MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND AVIATION ADMINISTRATION

# 2017 DESIGN STANDARDS MANUAL

BALTIMORE/WASHINGTON INTERNATIONAL Thurgood Marshall AIRPORT

MARTIN STATE AIRPORT

[Click here to learn how to use this manual]

# 1 Introduction

## 1.1 Purpose

This GIS Data Standard provides guidance for developing geospatially-referenced data to be submitted to, maintained by, or provided by the Maryland Aviation Administration (MAA). This includes geospatial vector data, related attributes, and metadata (i.e. information about the data). This standard is required so providers and receivers of MAA data have an understanding of the requirements for the GIS data they submit and use.

## 1.2 Scope

This document defines 125 of the 393 features covered by MAA's GIS Data Standard. The remaining 268 feature classes are covered in Appendix I-3 Utilities Supplement.

## 1.3 Organization of this Document

This document is a reference document that defines the requirements of GIS data submitted to, maintained for, or provided by MAA. The sections that make up the body of this document define the geometry, attributes, and metadata requirements at a general level that applies to all GIS data submitted to MAA. Specific definitions and requirements for each feature class and attribute are provided in Appendix I-1 GIS Feature Types. In this appendix, the geometry type, required accuracy, sensitivity levels, attribute definitions and any applicable attribute domain lists are defined. A list of acceptable domain values for each attribute domain list is also provided in Appendix I-1 GIS Feature Types.

This document also provides a basis to convert GIS to a CADD format and vice versa. Since GIS layering and CADD layering are traditionally different, a crosswalk is necessary to identify one or more CADD layers that correlate to each GIS layer. This crosswalk is provided in Appendix I-2 Cross Reference of CADD and GIS.

Other topics covered in this document include a definition of the Maryland State Plane coordinate system to be used for all MAA GIS and CADD data in Chapter 5 Coordinate System. Finally, Chapter 6 Electronic Deliverables describes the GIS data delivery formats acceptable to MAA.

## 1.4 Intended Audience

This standard is intended for Geographic Information Systems (GIS) data developers, database designers, and other providers and recipients of geospatial data that depict Baltimore-Washington International (BWI) and Martin State (MTN) airports and their surrounds, as well as other facilities owned and operated by MAA. This standard assumes basic familiarity with GIS concepts and terminology. A glossary of acronyms and key terms is provided below.

## 1.5 Application of this Standard

All GIS data prepared for or used, maintained, and distributed by MAA should conform to this standard. This includes Esri shapefiles and file geodatabases prepared by MAA staff, consultants, or

contractors. The extent and specifications for GIS data to be delivered will be further specified in contracts with consultants and contractors.

Some of the data submitted to MAA will also be submitted to the FAA in compliance with the FAA's Airports GIS Program requirements. This data must conform with the requirements defined by the latest versions of FAA AC 150/5300-16A, FAA AC 150/5300-17C, and FAA AC 150/5300-18B. The structure of the data required by these ACs is reflected in this document, although the FAA requirements take precedence for data that is to be submitted to the FAA.

To be in conformance with this standard, all geographic features such as runways, buildings, wetlands, obstruction and identification surfaces should be grouped into features classes (i.e. map layers) as defined in Appendix I-1 GIS Feature Types or in Appendix I-3 Utilities Supplement. Features should be of the proper geometry type (i.e. point, line or polygon) as further defined in Chapter 2.1 Allowable Geometry Types, should meet or exceed the accuracy limits specified (unless otherwise stipulated in writing) and adhere to the topological constraints described in Chapter 2.2 Topology Rules. Attributes should be populated to the extent possible (or as otherwise stipulated in writing) and carry the names and be of the types specified in Appendix I-1 GIS Feature Types. Attributes that are bound to domains must contain values listed in Appendix I-1 GIS Feature Types. All data must be in the Maryland State Plane coordinate system as defined in Chapter 5 Coordinate System. This data is to be submitted along with the metadata specified in Chapter 4 Metadata in one of the formats specified in Chapter.

## 1.6 Related Material

The following documents are related to this GIS Data Standard and must be followed to be compliant with this standard.

The primary normative references (i.e. references that must be complied with) are those related to the FAA's Airports GIS Program. MAA is required to submit GIS data in a format that complies with the FAA requirements on any project funded through federal grant monies and/or changes what the FAA defines as safety critical information. As a matter of policy, MAA follows the FAA's Airports GIS Requirements on all projects that develop GIS data regardless of whether data is to be submitted to the FAA or not. It is relevant to note that the feature class, attribute, and domain definitions in FAA AC 150/5300-18B have been incorporated into MAA's GIS Standard. If, however, there are any differences or clarifications necessary, the FAA advisory circulars shall prevail over this document.

- FAA AC 150/5300-16A "General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey", Sept. 15, 2007
- FAA AC 150/5300-17C "Standards for Using Remote Sensing Technologies in Airport Surveys", Sept. 30, 2011
- FAA AC 150/5300-18B "General Guidance and Specifications for Aeronautical Surveys: Airport Survey Data Collection and Geographic Information System Standards", May 21, 2009
- MAA GIS Data Standard – Appendix I-3 Utilities Supplement, Version 2.0, November 2012
- MAA Naming, Identification & Addressing Standard, Version 1.3, April 2009

- MAA Data Security Standard, Version 1.1, July 2007
- MAA Design Standards, 2011

## 1.7 Change Control

Following is a chronological list of changes made to this document since it was first released. A version number and the date of release are indicated for each revision.

| Version Number | Date of Release | Changes Addressed |
|---|---|---|
| 1.0 | 12/22/2005 | Original release |
| 1.1 | 7/9/2007 | Chapter 1.7 added for change control.<br><br>Chapter formatting adjusted to be consistent with other AIRPortal standards.<br><br>Utility and communications features moved to a supplement to this document. |
| 1.2 | 9/20/2007 | Chapter 1.3 - CADD technicians removed from primary audience<br><br>Chapter 1.4 - Rewritten to be more specific to the intended audience<br><br>Chapter 6 - Clarification that a File Geodatabase is required as opposed to a Personal Geodatabase or SDE Geodatabase |
| 1.3 | 6/3/2008 | Updated to incorporate utility feature and attribute definitions required for utility data collection and maintenance being carried out by MAA's Office of Maintenance & Utilities |
| 2.0 | 7/1/2013 | Major revision to address the needs of MAA's Runway Safety Area Program and to re-align MAA's standards with those of the FAA Airports GIS Program. |
| 3.0 | 2/10/2015 | Minor revision to address update to Survey Control Manual |

Readers are encouraged to suggest additional changes to this document. Accepted changes will be reflected in a subsequent version of this document.

# Table of Contents

**VOLUME 1 ..... 1**
Chapter 01 AE Contract Management ..... 1
Chapter 02 Design Procedures ..... 8
Chapter 03 Deliverables ..... 23
Chapter 04 Design Coordination and Permitting ..... 46
Chapter 05 AIRPortal ..... 76
Chapter 06 Security Safety and Phasing ..... 82
Chapter 07 Site Development ..... 110
Chapter 08 Environmental Design Criteria ..... 139
Chapter 09 Architectural Buildings ..... 168
Chapter 10 Structural and Structural Systems ..... 215
Chapter 11 HVAC ..... 229
Chapter 12 Plumbing ..... 242
Chapter 13 Fire Prevention and Protection ..... 245
Chapter 14 Electrical ..... 286
Chapter 15 Lighting ..... 321
Chapter 16 Building Systems ..... 341
Chapter 17 Signage and Graphics ..... 351
Chapter 18 Passenger Boarding Bridges ..... 361
Chapter 19 Baggage Handling Systems ..... 377

**VOLUME 2 ..... 389**
Appendix B - Standard Forms ..... 394
Appendix C - Standard Contract Drawings ..... 416
Appendix D - Standard Specifications ..... 425
Appendix E - Survey Control Manuals ..... 435
Appendix F - Restroom Design Cut Sheets ..... 439
Appendix G - Codes and Standards ..... 463

**VOLUME 3 ..... 469**
Appendix H - CAD Standard ..... 469
Appendix I - GIS Data Standard ..... 644

# Volume 1

## Chapter 01 AE Contract Management

## 1.1 Proposal Preparation / Scoping Meeting / Scope of Services

For all MAA Office of Engineering & Construction projects, the MAA Project Manager, Designer, and end-users shall meet to review the capital program request; develop the scope, budget, and schedule for the project; identify the procurement method; and identify permit requirements. Based on the meeting, the Designer shall prepare a proposal for MAA's review and approval.

In addition to the contractual requirements and specific requirements for each task, designers shall submit all proposals, unless directed otherwise, in accordance with and to include the information below. Order of activities listed may vary from task to task. Scope of each project should determine the applicability of activities listed. Prior to submitting a proposal, the Consultant and MAA Task Manager shall meet with the client to develop the project scope. Designer should obtain an approved CTP request form, Capital Program budget, and any preliminary cost estimates performed to date.

<u>GENERAL</u>

Designer shall:

1. Develop a Description of the project.
2. Identify Scope of Services (Phases I, II, and III, as defined in subsequent sections): List types and purpose of specific activities to be performed or considered under each phase.
3. List items specifically not covered in the scope of services, and list of assumptions.
4. Provide requested compensation (must be identified separately):
   i. Cost for proposal preparation
      MAA will not approve and reimburse the consultants for charges associated with preparing and submitting the following types of design fee proposals:
      1. Short Form fee proposals.
      2. Supplemental fee proposals.
      3. Fee proposals prepared by subconsultants.
      4. Fee proposals for design projects that are based on an investigation and/or a study previously prepared by the same consultant.
   ii. Cost for Phase I (Pre-Design Services, Investigation, Surveying, Geotechnical, Subsurface Utility Engineering ([SUE]), etc.)
      1. If the fee proposal does not include topographic surveying, geotechnical exploration, and/or SUE provide reason(s) why these services are not included.
      2. When preparing fee proposals for geotechnical investigation, Consultants shall note the following regarding their and/or subconsultant fees:
         a. Contingency Percentage: Contingency fee is not acceptable and is not approvable. If extra work is requested/required, a fee supplement must be submitted to MAA for review and approval prior to conducting any additional work outside of the agreed upon scope.
         b. Delay/Cancellation/Non-productive time: Fees associated with possible delays, cancellations, and /or non-productive time is not pre-approvable. A fee supplement with justification should be submitted to MAA for review and approval if the subconsultant experiences any unforeseen cancellations and/or delays explicitly caused by others.

c. Fees associated with administrative efforts such as obtaining security badge cannot be invoiced by the consultant/subconsultant.

d. 3rd Tier Subconsultant: MBE subconsultants cannot hire other subconsultants/vendors to perform work related to their scope of work. Charges associated with using 3rd tier subconsultants will not be compensated by MAA. See Chapter 1.4.8, Adding New Subconsultants/Vendors Post Award.

iii. Cost for Phase II (Design Services)

iv. Cost for Phase III (Construction Administration/Shop Drawing Review/Record Drawing Preparation, Cost for Record Drawing Preparation should be shown separately). For projects with construction estimates over $10,000,000, include fees associated with Partnering. See Chapter 1.5, Partnering Requirements During Construction.

5. Provide required time of completion for each Phase.
6. Provide Man-Hour Breakdown
7. Identify Out of Pocket/Direct Cost Breakdown (no markups are permitted on ODCs or subconsultant fees)
8. Provide estimated quantity and title of construction drawings with associated man-hours.
9. MAA Task Manager and the Consultant shall complete the attached form (List of Deliverables), which constitute major deliverables for the task.
10. List all subconsultants to be utilized under the task. Subconsultants shall submit their proposal in the format required herein.
11. Identify MBE/DBE Subconsultant to be utilized under the task and state the percentage of the total fee request that will be performed by the MBE/DBE subconsultant. Include a summary of best faith efforts made to secure MBE/DBE participation on the task.
    i. All fee proposals must include contract MBE goal; contract MBE goal obligated to-date; contract MBE goal achieved to-date; total MBE participation proposed under the task.
    ii. If the proposed MBE participation is zero, or small relative to the contract total MBE goal, provide reasonable justification and explanation for lack of MBE subconsultant participation.
12. Coordinate with the MAA's GIS Coordinator regarding GIS Applicability and identify the extent of compliance with the AIRPortal GIS Design Standards.
13. Submit a detailed design schedule within one week following approval of the proposal and notice to proceed.
14. Consultants shall identify on every fee proposal, by name, the Project Manager, Task Manager, subject matter expert, and all individuals working on the proposed project. Individuals not charging to the task (i.e. administrative staff) need not be listed.
15. Provide a completed Design Checklist.

On federally funded projects, reports, plans, and specifications must be prepared in accordance with FAA guidelines and requirements.

<u>PHASE I – PRE-DESIGN SERVICES & ENGINEERING REPORTS:</u>

Phase I services shall include the following and any additional items requested at the scoping meeting.

1. Data collection and review of existing reports, record drawings, and other available information.
2. Conduct topographic field surveys.
3. Conduct Geotechnical Investigation.
4. Conduct field inspection, investigation, and testing
5. Evaluate environmental considerations, and identify permit requirements. Develop permit schedule.

6. Determine availability of and evaluate existing resources (power, water, gas, sewer, drainage, etc.) and future requirements.
7. Attendance at scoping and fact finding meetings with Maryland Aviation Administration, airport tenants and other agencies involved and prepare meeting minutes.
8. Provide GIS Applicability Statement. This shall include the identification of the types of features to be built, moved, reconfigured or demolished during the construction as listed in MAA's AIRPortal GIS Data Standard. Provide GIS data deliverable identification as per GIS Standards, when applicable.
9. Prepare and submit preliminary construction cost estimate.
10. Provide Recommendations and Concept Plans.
11. Prepare and submit the required number of Conceptual Plans, Cost Estimate and Report with recommendations for review, prepared in accordance with FAA standards, if applicable, including all tests and data and coordinate documents with other agencies.
12. Attend preliminary design review meeting(s).
13. Prepare and submit the required number of preliminary plans, preliminary construction cost estimates and report and incorporate MAA's, tenants' and other agencies' comments.

PHASE II SERVICES (DESIGN AND PREPARATION OF CONSTRUCTION DOCUMENTS):

1. Conduct additional research, data collection, site investigations, testing, and topographic survey if necessary.
2. Prepare agenda and necessary presentation material for attending and conducting pre-design conference. Prepare draft and final minutes of the meetings and distribute.
3. Develop, coordinate, and prepare final construction phasing plan with input from MAA, FAA, tenants and other affected agencies.
4. Prepare and submit construction cost estimate and the required number of 30%, 60% and 100% construction drawings and specifications in appropriate format for review.
5. Incorporate MAA, FAA and other agencies' comments and recommendations into 30%, 60% and 100% contract documents and prepare written responses to comments.
6. Apply for and obtain all required permits and approvals. Include the required correspondence, meetings, and follow-up with agencies concerned.
7. Attend coordination and review meetings with MAA, FAA, Fire Marshal, MDE, DNR, BG&E, Verizon, tenants, and other agencies. Prepare minutes of meetings and follow-up. Attend the Procurement Advisory Group to establish MBE goal for the construction contract.
8. Obtain the required approvals and signatures on the contract drawings from various MAA offices, as noted on the drawings.
9. Prepare and submit the required number of Bid documents suitable for bidding in accordance with MAA/FAA format.
10. Prepare and submit final construction cost estimate and construction duration.
11. Attend pre-bid conference. Respond to the contractor's questions and prepare minutes of the meeting for incorporation into an addendum or addenda.
12. Prepare and submit addenda for distribution (equal to the number of Bid documents produced).
13. Respond to contractors' questions prior to bidding and confirm in writing.
14. Prepare bid tabulation forms in MAA/FAA format to include all bidders and recommend award.
15. Furnish conformed documents in accordance with the MAA Design Standards. Incorporate all revisions made by addendum or addenda.

PHASE III SERVICES (CONSTRUCTION ADMINISTRATION):

1. Justification must be prepared for Engineer's Estimates that are above or below 10% of the apparent low bidder. Prepare Notice of Recommended Award to MAA.
2. Review all submittals by the Contractor for compliance with the drawings and specifications and sign and date.

   Designers may receive either hard copy or electronic submittals from the Contractor.

   Electronic Submittals/Shop Drawings
   Designers shall review electronic submittals the same as hard copy submittals. The submittal shall be reviewed for compliance with the contract documents and, if commenting, the Designer shall mark on a hard copy print in red ink. The Designer shall also initial the submittal as compliant or require resubmission. The hard copy print shall be scanned and returned electronically to the Contractor within the time specified in Section SP-8.06 of the Standard Provisions for Construction Contracts, latest edition.
3. Provide consultation and advice to Construction Management group during construction.
4. Attend meetings with MAA, Construction Management Group or other agencies during construction as required. The Project Engineer or other qualified personnel should be available, as requested by MAA, to meet with MAA, the Resident Engineer or the Contractor on issues related to the shop drawing submittals, field conditions and construction phasing coordination.
5. Prepare written responses to the Contractor's questions (RFI) regarding the plans and specifications.
6. Conduct site visits as requested by MAA and report findings.
7. Prepare Field Revisions, as required, to address field changes and modifications to the design.
8. Prepare Record Drawings and GIS data (if applicable) in accordance with the MAA Design Standards.
9. Submit Record Drawings and calculations for storm water management facilities to MDE, when applicable.
10. Conduct an as-built survey of SWM facilities in accordance with MDE requirements. Documentation must be submitted to MDE certifying that constructed facilities meet functionality as designed.

TASK MANAGER REQUESTED ITEMS:
The Consultant shall inquire from the Task Manager the need for the following items and if applicable include the cost in the design fee proposal:

1. Conducting Value Engineering/Peer Review.
2. Conducting Constructability Review/Ready Check.
3. Design for mitigation of asbestos and lead paint within the proposed construction area.
4. Independent construction cost estimate coordination and analysis
5. Presentation(s) to the Executive Management Team.
6. Procurement method for construction. Consult with the Task Manager regarding the requirements for preparing construction documents for Building Permit and On-Call Construction Contractors.

NOTES TO THE CONSULTANT:
Minutes of meeting must be submitted using the MAA's standard Meeting Minutes Template (Appendix B - Standard Forms).

1. Construction cost estimates must be submitted using the MAA's standard Construction Cost Estimate Template. Any increases to the construction estimate must be documented and justified in writing to the MAA Task Manager.
2. Obtain concurrence from the Task Manager regarding the proposed list of assumptions and exclusions, if any, prior to submitting the proposal.
3. Engineer's Reports must be submitted in Draft, Draft Final, and Final.
4. Any out of scope work performed under the task must be with prior approval of the Task Manager. The Consultant must submit a supplemental fee proposal for out of scope work prior to proceeding with the out of scope work. In circumstances where design must start before the proposal can be submitted, the supplemental proposal must be submitted within two weeks following the Task Manager's approval to proceed with the out of scope work.

## 1.2 Design Reviews

All written comments will be responded to in writing by the Designer within two weeks after receipt. All comments that cannot be fully addressed in the two-week period will be responded to in writing when resolved, and prior to the final addendum being issued. This applies to all written comments received by the Designer and the MAA Project Manager.

At the beginning of each project, the MAA project managers will determine who the “client” is within MAA. The client should be invited to all scoping, design, phasing, and review meetings. Project Managers and Consultants should use their judgment to additional invitees as needed.

## 1.3 Design Meeting Minutes

All meeting minutes prepared for MAA Office of Engineering & Construction projects shall be distributed to all attendees and persons invited to the meeting. Meeting minutes shall be developed and distributed within five (5) business days of the meeting date. The Meeting Notice shall also be attached to the meeting minutes. Refer to Appendix B - Standard Forms for the standard Meeting Minutes form.

# Chapter 02 Design Procedures

## 2.1 Phase I Studies/Programming and Schematic Design

MAA requests studies be performed by a Designer in order to determine if the corresponding project should be pursued. Factors such as funding, design recommendations, and construction schedules are considered. Studies shall be provided in draft, draft final, and final submissions or as directed by the MAA Task Manager.

Study content shall contain, but not limited to, a brief overview of the task, establish a scope of work, elaborate on current conditions described in the overview, any discussion items or options, designer's recommendation to resolve or correct the issue being studied, and a cost estimate appropriate to the level of the submittal. Designer may also include concept drawings or renderings for easy visualization of current conditions and/or resolutions.

At each submission, as the scope of work is further refined, the designer shall include, but not limited to, documentation in the form of Meeting Minutes, Review Comments, etc. as appendices to the study. The body of the study shall be modified to reflect and discuss any scope of work adjustments.

### 2.1.1 Assignment of Building Identification Number

The GIS and Engineering Technology Section is responsible for administration of the Building Number Management Program and will determine and assign all building identification numbers at BWI Marshall and Martin State Airports.

The designers of Capital and Building Permit projects shall contact the GIS and Engineering Technology Section to request a building identification number prior to 60% design process.

The GIS and Engineering Technology Section will coordinate the issuance of a new building identification number or the modification of any existing building identification number with the Office of Planning, the Office of the Fire Marshal, and the Office of Commercial Management prior to final issuance of a identification number.

See Chapter 4 - Design Coordination and Permitting and Chapter 9 - Architectural Buildings for additional information.

### 2.1.2 Assignment of Door Numbers

The GIS and Engineering Technology Section is responsible for administering the Door Number Management Program and will determine and assign door numbers for new, deleted, or relocated doors at BWI Marshall and Martin State Airport.

The designers of Capital and Building Permit projects shall contact the GIS and Engineering Technology Section to request door number(s) prior to 60% design and anytime during the design or construction process that a door number(s) is added, deleted, or modified.

Each internal and external door (overhead/roll down doors, gates, spaces, egress doors, etc.), elevator door, and stairwell door must be assigned a unique door number.

The GIS and Engineering Technology Section will coordinate the issuance of new door number(s) or the deletion/modification of any existing door numbers with the Office of the Fire Marshal and the Office of Commercial Management prior to final issuance of door numbers.

New or modified door numbers will integrate with various information management systems such as AIRPortal, BIM, Computer Aided Dispatch (CDC), and Maximo.

See Chapter 9 - Architectural Buildings, Chapter 13 – Fire Prevention and Protection and Chapter 17 – Signage and Graphicsfor additional information.

## 2.2 Phase II Design

Quantities of deliverables described in the following Sections shall be as outlined in Chapter 3 Deliverables.

### 2.2.1 Design Development (30% Review) Submittal

At the 30% level, submissions shall include, but are not limited to, drawings, a table of contents of the anticipated technical specifications required, cost estimate, and design report.

Design reports shall be designated as "Draft" and contain similar content described in Chapter 2.1 Phase I Studies Programming and Schematic Design. Preliminary phasing and security concerns shall also be discussed. If the project is anticipated to contain Sole Source Items, it shall be discussed in the body of the report.

### 2.2.2 Construction Documents (60% Review) Submittal

At the 60% level, submissions shall include drawings, specifications including general information and technical specifications, cost estimate, and design report.

Design reports shall be designated as "Draft Final." The report shall be a modified version of the Draft report. Revisions to the report shall be based on, but not limited to, a refined scope of work, review comments, and continued coordination with MAA Stakeholders.

At this level, Designers shall initiate coordination with OMU for extra materials (MROI) following the procedure described in Chapter 4.5 Maintenance Repair and Operating Items MROI.

### 2.2.3 Construction Documents (100% Review) Submittal

At the 100% level, submissions shall include drawings, specifications including general information and technical specifications, cost estimate, and design report. Designers should prepare the content of this submittal as if bid ready. There should not be major design revisions or omissions associated with the project at this level.

Design reports shall be designated as "Final." The report shall be the final version modified from the Draft Final report. Revisions to the report shall be based on, but not limited to, a refined scope of work, review comments, and continued coordination with MAA Stakeholders and shall reflect the final design decisions.

Design calculations shall be completed and submitted.

If OMU requires MROI, Designers shall obtain final signatures as required by Chapter 4.5 Maintenance Repair and Operating Items MROI.

### 2.2.4 Bid Documents

Bid documents shall include final drawings and specifications. Specifications shall include general information, technical specifications, and wage rates.

Hard copies of bid documents are to be submitted directly to MAA Procurement. If requested, Designer shall submit a hard copy of the bid documents to the MAA Task Manager as well.

The final cost estimate as a separate loose document to the MAA Task Manager. Designers shall also submit with the final cost estimate, a cost estimate certification prepared as described in Chapter 3.5 Cost Estimating.

## 2.2.5 Procurement

### 2.2.5.1 Pre-Bid Conference and Site Inspection

1. The Office of Procurement will schedule the pre-bid conference and the site inspection. The date(s) and time(s) of the pre-bid conference and site inspection will be included in the Technical Provisions.
2. The Designer shall attend the pre-bid conference and site inspection and prepare the meeting minutes for incorporation into Addendum No. 1.

### 2.2.5.2 Addenda

1. The Designer shall prepare Addendum No. 1 using the MAA Standard Addendum Template. Addendum No. 1 shall be issued within seven (7) days of the deadline for receipt of the Contractor's questions and shall include, at a minimum, the following:
   a. Pre-Bid Meeting Minutes.
   b. Pre-Bid Meeting Attendance Sheet.
   c. Minority Business Enterprise Goals and Requirements for Construction Contracts, Good Faith Efforts, and Trucking Requirements.
   d. Responses to Contractor's Questions.
   e. Plan holders list.
   f. Any additions, modifications or new specifications.
   g. Any additions, modifications or new drawings.
   h. Any revised bid tabulations (if applicable.)
2. Additional addenda shall be prepared by the Designer as required.
3. All addenda shall include an Acknowledgement of Receipt.
4. The last addendum shall be issued to the Contractors by the Office of Procurement a minimum of seven (7) days prior to the bid opening.

### 2.2.5.3 Bid Tabulation and Notice of Recommended Award (NORA)

1. After the bid opening, the Designer shall prepare a bid tabulation including all bids that were received and the Engineer's estimate. On Federally funded projects, the bid tabulation shall include eligible and non-eligible items.
2. Based on the bid tabulation, the Designer shall prepare a Notice of Recommended Award and forward it to the Office of Procurement and a copy to the attention of the MAA Project Manager. For the projects that are procured through the on call construction contracts, the Notice of Recommended Award will be forwarded to the Office of Engineering and Construction, Construction Section and a copy to the MAA Project Manager.
3. Justification must be prepared by the Designer if the Engineer's estimate is more than 10% above or below the apparent low bid.
4. If advertisement was allowed prior to receipt of all permits, the Office of Procurement and the Office of Engineering and Construction, Construction Section, shall be notified accordingly. The Office of Procurement and the Office of Engineering and Construction, Construction Section shall coordinate approvals with the MAA Project Manager prior to issuing the Notice to Proceed.

### 2.2.5.4 Conformed Construction Documents

Unless otherwise directed by MAA's Project Manager, the designer shall provide Conformed Documents incorporating all changes to the drawings and specifications that have been developed during the solicitation.

Deliverables shall be as described in Chapter 3 Deliverables. Documents shall be submitted to MAA's Document Manager for distribution.

The electronic documents will follow the standard described for submittal of electronic documents as per Chapter 3.1 Electronic Deliverable Requirements in the MAA Design Standards as well as the requirements as outlined in Appendix H - MAA CAD Standard.

1. All Conformed Documents shall be delivered to the Document Manager in the MAA Office of Engineering and Construction.
2. No one but the Document Manager is authorized to receive Conformed Documents for MAA.
3. Coordinate with the Document Manager for the delivery of Conformed Documents. Request the Document Manager's email from the MAA Task Manager.
4. DO NOT leave Conformed Documents at the Document Manager's desk or with anyone else if he or she is not at their desk.
5. Only full/complete set(s) of Conformed Documents will be accepted. Do not deliver partial sets unless specifically requested by MAA.
6. All documents shall be prepared in accordance with the latest MAA Design Standard (DST). Documents not conforming to the DST will be returned for correction.
7. All documents are to be submitted with a Letter of Transmittal addressed to the Document Manager. The Letter of Transmittal shall include relevant information such as Contract Number, Title, A/E Task Number, and a complete list of documents included in the set of Conformed Documents being delivered.
8. Copy the MAA Task Manager on the Letter of Transmittal.
9. Have the Document Manager sign the Letter of Transmittal. Consultants shall keep a copy of the signed Letter of Transmittal for future reference.
10. The Document Manager will distribute the Conformed Documents to the appropriate individuals at MAA.

# 2.3 Phase III Construction Administration

## 2.3.1 Shop Drawing/Submittal Review

Note that some material submittals may require review by the MAA Office of the Fire Marshal (OFM). Refer to Chapter 4.3.1.1 OFM Shop Drawing/Submittal Review.

Designers shall review shop drawings, product submittals, mix designs, etc. for conformance to the drawings and specifications issued to the successful bidder.

Designers shall NOT use the shop drawing/submittal review process to implement revisions to the original design and construction documents. Revisions to the design should be implemented by Field Revisions.

## 2.3.2 Requests for Information

The consultant shall review and respond to all Request for Information (RFIs) within the time frames specified in the Construction Documents.

## 2.3.3 Design Changes/Field Revisions

During construction, the contractor, CMI, or MAA stakeholder may request a change to the original design. Design changes occur for different reasons such as alternate construction methods to expedite the schedule, requests from MAA stakeholders to include a new portion of work that is easily included in the work already being performed, design resolution to a conflict found in the field, etc.

To prepare a Field Revision, the Designer shall revise existing drawings or create new drawings to show the work being modified. Only applicable sheets need re-issuing. Any content on the drawings which has been revised, modified, or deleted shall be enclosed in a revision bubble. Content in the specifications which has been revised, modified or deleted shall be shown via track changes.

A brief narrative shall be issued with the drawings and/or specifications of each Field Revision. A general overview of what the Field Revision addresses as well as a point by point description of what has been revised, added, deleted on each drawing and/or specification shall be included in the narrative.

A cost estimate to complete the Field Revision shall be prepared by the Designer and submitted as a loose document to the CM only along with the Field Revision package. The cost estimate is for the purpose of cost comparison with contractor pricing and should not be included in the package issued to the contractor with the Field Revision.

# 2.4 Phase IV Record Drawings & Project Close Out

## 2.4.1 Record Drawing Preparation

At the close of every project, the MAA will provide the Designer with the as-built markups from the contractor. The following requirements should be followed when preparing Record Drawings.

Deliverables shall be as described in Chapter 3 Deliverables.

Drawings shall include:

- Revision block labeled "Record" with date of issue.
- The disclaimer Record Drawing Stamp (on the following page) placed on each sheet (including the title sheet) and applicable boxes should be checked.
- Every drawing with file name clearly located within the sheet border.

CD covers/labels shall include:

- The contract number, title, date, A/E Task number, and any other pertinent information on the CD insert.
- CD inserts formatted per *CD INSERTS***.**

Electronic Files on the CD shall include:
AutoCAD DWG as well as PDF drawings prepared per the Electronic Deliverables Section in Appendix H - MAA CAD Standard.
PDF and DOC files of the contract technical specifications prepared per the Electronic Deliverables Section in Appendix H - MAA CAD Standard.

- PDF file of the Design Report (if applicable for the project).
- Any addenda issued during the bidding process in PDF format. Changes to the original contract documents via addenda are to be included separately only for verification purposes. The changes made during addenda should have been incorporated into the conformed set. If for some reason, a conformed set was not issued, the addenda shall be incorporated into the record drawing DWG files.
- All RFIs and Shop Drawings/Product Submittals in PDF format.
- Contractor as-built markups in PDF format.

All fonts must be available in the MAA standard font library. The MAA standard font library includes all fonts delivered with AutoCAD.

## 2.4.2 Procedure for Delivery of Record Documents

The Designer shall comply with the following procedure when delivering Record Documents to MAA:

1. All Record Documents shall be delivered to the Document Manager in the MAA Office of Engineering and Construction.
2. No one but the Document Manager is authorized to receive Record Documents for MAA.
3. Coordinate with the Document Manager at 410-859-7933 or via email for the delivery of Record Documents. Request the Document Manager's email from the MAA Task Manager.
4. DO NOT leave Record Documents at the Document Manager's desk or with anyone else if he is not at his desk.

5. Only full/complete set(s) of Record Documents will be accepted. Do not deliver partial sets unless specifically requested by MAA.
6. All documents shall be prepared in accordance with the latest MAA Design Standard (DST). Documents not conforming to the DST will be returned for correction.
7. All documents are to be submitted with a Letter of Transmittal addressed to the Document Manager. The Letter of Transmittal shall include relevant information such as Contract Number, Title, A/E Task Number, and a complete list of documents included in the set of Record Documents being delivered.
8. Copy the MAA Task Manager on the Letter of Transmittal.
9. Have the Document Manager sign the Letter of Transmittal. Consultants shall keep a copy of the signed Letter of Transmittal for future reference.

SUBMISSION NOTE:

"THESE RECORD DRAWINGS DATED... AND TITLED "RECORD" HAVE BEEN DEVELOPED FROM

☐ RFI/FIELD CHANGES

☐ CONFORMED DRAWINGS

☐ AS-BUILT MARKUPS

AND MAY NOT REPRESENT THE FINAL PROJECT, AS CONSTRUCTED, IN EVERY DETAIL. THE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION SUPPLIED BY OTHERS AND THE ENGINEER HAS NOT VERIFIED THE ACCURACY OR COMPLETENESS OF THE INFORMATION."

SUBMISSION NOTE:

"THESE RECORD DRAWINGS DATED... AND TITLED "RECORD" HAVE BEEN DEVELOPED FROM

☐ RFI/FIELD CHANGES

☐ CONFORMED DRAWINGS

☐ AS-BUILT MARKUPS

AND MAY NOT REPRESENT THE FINAL PROJECT, AS CONSTRUCTED, IN EVERY DETAIL. THE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION SUPPLIED BY OTHERS AND THE ENGINEER HAS NOT VERIFIED THE ACCURACY OR COMPLETENESS OF THE INFORMATION."

| SHEET TITLE: RECORD DRAWING STAMP | DATE: SEPT 2007 |
|---|---|

### 2.4.3 Procedure for SWM As-Built Certification

Deliverables shall be as described in Chapter 3 Deliverables.

The designer shall be responsible for including the General Stormwater Management Notes Sheet in the overall contract documents for the project.

The designer shall convey through the contract documents that it is the responsibility of the contractor to provide the completed as-built certification package for each SWM facility. The Contractor is responsible for submitting a complete As-Built Certification Package for each Stormwater facility to MAA Environmental Planning Section (EPS), which shall then be submitted by the Environmental Planning Section to MDE for final acceptance. If a project has multiple SWM facilities, the Contractor (while consulting with MAA) will review contract documents to determine if the As-Built certifications for each SWM facility will be submitted to MAA separately (once the facility is constructed) or collectively (at the close of the project).

# 2.5 Special Design and Procurement Procedures

## 2.5.1 Comprehensive Paving and Comprehensive Interior/Exterior Modifications Contract Design Procedure

Comprehensive Paving Contracts (Comp Paving) and Comprehensive Interior/Exterior Modifications Contracts (Vertical Comp) at BWI Marshall and Martin State (MTN) Airports are on-call construction contracts for which MAA makes multiple awards under one contract. Each successful bidder is issued the Technical Provisions for the overall Contract which include General Information, Technical Specifications (Comp Paving only), Wage Rates, and Bid Forms. After award, competitive bids are solicited from the selected contractors as "Tasks" are advertised.

Comp Paving tasks involve airside and landside paving projects and typically do not include terminal/building work. Tasks under a Comp Paving contract range from small to large, usually involving paving, pavement patching, crack sealing, pavement marking, structure adjustments, sign installation, and other construction flatwork.

Vertical Comp projects are for work on buildings, utilities, and other airport facilities and typically do not include flatwork such as paving. Tasks under a Vertical Comp contract usually involve construction and/or repair services including electrical, mechanical, architectural, demolition, roofing, painting and finishes.

Designs of Comp Paving and Vertical Comp tasks shall comply with all applicable sections of this DST Manual. The following sections describe the design procedure for a Task to be bid under Comp Paving and Vertical Comp Contracts at BWI Marshall and MTN. Text which does not specify either Comp Paving or Vertical Comp is applicable to both.

### 2.5.1.1 Technical Provisions

Procurement templates have been developed for Comp Paving and Vertical Comp Tasks and shall be used to create the Technical Provisions specific to each Task. The information to be provided in the template is discussed below. The populated template shall be bound in one (1) complete volume. The templates are available for download on AIRPortal > Designer Tools. Click here to download the Microsoft Word file.

#### *A. Part I – General Information*

Designers shall develop the General Information in the format provided in the template and submit this at each submittal phase. Refer to Chapter 3 Deliverables.

General Information shall be a narrative of the Task, summarizing major items for contractor consideration and awareness for bid. The items shall include at minimum:

- Contract Summary – table with information fields to be filled in by Designer
- Referenced Documents – for Comp Paving tasks, reference overall contract technical specifications
- Description of project
- Special Construction Requirements – include information such as Project Duration, Liquidated Damages, Phasing Requirements (if applicable), Security Requirements (if applicable)
- List of Drawings

The information included in the Special Construction Requirements is not limited to the items listed above. The Designer shall determine if there are other specific items that should be brought to the contractor's attention and include them with the narrative.

## B. Part II – Technical Specifications

Comp Paving

Each Contractor awarded a Comp Paving contract is issued the Technical Specifications that apply to all Tasks, airside and/or landside, constructed under the contract. The technical specifications are also available on AIRPortal. Click here to download the Microsoft Word file. Additional supplemental specifications may be required and should be issued with each individual Task as described below.

Designers shall review and evaluate the Comp Paving Technical Specifications to determine if the Task being designed requires language/specifications above and beyond those given. If a Comp Paving Technical Specification is determined to be applicable but needs supplemental information, the Designer may include this information as additional notes on the Task drawings. If additional technical specifications are deemed necessary for the Task, the Designer shall develop the appropriate specifications and submit them to MAA in Part II of the Technical Provisions.

In general, the Comp Paving technical specifications are more suitable for landside tasks than for airside tasks. Each specification shall be reviewed by the Designer to ensure compatibility with each task. Several airside specifications have been included in the contract; however, additional specifications may be required.

In the event that additional specifications are required, Designers shall note that MAA has developed certain Standard Specifications which are included in Appendix D - Standard Specifications. These specifications shall be used if applicable when additional specifications are needed for the Task. Refer to Chapter 3.6 Construction Specifications.

If the Comp Paving Specifications are deemed adequate and no supplementary specifications are required, the Design shall not in Part II "Not Applicable."

Vertical Comp

There are no Technical Specifications issued to Contractors that apply to all Vertical Comp Tasks. Each individual Task shall have the appropriate specifications developed, tailored to the Task's specific scope of work.

In addition to the applicable technical specifications tailored to the scope of work, Designers shall also include MAA Standard Specification items for each Task where relevant. See Chapter 3.6 Construction Specifications, and Appendix D - Standard Specifications.

Designer shall prepare remaining Technical Specifications following the most current listing of sections included in Construction Specifications Institute (CSI) MasterFormat Division Numbers (6-digits) and Titles, and Section Format organization. Note that MasterFormat 95 and Section numbering (5-digits) is not acceptable.

Method of Measurement and Basis of Payment

Technical Specifications shall be developed in accordance with Chapter 3.6 Construction Specifications, and shall include sections for Method of Measurement and Basis of Payment sections.

The Comp Paving Technical Specifications do not include sections for Method of Measurement or Basis of Payment. Designers shall include additional notes on the Task drawings to indicate if work and/or materials are incidental to a specific Item. This shall be a requirement for all pay items, regardless of whether they are from the Comp Paving Technical Specifications or from supplemental specifications prepared by the Designer.

### *C. Part III – Wage Rates*

Wage rates are provided in the Technical Provisions issued to the Contractor upon award of a Comp Paving or Vertical Comp contract. The wage rats do not need to be provided again if the Task specific Technical Provisions.

### *D. Part IV – Bid Forms*

Bid Forms are provided in the overall Technical Provisions of both contracts and do not need to be provided again for each Task.

However, a Bid Tabulation form is required for each Task. Designers shall develop the Bid Tabulation form with which the contractors will use to submit Unit or Lump Sum prices to MAA. Designers shall determine each item of work and the quantity of each item necessary to complete the Task.

A blank Bid Tabulation Form is provided in the template found on MAA's AIRPortal > Designer Tools, in Microsoft Excel format. Rows can be added or deleted for items depending on the complexity of the work.

#### 2.5.1.2 Construction Contract and Task Number

All Tasks shall be identified by the Comp Paving or Vertical Comp contract number, in the format MAA-CO-XX-XXX, as well as its unique Task number, on the drawings and in the template for the Technical Provisions in the designated spaces. Designers shall obtain the Task numbers from the MAA Task Manager during the 100% design stage at the latest, prior to submitting 100% documents.

#### 2.5.1.3 MBE Goal Establishment

MBE goals shall be obtained by the Designer for all Comp Paving and Vertical Comp tasks issued under the 2016 and future on-call construction contracts. MBE goals will be determined on an individual task basis.

The Designer shall contact Lisa Grant, Compliance Officer, Office of Fair Practice, at the time of the 100% design submission, to initiate the process.
The following items shall be provided by the Designer, as part of the 100% design submission, to Lisa Grant:

- Part I – General Information Section.
- Scope of Work and purpose of the task.
- Engineer's Estimate.
- Subcontractable items.
- Contractor Self-Performance Goal.
- A description of the work that will be the responsibility of the prime contractor.

If a task is deemed to be an "emergency" task by MAA, the Designer shall contact Lisa Grant as soon as possible and indicate that said task is an "emergency" task.

Once the MBE goals have been established by the Office of Fair Practice, the Designer shall include the MBE goals in Part I – General Information Section of the Technical Provisions.

#### 2.5.1.4 Task Durations and Submittal Review

Task durations shall be established during design and documented in the contract documents. In instances when duration is less than 30 days, the designer shall be aware that the product submittal review period as defined in the Standard Provision SP-8.06 is reduced from 21 calendar days to 10 calendar days. For projects requiring materials with a lengthy procurement time, utility relocations, a large number of product submittals or other similar situations, Designer shall consider specifying a "Phase 0" to account for the duration of these activities prior to the start of construction in the field.

#### 2.5.1.5 Liquidated Damages

The amount of liquidated damages shall be evaluated for each task to be completed under a Comp Paving or Vertical Comp contract. The Designer shall state the liquidated damages amount(s) in Part I – General Information section of the Technical Provisions. Designers shall note whether liquidated damages are being assessed per phase, for the overall project duration, or both.

#### 2.5.1.6 Deliverables

Designers shall deliver each design submittal to the MAA Task Manager. Pre-bid submittals such as 60%, 100%, etc. will be distributed by the MAA Task Manager to the Fire Marshal, Construction Manager, and other MAA stakeholders for review. Bid documents are also delivered to the MAA Task Manager for their review and delivery to the MAA Manager, Division of Construction.

The following items shall be submitted to the MAA Task Manager at each submittal level:

- Task Drawings
- Engineer's Estimate of Construction Costs
- Technical Provisions
- Engineer's Design Report, if required

The number of hard copies and CDs to be distributed for review shall be coordinated with and determined by the MAA Task Manager prior to the first design submission. This count shall be maintained for the remaining pre-bid design submissions (i.e., 60%, 100%, etc.) unless otherwise directed by the MAA Task Manager.

CDs shall be formatted in accordance with the design standard for electronic document preparation; however folders 01_Instructions to Bidders and 02_Standard Provisions need not be included on the CD. Utilize the Comp Paving or Vertical Comp procurement template for the 03_Technical Provisions folder.

The number of hard copies and CDs to be submitted for Bid solicitation shall vary for each contract depending on the number of contractors bidding. Confirm the number of hard copies and CDs with the MAA Task Manager prior to bid submission.

CDs for Bid solicitation shall contain PDFs of the drawings, Technical Provisions, and Certified Engineer's Estimate. PDFs of the Bid Documents shall display all applicable signatures required in Chapter 3.4.Drawing Requirements.

#### 2.5.1.7 Pre-Bid Meetings

The Construction Manager will schedule Pre-Bid meetings for each Task. Designers shall attend the Pre-Bid meetings unless instructed otherwise by the MAA Task Manager.

#### 2.5.1.8 Conformed Documents

At the direction of the MAA Task Manager, Designers shall provide Conformed Documents for Comp Paving/Vertical Comp Tasks in accordance with Chapter 2.2.5.4 Conformed Construction Documents, and in accordance with the design standard for electronic document preparation. Conformed documents shall be submitted to the MAA Document Manager in accordance with Chapter 2.2.5.4 Conformed Construction Documents.

#### 2.5.1.9 Record Documents

Designers shall provide Record Documents for all Tasks to the MAA Document Manager in accordance with Chapter 2.4 Phase IV Record Drawings Project Close Out.

# Chapter 03 Deliverables

## 3.1 Electronic Deliverable Requirements

Each project submission will include delivery of electronic files of the project documents for use by the MAA and incorporation into the AIRPortal database. The database structure mandates that the format of delivered electronic media shall be strictly adhered to. This section serves to outline the requirements and the formats for delivery of Architectural, Engineering, and Construction documents, as well as any document, which is submitted electronically to MAA's Office of Engineering & Construction for archiving purposes.

### 3.1.1 General Electronic Deliverable Requirements

#### 3.1.1.1 AIRPortal Document Manager (ADM)

AIRPortal Document Manager (ADM) is a light weight, downloadable, Windows based desktop application that will allow MAA Design Consultants to directly submit electronic deliverables to the MAA for archiving purposes only. The purpose of ADM is to streamline the archiving process at MAA for design document submittals. ADM allows for a direct upload of the electronic version of a submittal to AIRPortal.

ADM will be used for the submission of all CAD and non-CAD electronic deliverables for archiving purposes at each Design Phase as outlined in Chapter 3.2 Deliverables by Design Phase. All electronic deliverables submitted using ADM must be uploaded by the prime consultant at the same time as submissions to MAA for distribution and review.

ADM is configured to accept the following eligible submissions:

- Exhibits and Presentations
- 30/60/100 Review Documents (Drawings & Specifications)
- Draft, Draft-Final, and Final Reports (Engineer's Reports, Stormwater Management Reports, Geotechnical Reports)
- Bid Documents (Drawings, Specifications, Bid Forms)
- Addenda
- Conformed Documents
- Record Documents

PDF documents submitted to MAA shall have pages rotated for on-screen readability regardless of page orientation in the hard copy submission.

Electronic deliverables outlined in Chapter 2 – Design Procedures that are not reports or specifications (i.e. meeting minutes, Final Task Files, etc.) will be delivered to the MAA Project Manager as described in Chapter 2 – Design Procedures.

Documents identified as SSI will be submitted via ADM and will follow the standard MAA naming conventions outlined in the Chapter 3.3 Standard File Naming Conventions.

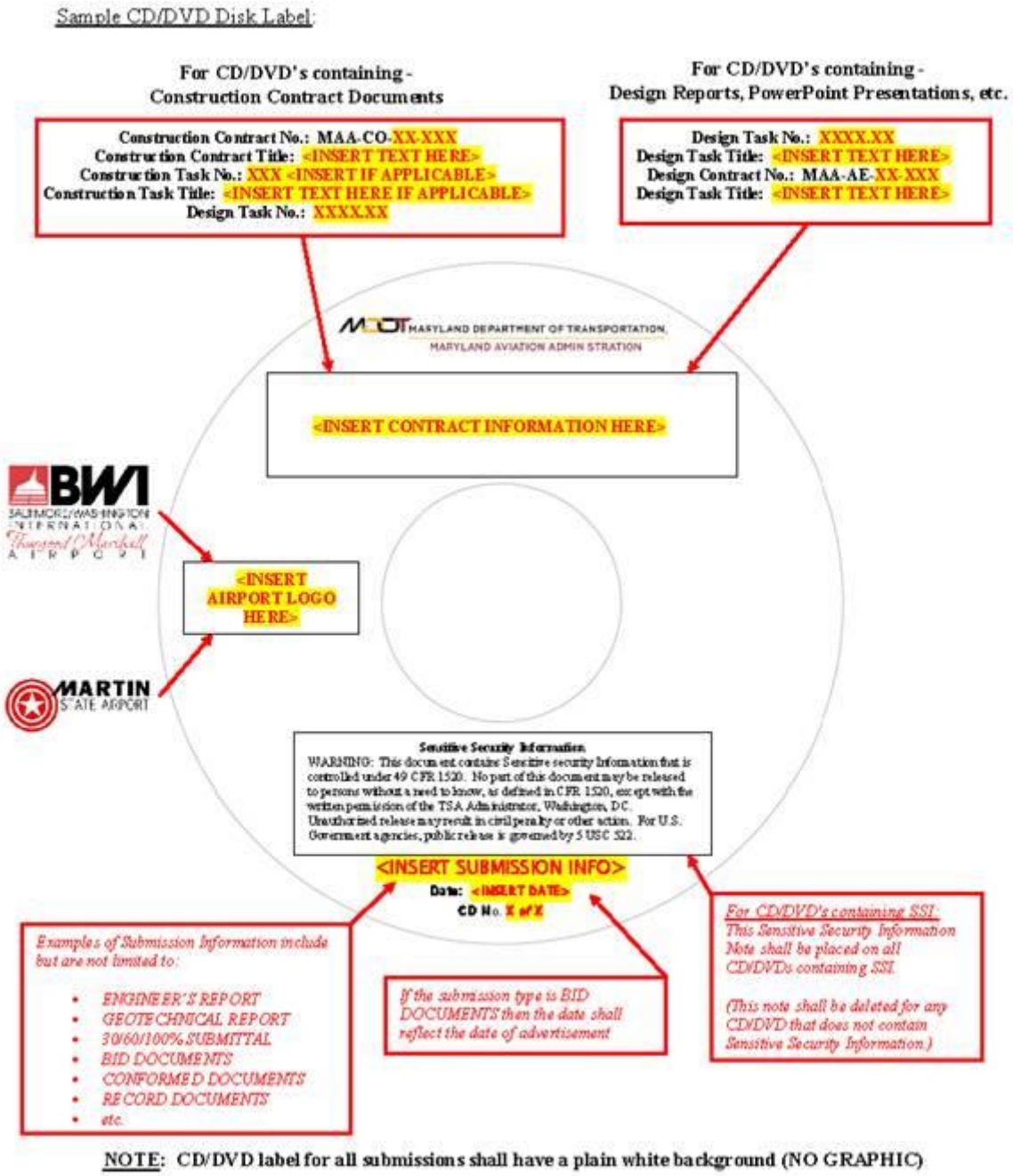
Required hard copy documents will be submitted to the MAA Archive as outlined in Chapter 3.2 Deliverables by Design Phase.

ADM does not eliminate the need for paper and electronic copies of documents for distribution to MAA for review. The MAA Project Manager will continue to direct these activities.

For availability, usage, limitations and system requirements, please refer to Chapter 5.4.1 AIRPortal Document Manager (ADM).

#### 3.1.1.2 Media (CDs/DVDs)

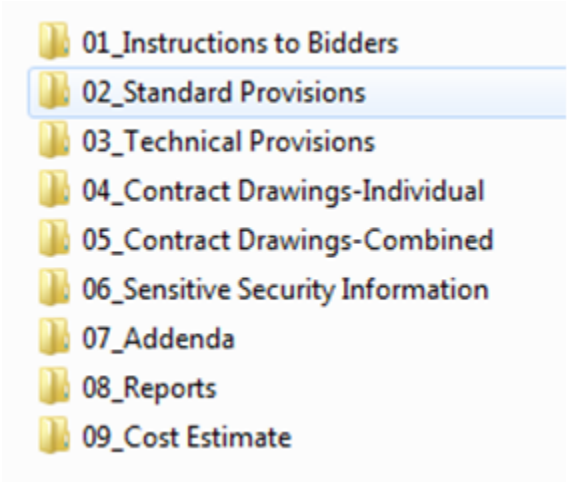
- Electronic copies of documents provided to MAA on CD R or CD R/W shall be with the session closed to ensure maximum cross platform readability.
- Documents shall be provided in Adobe pdf format, noting the following guidelines:
  - Resolution of scanned documents shall not be less than 200 dpi and must enable reproduction of the original document without loss of clarity and definition.
  - Color pages and large size inserts must be scanned to enable the reproduction of the document in its original form, as part of the main document.
  - PDF Portfolios are not acceptable.
- Submitted electronic files should not be compressed. (i.e. ZIP) unless otherwise noted.
- Each CD will include a CD label with the information in the Sample CD/DVD Disk Label below. Word files for the standard CD label are provided on AIRPortal. Click here to download the CD Label in Microsoft Word format.




*Sample CD/DVD Disk Label*

### 3.1.1.3 Folder Structure for Bid Documents

Files shall be organized into the following folder and file structure for submittal to MAA. This folder and file structure shall be considered standard and the Consultant shall not alter the folder names or add/delete folders without the written permission of the MAA Archivist. Document file names within the folder structure shall also be considered a standard with the exception of the individual drawing names, which shall be developed in accordance with the drawing file naming convention contained in Chapter 3.3 Standard File Naming Conventions.




| SUBMISSION | | | | | | | STANDARD FOLDER STRUCTURE FOR DIGITAL SUBMISSIONS |
|---|---|---|---|---|---|---|---|
| 30% | 60% | 100% | BID | ADDENDA | CONFORMED | RECORD | |
| | | ● | ● | | | | 01_Instruction to Bidders |
| | ● | ● | ● | | | | 02_Standard Provisions |
| | ● | ● | ● | | ● | ● | 03_Technical Provisions |
| ● | ● | ● | ● | | ● | ● | 04_Contract Drawings - Individual |
| ● | ● | ● | ● | | ● | | 05_Contract Drawings – Combined |
| ● | ● | ● | ● | | ● | ● | 06_Sensitive Security Information |
| | | | | ● | ● | | 07_Addenda |
| ● | ● | ● | | | | ● | 08_Reports |
| ● | ● | ● | | | | | 09_Cost Estimate |

*Standard Project Folder Structure*

01_Instructions to Bidders

Designers shall copy the Link to Adobe Reader and Terms and Conditions from AIRPortal. The Designer shall not make modifications to these documents.

02_Standard Provisions

Designers shall copy the latest version of the General Provisions and Standard Provisions from AIRPortal. The Designer shall not make modifications to these documents.

03_Technical Provisions

This folder will contain one (1) pdf file for each volume of the Technical Provisions provided by Design Consultant.

i. Volume 1 – Technical Provisions contains the following:
   PART I. General Information
   PART II. Technical Specifications
   PART III. Wage Rates
ii. Volume 2 - Technical Provisions contains:
   PART IV. Bid Forms (documents to be water-marked “NOT FOR BIDDING PURPOSES” on 60%, 100% submissions)

04_Contract Drawings – Individual

This folder will contain individual project drawings in pdf format.

See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

05_Contract Drawings – Combined
This folder will contain a combined set of drawings (one single file).

See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

06_Sensitive Security Information
This folder will contain any drawings or specifications containing SSI. See Chapter 3.1.2 Electronic documents containing Sensitive Security Information (SSI) for more detail on how to prepare documents in this section.

07_Addenda
This folder for Conformed CD shall contain a copy of each addendum issued during the project's procurement phase.

08_Reports
This folder shall contain all reports prepared during the life of the project, such as the Design Report, Stormwater Management Report, Geotechnical Report, Environmental Assessment, Hazardous Material Report, etc.

See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

09_Cost Estimate
This folder will contain the Engineer's Estimate of construction and program costs for the project at each design submission. Designer shall use the Cost Estimating Template found on AIRPortal in "Designer Tools" and described in Chapter 3.5 Cost Estimating. This folder is omitted on the Bid, Conformed, and Record CDs.

Note: Bid Document requirements may vary slightly for each method of procurement. Refer to the Procurement Templates posted on AIRPortal under "Designer Tools" for more information on the requirements for each procurement type.

### 3.1.2 Electronic Documents Containing Sensitive Security Information (SSI)

On projects containing SSI, the Consultant shall develop the drawings and specifications in accordance with MAA Design Standard Chapter 6.1.3 Management of Sensitive Security Information (SSI) with the following additional requirements for the preparation of the electronic SSI documents:

- The Consultant shall prepare two distinct CD/DVD's for any project containing SSI: one containing only non-SSI content and one containing only SSI content. Both CD/DVD's shall follow the format described in Chapter 3.1.1.3 Folder Structure for Bid Documents.
- Non-SSI CD/DVD: This disk shall contain all non-SSI information only. The following "SSI Notice" shall be included on the non-SSI disk as a substitute for each SSI document. The intent of the SSI Notice is to direct the user to the disk containing SSI. This requirement shall apply to CADD and non-CADD deliverables. Because there is no SSI content on this disk, the SSI identification statement shown on the sample CD/DVD label in Chapter 3.1.1.2 Media (CDs/DVDs) shall be deleted.

- SSI CD/DVD: This disk shall contain all SSI information only. The files and folder structure shall be compressed in a ".zip" file. The ".zip" file shall be password protected. The SSI CD/DVD shall contain this password protected ".zip" file. See Chapter 6.1.3.3, SSI General Requirements for password requirements. The CD/DVD label for this disk must contain the required SSI identification statement in accordance with Chapter 3.2 Deliverables by Design Phase. See sample CD/DVD label in Chapter 3.1.1.2 Media (CDs/DVDs).
- SSI CD/DVD: Reports/Studies containing SSI shall be password protected even if the report also contains non-SSI information.
- When submitting files through the AIRPortal Document Manager (ADM) application, SSI files shall not be password protected. ADM will automatically detect and mark files as SSI based on the file names. See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

*Revise Text as appropriate for content*

Drawing No. XXXX or Specification Section No. XXXXXX

NOTICE: THIS DRAWING CONTAINS SENSITIVE SECURITY INFORMATION (SSI) THAT IS CONTROLLED UNDER 49 CFR 1520

Requirements for viewing and handling SSI are contained in the Notice to Contractors that is provided in Volume 1 of the Technical Specifications that are provided on this CD.

All SSI information associated with this project, **including this drawing**, is provided on a separate CD that is clearly marked "Sensitive Security Information". No part of this document may be released to persons without a need to know, as defined in CFR 1520, except with the written permission of the TSA Administrator, Washington, DC. Unauthorized release may result in civil penalty or other action. For U.S. Government agencies, public release is governed by 5 USC 522.

*SSI Notice*

## 3.2 Deliverables by Design Phase

The table below illustrates the type and quantity of deliverables during each phase of design.

| Standard List of Deliverables | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Item | Letter Size (8 1/2"x11") PAPER | Half Size (11"x17") PAPER | Full Size (22"x34") | | DWG (e-Transmit) | PDF/MS Office | PDF | GIS Data Fil GeoDatabas Check-out *(See Note 4 below)* |
| | | | PAPER | ~~MYLAR~~ | | | | |
| | *Quantity of Hard Copies* | | | | *AIRPortal* | | *CD/DVD* | |
| P Cost Estimates | | | | | | | (1) | |
| chnical Memorandum | | | | | | | (1) | |
| ft Study Report | (5) | | | | | ADM | (5) | |
| ft Final Study Report | (5) | | | | | ADM | (5) | |
| al Study Report | (5) | | | | | ADM | (5) | |
| ncept Plans | | (5) | | | | ADM | (10) | |
| nderings | | (5) | | | | ADM | (5) | |
| werPoint Presentations | (2) | | | | | ADM | (5) | |
| liminary Design-Build Drawings | | (5) | (5) | | ADM | ADM | (10) | |
| liminary Design-Build ecifications | (5) | | | | | ADM | | |
| al Design-Build Drawings | | (5) | (5) | ~~(1)~~ | ADM | ADM | (10) | |
| al Design-Build Specifications | (5) | | | | | ADM | | |
| % Drawings | | (5) | | | ADM | ADM | (6) | |
| % Outline Specifications | (5) | | | | | ADM | | |
| % Engineer's Report | (5) | | | | | ADM | | |
| % Cost Estimate | (1) | | | | | | | |
| % Drawings | | (5) | | | ADM | ADM | (6) | |
| % Specifications/Bid Forms | (5) | | | | | ADM | | |
| % Engineer's Report | (5) | | | | | ADM | | |
| % Cost Estimate | (1) | | | | | | | |
| 0% Drawings | | (5) | | | ADM | ADM | (6) | |
| 0% Specifications/Bid Forms | (5) | | | | | ADM | | |
| al Engineer's Report | (5) | | | | | ADM | | |
| 0% Cost Estimate | (1) | | | | | | | |
| otechnical Report | (4) | | | | | ADM | (5) | |
| otechnical Boring/Coring cations | | | | | ADM | ADM | | |
| otechnical Logs | | | | | | ADM | | |
| Drawings (Comprehensives) | | (3) | | | ADM | ADM | (2) | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Specifications/Bid Forms mprehensives) | (2) | | | | | ADM | | |
| st Estimate to Match Bid Forms mprehensives) | (1) | | | | | ADM | (1) | |
| Drawings | | (3) | | | ADM | ADM | (40) | |
| Specifications/Bid Forms | (42) | | | | | ADM | | |
| st Estimate to Match Bid Forms | (1) | | | | | | (1) | |
| dendum Drawings | | (2) | (2) | | | ADM | (40) | |
| dendum Specifications/Bid ms | (4) | | | | | ADM | | |
| nformed Drawings | | (2) | (2) | | ADM | ADM | (2) | |
| nformed Specifications/Bid ms | (2) | | | | | ADM | | |
| nformed GIS Data | | | | | | ADM | | (See Note 4 below) |
| cord Drawings | | | | ~~(1)~~ | ADM | ADM | (1) - (~~2~~ if AIP) | |
| cord Specifications | | | | | | | | |
| cord GIS Data | | | | | | ADM | | (See Note 4 below) |
| otographs | | | | | | | (1) | |
| al Stormwater Management port | (2) | | | | | ADM | (3) | |

1. *All electronic documents (pdf, dwg, etc.) must comply with MAA's standard naming convention.*
2. *Quantities indicate the suggested number of CD/DVDs to be provided unless directed otherwise by the MAA Project Manager. Digital Plan and Specification submissions (30%, 60%, 100%, etc.) may be combined on 1 CD/DVD.*
3. *ADM is the AIRPortal Document Manager used for direct submission to MAA for archiving purposes.*
4. *For project requiring GIS Deliverables, please contact the AIRPortal Administrator prior to initiating design activities to obtain a File GeoDatabase Check-out and to coordinate procedures for data submissions.*
5. *For presentations and photographs, reduce file size as appropriate.*

## 3.3 Standard File Naming Conventions

| STANDARD NAMING CONVENTIONS - SUMMARY TABLE | |
|---|---|
| **Naming Convention ***<br>**KEY: <RED> required, *<BLUE italics>* as needed** | **Example** |
| MENT TITLE><_V#><_REVISED>_<date using the format yyyymmdd><_SSI>.pdf | B-C Security Checkpoint and Connector_V2_2012050 |
| MENT TITLE><_V#><_REVISED>_<date using the format yyyymmdd><_SSI>.pdf | B-C Security Checkpoint and Connector_V2_2012050 |
| MENT TITLE><_V#>.pdf | Runway 15R-33L Safety Area Improvements.pdf |
| ng) or C (Coring)> - <AE Task No.> - <Location Number>.pdf | B-2616.00-AJK-67.pdf |
| MENT TITLE><_REVISED>_<date using the format yyyymmdd><_SSI>.pdf | MTN Rehabilitation of Helipad Taxiways_20120214.p |
| MENT TITLE><_REVISED>_<date using the format yyyymmdd><_SSI>. pdf | International Terminal Presentation_20040209_SSI.p |
| MENT TITLE><_REVISED>_<date using the format yyyymmdd><_SSI>.pptx | International Terminal Presentation_20040209_SSI.p |
| equence#>_<sheet #>_<sheet title><_SSI>.pdf | V2_0201_ES202_PORTAL DETAILS.pdf |
| roject Title><_SSI>.zip | V2_B-C Security Checkpoint and Connector.zip |
| equence#>_<sheet #>_<sheet title><_SSI>.pdf | V2_0201_ES202_PORTAL DETAILS.pdf |
| roject Title><_SSI>.zip | V2_B-C Security Checkpoint and Connector.zip |
| equence#>_<sheet #>_<sheet title><_SSI>.pdf | V2_0201_ES202_PORTAL DETAILS.pdf |
| equence#>_<sheet #>_<sheet title><_SSI>.pdf | V2_0201_ES202_PORTAL DETAILS.pdf |
| roject Title><_SSI>.zip | V2_B-C Security Checkpoint and Connector.zip |
| equence#>_<sheet #>_<sheet title><_SSI>.pdf | V2_0201_ES202_PORTAL DETAILS.pdf |
| roject Title><_SSI>.zip | V2_B-C Security Checkpoint and Connector.zip |
| Title><_V#><_SSI>.pdf | B-C Security Checkpoint and Connector_V1.pdf |
| Title><_V#><_SSI>.pdf | B-C Security Checkpoint and Connector_V1.pdf |

| | |
|---|---|
| roject Title>_Addendum <number><_SSI>.pdf | Concourse E Extension - Site Work_Addendum 3.pdf |
| Title><_V#><_SSI>.pdf | B-C Security Checkpoint and Connector_V1.pdf |
| Title><_V#><_SSI>.pdf | B-C Security Checkpoint and Connector_V1.pdf |
| ing the format yyyymmdd>_<photo sequence #>_<Photo subject> | 20161001_02_VSR Stop sign 43.jpg |

** - Special characters("/", "\", "&", "*", etc) are not permitted in file names.*
*** - "Final" CTP Estimates are to be submitted as Reports. All other cost estimates are to be submitted to the MAA Project manager.*
*SSI documents should follow established protocols for distribution except for submissions using AIRPortal Document Manager (ADM)*
*Filenames will use a combination of upper and lowercase letters to improve readability.*
*Filenames will use a combination of upper and lowercase letters to improve readability.*
*Filenames that are excessively long may require truncating using acceptable MAA abbreviations.*
*Digital documents submitted to the MAA Project Manager, Procurement or Construction are to be made on CD/DVD ROM*

# 3.4 Drawing Requirements

All drawing submissions to MAA shall meet the requirements described in this section as well as Appendix H - MAA CAD Standard.

## 3.4.1 Standard Drawings

MAA has established standard drawings that shall be included in the plan sets for all contract documents. They are found in Appendix C - Standard Contract Drawings.

### 3.4.1.1 Standard Title Sheet

Each project shall utilize the standard title sheet provided for either BWI Marshall or Martin State Airport which are found in Appendix C - Standard Contract Drawings.

### 3.4.1.2 Standard Border

All sheets following the Title Sheet shall utilize the MAA standard border provided for either BWI Marshall or Martin State Airport which are found in Appendix C - Standard Contract Drawings.

### 3.4.1.3 General Construction and Safety Notes

To ensure accurate and consistent information is included with each plan set, all designers shall use the standard General Construction and Safety Notes Sheets found in Appendix C - Standard Contract Drawings. There are four versions of the General Construction and Safety Notes to be selected based on the location of the project, as described below:

- Projects that impact the Security Identification Display Area (SIDA) at BWI Marshall Airport. Any project that requires access into the SIDA shall include this version of the notes in the construction documents.
- Projects that impact the Sterile Area of the Terminal Building. The Sterile Area is considered those areas that a person has to pass through security to access, but does not include work on the SIDA, outside of the Terminal Building at BWI Marshall Airport.
- Projects not within the secure area of BWI Marshall Airport. Note that non-secure areas within the Airport's main Terminal Building and extending 300 feet from the non-secure (public-side) face of the main Terminal Building, as well as public areas within ten feet of the security perimeter fence are considered restricted public areas and have specific security requirements as identified in Specification 010005X_Security Requirements During Construction at BWI. Note that the Hourly Garage is exempt from the restrictions for areas within 300 feet of the terminal building.
- All projects at Martin State Airport.

Each version of the notes has highlighted sections within it. These highlighted sections are to be reviewed and edited as appropriate for each project.

Any proposed changes to the notes shall be submitted to the MAA's Project Manager for approval.

## 3.4.2 Project-Specific Drawings

The following drawings shall be included in plan sets as applicable.

### 3.4.2.1 Standard Survey Sheet

The MAA has established standard survey control for both BWI Marshall and Martin State Airports (please refer to Chapter 7.1.1 Survey Control). All drawing sets involving survey work/grading are required to include the appropriate BWI Marshall or Martin State Airports Standard Survey Control Drawing contained in Appendix E - Survey Control Manuals.

#### 3.4.2.2 MDE Standard Erosion and Sediment Control Notes and Details

Erosion and Sediment Control (ESC) drawings shall be provided for all MAA projects involving site work and earth disturbance, regardless of whether an MDE permit is required. MAA has established Standardized Erosion and Sediment Control Notes, Details and Sequencing Sheets for all projects at BWI Marshall or Martin State Airports. These sheets shall be the basis for all projects to ensure standardization of all Erosion and Sediment Control drawings for construction work at BWI Marshall or Martin State Airports.

Background:

The Erosion and Sediment Control Package has been assimilated for use for all projects at BWI Thurgood Marshall and Martin State Airports. The details used are from the Maryland Department of the Environment, *Maryland Standards and Specifications for Erosion and Sediment Control,* current edition. Vegetative Stabilization Notes used are from the *Specifications for Performing Landscaping Activities for the Maryland Aviation Administration (Latest Edition).*

These represent the most widely-used Erosion and Sediment Control practices associated with MAA projects. They include the following sheets:

- Erosion and Sediment Control Notes 1
- Erosion and Sediment Control Notes 2
- Erosion and Sediment Control Plan (Border Sheet)
- Erosion and Sediment Control Details 1
- Erosion and Sediment Control Details 2
- Erosion and Sediment Control Details 3
- Erosion and Sediment Control Details 4
- Erosion and Sediment Control Details 5
- Vegetative Stabilization Notes

Details and requirements for use are to follow the information and guidelines from the following sources:

- The Maryland Department of the Environment, Maryland Standards and Specifications for Erosion and Sediment Control (latest edition).
- Specifications for Performing Landscaping Activities for the Maryland Aviation Administration (Latest Edition), prepared by the Maryland Aviation Administration Division of Environmental Planning.
- The Maryland's Waterway Construction Guidelines prepared by the Maryland Department of the Environment Water Management Division issued September 1999 and revised November 2000.
- The Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects, by the Maryland Department of the Environment, Water Management Administration, published February 2015.

Erosion and Sediment Control Notes 1:

This is a standard sheet used in the Erosion & Sediment Control package and therefore no additional changes are required to this sheet.

Erosion and Sediment Control Notes 2:

Standard Erosion and Sediment Control Note 27 (Site Information): This information varies with each contract and should be completed by the Consultant.

A. Total Areas for the Facility represents the total area for each airport as follows:
   a. BWI Marshall = 3,200 Acres
   b. Martin State = 775 Acres
   c. Total Area of Project Site: Site Specific
   d. Area Disturbed: Equivalent to Limits of Disturbance (LOD)
   e. Area to be roofed or paved: Site Specific
   f. Total Cut: Site Specific
   g. Total Fill: Site Specific
   h. Off-Site Waste/Borrow Area Location: If a location has been provided within the plans refer to respective plan sheet(s). If a location has not been determined then add statement "TO BE DETERMINED"
      - Design Certification: Must be signed prior to MDE approval
      - Owner's/Developer's Certification: To be signed by MAA representative such as the MAA Project Manager
      - As-Built Certification Statement: To be signed by the Contractor at completion of the project (for SWM facilities only)
      - Sequence of Construction: A general sequence of construction has been provided on the sheet for both an Initial and Final Phase for Erosion and Sediment Control. The designer is to provide the device information and a sequence at the locations where indicated "Consultant To List Devices Used On Plans Here" and "Consultant to Establish Sequencing Here"

Depending upon the complexity of the project, the Sequence of Construction shall be specific to the Construction Activity to take place. This may require additional line items which shall be numbered. Please note that on simplified projects a "Final Phase" may not be required. This will be determined on a project by project basis.

Erosion and Sediment Control Plan(s):

- These plans will be specific for each project and may include more than one plan. Scales should meet MAA requirements.
- The Sediment Control Legend is to remain on each plan sheet. Modifications can be made based upon project specifics and controls that are being used.
- In some instances more detailed Sequence of Construction may be provided on these sheets as necessary.
- Standard Erosion and Sediment Control Note 27 (Site Information): This information varies with each contract and should be completed by the Consultant.

Erosion and Sediment Control Details 1-8:

- Several sheets have been provided for use. The designer is to use only the details required for the specific project. Other details not used may be removed.

- If new or unique details are required, the designer may add them to the detail sheet. Final approval for use will be made by MDE.
- Any details not shown on these sheets and/or new details being provided should be provided to MAA for incorporation into the standardized sheets for future distribution.

Vegetative Stabilization Notes:
This sheet reflects the information from the *Specifications for Performing Landscaping Activities for the Maryland Aviation Administration* and therefore no changes are required. However, if additional requirements are determined above and beyond requirements on this sheet, changes should be made to reflect these requirements.

Additional Drawings:
If required, the Consultant/Designer may be required to provide additional Plan, Detail, Note, and Sequencing sheets based upon complexity and size of the project.

#### 3.4.2.3 Stormwater Management Plans

~~In accordance with MDE, Stormwater Management Plans shall include As-Built Tabulations for new Stormwater Management Plan submittals. Tabulations and certification required by the designer and contractor are available on MDE's website. The contract documents shall state that the contractor is responsible for surveying and obtaining the as-built quantities for the table once construction has been completed. Refer to Chapter 4.6.1.1 Environmental Coordination and Permitting for submission requirements.~~

The Designer shall ensure that the Stormwater Management Plans include As-Built certification and applicable SWM As-Built table(s) provided in accordance with MDE, available in the "Maryland Stormwater Management Guidelines For State & Federal Projects" and "Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects" and *MDE Technical Memorandum #1* which can be electronically accessed at the following MDE weblinks:

http://www.mde.state.md.us/programs/Water/StormwaterManagementProgram/Documents/www.mde.state.md.us/assets/document/State%20and%20Federal%20SWM%20Guidelines%20final.pdf

http://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/SWM%20and%20ESC%20Guidelines%20for%20State%20and%20Federal%20Projects%20FEB%202015.pdf

http://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Technical%20Memorandum%20No.%201.pdf

The Designer shall ensure that the contract documents state that the Contractor is responsible for surveying, and providing the As-Built quantities, dimensions and elevations for the table of each SWM facility once construction has been completed. The designer shall convey through the contract documents that it is the responsibility of the contractor to provide the completed as-built certification package for each SWM facility in the contract. Refer to Chapter 4.6.1.1 Environmental Coordination and Permitting and Appendix C Standard Contract Drawings, General Stormwater Management Notes Sheet for submission requirements.

General Stormwater Management Notes:

This is a standard sheet used in the Stormwater management package and therefore no additional changes are required to this sheet.

- This sheet summarizes the requirements of the SWM facility As-Built certification which shall be completed for each facility on the contract.
- The responsibilities of the Contractor are outlined as part of this plan sheet.
- The As-Built Approval Checklist shall be completed for all facilities in the contract.

#### 3.4.2.4 Quantity Sheet for FAA Projects

A Quantities Sheet is required for all federally funded projects. The Quantities Sheet shall identify federally and non-federally funded quantities.

#### 3.4.2.5 Construction Staging and Stockpiling Areas

Construction Staging and Stockpile Areas shall be shown on all drawings and be coordinated with the MAA Project Manager and the MAA Office of Engineering and Construction, Construction Section.

#### 3.4.2.6 Geotechnical Boring & Core Data

When a geotechnical investigation is included in the scope of work for projects at BWI Marshall or Martin State Airports, the consultant shall comply with the following requirements for preparation and delivery of geotechnical boring & core data:

A geotechnical boring/pavement core location plan shall be prepared in accordance with the requirements of the CADD Standards Manual contained in Appendix H - MAA CAD Standard. Geotechnical boring/pavement core GIS data shall be prepared in accordance with the requirements of the GIS Data Standards contained in Appendix I - MAA GIS Data Standard.

Within the CADD file, each boring/core shall be included at the location where the boring/core was obtained and shall be attributed and annotated with the following information:

A. Boring or Core Number (Boring/Core numbers shall be established as “MAA TASK NUMBER – BORING/CORE NUMBER”. For instance the fifth boring taken for MAA Design Task Number 2750.1 shall be labeled B-2750.1-5 on the drawing and on the associated boring log. The fifth pavement core for the same project shall be labeled C-2750.1-5.)
B. Design Task Number
C. Date the Boring/Core was taken
D. Geotechnical Engineering firm responsible for the boring or core
E. Coordinates and existing ground elevation of the boring

The boring and pavement core logs shall also be delivered to MAA as part of the Geotechnical Report submission described under Chapter 3.6.2 Geotechnical Reports. Additionally, each boring and pavement core log shall be submitted as individual files in Portable Document Format (PDF) and each file shall be titled with the boring or core number.

#### 3.4.2.7 Construction Phasing Plans

Construction Phasing Plans shall be developed according to Chapter 6.3 Construction Duration and Phasing.

#### 3.4.2.8 Maintenance of Traffic (MOT) Plans

Maintenance of Traffic Plans shall be developed according to Chapter 6.4 Maintenance of Traffic.

## 3.4.3 Signature Requirements for Bid Set Construction Drawings

### 3.4.3.1 Designer of Record Signature Requirements

The construction project's bid set drawing cover sheet shall be signed and sealed by a Maryland Licensed Design Professional (registered Professional Engineer or Architect as appropriate) as the Designer of Record in the designated space.

All bid set plan sheets in the plan set are to be signed and sealed by a Maryland Licensed Design Professional in the designated space within the title block. The Professional Certification block shall be completed with the professional's license number and expiration date in the designated space. Design Professionals shall only sign and seal plan sheets for which they are responsible for the design.

### 3.4.3.2 Office of Engineering and Construction Signature Requirements

All bid set construction project's drawings shall be signed by the Office of Engineering and Construction, Engineering or Architectural Section Managers or their designated person. Signatures from the Office of Engineering and Construction are only required on the drawing Cover sheet in the space provided.

### 3.4.3.3 Office of the Fire Marshal (OFM) Signature Requirements

The Fire Marshal must sign the bid set construction project's drawing Cover sheet in the space provided for all Tasks.

Additionally, Life Safety plans are required to be signed by the Fire Marshal on the signature block provided on the drawing. If there are multiple Life Safety sheets, a signature is required on each individual sheet.

### 3.4.3.4 MTN Signature Requirements

For all construction projects at Martin State Airport, the bid set Cover sheet must be signed by the Martin State Airport Director in the space provided.

### 3.4.3.5 Additional Signature Requirements

Additional signatures may be required on plans in the plan set. Refer to the following DST sections for detailed requirements.

| | |
|---|---|
| Security Bid Plan | Chapter 6.1.1.1 Security Plan |
| Construction Safety and Phasing Plan (CSPP) | Chapter 6.5 Construction Safety and Phasing Plans |
| Erosion & Sediment Control Notes (Owner/Developer Certification) | Chapter 3.4.2.2 MDE Standard Erosion and Sediment Control Notes and Details |

## 3.4.4 Signature Requirements for Conformed Construction Drawings

All conformed drawings shall be signed and sealed by a Maryland Licensed Professional (registered Professional Engineer or Architect) as the Designer of Record in the designated space.

# 3.5 Cost Estimating

## 3.5.1 Development of Cost Estimates

Since the MAA utilizes various funding sources for construction projects, the following procedure outlines the requirements for development of construction cost estimates, and supplemental requirements for preparation of quantity plan sheets, tabulation of bids and bid forms.

1. "Design Contingencies" should be included in all construction cost estimates. The percentages should be determined by the design consultant for the individual project components and should be higher for early budget estimates and decreased as the design progresses. The final Engineer's Estimate should not have any design contingency.
2. In addition to the design contingencies discussed above, all estimates should have a "Miscellaneous Work Allowance" added after the subtotal to account for change orders. The amount of Miscellaneous Work Allowance has generally ranged between five (5) and ten (10) percent but should be coordinated with the MAA Project Manager.
3. All estimates shall include line items as described in the Security Requirements During Construction specification relating to the project (i.e., airside, terminal, MTN, etc.). Refer to the applicable Security Requirements During Construction specification in Appendix D - Standard Specifications for the basis of payment and method of measurement of specific line items when determining costs for the estimate.
4. Design contingencies and construction contingencies should be listed as separate line items.
5. Once a project component has been identified in the budget or subsequent estimates, it must be carried forward as a line item in all future estimates. When work is added to the project scope, an additional line item should be included in the estimate to cover that work. Back-up for each line item should be attached.
6. For projects with Federal (AIP) or PFC funding, eligible and non-eligible costs should be separated. For estimates with these costs, a narrative should be attached, briefly outlining which costs are non-eligible and why.
7. For unit price contracts, the quantities for the various line items with different funding sources should be calculated and shown separately in the Quantity plan sheets and Tabulation of Bids.
8. For lump sum contracts, language should be added in the bid forms requiring the Contractor to furnish MAA with a breakdown of the total bid into the project components as necessary to allow the determination of eligible and non-eligible costs under different funding sources.
9. All cost estimates shall be program costs which shall include both construction costs and soft (design and construction management) costs.

The MAA standard format for cost estimates should be used for preparing all estimates. It is found in Appendix B - Standard Forms. Percentages shown in the cost estimate form for contingencies, overhead and profit, etc. are samples. It is the designer's responsibility to select the correct percentage and apply the correct formulas within the spreadsheet.

## 3.5.2 Bid Tabulation Format Cost Estimates

When final contract documents or addendum documents are submitted for bidding, the A/E Designer shall be responsible for delivering a final complete construction cost estimate prepared as described below to the MAA Project Manager, as well as, the Office of Procurement. For the on-call construction contracts, the A/E Designer shall be responsible for delivering a final complete construction cost estimate prepared as described below to the MAA Project Manager, as well as, the Construction Section.

The A/E Designers are required to submit a completed set of **Bid Tabulation Format Cost Estimate** wherein the A/E Designer has filled in the same **Unit Prices** and **Total Prices** on the Bid Forms as those presented in the A/E Designer's cost estimate in the same manner as a prospective bidder would. The A/E Designer's Bid Tabulation Format Cost Estimate shall have identical bid **Item Numbers**, **Description**, **Units** and **Approximate Quantities**. For lump sum bid items, the A/E Designer cost estimate shall also include separate lump sum breakdowns for each lump sum item used. Lump sum breakdowns can be prepared using any industry accepted cost estimating program, and the breakdown information shall be included as an Appendix to the cost estimate.

The A/E Designer shall be responsible for the review of each line item to insure that the **Item Numbers**, **Description**, **Units** and **Approximate Quantities** of the Bid Tabulation Format Cost Estimate and the Bid Tabulation Forms correspond to each specification section's "Method of Measurement" and "Basis of Payment" descriptions.

### 3.5.3 Bid Tabulation Format Cost Estimate Certification

The A/E Designer shall also provide a cover letter on their company's letterhead for the completed set of Bid Tabulation Format Cost Estimate containing the following statement:

"I hereby certify that I have personally checked the bid tabulation forms, cost estimate and specifications for consistency and completeness and certify that there are no missing or incomplete pay items, units, or other discrepancies".

Project Manager: *Insert Signature of Project Manager*
*Project Manager's Typed Name "*

### 3.5.4 Liquidated Damages

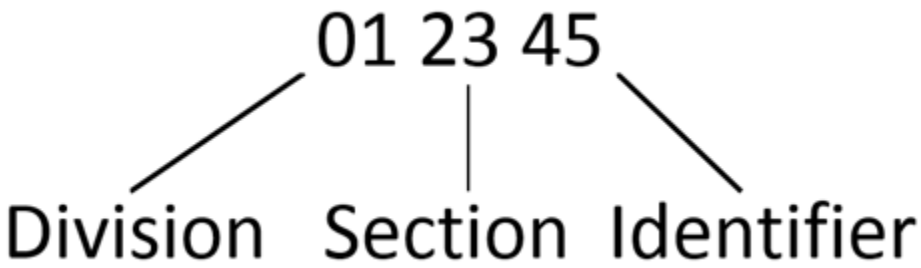
The designer shall provide to the MAA written documentation outlining the basis for liquidated damages. The documentation shall be provided to the MAA Project Manager at 100% submittal.

# 3.6 Construction Specifications

Technical Specifications shall be included in all construction contract documents prepared for the MAA. The designer should identify in writing to the MAA Project Manager inclusion of any special technical requirements in the contract specifications (i.e. pre-qualification for minimum years of experience, dollar value of past work, certifications, warranties, proprietary procurement, value engineering; etc.). MAA will approve the special requirements on a case-by-case basis.

## 3.6.1 Specification Format and Numbering

The MAA has adopted the American Institute of Architects (AIA) "MasterSpec®" building construction specifications system (MasterSpec), which incorporates the Construction Specifications Institute (CSI) MasterFormat™ Numbers and Titles. All specifications shall follow the MasterSpec standard six-digit numbering system:




*MasterSpec Numbering System*

A Table of Contents of MasterSpec divisions is included in Appendix D - Standard Specifications. Where no existing MasterSpec division or section exists, Designers shall use their best judgment to select a number to appropriately describe the item specified. All building contract specifications shall be developed using the current edition of MasterSpec.

Specifications shall generally implement the following format convention:

PART 1 – GENERAL
PART 2 –PRODUCTS
PART 3 – EXECUTION
PART 4 – METHOD OF MEASUREMENT
PART 5 – BASIS OF PAYMENT

Sections not used shall note "not used" in the body of the section.

## 3.6.2 MAA Standard Specifications

MAA has developed several Standard Specifications to be utilized on relevant contracts, which are included in Appendix D - Standard Specifications. MAA Standard Specifications include an "X" following its specification number. These specifications contain "Notes to the Designer" shown in shaded boxes, instructing the Designer to modify sections of the specification as necessary to suit the individual project. These notes and boxes shall be deleted once the note is addressed.

MAA standard procedural specifications are included as part of Division 01. Other MasterSpec Division 01 requirements must be closely coordinated with the MAA "Standard Provisions for Construction" and

individual construction management requirements. Do not duplicate items in a Division 01 spec that are included in an MAA standard spec (i.e. Mobilization). MAA's "Standard Provisions for Construction" address many of the MasterSpec Division 01 requirements, and will take precedence. Additional Division 01 items shall only be used to supplement and enhance the MAA "Standard Provisions for Construction Contracts."

### 3.6.3 MAA Special Product/Sole Source Requirements

The MAA has developed specifications for several construction products for which special requirements and/or sole source procurement are required. On projects utilizing one or more of these products, the Designer shall include the referenced specification(s) from Appendix D - Standard Specifications in the Contract documents. For certain products, MAA has provided only a partial spec (i.e. Part 2 – Products only). Designer shall insert the provided specification language into the referenced specifications section and complete the specification with information applicable to the project.

A list of products with MAA special requirements and their referenced specifications sections are included in the list below. Note that additional product requirements may exist for each project, and the Designer shall coordinate with the MAA Project Manager to obtain those requirements to include in the project's Technical Specifications.

MAA Special Product Requirements

1. Door Hardware (Section 087100)
2. Building Automation Systems (BAS) (Section 230900)
3. Air Flow Monitoring System (in Meters and Gauges, Section 230519)
4. Flow Meters (in Meters and Gauges, Section 230519)
5. Power Monitors for Low Voltage Switchgear (Section 262300)
6. Panelboards (Section 262416)
7. Variable Frequency Drives (Section 262923)
8. Closed-Circuit Television (CCTV) System (Section 275400)
9. Controlled Access Security System (CASS) (Section 281301)
10. Fire Alarm System (Section 283111)
11. Flexible Response System (Section 283200)
12. Landscaping (Section 329000X)
13. Topsoil (Section 329115X)
14. Plant Installation (Section 329300X)
15. Seeding (Section 329201X)
16. Sodding (Section 329202X)
17. Mulching (Section 329203X)
18. Natural Gas Distribution (Section 335103X)
19. Passenger Boarding Bridges (Section 347713X)

### 3.6.4 Airfield Specifications

The Designer shall use the applicable FAA specifications for items located on the airfield which are subject to FAA review. These specifications can be found in the FAA AC 150/5370-10G – Standards for Specifying Construction of Airports. Note that several FAA specifications have been modified for MAA use, and are contained in the MAA Standard Specifications in Appendix D - Standard Specifications.

FAA Specifications shall be listed under "Division 50: FAA Specifications" in the Specifications Table of Contents. Each specification shall retain its FAA specification number for ease of FAA project review.

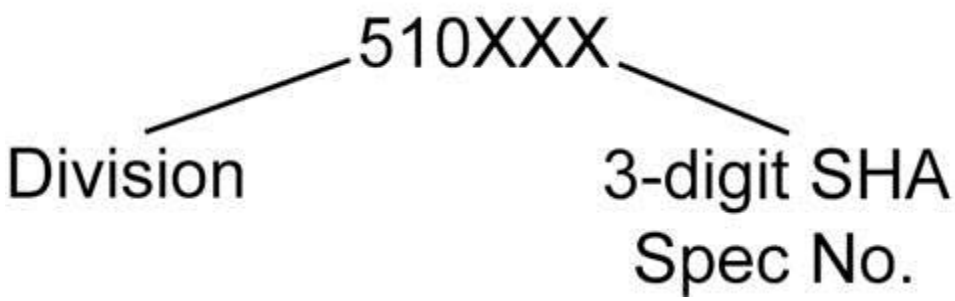
Example:

***Division 50: FAA Specifications***
***L-109 Modifications and Additions to Airfield Lighting System***
***P-401 Plant Mix Bituminous Pavements***

### 3.6.5 Landside Site Work Specifications

MAA has adopted the Maryland State Highway Administration (SHA) Standard Specifications for Construction and Materials for non-airfield roadway and landside site construction. The applicable SHA specification number may be referenced in "Part 3 – Execution" of the technical specifications for landside site work items, noting any modifications to the specifications necessary for the specific project. SHA specifications used on a contract shall be numbered using the six-digit convention below for continuity with the remaining project specifications using MasterSpec format.

Division 51: SHA Specifications




*Example: 510508 for SHA Specification 508, Milling Hot Mix Asphalt Pavement*

The current SHA Standard Specifications for Construction and Materials can be found on the SHA website, (http://www.roads.maryland.gov), or hard copies may be purchased by contacting:

Maryland State Highway Administration, Cashier Office
211 E. Madison Street
Baltimore, Maryland 21202
Telephone: 410-545-8490

MAA Standard Provisions (SP) will be used in lieu of the SHA's General Provisions (GP) and Terms and Conditions (TC) provided in this document.

SHA Section 700 – Landscaping and Section 920 – Landscaping Materials are not to be used. Landscaping and Landscaping Materials for MAA construction projects are included in Appendix D - Standard Specifications.

### 3.6.6 Miscellaneous Specification Requirements

1. All contract milestones shall be specified in calendar days from NTP. If specifying specific dates it must be approved by the MAA Project Manager in advance.
2. All incentives must be approved by the MAA Project Manager in advance.

3. Sole source and proprietary items, other than those specified by the MAA standard specifications and special product requirements contained in Appendix D - Standard Specifications, must be approved by the MAA Project Manager in advance.
4. Performance specifications which require the contractor to design/build shall be identified and brought to the attention of the MAA Project Manager in advance. The designer should provide justification for using this method.
5. Specifications which require pre-qualification of contractors and suppliers (i.e. the number of years providing specific products or services, previous project experience etc.), should be identified and brought to the attention of the MAA Project Manager in advance. The designer should provide justification for pre-qualification requirements.
6. Specifications which have specific warranty/maintenance requirements beyond the MAA standard of one year shall be identified. The designer should provide justification for extended/additional warranty maintenance requirements and brought to the attention of the MAA Project Manager in advance.

# 3.7 Reports

## 3.7.1 Design Reports and Studies

A draft, draft-final, and final Engineer's report is required for all FAA reviewed and funded projects. For all non-FAA projects, verify with the MAA Project Manager during the proposal preparation phase if an Engineer's report is required for the project. All Engineer's reports shall be marked as "draft" until approved by the MAA Project Manager. Once approved by the MAA Project Manager, the final report shall be issued.

- All design reports and studies shall follow the format shown in the standard template available on AirPortal>Designer Tools. Template includes: Cover page
- Table of Contents
- Section I. Executive Summary
- Section II. Design/Study Report
- Section III. Appendices – Appendices include, but not limited to, meeting minutes, review comments and responses, cost estimate, exhibits, geotechnical report.
- Section IV. Design Report General Information

## 3.7.2 Geotechnical Reports

When a geotechnical study is included in the scope of work for projects at BWI Marshall or Martin State Airports, the consultant shall submit the final geotechnical report as outlined below. Geotechnical investigations shall be performed in accordance with Chapter 7.1.3 Geotechnical Investigations.

### 3.7.2.1 Hardcopy Submission

The final Geotechnical Report shall be submitted to the MAA Project Manager as an appendix to the Engineer's Report.

### 3.7.2.2 Digital Submission

The consultant shall submit the final Geotechnical Report in electronic format described below, to the MAA Archive using MAA's web application AIRPortal Document Manager (ADM). The requirements for submission using ADM are:

- Full Report, as one multipage PDF document. Geotechnical Report shall be submitted both in the Engineer's Report and as a separate PDF document from the Engineer's Report on ADM.
- Individual logs, as one page PDF per log.
- Boring/Coring location plan in both PDF and DWG formats.

See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

## 3.7.3 Stormwater Management Reports

The consultant shall submit the draft and final Stormwater Management Report in electronic, Portable Document Format (PDF), to the MAA Archive using MAA's web application AIRPortal Document Manager (ADM). The requirements for submission using ADM are:

- Full Report, as submitted to the MDE.

See Chapter 3.3 Standard File Naming Conventions for file naming requirements.

## Chapter 04 Design Coordination and Permitting

# 4.1 ALP Coordination

At the initiation of each project, designers shall confirm with the MAA Office of Planning and Environmental Services that the project is included on a Federal Aviation Administration (FAA) approved ALP. If the project has not been included, the designer shall identify and coordinate with the MAA Division of Airport Facilities Planning all changes to the Airport Layout Plan. FAA review time is approximately 14 days for pen and ink revisions and approximately 60 days for more substantial revisions.

## 4.2 FAA Requirements for Proposed Development

Federal Aviation Administration (FAA) requirements for proposed development must be followed at BWI Marshall and Martin State Airports. Designers shall take these items into consideration during the design process and develop project schedules accordingly. During preliminary design, designers shall identify to the Maryland Aviation Administration (MAA) Project Manager the impact of each requirement on the project.

Unless otherwise approved by the MAA Project Manager, it shall be the designers' responsibility to submit all required information identified below well enough in advance to receive all FAA approvals and permits prior to advertisement of the construction documents. Construction Notice to Proceed (NTP) shall not be given on any project until all FAA approvals have been obtained.
With prior approval from the MAA Project Manager, Consultants may submit items directly to the FAA on behalf of the MAA. All submissions shall be made to the FAA Washington Airports District Office (WADO) unless otherwise noted.

The following requirements apply:

1. Environmental document coordination for all development projects as follows:
   a. At the initiation of each project, the Consultant shall obtain a determination from the MAA Office of Planning and Environmental Services on the required environmental coordination and documentation needed for each project.
   b. For large/complex projects, designers shall set up a preliminary coordination meeting with the MAA Division of Environmental Planning to coordinate the design with the environmental documentation preparation.
   c. For development projects with the potential to be categorically excluded, plans shall be submitted to the MAA Division of Environmental Planning at the same time the review plans are submitted to the MAA Project Manager. MAA needs approximately 30 days to prepare and submit an Environmental Impact Evaluation Form A to the FAA. FAA review time is approximately 15 days. Note: Durations may be longer due to project specifics and the coordination required with state and federal agencies.
2. Pre-design meetings are required for all airfield projects prior to 30% completion.
3. Line of sight (shadow studies), ground radar interference and reflectivity studies for new or modified structures and buildings shall be submitted to the FAA prior to 30% design completion.
4. Eight copies of the construction safety and phasing plans shall be submitted for FAA approval. Designers must include on the Safety and Phasing plans the locations and heights of all structures penetrating any navigational surfaces. Both permanent and temporary structures, including construction equipment, are included in this requirement. Construction equipment heights should be estimated on a worst-case basis and equipment locations should be broadly shown, i.e. envelope locations with coordinates defining the corners.

   The Safety and Phasing Plan shall be submitted well enough in advance to receive approval prior to advertisement of the construction documents. Designers should submit eight copies of the Safety and Phasing plans to the FAA. Upon receipt, the FAA will review and approve the structure locations and heights in conjunction with the safety and phasing. FAA review time is 60-90 calendar days. Once approval is received, designers shall provide a copy of the FAA approved plans to MAA, Division of Airport Facilities Planning.

MAA's Division of Airport Facilities Planning shall then issue an Airport Zoning Permit to the contractor per the accepted plan. If the Contractor wants to place equipment and/or cranes at locations and heights which differ from the FAA approved plan, they will be required to submit a Notice of Proposed Construction or Alteration (FAA Form 7460-1). Once Form 7460-1 has been approved by the FAA, the Division of Airport Facilities Planning will issue an additional Airport Zoning Permit for those items which differ from the original plan.

Completed Modification of Standards (MOS) forms shall be submitted to the FAA for approval for each modification requested. FAA review time is approximately 60 days.

5. Changes to the FAA Part 139 signing and marking plans shall be submitted (on a separate drawing) to the MAA Project Manager and Office of Airport Operations (OPS) for internal review. Upon MAA approval, Consultants shall provide OPS with three copies of the plan(s), which will be forwarded on to the FAA Eastern Region for coordination and approval. Upon approval, the Eastern Region will send a copy of the approved plan(s) stating that the changes will be added to the next revision of the signage plan to MAA and WADO. The MAA Project Manager will forward an approved copy of the signed plan(s) to the designer. MAA coordination and review time is approximately 14 days, and FAA review time is approximately 30 days.
6. Temporary and permanent changes to the Airport Operations fence lines shall be submitted to the FAA for approval. FAA review time is approximately 30 days.
7. Copies of the plans, specifications, and design report for all projects which MAA plans to request AIP or PFC funding shall be submitted for FAA approval. In addition to the final submission, designers shall submit 60% plans and specifications to FAA for review and comment. MAA shall review the design report internally and submit it directly to the FAA. FAA review time is approximately 14 days.

### 4.2.1 Radar Reflectors

The FAA has installed radar reflectors throughout the airfield as part of the surface detection system. All contract documents at BWI Marshall Airport shall include the locations of radar reflectors. Radar reflector locations and removal/replacement requirements shall be coordinated with the FAA at 410-859-7252.

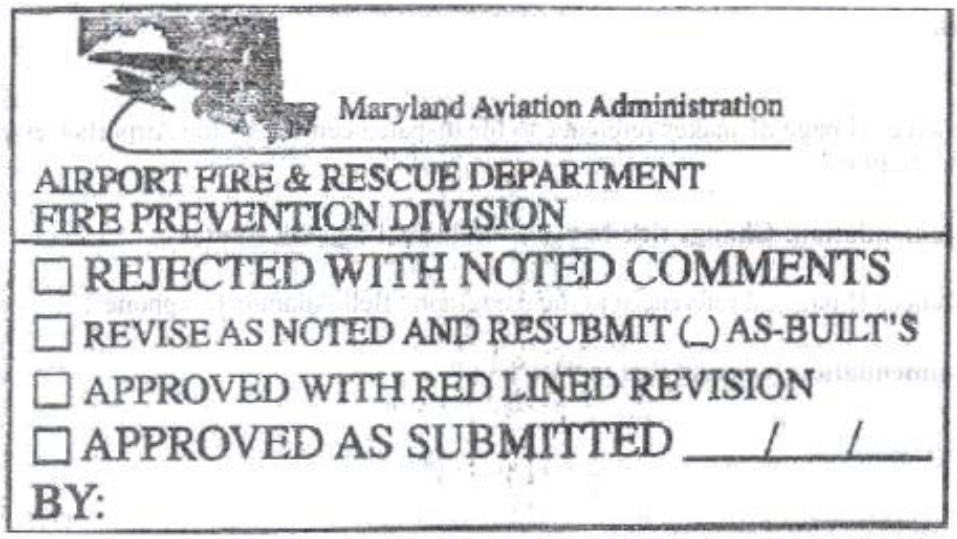
# 4.3 Internal MAA Coordination

## 4.3.1 Office of the Fire Marshal (OFM) Coordination

The Authority Having Jurisdiction (AHJ) for enforcement of fire related codes, standards, and laws on MAA owned or leased facilities and properties is the MAA Office of the Fire Marshal. Questions involving interpretation or enforcement of fire related codes and standards shall be directed to the Office of the Fire Marshal.

### 4.3.1.1 Office of the Fire Marshal Shop Drawing/Submittal Review

During construction, the Construction Manager will forward a copy of the appropriate shop drawing/submittals to the Fire Marshal at the same time they are sent to the Designer. The Construction Manager will then schedule a meeting one week later with the Fire Marshal, Designer, Construction Manager, and MAA Division of Facilities Construction. At that meeting, all shop drawing issues will be addressed, and a decision will be rendered as to the status of the submittal and noted on the MAA stamp shown below. The shop drawings/submittals will be returned to the Construction Manager at that time for further action.


Maryland Aviation Administration
AIRPORT FIRE & RESCUE DEPARTMENT
FIRE PREVENTION DIVISION
☐ REJECTED WITH NOTED COMMENTS
☐ REVISE AS NOTED AND RESUBMIT (_) AS-BUILT'S
☐ APPROVED WITH RED LINED REVISION
☐ APPROVED AS SUBMITTED ___/___/___
BY:

The shop drawing/submittal review meeting will also provide an opportunity for the Designer, Construction Manager, and Fire Marshal to review contract revisions and modifications.

## 4.3.2 Zoning Permits

For all projects requiring cranes or tall structures, the Consultants shall contact the MAA Office of Planning for guidance and direction for a zoning permit.

## 4.3.3 Tenant Information Advisories

All Consultants performing field inspections are required to coordinate with the Office of Airport Operations to determine if a Tenant Information Advisory is required prior to conducting inspections. The Office of Airport Operations requires a ten (10) day advance notice for Tenant Information Advisories.

## 4.4 Designated Sub-Contractor Systems

The Maryland Aviation Administration maintains several vendors under contract to provide design and installation services on specific systems at the airport. If a construction project requires participation of such a "Designated Sub-Contractor" on a project at Baltimore/Washington International Marshall and Martin State Airports, it shall be the designer's responsibility to coordinate and ensure the following:

1. Determine what existing airport systems are within the scope of the design and may require alteration. Coordinate with MAA to determine which systems have vendors under contract to provide alteration, maintenance, or similar services that would be required to be performed under the proposed design. A partial list of sample systems is provided below:
   - Fire Alarm System
   - Controlled Access Security System (CASS)
   - Closed Circuit Television System (CCTV)
   - Multi-User Flight Information Display System (MUFIDS) and Baggage Information Display System (BIDS)
   - Building Automation and Control (METASYS)
   - Distributed Antenna System (DAS)
   - Public Address System
   - Automated External Defibrillators (AED)
   - Flexible Response System
   - Wall Mounted Advertisement
   - Public Telephones
   - Parking Access and Revenue Control Systems (PARCS)
   - Air Navigation Systems (NAVAIDS)
   - Utilities (Gas, Power, and Communication)
   - Airfield Lighting Control System
   - Airlines (Equipment and Wiring Systems Owned by Airlines)
   - FAA (Equipment and Facilities Owned and Operated by FAA)
   - TSA (Equipment and Facilities Owned and Operated by TSA)
   - Master Clock System
   - Noise Monitoring and Analysis System
   - Artificial Turf

   In addition, the designer shall add a section to the Engineer's Report titled "Designated Sub-Contractors" and state whether the construction project requires participation of Designated Sub-Contractors. If so, the consultant shall identify and list the vendor(s) and the respective system(s) that are impacted under the project. The consultant shall include a summary of the scope of services and fee estimates received from vendor(s) in the referenced section of the Engineer's Report.
2. Coordinate, as necessary, the requirements of the design, the preparation of a scope of services to clearly define the work proposed, and the responsibilities of the owner, designer, contractor, and designated sub-contractor.
3. Verify with the Office of Procurement that Sole Source documentation is/is not required.
4. Reflect the scope and responsibilities in the contract documents.
5. Secure written final scope and cost proposal from the designated sub-contractor.

6. It shall be a requirement to have all final scope and cost proposals submitted to MAA from every vendor required for a given project prior to proceeding with advertisement. This requirement may be waived on a case by case basis with prior written approval of the MAA Task Manager.

# 4.5 Maintenance, Repair, and Operating Items (MROI)

Maintenance, Repair and Operating Items (MROI) were formerly known as "attic supplies" or "attic stock." During the design phase of a project, Designers shall coordinate with MAA to determine if MROI is required, and if so, the type and quantity items needed. Designers shall not specify MROI unless requested in writing by the MAA. MROI shall be included as an agenda item for discussion in the project's design review meetings. All projects requiring MROI shall include in the construction documents standard Specification 010003X_Maintenance, Repair and Operating Items (MROI)_with forms. Specification 010003X is included in Appendix D - Standard Specifications.

## 4.5.1 MROI Approval Form

Designers are required to fill out the MROI Approval form in Appendix B.3 – MROI Forms if the project includes MROI to be turned over to MAA. Items that are anticipated to be salvaged must be listed on the form and noted that it is a salvaged item. This list shall include:

- Applicable specification section of the item – this is not the Specification 010003X that specifies MROI.
- Material/Product description – similar materials shall be listed together, e.g., carpet, ceiling tiles, ceramic tiles.
- Quantity – a specific quantity and measurable unit is required. A percentage of materials is not acceptable.
- Unit – SY, CY, Each, etc.
- Person Requesting – MAA employee or representative who requested the item.

All equipment turned over to MAA shall be accompanied by any and all operating/ service/maintenance manuals, equipment specifications, and vendor information such as where obtained, spare part sources, etc.

The designer shall obtain necessary signatures on the MROI Approval form prior to advertisement. This form shall be included in the project's final design report. If no Design Report is prepared for the project, a scanned copy of the signed MROI Approval form shall be emailed to the MAA Task Manager for inclusion in the task file.

## 4.5.2 Signature Requirements for MROI

A signature from the following MAA Offices shall be obtained for all MROI Approval forms:

- Office of Engineering and Construction – signed by MAA Task Manager
- Office of Capital Programs – signed by Director
- Office of Procurement – signed by Procurement Officer

If the MROI specified includes items requested by the Office of Maintenance & Utilities (OMU), then a signature from the Director/Deputy Director of OMU is required. If there are no items requested by OMU, then the Designer shall write "N/A" and initial the signature line for OMU confirming that the MROI listed on the form are not applicable to OMU.

If the MROI specified includes items requested by the Office of Airport Technology (OAT), then a signature from a Director of OAT is required. If there are no items requested by OAT, then the Designer

shall write “N/A” and initial the signature line for OAT confirming that the MROI listed on the form are not applicable to OAT.

### 4.5.3 MROI List Form

After all parties have agreed to the type and quantity of MROI required for the project and signatures on the MROI Approval form are obtained, the Designer shall fill out the MROI List form in Appendix B.3 – MROI Forms to include in the contract specifications. The items included in the MROI List form shall be identical to the items listed in the MROI Approval form. If during the approval process, items were not approved, the Designer shall not include those items on the MROI List form for bid.

The purpose of the MROI List form is to clearly identify in one place items to be turned over to MAA as required throughout the contract specifications. The completed MROI List form shall be placed in the contract specifications directly behind Specification 010003X. Blank lines shall be provided to allow for any MROI generated during construction. A blank MROI Record of Delivery form shall be placed behind the MROI List form in the specifications. The MROI Record of Delivery form is to be filled out by the contractor for each item delivered to the MAA as MROI, and includes information such as product description, contract requirement, quantity, price, and date delivered. The completed MROI Record of Delivery forms will be submitted to the MAA Division of Construction Manager on the date of MROI delivery. See Specification 010003X for additional details.

# 4.6 Environmental Coordination and Permitting

All permit applications shall be submitted in conjunction with and only after approval by MAA's Division of Environmental Planning or Division of Environmental Compliance. At project initiation, Designer must schedule an initial consultation with MAA's Division of Environmental Compliance to discuss permitting requirements for all planned or proposed environmental impacts.

## 4.6.1 MAA Division of Environmental Planning Coordination

### 4.6.1.1 Maryland Department of the Environment (MDE) Stormwater Management and Erosion & Sediment Control

All correspondence, submittals, and re-submittals to MDE shall be forwarded by the Designer to MAA's Manager of the Division of Environmental Planning (DEP). This includes, but is not limited to: concept plans, Stormwater Management (SWM) reports, Erosion and Sediment Control (ESC) drawings, site development and final plans, responses to MDE comments, etc. Please refer to the current version of the Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects document for what should be included with each submission. If you have any questions, contact MAA DEP.

For projects involving greater than one acre of disturbance, a Notice of Intent (NOI) General Permit for Stormwater Associated with Construction Activity will be required. MAA DEP will apply for and manage this permit through the MDE ePermits system and serve as the principal contact; however, the Designer shall provide information to MAA DEP, as requested, to complete the application. At a minimum, the Designer shall provide the following information to MAA DEP as soon as possible in order to initiate the application: project area (square footage and acreage of LOD including 5% for potential expansion), a written description of the project's location, and latitude and longitude for the centerpoint of the project.

1. All submittals shall include a cover letter/transmittal to the attention of MAA DEP Manager stating the purpose of the submittal and a listing of the attachment(s), as well as any specific instructions or information that may be necessary for the submission.
2. The Designer shall email a .pdf copy of the cover letter/transmittal to MAA's Design Task Manager.
3. The Designer shall obtain a signed receipt from the DEP Manager or his/her designee for the document(s) delivered. The DEP Manager will maintain records of MDE submittals associated with individual projects for future reference.
4. The DEP Manager will forward the documents submitted by the Designer to MDE for review. Concurrently, the DEP Manager will contact and coordinate with MAA's Expedited Reviewer at MDE regarding the forthcoming documents.
5. Comments and correspondence received on the submittal(s) from MDE will be forwarded by the DEP Manager to the Designer for necessary action. The Designer shall provide complete, point-by-point, response(s) to the MDE comments within ten (10) business days of receipt, unless directed otherwise. The "response to comments" letter shall be addressed to the MDE assigned staff, on behalf of the DEP Manager.
6. Refer to and insert the MDE Plan Review Number on all submittals, correspondence, and drawings to MDE once a number is assigned by MDE.
7. The DEP Manager or his/her designee shall sign the Owner's/Developer's Certification on the ESC plans and the Water Quality Summary sheets, as needed. If DEP Manager or his/her

designee is unavailable, the Designer may contact MAA's Manager of the Division of Engineering for further instruction or to sign the documents.

8. For projects that fall below the threshold to require MDE's ESC review and approval but contain Erosion & Sediment Control drawings and specifications (for example, mill & overlay within existing paved areas), the Designer shall submit the ESC documents to the DEP Manager for review and approval.
9. The DEP Manager or his/her designee will be the principal contact and responsible to manage the NOI process for the BWI Marshall and Martin State Airports' construction sites in compliance with the General Permit for Construction Activity and in accordance with the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) stormwater program.
10. The DEP Manager will forward a copy of the approvals and permits to the Designer, MAA Task Manager, MAA Construction Manager, and others, as necessary. The NOI shall be transferred electronically to the Contractor after the contract has been awarded via the MDE ePermits system, the DEP Manager or designee will inform these parties that the permit has been transferred. Once the project is complete, the NOI will be Terminated through a Notice of Termination on the ePermits system, and the DEP Manager or designee will inform these parties that the permit has been terminated.
11. After approval of the Final Stormwater Management Report by MDE, the Designer shall submit a copy of the report to the MAA as an electronic deliverable to be uploaded with the Contract Documents and placed on record in AIRPortal. Refer to Chapter 3.1 Electronic Deliverable Requirements for more information on electronic submittals.
12. As-built requirements for Stormwater Management facilities are described in Chapter 3.2 Deliverables by Design Phase. Once as-built plans have been completed, the Designer shall submit to Environmental Planning Section (EPS) one hard copy and one CD of the documents, which EPS will then submit to MDE. As-Built documentation and certification is required for all Stormwater Management Facilities.

#### 4.6.1.2 MDE Non-tidal and Tidal Wetlands and Waterways and US Army Corps of Engineers (USACE)

A. For projects that may disturb nontidal or tidal wetlands, waterways, etc, coordination with the MDE Wetlands and Waterways division and the USACE will be necessary.
B. All coordination and correspondence with MDE and USACE for these approvals and permits shall be done through the MAA DEP.
C. Contact the Manager of the MAA DEP for further information.

#### 4.6.1.3 Maryland Department of Natural Resources (MDNR)

A. The Maryland Forest Conservation Act was enacted in 1991 to minimize the loss of Maryland's forest resources during land development by making the identification and protection of forests and other sensitive areas an integral part of the site planning process. More information can be found on the Maryland DNR Forest Conservation Act web page.
B. Any activity requiring an application for a subdivision, grading permit or sediment control permit on areas 40,000 square feet (approximately 1 acre) or greater is subject to compliance with the Forest Conservation Act requirements and will likely necessitate a Forest Stand Delineation/Forest Conservation Plan (FSD/FCP) to be prepared by a licensed forester, licensed landscape architect, or other qualified professional UNLESS you are subject to one of the exemptions listed on MDNR's website.

C. All coordination and correspondence with MDNR for the approval of FSDs and/or FCPs shall be done through the MAA DEP.
D. Contact the Manager of the MAA DEP and consult MAA Standard Specification 329000X_Landscaping for further information.

#### 4.6.1.4 MDNR Critical Area Commission

A. The Critical Area Act (1984) defines the Chesapeake Bay "Critical Area" as all land within 1,000 feet of the Mean High Water Line of tidal waters or the landward edge of tidal wetlands and all waters of and lands under the Chesapeake Bay and its tributaries. More information can be found on the Maryland DNR Critical Area Commission web page.
B. For projects that may fall within with the Critical Area (specifically, those at Martin State Airport), coordination with MDNR Critical Area Commission will be necessary.
C. All coordination and correspondence with the Critical Area Commission for the approval of the project within the critical area shall be done through the MAA DEP.
D. Contact the Manager of the MAA DEP for further information.

### 4.6.2 Permitting Process for the Construction of Air Emissions Sources

Please consult COMAR 26.11.02.10 for a list of sources which are exempt from having to obtain Air Quality Permits to Construct and/or Approvals.

When new sources of air pollution are planned for installation at BWI Marshall and Martin State Airports, an Air Quality Permit to Construct must be obtained (if required) from the Maryland Department of the Environment's Air and Radiation Management Administration (MDE/ARMA) prior to commencing construction. All permit applications shall be submitted to MDE/ARMA in conjunction with and only after approval by MAA's Division of Environmental Compliance. At project initiation, Designer must schedule an initial consultation with MAA's Division of Environmental Compliance to discuss permitting requirements for all new air emissions sources that are planned or proposed. Preparing the applications for such permits is the responsibility of the Designer. Later integration of new sources with facility air quality operating permits is the responsibility of the Owner (MAA).

Whenever practicable, Designer/Owner should consider the incorporation of energy/fuel efficient, lower emission equipment into the design for air emission sources. In addition, when the purchase of a non-environmentally responsible piece of equipment is specified and/or recommended by the Designer, justification in the form of a best available or economically feasible option will be required.

Whenever fuel burning equipment is added to the MAA inventory, the Division of Environmental Compliance must be notified by the Designer regarding the addition.

Unless otherwise stated, the general application for equipment capable of emitting air pollution (not including air pollution control devices, incinerators, and boilers) is the Application for Processing or Manufacturing Equipment (Form 5). Sources which have the potential to emit Toxic Air Pollutants (TAPs) and are subject to COMAR 26.11.15, also require a Summary of Demonstrations for Meeting the Ambient Impact Requirement and the T-BACT Requirement (Form 5A) and an Emission Data Sheet (Form 5B). If pollution control equipment is to be installed on the unit, then Application for Permit to Construct Gas Cleaning or Emission Control Equipment (Form 6) is required for any control device associated with the equipment described on Form 5.

All forms can be found on the Maryland Department of the Environment Permits to Construct and Operate Application Forms web page.
The application fee of $500 per piece of equipment will be invoiced once MDE/ARMA receives the permit application. This fee will be paid per the Designer's contractual agreement with MAA. Three (3) copies of the permit application, each signed and dated individually, must be submitted to MDE/ARMA.

#### 4.6.2.1 Permitting Process

The Designer shall be responsible for completing the necessary applications for Air Quality Permits to Construct as set forth below. The permit applications shall be submitted to the MAA Environmental Compliance Division in the Office of Planning and Environmental Services. The Owner (MAA) shall be responsible for signing and submitting the appropriate permit applications to the MDE/ARMA. In addition, the MAA is responsible for paying all permitting fees as set forth below. If the MAA is notified that any permit application is deemed incomplete, the Designer shall take immediate action to rectify the situation and submit the appropriate documents to MDE/ARMA.

After an *Application for Processing/Manufacturing Equipment* has been approved by MDE/ARMA, but prior to operating the processing/manufacturing equipment, the Division of Environmental Compliances, upon notification by the Engineer, will submit an Application for Permit to Operate Process Equipment (Form 26).

Note that BWI Marshall and Martin State Airports each have different environmental regulatory requirements depending on the type and size of equipment to be constructed as the two airports have separate permits. BWI Marshall is a major source ($NO_x$ emissions >25 tpy) under Title V (COMAR 26.11.02.17); therefore, the addition of equipment may constitute a major modification and trigger major source permitting. This imposes additional air pollution control requirements and significant delays due to the longer permitting process. An evaluation should be completed for any future projects involving the installation of sources emitting $NO_x$. On the other hand, Martin State is a minor source and therefore; additional equipment would most likely not trigger the need for major modification.

#### 4.6.2.2 Sources Exempt from Permits to Construct

COMAR 26.11.02.10 lists sources which are exempt from having to obtain Air Quality Permits to Construct and/or Approvals.

For sources not listed in COMAR 26.11.02.10, if the source to be installed meets the following requirements, it may be exempt from an Air Quality Permit to Construct as follows:

- The installation is not subject to any source-specific State or Federal emission standard;
- The expected uncontrolled emissions are less than 1 ton per calendar year of each pollutant for which there is a Federal air quality standard or which is a Class II toxic air pollutant (TAP) as defined in COMAR 26.11.15.01B(5); and
- The emissions contain no more than one (1) pound per day of Class II toxic air pollutant, as defined in COMAR 26.11.15.01B(4).

### 4.6.3 Fuel Burning Equipment Permitting Process

#### 4.6.3.1 Permitting Requirements for Emergency Generators

The following guidelines are for permitting of generators that will serve as emergency power supplies only. Generators that are to serve other purposes are subject to additional requirements.

After an *Application for Fuel Burning Equipment* has been approved by MDE/ARMA, but prior to operating the fuel burning equipment, the Division of Environmental Compliance, upon notification by the Engineer, must submit an Application for Permit to Operate Fuel Burning Equipment (Form 28).

1. MDE/ARMA requires that all stationary internal combustion engines with an output greater than or equal to 500 brake horsepower (373kilowatts) have a Permit to Construct **prior to installation** of the equipment. The MDE/ARMA permit application process for emergency generators is three-fold and outlined below. It should be noted that emergency generators which were installed prior to October 1, 2001 and permitted after-the-fact do not require a Certificate of Public Convenience and Necessity (CPCN) Exemption (discussed below).

   Certain types of generators are exempted from the CPCN process and may obtain a waiver from the MD Public Service Commission (PSC), including, but not limited to the following:
   - Emergency generators which do not export any electricity to the distribution system and with a capacity equal to or less than 70 megawatts;
   - Power generation projects for which the generating station produces on-site generated electricity (as defined in PUC Article 1-101(s)), the capacity of the generating station does not exceed 70 megawatts, and less than 20 percent of the annual energy generated is exported or sold on the wholesale market; or
   - Power generation projects for which the capacity of the generating station does not exceed 25 megawatts and at least 10 percent of the electricity generated at the generating station each year is consumed on-site.

   In order to receive an exemption from the CPCN process, a CPCN Exemption Application Form must be completed by following the steps listed below. A copy of the CPCN Exemption Application Form can be found on the Maryland Public Service Commission CPCN Exemptions web page. Specifically, the CPCN Exemption Application Form can be found in the dropdown menu entitled “Electric.”

   a. The Owner shall send a letter to the local electric company, Baltimore Gas and Electric (BGE), requesting relief from the CPCN requirements, pursuant to the Public Utility Companies ("PUC") Article of the Annotated Code of Maryland. The letter shall also provide BGE with the proposed dates for installation and start-up of the generators, the quantity and size of the units, the fuel type, the location of the units, and how the generators will be used (in this case emergency only). A one-line drawing of the generators and routing design shall be included with the letter as well. The Designer shall be responsible for supplying the technical attachments to the letter.
   b. The electric company will determine if an Interconnection, Operation, and Maintenance Agreement (IOMA) is necessary. This is determined by the type of generator to be installed (Type I, II, III, or IV). Definitions of Type I, II, III, and IV generators are provided by the MD (PSC). For Type I generators (generators that will not be synchronized with the local electric company’s transmission and distribution system and will be configured so that there is no export of electricity to the transmission and distribution system - includes emergency back-up generators), the local distribution company will provide a letter indicating that an Interconnection, Maintenance, and Operation Agreement is not necessary. For Type II, III, and IV generators, an Interconnection, Maintenance, and Operation Agreement (“Agreement”) with the local electric company will be necessary, and must be filed with the PSC before the CPCN Exemption application will be approved. A Type III generator (synchronized with the electric system and will export electricity for sale on the wholesale

electric market) will also require a wholesales agreement with the Independent System Operator. BWI Marshall and MTN airports do not have Type II, III, or IV generators; therefore, an Agreement is not required. The electric company will also determine if the generators' installation meets the criteria for a CPCN waiver. This approval by the electric company will allow the PSC to review and waive the CPCN requirements for the construction of generating units.

c. The Owner shall submit a CPCN Exemption Application to the PSC as required under PUC Article 7-207.1. In order for the Designer to complete the application, additional information is required, including the following: the address and point of contact information for the facility, the manufacturer of the generators, a list of the equipment and facilities that will be powered by the generators, and the letter of agreement from BGE regarding the CPCN waiver. The Point of Contact will be the Manager of the MAA Division of Environmental Compliance. The original signed (by legal counsel, an officer, or other person who has the authority to legally bind the Owner) application package (consisting of the application form and BGE's concurrence letter), along with fourteen (14) copies of the signed package, will be submitted to the PSC by the MAA. The PSC waives filing fees for a unit of State government. The PSC will then issue a waiver, if appropriate, to exempt the proposed generators from the CPCN process.

d. Once the MAA receives the waiver from the PSC, the Designer shall prepare and the MAA shall submit an Air Quality Permit to Construct & Registration Application for Emergency Generators (Form 42), along with the waiver, to MDE/ARMA. To complete the permit application, Not-to-Exceed (NTE) emissions data is required and is obtained from the engine manufacturer submittal data. MDE/ARMA permitting fees are $500 per source and MDE/ARMA will notify the applicant of the appropriate fee upon receiving a complete application. Three (3) copies of the permit application, each signed and dated individually, must be submitted to MDE/ARMA.

2. If pollution control equipment is to be installed on the unit, then an Application for Permit to Construct Gas Cleaning or Emission Control Equipment (Form 6) is required and must be submitted with the Form 42.
3. All Form 42s require proof of Worker's Compensation for the Owner (not the Contractor) under Environmental article 1-202. The Designer can obtain a copy of this proof from the MAA Division of Employee Risk Management (410-859-7509).
4. If the emergency generators are subject to non-attainment New Source Review (NSR) or Prevention of Significant Deterioration (PSD) requirements, as defined by 40 CFR Part 51 and 40 CFR Part 52, COMAR 26.11.02.09, COMAR 26.11.02.12, COMAR 26.11.06.14, and COMAR 26.11.02.17, additional permitting may be required simultaneously with the application for an MDE/ARMA Permit to Construct.

#### 4.6.3.2 Permitting Requirements for Internal Combustion Engines (Electrical Power Generators, Power Equipment, and Fire Protection Pumps)

The following guidelines are for permitting of electrical power generators (off grid, base load, peak, load shaving, etc.), power equipment (hydraulic, mechanical, etc.), and fire protection pumps. Guidelines for emergency use only generators are discussed in Chapter 4.6.3.1 Permitting Requirements for Emergency Generators.

1. MDE/ARMA requires that all stationary internal combustion engines with an output greater than or equal to 500 brake horsepower (373 kilowatts) have a Permit to Construct prior to installation of the equipment. The MDE/ARMA permit application process for electrical power generators is identical to the permit application process for emergency generators and is

outlined below. It should be noted that power equipment (hydraulic, mechanical, etc.) and fire protection pumps do not require a CPCN Exemption from the Public Service Commission. Additionally, it should be noted that electrical power generators which were installed prior to October 1, 2001 and permitted after-the-fact do not require a CPCN Exemption (discussed below).

a. The Owner shall send a letter to the local electric company, Baltimore Gas and Electric (BGE), requesting relief from the CPCN requirements, pursuant to the PUC Article of the Annotated Code of Maryland. The letter shall also provide BGE with the proposed dates for installation and start-up of the generators, the quantity and size of the units, the fuel type, the location of the units, and how the generators will be used. A one-line drawing of the generators and routing design shall be included with the letter as well. The Designer shall be responsible for supplying the technical attachments to the letter. The electric company will respond with a letter stating what type of generators are to be installed using the definitions of generating systems under the Maryland PSC requirements (Type I, II, or III) and if the generators' installation meets the criteria for a CPCN waiver. This approval by the electric company will allow the PSC to review and waive the CPCN requirements for the construction of generating units.

b. The Owner shall submit a CPCN waiver application to the PSC as required under PUC Article 7-207.1. In order for the Designer to complete the application, additional information is required, including the following: the address and point of contact information for the facility, the manufacturer of the generators, a list of the equipment and facilities that will be powered by the generators, and the letter of agreement from BGE regarding the CPCN waiver. The Point of Contact will be the Manager of the MAA Division of Environmental Compliance. The original signed (by legal counsel, an officer, or other person who has the authority to legally bind the Owner) application package (consisting of the application form and BGE's concurrence letter), along with fourteen (14) copies of the signed package, will be submitted to the PSC by the MAA. The PSC waives filing fees for a unit of State government. The PSC will then issue a waiver, if appropriate, to exempt the proposed generators from the CPCN process.

c. Once the MAA receives the waiver from the PSC, the Designer shall prepare and the MAA shall submit an Air Quality Permit to Construct & Registration Application for Internal Combustion Engines (Electrical Power Generators, Power Equipment, & Fire Protection Pumps) (Form 44), along with the waiver, to MDE/ARMA for the generators. Again, the waiver from the PSC is only required for electrical power generators (not for power equipment or fire protection pumps); power equipment and fire protection pumps only require an Air Quality Permit to Construct & Registration Application for Internal Combustion Engines. To complete the permit application, NTE emissions data is required and is obtained from the engine manufacturer submittal data. MDE/ARMA permitting fees are $500 per source and MDE/ARMA will notify the applicant of the appropriate fee upon receiving a complete application. Three (3) copies of the permit application, each signed and dated individually, must be submitted to MDE/ARMA.

2. If pollution control equipment is to be installed on the unit, then an Application for Permit to Construct Gas Cleaning or Emission Control Equipment (Form 6) is required and must be submitted with the *Air Quality Permit to Construct & Registration Application for Internal Combustion Engines (Electrical Power Generators, Power Equipment, & Fire Protection Pumps)*.

3. All Form 44s require proof of Worker's Compensation for the Owner (not the Contractor) under Environmental article 1-202. The Designer can obtain a copy of this proof from the MAA Division of Employee Risk Management (410-859-7509).

4. If the electrical power generators, power equipment, and/or fire protection pumps are subject to non-attainment NSR or PSD requirements, as defined by 40 CFR Part 51 and 40 CFR Part 52, COMAR 26.11.02.09, COMAR 26.11.02.12, COMAR 26.11.06.14, and COMAR 26.11.02.17, additional permitting may be required simultaneously with the application for an MDE/ARMA Permit to Construct.

#### 4.6.3.3 Permitting Requirements for Boilers, Water Heaters, and Other Fuel Burning Equipment (including Snow Melters)

1. MDE/ARMA requires that all fuel burning equipment using fuel oil or gaseous fuel, and with a maximum heat input of one (1) million BTU per hour (MMBtu/hr) or greater, have a Permit to Construct prior to installation. COMAR 26.11.01.01B(17)(a) defines "fuel burning equipment" as any boiler or furnace that has the primary function of heating air, water, or any other medium through indirect heat transfer from the burning of fuels.
   a. All fuel burning equipment with a maximum heat input of ten (10) MMBtu/hr or greater requires an Application for Fuel Burning Equipment (Form 11) unless the boiler/heater/snow melter meets the requirements for a General Permit (see below). Form 11 requires an estimate of the potential annual fuel consumption and operating schedules for the equipment. The Designer shall coordinate with the MAA Office of Maintenance and Utilities for this information. In addition, Form 11 also requires stack parameters, total stack emissions, construction start and end dates for the permitted equipment, and the type of control device(s) associated with the equipment. The permitting fee is $500 per piece of fuel burning equipment and will be invoiced once MDE/ARMA receives the permit application. Three (3) copies of the permit application, each signed and dated individually, must be submitted to MDE/ARMA.
   b. If pollution control equipment is to be installed on the unit, then an Application for Permit to Construct Gas Cleaning or Emission Control Equipment (Form 6) is required and must be submitted with the Application for Fuel Burning Equipment.
   c. Natural gas, liquid propane gas, or distillate oil-fired fuel burning equipment with a maximum heat input of one (1) MMBtu/hr or greater, but less than ten (10) MMBtu/hr may submit an Air Quality General Permit to Construct for Small Fuel Burning Equipment. This General Permit does not apply to fuel burning equipment that burns residual fuel oil (ASTM fuel oil Numbers 4, 5, and 6).

      In order to obtain an Air Quality General Permit to Construct for Small Fuel Burning Equipment, the Designer can either request a General Permit to Construct package from MDE/ARMA by calling (410) 537-3230, or the Designer may simply download the package from the MDE website listed above. The package will include the Air Quality General Permit for Small Fuel Burning Equipment, the Request for Coverage Form, instructions on how to submit the completed Request for Coverage, and information regarding the required permit fee. The General Permit includes any construction and/or operating requirements, air emissions limitations, and other regulatory obligations. The required permitting fee is $500 per piece of small fuel burning equipment and must be submitted to MDE/ARMA with the application form. Once a request for coverage under the General Permit is made by submitting the Request for Coverage Form and permit fee, the MAA may install and operate the applicable small fuel burning equipment stated on the Request for Coverage Form. A new Request for Coverage must be filed with MDE/ARMA, and another permit fee paid for any small fuel burning equipment which is moved to another facility. Three (3) copies of the

permit application package, each signed and dated individually, must be submitted to MDE/ARMA.

d. Natural gas, liquid propane gas, or distillate oil-fired fuel burning equipment with a maximum heat input of ten (10) MMBtu/hr or greater, but less than thirty (30) MMBtu/hr may be eligible for an Air Quality General Permit to Construct for Medium Fuel Burning Equipment. This General Permit does not apply to fuel burning equipment that burns residual fuel oil (ASTM fuel oil Numbers 4, 5, and 6). Note that fuel burning equipment that falls under the Medium Fuel Burning Equipment General Permit is also subject to 40 CFR Part 60, the Federal, Subpart Dc New Source Performance Standards (NSPS) requirements (discussed below). Please note that BWI Marshall cannot use the Medium Fuel Burning Equipment General Permit since it is a major source of nitrogen oxide (NOx).

In order to obtain a *General Permit to Construct for Medium Fuel Burning Equipment*, the Designer can either request a General Permit to Construct package from MDE/ARMA by calling (410) 537-3230, or the Designer may simply download the package from the MDE website listed above. The package will include the Air Quality General Permit for Medium Fuel Burning Equipment, the Request for Coverage Form, instructions on how to submit the completed Request for Coverage Form, and information regarding the required permit fee. The General Permit includes any construction and/or operating requirements, air emissions limitations, and other regulatory obligations, including NSPS Subpart Dc requirements. The required permitting fee is $500 per piece of medium fuel burning equipment, and must be submitted to MDE/ARMA with the application form. Once a request for coverage under the General Permit is made, by submitting the Request for Coverage Form and permit fee, the MAA may install and operated at the applicable medium fuel burning equipment stated on the Request for coverage Form. A new Request for Coverage Form must be filed with MDE/ARMA, and another permit fee paid any time medium fuel burning equipment which is moved to another facility. Three (3) copies of the permit application package, each signed and dated individually, must be submitted to MDE/ARMA.

2. All Permit to Construct Applications (Form 11 or General) require proof of Worker's Compensation Coverage for the Owner (not the Contractor) under Environmental article 1-202. The Designer can obtain a copy of this proof from the MAA Division of Employee Risk Management (410-859-7509).
   a. If the boilers/heaters/snow melters are subject to non-attainment NSR or PSD requirements, as defined by 40 CFR Part 51 and 40 CFR Part 52, COMAR 26.11.02.09, COMAR 26.11.02.12, COMAR 26.11.06.14, and COMAR 26.11.02.17, additional permitting may be required simultaneously with the application for an MDE/ARMA Permit to Construct.

#### 4.6.3.4 Design Guidelines for Emergency Generators, Internal Combustion Engines, and Fuel Burning Equipment (including Snow Melters)

1. The Designer shall be responsible for preparing all permit applications and submitting the appropriate documentation to the MAA for all required permits and exemptions as defined above. In addition, the Designer shall specify equipment that meets all State and Federal air quality requirements.
   a. Specifications for all Fuel Burning Equipment requiring permits shall include:
      i. Notification that a permit to install the equipment is required;
      ii. Designation of the "Owner" or "Owner's Agent" as the party responsible for completing the permit application;

iii. A projection of the permitting process duration after receipt of the required equipment data; and For generators, the CPCN exemption process, including utility approval, can take up to two (2) months and the permitting process can take up to ninety (90) days after a waiver is received and a complete application is received by MDE/ARMA.
- For boilers/heaters/snow melters with a maximum heat input of ten (10) MMBtu/hr or greater that burn natural gas only and are not subject to the public review process, the permitting process can take up to ninety (90) days after a complete application is received by MDE/ARMA; however, for fuel oil fired boilers with a maximum heat input of ten (10) MMBtu/hr or greater, the permitting process can take up to six (6) months after a complete application is received by MDE/ARMA.

iv. The specific equipment data required for the permit application listed in the "Submittals" paragraph.

b. The Designer shall specify equipment that meets the Federal requirements for units that are subject to 40 CFR Part 60 (NSPS), Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE) and the Designer is responsible for providing the Owner with the EPA Certificate of Conformity identifying the engine as a certified unit:

Subpart IIII Applicability

i. Stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:
- Manufactured after April 1, 2006 and are not fire pump engines, or
- Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

ii. Stationary CI ICE that are modified or reconstructed after July 11, 2005.

Subpart IIII Requirements

i. Emission standards (60.4204 and 60.4205) for owners and operators of stationary CI ICE vary based on model year ("pre-2007" vs. "2007 and later") and function ("non-emergency stationary CI ICE" vs. "emergency stationary CI ICE");

ii. Fuel requirements (60.4207), specifically diesel fuel requirements for owners and operators of stationary CI ICE, must meet the requirements of 40 CFR Part 80.510(a): sulfur content of 500 parts per million (ppm). Beginning October 1, 2010, owners and operators of stationary CI ICE subject to NSPS Subpart IIII, with a displacement of 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR Part 80.510(b) for nonroad diesel fuel: sulfur content of 15 ppm.

iii. Monitoring requirements (60.4209) for owners and operator of stationary CI ICE include installing a nonresettable hour meter prior to start-up of the engine. Also, if the engine is equipped with a diesel particulate filter, the filter must be installed with a backpressure monitor that notifies the owner or operator when the high back pressure limit of the engine is approached.

iv. Compliance requirements (60.4211) for owners and operators of stationary CI ICE vary based on model year ("pre-2007" vs. "2007 and later") and function ("non-emergency stationary CI ICE" vs. "emergency stationary CI ICE").

v. Test methods (60.4212 and 60.4213) for owners and operators of stationary CI ICE vary based on the displacement of the engine ("less than 30 liters per cylinder" vs. "greater than 30 liters per cylinder").

vi. Notification, recordkeeping, and reporting requirements (60.4241) for owners and operators of stationary CI ICE vary based on model year, function, and displacement (per cylinder) of the engine.

c. The Designer shall specify equipment that meets the Federal requirements for units that are subject to 40 CFR Part 60 (NSPS), Subpart JJJJ - Standards of Performance for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE):

Subpart JJJJ Applicability

i. Stationary SI ICE that commence construction after June 12, 2006 where the stationary SI ICE are manufactured on or after:
   - July 1, 2007, for engines with a maximum engine power greater than or equal to 500 horsepower (except lean burn engines with a maximum engine power greater than or equal to 500 horsepower and less than 1,350 horsepower);
   - January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 horsepower and less than 1,350 horsepower;
   - July 1, 2008, for engines with a maximum engine power less than 500 horsepower; or
   - January 1, 2009, for emergency engines with a maximum engine power greater than 19 kilowatts (25 horsepower).

ii. Stationary SI ICE that commence modification or reconstruction after June 12, 2006.

Subpart JJJJ Requirements

i. Emission standards (60.4233) for owners and operators of stationary SI ICE vary based on maximum engine power, date of manufacture, type of fuel combusted, burn type (e.g., lean vs. rich burn engine), and function ("non-emergency stationary SI ICE" vs. "emergency stationary SI ICE").

ii. Fuel requirements (60.4235) for owners and operators of stationary SI ICE that use gasoline must meet the requirements of 40 CFR Part 80.195.

iii. Monitoring requirements (60.4237) for owners and operators of stationary SI ICE vary based on the horsepower of the engine and the date which it was built. In general, monitoring requirements include installing a non-resettable hour meter.

iv. Compliance requirements (60.4243) for owners and operators of stationary SI ICE vary based on maximum engine power, date of manufacture, type of fuel combusted, whether or not the stationary SI ICE is certified, and function ("non-emergency stationary SI ICE" vs. "emergency stationary SI ICE").

v. Owners and operators of stationary SI ICE who conduct performance tests must follow the test methods and procedures outline in 60.4244.

vi. Notification, recordkeeping, and reporting requirements (60.4245) for owners and operators of stationary SI ICE vary based on maximum engine power, date of manufacture, and function ("non-emergency stationary SI ICE" vs. "emergency stationary SI ICE").

Whenever possible, the Designer shall specify the requirement to install a certified engine under Subpart JJJJ. However, under this rule, manufacturers are not required to certify the majority of engines and therefore, certified engines are not readily available on the market. If a Subpart JJJJ engine is installed and not certified, initial compliance testing will be required for the engine within 180 days of startup. In addition, if the

engine is greater than 500 hp, testing every 3 years after the initial compliance testing is also required.

d. The Designer shall specify equipment that meets the following emission control requirements:
   i. These units shall be fired with natural gas, and when necessary with No. 2 fuel oil as a back-up fuel, and designed to be high efficiency units. They shall be equipped with a low NOx burner system for guaranteed NOx performance when using natural gas at no greater than 30 ppm, dry volume basis and corrected to 3% excess oxygen (O2).
   ii. Burner, boiler/water heater, and low NOx system shall be manufactured as a package by a single manufacturer. The unit's nameplate shall include the approved Underwriter's Laboratory (UL) low NOx model designation. The manufacturer shall provide the Contractor with a copy of the most recent stack testing results to demonstrate compliance with the 30 ppm NOx guarantee. After boiler installation is completed, the Contractor shall provide the services of a manufacturer's field representative for commissioning the unit and training the operator(s). A manufacturer's – approved and authorized commissioning report shall be submitted to the Engineer at the time of start-up.
   iii. The Designer shall specify equipment that meets the Federal requirements for 40 CFR Part 60 (NSPS) Subpart Dc – Small Industrial-Commercial-Institutional Steam Generating Units for all fuel burning equipment with a maximum design heat input greater than or equal to ten (10) MMBtu/hr, but less than or equal to one hundred (100) MMBtu/hr and constructed, modified, or reconstructed after June 9, 1989. In addition, the Designer is responsible for ensuring that these units also meet the more stringent State of Maryland requirements under COMAR 26.11.09.05A, COMAR 26.11.09.06A, and COMAR 26.11.09.07A

### 4.6.4 Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs) Permitting Process

The storage of deicing compounds or other liquids which may be considered Volatile Organic Liquids (VOLs) may require a permit to construct as they could be subject to a NSPS under 40 CFR Part 60, Subpart Kb. Tanks that store VOLs with a capacity greater than or equal to 75 cubic meters and for which construction, reconstruction or modification began after July 23, 1984, are subject to Subpart Kb. The Designer must consider the following requirements for tanks of certain sizes:

- Tanks with design capacity greater than 151 cubic meters and storing liquid with vapor pressure >5.2 kPa require fixed roof control or internal floating roof control with specific seal requirements.
- Tanks with design capacity greater than or equal to 75 cubic meters and less than 151 cubic meters and storing liquid with vapor pressure >27.6 kPa also require a fixed roof control or internal floating rood control with specific seal requirements.
- Tanks with design capacity greater than 75 cubic meters and storing liquid with vapor pressure >76.6 kPa require a closed vent system.

An Application for Processing or Manufacturing Equipment (Form 5) would be used to obtain a permit to construct for a tank subject to Subpart Kb and requiring a permit. All forms can be found on the Maryland Department of the Environment's Permits to Construct and Operate Application Forms web page.

### 4.6.5 Gasoline Dispensing/Motor Vehicle Refueling Facilities Permitting Process

When new Gasoline Dispensing/Motor Vehicle Refueling Facilities (GD/MVRFs) are planned for installation at BWI Marshall and Martin State Airports, a General Permit to Construct Motor Vehicle Refueling Facilities must be obtained from MDE/ARMA if the facility will dispense gasoline into the tanks of motor vehicles and have a gasoline storage tank larger than 2,000 gallons. Multiple tanks at the same location are considered a tank farm and only one permit is required for all the tanks in the tank farm. Preparing the applications for such permits is the responsibility of the Designer.

The emission sources to which these regulations apply are gasoline storage tanks larger than 2,000 gallons and their associated equipment components in vapor or liquid gasoline service, including pressure/vacuum vents on storage tanks and equipment necessary to unload product from cargo tanks into the storage tanks. Equipment used for refueling motor vehicles is not deemed an emission source under these regulations.

No General Permit to Construct is required for the storage of diesel fuel, kerosene, jet fuel, or fuel oils. However, the Designer must inform/notify MAA's Division of Environmental Compliance with the appropriate information that will be necessary to update the Oil Operations Permit (OOP) for newly acquired permanent tanks greater than 10,000 gallons which store oil (includes but is not limited to the following: asphalt, gasoline, ethanol that is intended to be used as a motor fuel or fuel source, kerosene, aviation/jet fuels, diesel fuel, biodiesel fuel regardless of whether the fuel is petroleum based, used oil, waste oil, lubricating oils, hydraulic oil, mineral oil, and all heating oils) through MDE. Designer must also provide sufficient information to allow for update and PE review/stamp of the Spill Prevention Control & Countermeasures (SPCC) Plan and the Stormwater Pollution Prevention Plan (SWPPP). Additionally, Form A and Form M92 must be completed prior to use of the tanks and can be found on the MDE Land Permit Applications and Instructions web page.

#### 4.6.5.1 Permitting Requirements for GD/MVRFs

The Designer shall be responsible for completing the Air Quality General Permit to Construct Application Package for Motor Vehicle Refueling Facilities, including the Request for Coverage Form (Form No. MDE/ARMA/PER.006). The Application Package can be obtained by calling MDE/ARMA at (410) 537-3230 or downloading from the MDE Air Quality General Permits to Construct Application Forms web page.

The Application Package shall be submitted to the MAA Environmental Compliance Division in the Office of Planning and Environmental Services. MAA shall be responsible for signing and submitting the Application Package to the MDE/ARMA. In addition, the MAA is responsible for paying the $200 permitting fee (payable to MDE Clean Air Fund) that must accompany the Application Package. If the MAA is notified that any permit application is deemed incomplete, the Designer shall take immediate action to rectify the situation and submit the appropriate documents to MDE/ARMA.

Coverage under the General Permit to Construct begins on the day a complete Application Package (as determined by MDE/ARMA) and full payment of the permitting fee is submitted to MDE/ARMA.

#### 4.6.5.2 Design Guidelines for GD/MVRFs

1. The Designer shall be responsible for preparing all Application Packages and submitting the appropriate documentation to the MAA for all required permits and exemptions as defined

above. In addition, the Designer shall specify equipment that meets all State and Federal air quality requirements.

a. Specifications for all GD/MVRFs requiring permits shall include:
   - Notification that a General Permit to Construct the equipment is required;
   - Designation of the "Owner" or "Owner's Agent" as the party responsible for completing the Application Package;
   - A statement that Coverage under the General Permit to Construct begins on the day a complete Application Package (as determined by MDE/ARMA) and full payment of the permitting fee is submitted to MDE/ARMA. MDE/ARMA will reply with a letter acknowledging the receipt of the Application Package and fee payment, which must be retained along with the General Permit to Construct document.

2. Stage I and II Vapor Recovery
   - Stage I vapor recovery systems capture the gasoline vapors emitted when a tank truck refills the gasoline storage tank and is required for all gasoline storage tanks larger than 2,000 gallons.
   - Stage II vapor recovery systems capture gasoline vapors lost during vehicle refueling at the pump. Stage II vapor recovery is required for gasoline tanks larger than 2,000 gallons and facilities with a monthly throughput greater than or equal to 10,000 gallons in the following areas: Baltimore City, Anne Arundel, Baltimore, Calvert, Carroll, Cecil Charles, Frederick, Harford, Howard, Montgomery, and Prince George's counties.
3. Permitting and compliance requirements for GD/MVRFs are dependent on various thresholds of monthly throughput of gasoline, where monthly throughput is defined as the total volume of gasoline during a month as calculated on a rolling 30-day average. The Designer shall be responsible for determining the projected throughput threshold, discussed below, that will drive design specifications and notification requirements to comply with state requirements as well as Federal requirements under 40 CFR Part 63 Subpart CCCCCC. Please refer to Chapter 10 "Environmental Procedures and Requirements" for notification, recordkeeping, and reporting requirements.
4. Monthly Throughput of Less Than 10,000 Gallons – The Designer shall specify a vapor balance line to load product into gasoline storage tanks per Part II.A(1)(a)(i) of the Air Quality General Permit to Construct Application Package for Motor Vehicle Refueling Facilities. Additionally, the Designer shall specify a submerged fill pipe no higher than 6 inches from the bottom of the storage tank for loading product into the storage tank. Other specifications as necessary must be incorporated to minimize vapor releases, such as those that minimize gasoline spills, allow for expeditious cleanup of gasoline spills, use of gasketed seals for gasoline containers and storage tank fill pipes, and minimize product being sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices such as oil/water separators.
5. Monthly Throughput of 10,000 Gallons or More – The Designer shall specify identical requirements as above for monthly throughput of less than 10,000 gallons. In addition, in order to comply with Subpart CCCCCC, all storage tanks at or above 250 gallons shall be loaded using submerged fill (drop tubes).
6. Monthly Throughput of 100,000 Gallons or More
   a. The Designer shall specify identical requirements as outlined above in the section for facilities with monthly throughput of 10,000 gallons; in addition, in order to meet the requirements of Subpart CCCCCC, the facility must either (1) operate a vapor balance system that meets a specified enforceable State, local rule or permit or (2) operate a vapor balance system during storage tank loadings, test the system periodically to make sure it works

correctly, and includes specific equipment or work practices according to the rule, or meets 95% control.

b. Because BWI Marshall and Martin State Airports are located in Anne Arundel and Baltimore County, respectively, the Designer must specify Stage II vapor recovery equipment for all new sources.
   - For Stage II vapor recovery equipment, the Designer shall specify instructional signs, to be placed in conspicuous locations at each gasoline dispenser, that include instructions and illustrations for inserting and removing the nozzle and dispensing product, warn against attempts to continue refueling after automatic shut-off of the gasoline occurs (i.e. "topping off"), and that display the MDE/ARMA's toll-free number for submitting complaints or comments regarding use of the Stage II vapor recovery system.

c. If the GD/MVRF had a permit for gasoline storage tanks issued before January 10, 2008, the facility is deemed to be in compliance with the following requirements. If not, the Designer must specify the following (note: these requirements do not apply to gasoline storage tanks equipped with a floating roof or equivalent):
   - A vapor balance system having vapor connections and lines that are equipped with closures that seal upon disconnect, and a vapor line between the storage tank and cargo tank that is vapor-tight to 100% of the Lower Explosive Limit (when measured with a combustible gas detector, calibrated with propane, at a distance of one inch from the source). The vapor balance system must not allow the pressure in the tank truck to exceed 18 inches water pressure or 5.9 inches water vacuum when transferring product. All vapor recovery adaptors and connections must be designed to prevent over-tightening or loosening of fittings during normal product delivery.
   - If a gauge well separate from the fill tube is specified, it must be provided with a submerged drop tube that extends no more than 6 inches from the bottom of the tank. Liquid fill connections must be equipped with vapor-tight caps.
   - Pressure/vacuum (PV) vent valves shall be specified for the storage tank vent pipes. The pressure specifications for PV vent valves must be a positive pressure setting of 2.5 to 6.0 inches of water and a negative pressure setting of 6.0 to 10.0 inches of water. The total leak rate of all PV vent valves at the GD/MVRF must not exceed 0.17 cubic foot per hour at a pressure of 2.0 inches of water, and 0.63 cubic foot per hour at a vacuum of 4 inches of water.
   - The vapor balance system must be capable of meeting the static pressure performance requirement of the following equation:

     $$Pf = 2e\text{-}500.887/v$$

     Where
     Pf = Minimum allowable final pressure, inches of water
     v = Total ullage affected by the test, gallons
     e = Dimensionless constant equal to approximately 2.718
     2 = The initial pressure, inches water; and
   - For new or reconstructed facilities, or new storage tank(s) at an existing facility, the Designer must specify gasoline storage tank(s) with a dual-point vapor balance system in which the storage tank is equipped with an entry port for a gasoline fill pipe and a separate exit port for a vapor connection.

d. The Designer shall specify that, at the time of installation and every three years thereafter, the PV vent valves must comply with the leak rate and cracking pressure requirements

specified above, using the California Air Resources Board (CARB) Vapor Recovery Test Procedure TP-201.1E or alternative method approved by the MDE/ARMA.

e. The Designer shall specify that, at the time of installation, the vapor balance system must comply with the static pressure performance requirements specified above, using the CARB Vapor Recovery Test Procedure TP-201.3 or alternative method approved by the MDE/ARMA.

   This requirement also applies every three years after initial installation.

f. If any alternative vapor balance system other than that described in 5.c., above, is specified, the Designer must specify that initial compliance is demonstrated such that a 95 percent reduction in emissions is achieved by the vapor balance system using CARB Vapor Recovery Test Procedure TP-201.1, and determine and document alternative acceptable values for the leak rate and cracking pressure requirements described in (d) and (e), above.

g. The Designer must specify the following initial CARB-approved tests:
   - A leak test in accordance with CARB Vapor Recovery Test Procedure TP-201.3
   - An air to liquid volume ratio test in accordance with CARB Vapor Recovery Test Procedure TP-201.5
   - A dynamic pressure performance test in accordance with CARB Vapor Recovery Test Procedure TP-201.4
   - A vapor return line vacuum integrity test for the Healy Model 400 ORVR System
   - A vapor return line vacuum integrity test for the Healy Model 600 System

### 4.6.6 Paint Booths and Abrasive Blasting Operations Permitting Process

Coating and painting operations, including the use of paint booths, require the designer to apply for an Air Quality Permit to Construct prior to installation of a paint booth.

Paint booths and their associated spray coating activities are regulated under 40 CFR Part 63 (National Emissions Standards for Hazardous Air Pollutants [NESHAPs]), Subpart HHHHHH – Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources. Categories and entities potentially affected by NESHAP Subpart HHHHHH are paint stripping operations using methylene chloride (MeCl)-containing paint strippers, motor vehicle and mobile equipment surface coating operations, and miscellaneous surface coating operations located at area sources. An area source is defined in the Clean Air Act (CAA) section 112(a) as any stationary source of Hazardous Air Pollutants (HAPs) that is not a major source. A major source is defined as any stationary source or group of stationary sources located within a contiguous area and under common control that emits, or has the potential to emit, considering controls, in the aggregate, 10 tons per year (tpy) or more of any single HAP or 25 tpy or more of any combination of HAPs. For the purposes of this rule, paint stripping operations are those that perform paint stripping using MeCl for the removal of dried paint (including, but not limited to, paint, enamel, varnish, shellac, and lacquer) from wood, metal, plastic, and other substrates at area sources as either: (1) an independent activity where paint stripping is the principal activity at the source, or (2) an activity incidental to the principal activity (e.g., surface coating, inspection, maintenance, etc.) at the source.

For co-located operations, the EPA considers paint stripping activities that use one ton or less to be incidental to the principal activity and those using more than one ton to be performing paint stripping as a principal activity. Motor vehicle and mobile equipment surface coating operations involve the spray

application of coatings at area sources to automobiles, light trucks, heavy duty trucks, buses, construction equipment, self-propelled vehicles, and equipment that may be drawn and/or driven on a roadway. Miscellaneous surface coating operations are those that involve the spray application of coatings that contain compounds of chromium (Cr), lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), herein after referred to as target HAPs, to miscellaneous parts and/or products made of metal or plastic, or combinations of metal and plastic.

#### 4.6.6.1 Permitting Requirements for Vehicle Surface Coating Operations

1. MDE/ARMA requires an *Air Quality General Permit to Construct for Vehicle Refinishing*. This general permit applies to auto body repair facilities that are at a fixed stationary location; use no more than 400 gallons of vehicle refinishing materials per year; have two or less paint spray booths; and do not use materials containing lead, formaldehyde, or pot life extenders. The Air Quality General Permit to Construct for Vehicle Refinishing can be found on the MDE Air Quality General Permits to Construct Application Forms web page.

   In order to obtain an Air Quality General Permit to Construct for Vehicle Refinishing, the Designer can either request a General Permit to Construct package from MDE/ARMA by calling (410) 537-3230, or the Designer may simply download the package from the MDE website listed above. The package will include the Air Quality General Permit for Vehicle Refinishing, an Initial Notification Form, a Compliance Notification Form, and information regarding the required permit fee. The General Permit includes any construction and/or operating requirements, air emissions limitations, and other regulatory obligations. The required permitting fee is $500 for the whole facility and must be submitted to MDE/ARMA with the application form. The Initial Notification Form must be sent to the EPA Region III and MDE/ARMA 180 days after initial start-up for new shops and by January 11, 2010 for existing shops. The Compliance Notification Form must be sent to the EPA Region III and MDE/ARMA 180 days after initial startup for new shops and by March 11, 2011 for existing shops. Three (3) copies of the permit application package, each signed and dated individually, must be submitted to MDE/ARMA.
2. All Permit to Construct Applications, including the Air Quality General Permit to Construct for Vehicle Refinishing, require proof of Worker's Compensation for the Owner (not the Contractor) under Environmental article 1-202. The Designer can obtain a copy of this proof from the MAA Division of Employee Risk Management (410-859-7509).
3. In addition to complying with all applicable Federal NESHAP Subpart HHHHHH requirements, the VOC content of the materials used shall not exceed the following limitations:

| **Coatings*** | **VOC (lb/gal)** |
|---|---|
| Pretreatment | 6.5 |
| Precoat | 5.5 |
| Primer surface | 4.8 |
| Primer sealer | 4.6 |
| Topcoat | 5.0 |
| Multi-stage coating system | 5.2 |
| Specialty coating | 7.0 |
| | |
| Preparation materials | |
| Non-plastic | 1.4 |
| Plastic | 6.5 |

*VOC content limitation is for coatings *as applied*.

#### 4.6.6.2 Design Guidelines for Vehicle Surface Coating Operations

1. Per §63.11173(e), the designer must ensure that motor vehicle and mobile equipment surface coating operations and miscellaneous surface coating operations meet the following requirements:
   a. All spray-applied coatings must be applied in a spray booth, preparation station, or mobile enclosure that meets the following requirements:
      i. All spray booths, preparation stations, and mobile enclosures must be fitted with a type of filter technology that is demonstrated to achieve at least 98-percent capture of paint overspray. The procedure used to demonstrate filter efficiency must be consistent with the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Method 52.1, "Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter, June 4, 1992" (incorporated by reference, see 63.14 of subpart A of this part). The test coating for measuring filter efficiency shall be a high solids bake enamel delivered at a rate of at least 135 grams per minute from a conventional (non-HVLP) air-atomized spray gun operating at 40 pounds per square inch (psi) air pressure; the air flow rate across the filter shall be 150 feet per minute. Owners and operators may use published filter efficiency data provided by filter vendors to demonstrate compliance with this requirement and are not required to perform this measurement. Waterwash spray booths that are operated and maintained according to the manufacturer's specifications are not required to meet these requirements.
      ii. Spray booths and preparation stations used to refinish complete motor vehicles or mobile equipment must be fully enclosed with a full roof, and four complete walls or complete side curtains, and must be ventilated at negative pressure so that air is drawn into any openings in the booth walls or preparation station curtains. However, if a spray booth is fully enclosed and has seals on all doors and other openings and has an automatic pressure balancing system, it may be operated at up to, but not more than, 0.05 inches water gauge positive pressure.
      iii. Spray booths and preparation stations that are used to coat miscellaneous parts and products or vehicle subassemblies must have a full roof, at least three complete walls or complete side curtains, and must be ventilated so that air is drawn into the booth. The walls and roof of a booth may have openings, if needed, to allow for conveyors and parts to pass through the booth during the coating process.
      iv. Mobile ventilated enclosures that are used to perform spot repairs must enclose and, if necessary, seal against the surface around the area being coated such that paint overspray is retained within the enclosure and directed to a filter to capture paint overspray.
   b. The designer must ensure that all spray-applied coatings must be applied with a high volume, low pressure (HVLP) spray gun, electrostatic application, airless spray gun, air-assisted airless spray gun, or an equivalent technology that is demonstrated by the spray gun manufacturer to achieve transfer efficiency comparable to one of the spray gun technologies listed above for a comparable operation, and for which written approval has been obtained from the Administrator. The procedure used to demonstrate that spray gun transfer efficiency is equivalent to that of an HVLP spray gun must be equivalent to the California South Coast Air Quality Management District's "Spray Equipment Transfer

Efficiency Test Procedure for Equipment User, May 24, 1989" and "Guidelines for Demonstrating Equivalency with District Approved Transfer Efficient Spray Guns, September 26, 2002" (incorporated by reference, see 63.14 of subpart A of this part).

c. There are additional miscellaneous metal coating regulations pertaining to paint booths for coating items other than motor vehicles that could impose other VOC control requirements. Please refer to COMAR 26.11.19.13 for more information depending on the product being coated.

## 4.6.7 Abrasive Blasting Operations Permitting Process

### 4.6.7.1 Permitting Requirements for Abrasive Blasting Operations

The MAA or tenant designer is responsible for obtaining an MDE/ARMA Air Quality Permit to Construct if they meet the regulatory definition of abrasive blasting operations, specifically dry abrasive blasting operations which are regulated under 40 CFR Part 63 (National Emissions Standards for Hazardous Air Pollutants [NESHAPs]), Subpart XXXXXX. Entities potentially affected by NESHAP Subpart XXXXXX at MAA include owners or operators of an area source (see Chapter 4.6.6 Paint Booths and Abrasive Blasting Operations for definition of area source) that is primarily engaged in the operations in one of the following source categories: (1) Fabricated Metal Products; (2) Industrial Machinery and Equipment Finishing Operations; and (3) Valves and Pipe Fittings. More specifically, NESHAP Subpart XXXXXX applies to area sources in these source categories that use or have the potential to emit compounds of cadmium, chromium, lead, manganese, or nickel from metal fabrication or finishing operations.

Neither BWI Marshall nor Martin State Airports are primarily engaged in the operations of any of the nine source categories listed in this subpart; therefore, the regulations of NESHAP Subpart XXXXXX may not be applicable. However, obtaining a permit to construct for abrasive blasting operations in MD predates the promulgation of Subpart XXXXXX, therefore, a permit to construct may still be required. In addition, there may be tenant operations that require compliance with NESHAP Subpart XXXXXX. Tenant operations are commonly not included in the facility's permit because they are considered under separate ownership and would be required to operate under separate permits. For example, equipment owned/operated by an airline would be permitted under the airline and compliance would be the responsibility of the airline and not MAA.

Abrasive blast cleaning equipment using a suspension of abrasive in water is exempt from obtaining a Permit to Construct per COMAR 26.11.02.10O(1). Furthermore, per COMAR 26.02.07.03, open abrasive blasting for the abatement of lead-containing subfstances (i.e., lead-based paint) is prohibited.

### 4.6.7.2 Design Guidelines for Abrasive Blasting Operations

Particulate matter (PM) and (particulate) HAPs are typically emitted from abrasive blasting operations. These emissions are dependent on both the abrasive material and the targeted surface. COMAR 26.11, Air Quality, regulates visible emissions (VEs), as well as PM emissions. The designer must ensure that the abrasive blasting operation:

- Does not cause or permit the discharge of emissions from any installation or building, other than water in an uncombined form, which is visible to human observers as required under the general provisions in COMAR 26.11.06.02.C.
- Does not cause or permit to be discharged (from a confined source) into the outdoor atmosphere from any other installation, PM in excess of 0.03 gr/SCFD (68.7 mg/dscm) as required by COMAR 26.11.06.03.B(2). Confined sources are defined as installations that discharge into the atmosphere through a stack, duct, hood, flue, or other conduit.

- Does not cause PM emissions to be emitted from unconfined sources without taking reasonable precautions (i.e., installation and use of hoods, fans, and dust collectors to enclose, capture, and vent emissions) to prevent PM from becoming airborne. Unconfined sources are defined as installations that cause emissions which are not enclosed in a stack, duct, hood, flue, or other conduit but which escape into the atmosphere through openings such as windows, vents or doors, ill-fitting closures, or poorly maintained equipment.
- Does not cause or permit any material to be handled, transported, or stored, or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent PM from becoming airborne.

## 4.6.8 Stationary Welders Permitting Process

### 4.6.8.1 Permitting Requirements for Stationary Welders

In addition to dry abrasive blasting operations, welding operations that use materials that contain metal fabrication or metal finishing HAPs (MFHAPs) or have the potential to emit MFHAPs and use 2,000 pounds or more per year of welding rod containing one or more MFHAP (calculated on a rolling 12-month basis) are also regulated under 40 CFR Part 63 (National Emissions Standards for Hazardous Air Pollutants [NESHAPs]), Subpart XXXXXX – Nine Metal Fabrication and Finishing Source Categories Applicability and Compliance Dates. However, as explained in Chapter 4.6.7.1 Permitting Requirements for Abrasive Blasting Operations, neither BWI Marshall nor Martin State Airports are "primarily engaged" per 63.11522 in the operations of any of the nine source categories listed in this subpart; therefore, the regulations of NESHAP Subpart XXXXXX are not applicable.

Welding equipment powered by stationary compression ignition (CI) internal combustion engines (ICE) is subject to the requirements of 40 CFR Part 60 (New Source Performance Standards [NSPS]), Subpart IIII – Stationary Compression Ignition Internal Combustion Engines. Refer to Chapter 4.6.3.2 Permitting Requirements for Internal Combustion Engines for permitting requirements for CI ICEs.

Stationary welders would be permitted as process equipment and would require an Application for Processing or Manufacturing Equipment (Form 5) to be submitted to MDE to obtain a permit to construct and operate prior to construction. All forms can be found on the MDE Permits to Construct and Operate Application Forms web page.

It should be noted that portable welding equipment is exempt from obtaining an Air Quality Permit to Construct per COMAR 26.11.02.10G.

Maryland also has air toxics requirements under COMAR 26.11.15 that may apply to welding equipment. Under this regulation, any source that emits a Class I or Class II toxic air pollutant (TAP) into the atmosphere must demonstrate that those emissions do not endanger public health and that the emissions are being reduced through the implementation of control technology.

### 4.6.8.2 Design Guidelines for Stationary Welders

Welding equipment powered by stationary compression ignition (CI) internal combustion engines (ICE) is subject to the requirements of 40 CFR Part 60 (New Source Performance Standards [NSPS]), Subpart IIII – Stationary Compression Ignition Internal Combustion Engines. Refer to Chapter 4.6.3.4 Design Guidelines for Emergency Generators for NSPS, Subpart IIII applicability and requirements.

## 4.6.9 Parts Washers and Degreasers Permitting Process

### 4.6.9.1 Permitting Requirements for Parts Washers and Degreasers

Designers should consider the use of non-solvent based parts washers and degreasers whenever practicable. Alternative non-solvent based (citrus-based or microbial cleaning agents) parts washers and degreasers do not require permitting and will reduce air emissions at MAA and tenant owned facilities. If an alternative non-solvent based parts washer and/or degreaser cannot be installed, the Division of Environmental Compliance must be notified.

Cold and vapor degreasing and the control of VOC emissions is covered under COMAR 26.11.19.09 and specifies requirements for the use of VOC degreasing material. Specifically, the regulation prohibits the use of any VOC degreasing material that exceeds 1mm Hg at 20 degrees Celsius (0.019 psia). In addition, a person may not use VOC degreasing material in vapor degreasing unless the vapor degreasing is equipped with a condenser or a pollution control device with an efficiency of not less than 90%. This regulation also provides provisions for good operating practices and there is no requirement for a permit to construct. A person subject to COMAR 26.11.19.09 may not use a halogenated substance that is a VOC in any cold degreasing. The use of halogenated solvents is not recommended to avoid the stringent requirements set forth in 40 CFR Part 63, Subpart T.

It should be noted that unheated volatile organic compound (VOC) dispensing containers or unheated rinsing containers (i.e., parts washers) of 60 gallons (227 liters) capacity or less are exempt from obtaining an Air Quality Permit to Construct per COMAR 26.11.02.10M.

#### 4.6.9.2 Design Guidelines for Parts Washers and Degreasers

The designer must ensure that cold and vapor degreasing machines meet the standards set forth in COMAR 26.11.19.09 and are equipped with a condenser or pollution control device with an efficiency of at least 90%. In addition, the Designer shall ensure compliance with the other VOC control requirements by maintaining good operating practices such as ensuring all parts washers and degreasers are equipped with covers, lids, or other methods of minimizing evaporative losses. Designers should also ensure that each parts washer and degreaser includes a sign with the good operating practices established and displayed to all operators.

### 4.6.10 Snow Melters and Portable Emission Units Permitting Process

#### 4.6.10.1 Permitting Requirements for Snow Melters and Portable Emission Units

According to MDE, temporary/portable snow melters are not required to be permitted at this time. However, based on the size of the units, the snow melters may be subject to federal requirements under 40 CFR Part 60, Subpart Dc. Subpart Dc applies to small industrial-commercial-institutional steam generating units built after June 9, 1989 and with a heat input capacity between 10 MMBtu/hr and 100 MMBtu/hr. The rule requires that daily fuel use be recorded and kept on site and that notification of construction (purchase of snow melter) and startup be submitted to EPA. In addition semi-annual fuel reports should be submitted to EPA identifying the sulfur content of the fuel and excess emissions reports shall also be submitted if applicable. Since the snow melters would be applicable to Subpart Dc, snow melters that are permanently stationed at the facility are subject to a permit to construct and would need to follow the same permitting requirements set forth above in Chapter 4.6.3.3 Permitting Requirements for Boilers, Water Heaters, and other Fuel Burning Equipment according to their size.

#### 4.6.10.2 Design Guidelines for Snow Melters

Snow melters with a heat input capacity between 10 MMBtu/hr and 100 MMBtu/hr shall meet the requirements of Subpart Dc as set forth above. The Owner shall be responsible for recordkeeping and reporting requirements under this rule.

## 4.6.11 Heating, Ventilation and Air Conditioning (HVAC) and Fire Suppression Equipment Containing Ozone Depleting Substances (ODS)

### 4.6.11.1 Requirements for HVAC Equipment Containing ODS

HVAC equipment containing refrigerants identified as ODS or fire suppression equipment containing Halon is subject to the monitoring, recordkeeping and reporting requirements of 40 CFR Part 82 - Protection of Stratospheric Ozone, Subparts F and H. This equipment is not subject to permitting by MDE. Part 82 includes requirements to have certified technicians to perform maintenance on HVAC equipment and prohibits the intentional venting or release of Class I and Class II ODS and their substitutes into the atmosphere. In addition, there are specific requirements for leak detection and repair for units containing more than 50 pounds of refrigerant per circuit and all recovery/recycling equipment used must be EPA approved. The sale of ODS is limited to certified technicians and purchases must be recorded and kept on site along with service records for the equipment.

### 4.6.11.2 Design Guidelines for HVAC Equipment

In order to comply with all of the requirements set forth above, it is imperative that the purchase/installation of any new HVAC equipment is reported to MAA's Division of Environmental Compliance immediately so that the Owner can ensure continuing compliance with these regulations. The Designer shall provide the manufacturer, model, serial number, refrigerant type, capacity (full charge), number of circuits, and the charge per circuit for any new HVAC equipment purchased. No permitting is required for this type of equipment.

## Chapter 05 AIRPortal

# 5.1 AIRPortal Introduction

AIRPortal is a secure web based portal that serves as the authoritative source for documents, drawings, data, applications and other information pertaining to both BWI Marshall and Martin State Airports, as well as various tools and resources for designing projects and doing business with MAA.

The upkeep and maintenance of AIRPortal is a highly coordinated and cooperative activity between MAA and its consultants. AIRPortal coordination is expected throughout the entire project lifecycle. Every project undertaken on behalf of MAA interacts with AIRPortal in some capacity, either with document submissions to the AIRPortal archive or through direct data contributions to the AutoCAD and GIS data libraries.

AIRPortal applications facilitate the input and retrieval of information in the AIRPortal databases and libraries. They are organized based on thematic categories. Applications provide access to maps, inventory photographs and document libraries containing records such as reports, specifications, drawings and construction files.

MAA expects all design consultants to coordinate with the MAA Project Manager and the AIRPortal Administrator to ensure appropriate deliverables are identified and subsequently recorded for each project.

## 5.2 AIRPortal Access and Support

AIRPortal can be accessed using a web browser from the following link:

http://www.airportal.maa.maryland.gov

New users shall request a login from the AIRPortal Administrator using the "Register" link on the appropriate login screen for either MAA Employee or MAA Consultant as appropriate – DO NOT REGISTER FOR BOTH. Logins are typically granted within 5 working days.

AIRPortal is currently compatible with the following browsers:

- Microsoft Internet Explorer version 9.0+
- Google Chrome
- Mozilla Firefox

User manuals associated with AIRPortal can be found in **AIRPortal->Designer Tools->AIRPortal User Information**.

If you have any questions or encounter any problems, please contact the AIRPortal Administrator. This email account is monitored regularly.

# 5.3 AIRPortal Document and Data Holdings

Because of timing of projects and the potential for incomplete legacy records, all digital data carries the following disclaimer:

AIRPortal Digital Data Disclaimer

> *While every reasonable effort has been made to provide complete and accurate information, MAA grants access to this digital data with no guarantees of its accuracy, correctness, or completeness. The digital data provided is not survey quality, is not legally recorded, and is not intended to be used for surveying, engineering, or site-specific analysis. Any conclusions drawn from such digital data are done so at the sole risk and responsibility of the user. MAA disclaims all express and implied warranties relating to the material, including but not limited to warranties of merchantability, integration, title, and fitness for a particular purpose.* ***All digital data is provided "as is." The data provided is exclusively for work associated with MAA projects ONLY and should not be distributed in any form outside MAA.***
>
> *As an AIRPortal user, one agrees to the fullest extent permitted by law, to indemnify and hold harmless MAA, its officers, directors, employees and consultants (collectively) against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising from any changes made by anyone or from reuse of the digital data files.*

## 5.3.1 Self-service Files

Many files within AIRPortal are available for self-service. Non-SSI documents and drawings can be viewed within the application, downloaded directly or shared with other users via AIRPortal's Shopping Cart functionality.

SSI documents are available upon request. Individual files are noted as SSI in their filenames and with the lock icon. They are listed for reference purposes. Please see Chapter 5.3.2 Digital Data Requests for procedures to request SSI documents.

Spatial data is available for viewing only. There is currently no direct download capability for this data. It is available upon request. Spatial data that is SSI is not available for viewing through the applications and is only available upon request.

## 5.3.2 Digital Data Requests

Access to GIS, CAD and SSI data shall be requested in writing by submitting the Digital Data Request form to the AIRPortal Administrator. Digital CAD and GIS data is provided for planning and design purposes with the understanding that existing conditions must be field verified.

When the digital data request form is completed and submitted to the AIRPortal Administrator, an authorization process is initiated to fill the request.

1. The AIRPortal Administrator confirms the availability of the files that have been requested. Some project based AutoCAD data may not be available if it was delivered prior to the MAA requirement for digital data.
2. The AIRPortal Administrator confirms the validity of the data request with the MAA Project Manager.
3. The AIRPortal Administrator contacts the data requestor to facilitate data transfer. If the requested data contains SSI, the requestor agrees to follow the handling procedures outlined in Chapter 6 - Security Safety and Phasing. Other data can be transferred via FTP and file sharing sites at the requestor's direction.
4. The AIRPortal Administrator transfers the files to the requester.

# 5.4 AIRPortal Submission Requirements

## 5.4.1 AIRPortal Document Manager (ADM)

AIRPortal Document Management (ADM) gives design consultants the ability to submit deliverables to MAA electronically. ADM is available at the following location: **AIRPortal->AIRPortal Document Manager (ADM).**

An AIRPortal login is required to utilize ADM.

The following are the system requirements to successfully install and run ADM:

- Windows 7 SP1 or higher
- .NET Framework 4.5
- 1 GHz processor
- 1 GB RAM
- 100 MB of disk space
- Internet Connectivity

Only Design Consultants that are prime on projects are authorized to submit electronic deliverables using ADM. Sub-consultants will not be able to submit electronic deliverables using ADM and therefore must transmit files to the prime for submission.

Users can upload files 2 GB or less in size using ADM. Any file that is larger than 2 GB must be delivered to the MAA Archive as specified in Chapter 3 Deliverables.

A user guide outlining step by step instructions for the submission of electronic deliverables is available at the following location: **AIRPortal->Designer Tools->AIRPortal User Information**.

Email support can be obtained from the AIRPortal Administrator.

## 5.4.2 Additional Guidelines

Below are additional guidelines for submitting deliverables to AIRPortal. In some cases, submission requirements are described in detail elsewhere in the DST. Links to those requirements are provided.

- General
  - Photographs that will be stored and displayed in AIRPortal must meet the following requirements:
    a. The aspect ratio must be 4:3
    b. The largest resolution is 2 megapixels (approximately 1632 X 1224)
    c. Photos should be named in accordance with the table in Chapter 3.3 – Standard File Naming Conventions.
  - Presentations

a. Presentations will be submitted in .ppt or .pptx format. Photographs included in the presentations should be reduced in size so as to optimize the performance of the presentation.
b. Presentations should be named based on the table in Chapter 3.3 – Standard File Naming Conventions.

For specific information related to deliverables to the AIRPortal archive, see Chapter 3 Deliverables.

# Chapter 06 Security Safety and Phasing

## 6.1 Security

### 6.1.1 Security at BWI Marshall Airport

Construction projects at BWI Marshall that require work in the following locations shall include the standard Specification 010005X_Security Requirements During Construction at BWI, unless otherwise noted.

- Within the Security Identification Display Area (SIDA)
- Inside the terminal building
- Within 300 feet from the face of the terminal building
- Within 10 feet of the security fence.

Specification 010005X shall be included in its entirety. Designers shall edit/tailor the "Project Specific Requirements" and the "Method of Measurement" sections of the specification to comply with each project's security requirements. This specification has been reviewed and approved by the Office of Airport Security (OAS) and shall not be modified, except where noted, unless approved by the OAS.

#### 6.1.1.1 Security Plan

For projects at BWI Marshall meeting the criteria state above, a Security Bid Plan (SBP) with notes shall be prepared as a standard drawing with notes as part of the Contract documents and shall include the following:

1. Project specific security requirements coordinated in detail with Project Phasing.
2. Project Phases and the duration of each phase.
3. Provision of an internal secure perimeter system where possible. Any materials required to establish the perimeter shall be detailed on the SBP and specified in Specification 010005X to ensure there is no confusion of pay items with Temporary Construction Items.
4. Guard locations.
5. Access points/SIDA entrance/security guard locations. The designer shall make note of anticipated processing times at access points, if any inspections should be anticipated, etc. The designer shall make note that the Contractor shall consider the processing time when computing his bid price for this item.
6. Delivery Routes
7. Identification of worksites and definition of geographical work areas.
8. Locations/phases where an escort from MAA Operations is required.
9. Any other job specific security items.
10. Signature Block on each sheet to be signed by the Director of Airport Security.

The OAS shall review and approve all Security Bid Plans during design. If a changed security condition is proposed (i.e. security fence relocation), the Transportation Security Administration (TSA) requires a forty-five (45) calendar day review period of the SBP. Consider that more than one submittal may be required when scheduling the submittal.

Upon approval of the SBP by all parties, a meeting shall be set up with the OAS to obtain final signatures on the SBP to become part of the contract documents.

### 6.1.2 Security at Martin State Airport

All construction projects at MTN, whether airside or landside, shall include the standard Specification 010006X_Security Requirements During Construction at MTN. Specification 010006X for MTN is included in Appendix D - Standard Specifications.

Because security requirements at MTN are not as stringent, there is no direct payment for Specification 010006X. Security requirements shall be considered incidental to Specification 010004X_Temporary Construction Items or Division 01, General Requirements.

### 6.1.3 Management of Sensitive Security Information (SSI)

This section applies to all persons and entities that have access to information classified by the Maryland Aviation Administration as SSI and provides instructions on the procedures that must be strictly adhered to when working with SSI information.

All projects designed, procured and constructed at BWI Marshall and MTN shall comply with these requirements.

The provisions of this section apply to the following physical security systems at the Baltimore Washington International/Thurgood Marshall Airport and their component data:

- Controlled Access Security System (CASS)
- Closed Circuit Television (CCTV)
- Flex Response System
- Computer Aided Dispatch (CAD)

Additionally, this section applies to the following groups of personnel who interface with these systems and must manage their associated SSI:

- MAA Office of Engineering and Construction
- MAA Office of Airport Security
- MAA Office of Procurement
- MAA Office of Airport Operations
- MAA Office of Commercial Management
- MAA Office of Technology
- MAA Office of the Attorney General
- Design Consultants
- Construction Management and Inspection Consultants
- Construction Contractors
- Construction Subcontractors
- Sole Source System Contractors under contract to MAA
- Tenants and their consultants and contractors performing facility modifications under the authority of a MAA Building Permit

Personnel within these organizations that must handle SSI pursuant to discharging their professional responsibilities are considered “covered” with a “need to know.”

#### 6.1.3.1 Protected SSI Systems

***Controlled Access Security System (CASS)***

Description - The Controlled Access Security System (CASS) provides a means of opening and closing doors to secure areas through the use of a card reader and data contained on an access card (MAA

Security Badge). The system produces an automated log of all activity and interfaces with other security systems. Additionally, there are subsystems which use the same components for limited, related applications.

System Components

- CASS Reader
- Power Supply
- Control Panel
- Door Security Hardware
- Head-end Equipment
- Other Peripheral Devices

System Administration

- System Manuals
- System Drawings
- Software
- Training Documents

Note: Data logs, the employee database and other system data may be considered SSI, but are beyond the scope of this section.

### *Closed Circuit Television (CCTV)*

Description – The Closed Circuit Television (CCTV) System provides a means of viewing activity at various locations throughout the BWI Marshall campus through the use of a series of cameras and monitors. The system includes the capability to record video of images viewed through the remote camera. The system is integrated and can be controlled remotely. Additionally, there are subsystems which use the same components for limited, related applications (such as the Exit Lane Breach Detection System).

System Components

- Cameras
- Monitors
- Power Supply
- Digital Video Recorders
- Fiber Optic Transceivers
- Head-end Equipment
- CCTV – CASS Interface

System Administration

- System Manuals
- System Drawings
- System Codes
- Software
- Training Documents

### *Flex Response*

Description – The Flex Response System is a stand-alone audible and visual alarm system that provides a means of alerting law enforcement and airline gate personnel of a security concern arising from personnel activity or carry-on baggage screening at pier security checkpoints. There are two alert levels: amber and red. Additionally, the system can be activated by opening a door to an Automated External Defibrillator (AED) cabinet.

System Components

- Strobe
- Audio alarm
- Power Source
- Head-end Equipment
- Activation switches

System Administration

- System Manuals
- System Drawings
- Training Documents

### *Computer Aided Dispatch System (CAD)*

Description – The Computer Aided Dispatch (CAD) System is an automated point of entry which provides an integrated information gathering function from multiple call, alarm, and signaling sources and distributes that information to appropriate emergency response units for public safety purposes. Basic functions provided by CAD include resource management, call taking, location verification, dispatching, unit status management, and call disposition. Interface with mobile data computers and other external safety and security systems, along with local, state and federal information systems, benefit timely and effective response to emergency situations.

System Components

- Computer Hardware and Software
- Audio headsets
- Audio visual monitors
- Keyboards
- Cable connections
- Workstation units
- Integration of communication, safety, and alarm systems:
  - Telephone
  - State and Regional NCIC
  - Fire Alarm System
  - Controlled Access Security System (CASS)
  - Closed Circuit Television System (CCTV)
  - Flex Response System
  - Fire Rescue Facility Alerting and Activation
  - Messaging System
  - Master Time Clock
  - Records Management System (RMS)

Systems Administration

- Systems Manuals
- Systems Drawings
- Systems Codes
- Software
- Training Documents
- Maintenance and Service

#### 6.1.3.2 Security System Drawings

Security System design shall be produced as separate and unique sections in the Contract Drawings. Security Systems shall be defined as the Controlled Access Security System (CASS), the Digital Video Management System (DVMS) or Close Circuit Television (CCTV) system, and the supporting communication and storage systems including the Local Area Network (LAN), the fiber-optic backbone, system servers, and the Storage Area Network (SAN). With the prior written authorization of the MAA's Office of Technology, infrastructure design elements that are located in secure telecommunication rooms or other secure locations may be kept in the general Contract Documents rather than be considered to be part of the Security System design. This authorization will be made on a contract by contract basis and does not alleviate the designer from any coordination required for the design of Security Systems.

All information pertaining to the Security System design must be clearly tagged as Security Sensitive Information (SSI). All Security System submittals and Contract Documents must be labeled, bound, and transmitted separately. These documents shall be protected when being transmitted or transferred using encrypted files with passwords to prevent unauthorized access. These documents must also carry the following statement:

> WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR Part 15 and 49 CFR Part 1520.

#### 6.1.3.3 SSI General Requirements

***General***

The Maryland Aviation Administration maintains physical security systems which are contained within, and integrated into, various facilities. Even though these systems (which are listed above in Chapter 6.1.1 Security at BWI Marshall Airport and Chapter 6.1.2 Security at Martin State Airport) are maintained and operated by sole source system contractors, they may be affected by various construction projects.

The design and construction of these projects involve the disclosure, reproduction and distribution of SSI among the owner, consultant design team and the contractor team.

***Access***

Access to SSI is limited to "covered persons" listed in 49 CFR 1520.7 with a "need to know," as defined in 49 CFR 1520.11. "Need to know" is limited to persons who carry out or supervise the maintenance or improvement of designated systems in the performance of their job.

### *Categories of SSI*

There are sixteen categories of SSI. Five of those categories pertain to this section. These are highlighted below:

1. Security Programs and Contingency Plans
2. Security Directives
3. Information Circulars
4. **Performance Specifications**
5. Vulnerability Assessments
6. Security Inspection or Investigative Information
7. Threat Information
8. Security Measures
9. Security Screening Information
10. **Security Training Materials**
11. Identifying Information of Certain Transportation Security Personnel
12. **Critical Aviation or Maritime Infrastructure Asset Information**
13. **Systems Security Information**
14. **Confidential Business Information**
15. Research and Development
16. Other Information

### *Determination of SSI*

Determination of SSI designation for design and construction projects shall be made in accordance with the provisions of this section by the Maryland Aviation Administration Director of Airport Security (DOAS). At each project design kick-off meeting, it shall be the responsibility of the assigned MAA Project Manager (Design) to discuss the project scope with the DOAS and obtain a preliminary SSI determination for the project. The DOAS shall be required to provide a written document outlining what portions of the design are considered SSI subject to the provisions of this section. The MAA Project Manager (Design) shall be responsible for ensuring that this documentation is obtained and distributed only to those team members with a "need to know," and that all portions of the design designated by the DOAS as SSI are adequately marked in accordance with the provisions of this section.

If a subordinate MAA staff member or consultant design team member believes that the SSI designation has been omitted, he shall immediately inform the MAA Project Manager (Design) for a designation determination. In the absence of the MAA Project Manager, the next highest member of the chain of command shall be notified for a designation determination.

### *Control and Release of SSI*

SSI may be released to federal, state and municipal government officials and employees, local law enforcement officials, and regulated parties who have a "need to know" as established by regulation, authorized by procedure established by the DOAS, or authorized by the TSA Administrator.

SSI requested under the Freedom of Information Act (FOIA) is exempt from disclosure under the FOIA based on Exemption 3, 5 USC 552(b)(3). Any decision to release SSI under the FOIA must have the concurrence of the TSA Administrator. Requests for Information that are addressed to regulated parties,

such as requests under state and local freedom of information or open records acts, should be referred to the DOAS, who may need to refer the request to the TSA Administrator.

> *If a record contains SSI but also contains non-SSI that may be disclosed, the latter will be provided in response to a FOIA request, provided the record is not otherwise exempt from disclosure under FOIA, if it is practical to redact the requested information from the record.*

Maryland State Government Article Section 10-611 et seq. grants the public a broad right of access to records that are in the possession of state and local government agencies. It has been a part of the Annotated Code of Maryland since its enactment as Chapter 698 of the Laws of Maryland 1970 and is similar in purpose to the FOIA, 5 USC. §552, and the public information and open records acts of other states. **SSI is exempt from the provisions of PIA.**

### *Protective Marking and Media Containing SSI*

1. **General**: - Any person who creates a record containing SSI shall include a protective marking and distribution limitation statement.
2. **Paper ("Hard Copy"):** - All SSI documents shall contain the following protective marking in the document header:

| **Sensitive Security Information** |
|---|

This protective marking should be stamped or typed in plain style bold text.

The following distribution limitation statement shall be contained in the document footer and informs the viewer that the record must be protected from unauthorized disclosure.

| |
|---|
| WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR Part 15 and 49 CFR Part 1520. |

The Header and Footer described above shall appear on the cover page of any document, report or specification that contains **any** SSI and on every page of the document containing SSI.

The distribution limitation statement described above shall be included on all project plan sheets, diagrams, shop drawings, record drawings or any other drawings that contain SSI about the affected systems or their component parts.

Charts, maps, and drawings designated as SSI must have the appropriate protective marking and the distribution limitation statement affixed in a manner that is plainly visible.

3. **Facsimile Cover Sheets**: - Documents used to transmit SSI (such as facsimile cover sheets) but that do not themselves contain SSI, must be marked with the protective marking and distribution limitation statement. The following statements must be affixed to the front page of the cover sheet:

| |
|---|
| **This facsimile is intended for the recipient only. If this is received by someone other than the intended recipient, the person receiving the message should immediately contact the sender for further instructions.** |

| |
|---|
| **The protective marking SENSITIVE SECURITY INFORMATION and/or the distribution limitation statement on this page are cancelled when the attachments containing SSI are removed.** |

4. **Transmittal Letters:** – Like facsimile cover letters, transmittal letters do not themselves contain SSI, but may cover other documents that do and must be marked with the protective marking and distribution limitation statement. The following statements must be affixed to the front page of the transmittal letter:

| |
|---|
| **This transmittal letter is intended for the recipient only. If this is received by someone other than the intended recipient, the person receiving the message should immediately contact the sender for further instructions.** |

| |
|---|
| **The protective marking SENSITIVE SECURITY INFORMATION and/or the distribution limitation statement on this page are cancelled when the attachments containing SSI are removed.** |

5. Plans and Specifications containing SSI:
   **a. Plans and Specifications containing SSI (hereafter also referred to as "plans and specifications")** - All project plans and specifications used in design and construction that contain SSI shall comply with the provisions of Chapter 3.1.2 Electronic documents containing Sensitive Security Information (SSI), Protective Marking of Media Containing SSI.

   Plan and specification sets shall be numbered by the MAA Project Manager or his designee. Set numbers shall be recorded by the MAA Project Manager by project phase (design, procurement or construction).

In the case of plan sets or other cases in which these drawings are combined into a single bound document, the document cover page/sheet shall contain the protective marking and distribution limitation statement, and all project plans and specifications that contain SSI shall comply with the provisions of Chapter 3.1.2 Electronic documents containing Sensitive Security Information (SSI), Protective Marking of Media Containing SSI.

**b.** **Electronic media:** - SSI contained on electronic media and magnetic media must have the protective marking and the distribution limitation statement applied at the beginning and end of the electronic and magnetic text; on each side of the disk and the disk sleeve / jacket; on the non-optical side of the CD-ROM, DVD or other format disk; and on both sides of the CD-ROM, DVD or other format disk case. Memory sticks that contain SSI shall be indelibly marked "SSI" on both sides of the device.

**c.** **Electronic Mail (e-mail):** - SSI contained within an electronic mail message must include the protective marking within the subject line of the message and the distribution limitation statement applied at the end of the message text.

### *Protection and Safeguarding of SSI*

All personnel possessing SSI are responsible for ensuring that such information is safeguarded at all times from disclosure to unauthorized personnel. When the information is not under the individual's direct physical control, the individual is responsible for ensuring that it is safeguarded and protected so that it is not physically or visually accessible to persons who do not have a need to know. When unattended, SSI must be secured in a locked container, office, or other restricted access area with access to the keys or combination limited to those with a "need to know."

A person who receives an unmarked record containing SSI should apply the protective marking and distribution limitation statement, and inform the sender of the omission.

Anyone possessing SSI is responsible for ensuring that the information and records containing SSI are protected at all times from disclosure to anyone who does not have a "need to know."

When SSI is not under direct physical control, the covered person must ensure that it is protected in such a way that it is not physically or visually accessible to persons who do not have a "need to know."

The authority to share SSI with any person or entity without a "need to know" is limited to the TSA Administrator.

Every covered person has the responsibility to safeguard SSI according to the CFR and TSA policies. If a covered person encounters a situation in which SSI has been inadvertently shared with a person without the "need to know," immediately notify the MAA Project Manager.

### *Transmission of SSI*

1. Non-electronic methods:
   a. Mail – Material will be placed in a single opaque envelope or container and sufficiently sealed to prevent inadvertently opening and to show evidence of tempering. The envelope or container will bear the complete name and address of the sender and addressee. SSI materials will be mailed by US Postal Service First Class Mail or a reputable commercial

delivery services such as Federal Express or UPS. The outside wrapping will NOT be marked as SSI.

b. Interoffice mail – SSI must be sent using unmarked, opaque, sealed envelope so that SSI cannot be read through the envelope.

c. Hand-carrying between buildings– SSI material carried by hand within or between buildings must be protected to prevent inadvertent visual disclosure.

2. Electronic methods:

a. Electronic mail - Prepare SSI information, marked accordingly, in a separate password protected document. Passwords should be sent separately with no subject line or shared either in person or via telephone. Use as attachment in email. SSI should not be sent to personal email accounts. Guidance for passwords:

- Be at least 8 characters in length
- Have at least one letter upper case and one letter lowercase
- Contain at least one special character
- Contain at least one number
- Not be a word in the dictionary

b. Web Posting - MAA does not authorize the posting of SSI on Internet or Intranet sites, unless the site has met prescribed MAA security standards.

c. Facsimile - Use marked coversheet, mark documents appropriately, and ensure receiver is available to retrieve information immediately. Preferable to be constant voice contact during transmission to confirm receipt.

Facsimiles sent to a controlled, secure area where unauthorized people cannot intercept the SSI material may be sent without requiring the recipient to be there.

d. Telephone - Will be done carefully to prevent eavesdropping. Land lines in non-public locations are more secure that cellular telephones.

e. CD's AND DVD's - Should be encrypted or password protected and the SSI Header and Footer should be affixed to the CD or DVD.

f. Electronic Presentations (e.g., PowerPoint) - Should be marked with the SSI Header on all pages and the SSI Footer on the first and last pages of the presentation.

g. Video and Audio - Should be marked the SSI Header and the SSI Footer on the protective cover when able and the header and footer should be shown be shown and/or read at the beginning and ending of the program.

h. When Leaving Your Desk or Computer - SSI must be secured in a locked container, office, or other restricted access area with access to the keys or combination limited to those with a need 'to know" and the computer should be turned off.

i. SSI Stored on Network Folders – Will either require a password to open or the network should limit the access to the folder to covered persons only.

### *Reproduction of SSI*

The reproduction of SSI shall be kept to a minimum with only those with a "need to know" being allowed access to the subject files. Documents shall only be reproduced for the expressed use of personnel actively involved with work pertaining to the project. These electronic documents shall be shared via password protected files with the approval of the SSI coordinator. Hard copy reproduction should be avoided unless absolutely necessary and only allowed with the approval of the SSI

coordinator. In the event a hard copy is approved by the SSI coordinator, only the trained person with the "need to know" shall be allowed to reproduce the document.

Documents containing SSI may be reproduced by an external organization (e.g., FedEx, Kinko's, Staples, etc.). The individual(s) assigned to make the reproduction(s) must first sign a non-disclosure agreement (NDA) to be kept by whoever contracted for or purchases such services. A covered person* must be physically present to oversee the process and ensure that the person making the copies does not read or intentionally or unintentionally retain a copy of the SSI document.

* A covered person, as defined by 49 CFR Part 15 and 49 CFR Part 1520, may reproduce records containing SSI. Reproductions may only be shared with covered persons with a need to know.

### *The Project Process*

1. **Project Responsibilities:**

   Responsibilities for SSI during the Project process are shown in the following table:

| Project Phase | Responsible MAA Staff | Cognizant (support) Staff |
|---|---|---|
| Pre-Design and Design | Project Manager (Design)* | Design (Consultant) Project Manager<br>Sole Source System Contractor<br>MAA and other Staff participating in Design Review |
| Procurement | Project Manager (Procurement)* | Design (Consultant) Project Manager<br>Project Manager (Construction)<br>Sole Source System Contractor<br>Contractors/Bidders (Signing the Non-Disclosure Agreement) |
| Construction | Project Manager (Construction)* | Construction Manager (Consultant)<br>Construction Inspector (Consultant)<br>Contractor<br>Subcontractor<br>Sole Source System Contractor |

**Note: * MAA Project Phase Management Staff will retain responsibility for the safeguarding and management of SSI by their respective team members from their first contact with SSI until the project is complete and all SSI is retained in archived documents or destroyed.**

2. **The Pre-design Phase:**

   General – At the project design kick-off meeting, a preliminary SSI determination will be made by the MAA Director of Airport Security (DOAS) The MAA Project Manager (Design) shall consult with the DOAS and the affected Sole Source System Contractor(s) in making this determination.

   If the project is identified as containing SSI, the project management personnel (MAA and Consultant) and MAA reviewers shall obtain MAA Security (Red) Badges and successfully complete MAA SSI training prior to handling SSI throughout the project.

MAA DOAS – The MAA DOAS is responsible for providing SSI training to project personnel and for issuing red security badges to project management personnel (MAA and Consultant). For MAA reviewers, the MAA DOAS is responsible for providing SSI training and for ensuring that reviewers pass a TSA Criminal History Record Check (CHRC) and a TSA Security Threat Assessment (STA).

3. **The Design Phase:**

MAA Project Manager (Design) – **The MAA Project Manager (Design) is the responsible officer for the safeguarding of SSI generated and handled by the Design Team throughout the duration of the project.** The MAA Project Manager (Design) assigned to a project that includes SSI shall be thoroughly familiar with the provisions of this section and shall ensure that the Design (Consultant) Project Manager receives a copy of this section for reference and compliance. The MAA Project Manager (Design) shall obtain signed "MAA Confidentiality and Non-Disclosure Agreement – Sensitive Security Information" forms (contained in Appendix B - Standard Forms) from all design team members, Design A/E's, Construction Management and Inspection members and Sole Source System Contractor(s).

The MAA Project Manager (Design) shall also ensure that the contract documents prepared by the design team include the required SSI language in the Notice to Contractors and Specification 010007X Sensitive Security Information (SSI) System Requirements During Construction, (contained in Appendix D - Standard Specifications) in the project specifications.

The MAA Project Manager (Design) shall ensure the accounting of all Plan and Specification review sets and their destruction. The MAA Project Manager (Design) shall maintain a master list of design team covered persons with "need to know" (including MAA reviewers) throughout the project and ensure that all design team project management staff comply with security badging and SSI training prior to handling SSI. The MAA Project Manager (Design) shall provide and account for final plans and specification sets provided to the affected Sole Source System Contractor(s) for use during design and the procurement phase.

Design (Consultant) Project Manager – The Design (Consultant) Project Manager shall work under the direction of the MAA Project Manager (Design) and ensure compliance with all provisions of this section by all design team members.

Design Review Conferences –The MAA Project Manager (Design) shall ensure that project stakeholders who have the "need to know" and participate in the design review process for projects with SSI understand and comply with SSI provisions contained herein. Plan and Specification sets used for staff review shall be numbered and accounted for by the MAA Project Manager (Design). Upon completion of all design reviews, all Plan and Specification sets shall be returned for destruction under the supervision of the MAA Project Manager (Design).

Sole Source System Contractor – Affected Sole Source System Contractor(s) shall avail themselves to the MAA Project Manager (Design) for design coordination. Affected Sole Source System Contractor(s) shall attend and participate in all design review conferences.

4. **The Procurement Phase:**

General – Plan and Specification Sets will be sold only to Contractors and Subcontractors who meet all of the requirements listed within the Notice to Contractors (contained in Chapter 6.1.3.2 SSI General Requirements).

**All advertisements for projects containing SSI shall include the language contained in** Chapter 6.1.3.3 SSI Language to be included in the Notice to Contractors**.**

MAA Project Manager (Procurement) – **The MAA Project Manager (Procurement) is the responsible officer for the safeguarding of SSI generated and handled by the Procurement Team throughout the duration of the project.** The MAA Project Manager (Procurement) shall maintain a master list of covered persons (including Contractors who purchase Plans and Specifications) with "need to know" during this phase of the project. The MAA Project Manager (Procurement) shall obtain signed MAA Confidentiality and Non-Disclosure Agreement – Sensitive Security Information forms (contained in Appendix B - Standard Forms) from all bidders and shall require a refundable deposit of $6,000 in the form of a certified check which shall be held until Plan and Specification sets are returned intact to MAA Procurement personnel. The MAA Project Manager (Procurement) shall schedule and conduct the pre-bid conference in accordance with requirements contained herein.

Pre-Bid Conference – The pre-bid conference for a project that includes SSI within the Plans and Specifications shall include a briefing by the MAA Project Manager (Procurement) to all bidders on the SSI handling requirements contained herein, with special emphasis on the provisions of the MAA Confidentiality and Non-Disclosure Agreement – Sensitive Security Information, bidding, coordination with sole source system contractor(s), and control of SSI during the construction phase.

Sole Source System Contractor - The bidder(s) and the SSSC will confirm task assignments and bid accordingly. Sole source system contractor(s) local representative(s) shall attend the pre-bid conference if their system is affected by the project and avail themselves to bidders to coordinate bid preparation.

5. **The Construction Phase:**

General – Plans and Specifications shall be used during the construction phase on a "need to know" basis with the disclosure and acknowledgement of the Contractor and Subcontractors and the assistance of the MAA Project Manager (Construction). The Contractor shall obtain the Project SSI Management Plan template from the DOAS to complete. The Contractor shall be required to submit the SSI Management Plan after receipt of a Notice of Recommended Award (NORA). The Contractor's SSI Management Plan must be accepted by MAA before MAA will issue a Notice to Proceed (NTP) for the project.

The SSI Management Plan is subject to an MAA review and acceptance process wherein MAA has seven (7) calendar days to review and comment on the SSI Management Plan each time it is

submitted for review. The Contractor shall be allowed up to thirty-five (35) calendar days from NORA (including MAA review periods) to prepare and gain approval of the SSI Management Plan. If acceptance of the SSI Management Plan occurs after thirty-five (35) calendar days from NORA, the Contract Performance Time specified elsewhere in the contract shall be reduced by the number of days of delay in MAA acceptance of the SSI Management Plan.

The Contractor's designated Project SSI Coordinator and the designated alternate SSI Project Coordinator shall obtain MAA Security (Red) Badges and undergo MAA SSI training prior to handling Plan and Specification sets.

MAA Project Manager (Construction) – **The MAA Project Manager (Construction) is the responsible officer for the safeguarding of SSI generated and handled by the Construction Team throughout the duration of the project.** The MAA Project Manager (Construction) shall maintain a master list of covered persons with a "need to know" during this phase of the project to ensure that all project management staff comply with security badging and SSI training prior to handling SSI. The MAA Project Manager (Construction) shall obtain signed MAA Confidentiality and Non-Disclosure Agreement – Sensitive Security Information forms (contained in Appendix B - Standard Forms) from all management-level members of the construction Management team (including the CM Management Consultant/Contractor and its Subcontractors and CMI staff who handle SSI). The MAA Project Manager (Construction) shall review and approve the Contractor's Project SSI Management Plan. The MAA Project Manager (Construction) shall account for the return of all Plan and Specification sets.

Construction Manager – The Construction Manager shall work under the direction of the MAA Project Manager (Construction) and ensure compliance with all provisions of this section by all Contractor and CMI team members.

Pre-Construction Conference – The pre-construction conference for a project that includes SSI within the plans and specifications shall include a briefing by the MAA Project Manager (Construction) to the prime contractor and affected subcontractor(s) on coordination with sole source system contractor(s) and control of SSI during the construction phase.

Sole Source System Contractor - Sole source system contractor local representatives shall attend the pre-construction conference if their system is affected by the project.

### *Destruction of SSI*

When copies of records containing SSI are no longer needed, they must be promptly and completely destroyed. The objective of destruction is to preclude recognition or reconstruction of the information. Destroying SSI shall be done using a cross cut shredder. The applicable MAA Project Manager (Design, Procurement and Construction) shall supervise and coordinate the destruction of SSI from their applicable project phase and will ensure destruction at the earliest appropriate time.

When a Contractor or Consultant proposes to destroy records containing SSI, the Contractor or Consultant must first provide notification in writing, to the applicable MAA Project Manager (Design,

Procurement and Construction), for approval. This notification must include the following minimum information: identification of information to be destroyed, quantity of copies, date and place of destruction, method of destruction, and residual SSI remaining in the custody of the Contractor or Consultant. After destruction of the documents, the Contractor or Consultant shall submit to the MAA Project Manager a certification and register of all documents destroyed.

### *Maintenance of Record Drawings and Specifications for projects containing SSI*

Record Drawings and Specifications shall be maintained for all MAA projects containing SSI in accordance with established MAA procedures for the production of project record drawings. All project Record Drawings and Specifications shall be marked in accordance with this section and consolidated for storage in a secure area. The following notation shall be included in the header of SSI record drawings in place of the protective marking:

| **Sensitive Security Information –Record Drawings** |
|---|

Other record drawing notations required per Chapter 2.4.1 Record Drawing Preparation, shall be included as well.

The following notation shall be included in the header of SSI record specifications in place of the protective marking:

| **Sensitive Security Information –Specifications** |
|---|

Other contract documents containing SSI such as shop drawings, coordination drawings, Operations and Maintenance Manuals (O&M), Request for Information (RFI's) and construction progress photographs shall be identified accordingly.

### *Enforcement*

Civil penalties are assigned for unauthorized disclosure of SSI.

#### 6.1.3.4 SSI Language to be included in the Notice to Contractors

All advertisements for projects containing SSI shall include the latest version of the language located on the following pages. The Design (Consultant) Project Manager shall contact the Office of Procurement to obtain the latest version of the SSI language to be included in the Notice to Contractors. The Contractor Representative Information Form (contained in Appendix B - Standard Forms) should also be attached to the Notice to Contractors.

**Sample language to be included in the Notice to Contractors:**

**THIS PROJECT CONTAINS SENSITIVE SECURITY INFORMATION (SSI). ALL CONTRACTORS INTERESTED IN THIS SOLICITATION MUST COMPLY WITH THE FOLLOWING REQUIREMENTS PRIOR TO MAA GRANTING ACCESS TO VIEW AND/OR PURCHASE THE PROCUREMENT DOCUMENTS.**

This project contains Sensitive Security Information (SSI) which shall be handled in accordance with 49 CFR Part 1520. To comply with 49 CFR Part 1520 requirements, MAA has instituted the following new procedure for bidders interested in this project.

**New Contract Document Purchase Procedures:**
Interested bidders shall not be permitted to view or purchase contract documents for this project or attend the Pre-bid meeting until they have satisfactorily cleared the **Transportation Security Administration (TSA)** Security Background Verification process. There are two levels of security background verification as follows:

1. **To Purchase and Hold SSI Documents:**
   a. **Bidders who currently possess a valid Red BWI Security badge** shall be required to submit to the Maryland Aviation Administration – Office of Procurement their Name, Company, Security Badge Number and Expiration date as it appears on the security badge. MAA will verify the validity of the bidders badge and Bidders will be notified of the results by email. Should notification not arrive within the specified period, bidders are urged to call Ms. Linda Marcucci, 410-859-7376 to inquire about their processing status.
   b. **Bidders who do not currently possess a valid Red BWI Security badge** must successfully complete a TSA Criminal History Record Check (CHRC) and a TSA Security Threat Assessment (STA). Bidders must complete the Application for Airport Identification Badge for all of their designated representatives that will be responsible for purchasing and handling SSI. Individuals who successfully complete a TSA CHRC and STA will be responsible for: protection of the SSI contained in the contract documents; return of all documents at the conclusion of the bidding process; and for any civil penalties incurred in the event that the requirements of 49 CFR Part 1520 are not complied with. **Please be advised that MAA reserves the right to prohibit any bidder that does not pass the Transportation Security Administration (TSA) Security Background Verification from purchasing or holding SSI for this project.**

      Bidders shall submit an original signed copy of each completed Application for Airport Identification Badge to the Maryland Aviation Administration – Office of Procurement for processing. It is recommended that all bidders submit at least two individuals for processing. (**Note: The MAA Office of Procurement will be the Authorized Signer for the Application, please do not place signatures in the Authorized Signer blocks**.) Processing of the application will take at least fourteen (14) Calendar Days and Bidders will be notified of the results by email. Should notification not arrive within the specified period, bidders are urged to call Ms. Linda Marcucci, 410-859-7376 to inquire about their processing status.

      **NOTE: MAA CANNOT GUARANTEE TIMELY BIDDER APPROVAL AND/OR DOCUMENT DISTRIBUTION FOR LATE APPLICATIONS SUBMITTED. BIDDERS ARE ENCOURAGED TO SUBMIT APPLICATIONS AS EARLY AS POSSIBLE, PRIOR TO THE SCHEDULED PRE-BID DATE, TO ALLOW TIME FOR RECEIPT AND REVIEW OF DOCUMENTS PRIOR TO THE SCHEDULED BID DATE.**

   c. Upon notification by MAA of successful Transportation Security Administration (TSA) Security Background Verification; or verification of the validity of the bidders red badge, the bidder's approved representative (Contractor's Representative hereafter) or red badge holder (Contractor's Representative hereafter) shall be eligible to purchase the contract documents at the Maryland Aviation Administration – Office of Procurement. In addition,

the Contractor's Representative will be required to meet ALL of the following requirements to purchase a set(s) of plans and specifications:

1. The Contractor's representative purchasing the contract Plan and Specification Sets shall be required to provide proof of identification before being granted access to the documents. The representative shall present for MAA inspection, two forms of original identification documents (**valid Driver's License and Social Security Card, Etc.)** matching the information supplied on the corresponding Application for Airport Identification Badge for the individual.
2. The Contractor's Representative shall provide documentation to demonstrate that his/her firm is licensed and registered to do business in the State of Maryland.
3. The Contractor's Representative shall provide documentation from a surety registered to do business in the State of Maryland demonstrating that his/her firm can secure a bond for the project in the amount specified in the Contract Documents.
4. The Contractor must be registered in the eMaryland Marketplace as a vendor.
5. The Contractor's Representative will be required to execute an MAA Confidentiality and Non-Disclosure Agreement – Sensitive Security Information prior to purchasing project plans and specifications. (included in Appendix B - Standard Forms of this manual). The Contractor's Representative shall provide a refundable deposit of $6,000/set of plans and specifications in the form of a certified check or money order made payable to the Maryland Aviation Administration. The certified check or money order shall be held by MAA until the Plan and Specification sets are returned fully intact to MAA Procurement personnel at which time the check or money order shall be returned to the Contractor.

2. **To View SSI Documents, attend Pre-bid Meeting or attend Field Site Visit:**

**a. Bidders who currently possess a valid Red BWI Security badge**

Interested bidders who possess a valid red badge shall be permitted to view contract documents, attend the Pre-bid Meeting or attend the Field Site Visit for this project provided they have submitted to the Maryland Aviation Administration Office of Procurement their Name, Company, Security Badge Number and Expiration date as it appears on the security badge; and received verification of the validity of the bidders badge. Bidders will be notified of the validity of their badge within ten (10) days by email. Should notification not arrive within the specified period, bidders are urged to call Ms. Linda Marcucci, 410-859-7376 o inquire about their processing status.

Interested bidders who possess a valid red badge and would like to view contract documents, attend the Pre-bid Meeting or attend the Field Site Visit shall be required to present a valid red badge before being granted access to the documents and/or meetings/site visits.

**b. Bidders who do not currently possess a valid Red BWI Security badge**

Interested bidders shall not be permitted to view contract documents, attend the Pre-bid Meeting or attend the Field Site Visit for this project until they have satisfactorily cleared a TSA "No Fly List" Security Background Verification process. Bidders shall be required to complete the attached form titled Contractor Representative Information for all of their designated representatives that will be viewing the contract documents; and/or attending the pre-bid meeting and/or site inspection. Any individual submitting the Contractor Representative Information form shall be considered responsible for protection of the SSI contained in the contract documents and shall be responsible for any civil penalties incurred

in the event that the requirements of 49 CFR Part 1520 are not complied with. **Please be advised that MAA reserves the right to prohibit any bidder that does not pass the Transportation Security Administration (TSA) "No Fly List" Security Verification from viewing the contract documents; and/or attending the pre-bid meeting and/or site inspection for this project.**

Bidders may submit the Contractor Representative Information form via email to the Office of Procurement to the attention of Ms. Linda Marcucci, lmarcucci@bwiairport.com. Processing of the Contractor Representative Information forms will take at least ten (10) Calendar Days and Bidders will be notified of the results by email. Should notification not arrive within the specified period, bidders are urged to call Ms. Linda Marcucci, 410-859-7376 to inquire about their processing status. **It is recommended that all bidders submit at least two individuals for processing.**

**NOTE: MAA CANNOT GUARANTEE TIMELY BIDDER APPROVAL AND/OR DOCUMENT DISTRIBUTION FOR LATE APPLICATIONS SUBMITTED. BIDDERS ARE ENCOURAGED TO SUBMIT CONTRACTOR REPRESENTATIVE INFORMATION FORMS AS EARLY AS POSSIBLE, PRIOR TO THE SCHEDULED PRE-BID DATE, TO ALLOW TIME FOR RECEIPT AND REVIEW OF DOCUMENTS PRIOR TO THE SCHEDULED BID DATE.**

Upon notification by MAA of successful **Transportation Security Administration (TSA) Security "No Fly List" Background Verification**, the Contractor's representative shall be permitted to view contract documents, attend the Pre-bid Meeting or attend the Field Site Visit. In addition, the Contractor's representative shall meet the following additional requirement:

The Contractor's representative(s) viewing contract documents, attending the Pre-bid Meeting or attending the Field Site Visit shall be required to bring with him/her and present to MAA Office of Procurement the original signed Contractor Representative Information form and proof of identification before being granted access to the documents and/or meetings/site visits. The representative shall present for MAA inspection, original identification documents (**valid Driver's License and Social Security Card)** matching the information supplied on the corresponding Contractor Representative Information form for the individual.

**NOTE: PLANS AND SPECIFICATIONS FOR THIS PROJECT WILL BE NUMBERED AND ARE NOT AUTHORIZED FOR REPRODUCTION BY PROJECT BIDDERS. FAILURE TO RETURN ALL PLAN AND SPECIFICATION SETS FULLY INTACT, UNAUTHORIZED REPRODUCTION OF THE PLAN AND SPECIFICATION SETS OR FAILURE TO COMPLY WITH THE REQUIREMENTS OF THE 'MAA CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT – SENSITIVE SECURITY INFORMATION' SHALL RESULT IN THE FORFEITURE OF THE DEPOSIT AND MAY LEAD TO CIVIL PENALTIES.**

# 6.2 Safety

## 6.2.1 Vehicle Access on BWI Marshall Airport Movement Area

Access to the movement area (taxiways and runways) is restricted to vehicles with an essential function. An essential function is defined as having a need to be on the movement area, e.g., working on runway edge lights. The intent of this action is to eliminate all convenience crossings. Using the movement area to get to other portions of the airport that can be accessed by alternative routing is not permitted. Any questions regarding accessing the movement area can be directed to the MAA Operations Center Manager at 410-859-7024.

## 6.2.2 Confined Space Requirements for Designers

### 6.2.2.1 Purpose

The Maryland Aviation Administration (MAA) has identified confined spaces on BWI Thurgood Marshall (BWI Marshall) and Martin State Airport property which require adherence to confined space entry procedures for personnel access in accordance with Occupational and Health Standards for Permit Confined Spaces (OSHA 29 CFR 1910.146). MAA has compiled and maintains a list of all known Confined Spaces located on BWI Marshall Airport property. This list is not guaranteed to be accurate or all inclusive, but is the result of a diligent effort by MAA to maintain an inventory of all confined spaces and associated potential hazards to workers at BWI Marshall Airport. The list is updated annually as confined space classifications change. Martin State Airport does not maintain a confined space list so it is incumbent upon the Designer to assess each potential confined space. The following requirements apply to all Designers engaging in confined space entry as part of their work.

### 6.2.2.2 Designer Requirements

When it is necessary for Designers to access any confined space on BWI Marshall or Martin State Airport property, Designers and contractors shall conduct all work related to the confined space entry in accordance with applicable Federal, State and local Confined Space Entry regulations contained in the OSHA Standard for Permit-Required Confined Spaces (29 CFR 1910.146), the MOSH Standard for Confined Spaces (COMAR 09.12.35) and the MAA Confined Space Entry Program (RM-1910.146) contained in the MAA Workplace Safety Manual. Forms that are required to be completed by the Designer and contractor are available in Section 7 of the MAA Confined Space Entry Program document. Designers and contractors shall conduct the confined space entry work at their expense and shall include all necessary labor, material and equipment costs in the Designer price proposal or contractor bid price, as applicable.

The Designer shall note in the MAA Confined Space Entry Program (RM-1910.146) Chapters 3.9.4 and 3.9.5 that when working at the BWI Marshall Airport, the BWI Marshall Airport Fire and Rescue Department shall only provide the required STANDBY rescue team for MAA's Consulting Firms for entry into confined spaces that are found to be immediately dangerous to life and health (IDLH). When working at Martin State Airport the Designer shall provide their own STANDBY rescue team at the Designer's expense.

Before entering into confined spaces, all Designers shall be required to submit the following, as applicable:

a. A completed Air Monitoring & Instrument Calibration & Maintenance Record Form, and a completed Confined Space Entry Equipment List Form for the items that the Designer or contractor will have on site, with specific information on make, model, and quantity. The Designer or contractor shall also provide a certification to the MAA Risk Management

Department that the equipment complies with the requirements of the MAA Confined Space Entry Program.

b. Personnel Training Certifications, including a list of names of the trained entrants, attendants, and entry supervisors proposed to perform the entry together with current training certifications. Where the Designer or contractor is providing rescue support, submit a list of names of trained employees proposed to perform such activities. All training shall meet or exceed the MAA's Confined Space Training requirements listed in the Confined Space Entry Program.

#### 6.2.2.3 MAA Office of Safety and Risk Management

The MAA Office of Safety and Risk Management shall provide the Designer with the following upon request:

a. List of known confined spaces on MAA property including permit and non- permit spaces.
b. List of known hazards associated with the confined space in question, including material safety data sheets for any chemical in the area of the confined space, MAA's experience with the space, and if a permit-required space, the reasons why the space in question is a permit space.
c. Applicable procedures, including lockout/tagout policy and procedures that MAA has implemented for the protection of employees in or near permit spaces where contractor personnel will be working.
d. A copy of MAA's Workplace Safety Manual which includes the MAA Confined Space Entry Program requirements.

To obtain this information, contact the MAA Office of Safety and Risk Management at (410) 859-7777.

The Designer is cautioned that due to the constantly changing nature of an airport environment, the confined space information provided by the MAA Office of Safety and Risk Management is not guaranteed accurate or all inclusive. The Designer and contractor shall be responsible for conducting informed due diligence with regard to any potential confined space to apprise himself/herself of the possible confined space conditions that could exist and take appropriate precautions accordingly. If there is any doubt regarding a possible confined space, the Designer or contractor shall not enter the space without consulting the MAA Office of Safety and Risk Management.

In instances where MAA and Designer or contractor employees will be working simultaneously as authorized entrants in a permit space, the MAA Office of Safety and Risk Management will coordinate entry operations so that MAA and Designer or contractor employees do not endanger each other. In cases where the Designer or contractor employees are working without MAA employees, the Designer or contractor shall be responsible for coordination of entry operations.

#### 6.2.2.4 Pre-Entry Submittal and Approval Requirements

No less than 24 hours prior to planned entry into a confined space, the Designer or contractor shall provide the MAA Risk Management Department Coordinator the following pre-entry materials:

a. Confined Space Entry Procedure Checklist: A completed Confined Space Entry Procedure Checklist Form.
b. Confined Space Entry Evaluation: A completed Confined Space Entry Evaluation Form.
c. Confined Space Entry Permit: A completed Confined Space Entry Permit Form including signature of the Fire Department representative.
d. Confined Space Emergency Information: A completed Confined Space Emergency Information Form.

#### 6.2.2.5 Entry Requirements

The Designer shall comply with all operational procedures required by the MAA Confined Space Entry Program (RM-1910.146) contained in the MAA Workplace Safety Manual before and during the confined space entry operations.

#### 6.2.2.6 Debriefing Requirements

The Designer shall attend a debriefing session with the MAA Office of Safety and Risk Management at the conclusion of the entry operations. This debrief shall include discussion and documentation of the permit space program followed including descriptions of any hazards confronted or created in permit spaces during entry operations. The following forms will be submitted to the MAA Office of Safety and Risk Management within 24 hours of completion of all confined space entries for use at the debriefing.

1. Confined Space Entry Procedure Checklist
2. Confined Space Entry Evaluation Form
3. Confined Space Entry Permit Form
4. Confined Space Entry Emergency Information Form
5. Confined Space Accountability Form
6. Confined Space Entry Critique/Review Sheet
7. Confined Space Entry Log

#### 6.2.2.7 Requirements for Identification and Reporting of Confined Spaces during the Design Process

MAA requires that the creation of confined spaces resulting from the design of new facilities be minimized. The Designer shall identify and report all possible new confined spaces during the design process, so that informed consent can be obtained from MAA. This MAA Design Standard provides guidance to Designers related to potential new confined spaces.

The Designer shall be familiar with the MAA Confined Space Entry Program, and requirements of 29 CFR 1910.146, Occupational Safety and Health Administration (OSHA) Standard for Permit-Required Confined Spaces, with the intent of minimizing the creation of new confined spaces, and especially permit-required confined spaces, during the design process. The Designer shall consider how the definitions for confined space and permit-required confined space apply to the components and systems developed in the design process. If a confined space is anticipated to be created by the design, then the Designer shall present possible alternatives to its creation and identify possible design features that can be incorporated to minimize permit required confined spaces.

Any new confined spaces, including those which are necessary as a course of the design (e.g. telecommunication manholes, sewer manholes) shall be identified by the Designer in the 30% design submittal/design report. The Designer shall include a section in the report dedicated to confined spaces. This section will identify each potential confined space and discuss the anticipated hazards associated with the confined space, including an evaluation of alternatives which resulted in the selection. For example, a confined space such as the dry well of a wet well/dry well sewage pump station could be anticipated to have hazards of hydrogen sulfide and methane gases which would make the dry well a permitted confined space.

However, the design could, at some additional cost to the project, include mechanical ventilation to reduce the classification to a non-permit confined space, in contrast, the confined space classification of the wet well would likely not benefit from any type of improvement investment. In this example, the

design report would indicate both the wet well and dry well as permit controlled confined spaces. The designer would then provide narrative regarding the pros, cons and cost of designing the dry well to comply with the requirements of a non-permit confined space by the addition of adequate ventilation and instrumentation etc. and a statement that the wet well will not benefit from any investment. The Designer would then make a recommendation as to whether or not the improvements are warranted on a case by case basis.

The design shall include all necessary signs for confined spaces as applicable and practical. Whenever the design includes new permit controlled spaces, the Designer shall include in the design documents adequate signage for confined space notification in accordance with OSHA requirements.

As the design is developed through the 60% and 100% submittals, the Designer shall record in these submittals specific details, and an evaluation of alternatives based on development of the findings presented in the 30% design submittal/report.

As part of the Designer Phase 3 Services, the Designer shall identify all confined spaces and signage requirements for confined spaces created during the course of the design and include this information on the record drawings. All permit controlled confined spaces shall be clearly designated as such on the record drawings.

The Designer shall also document all new confined spaces and provide the MAA Office of Safety and Risk Management and MAA Project Manager with a completed Confined Space Entry Evaluation Form for each new confined space. The form can be found in the Section 7 of the MAA Confined Space Entry Program (RM-1910.146) contained in the MAA Workplace Safety Manual.

# 6.3 Construction Duration and Phasing

## 6.3.1 Construction Durations and Blackout Dates

Construction durations shall be estimated during the design phase and documented in the Contract Documents. The Designer shall coordinate with MAA Operations to determine the appropriate work hours and dates of work permitted for the project. Annual construction blackout dates occur when airport traffic is expected to be higher than usual and therefore no construction activity is to take place. Blackout dates for consideration and discussion are listed below.

BWI Marshall:

President's Day weekend (Sat – M)
Spring Break/Easter (full week prior to Easter)
Memorial Day weekend (Sat – M)
Fourth of July and adjacent weekend
Labor Day weekend (Sat – M)
Thanksgiving (M – Su)
Christmas & New Year's (weekend prior to Christmas – weekend after New Year's)

Martin State:

All dates listed above
Weekends

Designers shall determine the applicable construction blackout dates for each project on a case-by-case basis with the Project Manager and the MAA office with operational responsibility (i.e. Airport Operations, Terminal and Landside Operations, Parking and Transportation, etc.) based on the type of work, location of the project, as well as the year's calendar.

## 6.3.2 Construction Phasing Plans

Construction Phasing Plans shall be included for all landside tasks involving multiple phases of construction. Phasing plans shall include the following information, at minimum:

- Project Work Area (shaded/hatched) [phased work areas on the same plan sheet shall have different, distinguishable hatches, if applicable]
- Contractor access/haul routes
- Description of work
- Phase Durations and/or Total Task Duration
- Closures for roads or lanes of roads – this note shall also refer to the Maintenance of Traffic plan
- Work hours (if applicable)
- Liquidated damages if determined to be different than specified in the Comp Paving Technical Specifications

## 6.3.3 Construction Staging and Stockpile Areas

Construction Staging areas are defined as, "the locations in which the general contractor stores construction equipment and materials for the needs of the contract." The Designer shall identify these areas within the contract documents and on the general site plan, or make a note that areas will be determined once the contract has received a "notice to proceed."

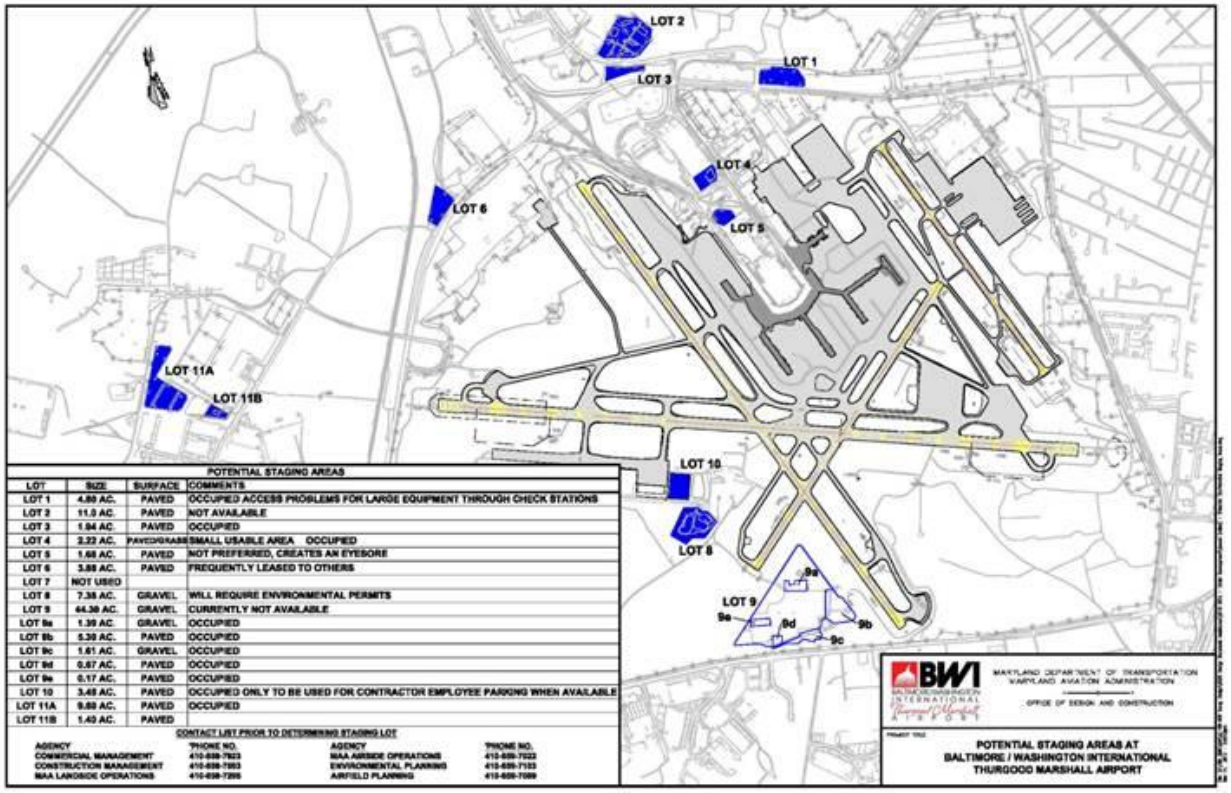
Stockpile Areas are to be defined as, “a mound or pile of soil protected by appropriately designed erosion and sediment control measures.” For projects involving site work/earth disturbance, the Designer shall provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns. Stockpile areas are designated to store soil and other erodible materials, such as sand, millings, and fine aggregate. The Designer may identify separate construction stockpiling areas within the contract documents on the general site plan and on the erosion and sediment control drawings. MDE erosion and sediment control measure **B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA** shall be referenced for these areas and the areas shall be located within the Limits of Disturbance (LOD).

Below is a graphic map depicting available areas for use as off-site staging areas. The graphic includes available lot size, an indication as to whether the lot is paved and brief comments about the site. The consultant shall determine which lot to use as a staging area based upon the type of construction being proposed and the locality of the work. The designer shall coordinate on-site and off-site staging areas with the MAA Project Manager and consult each agency identified on the map to confirm the availability and applicability of the proposed on-site and off-site staging area(s).

If there is a requirement to modify or change the construction staging area after the contract documents are issued, the consultant shall follow the same procedures to identify, coordinate, and design additional construction staging areas. Any off-site stockpiles outside of the approved project’s LOD will be required to have either a separate ESC approval (State, federal, or local) or a permit modification obtained for the MDE permit associated with the MAA project. All MDE coordination shall be through the MAA Division of Environmental Planning.

The consultant shall identify construction staging areas within the contract documents. The designer shall coordinate on-site and off-site staging areas with the MAA Project Manager and consult each agency identified on the map to confirm the availability and applicability of the proposed on-site and off-site staging area(s). On the following page is a graphic map depicting available areas for use as off-site staging areas. The graphic includes available lot size, an indication as to whether the lot is paved and brief comments about the site. The consultant shall determine which lot to use as a staging area based upon the type of construction being proposed and the locality of the work.

If there is a requirement to modify or change the construction staging area after the contract documents are issued, the consultant shall follow the same procedures to identify, coordinate, and design additional construction staging areas.




POTENTIAL STAGING AREAS

| LOT | SIZE | SURFACE | COMMENTS |
|---|---|---|---|
| LOT 1 | 4.80 AC. | PAVED | OCCUPIED ACCESS PROBLEMS FOR LARGE EQUIPMENT THROUGH CHECK STATIONS |
| LOT 2 | 11.0 AC. | PAVED | NOT AVAILABLE |
| LOT 3 | 5.94 AC. | PAVED | OCCUPIED |
| LOT 4 | 3.22 AC. | PAVED/GRASS | SMALL USABLE AREA OCCUPIED |
| LOT 5 | 1.68 AC. | PAVED | NOT PREFERRED, CREATES AN EYESORE |
| LOT 6 | 3.88 AC. | PAVED | FREQUENTLY LEASED TO OTHERS |
| LOT 7 | NOT USED | | |
| LOT 8 | 7.38 AC. | GRAVEL | WILL REQUIRE ENVIRONMENTAL PERMITS |
| LOT 9 | 64.30 AC. | GRAVEL | CURRENTLY NOT AVAILABLE |
| LOT 9a | 1.39 AC. | GRAVEL | OCCUPIED |
| LOT 9b | 5.30 AC. | PAVED | OCCUPIED |
| LOT 9c | 1.61 AC. | GRAVEL | OCCUPIED |
| LOT 9d | 0.67 AC. | PAVED | OCCUPIED |
| LOT 9e | 0.17 AC. | PAVED | OCCUPIED |
| LOT 10 | 3.48 AC. | PAVED | OCCUPIED ONLY TO BE USED FOR CONTRACTOR EMPLOYEE PARKING WHEN AVAILABLE |
| LOT 11A | 9.88 AC. | PAVED | OCCUPIED |
| LOT 11B | 1.40 AC. | PAVED | |

CONTACT LIST PRIOR TO DETERMINING STAGING LOT

| AGENCY | PHONE NO. | AGENCY | PHONE NO. |
|---|---|---|---|
| COMMERCIAL MANAGEMENT | 410-859-7823 | MAA AIRSIDE OPERATIONS | 410-859-7533 |
| CONSTRUCTION MANAGEMENT | 410-859-7993 | ENVIRONMENTAL PLANNING | 410-859-7133 |
| MAA LANDSIDE OPERATIONS | 410-859-7266 | AIRFIELD PLANNING | 410-859-7089 |

*Construction Staging Areas*

### 6.3.4 Runway 10-28 and 15R-33L Intersection Closure

Construction of utilities within the safety areas of the intersection of Runways 10-28 and 15R-33L, which will require simultaneous closure of both major runways, will not be permitted. Alternate routes or methods, such as crossing one runway point at a time and remaining clear of the adjacent runway safety area, should be used. The Director of the Office of Engineering & Construction must approve any project that requires closure of both runways.

This allows BWI Marshall to maintain airport capacity during utility construction by keeping at least one major runway open. It provides additional periods of time for accessing work areas for utility installation, which would be limited if both runways required closing. It also alleviates closures of both major runways for subsequent maintenance, emergency repairs, periodic inspections, tie-ins, etc. These types of occurrences are even more problematic, as they may be unscheduled and occur at peak times.

### 6.3.5 Use of Lifts Within the Terminal Building

The following information shall be added to construction documents for any construction that may require the use of lifts on the terminal floor tiles at BWI Marshall:

All man-lifts to be used on or transported across the ceramic, porcelain, and/or terrazzo floor tile in the terminal shall conform to the following requirements:

1. All lifts shall be equipped with pneumatic tires.
2. All lifts shall be transported and parked on ¾” plywood protection panels at all times.

# 6.4 Maintenance of Traffic

## 6.4.1 Maintenance of Traffic (MOT) Plans

Maintenance of Traffic (MOT) Plans are required when work requires road/lane closures. Road/Lane closures or roads otherwise impacted by the Task require approval by the agency having jurisdiction over said road; in most cases this is Maryland State Highway Administration (SHA) or the County (Anne Arundel County for BWI tasks, Baltimore County for MTN tasks.) All Tasks impacting roads, whether or not owned/maintained by the MAA, shall be coordinated with and approved by the Office of Terminal and Landside Operations.

For projects impacting SHA roads, the following SHA groups, at minimum, shall be coordinated with:

- Office of Traffic Safety (OOTS), for traffic signaling
- Office of Materials Technology (OMT), for materials testing
- District 5 Utility Permits, for any digging of utilities in Anne Arundel County
- District 4, for any digging of utilities in Baltimore County (MTN)

If MOT impacts SHA, Designers shall submit the plans and a “District Office Permit” application to the District Utility Engineer at SHA for approval. Upon approval, SHA will issue a District Office Permit. SHA does not return signed drawings upon approval.

## 6.4.2 Traffic Cones

Twelve inch (12”) traffic controlling cones shall not be used for projects at BWI Marshall and Martin State Airports. State Highway Administration (SHA) studies have found that larger cones decrease accident rates. For slower traffic, 18” cones shall be used. For highway and nighttime traffic, 28” cones shall be used. In addition, during nighttime work, 28” cones must have reflective collars. This information may be obtained from SHA’s Traffic Control Booklet #6.

# 6.5 Construction Safety and Phasing Plans

Projects receiving funding from the Airport Improvement Program (AIP) or the Passenger Facility Charge (PFC) program must prepare a Construction Safety and Phasing Plan (CSPP). All CSPP shall be prepared in accordance with the latest FAA AC 150/5370-2 and approved and signed by the Director of Airport Operations for BWI Marshall Projectsand the Chief of Airport Operations at Martin State Airport for all MTN projects. The document shall be prepared based on a joint effort between MAA Operations, the ATCT, MAA Office of Engineering & Construction and the Designer.

## 6.5.1 CSPP Review Checklist

### 6.5.1.1 Drawings

Construction Safety and Phasing Plans shall be submitted for FAA review as outlined in Chapter 4.2 FAA Requirements for Proposed Development. The Designer shall attach Construction Safety and Phasing Plan Review Checklist from FAA AC 150/5370-2, current edition, to the drawings. The checklist is also included in Appendix B - Standard Forms.

The following information needs to be completed by the Designer for BWI Marshall and MTN on their respective Construction Safety and Phasing Plans:

- Airport Name/LOCID/Associated City
- State
- AIP No. (Include if available)
- Date
- Signature block for Operations
- Checkmark for addressed items (Yes, No, N/A)
- Comments, special conditions, other (if applicable; If there are no additional comments, remove the Additional Comments from the sheet.)

### 6.5.1.2 Design Reports/Narrative

If applicable to the project, the Designer shall include an 8.5x11 copy of the Construction Safety and Phasing Plan Review Checklist (located in Appendix B - Standard Forms), and “additional comments, special conditions, others” in all submissionsof the design report. The information included should be identical to what is on the Construction Safety and Phasing Plan Review Checklist drawing sheet. The design report and narrative may be the same, and shall include (at a minimum) the information required in FAA AC 150/5370-2, current edition. Aside from the required information, any information related to BWI/MTN unique operations should be included in the respective narratives.

The following information needs to be completed by the Designer for BWI Marshall and MTN on their respective Construction Safety and Phasing Plans and the information included in the design report:

- Airport Name/LOCID/Associated City
- State
- AIP No. (Include if available)
- Date
- Checkmark for addressed items (Yes, No, N/A)
- Comments, special conditions, other (if applicable; If additional space is required, provide additional sheets titled “Additional Comments”)

## 6.5.2 Design Progress Milestones

As design progresses, an effort shall be made to meet with the construction manager (CM) at the 60% level (or whenever the CM is selected) to review the phasing sequence and constructability of the project. The CM should agree in principal on the construction phasing prior to the pre-bid meeting. Meeting minutes will be adequate to determine at least one meeting has been held with the CM and preliminary consensus has been achieved. Once the design has stabilized (or the 90% level), the designer shall engage FAA in the SMS/SRM process. This process involves a detailed presentation (PPT format) of the phasing to a selected FAA panel.

### 6.5.3 Sample CSPP

FAA AC 150/5370-2 has sample CSPP plans that the FAA suggests using as a guide. Seven (7) full-size copies of the MAA-approved CSPP, narrative and applicable specifications shall be submitted to the MAA Office of Planning for distribution to the FAA-WADO for final distribution/review.

### 6.5.4 Specific Design Requirements

#### 6.5.4.1 Placement of Construction Barricades

CSPP shall require that no spaces be permitted between adjacent barricades.

# Chapter 07 Site Development

## 7.1 Site Exploration

### 7.1.1 Survey Control

#### 7.1.1.1 BWI Marshall Airport Surveying Monuments

A network of 4 survey control points have been established at BWI Thurgood Marshall Airport to provide a reliable and accessible system of control for all surveys performed on the airport. Please refer to Appendix E - Survey Control Manuals.

Consultants shall use the BWI Thurgood Marshall Airport Survey Control for all design and construction projects. All project surveys must be tied to the BWI Thurgood Marshall Airport Survey Control Network shown on the Survey Control Drawing and described in the Survey Control Manual. All contract drawing sets must contain the BWI Thurgood Marshall Airport Survey Control Plan Sheet and a 2nd geometric layout sheet containing the specific geometric layout and coordinate data for the project. The geometric layout sheet shall also include any and all points set by the contractor for the specific project stating traverse closures and indicating which BWI Thurgood Marshall Airport control points were used.

The survey control for BWI Thurgood Marshall Airport is based horizontally on the Maryland State Plane Coordinate System which is tied to the North American Datum of 1983, 2007 adjustment (NAD 83 / 2007), and vertically on the North American Vertical Datum 1988 (NAVD 88). The primary control stations supplied in the manual meet or exceed 1st order horizontal survey control accuracies and 1st order vertical accuracies as indicated on the individual monument recovery sheets. All monuments are cast in place concrete, 48” deep with aluminum disks stamped “BWI Thurgood Marshall Airport – Survey Control,” and include a point ID. All secondary control meet or exceed 3rd order horizontal accuracies as indicated on the individual monument recovery sheets. In addition to the primary and secondary control networks, there are five (5) 1st order benchmarks.

All monuments are described on monument recovery sheets. Each monument recovery sheet contains “How to Reach” descriptions for each control point, coordinates, elevations and pictures of each monument as well as reference sketches. The scale factor given on the recovery sheet is the measure of the linear distortion that has been mathematically imposed on ellipsoid distances so they may be projected onto a plane. Stability ratings for each monument are also stated on the individual recovery sheets.

Elevations of monuments are based on the North American Vertical Datum of 1988 (NAVD 88). Elevations are derived from differential leveling performed in 2007 using NGS methods for establishing 1st order vertical benchmarks. This leveling project is included in NGS’ National Spatial Reference System. Elevations are in US Survey Feet.

The Consultant is responsible for quality control checking of all new and existing monumentation prior to using the monuments in accordance with standard survey practices.

NGS monumentation that has been damaged or destroyed should be reported to the National Geodetic Survey web page. In the event that the actual marker is separated from its setting, you can report the point as destroyed. To do so, please send the report on the destroyed mark as an email to Deb Brown (Deb.Brown@noaa.gov). If you send this email, please do not submit the current form, Deb Brown will submit the report for you. In addition, please submit proof of the mark's destruction via actual disk, rubbing, photo, or digital picture (preferred) to Deb Brown:

Deb Brown, N/NGS143
National Geodetic Survey, NOAA
1315 East West Highway
Silver Spring, MD 20910

If you did not find the actual marker, then you should enter notes concerning evidence of its possible destruction as text records and select "Not recovered, not found" as the condition of mark.

Also, please immediately notify the Director of the Office of Engineering & Construction, Maryland Aviation Administration, to report damaged or destroyed monumentation.

A network of 9 survey control points, including 3 points established by NGS, have been established at Martin State Airport to provide a reliable and accessible system of control for all surveys performed on the airport. Please refer to Appendix E - Survey Control Manuals.

Consultants shall use the Martin State Airport Survey Control for all design and construction projects. All project surveys must be tied to the Martin State Airport Survey Control Network shown on the Survey Control Drawing and described in the Survey Control Manual. All contract drawing sets must contain the Martin State Airport Survey Control Plan Sheet and a 2nd geometric layout sheet containing the specific geometric layout and coordinate data for the project. This drawing shall also include any and all points set by the contractor for the specific project stating traverse closures and which Martin State Airport control points were used.

The survey control for Martin State Airport is based horizontally on the Maryland State Plane Coordinate System which is tied to the North American Datum of 1983 (NAD 83), and vertically on the North American Vertical Datum 1988 (NAVD 88). Data supplied in the manual meets or exceeds 1st order horizontal survey control accuracies and is equal to or less than 3rd order vertical accuracies as indicated on the individual monument recovery sheet. All monuments are cast in place concrete, 48” deep with aluminum disks stamped “Martin State Airport – Survey Control”, and with a point ID.

All monuments are described on monument recovery sheets. Each monument recovery sheet contains “How to reach” descriptions for each control point, coordinates, elevations, and pictures of each monument as well as reference sketches. The scale factor given on the recovery sheet is the measure of the linear distortion that has been mathematically imposed on ellipsoid distances so they may be projected onto a plane. These monuments were set in the fall of 2005 and have a stability rating of “C” points subject to surface motion.

Elevations of monuments are based on the North American Vertical Datum of 1988 (NAVD88). Elevations are derived from GPS observations of NGS benchmark stations MARTAIR AZ (a third order vertical monument), CLOVER (a second order vertical monument), GIS58 (a third order vertical monument), and GIS70 (a third order vertical monument). Elevations are in U.S. Survey Feet.

The consultant is responsible for quality control checking of all new and existing monumentation prior to using the monuments in accordance with standard survey practices. Please notify the Airport Operations Manager of Martin State Airport (410-682-8826) and the Director of MAA’s Office of Engineering & Construction of damaged and destroyed monumentation immediately.

### 7.1.2 Subsurface Utility Exploration (SUE)

All SUE services shall be provided in accordance with applicable quality levels of ASCE Standard 38-02. Consultants are required to consult with the MAA Project Manager at the beginning of a project to identify all project specific Subsurface Utility Engineering (SUE) requirements including the quality level to be achieved. Consultant proposals shall clearly describe the specific SUE requirements in sufficient detail to identify the limits of the SUE work, the quality level of the services and the deliverables to be provided to MAA.

### 7.1.3 Geotechnical Investigations

The Consultant shall develop a program to perform subsurface exploration and laboratory testing in the area of any proposed construction. The Consultant shall describe the geotechnical exploration and testing methodology as part of the cost proposal required for the project. The explanation shall include technical issues to be resolved, field and laboratory methods to be used, estimated number and depths of borings/corings, and other field methods, estimated laboratory testing, and reporting methods.

Before performing any field work, the Consultant shall prepare a detailed work plan including coordination with stakeholders such as Airport Operations and the preparation of Tenant Information Advisories. The work plan shall include proposed boring/coring locations, details of investigation methods, coordination issues, and reporting schedule and the Consultant shall be responsible for identifying, field locating and avoiding all utilities in the vicinity of any proposed borings prior to drilling. Any utility discrepancies found shall be reported to the MAA Task Manager. Repair of any utility damaged by the Consultant shall be the Consultant's responsibility. The work plan shall be submitted to the MAA Project Manager for review and approval before any field work is performed.

The Consultant shall stipulate in their work plan that approximately 50% of proposed cores be performed specifically in areas displaying pavement distress. Full-depth cores are to be extracted unless directed otherwise. All cores taken will be used to evaluate the appropriate depth of milling and repairs, where applicable. The core results shall include location, thickness, and condition (crack depth, debonding, stripping, partial/full disintegration etc.) of the extracted cores along with the underlying material(s). The core pictures shall depict clear and actual in-situ conditions.

When only pavement coring is to be performed, a "grab sample" of the unbound material directly beneath the pavement core is to be collected and stored in a container such as a zip lock bag or a sample jar. The material/soil type shall be reported based on visual classification.

All core/bore holes shall be backfilled/grouted with cementitious in-situ or borrow or patch material and compacted in multiple lifts, as appropriate. A *minimum* 12 in. depth from the existing pavement surface shall be patched with a fast setting concrete mix. Proper cleaning, patching, and compacting procedures shall be followed throughout to ensure a durable and satisfactory patch. Any improper or deficient patches shall be promptly repaired or replaced at no cost to MAA.

See Chapter 3.2 Deliverables by Design Phase for details on Geotechnical report deliverable requirements. See Chapter 3.7.2 Geotechnical Reports for details on Geotechnical report submission requirements.

# 7.2 Utilities

## 7.2.1 Underground Utility Markings

The design and construction of all projects at BWI Marshall and Martin State Airports shall include the requirement to mark all temporary (regardless of duration) and permanent underground utilities with detectable utility warning devices in accordance with the following requirements:

In paved areas (asphalt or concrete) mark the underground utility with 6” wide detectable tape positioned at a maximum 3"- 6" deep below the bottom of asphalt or concrete.

In unpaved areas mark the underground utility with 6” wide detectable tape positioned at a maximum 8"- 12" deep below top of ground.

### 7.2.1.1 Utility Marking Requirements

a. Buried Underground **Non-metallic** Utilities:
   - All temporary and permanent buried underground non-metallic utilities shall be marked with appropriately colored detectable utility warning tape placed over the utility at the depth indicated above.
   - Additionally, all temporary and permanent buried underground non-metallic utilities shall also be marked with a steel reinforced copper clad tracer wire placed with and at the same depth as the utility. The tracer wire shall be continuous (thru) and shall be brought into and be accessible at all valves, handholes, manholes, and other access points along the length of the utility. Should the tracer wire be terminated at these locations, 5 or more feet of spare wire shall remain and be coiled.

b. Buried Underground **Metallic** Utilities:
   - All temporary and permanent buried underground metallic utilities shall be marked with appropriately colored detectable utility warning tape placed over the utility at the depth indicated above.

c. Underground **Non-metallic** Utilities installed by directional drilling or other trenchless technologies:
   - All temporary and permanent underground non-metallic utilities installed by trenchless technologies such as directional drilling, jack and bore, etc, shall include the placement of an appropriately colored steel reinforced copper clad tracer wire placed with and at the same depth as the utility. The tracer wire shall be continuous (thru) and shall be extended beyond the limits of the trenchless installation and be brought into and be accessible at all valves, handholes, manholes and other access points along the length of the utility. Should the tracer wire be terminated at these locations, 5 or more feet of spare wire shall remain and be coiled.

d. Underground **Metallic** Utilities installed by directional drilling or other trenchless technologies:
   - Metallic utilities installed by trenchless technology shall not be marked for the extent of the trenchless installation but they shall be marked in accordance with the requirements of Paragraph 2, Buried Underground **Metallic** Utilities, for all portions of the utility installed by conventional trenching.

e. Utility Marking Materials shall conform to the following requirements:
   1. Detectable Utility Warning Tape:
      The detectable tape shall be 6” wide and 5.0 mil thick, continuously inscribed with a description of the utility (Gas, Water, Electric, etc.), color coded to meet the American Public

Works Association (APWA) uniform color code system as listed below and shall include a metallic foil coating that is detectable by utility locating equipment.

| | |
|---|---|
| RED | Electric Power Lines, Cables, Conduit and Lighting Cables |
| YELLOW | Gas, Oil, Steam, Petroleum or Gaseous Materials |
| ORANGE | Communication, Alarm or Signal Lines, Cables or Conduit |
| BLUE | Potable Water |
| GREEN | Sewers and Drain Lines |
| PURPLE | Reclaimed Water, Irrigation and Slurry Lines |
| PINK | Temporary Survey Marking |
| WHITE | Proposed Excavation |

2. Steel Reinforced Copper Clad Tracer Wire: Tracer wire shall be a 12 AWG, Extra-High-Strength Copper-Clad Steel conductor (EHS-CCS), insulated with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. EHS-CCS conductor must be a 21% conductivity for locatability purposes. Break load shall be a minimum of 1,150 pounds. HDPE insulation shall be Restriction of Hazardous Substances (RoHS) compliant and utilize virgin grade material. Insulation color shall meet the APWA uniform color code system, as listed above, for identification of buried utilities.

   Tracer wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe installation. It shall be secured to the pipe as required to insure that the wire remains adjacent to the pipe. The tracer wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all trace wire access points. The contract shall require the tracer wire to be tested for continuity prior to acceptance of the utility.

f. Recommended product Manufacturers

Acceptable tracer wire products for buried installations include the following products or an approved equal:

- Copperhead conventional tracer wire produced by Copperhead Industries, LLC (www.copperheadwire.com), or DURAtraceTM Produced by Duratrace (www.duratracewire.com)
- Acceptable tracer wire products for trenchless technology installations include the following products or an approved equal:
- SoloShotTM EHS produced by Copperhead Industries, LLC (www.copperheadwire.com), or DURAtraceTM DD Produced by Duratrace (www.duratracewire.com).

Acceptable detectable utility warning tape products for underground utility markings installations include the following products or an approved equal:

- 6” wide and 5.0 mil thick, continuously inscribed with a description of the utility (Gas, Water, Electric, etc.), color coded to meet the American Public Works Association (APWA) uniform color code system and shall include a metallic foil coating that is detectable by utility locating equipment produced by Stranco, Inc. (www.strancoinc.com) or Rhino Marking and Protection Systems (www.rhinomarkers.com).

g. Recording of Marking Technique Used: CAD and GIS data that records the location of utilities should provide an indication where one of the marking techniques described above was installed and, if so, which type and manufacturer’s product was used.

1. As-built or record CAD should include a superscript number on any annotations used to label utility features in the drawing where a marking technique was used (i.e. 6” PVC Drainage Line). A schedule of corresponding notes on the same or a separate sheet, should

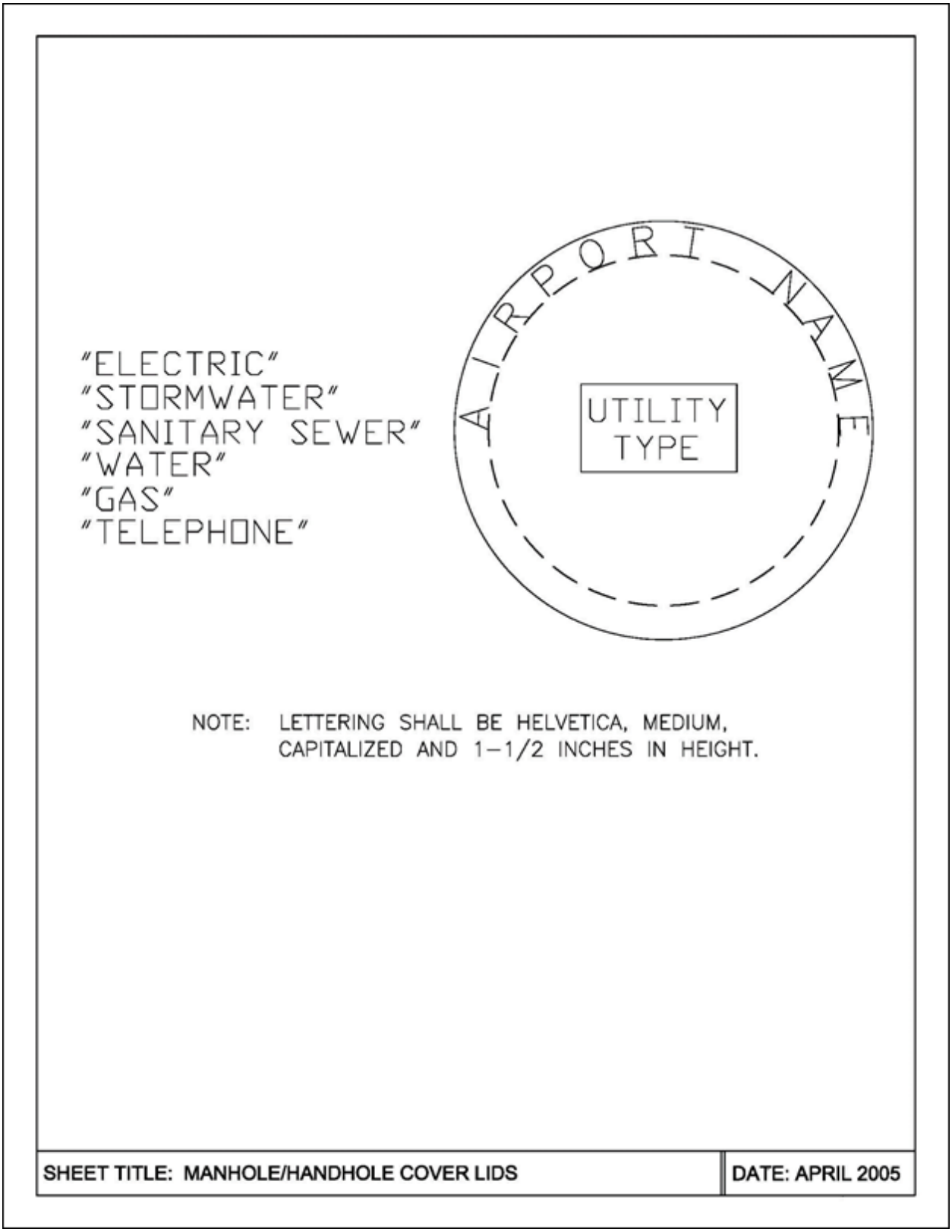
list all such notes indicating the method of marking used, the manufacturer name, and product name or model number.

2. As a requirement of the As-Built submittal, GIS data submitted with subsurface utilities should record the use of, manufacturer name, and product or model in the description attribute (e.g. “Marked with Copperhead Industries’ SoloShotTM EHS tracer wire).

### 7.2.2 Manhole/Handhole Covers/LIDS

All new and replacement manhole/handhole covers/lids shall include customized cover/lid surface lettering as follows:

All Airport manhole/handhole covers/lids shall include the name “BALTIMORE/WASHINGTON INTERNATIONAL AIRPORT” or “MARTIN STATE AIRPORT” and the type of utility: “ELECTRIC”, “STORMWATER”, “SANITARY SEWER”, “WATER”, “GAS”, “TELEPHONE.” Lettering shall be Helvetica, medium, capitalized, and 1 ½ inches in height.




### 7.2.3 Water Mains

#### 7.2.3.1 Backflow Prevention

Refer to Chapter 12 Plumbing for Backflow Prevention requirements.

### 7.2.3.2 Corrosion Protection for Water Valve Repair (New and Replacement Valves)

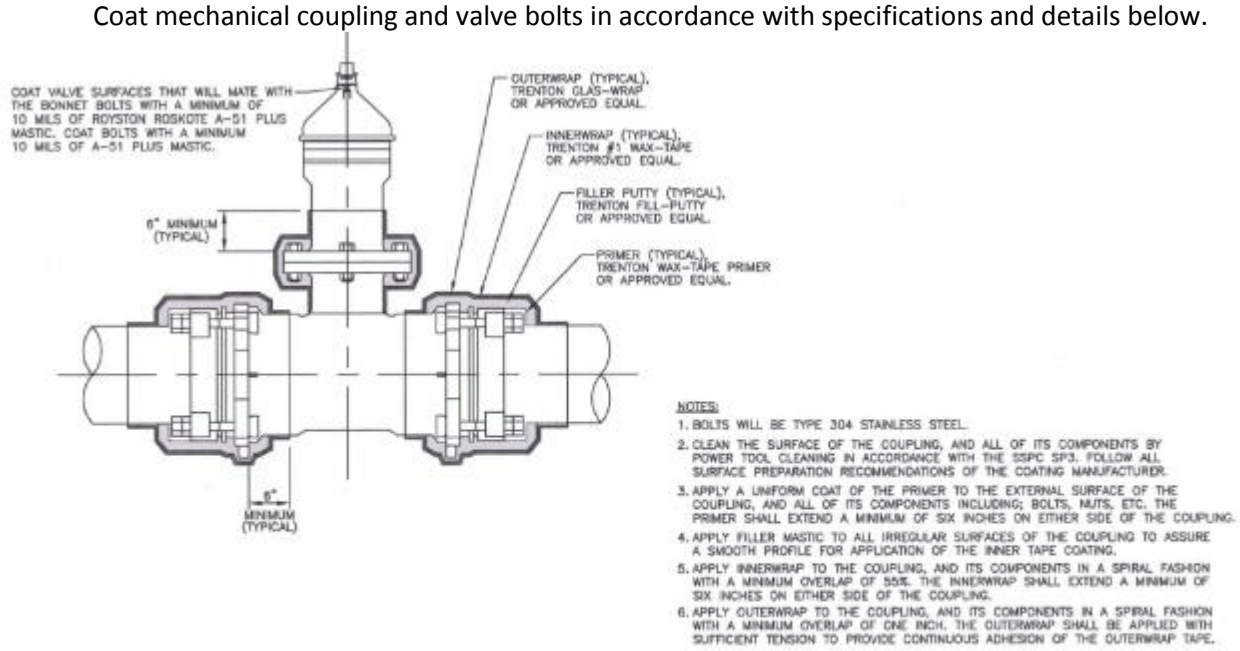
Valves and bolt assemblies for all new and replacement water valves shall be required to be protected from corrosion in accordance with the following specification and details.

A. Water Valve Notes and Specifications for New and Replacement Valves

New valves shall be non-rising stem, high pressure, resilient-seated gate valves sized to match existing, AWWA C509, ductile-iron body and bonnet with bronze or ductile iron gate, resilient seats, bronze stem and stem nut, 250-PSIG minimum working pressure, 400 PSIF test pressure, interior coating according to AWWA C550, and mechanical joint ends. All valves shall be standardized to close when turned in the clockwise direction "Right Handed". The basis of design is Mueller Valve Model A2360 Series Resilient Wedge Gate Valve or approved equal.

1. Valves shall be gates valves conforming to the American Waterworks Association.
2. Epoxy coated inside and out.
3. Fasteners exposed to backfill must be T304 stainless steel.
4. O-ring seals.
5. Solid sleeves shall be ductile iron 250-PSIG minimum working pressure design.

Coat mechanical coupling and valve bolts in accordance with specifications and details below.




COATING OF MECHANICAL COUPLING AND VALVE BOLTS

N.T.S.

B. Specifications for Coating of Bolts and Mechanical Joints-Gate Valve Assemblies for New and Replacement Valves

1. External Coating System for Mechanical Couplings
   a. Mechanical joints/flanges shall receive an exterior tape wrapping in the field as indicated in detail below. The coating applicator shall abide by and follow all manufacturer's application specifications for the coating system. All components of the coating system shall be manufactured by a single supplier to assure compatibility of

individual components. The coating system shall be manufactured by Trento Corporation or an approved equal.

b. Materials

I. Primer: A blend of microcrystalline wax, plasticizer, and corrosion inhibitors having a paste-like consistency, designed to displace moisture, penetrate rust and wet the surface, ensuring adhesion of the tape. The primer shall be Trenton Wax-Tape Primer or approved equal.

II. Filler Putty: A cold applied anti-corrosive moldable filler material used to even the contours of irregular fittings and surfaces. The filler putty shall have the following properties:

a. Specific gravity: 1.15
b. Density: 24 cu in/lb
c. The filler putty shall be Trenton Fill-Putty or approved equal. Filler putty shall be used at all irregular surfaces to provide a smooth surface for the application of the innerwrap and outerwrap.

III. Innerwrap: A non-woven, non-stitch bonded synthetic fabrix saturated with a blend of microcrystalline wax, plasticizer, and corrosion inhibitor (no clay fillers). The inner tape shall have the following properties:

a. Thickness: 70 to 90 mils
b. Dielectric strength: 170 volt/mil
c. The innerwrap shall be Trenton #1 Wax-Tape or approved equal.

IV. Outerwrap: A white, resin-coated, woven figerglass fabric. The outerwrap shall be the following properties:

a. Thickness: 0.005 inch
b. Tensile strength (per one inch width): 85 lb min
c. Tape width: 6 inches
d. The outerwrap shall be Trenton Glas-Wrap or approved equal

C. Application of Coating Materials

1. The mechanical couplings either side of the vale, including all components shall be fully coated for a minimum of 6 inches on either side of the coupling.

a. Clean the surface of the coupling, and all of its components by power tool cleaning in accordance with SSPC-SP3. Follow all surface preparation recommendations of the coating manufacturer.
b. Apply a uniform coat of the primer to the external surface of the coupling, and all of its components including; bolts, nuts, etc. The primer shall extend a minimum of six inches on either side of the coupling.
c. Apply filler mastic to all irregular surfaces of the coupling, with special attention to the bolts, to assure a smooth profile for application of the inner tape coating.
d. Apply innerwrap to the coupling, and its components in a spiral fashion with a minimum overlap of 55%. The innerwrap shall extend a minimum of six inches on either side of the coupling.
e. Apply outerwrap to the coupling and its components in a spiral fashion with a minimum overlap of one inch. The outerwrap shall be applied with sufficient tension to provide continuous adhesion of the outerwrap tape.

### 7.2.4 Sanitary Sewers

If existing conditions prohibit gravity flow then lift station/ejector pits are to be included in the design. Lift stations and ejector pits should be located outside the footprint of the building structure the

restroom is within. In addition, secondary containment of the lift station and ejector pit should be considered to limit overflow into adjacent areas during system failure.

If a lift station or ejector pit is required, this MUST be brought to the attention of the MAA Office of Engineering & Construction during the design process. The exact requirements of the design will then be provided for inclusion in the project construction documents.

SEWAGE EJECTOR PIT DESIGN: All projects with sewage ejector pits should be designed with the ejector motors, pumps, impellers and related equipment outside the actual "sewage pit." One acceptable method is to construct a wetside/dryside pit. All motors, pumps, impellers, and equipment would be installed on the dryside with pipe connections to the wetside (sewage pit side). The dryside of the pit would be sealed tight to prevent water and sewer gases infiltration. Other concepts will require the approval of the MAA Office of Engineering & Construction project manager and the Division of Maintenance. Refer to Chapter 9.6 Restroom Standards for further information on sewage ejection pit design.

## 7.2.5 Electric/Phone/Telecommunications

Parking facilities shall be equipped with public telephones. The Contractor should install the concrete pad and necessary conduits at the phone location. The telephone company (currently Verizon) should pull wiring and install housing and telephone.

### 7.2.5.1 Electrical Structure Drains

An Electrical Structure Drain (ESD) shall be provided as a drainage design alternative for electrical manhole (MH) and handhole (HH) structures where other preferred alternate drainage measures may not be possible to facilitate drainage away from the Electrical and Communications (E/C) Infrastructure Systems.

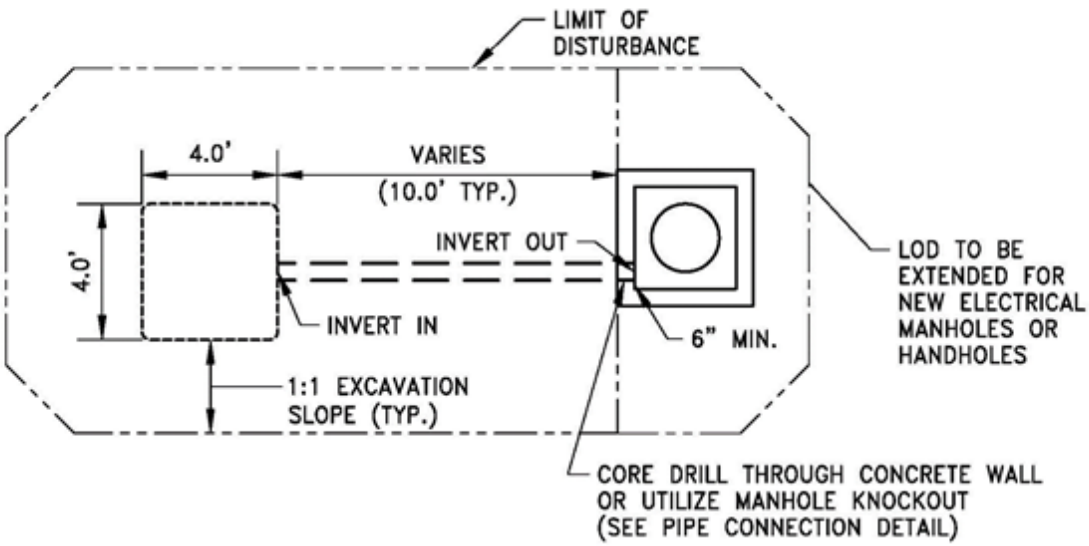
Qualifying Preferred Alternate Drainage Measures are the following:

- Install 6" Polyvinylchloride (PVC) drainage pipe from E/C MH or HH directly into a drainage MH in close proximity provided inverts permit positive drainage.
- Install 6" PVC drainage pipe from E/C MH or HH directly into drainage pipe in close proximity provided inverts permit positive drainage.

ESD(s) shall be installed in locations where space is available and where other preferred drainage measures cannot be provided in grass areas. For proposed E/C ductbank installations the design consultant shall provide either adequate space for ESD installations at an E/C structure or design the ductbank plan and profile to allow for the E/C ductbank infrastructure to drain to a low point at a MH or HH where an ESD can be installed.

Many design measures have been taken in the past to prevent water from entering the E/C infrastructure at lighting conduits, manholes, handholes, etc., however water has entered the E/C infrastructure despite those efforts, and design measures need to be taken to remove the water that has both entered in the past and will continue to enter in the future. For existing E/C ductbank runs, ESD(s) need to be installed at ductbank profile low points at E/C MH(s) and HH(s) where space is provided.

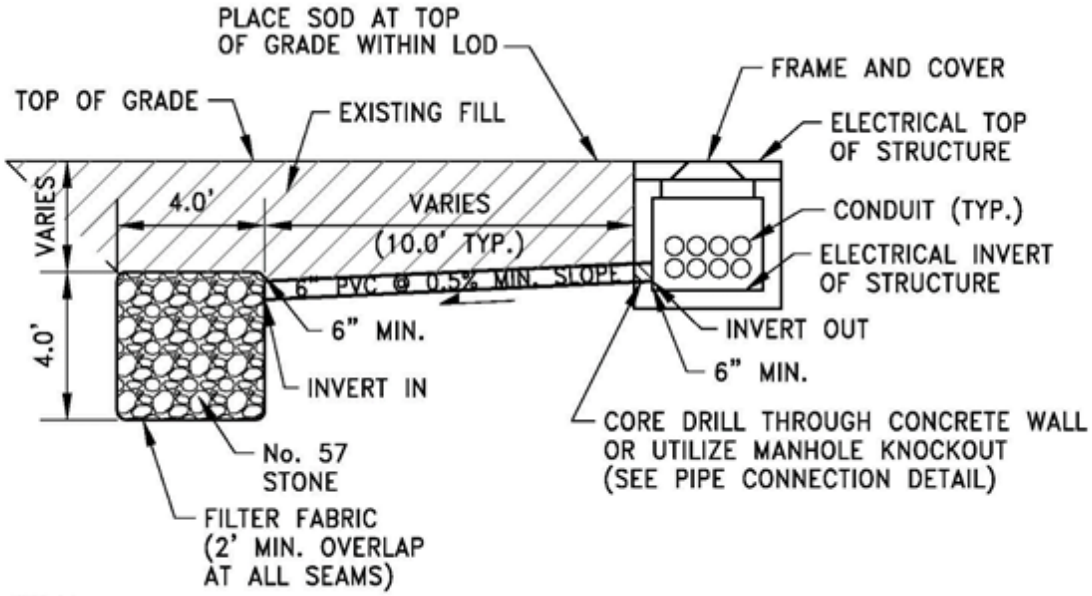
The following details depict the plan and section view of a typical ESD, section view of a typical pipe connection detail, and the plan view of a typical rodent screen detail.




**ELECTRICAL STRUCTURE DRAIN DETAIL (PLAN)**

N.T.S.

SHEET TITLE: ELECTRICAL STRUCTURE DRAIN DETAIL (PLAN)



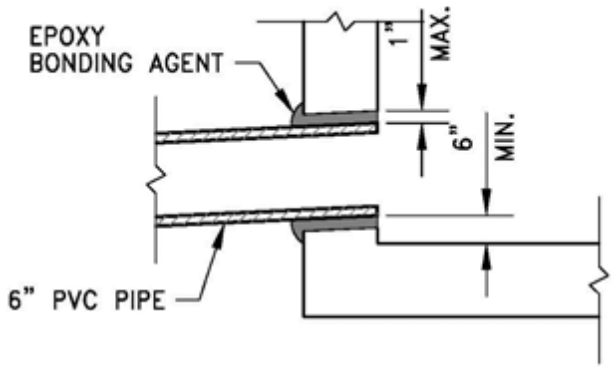

NOTE:

DEPTH OF DRAIN WILL VARY DEPENDING ON STUCTURE – 8' TO 9' FOR MANHOLES, AND 4' TO 5' FOR HANDHOLES.

## ELECTRICAL STRUCTURE DRAIN DETAIL (SECTION)

N.T.S.

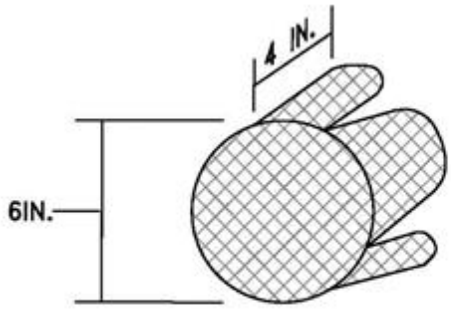
SHEET TITLE: ELECTRICAL STRUCTURE DRAIN DETAIL (SECTION)




PIPE CONNECTION DETAIL

N.T.S.

SHEET TITLE: PIPE CONNECTION DETAIL




## RODENT SCREEN

A REMOVABLE RODENT SCREEN SHALL BE CONSTRUCTED AT THE END OF ALL ELECTRICAL STRUCTURE DRAINS AS SHOWN. COMMERCIALLY AVAILABLE GALVANIZED HARDWARE SCREEN IS TO BE SNUGLY FITTED INSIDE EACH OUTLET PIPE. THE SCREEN IS TO HAVE THE CAPABILITY OF BEING REMOVED AND REINSTALLED FOR MAINTENANCE OPERATIONS. THE SCREEN WIRES SHALL BE WELDED AT A SPACING IN EACH DIRECTION OF 3/8- TO 1/2-INCHES. THE COST OF THE SCREEN IS TO BE INCLUDED IN THE COST OF THE DRAIN.

SHEET TITLE: RODENT SCREEN

### 7.2.6 Use of HDPE Pipe

1. HDPE Pipe is acceptable for underground use at BWI Marshall and MTN Airports for Sanitary Force Main, Natural Gas Distribution, communications conduit, and for electrical system directional bore. HDPE Pipe is prohibited for use with potable water and Fire Protection Water Systems or with glycol recovery drain/force main piping. HDPE Pipe is also prohibited for use inside railroad right-of-way.
2. Material Requirements:
   a. High Density Polyethylene (HDPE) Pipe and Heat Fusion Fittings shall conform to AWWA C906, PE 3408. Pipe and fittings shall have a minimum standard dimension ratio (SDR) of eleven (11) rated for 160 psi and have a nominal ductile iron pipe size. Butt Fusion Fittings shall meet the requirements of ASTM D-2153 and ASTM D-3261.
   b. Use Butt Fusion Joining Technique for joining pipe segments and pipe fittings in accordance with the pipe manufacturer's written specifications. Mechanical couplings are not permitted for joining segments of HDPE pipe underground. Flange or other pipe adapters for connection to valves or dissimilar pipe materials inside vaults or underground shall be as recommended by HDPE Pipe Manufacturer.
   c. Contractor shall certify that all joining operations are conducted by personnel trained by the joining equipment manufacturer. Certification shall be provided to the Resident Engineer prior to construction.
3. High Density Polyethylene Pipe (SDR 11) is furnished with inside diameters less than nominal pipe size which needs to be considered when determining pipe flow and velocity capabilities.
4. All underground natural gas and sanitary force main installations must be buried with at least 36-inches of cover from top of pipe to finished grade. Pipe bedding shall consist of a minimum of 4" depth of compacted sand, peagravel, or small diameter clean aggregate placed all around HDPE Pipe with select backfill above to bottom of pavement subgrade. Tape continuous length of No.12 AWG Copper insulated tracer wire to top of pipe and install 6-inch wide by 5 mils thick detectable warning and identification tape centered directly above pipe.
5. Testing:
   a. Sanitary Force Main: Conduct piping tests before joints are covered. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Perform Hydraulic Test with pressure at 150 PSI for two hours. There should be no leakage. Remake leaking joints with new materials and repeat test until leakage is stopped.
   b. Natural Gas Distribution: Conduct air pressure test per NFPA 54 on the gas system piping for at least 24 hours. Test pressure shall be 100 PSI. During the test, the entire system shall be completely isolated from all compressors and other sources of air pressure. Locate and repair leaks found and retest line until pressure holds for 24 hour test period.

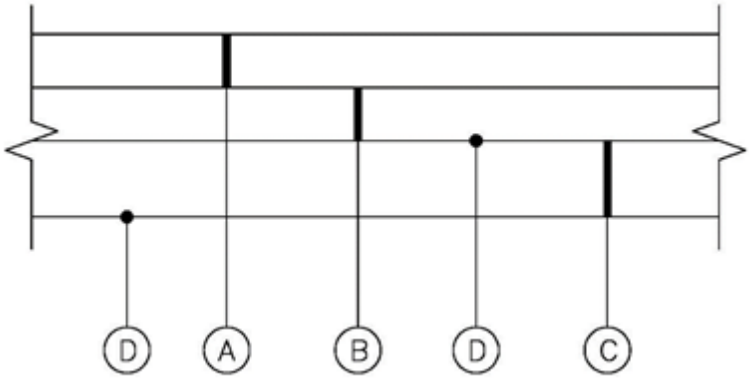
# 7.3 Pavement Design

## 7.3.1 Airfield Pavement Design

1. The preferred pavement mixes used on the airside shall be the following:

| Airside (P-401) Pavement Lift Thicknesses | |
|---|---|
| **Maximum Aggregate Size** | **Lift Thickness** |
| 1/2" | 1.0 to 2.0” |
| 3/4” | 1.5 to 3.0” |
| 1” | 2.0 to 4.0” |
| 1-1/4” | 3.0 to 5.0” |

2. The design and construction of all Martin State (MTN) Airport projects shall include the requirement of placing an additional layer of AASHTO #3 Stone under the design pavement section. The AASHTO #3 stone shall not be considered part of the structural pavement. Due to the excessive amount of unsuitable material located at MTN, MAA requires the consultant place a minimum of 12” of AASHTO #3 Stone and filter fabric over the entire paved area. The unsuitable material shall be removed and backfilled as determined by the engineer. AASHTO #3 Stone shall then be placed at a depth determined by the engineer prior to the placement of the subbase material. In addition, the engineer shall require filter fabric to be placed below and above the section of AASHTO #3. Refer to exhibit on the following page titled “*MARTIN STATE AIRPORT SECTION*” dated April 2005.




**TYPICAL SECTION**
**NOT TO SCALE**

**LEGEND**

(A) PORTLAND CEMENT CONCRETE / BITUMINOUS ASPHALT PAVEMENT *

(B) CRUSHED AGGREGATE BASE COURSE *

(C) NO. 2 STONE *

(D) FILTER FABRIC

* DEPTH TO BE DETERMINED BY THE ENGINEER

| SHEET TITLE: MARTIN STATE AIRPORT SECTION | DATE: APRIL 2005 |
|---|---|

3. Subbase and Base Course: Cement Treated Base Course materials shall not be used in the design and construction of flexible pavements in projects at BWI Marshall or Martin State Airports.

#### 7.3.1.1 Federal Aviation Administration (FAA) Specification Incentives

There are no incentive payments for either Specification P-401 or Specification P-501.

### 7.3.2 Landside Pavement Design

The preferred pavement mixes used on the landside shall be from this list:

- 9.5 mm PG 64-22 Level 2
- 9.5 mm PG 64-22 Level 2 HPV
- 9.5 mm PG 64-22 Level 4
- 9.5 mm PG 64-22 Level 4 HPV
- 9.5 mm PG 76-22 Level 4
- 9.5 mm PG 76-22 Level 4 HPV
- 9.5 mm PG 76-22 Level 4 GAP
- 12.5 mm PG 64-22 Level 2
- 12.5 mm PG 64-22 Level 2 HPV
- 12.5 mm PG 64-22 Level 4
- 12.5 mm PG 64-22 Level 4 HPV
- 12.5 mm PG 76-22 Level 4
- 12.5 mm PG 76-22 Level 4 HPV
- 12.5 mm PG 76-22 Level 4 GAP
- 19.0 mm PG 64-22 level 2
- 19.0 mm PG 64-22 Level 4
- 25.0 mm PG 64-22 Level 2
- 25.0 mm PG 64-22 level 4

| Landside (Superpave) Pavement Lift Thicknesses | |
|---|---|
| **Nominal Aggregate Size** | **Lift Thickness** |
| 9.5 mm | 1.0 to 2.0” |
| 12.5 mm | 1.5 to 3.0” |
| 19.0 mm | 2.0 to 4.0” |
| 25.0 mm | 3.0 to 5.0” |

# 7.4 Pavement Markings

## 7.4.1 Airfield Pavement Markings

Airfield pavement markings shall be according to the following table:

| Airfield Pavement Markings | | |
|---|---|---|
| **Location** | **Type** | **FAA Reference** |
| Runways<br>Aircraft Parking Envelope – Passenger Gates | Waterborne paint with glass beads | TT-P-1952E,<br>TT-B-1325D<br>Type I beads |
| Taxiway centerline and edge lines<br>Hold position markings<br>All other areas approved for use by FAA AC 150/5340-1 and the MAA Project Manager | Preformed Thermoplastic (FAA Approved) | AC 150/5340-1<br>P-620 specification in AC 150/5370-10 |
| Aircraft Parking Envelope – Cargo Areas<br>Vehicle Service Road (VSR)<br>Other non-movement areas. | Preformed Thermoplastic (MDSHA or FAA Approved) | N/A<br>MD SHA (section 559)*<br>or<br>FAA (P-620)*<br><br>*As approved by MAA Project Manager |

### 7.4.1.1 Waterborne Paint

All permanent pavement markings on the runways at both BWI Marshall and Martin State Airport, with the exception of black markings, shall be waterborne paint containing glass beads. Aircraft parking envelopes at passenger gates at BWI Marshall shall also be marked in waterborne paint and contain glass beads (Type I in the colored paint). Black outlines shall not contain glass beads.

Paint shall be waterborne in accordancewith Federal Specification TT-P-1952E, Type I or Type II depending on usage [TypeI has a standard dryingtime (no pick-up when tested in accordance with ASTM D 711), Type II may be used for striping where faster curing is desirable]. Paint shall be furnished in [white (37925), yellow (33538 or 33655), red (31136), black (37038), and pink (1 part red – 31136 to two parts white – 37925)] in accordance with Federal Standard Number 595. Black paint should be used to outline a border at least six inches wide around markings on all pavements. Black and red paints shall contain glass beads.

Glass beads shall meet the requirements for Federal Specification TT-B-1325D, Type III where required by FAA (hold lines, or where red paint is used, etc.) For runway markings at BWI and MTN, glass beads shall be Type I. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment. Designers shall include in the construction documents the requirement for glass beads to be installed in the first application of paint.

### 7.4.1.2 Heat Applied Preformed Thermoplastic Markings

All permanent pavement markings on the airfield at BWI Marshall shall receive permanent heat applied preformed thermoplastic markings where permitted by the latest edition of Federal Aviation Administration Advisory Circular AC 150/5340-1, Standards for Airport Markings and Federal Specification 150/5370-10, Item P-620, Runway and Taxiway Painting.

Permanent pavement markings on the airfield at Martin State Airport shall receive permanent heat applied preformed thermoplastic or waterborne markings as directed by the Project Manager. Thermoplastic markings, when requested, shall be where permitted in accordance with the latest edition of Federal Aviation Administration Advisory Circular AC 150/5340-1, Standards for Airport Markings and Federal Specification 150/5370-10, Item P-620, Runway and Taxiway Painting.

These include but are not limited to hold position markings, surface hold position signs, and taxiway centerline and edge lines. The material shall meet the requirements from the latest edition of Federal Specification 150/5370-10, Item P-620 Runway and Taxiway Painting.

The Designer shall specify in the contract documents that only trained and installers certified by the paint manufacturer apply these markings.

#### 7.4.1.3 Surface Painted Stop Markings

All surface painted stop markings shall have a red background in accordance with the head-knocker details included in the design standards.

#### 7.4.1.4 Aircraft Parking Marking

To provide safety and uniformity on the ramps and aprons at BWI Marshall Airport, all aircraft gate and RON markings shall adhere to the following standards. If a Tenant requires a gate marking in addition to or different than those specified in this standard, they shall submit a building permit/installation permit for the intended change or modification (such as envelope shape, line widths, and colors). Upon BWI Marshall Airport Operations' approval and receipt of an installation permit for the intended modification, Airlines may install their specific standard gate marking.

##### *Loading Bridge Gates*

It is required that all Loading Bridge Gates comply, at minimum, with the following marking standards.

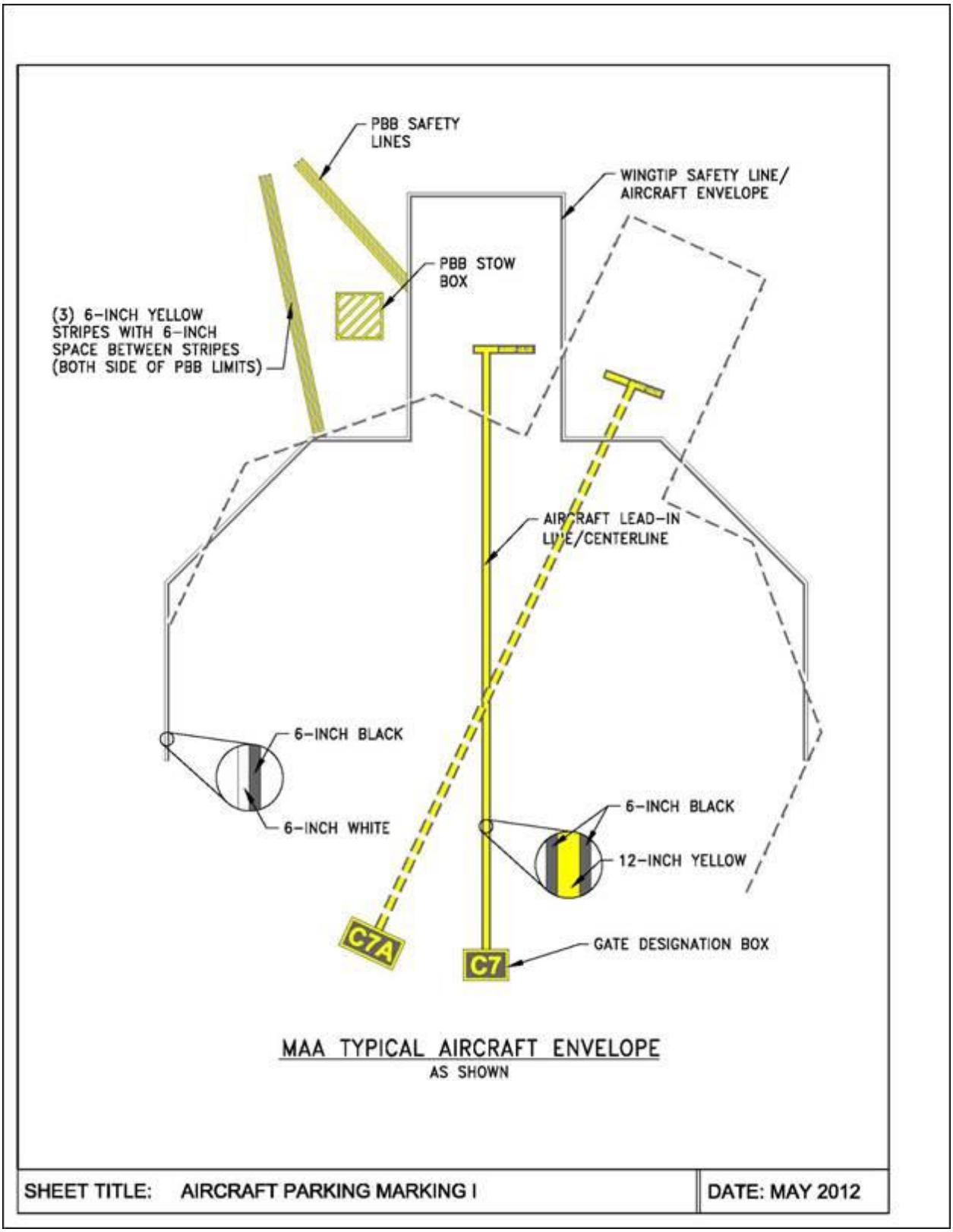
1. Wingtip Safety Line or Aircraft Envelope shall be 6-inch white with 6-inch black highlight on the inside or aircraft side of the stripe.
2. Aircraft Lead-in Lines or Centerline Marking shall be 12-inch yellow with 6-inch black outline on both sides (See Aircraft Parking Marking I exhibit).
3. Nose Wheel Stop Bars shall be 12-inch think, 5-foot wide yellow with 6-inch black outline on all sides.
4. Text defining the aircraft type at a given Nose Wheel Stop Bar shall be 12-inch tall yellow letters with black background. Text shall be justified to the left when located on the right side of the stop bar and justified to the right when located on the left side of the stop bar.
5. The Gate Designation Box at the end of the lead-in line shall include the pier designation and gated number with 4-foot tall yellow letters, black background, and 4-inch minimum width stroke. The black background shall extend a minimum of 12-inches beyond the extremities of the letters. It shall be encompassed with 6-inch yellow and 6-inch black outlines. (See Aircraft Parking Marking II exhibit)

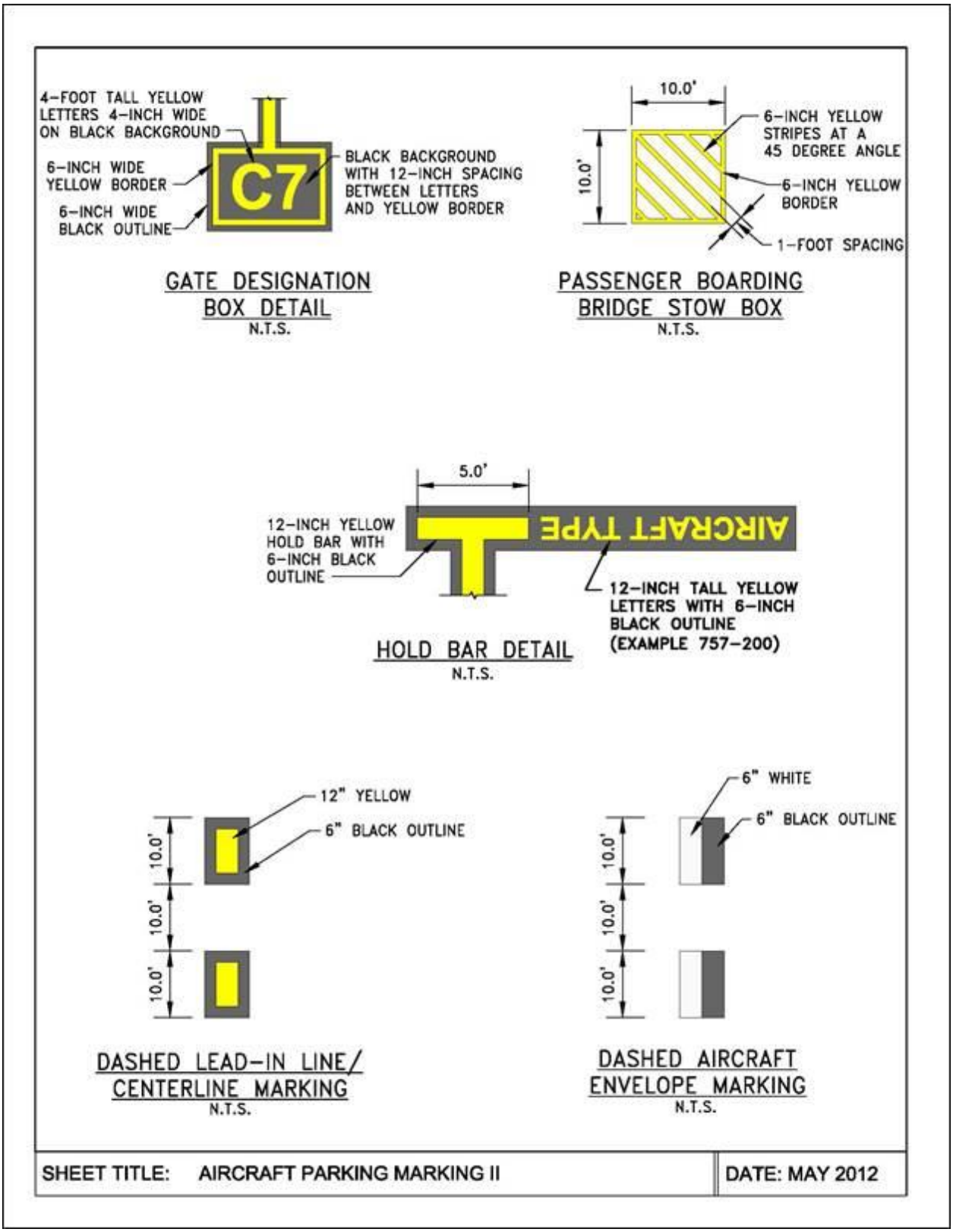
6. Passenger Boarding Bridge (PBB) safety lines shall include three (3) 6-inch yellow stripes with 6-inch spacing between stripes. No black outlines are required on either side of the PBB Safety Line.
7. PBB Stow Box shall be 6-inch yellow, 10-foot by 10-foot square, with 6-inch yellow stripes at a 45 degree angle (no black outline).
8. An alternate centerline and envelope may be required when a gate or RON position can accommodate different aircraft groups or sizes under different scenarios. The secondary, or less used set of marking, shall then be dashed. The widths and colors for the lead-in lines and aircraft envelope remain constant; however the marking shall be altered to 10-foot long stripes with 10-foot long spaces. (See Aircraft Parking Marking II Exhibit).

### *Remain Overnight (RON) Marking*

It is required that all Non-Loading Bridge Gates and RON only parking positions comply, at minimum, with the following marking standards.

1. Wingtip Safety Line or Aircraft Envelope shall be 6-inch white with 6-inch black highlight on the inside or aircraft side of the stripe.
2. Aircraft Lead-in Lines or Centerline Marking shall be 12-inch yellow with 6-inch black outline on both sides (See Aircraft Parking Marking I Exhibit).
3. Nose Wheel Stop Bars shall be 12-inch think, 5-foot wide yellow with 6-inch black outline on all sides.
4. Text defining the aircraft type at a given Nose Wheel Stop Bar shall be 12-inch tall yellow letters with black background. Text shall be justified to the left when located on the right side of the stop bar and justified to the right when located on the left side of the stop bar.
5. The Gate Designation Box, if applicable, at the end of the lead-in line shall include the pier or RON pad designation and position number with 4-foot tall yellow letters, black background, and 4-inch minimum width stroke. The black background shall extend a minimum of 12-inches beyond the extremities of the letters. It shall be encompassed with 6-inch yellow and 6-inch black outlines. (See Aircraft Parking Marking II Exhibit)
6. An alternate centerline and envelope may be required when a gate or RON position can accommodate different aircraft groups or sizes under different scenarios. The secondary, or less used set of marking, shall then be dashed. The widths and colors for the lead-in lines and aircraft envelope remain constant; however the marking shall be altered to 10-foot long stripes with 10-foot long spaces. (See Aircraft Parking Marking II Exhibit).


PBB SAFETY LINES
WINGTIP SAFETY LINE/ AIRCRAFT ENVELOPE
PBB STOW BOX
(3) 6-INCH YELLOW STRIPES WITH 6-INCH SPACE BETWEEN STRIPES (BOTH SIDE OF PBB LIMITS)
AIRCRAFT LEAD-IN LINE/CENTERLINE
6-INCH BLACK
6-INCH WHITE
6-INCH BLACK
12-INCH YELLOW
C7A
C7
GATE DESIGNATION BOX
MAA TYPICAL AIRCRAFT ENVELOPE
AS SHOWN
SHEET TITLE: AIRCRAFT PARKING MARKING I
DATE: MAY 2012




## 7.4.2 Landside Pavement Markings

Pavement markings on all landside pavements shall conform to the latest version of the applicable Maryland State Highway Administration (MDSHA) specification as outlined below. These specifications can be found on MDSHA's Supplemental Specifications and Provisions to the July 2008 Standard Specifciations for Construction and Materials Book web page.

The specifications, when applicable, shall be inserted in the contract documents.

#### 7.4.2.1 Landside Asphalt Pavements

Landside asphalt pavements shall receive thermoplastic pavement markings conforming to MDSHA Standard Specifications for Construction and Materials Section 553 – Lead Free Reflective Thermoplastic Pavement Markings or Section 556 – Preformed Thermoplastic Pavement Markings. The manufacturer's recommendations shall be followed for the duration between installation of the asphalt pavement and application of the thermoplastic pavement markings.

Alternatively, inlaid permanent preformed pattern reflective pavement marking materials conforming to MDSHA Standard Specifications for Construction and Materials Section 559 – Permanent Preformed Patterned Reflective Pavement Markings, may be used.

Thermoplastic pavement markings shall not be placed over existing pavement marking tape on existing asphalt pavement. The existing tape shall be removed prior to placement of the thermoplastic pavement markings.

#### 7.4.2.2 Landside Concrete Pavements

Landside concrete pavements shall receive permanent preformed contrast pattern reflective pavement markings materials conforming to MDSHA Standard Specifications for Construction and Materials Section 559 – Permanent Preformed Patterned Reflective Pavement Markings.

Existing contrast pavement markings shall be removed per MDSHA standard specifications for Construction Materials Section 565 – Removal Of Existing Pavement Markings, with high pressure water blasting or other manual removal methods as specified.

#### 7.4.2.3 Landside Crosswalks, Legends and Symbols

Landside crosswalks, legends and symbols shall receive heat applied permanent preformed thermoplastic pavement markings meeting MDSHA Standard Specifications for Construction and Materials Section 556 Preformed Thermoplastic Pavement Markings.

#### 7.4.2.4 Parking Garages

A. Lane, stall, and numbering markings shall use solvent based Low VOC Acrylic Traffic Marking Paint which is a conventional dry (non-heat applied) acetone based paint for use on concrete and asphalt pavements.
B. Crosswalks, messaging, and symbols shall be heat applied permanent preformed thermoplastic pavement markings conforming to MDSHA Standard Specifications for Construction and Materials Section 556 – Preformed Thermoplastic Pavement Markings.
C. Consolidated Rental Car Facility (CRCF) Garage – The CRCF Garage is an exception and shall use solvent based Low VOC Acrylic Traffic Marking Paint which is a conventional dry (non-heat applied) acetone based paint for use on concrete and asphalt pavements for all markings including lane, stall, numbering, crosswalks, messaging, and symbols.

### 7.4.3 Emergency Vehicle Access/Fire Lanes/Fire Hydrants and Fire Department Connections

Adequate emergency vehicle access and unobstructed access to fire protection system connections and equipment shall be provided at all facilities on the airport property, regardless of the facility ownership or lease/tenancy arrangements. Emergency vehicle access roadway shall be a minimum of 20 feet wide with surface and turning radii suitable for fire department apparatus and an unobstructed vertical clearance of not less than 13'-6" shall be maintained along the entire length of the roadway. No road level obstruction, such as vehicle parking, walls and fences shall be permitted in any portion of the emergency vehicle access. Clearances, markings, warning signs, etc., shall be provided for designated fire lanes, fuel hydrants, fire hydrants and fire department standpipe and sprinkler connections.

The design shall restrict standing or parking a vehicle within 15 feet of a fire hydrant (COMAR Subtitle 10, 21-1003 (m)). This shall include free standing or wall hydrants as well as fire department connections for automatic sprinkler and standpipe systems. As required by the Office of Fire Marshal, approved signs, approved roadway surface markings, or other approved notices shall be provided and maintained to identify fire department access roads and/or access to fire hydrants and fire department connections or to prohibit the obstruction, thereof, or both. Where fire hydrants are subject to vehicular damage, hydrants shall be protected with bollards.

Signing and marking for fire hydrants and fire department connections shall be in accordance with COMAR Subtitle 10, 21-1003 (m), NFPA 1, Chapter 18, and Anne Arundel County Code, and as follows:

#### 7.4.3.1 Fire Hydrants and Fire Department Connections in Travel Lanes

All designated fire hydrant fire lanes shall be clearly marked in one of the following manners:

1. Vertical curbs six inches in height shall be painted yellow on the top and side, extending the length of the designated fire lane. The pavement adjacent to the painted curbs shall be marked with block lettering a minimum of 18 inches in height and with a three-inch brush stroke reading "NO PARKING – FIRE LANE". Lettering shall be yellow and spaced at no more than 50-foot intervals.
2. Rolled curbs or surface without curbs shall have a yellow six-inch-wide stripe painted extending the length of the designated fire lane. The surface adjacent to the strip shall be marked with block lettering a minimum of 18 inches in height and with a minimum three-inch brush stroke reading "NO PARKING – FIRE LANE". Lettering shall be yellow and spaced at no more than 50-foot intervals.
3. Fire lane signs which shall be as follows (see exhibit on following page):
   a. Reflective.
   b. Red letters on white background.
   c. Lettering sizes as shown.
   d. A minimum of 12 inches wide by 18 inches tall.
   e. Bottom of sign shall be installed 7 feet above grade.
   f. Sign may be placed on a building when approved by the fire chief in coordination with the building official.
   g. When posts are required for signs, they shall be a minimum of two-inch galvanized steel or 4 x 4 inch pressure treated wood.
   h. Signs shall be placed so they face the direction of vehicular travel.

#### 7.4.3.2 Fire Hydrants and Fire Department Connections in Non-Travel Lanes (Parking Lots)

All designated fire hydrant fire lanes shall be clearly marked in one of the following manners (see exhibit following section 7.4.3.3):

1. Markings shall extend 15 feet on either side of fire hydrant/connections.
2. Outer line shall extend 3 feet from face of curb.
3. All striping shall be a minimum of 6-inch lines.
4. Chevron lines shall be spaced at 6 foot intervals.
5. Shall be marked with block lettering a minimum of 18 inches in height and with a minimum three-inch brush stroke reading “NO PARKING – FIRE LANE”. Lettering shall be yellow and spaced at no more than 50-foot intervals.
6. Fire lane signs shall be placed as shown.

#### 7.4.3.3 Fire Hydrants and Fire Department Connections at Face of Buildings or Other Structures

All designated fire hydrant fire lanes shall be clearly marked in one of the following manners (see exhibit on following page):

1. A 15-foot x 10-foot minimum area shall be marked.
2. Shall be marked with block lettering a minimum of 18 inches in height and with a minimum three-inch brush stroke reading “NO PARKING – FIRE LANE”. Lettering shall be yellow.

Coordination with the Office of the Fire Marshal is required during facility planning and design development stages. Fire lane layouts shall be included on the design drawings. Where design or construction activities will temporarily or permanently obstruct an existing emergency vehicle access, an alternative access must be provided during the time of the obstruction that is reviewed and approved in writing by the Office of the Fire Marshal and included in the design drawings.

*Fire Hydrant Protection Markings*

# 7.5 Miscellaneous Site Elements

## 7.5.1 Curb and Gutter

Only Combination Curb and Gutter shall be used as per MDSHA Standard 620.02. Straight Curb shall not be used under any circumstances.

## 7.5.2 Bollards

All bollards installed at BWI Marshall and Martin State Airports shall be concrete filled galvanized schedule 40 pipe not less than six (6) inches in diameter, painted yellow.
Bollards shall be covered with a yellow, 1/8" thick HDPE bollard post cover, securely fastened to the bollard in accordance with the manufacturer's recommendations. Sleeve height shall be from the top of the surrounding pavement to the top of the exposed pipe. Two red, reflective, 1-inch thick recessed bands shall be located within the top 18" of the bollard cover. Bollard cover manufacturer shall provide at least five (5) year warranty against warping, cracking, and fading.

Bollard placement shall be designed to protect buildings and other valuable assets from vehicular and mobile equipment impact without impeding access to the protected asset. Assets to be protected included, but are not limited to, above ground tanks, platforms, loading bridge foundations, generators, guard booths, baggage handling systems, etc. In the instance of fire hydrants and standpipes, the provision of, and location of, bollards will be subject to approval by the MAA Fire Marshal and bollards shall not be located in front of, or within three (3) feet of a fire hydrant steamer connection.

## 7.5.3 Power Gate Loops

The installation of the gate loop wire inside a plastic conduit pipe shall be mandatory when new concrete pad is poured.

## 7.6 Drainage Design Criteria

**This section left intentionally blank**

# Chapter 08 Environmental Design Criteria

## 8.1 Sediment Controls and Stormwater Management

### 8.1.1 Sediment and Erosion Control

Refer to Chapter 4.11.2.3 for Standard Maryland department of the Environment (MDE) Sediment and Erosion Control Notes and Plans and 4.8.1 for Environmental Planning Coordination.

### 8.1.2 Stormwater Management (SWM)

The MAA Office of Environmental Services has prepared Institutional Stormwater Management Plans (IMPs) for BWI Marshall and Martin State Airports. Existing Conditions have been documented and approved by MDE for both BWI Marshall and Martin State Airports; future conditions are currently under development. The IMPs shall be utilized by designers and requirements of these documents shall be followed in the design and construction of projects at BWI Marshall and Martin State Airports. Contact the MAA Division of Environmental Planning for additional information.

The following information outlines the general requirements for SWM at BWI Marshall and Martin State (MTN) Airports.

#### 8.1.2.1 Stormwater Management Requirements

Designers must comply with the Maryland Department of the Environment's (MDE's) stormwater management requirements as set forth in MDE's Maryland Stormwater Design Manual Volumes I & II, current edition and all subsequent revisions, and the Stormwater Management Act of 2007. The regulations outlined in this manual must be used during the design of all new stormwater management facilities on MAA-owned properties. MDE requires a comprehensive design strategy for maintaining predevelopment runoff characteristics and protection of natural resources, known as Environmental Site Design or "ESD," which relies on integrating site design, natural hydrology, and smaller controls to capture and treat runoff. The "Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects," "Maryland Stormwater Management Guidelines" and *MDE Technical Memorandum #1* should be utilized in design.

Designers must also comply with enforceable guidance set forth by FAA. To ensure the safety of the traveling public, designers must adhere to FAA's enforceable guidance set forth in the latest FAA AC 150/5200-33 Hazardous Wildlife Attractants on and Near Airports to minimize wildlife strike hazards through the reduction of wildlife attractants.

FAA defines a wildlife attractant as:

> *Any human-made structure, land use practice, or human-made or natural geographic feature that can attract or sustain hazardous wildlife within the landing or departure airspace, aircraft movement area, loading ramps or aircraft parking areas of an airport. These attractants can include but are not limited to architectural features, landscaping, waste disposal sites, wastewater treatment facilities, agricultural or aqua cultural activities, surface mining, or wetlands.*

The AC also provides guidance on placement and design of these facilities to achieve water quality goals while minimizing the potential for creation of a wildlife attraction. FAA's siting criteria for potential

wildlife attractants state that wildlife attractants should not be within 10,000 feet of an airport's aircraft movement areas (including loading ramps and parking areas) or within 5 statute miles of approach or departure airspace, if the attractant may cause hazardous wildlife movement into or across the approach or departure airspace. When facilities that create open water exist within 5 statute miles of the airport, FAA's enforceable guidance requires that they drain within 24 hours following a one- or two-year storm event and within 48 hours following a ten-year storm event.

#### 8.1.2.2 Landscaping Guidance

MAA provides guidance for landscaping (including appropriate seed mixtures) in MAA Landscaping Reference: Approved Species List and MAA Landscaping Reference: Approved Installation Methods (see Appendix D – Standard Specifications). In these documents, MAA details appropriate species to be utilized during the design of landscape plans at stormwater management facilities.

## 8.2 Landscaping

The MAA Office of Planning and Environmental Services has developed Landscaping, Topsoil, Seeding, and Sodding specifications for MAA owned and operated Airports. The specifications are found in Appendix D - Standard Specifications and should be used in the design and construction of projects at BWI Marshall and Martin State Airports. Design of Forest Conservation Plans and exceptions to the specifications must be coordinated with the Manager, Division of Environmental Planning.

# 8.3 Bird Deterrent Systems

## 8.3.1 Waterfowl Deterrent System for Sediment Traps at BWI Marshall

There is a need to discourage ducks and other waterfowl from being attracted to stormwater in sediment traps. The system proposed for BWI Marshall will interfere with the ducks' landing pattern by installing a grid using lightweight wire above the surface of the trap. As they approach a water-filled trap, ducks, geese, and other waterfowl will see the grid wires and not attempt to land. A perimeter fence consisting of two wire strands strung around the posts will keep birds from walking onto the traps.

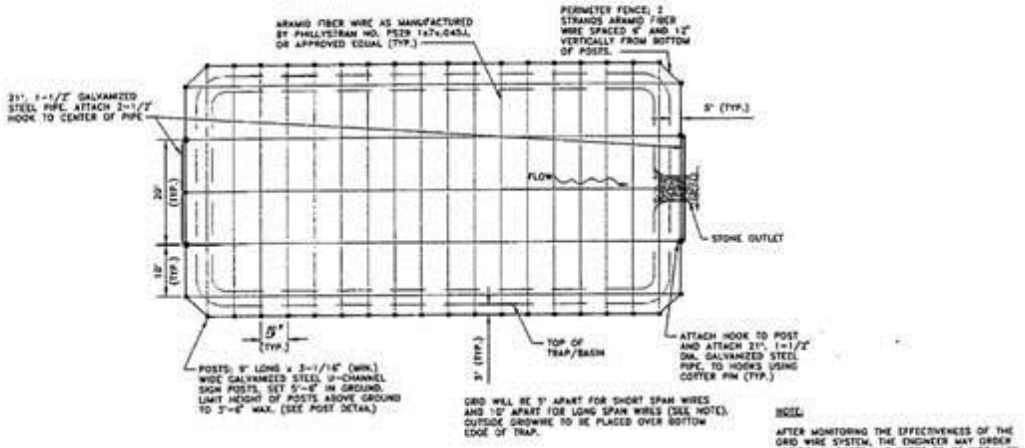
Initial grid spacing will be five feet for short spans and ten feet for long spans. See details for a typical layout. The ends of the grid wires will be strung from hooks placed on posts three feet above the ground. It is expected that the wires will sag as much as two feet and will exert a maximum line tension of thirty-five pounds.

Grid wire will be high-strength, lightweight synthetic material made from aramid fiber as manufactured by Phillystran, Inc., Part No. PS29 1x7x.045J, or approved equal.

Posts will be nine-foot long galvanized steel U-channel signposts, driven five and one half feet into the ground. The height above ground shall be no more than three and one half feet. Three holes will be drilled into each post to attach one 2 ½ inch hook and two 1 ½ inch eye bolts.

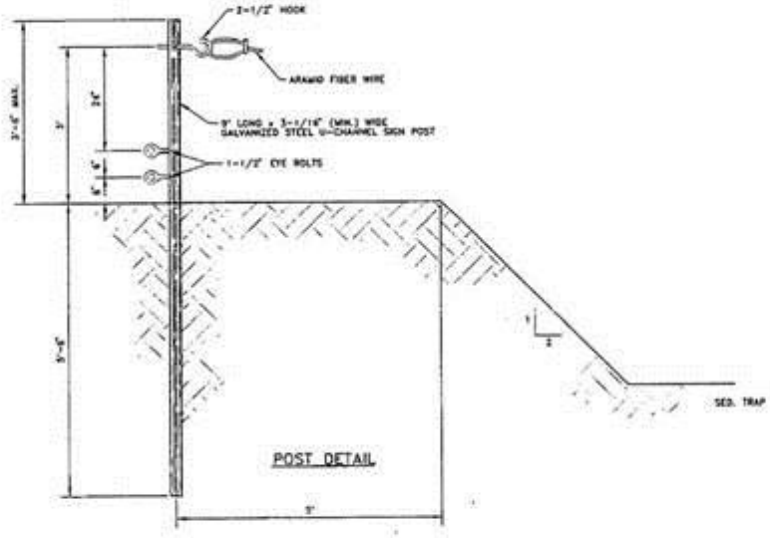
An access gate will be installed on the short end opposite the outlet to facilitate trap cleanout. Each gate consists of a twenty foot long, 1 ½" diameter horizontal pipe placed three feet above ground and spanning two posts spaced twenty feet apart. When sediment is to be cleaned out from the trap, the long pipe is removed. An identical horizontal pipe will also span the stone outlet weir at the opposite end of the trap. Each pipe will have a hook placed in the middle to attach the grid wire.

# BIRD DETERRENT SYSTEM FOR SEDIMENT TRAPS AND SEDIMENT BASINS




BIRD DETERRENT SYSTEM FOR SEDIMENT TRAPS AND SEDIMENT BASINS

N.T.S.



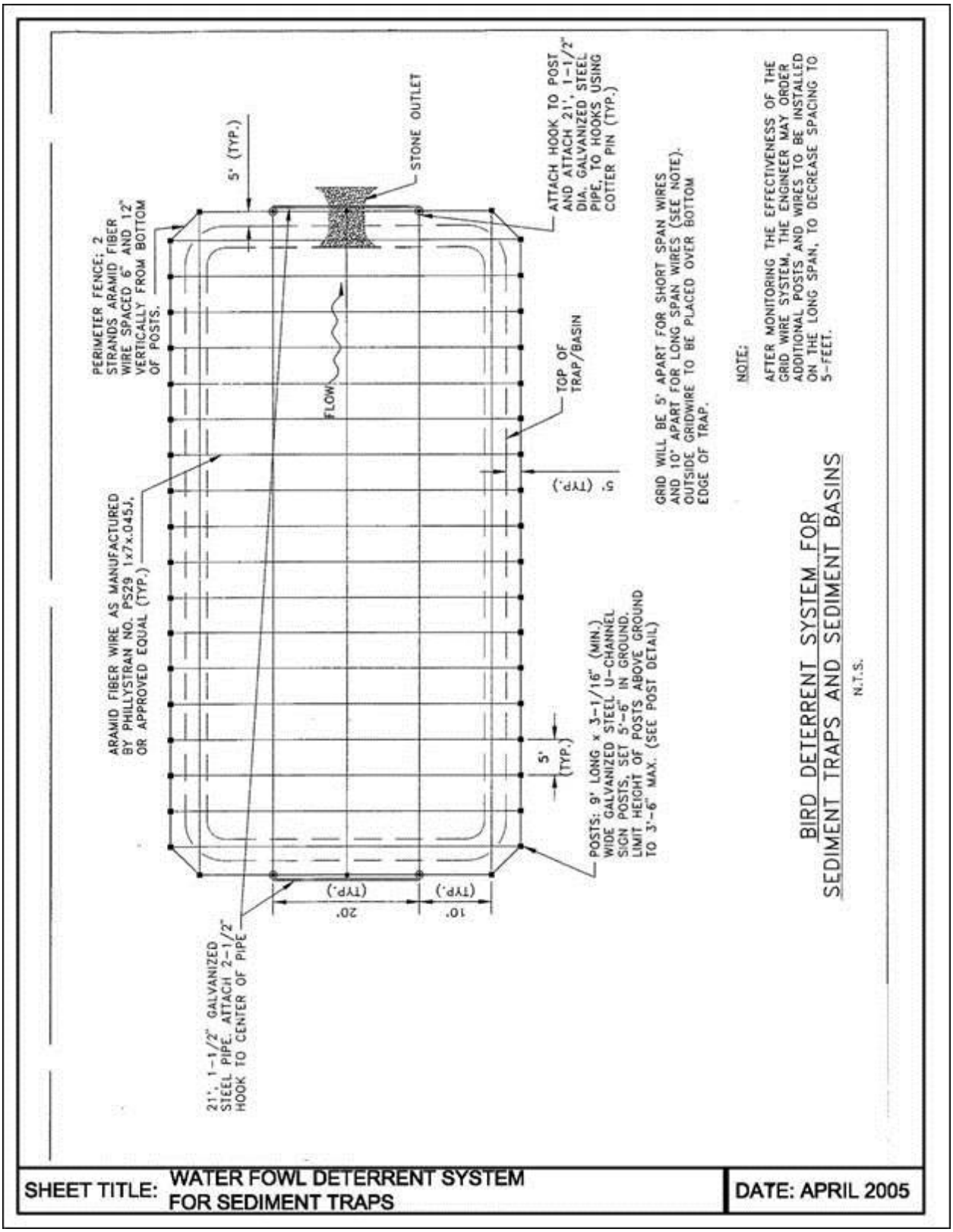

POST DETAIL

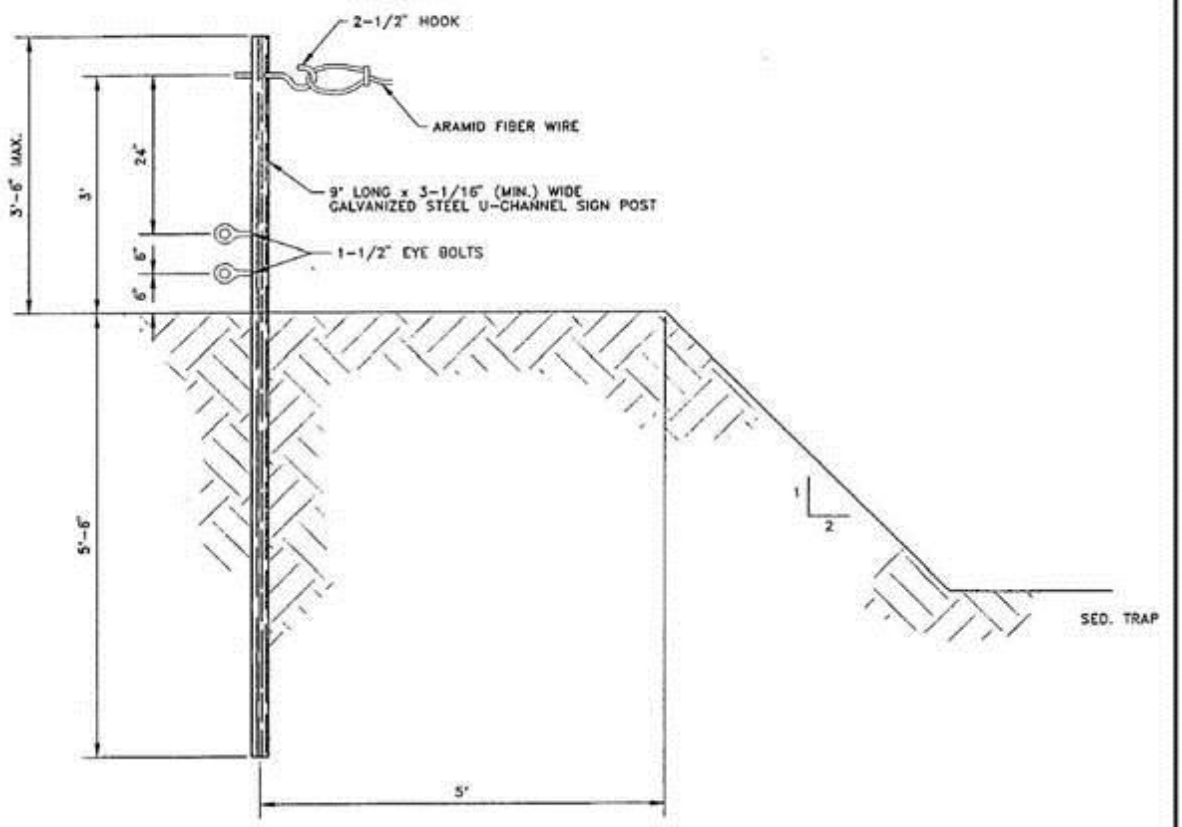
CONSTRUCTION SPECIFICATIONS

AFTER EACH SEDIMENT TRAP/BASIN IS CONSTRUCTED, POSTS ARE PLACED FIVE FEET OUTSIDE OF THE TOP EDGE OF THE TRAP/BASIN, SPACED FIVE FEET ON CENTER ON THE LONG SIDES AND TEN FEET ON CENTER ON THE SHORT SIDES, LEAVING ONE 20-FOOT GAP FOR THE GATE AND ANOTHER 20-FOOT GAP TO STRADDLE THE OUTLET WEIR. AFTER MONITORING FOR EFFECTIVENESS, INSTALLATION OF ADDITIONAL LONG SPANS MAY BE ORDERED BY THE ENGINEER. ATTACH HOOKS TO POSTS. ATTACH BEAMS TO POSTS STRADDLING OUTLET WEIR AND ACCESS GATE. GRID WIRES WILL THEN BE SIZED AND LOOPS ASSEMBLED ACCORDING TO MANUFACTURER'S DIRECTIONS. GRID WIRES ARE THEN ATTACHED TO POSTS STARTING WITH THE LONG DIMENSION FIRST SO THAT THE LONGER WIRES WILL SAG BELOW THE SHORTER STRANDS. WIRE LENGTHS SHOULD BE SIZED TO ALLOW THEM TO BE PULLED TIGHT WITH TWO FEET SAG IN THE MIDDLE OF THE SPANS. AFTER THE GRID IS IN PLACE, THE TWO-STRAND PERIMETER FENCE CAN BE INSTALLED.

WHEN SEDIMENT NEEDS TO BE CLEANED OUT, DISCONNECT AND STORE THE GRID WIRES. THIS CAN BE DONE WITH A TWO-MAN CREW. ONE ON EITHER END OF THE WIRE. EACH PERSON SHALL DISCONNECT THE WIRE FROM THE HOOK AT THE SAME TIME, WALK BEYOND THE TRAP/BASIN, HOLDING THE WIRE TAUT, AND PLACE THE WIRE ON THE GROUND. THE CREW THEN MOVES TO THE NEXT WIRE AND REPEATS THE PROCEDURE UNTIL ALL THE WIRES HAVE BEEN REMOVED. NEXT, THE CREW SHALL REMOVE THE PERIMETER FENCE STRANDS AT THE ACCESS GATES AS WELL AS THE 21-FOOT LONG HORIZONTAL BEAM. CONTRACTOR'S EQUIPMENT CAN THEN ENTER THE TRAP/BASIN TO REMOVE SEDIMENT. AFTER SEDIMENT REMOVAL, THE CREW SHALL RE-INSTALL GRID ASSEMBLY AS DESCRIBED ABOVE.

| SHEET TITLE: | BIRD DETERRENT SYSTEM FOR SEDIMENT TRAPS AND SEDIMENT BASINS | DATE: APRIL 2005 |
|---|---|---|


PERIMETER FENCE: 2 STRANDS ARAMID FIBER WIRE SPACED 6" AND 12" VERTICALLY FROM BOTTOM OF POSTS.
5' (TYP.)
STONE OUTLET
ATTACH HOOK TO POST AND ATTACH 21', 1-1/2" DIA. GALVANIZED STEEL PIPE, TO HOOKS USING COTTER PIN (TYP.)
ARAMID FIBER WIRE AS MANUFACTURED BY PHILLYSTRAN NO. PS29 1x7x.045J, OR APPROVED EQUAL (TYP.)
FLOW
TOP OF TRAP/BASIN
5' (TYP.)
GRID WILL BE 5' APART FOR SHORT SPAN WIRES AND 10' APART FOR LONG SPAN WIRES (SEE NOTE). OUTSIDE GRIDWIRE TO BE PLACED OVER BOTTOM EDGE OF TRAP.
NOTE:
AFTER MONITORING THE EFFECTIVENESS OF THE GRID WIRE SYSTEM, THE ENGINEER MAY ORDER ADDITIONAL POSTS AND WIRES TO BE INSTALLED ON THE LONG SPAN, TO DECREASE SPACING TO 5-FEET.
5' (TYP.)
POSTS: 9' LONG x 3-1/16" (MIN.) WIDE GALVANIZED STEEL U-CHANNEL SIGN POSTS, SET 5'-6" IN GROUND. LIMIT HEIGHT OF POSTS ABOVE GROUND TO 3'-6" MAX. (SEE POST DETAIL)
(TYP.) 20'
(TYP.) 10'
21', 1-1/2" GALVANIZED STEEL PIPE. ATTACH 2-1/2" HOOK TO CENTER OF PIPE
BIRD DETERRENT SYSTEM FOR SEDIMENT TRAPS AND SEDIMENT BASINS
N.T.S.
SHEET TITLE: WATER FOWL DETERRENT SYSTEM FOR SEDIMENT TRAPS
DATE: APRIL 2005




POST DETAIL

SHEET TITLE: WATER FOWL DETERRENT SYSTEM FOR SEDIMENT TRAPS

DATE: APRIL 2005

| Sediment Trap | Approximate | Number of | Total length | Total length of | Number |
|---|---|---|---|---|---|

| Bottom Dimensions, ft. | length per Gridwire, ft. | Gridwires | of Gridwire ft. | Perimeter Fence ft. | of Posts |
|---|---|---|---|---|---|
| 40’ x 85’ | 113’ | 5 | 565’ | 362’ | 44 |
| | 68’ | 18 | 1,224’ | | |
| | Trap TOTAL: | | **1,789’** | | |
| 40’ x 70’ | 98’ | 5 | 490’ | 332’ | 38 |
| | 68’ | 15 | 1,020’ | | |
| | Trap TOTAL: | | **1,510’** | | |
| 30’ x 105’ (2 traps) | 125’ | 4 | 500’ | 350’ | 50 |
| | 50’ | 22 | 1,100’ | | |
| | Trap TOTAL: | | **1,600’** | | |
| 30’ x 150’ | 175’ | 4 | 700’ | 450’ | 70 |
| | 50’ | 32 | 1,600’ | | |
| | Trap TOTAL: | | **2,300’** | | |
| 30’ x 155’ | 170’ | 4 | 680’ | 440’ | 68 |
| | 50’ | 31 | 1,550’ | | |
| | Trap TOTAL: | | **2,230’** | | |
| **GRAND TOTAL:** | | | **11,029’** | **2,284’** | **320** |
| **TOTAL LENGTH OF GRIDWIRE: 11,029 + 2 x 2,284 = 15,597 feet** | | | | | |

Procedure for Installing and Removing Grid Wire System

After each sediment trap is constructed, posts are placed five feet outside of the top edge of the traps, spaced five feet on center on the long side of the trap and ten feet on center on the short sides, leaving one twenty foot gap for the gate. Attach hooks to posts. Attach beams to posts straddling outlet weir and access gate. Grid wires will then be sized and loops assembled according to manufacturer’s directions. Grid wires are then attached to posts starting with the long dimension first so that the longer wires will sag below the shorter strands. Wire lengths should be sized to allow them to be pulled tight with two feet sag in the middle of the spans. After the grid is in place, the two-strand perimeter fence can be installed.

When sediment needs to be cleaned out, disconnect, and store the grid wires. This can be done with a two-man crew, one on either end of the wire. Each person shall disconnect the wire from the hook at the same time, walk beyond the trap, holding the wire taut, and place the wire on the ground. The crew then moves to the next wire and repeats the procedure until all the wires have been removed. Next, the crew shall remove the perimeter fence strands at the access gates as well as the twenty-one foot long horizontal beam. Contractor’s equipment can then enter the trap to remove sediment. After sediment removal, the crew shall re-install grid assembly as described above.

# 8.4 Fueling Systems Management

## 8.4.1 Underground Storage Tanks (UST)

### 8.4.1.1 Conformance with Regulations, Codes, Standards, and Specifications

Underground Fuel Storage Tanks (UST) containing fuels or chemicals designated hazardous by the United States Environmental Protection Agency (U.S. EPA) or by the applicable codes and standards, shall be approved secondary containment systems and shall be in strict conformance with the most recent applicable regulations, manufacturer's recommendations, codes, and standards.

1. U.S. EPA Final Rule; Federal Relations: Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks. Title 40, Code of Federal Regulations, Part 280 (40 CFR Part 280).
2. State of Maryland, Department of Environment (MDE), Title; 26, Subtitle 10, Oil Pollution and Tank Management (COMAR 26.10).
3. State of Maryland, Department of Public Safety and Correctional Services, Title; 12, Subtitle 03, Fire Prevention Commission (COMAR 12.03).
4. National Fire Prevention Association (NFPA) Standards:
   - NFPA 30: Flammable and Combustible Liquids Code.
   - NFPA 30A: Motor Fuel Dispensing Facilities and Repair Garage.
   - NFPA 31: Standard for Installation of Oil-Burning Equipment.
   - NFPA 70: National Electric Code.
5. Petroleum Equipment Institute (PEI) Recommended Practice (RP) For the Installation of Underground Liquid Storage Systems (PEI/RP 100-05).
6. American Petroleum Institute (API) Recommended Practice (RP) For the Installation of Underground Petroleum Storage Systems (API/RP 1615).
7. American Petroleum Institute (API) Standard 2000, Venting Atmospheric and Low-Pressure Storage Tanks.
8. Listing and Labeling: Provide equipment and accessories that are listed and labeled as defined in the National Electric Code (NEC), Article 100.

### 8.4.1.2 Underground Fuel Storage Tank Requirements

Underground storage tanks shall be warranted for 30 years against failure due to internal/external corrosion and when properly installed, against structural failure. Underground storage tanks shall also be UL listed of one of the following type:

1. Fiberglass Reinforced Polyester UST
   A. The underground storage tank shall be constructed of double-walled, fiberglass reinforced polyester (FRP).
   B. Tank shall be manufactured with 100% resin and glass-fiber reinforcement. Tank shall include an integral fiberglass-reinforced polyester (FRP) secondary containment.
   C. The tank shall be double wall construction for containment of leaks with interstitial space between primary (internal) and secondary (external) tank walls to allow for free flow of all leaked product from the primary tank. The entire tank system shall be fabricated as a single unit and delivered to the job site as a complete assembly.
   D. Both the primary storage tanks and secondary containment shall be UL approved for their use and shall be compatible with gasoline, gasohol, ethanol, E85, methanol, oxygenated fuels, jet fuel, av-gas, kerosene, diesel fuel, bio-diesel, and motor oil (new or used) at ambient underground temperature or fuel oil stored at temperatures not to exceed 100ºF. Tanks shall be chemically inert to petroleum products.

E. Tank shall be designed with one 4-inch fitting that will access the tank bottom between the primary and secondary walls (annular space).
F. Tanks with a 6-foot diameter or larger shall have a UL approved, integrally mounted reservoir installed on the tank for hydrostatic monitoring of the interstitial space. The reservoir shall be constructed of fiberglass reinforced plastic materials and warranted for 30 years against failure due to internal/external corrosion and when properly installed, against structural failure (same as tank warranty).
G. The annular space of the tank shall be filled with a Brine Antifreeze solution provided by the tank manufacturer.
H. The tank shall have one (1) 22-inch I.D. flanged manway complete with UL listed gaskets, bolds and cover and appropriate hold-down straps and lifting lugs.
I. Each tank shall be provided with glass fiber reinforced plastic anchor straps for each tank. The number and location of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding a maximum load for each tank diameter per the manufacturer's specifications. Straps shall be standard as supplied by the tank manufacturer.
J. Precast concrete deadman anchors or poured-in-place concrete hold down slab shall be compatible with the manufacturers anchor straps. The concrete deadman or hold down slab and anchor straps shall prevent the fiberglass tank from floating out of the ground when the tank installation in an area of high groundwater or saturated soil conditions.
K. The tank shall support accessory equipment such as ladders, submersible pumps, containment sumps, drop tubes, etc. when properly installed.
L. Threaded fittings and optional equipment shall be consistent for use as directed by the Engineer.
M. Striker plates shall be installed under each service fitting and manway opening.
N. The Underwriters Laboratories (UL) label shall be permanently affixed to each tank.
O. Provide lifting lug(s) on all tanks. Lifting lug system shall be capable of withstanding weight of tank with a sufficient safety factor.
P. The tank shall withstand surface H-20 axle loads when properly installed according to manufacturer's installation instructions. The tank shall withstand aircraft loading if the proposed location requires such loading.

2. HMW Polymer Extruded Double-wall Steel UST
   A. The underground storage tank shall be double-walled steel with a primary steel storage tank contained in a 360º, air-pressure testable and unbreakable jacket, bonded together and sealed off at the fittings. The secondary containment tank wall shall be made of high molecular weight (HMW) polymer extruded and applied at the tank factory. The tank shall be designed with one (1) 22-inch I.D. flanged manway complete with UL listed gaskets, bolts and cover, and appropriate hold-down straps and lifting lugs.
   B. The tank shall be double wall construction for containment of leaks with interstitial space between primary (internal) and secondary (external) tank walls to allow for free flow of all leaked product from the primary tank.
   C. Tank shall be designed with one 2-inch fitting that will provide access to the tank bottom between the primary and secondary walls (annular space).
   D. The tank shall withstand surface H-20 axle loads when properly installed according to manufacturer's installation instructions. The tank shall withstand aircraft loading if the proposed location requires such loading.
   E. The tank shall be shipped, delivered, installed and 75% backfilled while maintaining a constant vacuum (minimum 12 inches of mercury vacuum) on the interstitial space to assure

integrity of both the primary storage tank and secondary containment tank wall simultaneously.

F. Each tank shall be provided with appropriate anchor straps, per the manufacturer's recommendations. The number and location of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding a maximum load for each tank diameter per the manufacturer's specifications. Straps shall be standard as supplied by the tank manufacturer.

G. Precast concrete deadman anchors or poured-in-place concrete hold down slab shall be compatible with the manufacturers anchor straps. The concrete deadmen or hold down slab and anchor straps shall prevent the tank from floating out of the ground when the tank installation in an area of high groundwater or saturated soil conditions.

H. The tank shall support accessory equipment such as ladders, submersible pumps, containment sumps, drop tubes, etc. when properly installed.

I. Threaded fittings and optional equipment shall be consistent for use as directed by the Engineer.

J. Striker plates shall be installed under each service fitting and manway opening.

K. The Underwriters Laboratories (UL) label shall be permanently affixed to each tank.

L. Provide lifting lug(s) on all tanks. Lifting lug system shall be capable of withstanding weight of tank with a significant safety factor.

3. Double-wall Polyurethane-coated Steel UST

A. The underground storage tank shall be double-walled steel, externally protected with 75mils thick of Polyurethane Coating System per corrosion control system specifications, and built in accordance with UL 58 Type I Construction criteria.

B. The corrosion control system shall have a minimum of 30-year warranty against failure due to exterior corrosion and internal corrosion when used with compatible petroleum products. The tank will not require sacrificial anodes and therefore will not require cathodic monitoring.

C. The tank shall be double wall construction for containment of leaks with interstitial space between primary (internal) and secondary (external) tank walls to allow for free flow of all leaked product from the primary tank.

D. Tank shall be designed with one 2-inch fitting that will provide access to the tank bottom between the primary and secondary walls (annular space).

E. The tank shall withstand surface H-20 axle loads when properly installed according to manufacturer's installation instructions. The tank shall withstand aircraft loading if the proposed location requires such loading.

F. The tank shall be shipped, delivered, installed and 75% backfilled while maintaining a constant vacuum (minimum 12 inches of mercury vacuum) on the interstitial space to assure integrity of both the primary storage tank and secondary containment tank wall simultaneously.

G. Each tank shall be provided with appropriate anchor straps, per the manufacturer's recommendations. The number and location of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding a maximum load for each tank diameter per the manufacturer's specifications. Straps shall be standard as supplied by the tank manufacturer.

H. Precast concrete deadman anchors or poured-in-place concrete hold down slab shall be compatible with the manufacturer's anchor straps. The concrete deadman or hold down slab and anchor straps shall prevent the tank from floating out of the ground when the tank installation in an area of high groundwater or saturated soil conditions.

I. The tank shall support accessory equipment such as ladders, submersible pumps, containment sumps, drop tubes, etc. when properly installed.
J. Threaded fittings and optional equipment shall be consistent for use as directed by the Engineer.
K. Striker plates shall be installed under each service fitting and manway opening.
L. The Underwriters Laboratories (UL) label 58 Type I Construction label shall be permanently affixed to each tank.
M. Provide lifting lug(s) on all tanks. Lifting lug system shall be capable of withstanding weight of tank with a significant safety factor.

#### 8.4.1.3 Underground Storage Tank Piping

All product piping that is buried underground shall be made of non-ferrous materials and shall be designed as double containment components.

***A. Double-Wall Flexible Plastic***

1. Underground piping shall be 1-inch – 1.5-inch diameter Flexible, Double-Containment Piping and MUST comply with UL 971 (2004).
2. Ducting for flexible double wall pipe shall be 4" nominal diameter HDPE duct utilized as a carrier for double wall pipe to allow ease of replacement of double wall pipe if leakage is detected. Duct shall be a minimum SDR of 11 with a wall thickness of 0.409". Bends within the duct shall be limited to a bend radius that is greater than or equal to the bend radius of the flexible double containment product piping.
3. Flexible plastic piping systems shall not be utilized as direct fill lines, vent lines, stage II vapor recovery lines or aboveground.
4. An automatic line leak detector must be installed on each fuel supply line that conveys product under pressure.

***B. Coaxial Fiberglass Pipe***

1. An automatic line leak detector must be installed on each fuel supply line that conveys product under pressure.
2. FRP piping shall not be utilized as direct fill lines or aboveground.

### 8.4.2 Aboveground Storage Tanks

#### 8.4.2.1 Conformance with Regulations, Codes, Standards, and Specifications

Aboveground Storage Tanks (AST) containing fuels or chemicals designated hazardous by the EPA or by the applicable codes and standards, shall be approved secondary containment systems and shall be in strict conformance with the most recent applicable regulations, manufacturer's recommendations, codes, and standards.

A. U.S. EPA Spill Prevention Control and Countermeasure Plans. 40 CFR Part 112 as approved by MAA Manager of Environmental Compliance.
B. State of Maryland, Department of Public Safety and Correctional Services, Title; 12, Subtitle 03, Fire Prevention Commission (COMAR 12.03).
C. State of Maryland, Department of the Environment (MDE), Title; 26, Subtitle 10, Oil Pollution and Tank Management (COMAR 26.10).
D. National Fire Prevention Association (NFPA) Standards:
   - NFPA 1: Fire Code
   - NFPA 30: Flammable and Combustible Liquids Code.
   - NFPA 30A: Motor Fuel Dispensing Facilities and Repair Garage.

- NFPA 31: Standard for Installation of Oil-Burning Equipment.
- NFPA 58: Liquefied Petroleum Gas Code.
- NFPA 59: Utility LP-Gas Code
- NFPA 59A: Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG).
- NFPA 70: National Electrical Code.
- NFPA 385: Standard for Tank Vehicles for Flammable and Combustible Liquids.
- NFPA 395: Standard for the Storage of Flammable and Combustible Liquids at Farms and Isolated Sites.
- NFPA 704: Standard System for Identification of Hazards of Materials for Emergency Response.
- NFPA 780: Standard for the Installation of Lightning Protection Systems.

E. Petroleum Equipment Institute (PEI) Recommended Practice (RP) For the Installation of Aboveground Storage Systems for Motor-Vehicle Fueling (PEI/RP 200-03).

F. Underwriters Laboratories Inc. (UL) listing required – UL 142 – Standards for Steel Aboveground Tanks for Flammable and Combustible Liquids.

G. Underwriters Laboratories Inc. (UL) listing required – UL 2085 – Standards for Protected Aboveground Tanks for Flammable and Combustible Liquids.

H. American Petroleum Institute (API) Standard 2000, Venting Atmospheric and Low-Pressure Storage Tanks.

I. Steel Tanks Institute (STI), Shop Fabricated Atmospheric Tank Documents.

#### 8.4.2.2 Aboveground Fuel Storage Tank Requirements

A. Storage tanks shall be warranted for 30 years against failure due to internal/external corrosion and when properly installed, against structural failure.

B. Aboveground storage tanks shall be UL-2085 or UL-142 listed and shall be equipped with the following design parameters:

1. "Protected" Aboveground Storage Tank System (UL-2085)
   a. The storage tank shall be a UL-2085 thermally insulated double-walled, steel aboveground storage tank designed for the storage of flammable and combustible liquids at atmospheric pressure. The tank shall include steel primary tank, integral steel secondary containment and thermal insulation that provides a minimum two-hour fire rating. The entire tank system shall be factory fabricated as a single unit and delivered to the job site as a complete assembly. Secondary containment shall be a minimum 110% of the primary containment volume.
   b. Inner and outer tank shall be manufactured in accordance with UL-142 Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids. Entire tank shall be labeled for Underwriters Laboratories UL-2085 Standard for Insulated Secondary Containment Aboveground Tank for Flammable Liquids. The tank design shall comply with UL-2085 "Protected" Tank standard and shall be tested for Ballistics, Impact, Hose Stream, and Pool Fire UL-2085 performance standards. Each tank shall be delivered as a completed UL-listed assembly.
   c. Tank shall be manufactured and labeled per NFPA 704 for type of hazardous material stored and in strict accordance with Steel Tank Institute (STI) Fireguard® Thermally Insulated, Double Wall Steel Aboveground Storage Tank standards as applied by a license of the STI. Tanks shall be subject to STI's Quality Assurance program and backed by the STI 30-year limited warranty.

d. Tank shall be fabricated per UL-142 of mild carbon steel with shall seams of continuous lap weld construction. Tank shall be of double wall construction and provide complete secondary containment of the primary storage tank's contents by an impervious steel outer wall. A minimum of 3-inches of porous, lightweight monolithic thermal insulation material shall be installed at the factory within the interstitial space between the inner and outer wall. The thermal insulating material shall be in accordance with American Society of Testing Materials (ASTM) Standards C-332 and C-495. The thermal insulating material shall allow liquid to migrate through it to the monitoring point. The thermal insulating material shall not be exposed to weathering and shall be protected by the steel secondary containment outer wall.

2. Aboveground Storage Tank System (UL-142)
   a. The storage tank shall be a UL-142 double-walled, steel aboveground storage tank designed for the storage of flammable and combustible liquids at atmospheric pressure. The tank shall include steel primary tank and integral steel secondary containment. The entire tank system shall be factory fabricated as a single unit and delivered to the job site as a complete assembly. Secondary containment shall be a minimum of 110% of the primary containment volume. The tank shall be designed for possible relocation at a future date.
   b. Inner and outer tank shall be manufactured in accordance with UL-142 Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids. Each tank shall be delivered as a completed UL-listed assembly.
   c. Tank shall be fabricated per UL-142 of mild carbon steel with shall seams of continuous lap weld construction. Tank shall be of double wall construction and provide complete secondary containment of the primary storage tank's contents by an impervious steel outer wall.

C. Each tank shall be designed for possible relocation at a future date. Concrete encased tank designs are not recommended.

D. Each tank shall be equipped with OSHA approved stairs and platforms with handrails, supplied by the manufacturer. For tanks without remote fill assemblies, stairs shall be located at same end of tank as fill pipe, fill pipe shall be fully accessible to fuel delivery operator.

E. Lifting lugs shall be provided at balancing points to facilitate handling and installation of the tank.

F. Exterior protective coatings shall be applied per manufacturer's recommendations.

G. The interstitial space between tanks must be able to be monitored for leaks.

H. Tank Appurtenances – At a minimum each tank shall be equipped with the following. Any deviations from this requirement must be approved by the Engineer in writing. All tank appurtenances must meet the requirements of NFPA 30 and NFPA 30A.
   1. Normal vent;
   2. Emergency vent(s);
   3. Spill catchment basin;
   4. Site gauge capable of providing the level of liquid within the tank to the nearest inch (minimum);
   5. Overfill prevention valve;
   6. Vent whistle / high level alarm;
   7. Fire valve;
   8. Ball valve(s);
   9. Antisiphon valve / solenoid valve that will prevent the release of liquid from the tank by siphon flow; and

10. Annular space leak detection gauge that will visually alert facility personnel to the presence of liquid within the annular space.
11. Minimum 30” diameter flanged manway access at top centerline of tank for tanks over 5,000gallon capacity.

I. The tank’s primary and secondary containments must be tested for tightness in the factory and in the field (following installation of all components) before commissioning.

#### 8.4.2.3 Aboveground Storage Tank Venting (Normal Vent)

A. Storage tank shall be adequately vented to prevent the development of pressure or vacuum that can damage the tank or exceed the tank’s design pressure during filling or emptying of the tank. Each compartment of the primary tank shall be equipped with a normal venting device sized and installed in accordance with the requirements of NFPA 30, NFPA 30A, and API Standard 2000.
B. The normal vent shall be at least as large as the largest filling or withdrawal connection but shall not be less than 1.25-inches nominal inside diameter.
C. The normal vent for an AST system storing a flammable liquid shall extend a minimum of twelve (12) feet above the ground. The normal vent for an AST system storing a combustible liquid shall extend a minimum of three (3) feet above the top of the tank.
D. The venting device(s) shall be designed so vapors exhaust upward. Vent outlets shall be installed so that vapors will not be trapped by eaves or other obstructions, all vent outlets shall be a minimum of five (5) from building openings and air intakes.
E. Tank vents that are installed within or attached to a canopy shall extend a minimum of five (5) feet above the highest projection of the canopy.
F. Normal vents shall NOT be installed on any compartment of the tank that does not routinely contain petroleum products (i.e., interstitial spaces, closed portions of closed-top dike tanks).
G. Ball float vent checks shall NOT be used with an AST system.

#### 8.4.2.4 Aboveground Storage Tank Venting (Emergency Vents)

A. Every aboveground storage tank shall have emergency relief venting (either through construction of device(s)) that will relieve excessive pressure caused by exposure to fire. This applies to every compartment of the primary tank, the interstitial space of the secondary tank, and the enclosed space of tanks of closed-top dike construction.
B. The necessary emergency relief venting capacity for a tank system shall be in accordance with NFPA 30, NFPA 30A, and the manufacturer’s recommendations.

#### 8.4.2.5 Aboveground Storage Tank Piping

A. Aboveground piping shall be minimum Schedule 40 galvanized steel for ground product fuels and internally lined epoxy-coated or stainless steel for jet fuel. Galvanized piping shall not be used for diesel or aviation fuels.
B. Underground product piping shall be one of the following: UL approved double-walled fiberglass, or UL approved double-walled corrosion resistant flexible petroleum fuel piping including polyethylene conduit, or equal, including the installation of product containment sumps for dispensing units and transition points from aboveground to underground piping.
C. Piping systems of aboveground storage tanks in connection with pumps shall contain a sufficient number of control valves and check valves to control the flow of liquids properly in normal operation and in the event of physical damage or fire exposure.

D. Piping systems affiliated with aboveground storage tanks shall be protected and supported in a way that it will be protected from physical damage and excessive stresses arising from settlement, vibration, expansion, contraction, or exposure to fire.

E. Aboveground product supply piping shall be equipped with the following components, which shall be installed in the following order moving downstream from the tank (unless otherwise specified by the Engineer in writing):
   1. Block valve / Ball valve – capable of isolating the tank from the piping.
   2. Fire / Emergency valve – capable of automatically closing and isolating the tank and piping in the event of a fire. The fire / emergency valve shall be constructed of steel of nodular iron to prevent failure under fire conditions.
   3. Anti-siphon valve / solenoid valve – capable of preventing gravity-discharge / siphon flow of product from damaged piping. The anti-siphon valve may be electrically operated solenoid valves or mechanical check valves that open or close simultaneously with the operation of the pump motor. Anti-siphon valves are only required on tanks where the liquid level in the tank (at any point) is higher than the supply piping or dispensing unit. Where permitted, mechanical anti-siphon valves shall be installed in lieu of electric solenoid valves.

### 8.4.3 Storage Tanks Associated with Gasoline Dispensing/Motor Vehicle Refueling Facilities (GD/MVRFs)

Please see Chapter 4.6.5 Gasoline Dispensing/Motor Vehicle Refueling Facilities Permitting Process regarding the Gasoline Dispensing/Motor Vehicle Refueling Facilities Permitting Process and Design Requirements.

For the purposes of this section and all subsequent subsections, “Owner” refers to the Maryland Aviation Administration (MAA), or either of BWI Marshall and/or Martin State Airports as determined by the context. “Designer” refers to any entity commissioned to design and/or specify equipment described herein for construction and/or installation at any MAA facility or location within the BWI Marshall and/or Martin State Airports.

Owner must ensure that proper procedures are followed during product transfer from cargo tanks to storage tanks to minimize vapor releases, such as minimizing gasoline spills, expeditiously cleaning up gasoline spills, using gasketed seals for gasoline containers and storage tank fill pipes, and minimizing product being sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices such as oil/water separators.
Owner must not permit cargo (delivery) trucks/tanks to unload gasoline into a storage tank unless proper connections in the vapor balance system are established, vapor-tight equipment and connections are used, and the tank truck vapor return equipment/hatches/seals are vapor- tight and compatible with the storage tank vapor balance equipment. Additionally, the cargo tank must carry documentation that it has met specifications of EPA method 27.

Owner must comply with general requirements pertaining to permit duration, availability of permit at permitted location, modifications, inspections, right of entry, violations, and penalties as outlined in Part III of MDE/ARMA’s *Air Quality General Permit to Construct Application Package for Motor Vehicle Refueling Facilities*.

In addition, the following recordkeeping, testing, notification, and reporting procedures are required for GD/MVRF storage tanks:

1. Recordkeeping

a. For tanks with a monthly throughput of less than 100,000 gallons and Stage I vapor recovery equipment, owner must make gasoline throughput, gasoline spills and cleanups, and maintenance records available within 24 hours of a Maryland Department of the Environment's Air and Radiation Management Administration (MDE/ARMA) request.
b. For tanks with monthly throughput of 100,000 gallons or more and Stage I vapor recovery equipment, owner must make those records outlined in item 1.a., above, as well as records of all tests performed and all notifications or reports submitted to the EPA or MDE/ARMA available within 24 hours of a MDE/ARMA request.
c. All records must be kept by owner for a period of five years.
d. Additional recordkeeping requirements are outlined for tanks with Stage II vapor recovery equipment (required for all new sources at BWI Marshall and Martin State Airports) in Part II, Section E(2) of MDE/ARMA's *Air Quality General Permit to Construct Application Package for Motor Vehicle Refueling Facilities*.

2. Testing
   a. For tanks with a monthly throughput of 100,000 gallons or more and Stage I vapor recovery equipment, owner must demonstrate compliance at the time of installation and every three years thereafter with those tests outlined in Section 4.8.5.2, subsection 5(d-g) and in Part II, Section B(1)(c) of MDE/ARMA's *Air Quality General Permit to Construct Application Package for Motor Vehicle Refueling Facilities*.
   b. Testing frequency as well as additional testing requirements for tanks with Stage II vapor recovery equipment are outlined in Part II, Section B(2) of the *Application Package*.
   c. Owner must ensure that all Stage II equipment is inspected at least daily, and that at least one employee shall be trained to conduct inspections through an approved training course.
3. Notifications
   a. Regulatory notifications are required for tanks with monthly throughput of 10,000 gallons or more and Stage I vapor recovery equipment. Notification types include Initial, Compliance, Change in Information, and Performance Test, and requirements increase for tanks with a monthly throughput of 100,000 gallons or more. These notification requirements and procedures are outlined in Part II, Section C of the *Application Package*.
   b. Except for Performance Test notifications, there are no other notification requirements for tanks of any size with Stage II vapor recovery equipment (see Part II, Section C(2) and Section D(2) of the Application Package). Owner must notify MDE/ARMA of any Stage II vapor recovery equipment performance tests at least 5 days before conducting the test. Copies of all test results and reports of test failures must be forwarded to MDE/ARMA within 45 days per Part II, Section D(2) of the Application Package.
4. Reporting
   a. There are no reporting requirements for tanks with monthly throughput of less than 100,000 gallons and Stage I vapor recovery equipment. For tanks with monthly throughput of 100,000 gallons or more and Stage I vapor recovery equipment, owner must report results of tests to EPA Region III and the MDE/ARMA within 180 days of test completion (see Part II, Section D(1) of the Application Package).

### 8.4.4 Oil Water Separator (OWS)

Oil/Water Separators offer environmental protection from surface water pollution meeting the needs of a wide variety of run-off applications. Oil/water separators serving as secondary containment as defined by 40 CFR Part 112.8 must be constructed to contain 110% of the volume of the largest oil storage container. This often includes mobile fuelers and bulk fuel storage containers.

Construction and performance of the oil/water separators must be in accordance with UL SU-2215. Oil/Water separators shall be listed to Underwriter's Laboratories UL SU-2215. Manufacturer must provide certification documentation detailing criteria under which the system was tested. UL SU-2215 label shall be prominently displayed on manway covers.

Capacities, dimensions, construction, and thickness of separators shall be in strict accordance with UL 58, double-walled construction with 360-degree steel secondary containment. The inner steel tank shall be completely contained within the outer tank, enclosing 100% of the tank volume. The tank must have a double steel shell with a space between the layers. The space between the inner and outer steel walls shall be monitored with an approved leak detection device.

Oil/Water separators shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separators dimensions and thickness shall be in strict compliance with Roark's Formulas for Stress and Strain as presented in UL 58. Calculations shall be submitted to project Design Engineer to document structural strength under specified overbearing or external pressure. These calculations shall be included in the submittal for the Oil/water separator. The separator shall be installed in accordance with manufacturer's recommendations. Oil/water separators installed below ground shall be installed to withstand H-20 or aircraft rated loading depending on location.

Coalescer area calculations also must be provided during the submittal process and should illustrate specified performance under laminar flow conditions. Submitted calculations shall take into account the rate of flow, potential surge flow, influent concentration, particle characteristics (20-micron), fluid temperature, fluid specific gravity and pH.

Separators must be designed to remove all free oil droplets equal or greater than 20 microns. In addition the effluent quality must meet a discharge limit of 15mg/L Oil and grease.

Corrosion control systems for separators shall be in accordance with UL 1746 standard for external corrosion protection systems for steel underground tanks. Accepted exterior surfaces include: polyurethane (PUR), polyurea, or fiber-reinforced plastic (FRP) coated systems. Galvanic-type cathodic protection systems are not acceptable. Each separator STI corrosion control system shall include a 15 mil thick interior polyurethane coating and all interior seams shall be steel welded before sand blasting and interior coating.

Oil/water separators may provide treatment with flow-through or actuated inlet tanks. Oil/water separator systems shall be fabricated, inspected and tested for leakage before shipment from the manufacturer as completely assembled units. The oil/water separator shall be tested in accordance with NFPA 30 Chapter 21.5.2 before being placed into service.

Separators shall never be intended for use with hazardous chemicals. Oil/water separators should not be used with additional tanks for collection of oil effluent downstream of the unit discharge.

The source of the influent to the separator shall be gravity flow from storm water runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

Oil/water separator local alarm control panel shall consist of audible and visual alarms generated. Alarms shall consist of "high" oil level, "high, high" oil level, and "leak" detection. Control panel shall

consist of NEMA 4 enclosure and level sensors shall be intrinsically safe. Liquid level sensing device shall comply with the Standard for Liquid Level Indicating Gauges for Oil Burner Fuels, UL 180, or Control Equipment for use with Flammable Liquid Dispensing Devices, UL 1238.

Separators shall be furnished with flanged inlet and outlet pipe connections.

Separators shall utilize necessary appurtenances, including, but not limited to, liquid level devices, overpressure devices, venting, heaters, pumps, monitors, shutoff valves, control panels, or other individual mechanical or electrical components.

Oil/water separators shall meet the following requirements:

- Must comply with Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks—UL 1746
- Normal Venting for Underground Storage Tanks—National Fire Protection Association NFPA 30, 2012. Flammable and Combustible Liquids Code.
- Erosion and Sediment Control—COMAR 26.17
- Gaskets and Seals—UL 157
- Underwriter's Laboratories UL SU-2215

Design must maintain positive drainage through the unit. Piping utilized for drainage from the unit shall be sized based on maximum discharge flowrates from the unit, pipe capacity, and necessary pipe strength based on depth of below ground pipe placement. Piping shall be installed with all necessary appurtenances, including seals at piping connections to prevent contamination by unit, cleanouts to allow access to entire length of installed piping, and necessary valves. Oil/water separator inlet and outlet piping shall be installed with a minimum slope of 1 percent, and to discharge non-erosively.

Oil water separator must be properly vented to prevent flow siphoning through the tank. Comply with oil/water separator manufacturer recommendations for vent pipe size and locations.

Oil/water separator must contain a minimum of two manways. One manway shall be directly above coalescers (either parallel plates or coalescer balls acceptable) to provide easy access during maintenance. The second manway shall be directly above either a final polishing coalescer, if applicable, or the sludge chamber. Each manway dimensions shall facilitate easy removal of either device during maintenance. No manway shall be less than ID 30 inches in size. The manway covering must be in accordance with Chapter 7.2.2 Manhole/Handhole Covers/LIDS.

Each separator shall be provided with a minimum warranty of one year material and workmanship against structural failure following placement into service.

Separators must be designed to remove all free oil droplets equal or greater than 20 microns. In addition the effluent quality must meet a discharge limit of 15mg/L oil and grease.

Selected oil/water separator manufacturer shall have at least 5 years of experience in manufacturing similar units for comparable applications.

If there is a conflict between the MAA design standards and federal, state, or local code, the latest code or policy will govern.

### 8.4.5 Fuel Truck Parking

The design of all facilities at BWI Marshall and MTN, involving fuel loading and/or parking areas for mobile or portable fuel/oil storage containers must comply with NFPA 407, and must meet 40 CFR, Part 112 requirements of the Environmental Protection Agency's Spill Prevention and Control Countermeasures (SPCC).

The MAA requires all owners of existing fuel operations at BWI Marshall and MTN to construct the secondary containment. New facilities must construct the required secondary containment prior to beginning operation. The requirement for secondary containment applies but is not limited to, the following conditions:

1. Fuel truck parking areas where filled and parked fuel trucks are left unattended. The fuel truck parking areas must be provided with secondary containment capable of holding the volume of the largest tank.
2. Truck loading/unloading areas. Areas where fuel is loaded or unloaded from a tank truck to a storage tank, or vice-versa, must be provided with secondary containment capable of holding at least the maximum capacity of any single compartment of a truck using the facility.

# 8.5 Hazardous Materials Management

## 8.5.1 Asbestos and Other Hazardous Materials

Current Federal and State environmental statutes require that certain potentially hazardous materials that may be affected by building improvements or modifications involving activities such as construction, repair, maintenance, alterations, and renovations be identified and removed prior to conducting these activities. The requirements mandate that hazardous materials be identified in order to comply with worker and occupant/tenant safety, environmental, and disposal requirements. The primary materials of concern include, but are not limited to, asbestos-containing materials (ACM), lead-based paint, PCB, and mercury-containing building elements.

Prior to developing a scope of work for the proposed improvements or modifications, the Designer, Contractor and/or Tenants are required to coordinate with the Division of Environmental Compliance to obtain recent hazardous materials surveys and to arrange for a Hazardous Materials Site Assessment. An MAA contractor will inspect the area and provide a report describing the hazardous materials that will be affected by the proposed activities and recommendations for their removal or management. Hazardous materials removal services will be arranged and managed by the MAA or by the tenant. In either case, "third party" abatement oversight will be provided by the Division of Environmental Compliance. The 100% plans shall be submitted to the Division of Environmental Compliance for review and coordination.

The following shall be incorporated into the construction documents for hazardous materials abatement work:

1. The Contractor shall coordinate through CMI the scheduling of the Division of Environmental Compliance inspectors' and industrial hygienist during the construction demolition phase. The Environmental Compliance Inspectors and Industrial Hygienist would identify any suspect hazardous material that may have been inaccessible during design, for example behind a wall or under a floor. If hazardous material is found during demolition, a Field Revision will be issued by the Engineer.
2. Include Miscellaneous Work Allowance for unforeseen asbestos removal.

The following addresses the post abatement deliverables from abatement contractors and provides a consistent method of reporting required information. This is designed to be included in contracts or agreements between MAA and abatement contractors.

Contract Language for Office of Engineering & Construction to Provide to Abatement Contractors:

The Abatement Contractor shall perform work in accordance with the contract terms, applicable Federal and State regulations, and approved Abatement Design. Within thirty (30) days of project completion the Contractor shall provide an Abatement Closure Report. The submittal shall consist of two hard copies of the Closure Report and one electronic version in PDF format. The Closure Report must include a Title Page containing the site or renovation area, project name (what was removed from where), Contractor name and information, Contract number, and dates of abatement. An Abatement Summary must be provided that describes the materials removed, controls used, work procedures, total amount removed and location(s) of removal. Indicate if "all" materials were removed or if remnant materials remain and where.

The following appendices must be provided:

- Copies of Abatement Design/Work Plan
- Copies of EPA Notifications or permits (as applicable)
- Copies of Contractor Supervisor and Worker certificates/licenses
- Copies of Daily Sign in Logs and Inspection Logs
- Copies of Air Sample Results
- Copies of Waste Manifests

The hard copy and electronic reports shall be submitted to MAA's Environmental Program Manager, Division of Environmental Compliance for review and acceptance.

#### 8.5.1.1 Asbestos

For renovation work, a checklist should be formulated to insure all possible sources of asbestos have been removed (i.e., ceiling tile, floor tile, insulation, etc.). If asbestos is suspected, the MAA Environmental Compliance Officer shall be contacted to initiate the proper documentation and testing of the site and determination of the proper abatement procedures.

Column Covers: Many of the column covers in the terminal building consist of preformed asbestos cement. Because this material is non-friable, there is no health hazard associated with its undisturbed presence. Any cutting, sawing, drilling, or work which disturbs the column will require a licensed asbestos abatement firm to properly isolate, contain, and dispose of debris produced.

#### 8.5.1.2 Lead Paint

The Designer shall determine if the project has potential lead exposure. Where the potential for lead exposure exists, request the MAA Environmental Compliance Officer to test the project site for potential areas which may result in lead exposure above the action level. Test locations and results shall be shown on the contract plans. Incorporate the following into the Special Provisions:

*"The Contractor shall fully comply with the requirements of COMAR 09.12.32 – 'Occupational Safety and Health Standard – Occupational Exposure to Lead in Construction Work,' dated November 28, 1988, and as may be amended."*

*"The Maryland Aviation Administration (MAA) had conducted preliminary tests of the project site to determine the potential lead exposure to workers above the action level. The location and results of those tests are shown in the contract documents."*

*"The MAA has conducted the tests and made the results available as a matter of courtesy to prospective contractors. This information in no way relieves the Contractor from performing his own tests or complying with the requirements set forth in COMAR 09.12.32."*

Project inspectors shall follow-up and insure the requirements of COMAR 09.12.32 – "Occupational Safety and Health Standard – Occupational Exposure to Lead in Construction Work" are being complied with.

#### 8.5.1.3 Management of Radioactive Wastes

The identification, handling, storage, transferring, and disposal of common radioactive wastes, specifically, self-luminous exit signs that may contain radioactive gas, such as tritium or radium, generated from construction projects is subject to Federal regulations that govern tritium or radium-containing signs which are found in the Nuclear Regulatory Commission regulations, 10 CFR Part 31.

Accordingly, any construction project at BWI Marshall and Martin State Airports involving removal and disposal of common radioactive waste shall include Specification 010009X_Management of Radioactive Wastes. Specification 010009X can be found in Appendix D - Standard Specifications.

#### 8.5.1.4 Management of Universal Wastes

The characterization, handling, storage, transport, and disposal of Universal Wastes (UW), such as mercury-containing equipment, batteries, mercury-containing lamps or bulbs, and fluorescent light ballasts that contain polychlorinated biphenyls (PCBs), generated from construction projects is subject to COMAR 26.13.10. Accordingly, any construction project at BWI Marshall and Martin State Airports involving removal and disposal of UW material/equipment shall include Specification 010008X_Management of Universal Wastes. Specification 010008X can be found in Appendix D - Standard Specifications.

### 8.5.2 Paint Booths

For the purposes of this section and all subsequent subsections, "Owner" refers to the Maryland Aviation Administration (MAA), or either of BWI Marshall and/or Martin State Airports as determined by the context. "Designer" refers to any entity commissioned to design and/or specify equipment described herein for construction and/or installation at any MAA facility or location within the BWI Marshall and/or Martin State Airports.

The design and use of paint booths for paint stripping operations and surface coating operations must meet the requirements set forth in COMAR 26.11.01, COMAR 26.11.02, COMAR 26.11.03, COMAR 26.11.13, and COMAR 26.11.19, as well as the Federal regulatory requirements set forth in 40 CFR Part 63.11173 (if applicable).

#### 8.5.2.1 Paint Stripping Operations

If MAA or Tenant paint stripping operations includes paint stripping using methylene chloride (MeCl) for the removal of dried paint (including but not limited to paint, enamel, varnish, shellac, and lacquer) from wood, metal, plastic, and other substrates, then the following steps should be taken:

A. Evaluate each application to ensure there is a need for paint stripping (e.g., evaluate whether it is possible to re-coat the piece without removing the existing coating);
B. Evaluate each application where a paint stripper containing MeCl is used to ensure that there is no alternative paint stripping technology that can be used;
C. Reduce exposure of all paint strippers containing MeCl to the air;
D. Optimize application conditions when using paint strippers containing MeCl to reduce MeCl evaporation (e.g., if the stripper must be heated, make sure that the temperature is kept as low as possible to reduce evaporation); and
E. Practice proper storage and disposal of paint strippers containing MeCl (e.g., store stripper in closed, air-tight containers).

Owners or operators of a paint stripping operation using paint strippers containing MeCl must submit an Initial Notification to EPA Region III and MDE/ARMA, as required by 40 CFR Part 63.9(b). For a new affected source, the initial Notification must be submitted no later than 180 days after initial startup. For an existing affected source, the Initial Notification must be submitted no later than January 11, 2010.

If the owner or operator of a paint stripping operation uses more than one ton of MeCl annually, a MeCl Minimization Plan must be development to address the management practices outlined in 40 CFR Part 63.11173(a)(1) through (a)(5). Paint stripping operations that use less than one ton of MeCl annually

must comply with the management practices outlined in 40 CFR Part 63.11173(a)(1) through (a)(5), but are not required to develop and implement a written MeCl Minimization Plan.

Each paint stripping operation must maintain copies of annual usage of paint strippers containing MeCl onsite at all times.

MAA or tenant operations which include a paint stripping operation using paint strippers containing MeCl must submit an Initial Notification to EPA Region III and MDE/ARMA, as required by 40 CFR Part 63.9(b). For a new affected source, the Initial Notification must be submitted no later than 180 days after initial startup. For an existing affected source, the Initial Notification must be submitted no later than January 11, 2010.

MAA/tenant owners or operators of a paint stripping operation must maintain the records specified below:

A. Records of paint strippers containing MeCl used for paint stripping operations, including the MeCl content of the paint stripper used. Documentation needs to be sufficient to verify annual usage of paint strippers containing MeCl (e.g., material safety data sheets or other documentation provided by the manufacturer or supplier of the paint stripper, purchase receipts, records of paint stripper usage, engineering calculations);
B. Paint stripping sources that annually uses more than one ton of MeCl are required to maintain a record of the current MeCl Minimization Plan onsite for the duration of the paint stripping operations. Records of the annual review of, and updates to, the MeCl Minimization Plan must also be maintained;
C. Records of any deviation from the requirements in 40 CFR Part 63.11173, 40 CFR Part 63.11174, 40 CFR Part 63.11175, or 40 CFR Part 63.11176. These records must include the date and time period of the deviation, and a description of the nature of the deviation and the actions taken to correct the deviation; and
D. Per 40 CFR Part 63.111778, owners or operators of an affected source must maintain copies of the records listed above for a period of at least five years after the date of each record. Copies of records must be kept onsite and in a printed or electronic form that is readily accessible for inspection for at least the first two years after their date, and may be kept offsite after that two year period.

#### 8.5.2.2 Surface Coating Operations

Per 40 CFR Part 63.11173(e), motor vehicle and mobile equipment surface coating operations and miscellaneous surface coating operations must meet the following requirements:

A. All painters, including contract personnel, must be certified that they have completed training in the proper spray application of surface coatings and the proper setup and maintenance of spray equipment.
B. All paint spray gun cleaning must be done so that an atomized mist or spray of gun cleaning solvent and paint residue is not created outside of a container that collects used gun cleaning solvent. Spray gun cleaning may be done with, for example, hand cleaning of parts of the disassembled gun in a container of solvent, by flushing solvent through the gun without atomizing the solvent and paint residue, or by using a fully enclosed spray gun washer. A combination of non-atomizing methods may also be used.

Owners or operators of a surface coating operation subject to NESHAP Subpart HHHHHH must submit an Initial Notification to EPA Region III and MDE/ARMA, as required by 40 CFR Part 63.9(b). For a new

affected source, the Initial Notification must be submitted no later than 180 days after initial startup. For an existing affected source, the Initial Notification must be submitted no later than January 11, 2010.

Per 40 CFR Part 63.11176(a), owners or operators of a motor vehicle or mobile equipment, or miscellaneous surface coating affected source, are required to submit an Annual Notification of Changes Report in each calendar year in which information previously submitted in either the Initial Notification, Notification of Compliance, or a previous Annual Notification of Changes Report has changed. Deviations from the relevant requirements in 40 CFR Part 63.11173(a) through (d) or 40 CFR Part 63.11173(e) through (g) on the date of the report will be deemed to be a change. The Annual Notification of Changes Report must be submitted prior to March 1 of each calendar year when reportable changes have occurred.

Owners or operators of a surface coating operation must maintain the records specified below:

A. Certification that each painter has completed the training specified in 40 CFR Part 63.11173(f) with the date the initial training and the most recent refresher training was completed;
B. Documentation of the filter efficiency of any spray booth exhaust filter material, according to the procedure in 40 CFR Part 63.11173(e)(3)(i);
C. Documentation from the spray gun manufacturer that each spray gun with a cup capacity equal to or greater than 3.0 fluid ounces (89 cc) that does not meet the definition of an HVLP spray gun, electrostatic application, airless spray gun, or air assisted airless spray gun, has been determined by the Administrator to achieve a transfer efficiency equivalent to that of an HVLP spray gun, according to the procedure in 40 CFR Part 63.11173(e)(4);
D. Copies of any notification submitted as required by 40 CFR Part 63.11175 and copies of any report submitted as required by 40 CFR Part 63.11176; and
E. Per 40 CFR Part 63.11178, owners or operators of an affected source must maintain copies of the records listed above for a period of at least five years after the date of each record. Copies of records must be kept onsite and in a printed or electronic form that is readily accessible for inspection for at least the first two years after their date, and may be kept offsite after that two year period.

### 8.5.3 Parts Washers/Degreasers

For the purposes of this section and all subsequent subsections, “Owner” refers to the Maryland Aviation Administration (MAA), or either of BWI Marshall and/or Martin State Airports as determined by the context. “Designer” refers to any entity commissioned to design and/or specify equipment described herein for construction and/or installation at any MAA facility or location within the BWI Marshall and/or Martin State Airports.

Designers should consider the use of non-solvent based parts washers and degreasers whenever practicable. Alternative non-solvent based (citrus-based or microbial cleaning agents) parts washers and degreasers do not require permitting and will reduce air emissions and eliminate the generation of associated hazardous wastes at MAA and tenant owned facilities. If an alternative non-solvent based parts washer and/or degreaser cannot be installed, the Division of Environmental Compliance must be notified.

The design and use of parts washers and degreasers must meet the requirements set forth in COMAR 26.11.19.09, as well as the Federal regulatory requirements set forth in 40 CFR Part 63.462 (if applicable).

COMAR 26.11.19.09 requires that Good Operating Practices be employed when using VOC degreasing material. The following are considered Good Operating Practices:

A. A person subject to this regulation shall implement good operating practices to minimize spills and evaporation of VOC degreasing material.
B. Good operating practices shall include covers (including water covers), lids, or other methods of minimizing evaporative losses, and reducing the time and frequency during which parts are cleaned.
C. Good operating practices shall be established in writing, and displayed so they are clearly visible to the operator.
D. The written good operating practices shall be maintained at the facility and made available for review by the Department upon request.
E. A person subject to this regulation may not use a halogenated substance that is a VOC in any cold degreasing.

#### 8.5.3.1 Batch Cold Cleaning Machine Standards

A. Owners or operators of an immersion batch cold solvent cleaning machine shall comply with the requirements of 40 CFR Part 63.462(a)(1) through (a)(2).
B. Owners or operators of a remote-reservoir batch cold solvent cleaning machine shall comply with the requirements of 40 CFR Part 63.462(b).
C. Owners or operators of a batch cold solvent cleaning machine complying with 40 CFR Part 63.462(a)(2) or 40 CFR Part 63.462(b) shall comply with the work and operational practice requirements in of 40 CFR Part 63.462(c)(1) through(c)(9), as applicable.
D. Owners or operators of a batch cold cleaning machine shall submit an Initial Notification Report as described in 40 CFR Part 63.468 (a) and (b) and a Compliance Report as described in 40 CFR 63.468(c).

#### 8.5.3.2 Batch Vapor and In-Line Cleaning Machine Standards

A. Owners or operators of an existing or new batch vapor or in-line solvent cleaning machine shall meet all of the required work and operational practices of 40 CFR Part 63.463(d)(1) through (d)(12).
B. Owners or operators of a solvent cleaning machine which complies with 40 CFR Part 63.463(b), (c), (g), or (h) shall comply with the requirements of 40 CFR Part 63.463(e)(1) through (e)(4).
C. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the idling emission limit standards in 40 CFR Part 63.463(b)(1)(ii), (b)(2)(ii), (c)(1)(ii), or (c)(2)(ii) shall comply with the requirements of 40 CFR Part 63.463(f)(1) through (f)(5).

#### 8.5.3.3 Test Methods

A. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with an idling emission limit standard in 40 CFR Part 63.463(b)(1)(ii), (b)(2)(ii), (c)(1)(ii), or (c)(2)(ii) shall determine the idling emission rate of the solvent cleaning machine using Reference Method 307 in 40 CFR Part 63 Appendix A.
B. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with 40 CFR Part 63.464 shall, on the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that has been cleaned of soils. A fill line must be indicated during the first month the measurements are made. The solvent level within the machine must be returned to the same fill-line each month, immediately prior to calculating

monthly emissions as specified in 40 CFR Part 63.465(c). The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

C. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with 40 CFR Part 63.464 shall, on the first operating day of the month, comply with the requirements of 40 CFR Part 63.465(c)(1) through (c)(3).

D. Owners or operators of a batch vapor or in-line solvent cleaning machine using a dwell to comply with 40 CFR Part 63.463 shall determine the appropriate dwell time for each part or parts basket using the procedures specified in 40 CFR Part 63.465(d)(1) and (d)(2).

E. Owners or operators of a source shall determine their potential to emit from all solvent cleaning operations using the procedures described in 40 CFR Part 63.465(e)(1) through (e)(3).

#### 8.5.3.4 Monitoring Procedures

A. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the equipment standards in 40 CFR Part 63.463(b)(1)(i), (b)(2)(i), (c)(1)(i), (c)(2)(i), (g)(1), or (g)(2) shall conduct monitoring and record the results on a weekly basis for the control devices, as appropriate, specified in 40 CFR Part 63.466(a)(1) through (5).

B. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the equipment standards of 40 CFR Part 63.463 (b)(1)(i), (b)(2)(i), (c)(1)(i), or (c)(2)(i) shall conduct monitoring and record the results on a monthly basis for the control devices, as appropriate, specified in 40 CFR Part 63.466(b)(1) and (b)(2).

C. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the equipment or idling standards in 40 CFR Part 63.463 shall monitor the hoist speed as described in 40 CFR Part 63.466(c)(1) through (c)(4).

D. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the equipment standards in 40 CFR Part 63.463 (b)(1)(i), (b)(2)(i), (c)(1)(i), or (c)(2)(i) using a reduced room draft shall conduct monitoring and record the results as specified in 40 CFR Part 63.466(d)(1) or (d)(2).

E. Owners or operators using a carbon adsorber to comply with this subpart shall measure and record the concentration of halogenated HAP solvent in the exhaust of the carbon adsorber weekly with a colorimetric detector tube. This test shall be conducted while the solvent cleaning machine is in the working mode and is venting to the carbon adsorber. The exhaust concentration shall be determined using the procedure specified in 40 CFR Part 63.466(e)(1) through (e)(3).

F. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the idling emission limit standards of 40 CFR Part 63.463 (b)(1)(ii), (b)(2)(ii), (c)(1)(ii), or (c)(2)(ii) shall comply with the requirements specified in 40 CFR Part 63.466(f)(1) and (f)(2).

G. Owners or operators using a control device listed in 40 CFR Part 63.466(a) through (e) can use alternative monitoring procedures approved by the Administrator.

#### 8.5.3.5 Recordkeeping Requirements

A. COMAR requires the MAA and tenants using VOC degreasing materials to maintain monthly records of the total VOC degreasing materials used and to make the records available to the Department upon request.

B. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.463 shall maintain records in written or electronic form specified in 40 CFR Part 63.467(a)(1) through (7) for the lifetime of the machine.

C. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with 40 CFR Part 63.463 shall maintain records specified in 40 CFR Part 63.467(b)(1) through (b)(4) either in electronic or written form for a period of 5 years.
D. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.464 shall maintain records specified in 40 CFR Part 63.467(c)(1) through (3) either in electronic or written form for a period of 5 years.

#### 8.5.3.6 Reporting Requirements

A. Owners or operators of an existing solvent cleaning machine subject to the provisions of 40 CFR Part 63.468 shall submit an Initial Notification Report to the Administrator no later than August 29, 1995. This report shall include the information specified in 40 CFR Part 63.468(a)(1) through (a)(6).
B. Owners or operators of a new solvent cleaning machine subject to the provisions of 40 CFR Part 63.468 shall submit an Initial Notification Report to the Administrator. New sources for which construction or reconstruction had commenced and initial startup had not occurred before December 2, 1994, shall submit this report as soon as practicable before startup but no later than January 31, 1995. New sources for which the construction or reconstruction commenced after December 2, 1994, shall submit this report as soon as practicable before the construction or reconstruction is planned to commence. This report shall include all of the information required in 40 CFR Part 63.5(d)(1) of Subpart A (General Provisions), with the revisions and additions in 40 CFR Part 63.468(b)(1) through (b)(3).
C. Owners or operators of a batch cold solvent cleaning machine subject to the provisions of 40 CFR Part 63.468 shall submit a Compliance Report to the Administrator. For existing sources, this report shall be submitted to the Administrator no later than 150 days after the compliance date specified in 40 CFR Part 63.460(d). For new sources, this report shall be submitted to the Administrator no later than 150 days after startup or May 1, 1995, whichever is later. This report shall include the requirements specified in 40 CFR Part 63.468(c)(1) through (c)(4).
D. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.463 shall submit to the Administrator an Initial Statement of Compliance for each solvent cleaning machine. For existing sources, this report shall be submitted to the Administrator no later than 150 days after the compliance date specified in 40 CFR Part 63.460(d). For new sources, this report shall be submitted to the Administrator no later than 150 days after startup or May 1, 1995, whichever is later. This statement shall include the requirements specified in 40 CFR Part 63.468(d)(1) through (d)(6).
E. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.464 shall submit to the Administrator an Initial Statement of Compliance for each solvent cleaning machine. For existing sources, this report shall be submitted to the Administrator no later than 150 days after the compliance date specified in 40 CFR Part 63.460(d). For new sources, this report shall be submitted to the Administrator no later than 150 days after startup or May 1, 1995, whichever is later. The statement shall include the information specified 40 CFR Part 63.468(e)(1) through (e)(4).
F. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.463 shall submit an Annual Report by February 1 of the year following the one for which the reporting is being made. This report shall include the requirements specified in 40 CFR Part 63.468(f)(1) through (f)(3).
G. Owners or operators of a batch vapor or in-line solvent cleaning machine complying with the provisions of 40 CFR Part 63.464 shall submit a Solvent Emission Report every year. This Solvent

Emission Report shall contain the requirements specified in 40 CFR Part 63.468(g)(1) through (g)(4).

H. Owners or operators of a batch vapor or in-line solvent cleaning machine shall submit an Exceedance Report to the Administrator semiannually except when, the Administrator determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source or, an exceedance occurs. Once an exceedance has occurred, the owner or operator shall follow a quarterly reporting format until a request to reduce reporting frequency is approved. Exceedance Reports shall be delivered or postmarked by the 30th day following the end of each calendar half or quarter, as appropriate. The Exceedance Report shall include the applicable information in 40 CFR Part 63.468(h)(1) through (h)(3).

I. Owners or operators who are required to submit an Exceedance Report on a quarterly (or more frequent) basis may reduce the frequency of reporting to semiannual if the conditions in 40 CFR Part 63.468(i)(1) through (i)(3).

Owners or operators of a solvent cleaning machine requesting an equivalency determination, as described in 40 CFR Part 63.469 shall submit an Equivalency Request Report to the Administrator. For existing sources, this report must be submitted to the Administrator no later than June 3, 1996. For new sources, this report must be submitted and approved by the Administrator prior to startup.

### 8.5.4 Glycol Collection

Underground Diversion Vaults, Lift Stations, and other similar structures related to glycol collection system shall be designed with Schedule 80 CPVC pipe and fittings. Ductile iron pipe will be accepted as an alternate piping material only if there is a potential for hydrocarbons, e.g. or fuel or oil to enter the piping system. Support brackets, clamps, and braces shall be non-metallic, and use non-corrosive materials. Hardware shall be corrosion resistant.

The deicing collection system shall communicate with the existing BWI Marshall Metasys Facility Management System (FMS).

# Chapter 09 Architectural Buildings

## 9.1 Design Continuity

The Designer shall coordinate their design approach with MAA's Resident Architect prior to and during the concept and schematic design phases for all projects. In addition, the Resident Architect shall review and approve all architectural materials. Prior to the proposal preparation, the Designer, MAA's Project Manager, and Resident Architect shall identify any specialty architectural sub-consultants required for interior design, graphics, furnishings, etc.

The Office of the Fire Marshal is responsible for the numbered identification of all doors, elevators, stairwells, and buildings. Designs/construction requiring new or re-numbering of any of the mentioned shall be obtained from the Office of the Fire Marshal.

### 9.1.1 Domestic Terminal Baggage Claim Areas

The Designer shall match the standard wall covering, solid surface wainscot and terrazzo floor finish. The red wall covering used on the back wall is "Tretford 570" manufactured by Eurotex. Signage shall match the Airport's standard.

### 9.1.2 Domestic Terminal Ticketing Concourse

The present design of the ticket counter facing the public shall be maintained. All plastic laminate visible to the public shall match the existing black plastic laminate. The ticket counter module and baggage well size shall match the existing unless approved in advance by the MAA. The provider of the inserts shall be identified during the concept design phase. The design of the back wall, including airline signage and graphics, must be approved by the MAA. Signage required by the Federal Aviation Administration (FAA) must be maintained. The MAA must approve any objects placed by tenants in the public space. Ticket counters shall be designed to have an accessible counter level for the disabled per ADA's current regulations.

Queuing areas may be a maximum of twenty feet (20') from the face of the ticket counters on the upper level of the terminal. Temporary exceptions to these limits may be allowed when needed to accommodate a large number of patrons; however, a minimum of twelve feet (12') of clear corridor must be maintained at all times. Stanchions shall be manufactured by Lavi Industries, Model #60-50-3000CL with plastisol coating on the base and a nylon webbed belt that will extend 6 feet. The logo and color of the tenant/designer's choice shall be silk-screened on the belt. LED and Blade signs shall match existing.

### 9.1.3 Domestic Terminal Security Checkpoints

Terminal Security Checkpoints shall comply with all regulations issued by the Transportation Security Administration (TSA) for security checkpoint equipment, signage, screens, search rooms, etc. Wall covering and solid surfacing wainscot shall match the Airport's standard. Column covers shall be stainless steel. The checkpoint area shall be separated from the egress corridor with full height clear butt-glazed partition. Designers must provide a private search room for dignitaries and an office for the security personnel. In addition, convenient storage for personal items belonging to security personnel shall be provided. This may be a closet or a cupboard in the casework. Lockers, which are visible to the public, are not acceptable.

### 9.1.4 Domestic Terminal and International Terminal Concourse Holdrooms

The furnishings and finishes in the preferential use Domestic Terminal Holdrooms are the responsibility of the airlines, if required by the lease agreements. Changes in the finishes must be submitted to the MAA for approval. The furnishings and finishes in the International Terminal and common use Domestic Terminal Holdrooms are the responsibility of the MAA. Ticket and lift and gate podium design shall match existing unless approved by MAA.

### 9.1.5 Commercial Storefronts and Signage

Some latitude is allowed in the design of storefronts and signage in the Domestic Terminal. The preliminary design must be approved by the MAA Resident Architect prior to commencement of Construction Documents (CDs). The roll down grilles shall be aluminum and approved by the MAA Resident Architect. Storefronts and signage in the International Terminal shall conform to the current design. Roll-down grilles shall be clear aluminum and approved by the MAA Resident Architect.

For all Terminal buildings, except A, B, A/B and E Concourses, storefront security grills must be “smoke barrier” grills. Lexan, or Class A rated thermal polycarbonate filler strips, are permitted by the Office of the Fire Marshal to be used for smoke barrier grill designs.

### 9.1.6 Service Areas

Back-of-house corridor walls should be constructed of painted gypsum board, painted concrete block, or glazed concrete block. When using gypsum board, vinyl bumpers and corner guards shall be provided to protect walls from impact damage. Consider using a wainscoting material such as Kydex or approved equal at the elevator entrances and/or other areas especially subject to damage.

### 9.1.7 Offices

The design of office space shall be coordinated with the MAA Resident Architect.

### 9.1.8 FIDS/BIDS Enclosures

The design of FIDS/BIDS enclosures and displays shall be coordinated with the MAA Resident Architect.

# 9.2 Tenant Improvements

## 9.2.1 International Terminal and Concourse Millwork

MAA would like to maintain the architectural standard and structural integrity of the International Terminal and Concourse millwork. Accordingly, modifications to the ticket counter and holdroom millwork should be designed, reviewed, and constructed using the following general guidelines. Deviations from the following will require approval on a case by case basis by the MAA Resident Architect.

1. Cabinet Work or Shell
   - Top, front, and sides of counters that are visible to the public should not be altered. The continuity of design that is presented to the public should be maintained.
   - Modifications for inserts should be done in a manner which insures that support is provided for all parts of the shell independent of the inserts.
   - The rear counter work surface can be modified, provided that supports are added so that the work surface can support itself without the use of inserts.
   - When modifications such as cut outs are made, all visible edges should be finished by qualified case work specialist with plastic laminate, or solid surfacing material to match original design.
2. Baggage Scales
   - Stainless steel surrounding the scales and the scales should not be modified in any manner. The continuity of design that is presented to the public should be maintained.
   - Readouts should not be modified or relocated. The continuity of design that is presented to the public should be maintained.
3. Hardware
   - Hinges for the flip-up counter top work surface in front of the monitors should be concealed or located in such a manner so that clothing cannot be damaged.
   - Visible hardware, such as locks and hinges, should be the same as or compatible with the original design.
   - All hardware should be commercial grade.
4. Inserts and Equipment
   - New inserts should match original design with respect to colors, finish, plastic laminate, solid surface material, etc.
   - Monitors should have a mental angle or wood stops to prevent them from resting on the back of the front counter wall.
   - Scale readouts should remain on the side panels as originally designed. They should not be placed in the counter top work surface.
   - Telephones, outlets, etc. shall not be placed in areas that are visible to the public.
5. Plastic Laminate
   - Plastic laminate shall be Nevamar; MR-6-7-CR, PHANTOM GRAY MATRIX.
6. Solid Surface
   - Solid surface material shall be Wilsonart; Surfacing veneer Steel Grey Tempest – 9194TM at 13 mm thickness.

# 9.3 Roof Systems

All projects at BWI Marshall and Martin State Airports shall comply with the Department of General Services (DGS) Statewide Roofing Policy and specifications, as well as the following criteria:

1. Design shall include a 60-year life cycle cost analysis for all new construction projects. Reroofing rehabilitation projects are exempt from this requirement. Any method of analysis is acceptable as long as assumptions include: 1) 20-year life for built-up and modified bitumen roofs, 2) biannual maintenance performed.
2. If the proposed roofing system has not been previously approved by DGS, designers shall submit the system to Chief, Project Management Design, DGS Engineering, for review and approval. DGS review time is approximately 14 days.
3. Based on project specifics, DGS may waive the requirement to install vapor retarders for roof installation and/or replacement projects. DGS shall evaluate the need for vapor retarders on a case-by-case basis. Requests for waivers shall be submitted to Chief, Project Management Design.
4. All projects shall be specified to insure qualified contractors perform the work. Qualified contractors shall be approved by the manufacturer, have a minimum of 5 years of experience in the installation of roof systems, and meet the following guarantee and warranty requirements:
   **a.** Provide Manufacturer's roof warranty, including the following minimum criteria:
   - Complete coverage of the cost of the labor and materials for repair of leaks due to poor workmanship or materials failure.
   - Complete systems warranty must include each and every component of the roofing system.
   - Non-prorated, non-penal sum (no dollar limit), twenty (20) year warranty period.

     Note: The use of polyisocyanurate (Iso) insulation, to make up the two layers of insulation (base and tapered layer) needed to achieve a 20-year no dollar limit roof, is no longer allowed unless a ½" cover board is applied. Roof systems in which felts are attached directly to the Iso boards shall be rejected and must be remedied.

   - Coverage of the cost of removal and replacement of damaged or wet insulation, which is a result of leaks from poor workmanship or failed materials.
   - No exclusion from coverage for damage to the roof system as a result of wind gusts less than 55 mph.

   **b.** Submit and provide components required by the roofing system manufacturer for the specific warranty.

   **c.** At the completion of the work, the contractor shall guarantee in writing to the Maryland Aviation Administration (MAA) representative that the roofing system, flashing, sheet metal work and all associate components as installed are of the highest quality, weathertight, waterproof and free from defects due to improper or defective materials, and/or workmanship developing under normal wear and tear for a period of five (5) years from the date of final acceptance of all work under this contract. The contractor shall be notified by the MAA representative of any defective work, and shall correct water leaks into the building within forty-eight (48) hours after notification and within ten (10) days for all other defects. Failure of the contractor to correct any defects in the time allowed shall allow the MAA to contract for repairs and charge the contractor for all costs incurred. All repairs/replacement shall be at no cost to the MAA.

**d.** Evidence shall be submitted to MAA which verifies that all new or replacement roofing materials conform with applicable Underwriter's Laboratories listed fire rated roof-ceiling assemblies, where listed assemblies are specified as components of A/E designs for the subject building, or are otherwise required by the adopted building or fire codes. Additionally, MAA will not accept any roofing material that is not a Class "A" roof, listed by Underwriter's Laboratories or Factory Mutual.

**5.** All roofs at BWI Marshall and Martin State Airports shall be color white. Designer shall coordinate with Resident Architect for exact color requirements.

### 9.3.1 Rooftop Equipment Installation

Equipment installation such as satellite dishes is prohibited. Only HVAC equipment shall be permitted on rooftops. All rooftop equipment installation shall undergo a Line of Sight study and shall be reviewed and coordinated with MAA Operations and FAA-ATCT at BWI Marshall.

# 9.4 Floor and Wall Coverings

## 9.4.1 Restrooms

Refer to Restroom Standards in Chapter 9.6 Restroom Standards for Restroom floor and wall coverings.

## 9.4.2 Tile

1. Red Ceramic Tile Column Finish: Summitville Tile, Inc., Summitville, Ohio 43962, manufacturers the red tile which clads the columns in front of the Passenger Terminal. The custom color number is 4865-1.
2. No asbestos containing materials are to be used, including mastic.

## 9.4.3 Carpet Tile

1. Terminal E Carpet Tile: Carpet tile used in Concourse E Holdrooms is manufactured by Shaw Industries, Inc. The product is Networx Hemisphere No. SC-32, color 4295B-11. The field is 3 ply Dupont Antron Lumina, 2 end No. C145A and 1 end No. C151A. The border is 2 ply Dupont Antron Lumina, 1 end No. C127A and 1 end No. C247A.
2. Domestic Terminal Carpet Tile: The Designer shall coordinate selection of carpet with the MAA Resident Architect.

## 9.4.4 Painting

Architects shall specify “white” paint colors that are standard with the MAA Division of Maintenance in order to minimize the paint colors they have to keep on hand.

## 9.4.5 Wall Covering

The wall covering used in the public areas of the Domestic Terminal shall be the MAA standard.

## 9.4.6 Solid Surfacing Material

1. Domestic Terminal’s Public Area: The solid surfacing material for the Domestic Terminal’s public area wainscot shall be coordinated with the MAA Resident Engineer.
2. Terminal E Casework: The solid surfacing material for Terminal E casework is Wilsonart Steel Grey Tempest – 9194TM at 13 mm thickness.

## 9.4.7 Plastic Laminate

1. Terminal E Casework: The Plastic Laminate used for Terminal E casework shall be Nevamar “Phantom Grey Matrix Crystal” MR-6-7CR, and “Storm Grey Matrix Crystal” MR-6-4CR.

## 9.4.8 Waterproofing

1. Waterproofing of suspended composite and reinforced concrete floors in janitors’ closets, toilet rooms, kitchens, food preparation areas and any other spaces where the use of the space, potentially or consequently, results in the wetting of the floor. These spaces are referred to as “wet areas” in this Design Standard.
2. Prevention of water damage from hot water heaters and sprinkler drains.

**SPECIAL NOTE:**
**Designers shall not place wet pipes over electrical rooms (such as electrical substations, communications rooms and other spaces where water damage would have significant impact on life safety or the airport’s operations or that of its tenants’).**

**For special conditions that prohibit this, it should be brought to the attention of the Building Permit Committee or the MAA Project Manager. This may result in additional provisions being required beyond those contained in this Design Standard.**

### 9.4.8.1 Waterproofing of Floors

A. Waterproofing of floors in wet areas is intended to prevent water damage to spaces below or adjacent to the wet area.

B. Waterproofing of floors in wet areas shall be continuous. The waterproofing may be a membrane material or a liquid-applied material, and must have acceptable waterproofing and crack-suppression qualities. The material must be laid in full compliance with the manufacturer's instructions.

C. Acceptable membrane materials are "Schluter-Ditra" membrane and underlayment as manufactured by Schluter Systems, or equal materials approved by MAA.

D. Acceptable liquid-applied materials are "Redgard" waterproofing and crack prevention membrane, as manufactured by Custom Building Products, or equal materials as approved by MAA.

E. At perimeter walls of wet areas and at pipe and other projections above the floor slab, turn up floor waterproofing minimum 2" onto the vertical surface, so that the wet area is surrounded by a continuous waterproof barrier to prevent water penetration into surrounding spaces. Refer to Standard detail for Floor Penetration on the following pages.

### 9.4.8.2 Floor Drains, Floor Sinks and Floor Cleanouts

A. Refer to the standard details for floor drains and floor sinks on the following pages.

B. Floor drains, floor sinks, and floor cleanouts in food preparation spaces must comply with the requirements of Anne Arundel County Health Department.

C. Floor sinks, floor drains, and floor cleanouts in wet areas generally must comply with the following requirements:

- Floor sinks, drains, and cleanouts must be provided with flanges to allow the floor waterproofing to be flashed around the flange and secured with continuous flashing clamps. Where necessary to allow for smooth transition of floor waterproofing onto flange, cut back the topping of the slab as illustrated.
- Floor sinks and drain must have seepage openings to allow moisture penetrating the floor covering to discharge into the body of the sink/drain. Provide loose gravel at seepage openings.

D. Size of floor drains and sinks.

- Grids of drains and sinks shall be not less than 8 inches in diameter, or 8" X 8" square. Rectangular grids shall not be less than 50 square inches in area.
- Floor drains and sinks must have outlets not less than 4 inches diameter to discharge into drain piping not less than 4 inches in diameter.

E. Cleanouts

- Cleanouts below the slab shall only be located above service areas or other unoccupied spaces, where access to them will not inconvenience other Tenants or the Public.
- Where cleanouts below slab level are not permissible, provide side-accessible cleanouts in walls above the slab, such as walls of mechanical chases or other walls in Tenant's premises.
- Cleanouts shall not be permitted in electrical substations, communications rooms and other similar spaces.

### 9.4.8.3 Penetrations Through Floors of Wet Areas

**A.** Refer to the standard details on the following pages.

B. Penetrations through slabs for new sinks, drains and pipes must not impair the structural stability of the slabs. Existing suspended slabs at the Airport are generally of the following types (Designer must verify this information in the field):

- Composite concrete, generally 4-1/2 inches thick, with 2-1/2 inch concrete topping on 2 inch metal deck.
- Reinforced concrete. Thickness varies, from approximately 6 inches to 8 inches.

C. General Requirements for Floor Penetrations

- Submit drawings and documents signed and sealed by a structural engineer registered in the State of Maryland.
- Locate penetrations through slabs so that they are clear of below-slab beams.
- For reinforced concrete slabs, locate penetrations so as to avoid the slab reinforcement. Slab reinforcement is likely to be heavy in the areas surrounding columns. Where penetrations through reinforced concrete slabs are so located or of such a size that cutting of slab reinforcement bars is unavoidable, provide specific details signed and sealed by a structural engineer.
- For composite slabs, for any penetrations larger than 10” X 10” through the slab, provide specific details signed and sealed by a structural engineer.

### 9.4.8.4 Floor Coverings

A. Impervious tile or epoxy terrazzo is required in wet areas. Portland-cement based terrazzo is not permitted. An epoxy-type grout is recommended for tiled floors. At junction of floor finish and floor sinks/drains/cleanouts, provide flexible sealant. (National Sanitation Foundation approved where required at food service areas.)

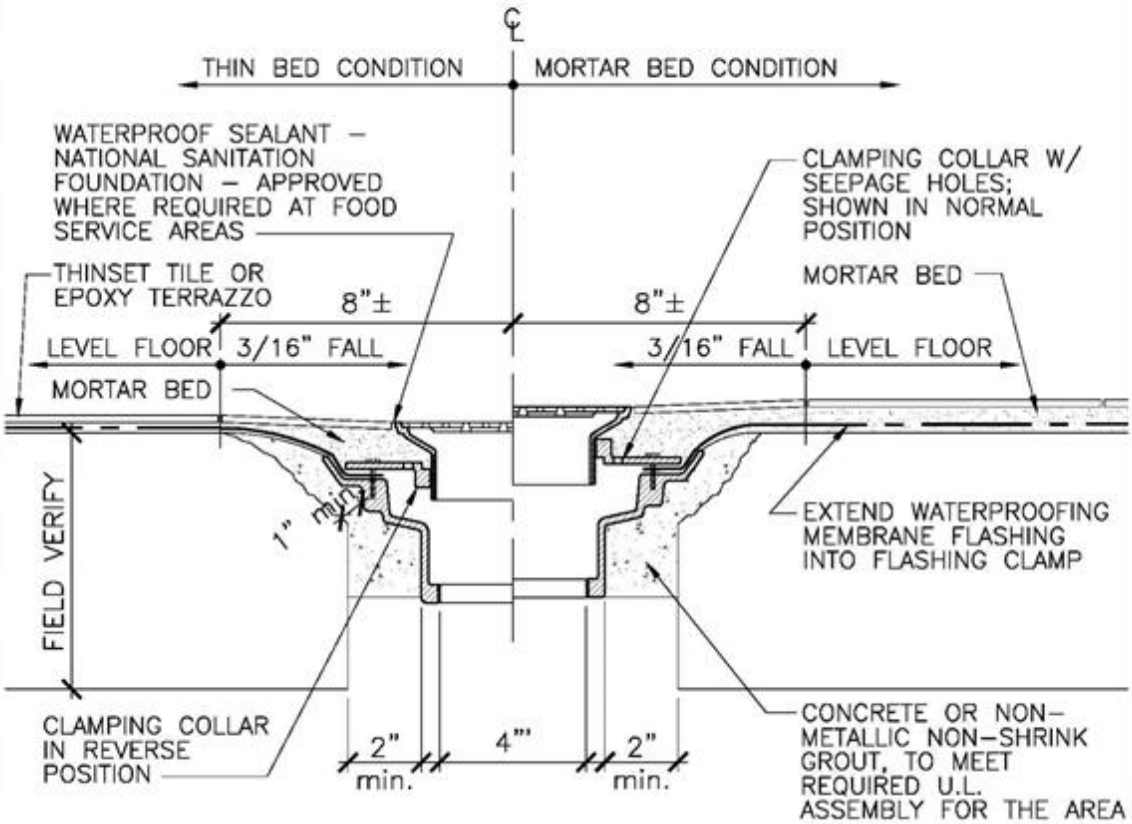
B. At perimeter walls, etc., turn floor covering up as a wall base and to protect turned-up vertical waterproofing.

### 9.4.8.5 Preventative measures to avoid water damage to floors from water heaters, sprinkler drains, etc.

A. Install hot water heaters (high level) over a curbed galvanized metal or other catchment tray, with a discharge pipe to discharge at a floor sink, mop sink or floor drain with a funnel.

B. Install hot water heaters (floor mounted) on a curbed waterproof tray raised sufficiently above the floor so that the tray discharge pipe can fall to discharge at a floor sink or floor drain.

C. Sprinkler drains must discharge over an adequately sized floor drain or floor sink.



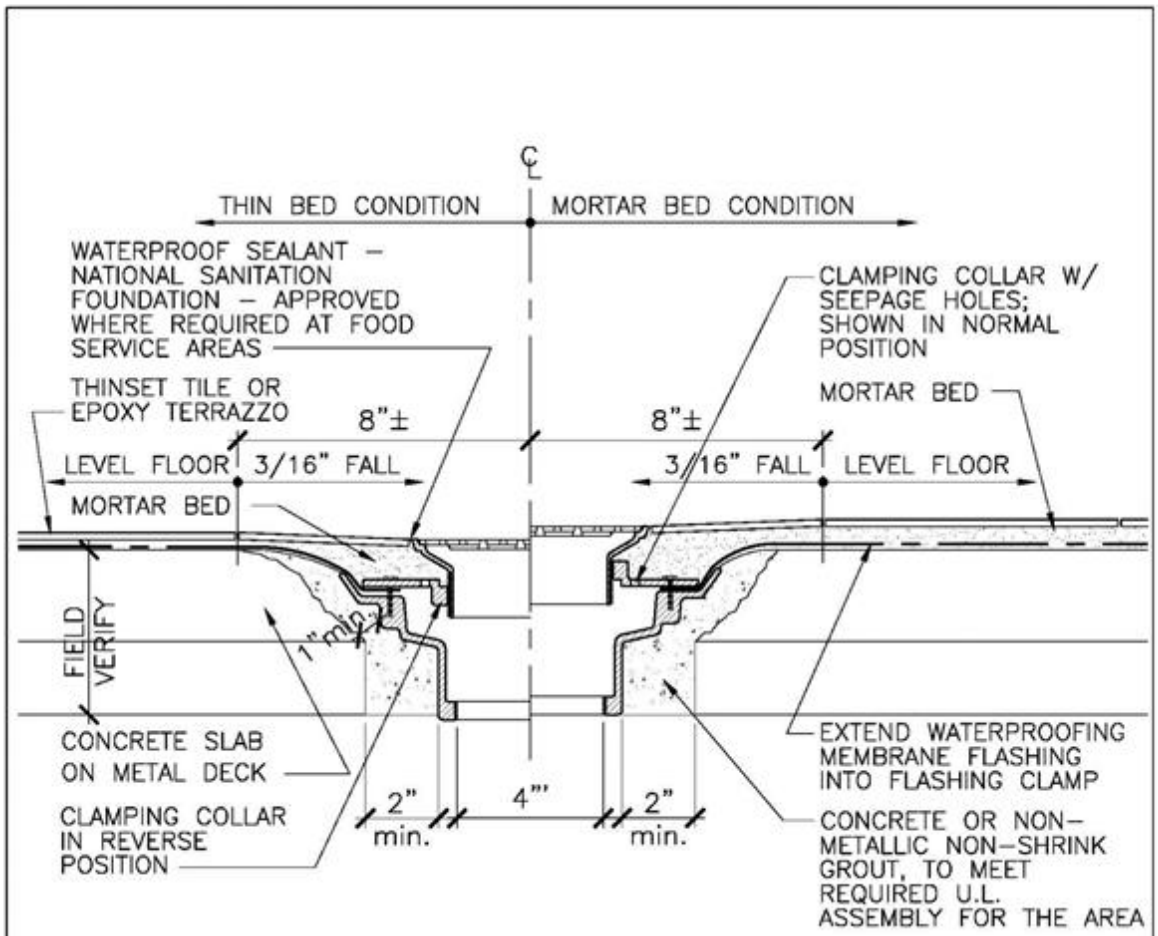

NOTE:
CORE DRILL OR SAW CUT AS NECESSARY TO REMOVE SLAB.
SLAB REINFORCEMENT CAN ONLY BE CUT WITH STRUCTURAL ENGINEER'S APPROVAL.

1 SK-2 FLOOR DRAIN — SUSPENDED REINFORCED CONCRETE SLAB CONDITION

SCALE: 3" = 1'-0"

DRAIN AS SHOWN – J.R. SMITH FLOOR DRAIN # 2005-A
EQUIVALENT DRAINS ACCEPTABLE FROM JOSAM OR ZURN

| SHEET TITLE: FLOOR DRAIN IN SUSPENDED REINFORCED CONCRETE SLAB LOCATION | DATE: SEPT 2006 |
|---|---|



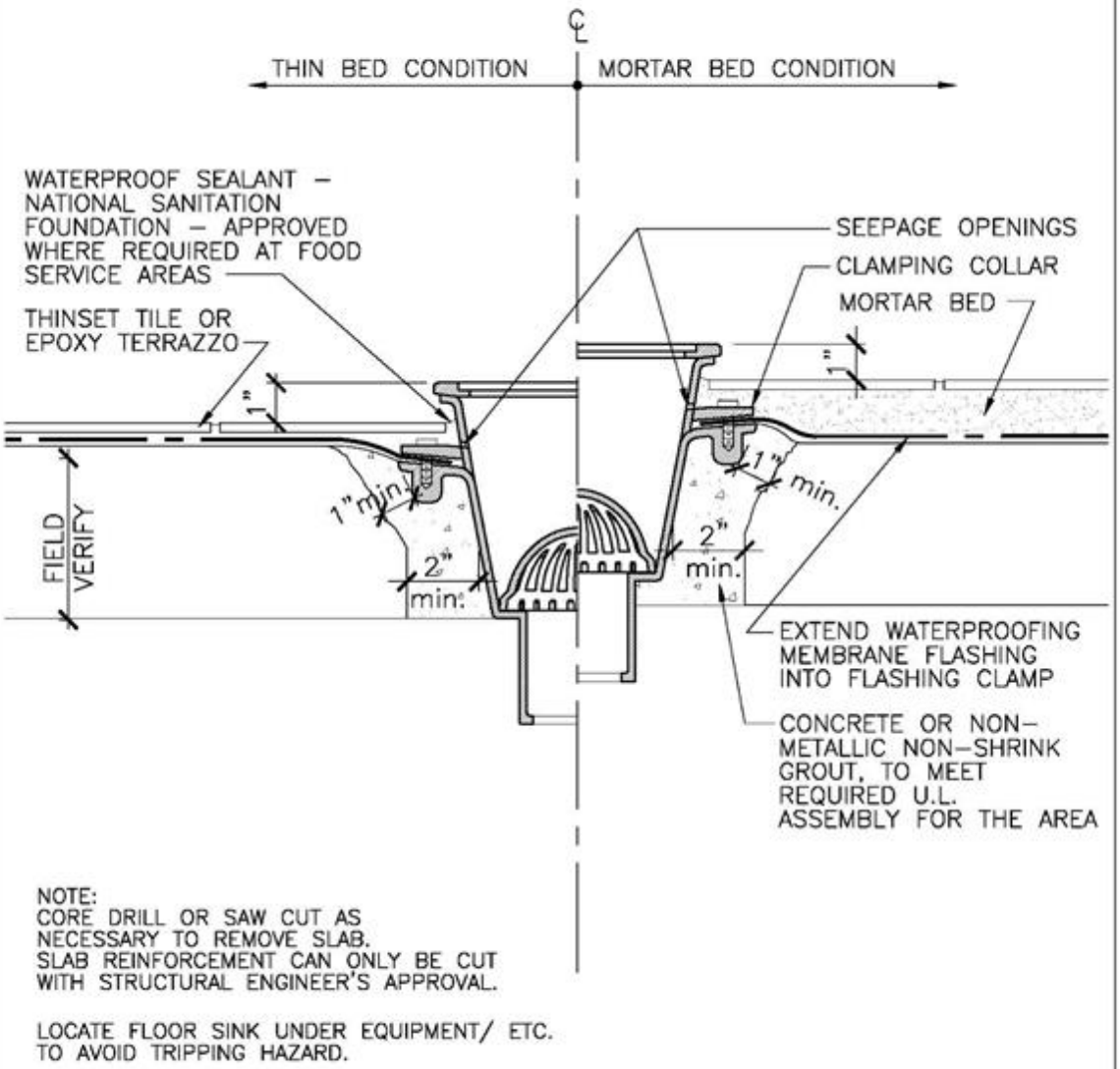

NOTE:
CORE DRILL OR SAW CUT AS NECESSARY TO REMOVE SLAB. OPENINGS LARGER THAN 10"x10" REQUIRE STRUCTURAL ENGINEERS APPROVAL.

1 SK-1 FLOOR DRAIN — COMPOSITE SLAB CONDITION

SCALE: 3" = 1'-0"

DRAIN AS SHOWN – J.R. SMITH FLOOR DRAIN # 2005-A
EQUIVALENT DRAINS ACCEPTABLE FROM JOSAM OR ZURN

| SHEET TITLE: FLOOR DRAIN IN COMPOSITE SLAB LOCATION | DATE: SEPT 2006 |
|---|---|




NOTE:
CORE DRILL OR SAW CUT AS NECESSARY TO REMOVE SLAB.
SLAB REINFORCEMENT CAN ONLY BE CUT WITH STRUCTURAL ENGINEER'S APPROVAL.

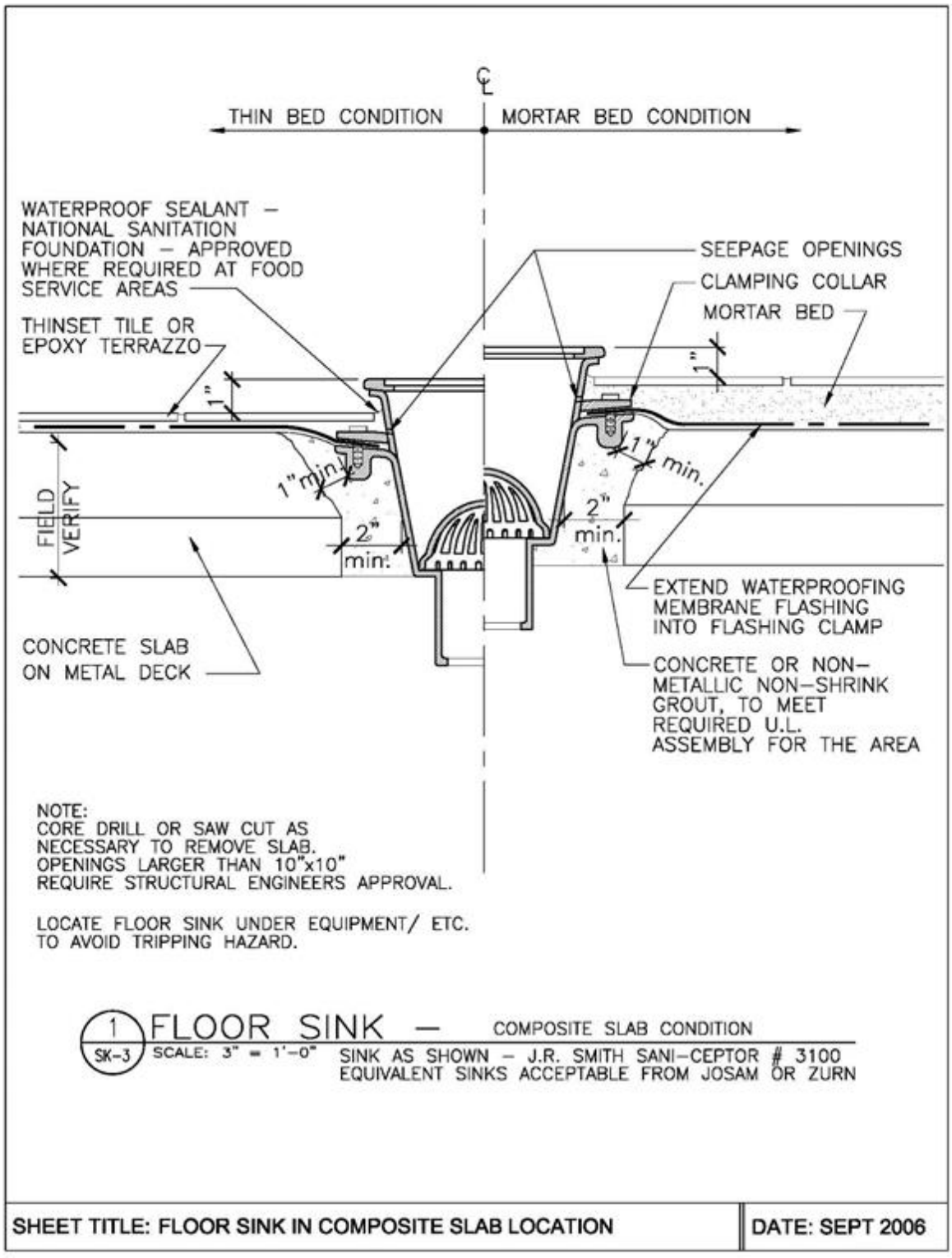
LOCATE FLOOR SINK UNDER EQUIPMENT/ ETC. TO AVOID TRIPPING HAZARD.

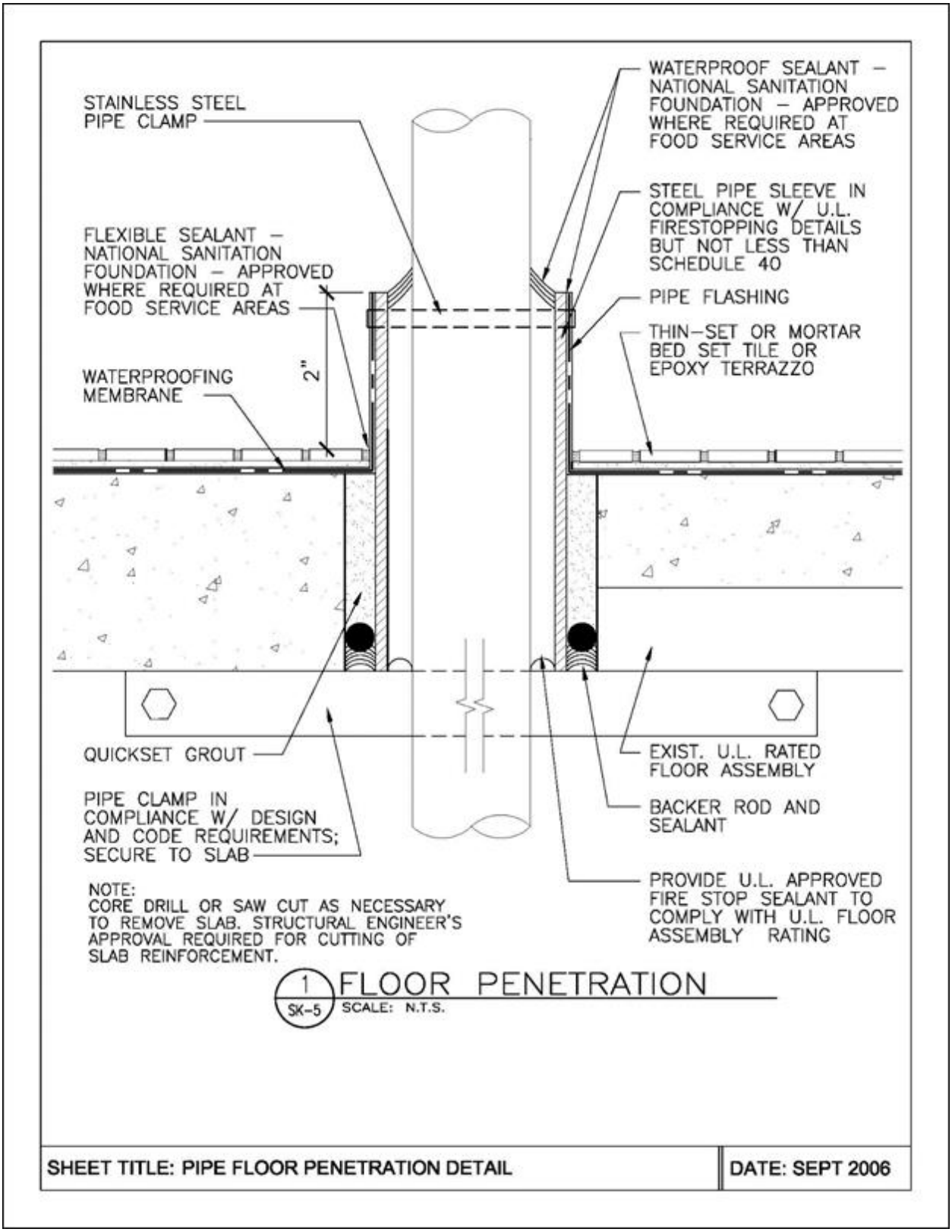
1 SK-4 FLOOR SINK — SUSPENDED REINFORCED CONCRETE SLAB CONDITION

SCALE: 3" = 1'-0"

SINK AS SHOWN – J.R. SMITH SANI-CEPTOR # 3100
EQUIVALENT SINKS ACCEPTABLE FROM JOSAM OR ZURN

| SHEET TITLE: FLOOR SINK IN SUSPENDED REINFORCED CONCRETE SLAB LOCATION | DATE: SEPT 2006 |
|---|---|


THIN BED CONDITION
MORTAR BED CONDITION
WATERPROOF SEALANT – NATIONAL SANITATION FOUNDATION – APPROVED WHERE REQUIRED AT FOOD SERVICE AREAS
THINSET TILE OR EPOXY TERRAZZO
SEEPAGE OPENINGS
CLAMPING COLLAR
MORTAR BED
1"
1" min.
2" min.
FIELD VERIFY
EXTEND WATERPROOFING MEMBRANE FLASHING INTO FLASHING CLAMP
CONCRETE SLAB ON METAL DECK
CONCRETE OR NON-METALLIC NON-SHRINK GROUT, TO MEET REQUIRED U.L. ASSEMBLY FOR THE AREA
NOTE:
CORE DRILL OR SAW CUT AS NECESSARY TO REMOVE SLAB. OPENINGS LARGER THAN 10"x10" REQUIRE STRUCTURAL ENGINEERS APPROVAL.
LOCATE FLOOR SINK UNDER EQUIPMENT/ ETC. TO AVOID TRIPPING HAZARD.
1 SK-3 FLOOR SINK – COMPOSITE SLAB CONDITION
SCALE: 3" = 1'-0"
SINK AS SHOWN – J.R. SMITH SANI-CEPTOR # 3100
EQUIVALENT SINKS ACCEPTABLE FROM JOSAM OR ZURN
SHEET TITLE: FLOOR SINK IN COMPOSITE SLAB LOCATION
DATE: SEPT 2006




### 9.4.8.6 Test for Waterproofing of Floors

**A.** Test of all wet areas as defined and required to be waterproofed should be tested to ensure that the requirements and recommendations in the standards have been successfully applied and that all spaces below and adjacent to the wet areas are protected from water penetration and moisture damage**.**

B. Items to be Tested:
   1. Waterproofing of Floors:
      a. Continuity of membrane and/or liquid-applied material.
      b. Perimeter walls to a min.1-1/2 inches height above the contributory area.
      c. Projections of pipe and other material above the floor.
   2. Floor Drains, Floor Sinks and Floor Cleanouts:
      a. Prevention of migration of water to occupied spaces below any wet area to be waterproofed in conformance with Chapter 9.4.8 Waterproofing water proofing standards.

C. Cost of the flood test shall be borne by the tenant, not the Airport.

D. The flood test shall include testing of:
   1. Each wet area to be waterproofed in conformance with Chapter 9.4.8 Waterproofing standards.
   2. All floor drains, floor sink drains, and clean outs in and serving each wet area.
   3. Ensure that all corners and door threshold are thoroughly tested.

E. Test Procedure: The flood test shall be performed in conformance with the following:
   1. Ensure that all new sanitary pipe drains are pre-tested for leaks and proper drainage prior to the wet area flood test.
   2. Allow for manufacturer's recommended dry and cure time for the installed water proof membrane before conducting testing.
   3. Notify the MAA Office of Commercial Management ten calendar days prior to testing to obtain access and an access schedule for the spaces being tested and the spaces located below and adjacent to the areas to be tested.
   4. Prior to testing, remove acoustic ceiling panels in spaces located beneath test area.
   5. Prior to testing, provide access into the ceiling/under slab space, in any areas with drywall ceiling that are located beneath the test area.
   6. Prior to testing, provide protective plastic sheet covering to all equipment, and furniture in any occupied areas located immediately below or adjacent to the wet floor being tested.
   7. Prior to testing, provide protection of doors into and out of the space being tested.
   8. Provide a seal at the sill (threshold) of each door into and out of the space being tested.
   9. Provide observers in the areas located immediately below the wet area being tested.
   10. Equip the testing team with devices that will permit communication between the wet floor area being tested and the areas immediately below and adjacent to the wet area being tested.
   11. Provide each of the observers with a reporting form that when filled out will locate any leaks for use during subsequent resealing operations.
   12. Install plugs in the floor drains in the wet floor being tested.
   13. Flood each area to a depth of 1-1/2 inches above the highest finish level of the contributory area. (That is to ½ inch below the two inch height of the turned up membrane located at the edges of the contributory area).
   14. Maintain 1-1/2 inches of water in the wet area for a minimum of 2 hours.
   15. Observe and report any leaks using the forms and communication devices called for above.
   16. Identify source of leak on top side of slab.
   17. After two hours of testing, unplug floor drains and allow water to drain out of the wet area.

18. After one hour, observe again, the conditions in areas below and adjacent to the test area.
19. Upon completion of the test replace all removed acoustic ceiling panels and repair any drywall ceiling modified to provide testing access. Remove all protective plastic sheathing and return the space to its original condition.

F. Report: Compile a report summarizing the test and specifically locating and describing any leaks that occur. Include the observers filled out forms as well as a diagram showing where the sources of the leaks are located. Provide two copies of the report to:

MAA Inspector and/or the Resident Engineer,
991 Corporate Boulevard
Linthicum, Maryland 21090

G. Re-test: After sealing leaks, re-test the wet area as specified above. Continue sealing leaks and testing until all leaking has been eliminated.

H. Repair: The contractor will be responsible for all damage, caused by the test, in areas which are located adjacent to and below the test area.

## 9.4.9 Floor Structure Recessed Expansion Joint Covers

The designer of new or renovated facilities shall specify floor structure expansion joints with recessed/flush metal covers when and wherever possible. The intent of the required covers is to reduce potential tripping hazards and, secondarily, to protect the expansion joints. This standard addresses both floor to floor and floor to wall expansion joints.

The need for, location of, performance requirements and type of expansion joints will be determined by the designer as required by the type of floor construction, floor finishes and current design code requirements.

A. General Requirements

All expansion joint covers shall be:

1. Recessed and flush with adjacent finishes or slab surface.
2. ADA-compliant.
3. Heavy duty, as appropriate, for the anticipated traffic over the joint.
4. UL fire-rating, as appropriate, where installed in a fire-rated assembly.
5. Weatherproof when exposed to the weather with occupied spaces below (including parking garages). Covers subject to snowplowing should be designed to withstand this activity.
6. Stainless steel or aluminum, as appropriate, with finishes to be determined by Designer. Ensure proper isolation barriers are specified for aluminum on concrete installations.
7. The Designer shall consider the coefficient of friction of adjacent floor/slab surfaces when selecting the cover plate and its finish. Plate texturing or applied non-skid treatment may be applicable with certain adjacent finishes.
8. Joint covers over bellow type expansion joints should be removable to allow cleaning.
9. The cover should span all components of the expansion joint.

B. New Construction Guidelines

For new construction in the Terminal, and other buildings with applied floor finishes, the expansion joint covers shall accommodate and be appropriate for the floor finishes on each side of the joint. These finishes typically include: carpet, vinyl composition tile, ceramic tile and terrazzo. Where the recessed expansion joint cover also acts as a transition between two types of floor finishes, the designer shall specify a cover that is designed for such transitions.

C. Existing Construction Guidelines

Designers of building renovations that include existing floor structure expansion joints within the limits of work must provide the MAA with an evaluation of the structural feasibility and

probable costs to modify or replace existing expansion joints to allow for a recessed flush cover plate installation. Based on the evaluation, the MAA will decide on whether to modify the existing joints to comply with the requirements of this standard.

NOTE: Floor structures in the Hourly, Daily and Consolidated Rental Car Facility Garages are post-tensioned concrete slabs. The Designer should take particular care in attempting to modify existing expansion joint configurations in this type of structure.

D. Interior Floor Expansion Joint Covers and Assemblies

1. General: Floor expansion joint covers required to bridge building structure expansion joints must be of a type recommended by manufacturers for installation in airports, and capable of withstanding the loads imposed by airport pedestrian traffic; wheeled carts of various capacities and wheel types; pallet trucks; trolleys; and commercial ride-on floor cleaning equipment. Covers must be all-metal design, flush with adjacent floor finishes such as tile and terrazzo to avoid tripping hazards, and textured or striated for slip resistance. Set expansion joint covers adjacent to carpeted floors slightly below the finished height of carpet to compensate for carpet crushing and wear.

2. Expansion joint assemblies consist of an approved expansion joint cover and fire barrier.

E. Expansion Joint Covers

1. Solid cast or extruded aluminum, or combination, no-bump type expansion joint covers are required. Minimum product design characteristics and performance requirements include the following:

- Material: Heavy-duty interlocking aluminum extrusions.
- Movement: Three-way.
- Load Capacity: Minimum 1450 psi for solid rubber tires.
- Capable of spanning width of expansion joint.
- Designed to reduce noise, and resist passage of liquid spills and accumulation of dirt in movement joints.
- Americans with Disabilities Act (ADA) compliant.

2. Installation Accessories: Factory-fabricated closure materials, intersections, and similar accessories required for a continuous expansion joint system. Isolate aluminum components from concrete and dissimilar metals following expansion joint cover manufacturers' recommendations and details.

3. Expansion joint covers incorporating elastomeric materials in the design of the wearing surface, including santoprene, have not been capable of withstanding the conditions at the airport. Aluminum extrusions of this type of cover are generally thin-walled and susceptible to damage. Additionally, elastomeric extrusions tear easily and are often of a unique design. Obtaining matching replacements of the

correct design has proven to be difficult for airport maintenance. Expansion joint covers of this type are not permitted.

F. Fire-Resistance-Rated Expansion Joint Assemblies

1. General: Floor fire-resistance-rated expansion joint assemblies must be of a type that is an approved fire-resistant joint system, designed to resist the passage of fire for a time period not less than the required fire resistance rating of the airport terminal floor, or other horizontal fire separation assembly. Where expansion joint covers are a part of fire-resistance-rated horizontal construction, expansion joint covers do not contribute to the overall fire-resistance rating of the floor assembly. Details must provide for the installation of the expansion joint covers, and not less than the minimum thicknesses of floor materials required to install the fire-resistant joint material in compliance with assemblies tested by laboratories recognized by the MAA Fire Prevention Division. For example, if the tested assembly requires a minimum four-inch depth of concrete either side of the fire-resistant joint material, the overall concrete depth at the expansion joint must be increased by the depth required for flush installation of the joint cover. Generally, the overall required thickness of concrete at the expansion joint will be greater than the thickness required for a fire-resistance-rated composite slab.

2. Fire Barrier Joint Material: Manufactured product consisting of a combination of traffic-bearing silicone top layer applied to a fire-retardant-impregnated foam core and intumescent bottom layer. Joint material is adhered to the edges of concrete floor slabs. Factory pre-formed transitions to reduce or eliminate field cutting are required wherever possible. Completed installation must be designed to produce a fire-resistance-rated watertight joint.

   Bellows type fire barriers are not permitted, unless otherwise accepted by MAA. These types of joints have become travel paths for various pests, and should be avoided.

3. Fire-Resistant Joint Design: Joint designs cannot include permanent metal concrete pour stops without greatly reducing the required fire-resistance rating of the horizontal assembly. Metal acts as a thermal bridge, resulting in premature failure of the joint when tested. Expansion joint details should indicate removal of the pour stops, or alternative methods of controlling concrete pours during construction.

   Note that many existing structural expansion joints utilized metal pour stops that were left in place. In order to comply with fire-resistance-rated horizontal separation requirements, these pour stops may have to be removed. Additionally, concrete slab thicknesses may not comply with tested assembly details. In existing construction, extraordinary measures may be required to sawcut pour stops and thicken slab at expansion joints.

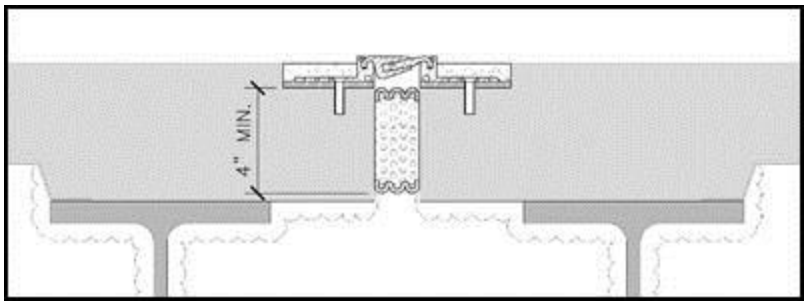



**Figure 1 Representative expansion joint cover and fire barrier.**

4. Non-Conforming Joint Designs: Although not recommended or encouraged, Designers, in consultation with MAA Fire Prevention Division and the expansion joint manufacturer's technical support, may seek to obtain an engineering judgment, prepared by a registered fire protection engineer (FPE), for joint designs not in full compliance with laboratory-tested assemblies. The FPE need not be registered in the State of Maryland, but must be certifying design on behalf of the expansion joint manufacturer.

# 9.5 Lock System

## 9.5.1 Finish Hardware

All projects shall specify MAA standard hardware and locksets. A list of the MAA Division of Maintenance (DOM) approved hardware and lockset is available from the Office of Engineering & Construction. The DOM must approve all hardware that deviates from the list.

## 9.5.2 Cipher Locks

Installation of all cipher locks shall comply with the requirements of the Life Safety Code, National Fire Protection Association NFPA 101, 2006 Edition or later adopted edition, as new editions are published and accepted and COMAR 05.02 – Department of Housing and Community Development,– Building and Material Codes. Per paragraph 7.2.1.5.1 of NFPA 101, no cipher locks shall be installed along required paths of egress travel. This requirement includes, but is not limited to, exterior doors, doors of egress from aircraft boarding bridges, and doors leading to stairways, corridors, etc. The Maryland Aviation Administration Fire Marshall is the governing authority in determining whether a door is part of a required path of egress.

The Fire Marshall shall be notified of the installation of any cipher lock. To allow emergency access, all cipher locks must have a key override. Three sets of keys shall be submitted to the Fire Marshall for each cipher lock installed.

The key override system shall have a Best core. Cipher locks to be installed on the exterior side of doors must be rated for exterior usage.

Magnetic card locks must meet requirements of NFPA 101 for delayed egress locks and are subject to review by the Office of the Fire Marshal.

# 9.6 Restroom Standards

Any toilet room renovated or newly constructed in public space on the departures or arrivals level of the terminal or concourses shall comply with this section. Toilet rooms constructed in Airline operation areas and tenant space shall comply with the hardware, fixtures, urinals, etc. and other requirements as outlined in this section to the full extent possible.

## 9.6.1 Design and Layout

A. **Code Requirements:** The design of the toilet room shall be in accordance with the most current edition of the applicable codes. The International Building and Plumbing Codes, the Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," and COMAR are applicable, and shall be used for the toilet room designs at BWI Marshall.

B. **Fixture Quantity Calculations:** The designer should consider the proposed services being offered in the immediate vicinity of the toilet room for the basis of fixture quantity calculations. Fixture quantities in renovated toilet rooms shall be in accordance with the current local, state and federal plumbing codes.

   When Male and Female toilet rooms are designed immediately adjacent to each other, parity between fixtures shall be in accordance with current building codes and MAA requirements. Currently no requirement exists for parity. Women's toilet rooms shall be provided with as many fixtures as possible.

C. **Toilet Room Configuration:** The configuration and geometry of toilet rooms will vary depending on the physical constraints in the existing facility for renovated or new toilet room construction. All Toilet rooms shall be designed in accordance with the following guidelines:
   1. The entry into high volume toilet rooms should be through a "maze" configuration. The maze should be configured to prevent direct line of sight into the toilet room from the entry corridor. The minimum functional clearance should permit two-way traffic through the maze, and be considerate of travelers with baggage. The minimum allowable clear width is five (5) feet. The maze geometry should consider the traffic volumes expected for the toilet room.
   2. Family Assist, single-use, and tenant toilet rooms shall be equipped with a lockable door.
   3. The toilet room geometry should consider the daily maintenance required.
      a. Designs should permit half of the toilet room to be closed and cleaned while the other half remains open.
      b. A 3-foot chase is required behind all toilet walls for ease of maintenance. Accessible chases are not required behind lavatories and urinals, although a non-accessible "wet wall" may be required for plumbing line clearance and installation.
      c. Waste receptacles should be shown on the plans to verify adequate space is available.

D. Janitorial Closets:
   1. A janitorial closet shall be located immediately adjacent to the toilet room(s). Only one closet is needed per pair of male/female restrooms. One closet is required adjacent to a single stall restroom.
   2. The janitorial closet shall be a minimum of 20 square feet with a minimum width of 3 feet in any direction.
   3. Closets shall be equipped with:
      a. Floor mounted mop basin constructed of terrazzo or molded stone.
      b. One fluorescent lighting fixture operated by a wall switch.

c. Single gang electrical outlet installed in accordance with code (i.e. GFCI).
d. A mop strip over the basin with multiple clips for hanging equipment.
e. Threaded hose connection with an anti-siphon backflow preventer.

4. Hot water heaters are NOT to be installed in the Janitorial Closets.
5. Minimal storage is required in the janitorial closet. The designer should verify the location of the nearest bulk storage location to verify if additional storage should be provided at the designed location.
6. Access to the closet shall be from the common public corridor. Locks for the door should be in accordance with the requirements of this document.
7. Waterproofing of floor shall be designed per Section 9.4.8.1 Waterproofing of Floors.

## 9.6.2 Facility Construction Requirements

A. The facility construction requirements provided below should be followed for all public toilet rooms. Private toilet rooms that are maintained and used by tenant personnel only should follow the requirements for the hardware, fixtures, urinals, etc. and other requirements as outlined in this standard to the full extent possible.

B. **Floors:** The floors can be either ceramic tile or terrazzo. The material shall match the existing corridor material. If the existing corridor does not consist of ceramic tile or terrazzo, then ceramic tile is preferred. The tile should be 12” x 12” with a non-slip finish. The grout should be non-absorbent and dark. The floors should be sloped to the extent possible to promote drainage. Floor drains are required for each bank of fixtures. The floor drains should be located in non-walking areas. The castings and grates for the drains should be stainless steel. Drains are to be installed per the current Plumbing Code. No check valve type drains are to be provided.

C. **Walls:** The walls should be constructed of concrete masonry units (CMU) when costs and structural integrity allow. CMU walls offer greater durability and impact resistance, and better anchorage for fixtures, stalls and accessories. Other approved wall construction would consist of 20-gauge metal studs with 5/8” marine grade plywood and cement board. Use of the stud wall construction should be reviewed and approved by the MAA. The wall finish should be ceramic tile from floor to ceiling. The cove base should be extended as high as possible off the floor. The tile size should match the floor. The grout for the walls should be light colored. The grout lines of the wall shall match the grout lines of the floor.

D. **Crash Protection**: Crash rails should be provided along the entrance hall walls. The material should be a high impact resistant extruded rigid plastic. The corners should have full-height corner guards from the floor to the ceiling. All guards should be mechanically fastened for ease of replacement when needed.

E. **Ceiling:** The height of the ceiling should be nine feet (9’-0”) above finish floor, unless constrained by existing conditions. The ceiling material is preferred to be gypsum wallboard with access panels. The access panels should be 16” x 16”, minimum and key-lockable. The keys shall have best key core to match airport standards. The finish on the gypsum ceiling is to be painted semi-gloss enamel. If an excessive number of access panels are required, an acoustic tile ceiling is permitted. Tile ceilings should consist of 2’ x 2’ moisture resistant panels, aluminum pre-painted suspension grid and tiles with anti-micro bacterial coatings. A restroom with both gypsum and acoustic panel ceiling is acceptable.

F. **Doors:** Doors are required for the Family Assist, single use, and tenant restrooms. The janitorial closets and the chase entry locations should also have doors. The doors should be hollow metal seamless with welded frames. The hardware should be in accordance with the details found in Chapter 9.7 Doors/Windows and restroom design cut sheets in Appendix F - Restroom Design Cut Sheets.

1. Hinges should be stainless steel ball bearing type.
2. Door Lever should be type required by ADA. The lever should of a type that returns to door face, to avoid possibility of catching fire hoses in an emergency situation.
3. Locks should be keyed to MAA master key system. The locks should be equipped with Best Lock Company interchangeable cores.
4. Closers should be delayed action closing type.

G. **Casework:** At multi-user locations, the countertops should be solid surface material with drop-in self-rimming lavatories, integral back and end splashes. The countertops should be linear and set at a constant height. The height should be in accordance with current ADA requirements. Under lavatory guards should be provided at each lavatory to prevent the potential scalding to users due to hot piping. Refer to Finishes cut sheets in Appendix F - Restroom Design Cut Sheets.

H. **Partitions:** Stalls are required at multi-user toilet rooms with water closets. Do not install urinals screens. The stall partition should be stainless steel with honeycomb cores. Additional reinforcement should be provided for grab bars, toilet paper holders and other accessories. The partitions should be floor supported unless otherwise approved.

Stall doors shall be attached to partitions with continuous stainless steel piano hinges - top and bottom pivot hinges are not acceptable.

The locking mechanism should be the latch type. No piston in hole type latch. Doors are required to have automatic returns. Typical stall doors should swing in towards the toilet. For the ADA toilets, the doors need to swing out. (Refer to Partitions cut sheets in Appendix F - Restroom Design Cut Sheets.

The wall-mounted side of the partition should be a continuous connection rather than a point-mounting bracket.

No coat hooks are to be placed on the partitions or the door. Locate hooks on rear wall. The coat hook attachment should be reinforced to the extent possible. Hooks should be located so the automatic flusher sensor is not blocked.

I. **Accessories:** The toilet accessories apply to public toilet rooms only.

1. **Mirrors** should be located above the vanity running the full length in multi-user toilet rooms. In single use or Family Assist restrooms, only a wall mounted individual mirror is required. Mirrors can be tilted if required by the ADA. A minimum of one independent full height mirror is required in each multi-use toilet room. All mirrors should be placed away from the main entrance and in a location that would permit reflective view into the room. Mirrors should be constructed of tempered glass.
2. **Soap dispensers** should be liquid soap dispensing type. They are required to be wall mounted with adhesive material. One dispenser is required between each sink. Coordinate with MAA Building maintenance for acceptable manufacturer per vendor contract.
3. **Paper towel dispensers** shall be coordinated with MAA Building maintenance for acceptable manufacturer per vendor contract. Do not specify electric hand dryers.
4. **Toilet paper holders** shall be coordinated with MAA Building maintenance for acceptable manufacturer per vendor contract. Provide one at each water closet.
5. **Waste receptacles** are to be 32 gallon, round freestanding unit with large top opening and grey in color. Wastes receptacles should be located immediately adjacent to the towel dispensers and of sufficient quantities. Where possible, provide a recessed nook to permit

the receptacles space without taking away any traffic floor area. Waste receptacles are to be located on the plan view of the restroom in the construction documents.

6. **Sanitary napkin disposal** receptacles should be provided in each stall of the women's toilet room. Receptacles should be free standing and not attached to the partitions. Coordinate with MAA Building maintenance for acceptable manufacturer per vendor contract.
7. **Sanitary napkin dispensers** should be located in the women's and Family Assist restrooms. Coordinate with MAA Building maintenance for acceptable manufacturer per vendor contract.
8. **Toilet seat cover dispensers** are required in the toilet rooms. They are not required in each stall and should be wall-mounted type. The automatic toilet seat cover dispenser is not to be specified. Coordinate with MAA Building maintenance for acceptable manufacturer per vendor contract.
9. **Air Fresheners** shall be located in all restrooms. A minimum of one should be provided for the Family Assist restroom. The location and number of fresheners in the multiple-user restrooms is at the discretion of the designer. Coordinate with MAA Building maintenance for acceptable manufacturer per vendor contract.
10. **Grab bars** are required in the ADA toilet stall. Grab bars should have slip resistant gripping surface.
11. **Handbag shelves** are not to be provided in multiple-user toilet rooms.
12. **Baby changing stations** and related countertops and sinks are to be provided in each male and female multi-use toilet room and Family Assist restroom. The changing table should be within 4 feet of the countertop and sink. Baby changing equipment shall be Koala Bear Care or approved equal. A sign is required within each multiple-user restroom indicating the location of the baby changing station.

J. **Signage:** The toilet room signage should be in accordance with the terminal standards. Icons are to be used to designate male and female toilet rooms. Directional signs are required in public toilet room areas. Signs shall be installed at the toilet room entrance including blade-type signage. ADA compliant wall mounted signage is to be provided at each toilet room.

K. **Lighting:** Lighting design and illumination levels should be in accordance with current lighting standards and codes. Lighting fixtures consistent with Chapter 15 Lighting, and should be 2 x 2 with parabolic lens and respective luminaire type. Alcove lighting above sinks and urinals shall have an egg-crate type parabolic diffuser. Flat translucent sheet diffusers are not acceptable.

L. **Ventilation:** The ventilation should exceed published mechanical standards by ten percent. The toilet room should be designed to have lower pressure than the public corridor to prevent fumes from escaping.

M. **Acoustics:** All toilet rooms should be sound proof. This is to be performed by constructing walls from the floor to roof deck/floor above.

N. **Fire Alarm and Emergency Lighting**: All public rooms need to comply with current building codes for fire alarm notification and emergency lighting requirements.

O. **Plumbing Fixtures**: The plumbing fixtures shall have the following requirements for all toilet rooms constructed. Refer to Fixtures cut sheets in Appendix F - Restroom Design Cut Sheets.

1. Lavatories for Family Assist and single use restrooms are to be wall mounted with trim and controls. Lavatories for multi-use toilet rooms are to be countertop mounted drop-in self-rimming with trim and controls. All sinks are to be cast iron. The mixing valves should be located in the walls (not the ceiling). The maximum temperature setting should be in accordance with applicable code. Automatic presence sensors are required at each lavatory.

2. Urinals are to be wall mounted with trim and controls on the flushometer. Wing-walls are required on the urinals. Automatic presence sensors are required at each urinal. The sensor shall be equipped with the ability to manual flush in the event the sensor is malfunctioning.
3. Water closets are to be wall mounted with trim and controls. Automatic presence sensors are required at each water closet. Comply with current ADA requirements for accessible toilet stalls. The sensor shall be equipped with the ability to manual flush in the event the sensor is malfunctioning.
4. Mop basins are to be floor mounted with trim, controls and plumbing accessories.
5. Floor drains should be self-priming and properly flashed for leak prevention (pertains to Janitorial closet as well).
6. General control requirements for all toilet rooms:
   a. All controls are to be automatic and hard wired.
   b. Limit the number of fixtures on a single transformer to reduce multiple fixture outages.
   c. Provide scald protection at all lavatories.

P. **Shower Compartments**: Shower compartments are not to be placed in multi-use, Family Assist, or single-use public toilet rooms. When shower compartments are required, they shall meet the following standards (Refer to Fixtures cut sheets in Appendix F - Restroom Design Cut Sheets):
1. Designed in accordance with current ADA requirements.
2. The compartment should be a prefabricated solid surface material.
3. Each compartment should have grab bars, soap dish or dispenser, a shower seat, and a heavy-duty curtain rod.
4. The mixing valve should be in the wall.
5. The showerhead should be slide type (up and down). Head is not to be placed on the back wall.
6. A floor drain is to be installed in front of the shower when installing an ADA accessible shower stall.

Q. **Lockers**: Lockers are not to be placed in multi-use, Family Assist, or single use public toilet rooms. The type, size, and material are at the discretion of the designer. All lockers shall have removable legs with base filler (no concrete bases for ease of renovation). Attaching lockers to the wall or to the floor is to be approved by MAA. The lockers and locks will not be provided by MAA. ADA requirements must be maintained in locker areas.

R. **Sanitary Lines:** All restroom fixtures should drain by gravity to the sanitary piping system. If existing conditions prohibit gravity flow then lift station/ejector pits are to be included in the design. Lift stations and ejector pits should be located outside the footprint of the building structure the restroom is within. In addition, secondary containment of the lift station and ejector pit should be considered to limit overflow into adjacent areas during system failure.

## 9.6.3 Adult Change Rooms

### 9.6.3.1 General

The Maryland Aviation Administration has recognized a need to provide restroom facilities with greater accommodation than required by current accessibility codes and guidelines. Current MAA practice has been to provide family assist restrooms offering privacy for families with young children and individuals with special needs. The purpose of this Standard is to expand on those provisions, space permitting, and exceed the minimum requirements included in ADA Accessibility Guidelines and ICC ANSI A117.1.

### 9.6.3.2 Entrance Door

Comply with Chapter 9.7.5 Adult Change Room Door requirements.

### 9.6.3.3 Changing Table

Refer to Photo 2 and Drawings at end of this Article. Provide a floor-supported changing table, sized for use by adults, which can support individuals weighing a minimum of 400 pounds (180 kilograms). Table surfaces must be easily cleanable using steam or power-spray equipment. Do not permanently attach table to wall or floor to permit cleaning of spills on and around wall and floor surfaces behind and under table. Design table with the following characteristics:

- Removable top.
- Adjustable leveling feet.
- Rounded edges and corners on open sides of table.
- Located against an inside corner of the room.
- Minimum 6-inch high back- and end-splash, integral with top. Loose splashes are not permitted.
- Medical examining table paper roller at end of table.
- Duplex convenience outlet (GFCI), and emergency call switch with pull cord within reach of individuals using changing table and assistant. Call switch is to signal the Consolidated Dispatch Center, and illuminate a flexible response blue strobe signal light outside the Adult Change Room, above the entrance door.

Wood framing and panel products used in the design of the table are to be fire-retardant-treated. Refer to Chapter 13.2 General Fire Protection Design Information, regarding architectural woodwork fire protection requirements.

Metals, including fasteners, are to be corrosion-resistant or otherwise protected from corrosion, including the effects of cleaning chemicals. Fasteners securing removable top are to be tamper-resistant.

Grab Bars are to be installed along the full length and width of changing tables. Provide at least one intermediate support for grab bars installed along the length of changing tables. Comply with ICC ANSI A117.1 requirements for grab bars, except increase structural strength requirements to 400 pounds (1770 N). Peened grip for grab bars is optional.

Assistant's Chair: Subject to program requirements, provide area adjacent changing table (end opposite paper roll preferred) for one assistant's chair. Chair may also be used by nursing mothers in addition to those assisting individuals with decreased mobility. Chair must be easily cleanable, water-resistant, and capable of supporting a minimum weight of 300 pounds (135 kilograms). A fixed seating location is preferred. Optional features may include adjustable chair armrests and seat height, folding armrests and seat. Refer to Photo 1 at end of this Article for sample product available.

### 9.6.3.4 Changing Room Design

At a minimum, design Adult Change Rooms to comply with applicable requirements of ICC ANSI A117.1 Accessible and Usable Buildings and Facilities, and the Code of Maryland Regulations (COMAR). Designers are encouraged to provide enhanced accommodation for these spaces, exceeding the minimum requirements contained in this Standard. For example, motorized wheelchairs, scooters, and wheelchairs and scooters with additional back and head support, often require greater floor space to maneuver and access plumbing fixtures. Additional space adjacent the water closet for assistant's use in aiding transfer may also be provided.

A. Room Finishes: Select finishes that can be cleaned easily, are mold and mildew resistant, and contain antimicrobial agents, when available by product manufacturers. Avoid finishes that are

easily stained. Waterproof floors in accordance with Chapter 9.4.8 Waterproofing. Grout joints of ceramic, porcelain, and quarry tile are to be sealed. If epoxy grout is used for tile, note that some types of epoxy grout cannot withstand certain cleaning methods that may be used, including steam-cleaning. Provide ceilings consisting of framed monolithic gypsum board, suspended gypsum board system, or suspended exposed grid system and gypsum panels. Comply with Chapter 9.6.2 Facility Construction Requirements.

B. Water Closet: Wall-mounted type, conditions permitting.
C. Lavatories: Wheel-chair type with lavatory guards.
D. Vanities: Vanities are optional. If provided, ensure weight of an individual who may sit or stand on vanity can be supported.
E. Toilet Accessories: Coordinate with the Office of Transportation and Terminal Services, Division of Terminal and Landside Operations for toilet accessories provided by MAA vendor(s), which may include soap dispensers, paper towel cabinets, toilet tissue dispensers, and sanitary napkin disposals. In addition to typical restroom accessories, include the following:
   - Diaper changing station for infants.
   - At least one large wall-mounted trash receptacle (recessed or semi-recessed preferred) for disposable diapers.
   - Wall-mounted hook(s) for diaper bags and coats.
   - Room deodorizer.
   - Full-height angle-framed mirror with tempered glass.

### 9.6.3.5 Changing Room Design Scope

At the discretion of the Office of Engineering and Construction, elements of accommodation included in the Adult Change Room may be increased or decreased, but in no case less than what is required by referenced codes and regulations.

### 9.6.3.6 References

- Assistance Chair: Pressalit Care www.pressalit.com.
- Changing Table Paper Holder: Ritter 95 Treatment Table Accessories, Midmark Corporation www.midmark.com.

*Photo 1: Assistance Chair*

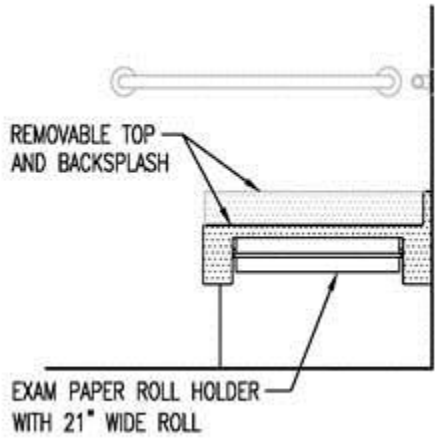
Chair, in this example, is attached to rail system, allowing horizontal adjustment. Height of seat and arms are adjustable and can be folded. Rail system is available in varying lengths.

*Photo 2: Changing Room*

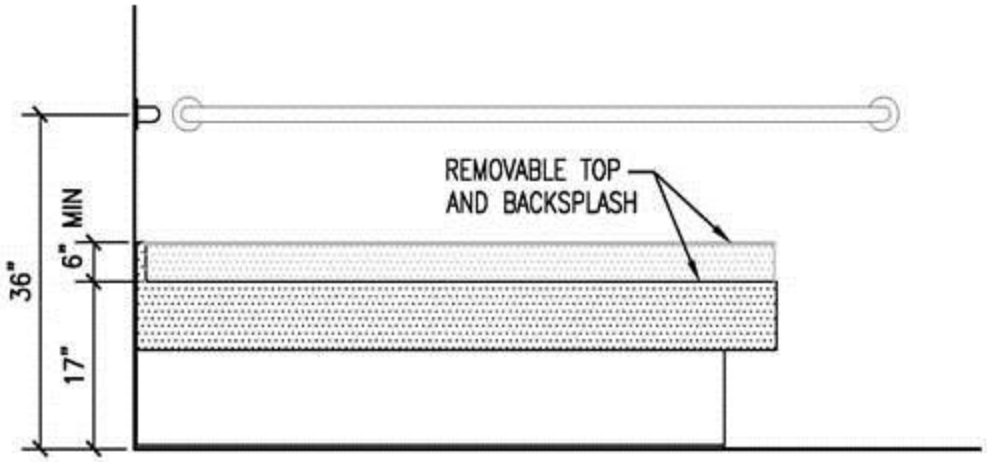
Changing table to right of view with examining table paper roll at end of table, housed within removable top. Duplex convenience outlet and emergency pull cord on wall at opposite end. Careful planning is required when locating plastic accessories supplied by vendors, to avoid encroaching upon required clearances.

**Drawings: Changing Table**

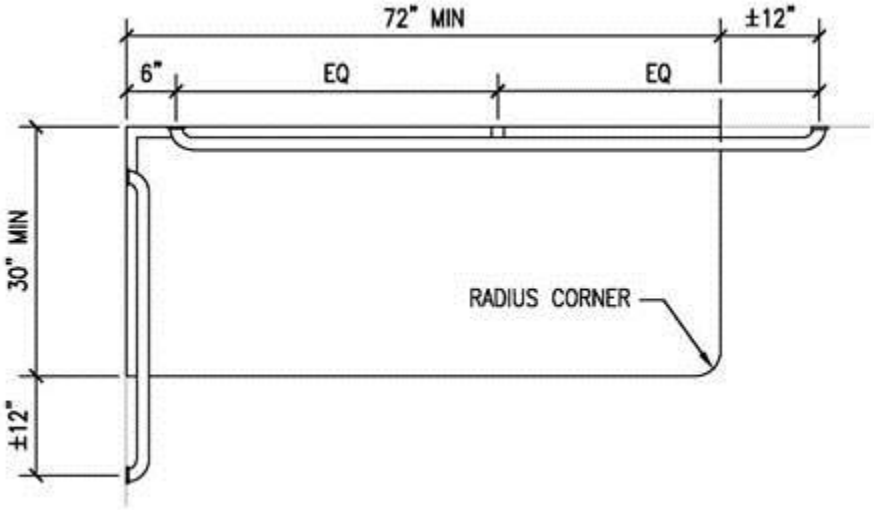
Locate table at inside corner of room. Design table as furniture, which can be moved for cleaning, and provide a removable top. Include grab bars mounted on wall along length and width of table. Extend room finishes behind and below table. Preferred location of Assistant's Chair in this layout is to left of plan, and within reach of convenience outlet.




*Front Elevation*




*End Elevation*




*Plan*

### 9.6.4 Restroom Exhibits and Standard Details

Standard exhibits and details to be utilized for restroom designs can be found in Appendix F - Restroom Design Cut Sheets.

# 9.7 Doors/Windows

## 9.7.1 Roll-up Doors

High Hazard Applications

Fabric roll-up doors at "high hazard" locations are not permitted. Fabric roll-up doors do not provide a fire rating, and therefore provide a hazard when used at improper locations. "High hazard" applications include, but are not limited to, mechanical, switch gear, and electrical substation rooms. When fire rated doors are required, metal roll-up doors shall be specified.

## 9.7.2 Door Numbers

All BWI Marshall projects which involve the allocation or change of door numbers shall be coordinated with the Division Chief, Fire Prevention Division. The Fire Prevention Division has been assigned the responsibility of door management and shall provide guidance when new or replacement numbers are needed. See Chapter 13 Fire Prevention and Protection for more fire protection design information.

## 9.7.3 Sterile Area Access Doors

In accordance with TSA mandate 5142-04-10A2, any proposal to increase the number of sterile area access doors (e.g. new construction) must be approved by TSA's Federal Security Director.

## 9.7.4 Window Opaque

All projects at BWI Marshall shall be designed and specified per the following requirements wherever the work requires the obscuring or covering of existing exterior windows in the terminal facility:

Terminal A/B (Where Exterior Wall Panel or Spandrel Glass is WHITE)

1. Provide tinting of windows where required to opaque existing vision glass windows. Provide product as follows or an approved equal:
2. Lumar – Window Film – NRM W PS3
3. 3M – Fasara –San Marino
4. Product color is to closely match installed white spandrel glass.
5. Prior to installation, review glass surface and verify submitted film is compatible with surface.
6. Warranty – provide minimum ten year installation and material warranty.
7. Install window film as recommended by manufacturer and published guidelines from the International Window Film Association.

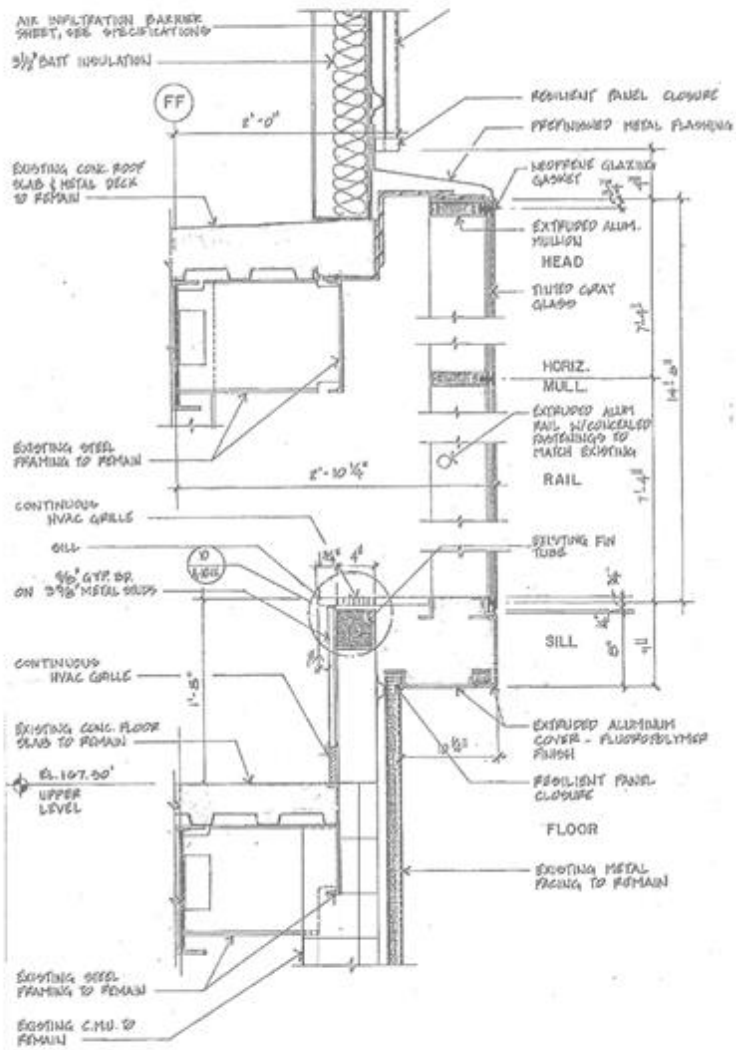
Terminal A/B and Concourses A and B (Where Exterior Wall Panel or Spandrel Glass is BLACK)

1. Provide infill panels where required to opaque existing vision glass windows. Provide hardboard panel (HBD) product as follows or approved equal.
   a. Omega Foam - Ply HBD by Laminators Inc.
      i. 0.013 "Stucco" aluminum face on window side with polyester paint finish; color black.
      ii. 1/8" Tempered Hardboard Stabilizers.
      iii. Polyisocyanurate Foam Core.
      iv. Manufacturer's standard white smooth finish on interior side of panels.
2. Install infill panels as detailed to interior of window frames wherever windows are required to be covered by tenant space requirements. See exhibits Horizontal Hardboard Panel, Concourse A & B, and A/B; and Vertical Hardboard Panel, Concourse B.
3. Provide manufacturer's standard panel product warranty.

Terminals C and D

1. Prior to installing panels specified below, remove all reheat coils, fin tube radiation, covers, and other devices, and abandon piping back to the main line. Demolition must provide for continuation of existing downstream service. Temporary outages may be required by demolition, but the piping loop must be retained to service existing downstream units which remain.
2. Provide infill panels where required to opaque existing vision glass windows. Provide hardboard panel (HBD) product as follows, or approved equal.
    a. Omega Foam - Ply HBD by Laminators Inc.
        i. 0.013 " Stucco" aluminum face on window side with polyester paint finish; color black.
        ii. 1/8" Tempered Hardboard Stabilizers.
        iii. Polyisocyanurate Foam Core.
        iv. Manufacturer's standard white smooth finish on interior side of panels.
            1. Install infill panels as detailed to interior of window jambs wherever windows are required to be covered by tenant space requirements. See exhibits for Wall Section – Standard Detain @ Domestic Terminal and Details @ Hardboard Panel.
            2. Provide interior gypsum wallboard assembly of 3-5/8" 20 gauge steel studs with 5/8" Type X gypsum wallboard and un-faced batt insulation to interior of space as illustrated in the Wall Section – Standard Detail @ Domestic Terminal.
            3. Provide panel manufacturer's standard product warranty.

Designer should refer to the following 5 exhibits.

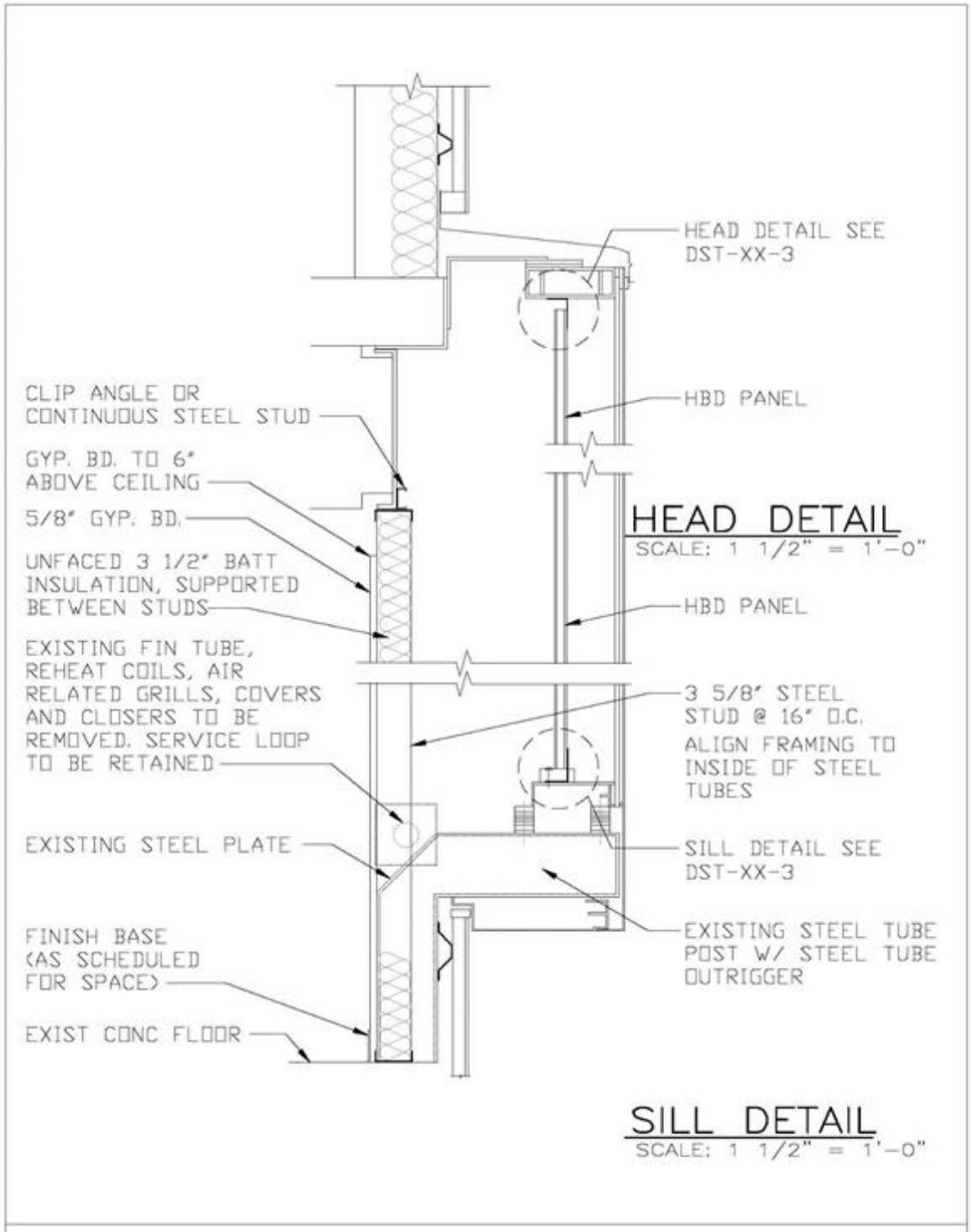


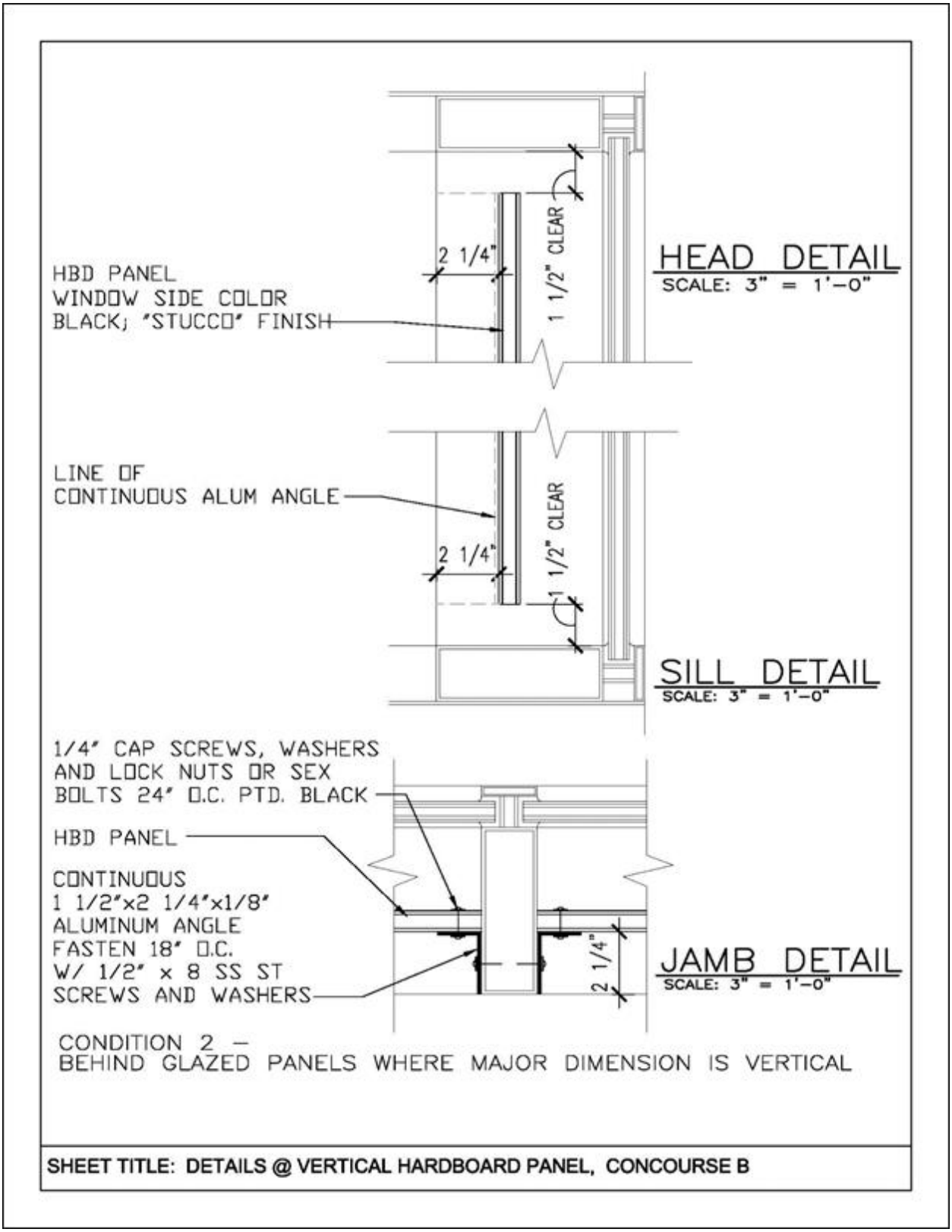

# EXISTING WALL SECTION

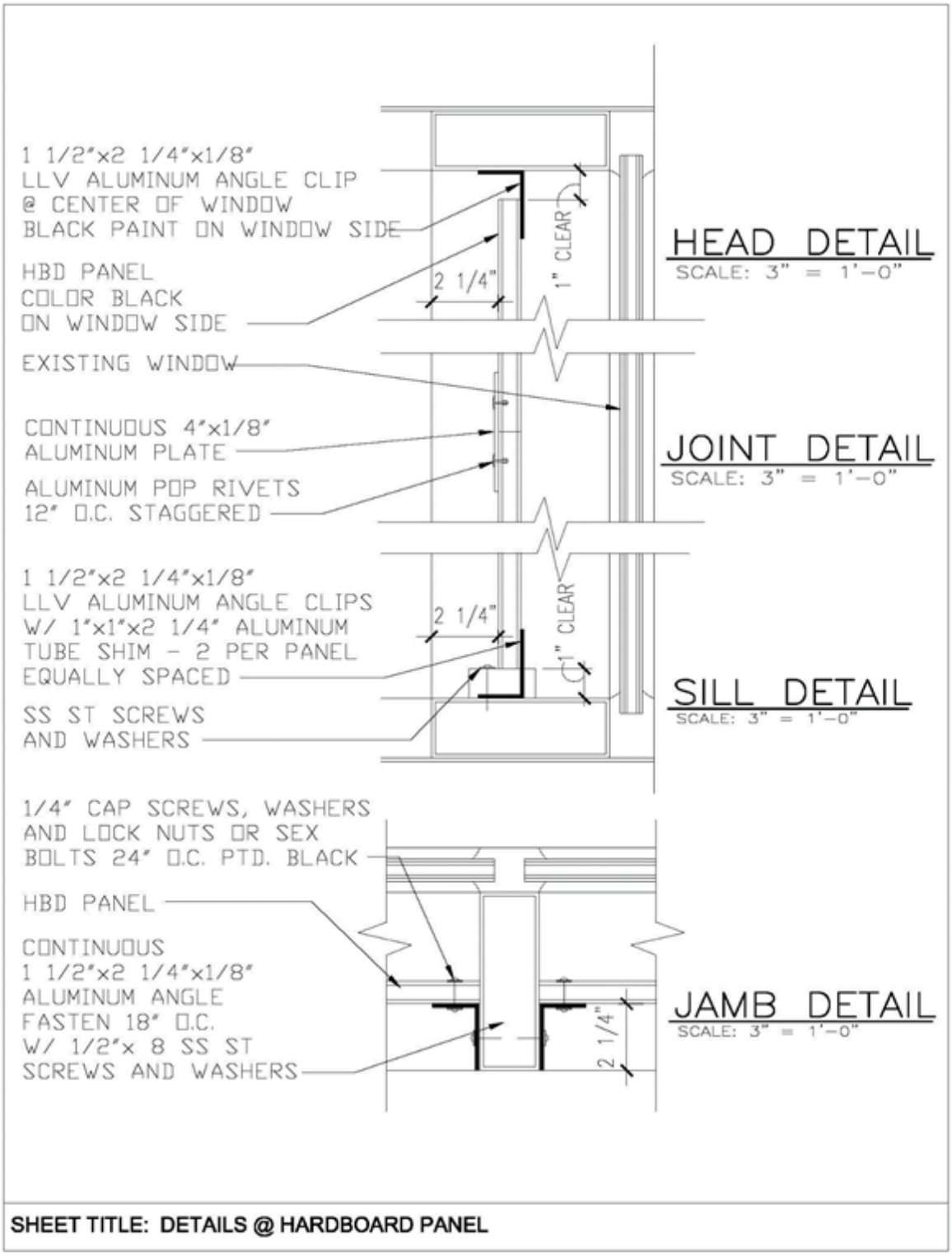
SCALE: N.T.S.

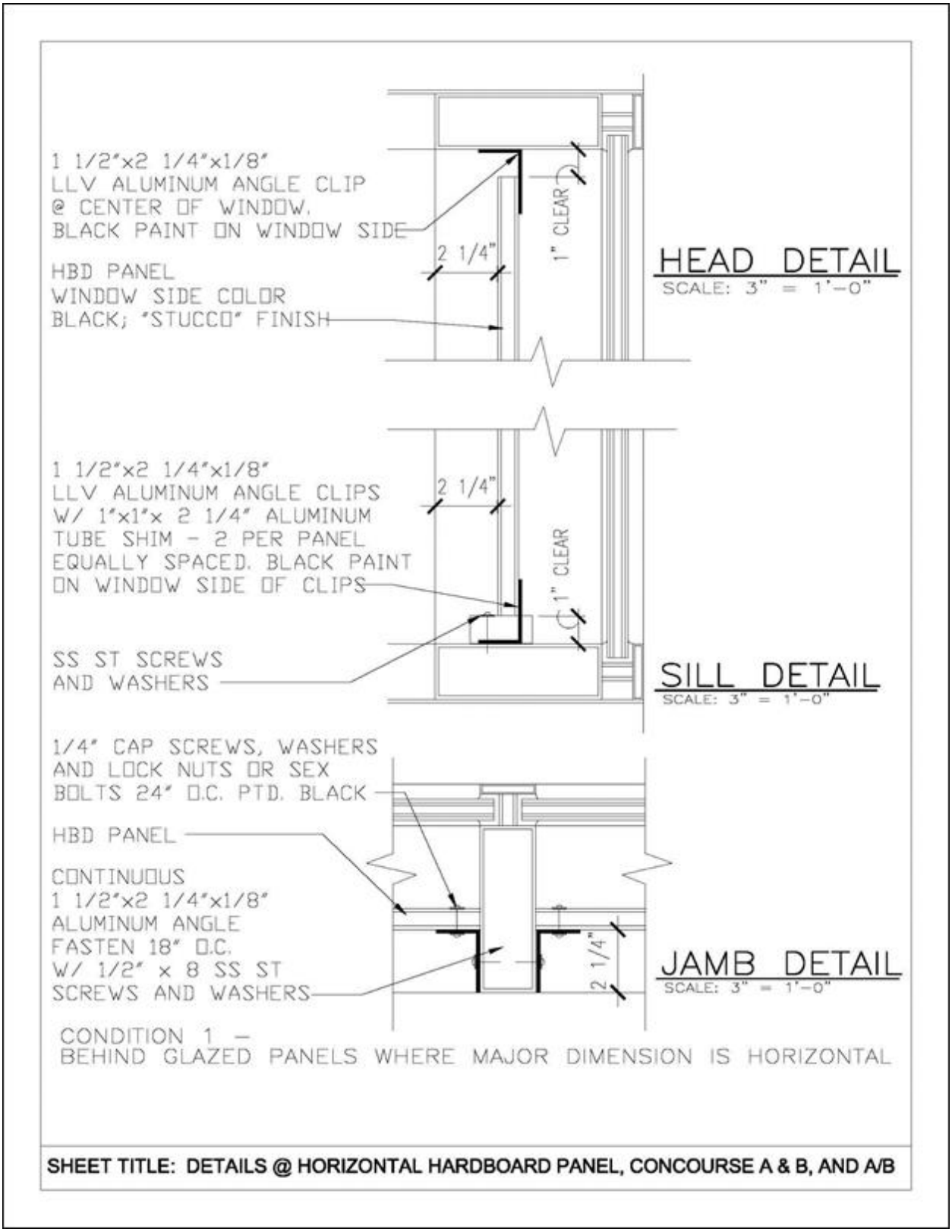
NOTE:
THIS DETAIL IS TAKEN FROM ARCHIVED CONSTRUCTION DOCUMENTS AND IS PROVIDED FOR REFERENCE. ALL INFORMATION MUST BE VERIFIED IN THE FIELD.

SHEET TITLE: EXISTING WALL SECTION @ DOMESTIC TERMINAL


HEAD DETAIL SEE DST-XX-3
HBD PANEL
CLIP ANGLE OR CONTINUOUS STEEL STUD
GYP. BD. TO 6" ABOVE CEILING
5/8" GYP. BD.
UNFACED 3 1/2" BATT INSULATION, SUPPORTED BETWEEN STUDS
HEAD DETAIL
SCALE: 1 1/2" = 1'-0"
HBD PANEL
EXISTING FIN TUBE, REHEAT COILS, AIR RELATED GRILLS, COVERS AND CLOSERS TO BE REMOVED. SERVICE LOOP TO BE RETAINED
3 5/8" STEEL STUD @ 16" O.C.
ALIGN FRAMING TO INSIDE OF STEEL TUBES
EXISTING STEEL PLATE
SILL DETAIL SEE DST-XX-3
FINISH BASE (AS SCHEDULED FOR SPACE)
EXISTING STEEL TUBE POST W/ STEEL TUBE OUTRIGGER
EXIST CONC FLOOR
SILL DETAIL
SCALE: 1 1/2" = 1'-0"
SHEET TITLE: WALL SECTION - STANDARD DETAIL @ DOMESTIC TERMINAL


HBD PANEL
WINDOW SIDE COLOR
BLACK; "STUCCO" FINISH
2 1/4"
1 1/2" CLEAR
HEAD DETAIL
SCALE: 3" = 1'-0"
LINE OF
CONTINUOUS ALUM ANGLE
2 1/4"
1 1/2" CLEAR
SILL DETAIL
SCALE: 3" = 1'-0"
1/4" CAP SCREWS, WASHERS
AND LOCK NUTS OR SEX
BOLTS 24" O.C. PTD. BLACK
HBD PANEL
CONTINUOUS
1 1/2"x2 1/4"x1/8"
ALUMINUM ANGLE
FASTEN 18" O.C.
W/ 1/2" x 8 SS ST
SCREWS AND WASHERS
2 1/4"
JAMB DETAIL
SCALE: 3" = 1'-0"
CONDITION 2 –
BEHIND GLAZED PANELS WHERE MAJOR DIMENSION IS VERTICAL
SHEET TITLE: DETAILS @ VERTICAL HARDBOARD PANEL, CONCOURSE B


1 1/2"x2 1/4"x1/8"
LLV ALUMINUM ANGLE CLIP
@ CENTER OF WINDOW
BLACK PAINT ON WINDOW SIDE
HBD PANEL
COLOR BLACK
ON WINDOW SIDE
EXISTING WINDOW
2 1/4"
1" CLEAR
HEAD DETAIL
SCALE: 3" = 1'-0"
CONTINUOUS 4"x1/8"
ALUMINUM PLATE
ALUMINUM POP RIVETS
12" O.C. STAGGERED
JOINT DETAIL
SCALE: 3" = 1'-0"
1 1/2"x2 1/4"x1/8"
LLV ALUMINUM ANGLE CLIPS
W/ 1"x1"x2 1/4" ALUMINUM
TUBE SHIM - 2 PER PANEL
EQUALLY SPACED
SS ST SCREWS
AND WASHERS
2 1/4"
1" CLEAR
SILL DETAIL
SCALE: 3" = 1'-0"
1/4" CAP SCREWS, WASHERS
AND LOCK NUTS OR SEX
BOLTS 24" O.C. PTD. BLACK
HBD PANEL
CONTINUOUS
1 1/2"x2 1/4"x1/8"
ALUMINUM ANGLE
FASTEN 18" O.C.
W/ 1/2"x 8 SS ST
SCREWS AND WASHERS
2 1/4"
JAMB DETAIL
SCALE: 3" = 1'-0"
SHEET TITLE: DETAILS @ HARDBOARD PANEL




## 9.7.5 Adult Change Room Doors

### 9.7.5.1 General

Comply with the minimum requirements included herein for entrance doors to Adult Change Rooms. Entrance doors are to provide user privacy, and enhanced accommodation, which exceeds accessibility requirements included in ADA Accessibility Guidelines and ICC ANSI A117.1. In-swinging type doors are preferred.

### 9.7.5.2 Automatic Door Operator:

Provide low-voltage electro-hydraulic type automatic door operator. Door operation included in this Standard requires that automatic door operator comply with manual door closer reduced opening force.

#### *A. Door Operator Characteristics:*

The electro-hydraulic door operator, in simplest terms, is a motorized manual hydraulic door closer. Since it contains a manual closer, it can be adjusted to fully comply with the accessibility requirements for reduced opening force of a manual closer. Other features of the operator are to include the following

- Obstruction detection on opening and closing cycles.
- Adjustable door opening and closing force.
- Adjustable hydraulic backcheck valve to cushion door speed if opened violently.
- Three-position switch, ON/OFF/HOLD-OPEN, with cover plate to prevent tampering, if available from manufacturer specified.
- Rigid type closer arm and slide track.
- Tested to UL standards for automatic closing door, UL 10B and UL 10C; ADA-compliant; certified by BHMA to meet ANSI A117.1 and A156.19.

#### *B. Door Operator Installation:*

Door operators and track arms are to be through-bolted to hollow metal door frame heads and doors (wood or metal) with sex bolts. Heights of frame heads are to be designed to provide a minimum 4-bolt attachment of operator to frame. Refer to door and frame requirements 11.9.5.8 below.

#### *C. Quality Control:*

Installer must be trained and approved by automatic door operator manufacturer for installation and maintenance of product. Include testing and inspection of installation by an inspector certified by the American Association of Automatic Door Manufacturers.

#### *D. Electric Strike:*

An electric strike is necessary to permit the lockset latch to pass through the door frame when the automatic door operator is used, and the lockset lever is not turned. Door sequence of operation must be set to release the strike prior to activation of the door operator to protect the operator motor. Provide fail safe type strike.

#### *E. Mortise Lockset:*

Privacy mortise lockset with tubular lever of type that returns to door face; Best Access Systems interchangeable core lock cylinder (Ref: Chapter 9.5 Lock System) with thumbturn; indicator (Vacant/Occupied outside, Secure/Unsecure inside). Standard mechanical lockset is to be custom pre-wired at the factory with a switch, operated by turning the thumbturn or key. Lockset functions include the following:

- Latchbolt by grip either side, unless outside grip is locked.
- Outside grip locked or unlocked, and outside door operator press wall switch deactivated or activated, by key (outside) or thumbturn (inside).

- Operating inside grip, closing the door, or using key unlocks outside grip, and activates outside press wall switch.
- Inside grip always free, and inside press wall switch always activated.
- Auxiliary latch deadlocks latch.

Lockset manufacturer will likely require that modification to mechanical lockset be reviewed and approved by their engineering department prior to release for fabrication. Coordinate with specified manufacturer(s) for procedure, and information to include in door hardware specifications.

### *F. Continuous Hinge:*

Provide geared aluminum, edge-mount (mortise), continuous hinges for adult change room doors equipped with automatic door operators. Hinge may be electrically modified, or prepared for power transfer hinge required for electrified mortise lockset.

### *G. Miscellaneous Door Hardware:*

Provide miscellaneous door hardware required for project, including boxed power supply, kickplates, saddles, wall stops, and similar items.

### *H. Hardware Finishes:*

Provide standard MAA-approved door hardware finishes and base metals.

### *I. Doors and Frames:*

Hollow metal doors and frames to receive automatic door operators are to be fully welded, and internally reinforced to receive surface-applied door hardware. Reinforce frame heads with channel type reinforcing for full height of frame head and depth of frame. Reinforce frame hinge jamb and door hinge edge full height for continuous hinges. Where wood doors are used, coordinate door blocking requirements with door manufacturer(s) to ensure adequate reinforcing (blocking) is specified for door hardware.

### *J. Hardware Set:*

The following is a sample door hardware set and sequence of operation. *Note: This is NOT a standard specification. Designer shall tailor the hardware set(s) to suit individual project requirements.*

Sample Door Hardware Set and Sequence of Operation

A. Basis of Design Manufacturers: Names of the following basis of design manufacturers are abbreviated in the Schedule as indicated:
   - Best Access Systems; Div. of Stanley Security Solutions, Inc. (BAS).
   - Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
   - HES, Inc.; an ASSA ABLOY Group company (HES).
   - McKinney Products Company; an ASSA ABLOY Group company (MCK).
   - Norton Door Controls; an ASSA ABLOY Group company (NOR).
   - Pemko Manufacturing Co.; an ASSA ABLOY Group company (PMC).
   - Rockwood Manufacturing Company (RMC).
   - Securitron Magnalock Corporation; an ASSA ABLOY Group company (SMC).

B. POWER-OPERATED OPENINGS
   HW-01 M x M
   Door Nos. AT213, Dx201

| Item | Description | Mfr | BHMA |
|---|---|---|---|
| 1 continuous hinge | MCK-25HD x 83" | MCK | 628 |
| 1 power transfer hinge | EL-CEPT | SMC | 630 |
| 1 wiring harness | ElectroLynx QC-C1500P (power xfer-junction box) | MCK | --- |
| 1 electrified lockset (privacy) | ML2068 x M92 x M105 x M19VN x LWA 24VDC | CR | 630 |
| -- indicator (vacant-occupied) | | | --- |
| 1 wiring harness | ElectroLynx QC-CXXX x lgth. (pwr xfer to lockset) | MCK | 630 |
| 1 mortise cylinder | 1E74 | BAS | 626 |
| 1 electric strike (fail safe) | 1006 x 1000-KM x 2004 x 2005 x 24VDC | HES | |
| 1 wiring harness | ElectroLynx QC-C1500P (strike-junction box) | MCK | --- |
| 1 door operator | 6010 x 120VAC x 668S | NOR | 689 |
| 2 press wall plate switches | 505 | NOR | 630 |
| 1 kickplate | 10" x 2" LDW x 0.050" 4BE CSK | RMC | 630 |
| 1 mop plate | 4" x 1" LDW x 0.050" 4BE CSK | RMC | 630 |
| 1 wall stop | 409 (gray) | RMC | 630 |
| 1 threshold (AT213 only) | 190 drilled for countersunk fasteners | PMC | Alum |
| 1 set seals | S88 BL x DOWxDOH | PMC | --- |
| 1 power supply (above ceiling) | BPS-24-1 | SMC | --- |

Sequence of Operation

1. Entry to the restroom by rotating the corridor side lever or by use of the corridor side press wall switch.
2. Corridor side press wall switch to activate the electric strike and then the automatic door operator.
3. Person entering the restroom rotates the indicator turn piece locking the corridor side lever and deactivating the corridor press wall switch.
4. Rotating the restroom side lever unlocks the corridor side lever and reactivates the corridor side press wall switch via the request for exit (RX) switch.
5. Use of the restroom side press wall switch activates the electric strike and then the automatic door operator.
6. Use of the restroom side press wall switch reactivates the corridor side press wall switch and with the closing of the door unlocks the corridor side lever.

### *K. Maintenance and Occupancy Adjustment:*

Prior to including in project specifications, review with MAA any requirements for the Installer to return to perform post Substantial Completion maintenance and occupancy adjustment for the automatic door operator.

### *L. Demonstration and Training:*

Include in project specifications for MAA Maintenance personnel.

# 9.8 Furnishings

## 9.8.1 Holdroom Tandem Seating

1. Domestic Terminal: Seating in most holdrooms is provided and installed by the designated airlines. Seating in MAA holdrooms is provided and installed by the MAA.
2. International Terminal: Seating is provided by the MAA. It is the “Eames Tandem Sling Seating” manufactured by Herman Miller, Inc., Zeeland, Michigan.

## 9.8.2 Exterior Benches and Bike Racks

1. Exterior Benches: Benches are manufactured by Landscape Forms, Inc. of Kalamazoo, MI. They are “Petroskey Group” with metal rod seat inserts. The color and finish is “Hollyberry” powdercoat.
2. Bike Racks: Bike racks are manufactured by Landscape Forms, Inc. of Kalamazoo, MI. They are “Pi Rack”. The color and finish is “Grotto” powdercoat.

## 9.8.3 Trash Receptacles

Division of Maintenance must approve trash receptacles.

## 9.8.4 Master Clock System

All electronic clocks shall operate on the Simplex Master Clock System. Cut sheets for electronic clocks with analog faces are available by contacting the MAA Resident Architect. Digital clocks shall be designed with red characters.

# 9.9 Passenger Conveyance

## 9.9.1 Elevators

### 9.9.1.1 Elevator Pre-Inspection

Pre-inspection requirements are found in Public Safety Article, Title 12, Subtitle 8, Annotated Code of Maryland. The contract documents shall require the contractor to procure and conduct the pre-inspection and submit the required written certifications.

**§12-801. Final acceptance inspection.**

A. Required- The Commissioner shall conduct a final acceptance inspection on completion of the installation, modification, or alteration of an elevator unit before it is placed in service.
B. Inspection checklist- The Commissioner shall provide an inspection checklist that specifies the requirements for compliance with the Safety Code and other regulations adopted by the Commissioner.
C. Duties of contractor- At least 15 days before a scheduled final acceptance inspection for an elevator unit being installed, modified, or altered in the State, the contractor, owner, or lessee shall submit to the Commissioner a written certification that:
    1. the elevator plans and construction documents have been reviewed by a qualified elevator inspector;
    2. the qualified elevator inspector has certified that the elevator unit as constructed and installed complies with this subtitle, its regulations, and the safety code; and
    3. the elements indicated on the inspection checklist are operational, have been tested, and are functional.
D. Failure to meet criteria- If an inspector arrives to inspect an elevator unit at the designated time and the elevator unit does not meet the criteria established in subsection (c) of this section, the inspector may cancel the inspection and charge the contractor a fee in accordance with § 12-809 of this subtitle.

### 9.9.1.2 Elevator Doors

Elevator doors shall be made of the following materials:

A. Service/Freight Elevators – Diamond-plated/textured
B. Passenger Elevators – Stainless Steel #14

## 9.9.2 LIFT-Net Monitoring System

All passenger conveyance equipment being installed or refurbished, including elevators, lifts, escalators, and moving walks shall be compatible with the Airport's LIFT-Net system as provided by Integrated Display Systems, Inc. and shall be connected to the LIFT-Net system as part of the contract to install the conveyance. The work shall include any hardware and programming required for connection to the system.

LIFT-Net installations shall be tested and working properly upon beneficial occupancy. Lift-Net Terminals monitoring equipment shall be available at the time of beneficial occupancy. The new/refurbished unit(s) must be visible and operating on the Airport's existing Lift-Net system on the MAA's computer terminals.

# 9.10 Terminal Stair Tower Ramp Access

## 9.10.1 General Design Considerations

A. Reference Standards: Comply with Appendix G - Codes and Standards. Particular attention should be given to COMAR 05.02.02 Maryland State Accessibility Code, Americans with Disabilities Act Accessibility Standards, International Building Code, and NFPA 101 Life Safety Code.
B. Hand/Guardrails: All BWI exterior gate ramps will have handrails and guard railings as shown on the following exhibits. These rails will meet or exceed the code requirements. The rails are intended to direct pedestrians to the ramp and entry door.
C. Door Landing: The exterior landing will be at the same elevation as the interior of the building. Provide a guardrail on each side of the landing to indicate the elevation difference between the landing and the adjacent sidewalk.
D. Doors: Provide new door, frame, and hardware as required to comply with ADA standards and changed exterior building conditions modified to comply with this standard.
E. Threshold: Provide ADA compliant extruded aluminum thresholds with integral weather seal.
F. Bollards: Provide as required to protect the ramp from vehicular traffic in accordance with Section 8.1 General Site Work and Utilities.
G. Pavement Walkways: Provide a walkway path, delineated by pavement paint, extending 5’-0” toward the aircraft parking area from the end of the access ramp.

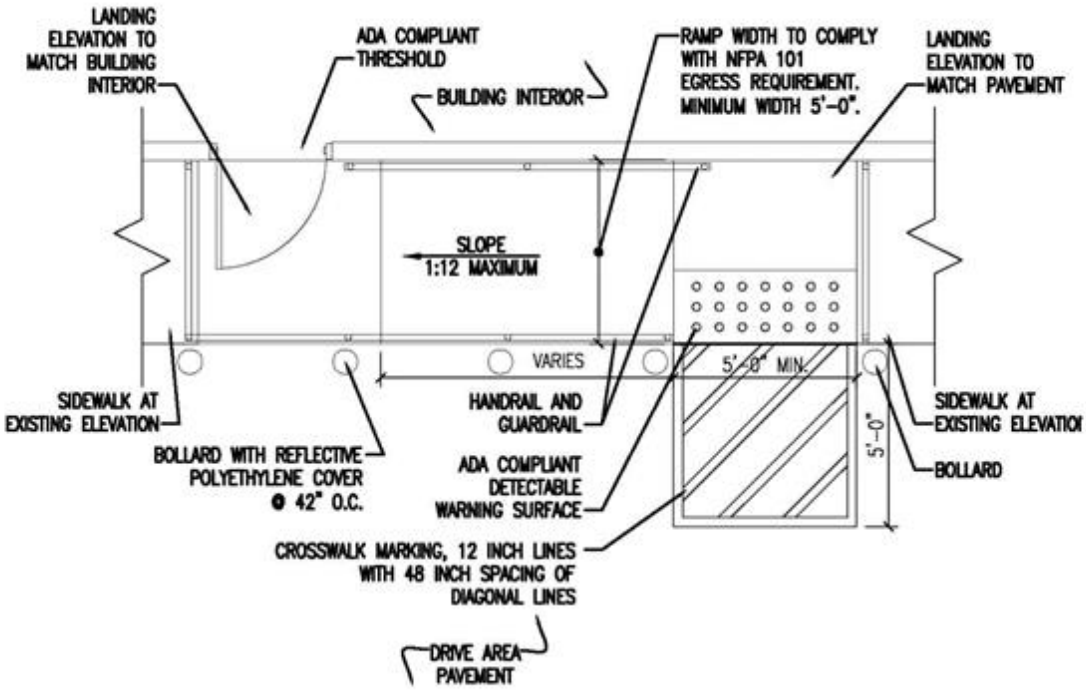
## 9.10.2 Ramp Configuration

Each location identified for a new ramp should be studied during the initial design process to ensure the location does not impact:

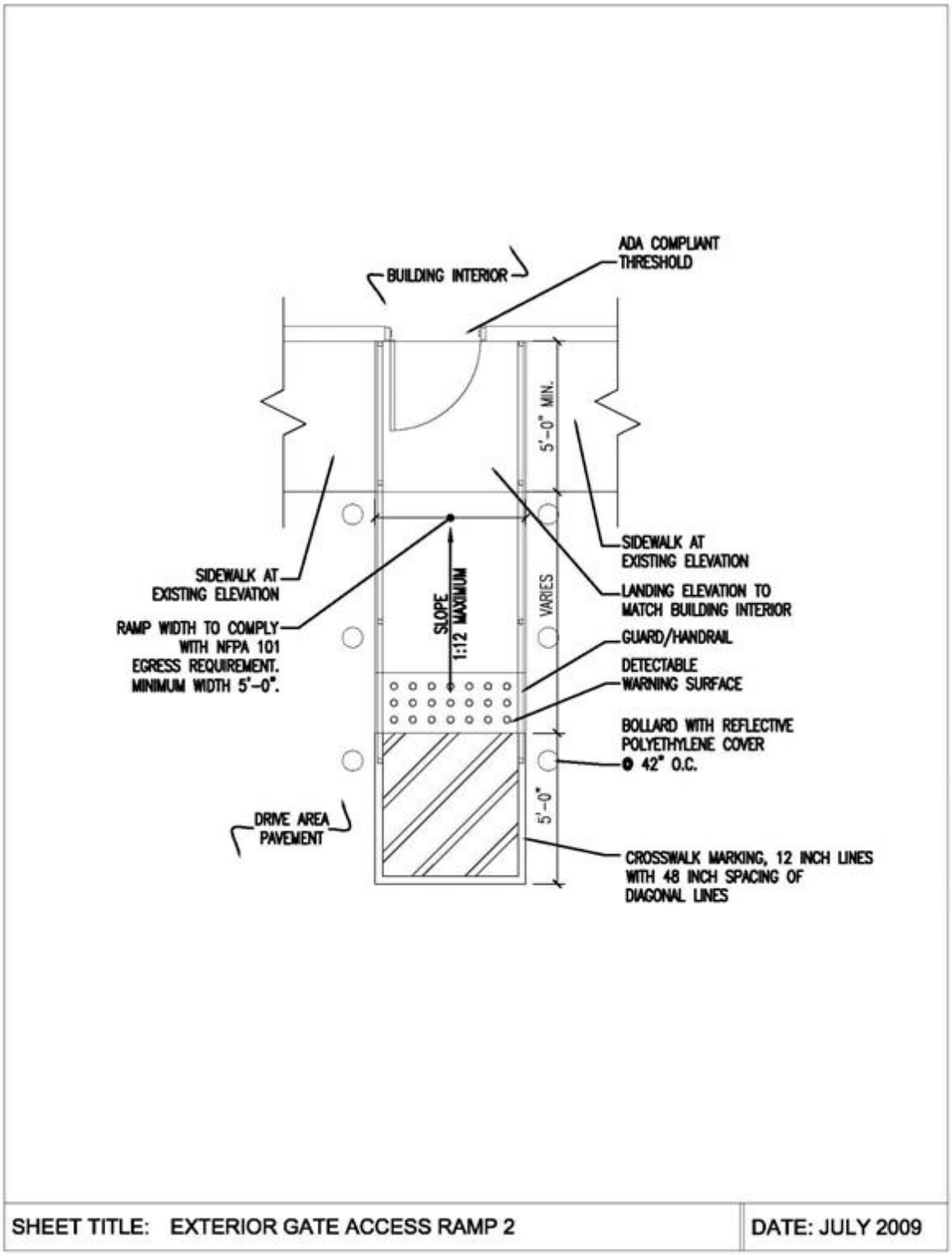
A. Vehicular traffic and parking spaces
B. Apron vehicle traffic and parking
C. Aircraft traffic and parking
D. Ground Service Equipment (GSE) locations

The configuration and geometry of ramps may vary depending on physical constraints surrounding the exterior doors. It is expected that most ramps can be configured in a manner similar to the following exhibits. The actual configuration of doors and curbs will vary around the perimeter of the concourses. It is the design professional’s responsibility to modify the designs to suit each field condition while maintaining the intent of the design standard.

Design ramps in accordance with the following Exhibits. The first exhibit is applicable where the ramp will be located parallel with the building and integrated into the existing sidewalk. The second exhibit is applicable where the ramp will be located perpendicular to the building.




SHEET TITLE: EXTERIOR GATE ACCESS RAMP 1 | DATE: JULY 2009




## 9.10.3 Construction Requirements

A. Ramp Pavement:

1. Concrete: 3000 psi @ 28 days, complying with ACI 301.
2. Finish: Light Broom.
3. Detectable Warning Surface: ADA compliant 1-3/8 inch thick precast concrete core, reinforced epoxy tiles.

B. Pavement Markings: Provide pavement paint to comply with Chapter 7.4 Pavement Markings.

C. Handrails and Guardrails:
1. Galvanized steel pipe or tube. 1-½ inch outside diameter.
2. Capable of withstanding following; concentrated load of 890 N (200 pounds) applied at any point in any direction and uniform load of 730 N/m (50 PLF) applied in any direction. Concentrated and uniform loads above need not be applied simultaneously.
3. Paint: In accordance with MPI EXT 5.3B, Alkyd System.

D. Vehicular Traffic Protection: Bollards in accordance with Section 8.1.

E. Doors, Frames, and Hardware:
1. Doors and frames: Provide galvanized seamless hollow metal doors with welded frames. Comply with SDI-100, Level 3, Model 2.
2. Hinges: Stainless steel ball bearing type.
3. Locksets: Lever type complying with ADA standards. Provide lever that returns to door face, to avoid possibility of catching fire hoses in an emergency situation.
4. Cores: Provide in accordance with MAA Design Standard Appendix D - Standard Specifications.

F. Lighting:
1. Purpose: Provide pedestrian lighting for ramps.
2. Lighting Level: Minimum of 5 footcandles with an average uniformity of 3 to 1of lighting on the ramp.
3. Comply with Chapter 15 Lighting of MAA Design Standards.
4. Light Fixture: Wall pack type fixture, 250w/120v with metal halide lamp with top visor and side shields. UL/CUL Listed for wet locations at 40C. UL Listed Marine Outdoor. Class I, Division 2 Class II, Div 1 & 2 Class III, Div 1 & 2. Provide Holophane Predator or similar.

# 9.11 Architectural Woodwork

## 9.11.1 General

Architectural Woodwork for MAA projects are to be designed, constructed, and installed in compliance with the recommendations and appropriate quality grade(s) as defined in the latest edition of the Architectural Woodwork Standards (AWS), published jointly by the Architectural Woodwork Institute (AWI), the Architectural Woodwork Manufacturers Association of Canada (AWMAC), and the Woodwork Institute (WI).

### 9.11.1.1 Types of Woodwork

Types of woodwork covered by this Standard are listed by Section in the AWS, including casework, doors, countertops, and trim.

### 9.11.1.2 Fire Protection Requirements

Refer to Chapter 13.2 General Fire Protection Design Information.

## 9.11.2 AWS Quality Grades

AWS includes three levels of quality, ranging from lowest to highest: Economy, Custom, and Premium. Each quality level addresses such items as permitted materials, appearance, detailing, finishes, and fabrication and installation tolerances for woodwork. Architectural woodwork quality grade for manufacture and installation shall be “Custom” for MAA projects, unless otherwise specified by the designer and approved by MAA’s Project Manager.

### 9.11.2.1 Modifications

Certain improvements to the specified quality grade, for example, Premium grade wood veneer faces for Custom grade wood doors, may be specified.

### 9.11.2.2 Option

Economy grade may be considered for certain types and locations of woodwork, subject to approval by the MAA’s Project Manager.

## 9.11.3 AWI Quality Certification Program (QCP)

Specifications for architectural woodwork for MAA projects shall include the requirement(s) that the project be registered with AWI's Quality Certification Program, which shall include manufacture and installation by AWI-Certified woodworking firms, certified for the applicable categories of the work. Project registration with AWI QCP by the woodworker is required immediately following construction contract award. Prior to Substantial Completion, each project is to be issued a Certificate of Compliance by the woodworker indicating the project has been completed under the auspices of the AWI QCP.

### 9.11.3.1 Submittal Requirements for QCP Projects

Action and Informational Submittals are to include the following requirements:

#### *A. Shop Drawings*

Action Submittals for QCP projects are to bear AWI QCP labels indicating the project's registration number. Shop Drawings not bearing labels may be reviewed and marked for resubmittal, but are not to be marked as approved (or approved as noted) by the Designer until shop drawings indicate compliance with requirements and labels are attached.

### *B. Compliance Certificates*

Informational Submittals of AWI Quality Certification Program Certificates of Compliance. Certificates of Compliance are to be delivered to MAA Office of Engineering and Construction, Division of Architecture, prior to Project Closeout.

#### 9.11.3.2 Inspection

Fabrication and installation of registered projects shall be inspected by an AWI QCP inspector for compliance with the AWS quality level specified, and a Project Compliance Inspection Report will be filed with the Engineer. The Report shall indicate any deficiencies that require correction prior to recommendation that a certificate be issued. A follow up site inspection shall be performed to verify that corrections have been satisfactorily completed, and an updated Report shall be filed with the Engineer. Project Specifications may include requirement for Informational Submittals of Reports.

### *A. Labels*

AWI QCP labels are to be affixed to woodwork receiving Certificates of Compliance by the woodworker in an inconspicuous location determined by the MAA Office of Engineering and Construction, Division of Architecture.

#### 9.11.3.3 Selection of Qualified Woodworkers

A list of qualified woodworkers may be included in each section of the specifications requiring AWI certification. Information regarding the QCP and AWI-Certified woodworkers is available from the AWI QCP web site. Check boxes for certified sections may be selected to narrow the search for qualified woodworkers. A complete list of certified sections applicable to each contractor is displayed following selection of the listed contractors from the search results.

### *A. Recommendation*

It is recommended that one section at a time be selected. Selection of multiple sections may yield inaccurate results, which may inadvertently disqualify otherwise qualified woodworkers.

#### 9.11.3.4 Economy Grade Woodwork

Certification for Economy grade woodwork is not required.

#### 9.11.3.5 Wood Doors

Flush wood doors produced by reputable manufacturers generally will not require certification. Certification may be specified for flush wood doors integral with wall paneling, stile and rail doors, sketchface doors, and similar special doors and applications. Compliance with Architectural Woodwork Standards is, nevertheless, required for quality grade specified.

#### 9.11.3.6 Enforcement

Any or all AWI QCP requirements may be waived at the discretion of MAA Office of Engineering and Construction, Division of Architecture; however, compliance with requirements of Chapter 9.11.1 General and Chapter 9.11.2 AWS Quality Grades is still required.

### *A. Modifications to Woodwork*

Proposed future work involving modifications to woodwork that has received a Certificate of Compliance is to be reviewed and approved in writing by the MAA Office of Engineering and Construction, Division of Architecture, prior to proceeding with any proposed modification.

# Chapter 10 Structural and Structural Systems

## 10.1 Materials

### 10.1.1 Reinforced Concrete (With Subcategories)

All projects shall be designed based on cast-in place concrete principles. However, the contract specifications should allow for the submission of pre-cast concrete alternatives. The specifications should require the Contractor to submit the required design documentation and calculations to support the substitution of pre-cast concrete. MAA approval is required prior to proceeding with pre-cast applications.

## 10.2 Bomb Mitigation Design

Criteria exist for the design of terminal and building facilities to mitigate a potential vehicle bomb attack at the terminal curbside. These criteria can be obtained by contacting the MAA Manager of Office of Engineering & Construction.

# 10.3 Trash Compactor Fall Protection Systems

The fall protection system consists of vertical and horizontal safety posts (details are on the following pages) and must adhere to the regulations listed below:

All design loads shall be as per the current MAA adopted edition of the International Building Code (IBC).

All Construction shall be compliant with the following OSHA standards:

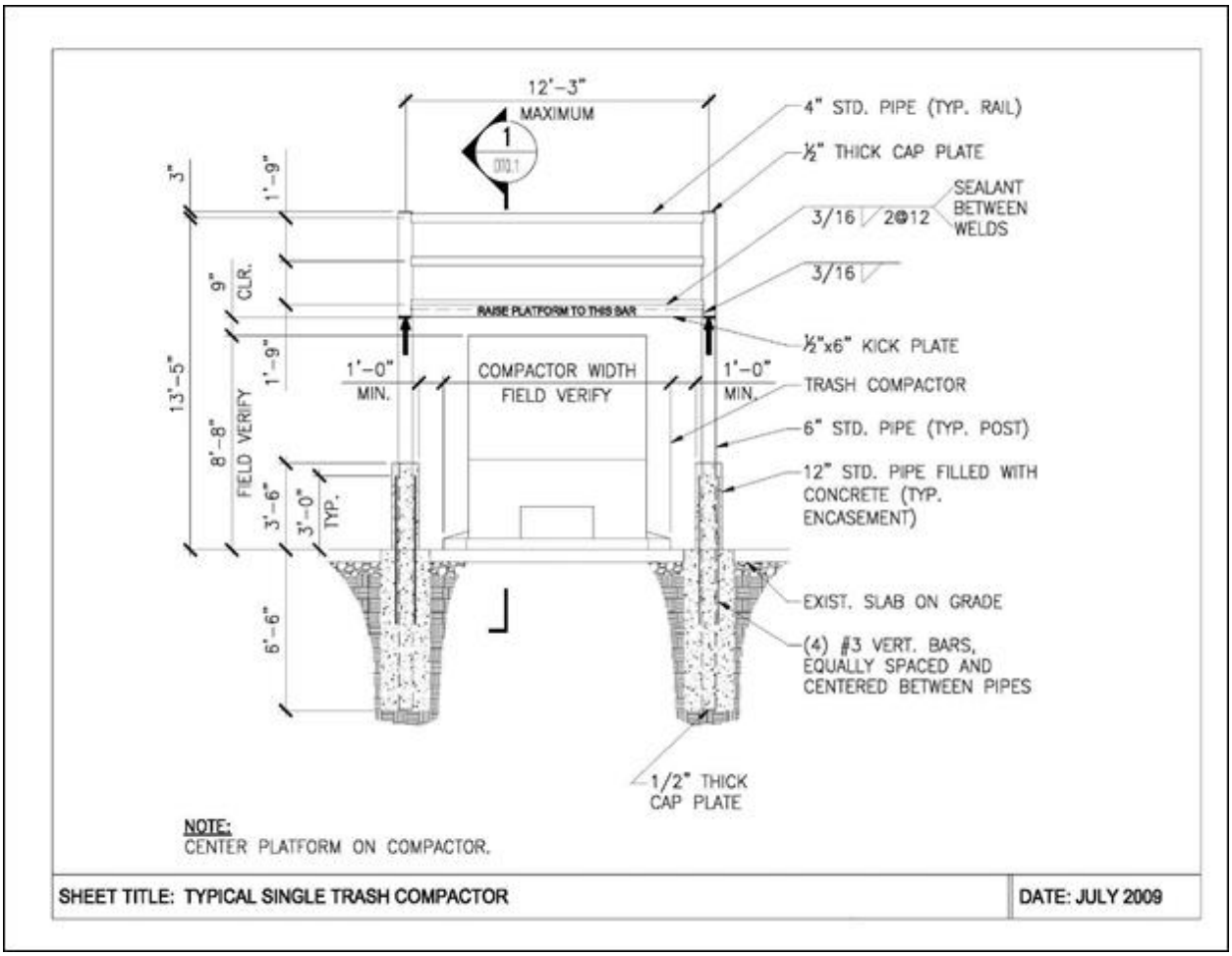
1910.23(e)(1)
A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface to top rail. The top rail shall be smooth-surfaced throughout the length of the railing. The intermediate rail shall be approximately 21 inches below the top rail. The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

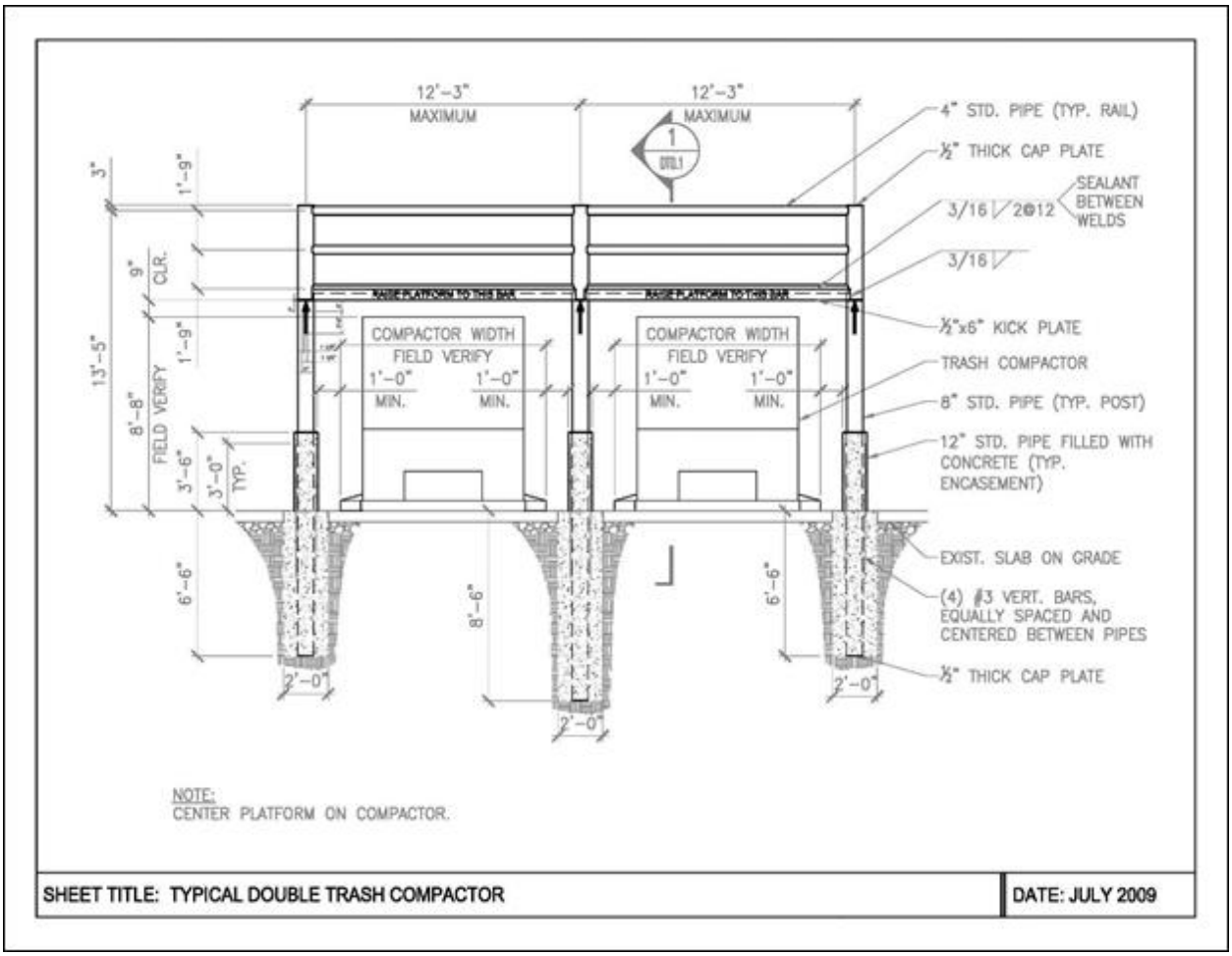
1910.23(c)(1)
Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing (or the equivalent as specified in paragraph (e)(3) of this section) on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toe board wherever, beneath the open sides.

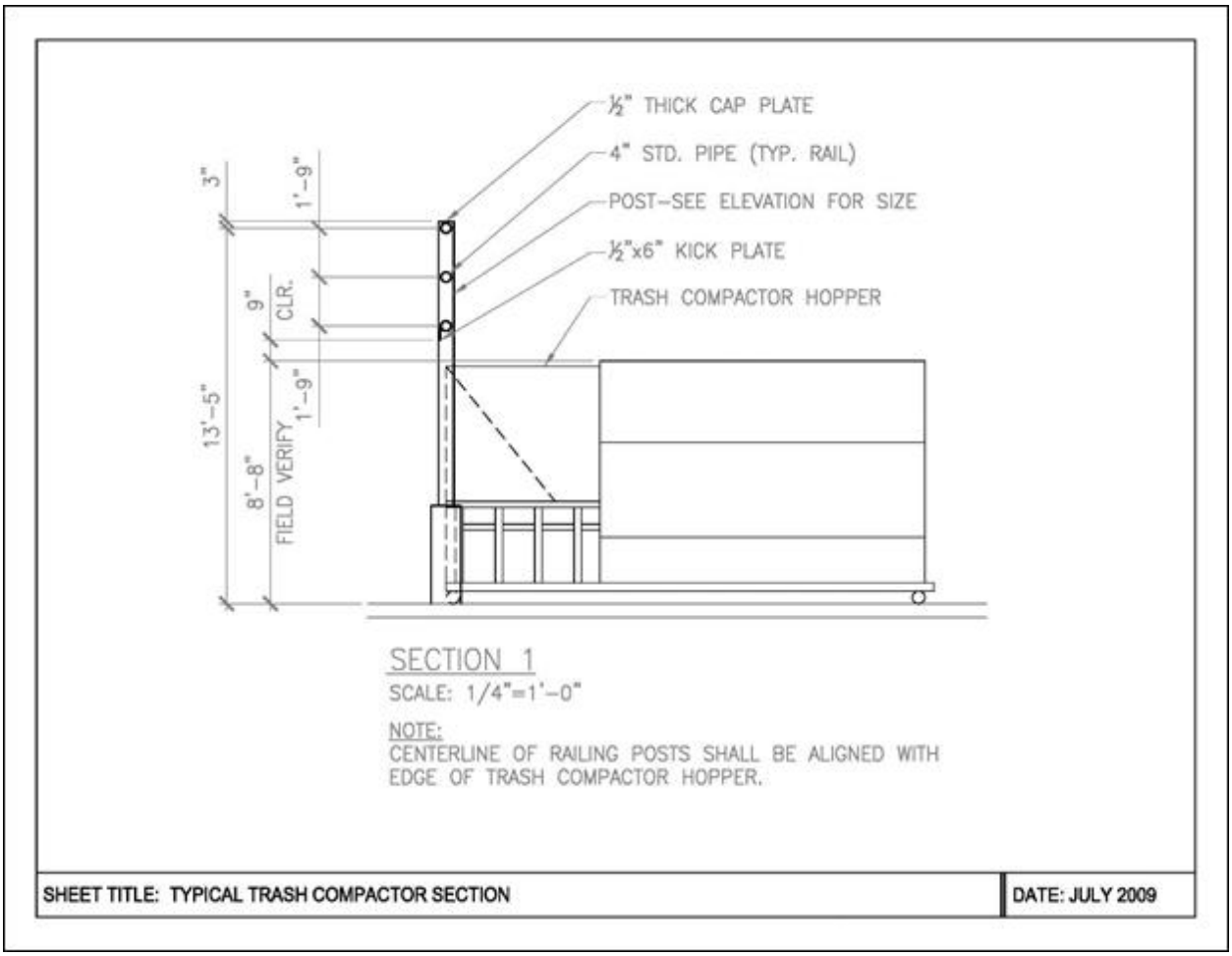
1910.23(e)(3)(iv)
The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

1910.23(e)(3)(v)(b)
A strength to withstand at least the minimum requirement of 200 pounds top pressure.

Because of the various dimensions of the trash compactors at the airport, dimensions for the safety posts will vary. Dimensions of the trash compactor requiring protection should be field verified before the design is to be submitted for construction. Any changes to these details should be submitted to the MAA Office of Engineering & Construction so that the changes can be incorporated into a revised notes standard.


12'-3"
MAXIMUM
1
D10.1
4" STD. PIPE (TYP. RAIL)
½" THICK CAP PLATE
SEALANT BETWEEN WELDS
3/16
2@12
3/16
RAISE PLATFORM TO THIS BAR
½"x6" KICK PLATE
TRASH COMPACTOR
6" STD. PIPE (TYP. POST)
12" STD. PIPE FILLED WITH CONCRETE (TYP. ENCASEMENT)
EXIST. SLAB ON GRADE
(4) #3 VERT. BARS, EQUALLY SPACED AND CENTERED BETWEEN PIPES
1/2" THICK CAP PLATE
1'-0" MIN.
COMPACTOR WIDTH FIELD VERIFY
1'-0" MIN.
3"
1'-9"
9" CLR.
1'-9"
13'-5"
8'-8" FIELD VERIFY
3'-6"
3'-0" TYP.
6'-6"
NOTE:
CENTER PLATFORM ON COMPACTOR.
SHEET TITLE: TYPICAL SINGLE TRASH COMPACTOR
DATE: JULY 2009


12'-3"
MAXIMUM
12'-3"
MAXIMUM
1
DTL1
4" STD. PIPE (TYP. RAIL)
½" THICK CAP PLATE
SEALANT BETWEEN WELDS
3/16 2@12
3/16
RAISE PLATFORM TO THIS BAR
RAISE PLATFORM TO THIS BAR
½"x6" KICK PLATE
TRASH COMPACTOR
8" STD. PIPE (TYP. POST)
12" STD. PIPE FILLED WITH CONCRETE (TYP. ENCASEMENT)
EXIST. SLAB ON GRADE
(4) #3 VERT. BARS, EQUALLY SPACED AND CENTERED BETWEEN PIPES
½" THICK CAP PLATE
COMPACTOR WIDTH
FIELD VERIFY
1'-0"
MIN.
1'-0"
MIN.
COMPACTOR WIDTH
FIELD VERIFY
1'-0"
MIN.
1'-0"
MIN.
3"
1'-9"
9"
CLR.
1'-9"
13'-5"
8'-8"
FIELD VERIFY
3'-6"
3'-0"
TYP.
6'-6"
8'-6"
6'-6"
2'-0"
2'-0"
2'-0"
NOTE:
CENTER PLATFORM ON COMPACTOR.
SHEET TITLE: TYPICAL DOUBLE TRASH COMPACTOR
DATE: JULY 2009


½" THICK CAP PLATE
4" STD. PIPE (TYP. RAIL)
POST–SEE ELEVATION FOR SIZE
½"x6" KICK PLATE
TRASH COMPACTOR HOPPER
3"
1'–9"
9"
CLR.
1'–9"
13'–5"
8'–8"
FIELD VERIFY
SECTION 1
SCALE: 1/4"=1'–0"
NOTE:
CENTERLINE OF RAILING POSTS SHALL BE ALIGNED WITH EDGE OF TRASH COMPACTOR HOPPER.
SHEET TITLE: TYPICAL TRASH COMPACTOR SECTION
DATE: JULY 2009

## 10.4 Core Drilling of Concrete Floors

The decision to core drill or not to core drill should be made by a qualified engineer (designer or resident engineer) based on the evidence from the documentation and nondestructive testing. Existing documentation of the structure should be reviewed to determine preliminary information on size and spacing of embedded objects.

Core drilling of concrete floors (on-grade, elevated, and post-tensioned) must be preceded by nondestructive testing (NDT) to show that no embedded conduits or structural reinforcing will be cut in the proposed location.

Nondestructive testing methods to determine the presence of reinforcing steel in concrete include electromagnetic sensor metal locators, x-rays or ground penetrating radar (GPR). The testing method used must be approved in advance by the resident engineer as being suitable for the application.

Safety precautions must be taken when utilizing x-ray techniques. For use of x-rays, access must be available to the both surfaces of the structure for placement of the x-ray source and the receptor (film).

Concrete dust, chips, water, etc. should be contained during core drilling. Safety should be practiced to assure that no one is directly below the core drilling location during the drilling.

# 10.5 Terminal Building Head Knockers

Terminal building head knocker structures shall be provided at each end of each at-grade through traffic vehicle passageway (tunnel) that traverses beneath an elevated portion of the terminal building. The free-standing head knockers shall protect the face of the building by preventing oversized vehicles from passing and making contact with the at the tunnel entrance.

## 10.5.1 Location

Head knockers shall be located at each end of each through vehicle passageway to protect the overhead portion of the building above the passageway. The head knockers shall clear span the full width of the passage and neither the head knocker frame nor any of its components or supports shall impede vehicle travel below the posted clear height or within the full width of the travel lanes.

The centerline of head knocker structures shall be located a minimum of 5’-0” from the face of the building and shall not be positioned any further from the face of the building then would allow passage of vehicles between the head knocker and the building. If conditions, such as adjacent existing building elements or equipment, require the head knocker to be closer to the building than 5’-0”, coordinate location with BWI Operations and verify clearances with existing building foundations.

Head knockers shall provide 7’-10” clearance. If a lower clearance is required to protect building elements, coordinate with BWI Operations for approval.

Head knockers must be positioned clear of existing and anticipated airfield and building infrastructure elements, such as sidewalks, below grade-utilities and high-mast light poles. Clearance must be maintained around high-mast light poles for lowering of the fixtures for maintenance. Head knockers must not reduce the width of Vehicle Service Road (VSR) lanes or other vehicle pathways.

Head knocker locations shall not impede fire truck access, including roof access, or access to or from egress doors or walkways. Head knocker supports shall not be positioned within in the path of sidewalks or protection curbs, unless there is no other acceptable location, and only with the approval of the BWI Fire Marshal. Head knockers shall not impede, block or otherwise obstruct any fire suppression systems to include, but not limited to, fire hydrants (free standing or wall hydrants), fire department automatic sprinkler or sprinkler/standpipe connections, fire pump connections or test headers, and should not impact established fire lane markings as required in the Annotated Code of Maryland, Title 21, Subtitle 10, Section 21-1003(m) as well as stipulated in NFPA 1, Fire Code, Chapter 18.

Final location of head knockers must be approved by the BWI Fire Marshal.

## 10.5.2 Civil

Head knockers shall be installed to clear span existing drive aisles. Existing lane pavement markings shall remain. A painted STOP line marking, including a painted stop bar shall be installed in the direction of travel in each lane at each head knocker.

Field investigation of existing utilities, either as part of the design or mandated for the contractor, shall be performed to aid in locating the head knockers clear of existing foundations and to prevent damaging utilities during construction.

Pavement repairs shall be included for the areas at the head knocker foundations and for trenching required for installation of electrical conduits.

### 10.5.3 Structural System

Head knockers shall be designed to resist a horizontal 10,000 pound concentrated load applied at any location along the length of the head knocker frame. The frame shall also resist other code applicable structural loads.

The head knocker structure shall be a welded steel frame composed of hollow structural sections. A top and bottom horizontal section of equal size shall be provided to support attached signage and resist applied loads. Intermediate, equally spaced vertical hollow structural sections shall also be provided to connect the top and bottom sections and provide signage support. Spacing of the intermediate sections shall not exceed 5’-0”. The base of the steel frame shall be elevated above grade a minimum of 4’-0” on concrete pedestals. The reinforced concrete pedestals shall be 2’-6” in diameter.

Foundations shall be provided to resist the applied and self-weight loads on the frame, signage and attachments. Foundation placement must be clear of existing foundations and utilities. Foundations shall be reinforced concrete drilled piers, or reinforced concrete spread footings if below grade obstructions make drilled piers impractical. Offset foundations to accommodate head knocker placement must be structurally adequate. Foundation design soil and subgrade parameters are site specific and shall be determined by the designer.

The steel frame shall have a multi-coat, high-performance epoxy coating. Color shall be Safety Yellow.

### 10.5.4 Signage

The head knocker frame shall include Caution, Clearance and Stop signs mounted over the clear drive aisle. Each head knocker shall include Pedestrian Warning signs attached to the vertical columns, reflective stripes on the concrete pedestals and a MAA User Authorization sign mounted to the face of the building. The Caution/Clearance/Stop sign shall accommodate surface mounting of signal lights. Signage lettering and colors are as indicated. Signs shall be fabricated from sheet aluminum, with joints as indicated and mounted to the head knocker frame with banding strap and universal channel clamps attached to sign with rivets Do not screw the signage directly to the head knocker frame. Wall mounted signage shall be screwed directly to the metal panel or masonry exterior wall of the building.

Signage shall be governed by the standards and requirements of the current versions of the following publications:

FHWA “Manual on Uniform Traffic Control Devices” (M.U.T.C.D.)

MDSHA “Maryland Manual on Uniform Traffic Control Devices” (MdMUTCD)

AASHTO “Highway Safety Design and Operations Guide”

AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals”
(Category II for all Overhead and Cantilever Sign Structures)

The disposition of existing signage shall be coordinated with BWI Airport Operations.

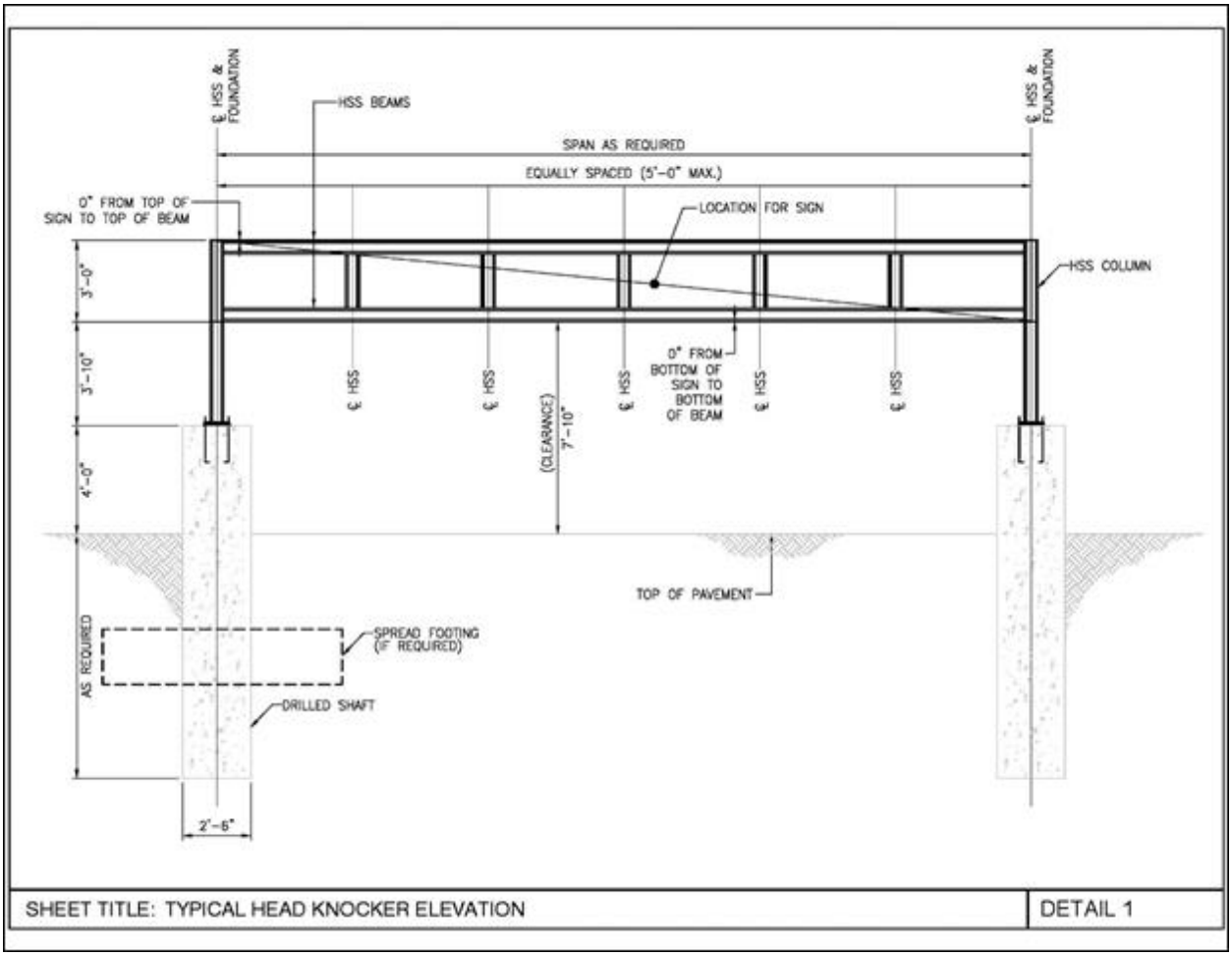
### 10.5.5 Electrical

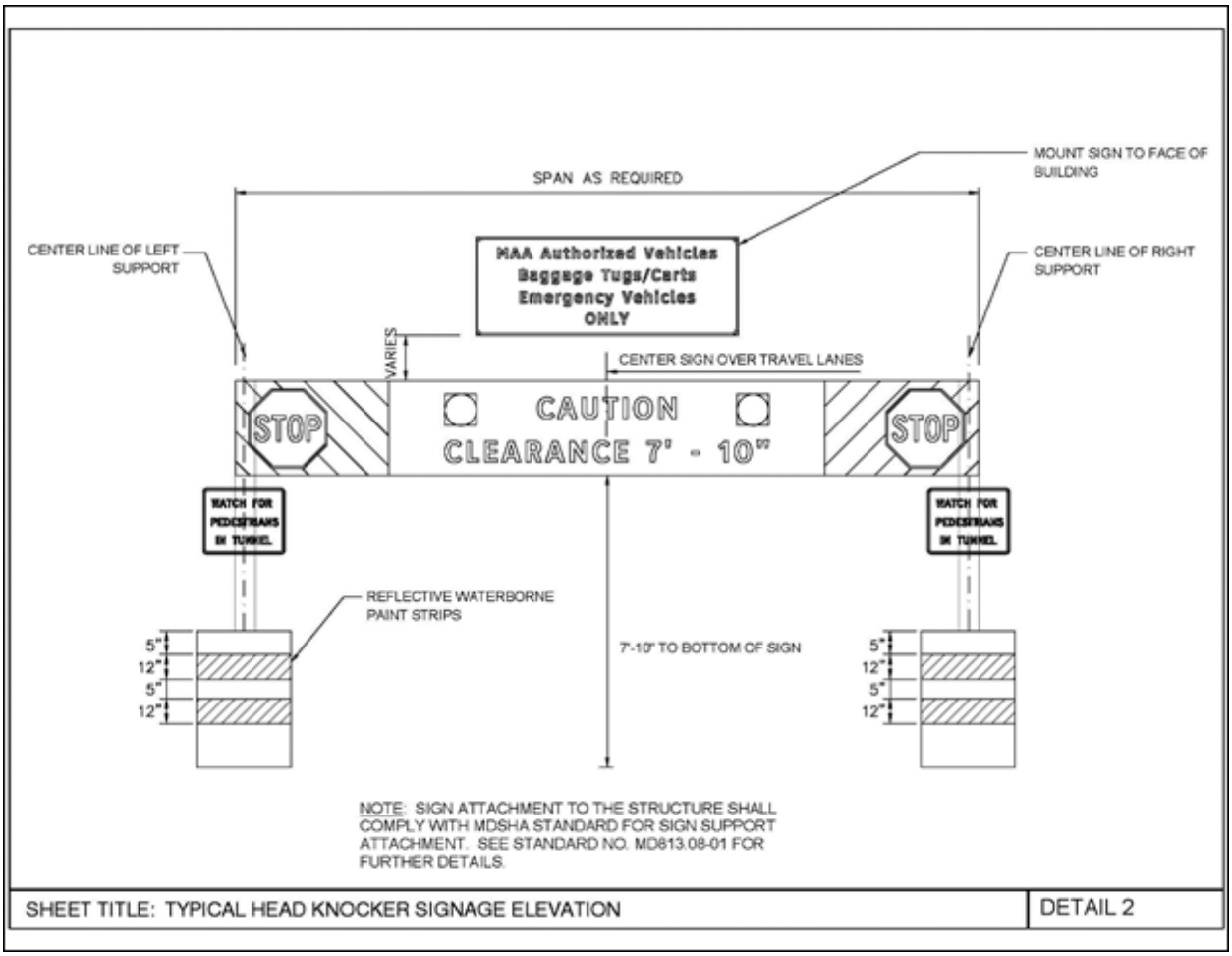
Each head knocker shall be equipped with two 120V red LED flashing 12-inch diameter signal light fixtures with glass lens and aluminum enclosures. The fixtures shall be surface mounted to the signage. Power for the lights shall be provided from the existing signal light circuit or from a nearby panel as required. Wiring shall be copper. All exterior conduits (exposed and underground) shall be rigid galvanized steel and a minimum of 1-inch. Junction boxes shall be cast metal weatherproof type FS. Conduit from the sign frame to the face of the terminal building shall be installed below grade. Do not mount conduit overhead. Conduit shall be surface mounted to the head knocker frame and embedded within the concrete pedestal.

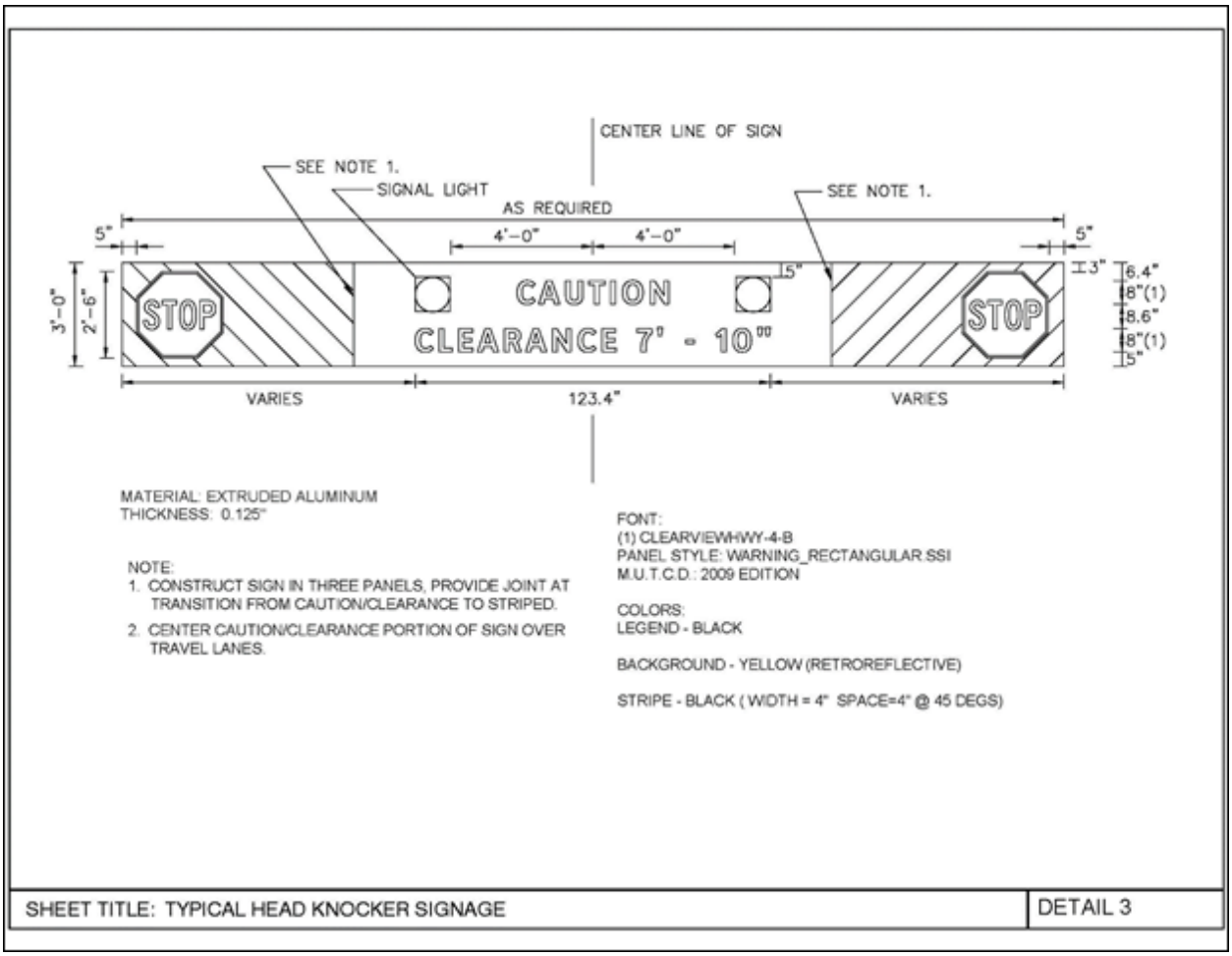
Each head knocker frame shall be grounded with a #8 bare copper conductor and ¾" x 10ft. copper ground rod.

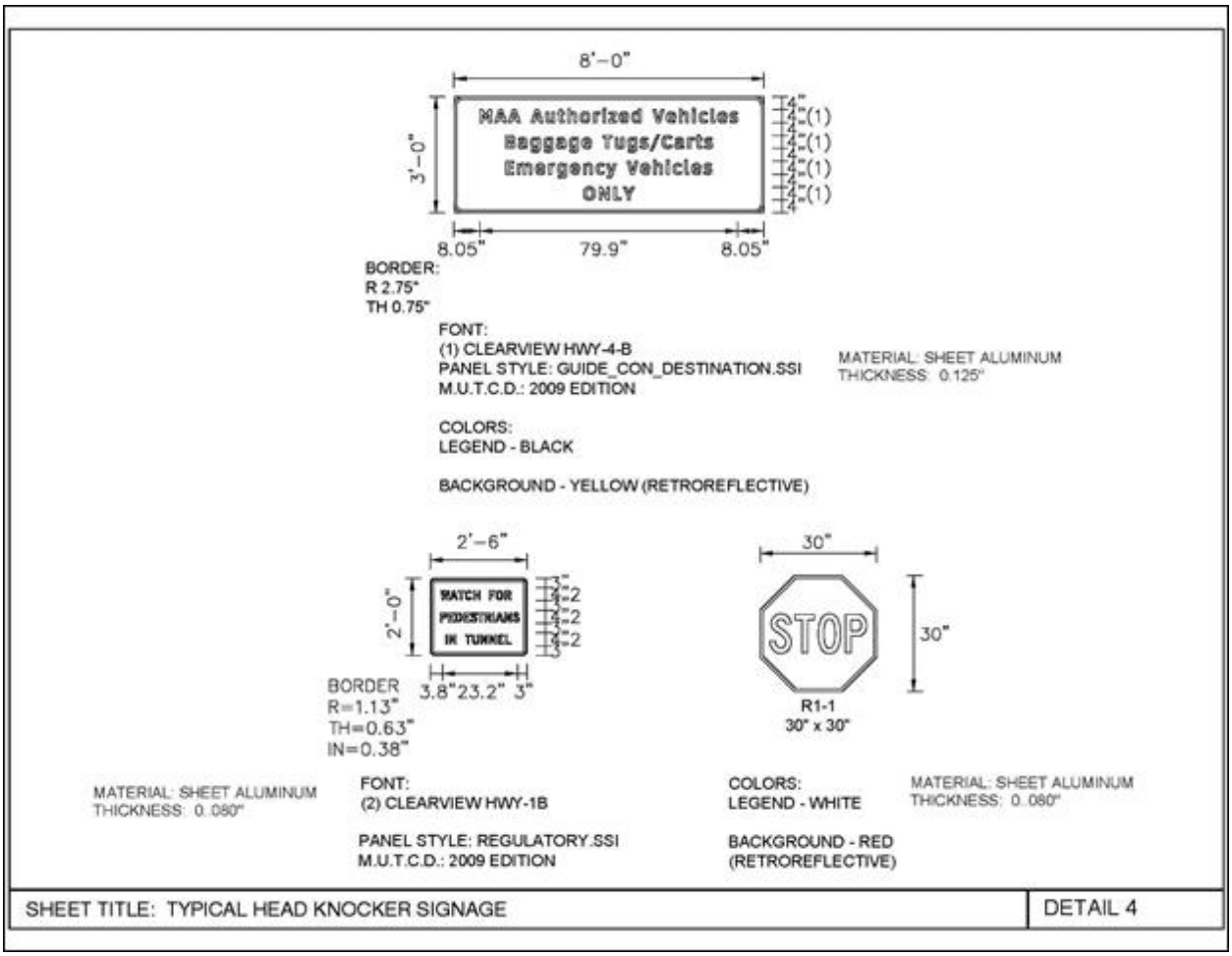
### 10.5.6 Head Knocker Exhibits and Standard Details

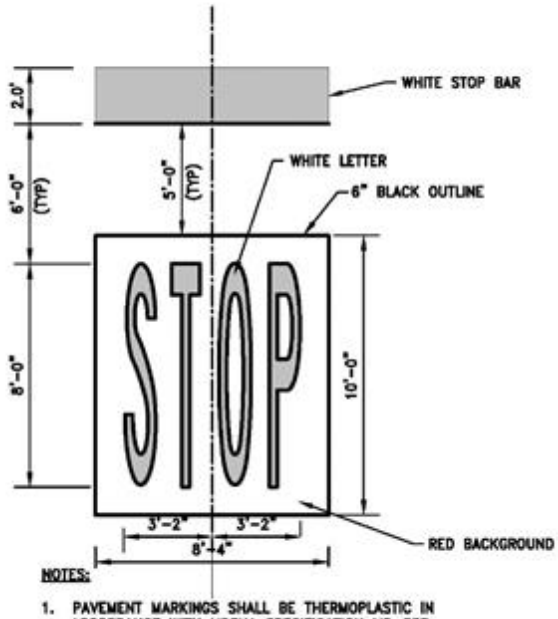
The following pages include standard head knocker elevations and signage details to be utilized for head knocker designs.




SPAN AS REQUIRED
MOUNT SIGN TO FACE OF BUILDING
CENTER LINE OF LEFT SUPPORT
CENTER LINE OF RIGHT SUPPORT
MAA Authorized Vehicles
Baggage Tugs/Carts
Emergency Vehicles
ONLY
VARIES
CENTER SIGN OVER TRAVEL LANES
STOP
CAUTION
CLEARANCE 7' - 10"
STOP
WATCH FOR PEDESTRIANS IN TUNNEL
WATCH FOR PEDESTRIANS IN TUNNEL
REFLECTIVE WATERBORNE PAINT STRIPS
5"
12"
5"
12"
7'-10" TO BOTTOM OF SIGN
5"
12"
5"
12"
NOTE: SIGN ATTACHMENT TO THE STRUCTURE SHALL COMPLY WITH MDSHA STANDARD FOR SIGN SUPPORT ATTACHMENT. SEE STANDARD NO. MD813.08-01 FOR FURTHER DETAILS.
SHEET TITLE: TYPICAL HEAD KNOCKER SIGNAGE ELEVATION
DETAIL 2


CENTER LINE OF SIGN
SEE NOTE 1.
SIGNAL LIGHT
SEE NOTE 1.
AS REQUIRED
5"
4'-0"
4'-0"
5"
3'-0"
2'-6"
STOP
CAUTION
CLEARANCE 7' - 10"
5"
3"
STOP
6.4"
8"(1)
8.6"
8"(1)
5"
VARIES
123.4"
VARIES
MATERIAL: EXTRUDED ALUMINUM
THICKNESS: 0.125"
NOTE:
1. CONSTRUCT SIGN IN THREE PANELS, PROVIDE JOINT AT TRANSITION FROM CAUTION/CLEARANCE TO STRIPED.
2. CENTER CAUTION/CLEARANCE PORTION OF SIGN OVER TRAVEL LANES.
FONT:
(1) CLEARVIEWHWY-4-B
PANEL STYLE: WARNING_RECTANGULAR.SSI
M.U.T.C.D.: 2009 EDITION
COLORS:
LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)
STRIPE - BLACK ( WIDTH = 4" SPACE=4" @ 45 DEGS)
SHEET TITLE: TYPICAL HEAD KNOCKER SIGNAGE
DETAIL 3


8'-0"
3'-0"
MAA Authorized Vehicles
Baggage Tugs/Carts
Emergency Vehicles
ONLY
4"=(1)
4"=(1)
4"=(1)
4"=(1)
8.05"
79.9"
8.05"
BORDER:
R 2.75"
TH 0.75"
FONT:
(1) CLEARVIEW HWY-4-B
PANEL STYLE: GUIDE_CON_DESTINATION.SSI
M.U.T.C.D.: 2009 EDITION
MATERIAL: SHEET ALUMINUM
THICKNESS: 0.125"
COLORS:
LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)
2'-6"
2'-0"
WATCH FOR
PEDESTRIANS
IN TUNNEL
3"=2
3"=2
3"=2
3"
BORDER
R=1.13"
TH=0.63"
IN=0.38"
3.8"23.2" 3"
30"
STOP
30"
R1-1
30" x 30"
MATERIAL: SHEET ALUMINUM
THICKNESS: 0.080"
FONT:
(2) CLEARVIEW HWY-1B
PANEL STYLE: REGULATORY.SSI
M.U.T.C.D.: 2009 EDITION
COLORS:
LEGEND - WHITE
BACKGROUND - RED
(RETROREFLECTIVE)
MATERIAL: SHEET ALUMINUM
THICKNESS: 0.080"
SHEET TITLE: TYPICAL HEAD KNOCKER SIGNAGE
DETAIL 4




NOTES:

1. PAVEMENT MARKINGS SHALL BE THERMOPLASTIC IN ACCORDANCE WITH MDSHA SPECIFICATION MD-553. THE WORD "STOP" SHALL BE INSTALLED WITH GLASS BEADS.
2. CENTER MARKINGS WITHIN LANE.

**HEAD KNOCKER PAVEMENT MARKING**
NOT TO SCALE

| SHEET TITLE: HEAD KNOCKER PAVEMENT MARKING | DETAIL 5 |
|---|---|

## Chapter 11 HVAC

# 11.0 Introduction

The Chief, HVAC Systems and the DOM must approve the design of proposed mechanical systems. The HVAC system shall be designed in accordance with the Maryland Department of General Services (DGS). The HVAC systems shall be tied to the Facility Management System (FMS) (BWI Marshall only).

# 11.1 Ductwork

## 11.1.1 Duct Liner

Unless otherwise approved by MAA, duct liners on supply ducts shall not be used. Where sound acoustics are a concern in public spaces, all insulation shall be installed on the exterior of the ductwork.

For critical non-public spaces where noise control is required, duct silencers shall be utilized, where space allows. If space for duct silencers is not available, then only the low velocity ducts shall be lined. No duct liner shall be provided in high velocity ducts, especially in ductwork on the supply to variable air volume terminals.

Return ducts to air handling units from return ceiling plenum spaces may have duct liners if the designer feels they are necessary.

When utilized duct liner shall be installed with anti-microbial products. In addition, reinforcing shall be provided for the liner material to guarantee that the liner will not peel away from the duct wall. All duct liners shall comply with building code and fire code requirements for smoke development and flame spread limits and shall be listed by UL or FM.

## 11.2 Particulate Air Filtration

Design documents shall require the contractor to install filters to prevent passage of unfiltered air for projects that create excessive dust/demolition adjacent to the terminal building. Construction documents shall locate air handling equipment that requires filtration during construction. The Contractor shall be required to replace filters at cost at the end of construction, as well as replacement of filters during the construction duration, in coordination with MAA Maintenance.

## 11.3 $CO_2$ Demand Ventilation

For holdroom, baggage claim, ticketing, and other areas with large assemblies (occupancy), provide demand controlled outdoor air ventilation based on carbon dioxide concentrations within the occupied space, per ASHRAE/IESNA Standard 90.1 – 1999 Users Manual Regarding Ventilation Control with $CO_2$.

# 11.4 HVAC Pipe Flushing

All newly installed HVAC piping systems shall be cleaned and flushed prior to placing the pipe into operation. These HVAC piping systems include chilled water piping, condenser water piping, high temperature hot water (HTHW) piping, and primary / secondary heating water piping. This design standard is intended to cover HVAC piping installed at BWI Marshall and Martin State Airports as part of the Maryland Aviation Administration capital projects, as well as tenant improvements, and other equipment procurements.

## 11.4.1 Background

Due to the increase in occurrences of contaminated HVAC piping systems during construction at the Airport, the following standard has been created. It is the intention of this standard to provide contractors with methods to clean and flush all new HVAC piping prior to placing the piping into operation. This will reduce the chance of damage to the chilled water, HTHW, and heating water systems within the Main Terminal and Central Utility Plant.

## 11.4.2 Design Specification Requirements:

Add the following in PART 3 of applicable hydronic piping specification sections.

"3.XX CLEANING AND FLUSHING OF PIPING SYSTEMS

A. The following applies to all temporary and permanent HVAC piping installations, both aboveground and underground. All of the following items must be completed prior to placing new connected HVAC pipes into operation with existing and/or new piping systems. The following items apply to condenser water piping, chilled water piping, high temperature hot water (HTHW) piping, and heating water piping systems.

1. Use clean potable water source. If not available from the Airport's water supply, then the Contractor must provide his own source of clean potable water. If high volumes of water are to be drawn from the Airport's water supply system, then the Contractor will provide a strainer to remove sand and grit which may be drawn from this water supply system.
2. The Contractor shall provide temporary pumps and strainers with fine mesh screens to obtain minimum eight (8) feet per second flushing velocity within the HVAC piping systems.
3. ***(This should be deleted if not desired for a particular project. This option may be considered if pre-approved by MAA Maintenance and Engineering, and if the logistics and costs for temporary pumps cannot be easily provided by the Contractor.)*** It may be possible to use existing pumps in the HVAC system, or pumps which are new as part of this project to obtain the minimum eight feet per second flushing velocity. If the Contractor wishes to utilize any new pumps or existing pumps within the HVAC piping system to obtain the minimum flushing velocity, this must be approved by the Engineer and MAA Maintenance. In addition, the Contractor shall provide additional strainers with fine mesh screens to insert into the existing strainers during flushing operations. Once the flushing is complete, the temporary strainers will be replaced with new strainer inserts matching existing and/or new pumps as utilized. In addition, if the new or existing pumps are used, the Contractor shall replace all pump seals after flushing operations, and then provide an additional set of pumps seals for Maintenance's use.
4. During the flushing operation, the Contractor shall add chemicals (cleaning agent) as necessary to clean all piping process oils and dirt/debris from within the piping systems. These chemicals shall not harm the new piping systems and any connected piping systems, including all valves, pumps, equipment, seals, gaskets, and other items associated with the

piping systems. All cleaning agents subject to approval by the Engineer and MAA Maintenance.

5. The cleaning operation for each section of piping installed shall be for a minimum of three (3) hours, or as necessary to completely clean all pipes. This water shall then be drained. Once drained, the piping shall be flushed with clean potable water.
6. **(*Delete this item if #3 is selected, or if not necessary due to the size of the piping additions.)*** After the cleaning and flushing operations are completed, the Contractor shall provide an additional set of pump seals and strainer inserts for each existing pump in each respective HVAC piping system which has been effected by this project. The pump seals and strainer inserts shall match existing.
7. ***(Consider the following for applicable projects with underground piping installations.)*** For underground pipes installed, prior to flushing the piping systems as described above, the Contractor shall provide television inspection of the entire pipe installation. This can be accomplished as the pipes are installed in several hundred foot sections (or the limit of the camera equipment used by the Contractor). The Contractor shall provide DVDs of the pipe interiors to show that no (or very minimal) excavation and backfill dirt has entered the piping systems. Two copies of these pipe inspections shall be provided to the Engineer. The DVDs should clearly indicate the date, time, and section of piping being videoed. If these DVDs indicate that there are large amounts of debris within the piping system, the Engineer may either direct the Contractor to open the pipes in the areas of question and clean them out, or have the Contractor re-record the pipe sections after the pipes are flushed. This will be at no additional cost to the MAA.

B. The above noted items are minimum requirements for the Contractor to complete to clean and flush the HVAC piping systems. The Contractor is fully responsible for a satisfactory flushing operation. Any damage to existing pumps, boilers, chillers, cooling towers, control valves, and other associated items within the piping systems due to poor flushing and cleaning of the piping systems will be the responsibility of the Contractor. The Contractor shall make all necessary repairs at no additional cost to the Owner.

After flushing and refilling each HVAC piping system, provide chemicals (match existing chemicals used by MAA Maintenance) to bring new piping additions and existing piping system which are effected back to existing Central Plant or Terminal Piping system chemical level conditions. Coordinate introduction and verification of chemical concentrations with MAA Maintenance through the Engineer."

## 11.5 Hydrostatic Water Pipe Testing

Please refer to Chapter 12.3 Hydrostatic Water Pipe Testing for hydrostatic water pipe testing requirements.

## 11.6 Boilers and Pressure Vessels

All Boiler and/or Pressure Vessel installations shall meet the following requirements:

1. As defined by the State of Maryland "Boiler and Pressure Vessel Safety Act," no Boiler or Pressure Vessel installation may be legally operated that has not been registered and issued a Certificate of Inspection by the Chief Boiler Inspector.
2. The Technical Provisions/Specifications for new and renovation projects at BWI Thurgood Marshall Airport and Martin State Airport shall contain references to COMAR 09.12.01 when applicable. Part I – General Information shall contain a statement of Contractor's responsibilities, including payment of fees by the Contractor for State inspections.
3. The Technical Specification related to boiler or pressure vessel installation shall include the following statement, "State law requires that the Installer notify the State of Maryland, DLLR not less than 30 days prior to commencement of installation. The Contractor shall fill out and submit the "Notice of Installation" form.(see Appendix B - Standard Forms).The Contractor must also notify the Construction Manager (CM) so that the MAA boiler insurance inspector may be notified." The information should be included in "Part 3 Execution" of the technical specification.
4. The Technical Specification related to boiler or pressure vessel installation shall include the following statement, "The Contractor shall be responsible for obtaining the Air Quality General Permit to Construct as applicable. A copy of all permit applications, and approvals must be provided to the Environmental Compliance division in the Office of Planning and Environmental Services." The information should be included in "Part 3 Execution" of the technical specification. The website for the permit can be found below.

The following references are provided for additional Maryland State information/requirements for Boiler and Pressure Vessel Installation:

| | | |
|---|---|---|
| Maryland Code: | | Public Safety: Title 12. Building and Material Codes; Other Safety Provisions: Subtitle 9. Boiler and Pressure Vessel Safety Act. |
| COMAR: | | Title 09 Department of Labor, Licensing, and Regulation Subtitle 12 Division of Labor and Industry Chapter 01 Board of Boiler Rules (COMAR 09.12.01). |
| DLLR: | | Boiler and Pressure Vessel Safety - Safety Inspection<br>Law, References and Publications - Boiler and Pressure Vessel Safety (includes links to applicable provisions of the Maryland Code and COMAR.) |
| MDE: | | Air and Radiological Health Management Permits & Approvals |
| Forms: | State: | Notice of Installation of a Boiler or Pressure Vessel (Downloadable form) |
| | ASME: | www.asme.org<br>800-THE-ASME.<br>State libraries. |

# 11.7 Natural Gas Piping

All Natural Gas Piping installations shall be designed and specified per the following requirements:

1. Material for Natural Gas Piping (above ground and underground) shall be ASTM A 53, Grade B, Schedule 40, Type E or S.
   a. Protective Coating for Underground Piping: Factory-applied, three-layer coating of epoxy, adhesive, and polyethylene (PE).
2. Material for Underground Natural Gas Piping shall be PE Pipe, ASTM D 2513, SDR 11.
   a. PE Fittings: ASTM D 2683, socket-fusion type or ASTM D 3261, butt-fusion type with dimensions matching PE pipe.
   b. PE Transition Fittings: Factory-fabricated fittings with PE pipe complying with ASTM D 2513, SDR 11; and steel pipe complying with ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.
3. Natural Gas Piping shall be constructed with threaded joints for gas pressure 5.0 PSIG or less.
4. Natural Gas Piping shall be constructed with welded joints for gas pressure higher than 5.0 PSIG.
5. Corrosion protection shall be provided for gas pipes installed underground, encased in concrete, and in wet or corrosive environments.
6. Exposed gas pipes subject to damage shall be protected. All installations shall follow NFPA 54, ANSI Z 223.1, Current Edition. Piping installed aboveground shall be securely supported from physical damage by vehicles or hand trucks, dollies, platform trucks, etc. Provide shields, bollards or pipe sleeve to protect exposed gas pipes as required.
7. Exposed natural gas piping shall be protected against mechanical damage in accordance with requirements of NFPA 54-7.2.
8. Comply with NFPA 54 and the International Fuel Gas Code for design, installation and purging of natural-gas piping.
9. Outdoor Natural Gas Piping Installations
   a. All underground natural-gas piping installations must be buried at least 36 inches below finished grade. If natural gas piping must be installed less than 36 inches below finished grade, it must be installed in an appropriate containment conduit
   b. Trench Backfill
      1. The gas pipe shall be placed in the trench on top of a minimum of 6 inches of aggregate bedding material, which also extends to 4 inches above the top of pipe and compacted. If the gas pipe is to be installed in an area with new bituminous or concrete pavement, then the aggregate bedding material shall be extended above new gas to the bottom of proposed subbase material. Compaction of earth or aggregate material in pipe trench shall only be accomplished by using hand mechanical tampers until the backfill material has been placed a minimum of 2 feet above the gas pipe.
10. Indoor Natural Gas Piping Installations
    a. Above Ceiling Installations: Natural-gas piping, fittings, valves, and regulators may be installed in accessible concealed ceiling spaces. Natural gas piping in concealed ceiling spaces does not require containment conduit. Provide proper access in locations where appropriate for maintenance and shut offs. Natural gas pipes must be identified utilizing permanent labels as required by code.
    b. In-Floor Installations: Natural-gas piping may be installed in cast-in-place concrete interior floors with a minimum of 1½ inches of concrete cover. Natural gas piping installed in interior floors must have welded joints and protective coating. All in-floor natural-gas piping installations must be in containment conduits constructed of steel pipe with welded joints.

A vent pipe must be provided from containment conduit to outdoors and terminated with weatherproof vent cap cover. Gas pipes shall not be in physical contact with other metallic structures such as reinforcing rods or electrically neutral conductors. Do not embed piping in concrete slabs containing quick-set additives or cinder aggregate. Provide proper access in locations where appropriate for maintenance and shut offs.

c. In-Floor Channels: Natural-gas piping may be installed in floor channels where appropriate and not in public view. Channels must have cover and be open to space above for ventilation.

11. Prohibited Locations:
    a. Natural gas pipes shall not be installed in or through circulating air ducts, clothes or trash chutes, chimneys, or gas vents (flues), ventilating ducts, or dumbwaiter or elevator shafts.
    b. Natural gas pipes shall not be installed in solid walls or partitions.
    c. Natural gas pipes shall not be installed on roofs of any building except branch pipes to roof mounted HVAC equipment. Branch Pipes shall be mounted on pipe stands.
    d. Natural gas pipes shall not be installed on the exterior fascia of any building except where it may need to enter buildings or branch pipes to exterior equipment.
    e. Natural gas pipes shall not be installed in Electrical and Communication Rooms.
12. LABELING AND IDENTIFYING
    a. Underground gas pipes:
        1. Detectable Warning Tape: Acid- and alkali-resistant, PE film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable b metal detector when tape is buried up to 30 inches (750) deep; colored yellow.
    b. Aboveground Pipe Labels:
        1. Preprinted, color-coded, with lettering indicating service, and showing flow direction.
        2. Spaced at maximum intervals of 25 feet along each run, and 2 feet on either side of wall penetrations.
13. VALVE TAGS
    a. Install ceiling tags for above ceiling mounted valves, ceiling tags shall be provided for all kinds of ceilings including suspended ceilings.

### 11.7.1 Metering of Gas

Gas meter shall be provided by each tenant. These meters must be compatible with MAA Power Monitoring System (Square-D Power Logic System). With prior coordination with MAA Utilities, RS 485 communication cable with one spare cable in one-inch conduit shall be extended from the meter to the nearest MAA Power Logic metering panel.

The gas meter shall be compatible with MOD BUS RTU – RS 485 protocol or MOD BUS RTU – TCP/IP protocol. The output gas reading displayed in Power Logic should be in units of Standard Cubic Feet per Minute (SCFM). Information for conversion from pulse rate to SCFM should be provided with meter specifications. Gas meter and any accompanying devices needing power should be compatible with power available on site.

# 11.8 Kitchen Hoods

"Type I and II Commercial-Kitchen Hoods" shall be designed, fabricated and installed according to this design standard.

During major kitchen renovations, the design engineer should evaluate the existing system(s) to determine if it complies with MAA adopted codes and standards. Analysis on the existing system shall be included in the design documents. If the system does not comply, the designer shall meet prior to design document submission with office of Fire Marshal, Office of Maintenance and Utilities (OMU), and the MAA project manager to determine the extent of upgrading to operate the system(s) safely and within code compliance.

## 11.8.1 Design, Fabrication and installation of kitchen hoods

Kitchen hoods shall be designed, fabricated, installed, and tested in accordance with NFPA 96 and approved manufacturers' design guidelines.

## 11.8.2 Type I Exhaust Hood Design

Designers shall review and include the following requirements in the contract documents regarding design of Type I exhaust hoods:

1. The rate of supply airflow (CFM) from make-up air unit shall be 80% of the exhaust airflow (CFM). Balance between the make-up airflow and exhaust airflow shall be provided through the building air distribution system and rooftop or air handling unit(s), dedicated for the dining and kitchen areas. Provide table of devices/ equipment and air balance in accordance with air balance schedule as included in this DST.
2. Overall kitchen and dining areas shall be negative versus other spaces, including corridors, offices and hold rooms.

## 11.8.3 Type II Exhaust Hood Design

Designer shall include the following requirements in the contract documents regarding operation of Type II exhaust hoods:

1. Make up air shall be provided by the building air distribution system or by a dedicated outdoor make up air unit where required by MAA, Office of Maintenance and Utilities (OMU). Designer shall coordinate with OMU during the design or major renovations of type II exhaust hoods.
2. Hood Controls shall be a hood or wall mounted control cabinet. Sequence of operation shall be as follows:
   a. Exhaust Fan: On-off switches shall start and stop the exhaust fan.
   b. Interlock the exhaust fan with any cooking appliances located under the kitchen hood to begin ventilation when the cooking appliances are turned on.
   c. Interlock the exhaust fan with make-up air unit if provided.

## 11.8.4 Air Balance

Include air balance schedule for the kitchen and dining areas per the following Air Balance Schedule.

Date: _____

| Air Balance Schedule- Kitchen area/ Dining Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| Unit/ Area | OA, | OA, | SA | RA | EA | Balance | Remarks |

| | provided | Required | | | | | |
|---|---|---|---|---|---|---|---|
| Hood MAU | | | | | | | |
| Exhaust Fan(s) | | | | | | | |
| Kitchen RTU/AHU | | | | | | | |
| Dining area RTU/AHU | | | | | | | |
| Airport Central Air system: VAV's or Const. air to kitchen/ dining areas | | | | | | | |
| Transfer air from other areas | | | | | | | |
| Total for OA | | | | | | | |
| Total for EA | | | | | | | |
| Total for SA | | | | | | | |
| Total for RA | | | | | | | |

Abbreviations:

| | |
|---|---|
| MAU | Make up Air unit |
| RTU | Rooftop Unit |
| AHU | Air Handling Unit |
| VAV | Variable Air volume |
| Const. Air | Constant Air |
| OA | Outside Air |
| SA | Supply air |
| RA | Return air |
| EA | Exhaust Air |

# 11.9 Exhausts Air Ducts and Exhaust Fans for Kitchen Hoods

"Exhaust and Make-up Air Ducts and Exhaust Fans for Commercial-Kitchen Hoods" shall be designed, fabricated, installed, and tested according to this design standard.

During major kitchen renovations, the design engineer should evaluate the existing system(s) to determine if it complies with MAA adopted codes and standards. Analysis on the existing system shall be included in the design documents. If the system does not comply, the designer shall meet prior to design document submission with office of Fire Marshal, Office of Maintenance and Utilities (OMU), and the MAA project manager to determine the extent of upgrading to operate the system(s) safely and within code compliance.

## 11.9.1 Design, Fabrication and Installation of exhaust system(s) and exhaust fans

Exhaust system(s) and exhaust fans shall be designed, fabricated, and installed in accordance with NFPA 96 and approved manufacturers' design guidelines.

## Chapter 12 Plumbing

# 12.1 Backflow Preventers

All Compartment Sinks, Mop, and Service Sinks installed shall be equipped with backflow preventers in accordance with the following requirements:

1. Backflow preventers shall be installed on cold and hot water lines that serve sinks.
2. Backflow preventers shall be double check valve type, equal to Watts, Model 9D.
3. Backflow preventers shall be equipped with integral strainer, ball shut off valves, and drain connection.
4. Backflow preventers shall be all bronze construction with stainless steel internal parts.

## 12.2 Grease Interceptors

All food and beverage facilities and other facilities where liquid containing grease is discharged into the sanitary sewer system shall be equipped with Automatic Grease Interceptors:

1. Grease Interceptors shall be automatic grease recovery type made of 304 Stainless Steel and internally lined with molded polyethylene equipped with the following devices:
   a. Rotating gear hydrophobic wheel assembly for automatic grease or oil removal.
   b. Integral flow control device.
   c. Self-regulating enclosed electric immersion heater.
   d. Vent connection.
   e. Integral gas trap.
   f. Programmable 24-hour multi-event time control.
   g. Gasket and fully removable 304 Stainless Steel lid.
   h. Electric motor with thermal overload protection and automatic reset switch.
   i. Removable solids strainer basket.
   j. Removable translucent collection container.
2. Grease Interceptors shall be Big Dipper as manufactured by Thermaco or approved equal.
3. Grease Interceptors shall be floor mounted.
4. Grease Interceptors shall be designed and located with sufficient clearances and space for service and maintenance.

# 12.3 Hydrostatic Water Pipe Testing

## 12.3.1 General

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure.
3. Isolate equipment from piping.
4. Install safety valve, set at a pressure of no more than one-third higher than test pressure, to protect system during test.
5. Provide signs where piping is under hydrostatic pressure.
6. Test pressure during examination shall be monitored and adjusted for the corresponding ambient temperature.
7. Prepare test and inspection report.

## 12.3.2 Hydronic Piping

1. Isolate expansion tanks and determine that hydronic system is full of water.
2. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A of ASME B31.9, "Building Services Piping."
3. After hydrostatic test pressure has been applied for at least 30 minutes, examine piping, joints and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.

## 12.3.3 Domestic Water Piping

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
2. Isolate test area. Subject piping to static water pressure of 50 psig (345 kPa) above operating pressure without exceeding pressure rating of piping system materials, and allow to stand for 4 hours. Leaks and loss in test pressure constitute defects that must be repaired.

# Chapter 13 Fire Prevention and Protection

## 13.1 Authority Having Jurisdiction (AHJ)

### 13.1.1 Introduction

1. The MAA Office of the Fire Marshal is designated as the Authority Having Jurisdiction (AHJ) for the enforcement of all adopted fire-related Codes and Standards for BWI Marshall and MTN Airports, including the Maryland State Fire Prevention Code and the fire safety aspects of the building codes.
2. The following Codes and Standards are applicable to all new project designs, specifications, construction, and occupancy at BWI Marshall and Martin State Airports. As such, the Office of the Fire Marshal enforces them during plan review and inspections as authorized representatives of the Maryland State Fire Marshal. Failure to comply with the fire and life safety related requirements of the Codes and Standards listed herein shall result in the withholding of project design approvals, inspection approvals, or occupancy approvals by the Office of the Fire Marshal. Additionally, violations of these codes are subject to the penalties set forth in the Public Safety Article of the Annotated Code of Maryland.

### 13.1.2 Martin State Airport (MTN)

1. All Design Standards (DST) and other fire protection requirements in these Fire Protection Design Guidelines apply to Martin State Airport, unless otherwise provided for herein.
2. Fire Alarm Systems for Martin State (MTN) Airport:

   MTN has various manufacturers' fire alarm systems (Honeywell, Tyco Integrated Security, Simplex). Contact the Office of the Fire Marshal to in advance to coordinate any work involving replacement, modifications, or extensions to any existing fire alarm equipment.

3. Other MAA Facilities and Tenant Spaces:

   MAA facilities and offices in non-MAA owned properties, and MAA leased properties and facilities that are not located at BWI Marshall Airport or Martin State Airport, are subject to the requirements of the codes which apply in the jurisdiction in which they reside, but in all cases the State Fire Prevention Code, and thereby the requirements of the NFPA 101 Life Safety Code, apply to all such spaces within the State of Maryland. When questions may occur regarding egress requirements regarding these facilities, contact the Office of the Fire Marshal.

### 13.1.3 Definitions & Abbreviations

1. BWI Marshall Terminal Building Designations

| Designation/ Abbreviation | Description |
|---|---|
| ST | South Terminal (All Areas, Upper and Lower Levels) |
| CT | Central Terminal (All Areas, Upper and Lower Levels) |
| NT | North Terminal (All Areas, Upper and Lower Levels) |
| NTE | North Terminal Extension (All Areas, Upper and Lower Levels) |
| N.I.T. | International Terminal E (historically referred to as "New International Terminal") |
| A, B, C,<br>D, DX, DY, E | Individual Concourses (historically referred to as "Piers")<br>These are the departure gate areas. |
| Throat | Generally refers to the Security Checkpoints at each Concourse entrance |

| | |
|---|---|
| Main Exit | The exits to the Upper Level Curbside via the Vestibules at the Ticketing Lobby. All doors (including those labeled for “Entry” to the Ticketing Lobby) may be used in calculating the required egress width. |

2. The following Definitions are used throughout this Chapter.

| | |
|---|---|
| OFM | Office of the Fire Marshal |
| AHJ | Authority having Jurisdiction |
| OT or OAT | Office of Technology |
| IASS | Integrated Access Security System |
| FACP | Fire Alarm Control Panel |
| SHECCG | Concourse Holdroom & Egress Code Compliance Guide |
| EBI | Enterprise Building Integration |
| CASS | Controlled Access Security System |
| AED | Automated External Defibrillator |
| AOA | Air Operations Area |
| MAA | Maryland Aviation Administration |
| COMAR | Code Of Maryland Regulation |

# 13.2 General Fire Protection Design Information

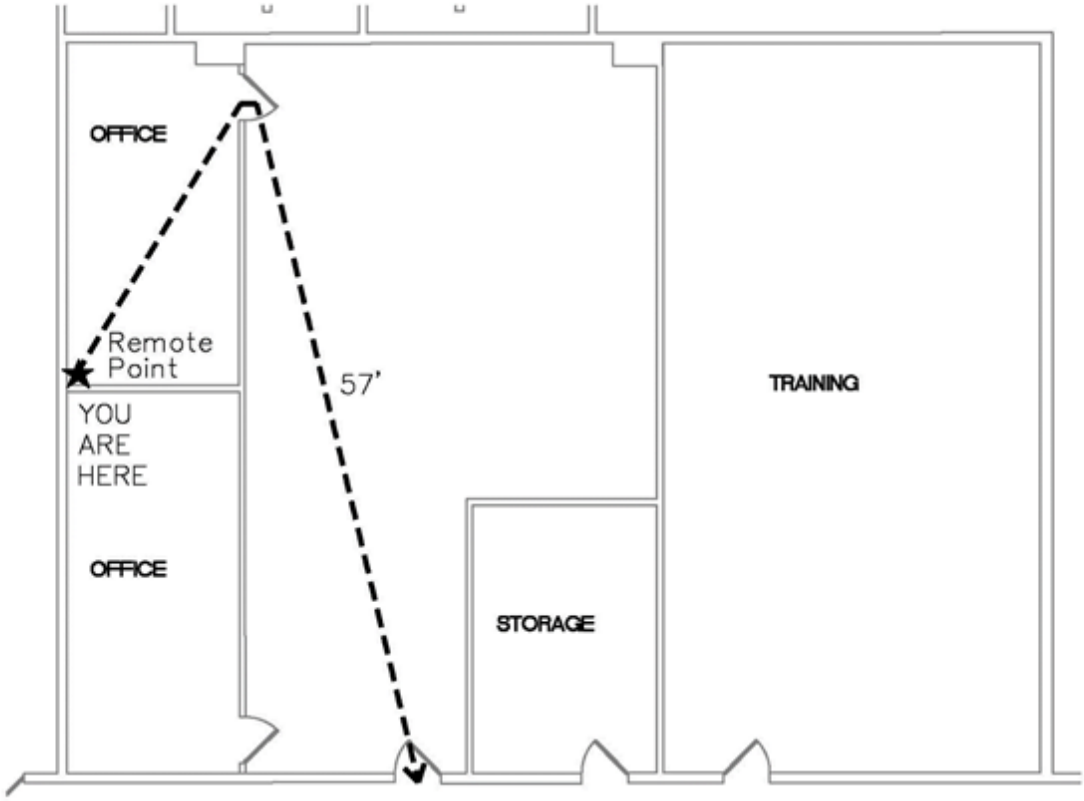
## 13.2.1 Signature and Seal Requirements of Fire Protection Systems Design Documents and Reports

A Fire Protection Engineer, who is a licensed Professional Engineer in the State of Maryland, shall prepare all calculations and supporting justification for Time-based Egress Analysis for Concourses C, D, E and Future Concourses for review by the Office of the Fire Marshal, and shall sign and seal them accordingly. See Chapter 13.3.3 Special Criteria for Controlled Evacuation Conditions

## 13.2.2 Drawings, Specifications and Reports

All design drawings and reports for new buildings, additions, and renovations must include the following fire protection design information, at a minimum or as applicable:

1. A complete list of currently applicable adopted fire and life safety related codes, regulations and standards that apply to the project.
2. "Height and Area" calculations that demonstrate conformance with the required type(s) of construction, in accordance with IBC.
3. Code classification(s) of the type(s) of construction for the new work and existing building (if applicable) in accordance with.
4. Detailed locations and ratings of all fire rated walls, floor-ceiling assemblies, roof-ceiling assemblies, fire rated columns, and other structural elements.
5. Complete floor plan(s), showing egress route(s) and measured travel distance(s) to each required exit.
6. Occupant load(s) and egress capacity calculations.
7. Smoke control calculations, if applicable.
8. A complete door schedule, with door fire ratings, door hardware, frame types, glazing sizes and types, and identifying door numbers assigned by the Office of the Fire Marshal.
9. Interior finish schedules, including flame spread and smoke development ratings, for interior finishes and trim.
10. A schedule of fire damper locations, sizes, and an installation mounting detail.
11. Type(s) of automatic fire suppression and fire alarm systems for specific areas and spaces, as required. Fire Protection Schedule shall include the following information provided by the Office of the Fire Marshal: the MAA-Valve No., Zone control location, Fire Alarm VT and WF point numbers.
12. Locations of fire standpipe systems and fire department connections.
13. Locations of fire hydrants.
14. Knox Box locations and sizes.
15. New Automated External Defibrillator (AED) locations
16. Existing Automated External Defibrillators (AED) to be stored during construction.
17. Any special detailed requirements based on use and occupancy contained in IBC.
18. All casework is to be constructed of non-combustible materials (fire retardant treated wood is permitted).




USE GROUP: BUSINESS W/ SPRINKLER SYSTEM
ALLOWABLE TRAVEL DISTANCE: 300'
ACTUAL TRAVEL DISTANCE: 57'

| SHEET TITLE: SAMPLE EGRESS PLAN | DATE: OCT 2010 |
|---|---|

# 13.3 Terminal Evacuation at BWI Marshall

## 13.3.1 Terminal Evacuation Plans

The MAA Office of Engineering & Construction, in coordination with the Office of the Fire Marshal is only responsible for assisting in the development, approval, and location of all written Evacuation Plans and drawings. Responsibility for submitting written Evacuation plans and drawings to MAA for review and approval shall be the Designer of Record under MAA Capital Program projects, and the tenant organization and/or the tenant organization's General Construction Contractor under the MAA Building Permit process. Upon approval of the Evacuation plans and drawings, and as directed by MAA, the General Construction Contractor for the Capital Program project or the tenant organization shall be responsible for the placement of the Evacuation Plan Drawings.

Provide Hard copy drawings and CADD generated evacuation plan with a "you are here" designation and the egress paths clearly shown on a floor plan. Permanent signage, with the capability for changing inserts, shall be provided by the general contractor.

## 13.3.2 Voice Evacuation System Requirements

1. No stand-alone voice evacuation system exists at the Airport. The public address system, although not Underwriter Laboratories (U.L.) listed as a fire alarm voice evacuation system, is monitored 24 hours a day by airport communications (paging) personnel and BWI Dispatch personnel. Historically, this system was accepted by the Maryland State Fire Marshal (OSFM) for use as a voice evacuation system following the NFPA 101 Life Safety Code Section 8-3.4.1, Exception No.2 (1994 Edition.)
2. Public Address (PA) System
   A. The Main Terminals (and Concourses are served by the public address system. The system is a microprocessor-based public address system with remote speakers located in holdrooms, public corridors, lobbies, restrooms, and concession areas. The speakers are connected to head-end equipment via plenum rated cable in cable tray or in conduit (except in some older, unrenovated areas of the terminal where cable is strapped to structural steel above the ceiling).
   B. Projects that modify or add to public areas, areas of assembly, or areas presently served by the public address system shall include all necessary work to provide public address system coverage to the areas of the project. Provide instruction and maintenance manuals, as built drawings, and schematic one-line drawings for revisions to the existing PA system and all new systems.
   C. Provide PA system training as required by the MAA.
   D. Survivability of the public address system is critical since it provides voice evacuation to all public areas. All work must comply with applicable sections of NFPA 72. All circuits necessary for the operation of the notification appliances shall be protected until they enter the evacuation-signaling zone that they serve. Any of the following methods shall be considered acceptable as meeting the requirements of this subsection:
      - A 2-hour fire rated circuit integrity (CI) cable
      - A 2-hour fire rated cable system (electrical circuit protective system)
      - A 2-hour fire rated enclosure
      - Performance alternatives approved by the authority having jurisdiction(AHJ)
      - Buildings fully protected by an automatic sprinkler system installed in accordance with NFPA 13 Standard for the Installation of Sprinkler Systems, and with the interconnecting

wiring or cables used for the operation of notification appliances installed in metal raceways and in accordance with Article 760 of NFPA 70.

E. It is preferred that all public address system wiring be run in conduit to the extent possible. However, wiring may be run in cable tray. Long runs of wire strapped to roof structures above suspended ceilings are prohibited. Coordinate with MAA and the Office of the Fire Marshal for approval of routing method.

F. All wire, which is not in conduit, shall be plenum rated.

G. For large renovation and new construction projects, create separate public address zones for dedicated use only by Airport personnel. Coordinate with the Office of the Fire Marshal for identification of the limits of such zones.

Add the following

- The Office Of Technology (OT) has detailed standards for the paging system. These standards shall be the overriding standards and documents for the paging system including infrastructure. The OT Standards (most current edition) can be found on the MAA Office of Technology Standards and Specifications web page.
- The specific sections dealing with the paging system are:
  - Emergency Tenant Paging
  - PA and Emergency Tenant Core Paging System

H. Normal PA Operations

I. The PA system at BWI Marshall Airport provides a means to allow for general announcements to the entire Terminal (all-call) or to selected zones from the BWI Dispatch. Paging/microphone stations exist throughout the concourses (piers) at ticket lift counters for use by airline personnel when making announcements within a specific holdroom. Announcements to selected zones are performed by entering a zone specific numeric code at a paging console keypad.

J. Emergency PA Operations

During emergency situations in the Terminal, Authorized Airport personnel can communicate with BWI Dispatch personnel via radio or house phone and direct the operator to issue emergency/evacuation announcements to the entire Airport (all-call) or to selected zones within the terminal. A system hierarchy exists whereby all emergency announcements take precedence over all other PA system activity.

### 13.3.3 Special Criteria for Controlled Evacuation Conditions

Time-based Analysis for Concourses C, D, E and Future Concourses

In addition to meeting the requirements of the Model Code criteria, a time-based analysis must be provided that ensures that Concourses C, D, E and Future Concourses can be evacuated under a controlled evacuation condition. The controlled evacuation analysis shall comply with the following requirements (Note: Concourses A and B were evaluated for compliance with this condition at the time of design and are considered compliant as long as Concourses A or B are not increased in area or passenger seating count.)

1. The controlled evacuation analysis shall be performed using a time-based egress modeling method acceptable to the Office of the Fire Marshal.
2. 100% of the Concourse occupant load is required to egress toward the front of the Concourse and through the Terminal Building to the curbside. Egress via a secure corridor adjacent to the front exit to the Terminal Building, connecting to another Concourse through a horizontal barrier which complies with NFPA 101, is also considered as being egress via the front of the Concourse.

3. The evacuation analysis must demonstrate that the entire Concourse population is capable of being evacuated within 20 minutes via the Terminal Building to the curbside, unless alternate evacuation time criteria are approved by the Office of the Fire Marshal in advance.
4. A Fire Protection Engineer, who is a licensed Professional Engineer in the State of Maryland, shall prepare all calculations and supporting justification for review by the Office of the Fire Marshal, and shall sign and seal them accordingly.

# 13.4 Interface of Fire Alarm, Life Safety and Security Systems at BWI Marshall

## 13.4.1 Purpose

The purpose of this section is to provide general and specific guidance to planners, designers, construction managers, contractors, tenants, and maintenance service providers for the renovation and new construction. The intent of this Standard is to supplement established and accepted codes, standards, and regulations. Any conflicts between this standard and other regulations, codes, or standards should be brought to the immediate attention of the Maryland Aviation Administration (MAA), MAA Office of the Fire Marshal and the MAA Director of Office of Engineering & Construction.

Where references are made to specific editions or sections of codes and standards herein, they are meant to also apply to any subsequently adopted editions having corresponding requirements.
The requirements of this Standard should not be modified or revised without the written approval of the Office of the Fire Marshal and the MAA Director of Office of Engineering & Construction.

**Purpose**: To document and provide consistent and current guidance to all personnel performing design, construction, inspection, and field certifying design systems and assembly components.
**Objective**: Publish the criteria which are in place and which have been confirmed as the means by which all MAA representatives shall interpret the building code and standard references; with respect to new construction.
**Policy**: The Maryland Aviation Administration, as a branch of the Maryland Department of Transportation, shall follow all criteria in the Code of Maryland Regulation's Public Safety Articles 6 and 9, as well as Title 29, Subtitle 06, of the Fire Laws of Maryland. See Appendix G - Codes and Standards.
**Application**: The standards and guidelines contained in this document are to be used in the design, construction, inspection, and certification of buildings and structures owned and operated by MAA, or tenant facilities.

All designs that are found not to be in conformance with the fire related aspects of the Federal DOT Standards, or the currently adopted International Building Code or the Fire Laws of Maryland, shall be redesigned to meet code requirements and be resubmitted and approved by the Office of the Fire Marshal prior to being released for construction, or the cited item(s) may be appealed in accordance with the provisions of the Fire Laws of Maryland.

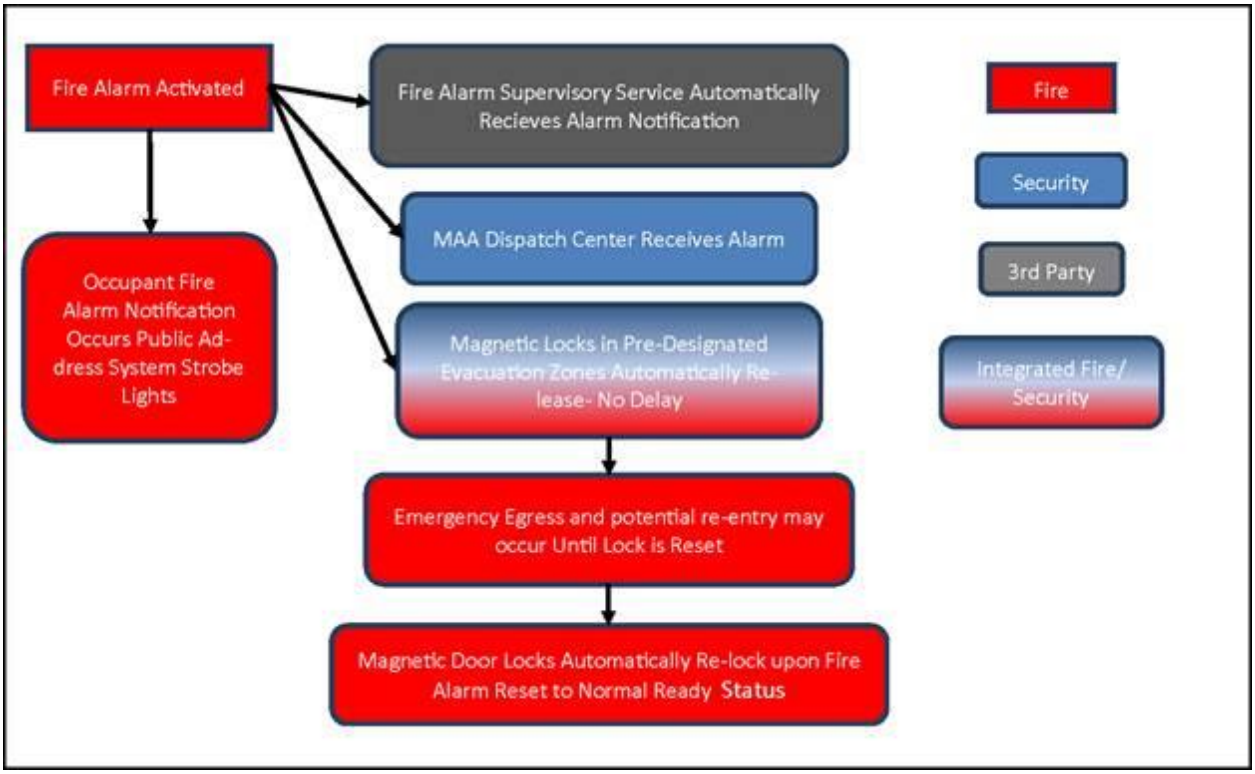
## 13.4.2 BWI Marshall Fire Alarm System (Terminal)

1. The MAA has adopted the Honeywell Fire Alarm system for BWI Marshall. All applicable contracts shall include the Honeywell Fire Alarm system as a sole source specification. The specified Honeywell Fire Alarm System shall function, operate and be compatible with the existing BWI Marshall Fire Alarm system.
2. All components of the fire alarm system shall be UL or FM listed.
3. The Project Specifications shall require the Contractor to:
   A. Submit a copy of the as-built fire alarm and sprinkler systems drawings to the Engineer for the BWI Marshall Fire Rescue Department (FRD).
   B. Design and submit to the Engineer AutoCAD of the sprinkler layout on CD for the BWI Marshall Fire Rescue Department.
   C. Design and submit to the Engineer AutoCAD files of the fire alarm system floor plans on CD for Honeywell to update the Fire Alarm Central Graphic Computer.

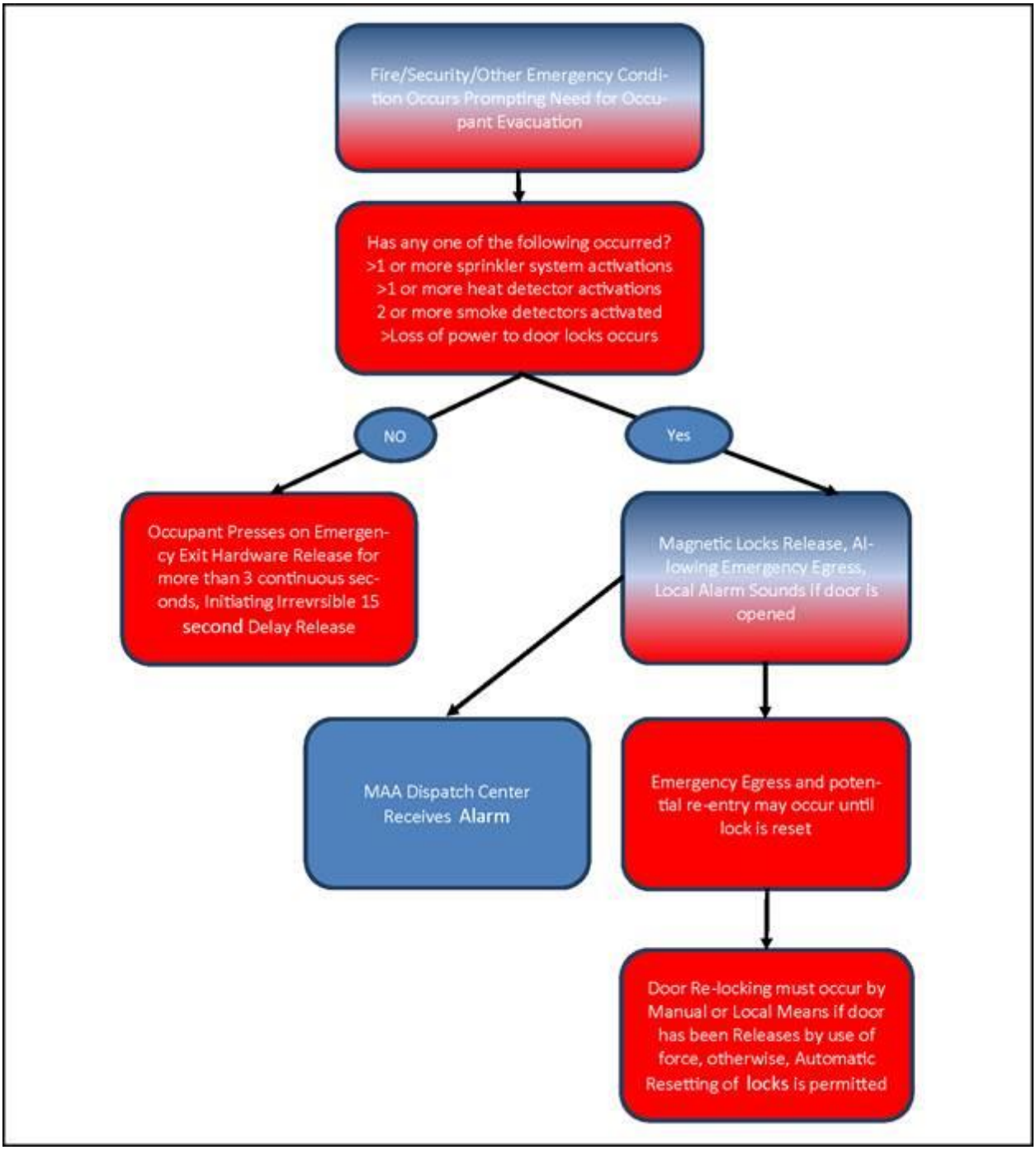
### 13.4.3 Access Controlled Egress Doors

1. Access Control or Controlled Access Security System (CASS) is part of the Airport's Integrated Access Security System (IASS).
2. The following requirements shall apply to access controlled emergency egress doors. The designer shall confirm any variance from this standard with MAA and FAA personnel.
   A. Magnetic locks shall be mounted to the top of door/frames. Only when clearance issues prohibit the use of mag-locks will the use of electric door strikes (electrified door hardware) be considered. Electric door strikes are not acceptable without the prior approval of the Office of the Fire Marshal.
   B. Provide panic hardware with door strike (this is not an electric door strike) and delayed egress magnetic locks that provide local alarm upon being activated and provide alarm to the BWI Dispatch upon activation of the non-reversible release countdown.
   C. Provide IASS system components. They are typically the door controller, combination card reader/keypad, door status contacts, audio/visual device and the door-locking device (mag-lock). Configure the system as follows:
      - IASS shall release the mag-lock for all personnel who use the combination card reader/keypad. This is an approved non-emergency egress.
      - The mag-lock will not release until a preset delay has expired. Pushing on the panic hardware for more than three (3) seconds starts the delay countdown.
      - In the event of an emergency, occupants will push on the panic hardware, the local alarm will immediately sound, an alarm will be sent to the BWI Dispatch and the delay countdown will begin. When the delay has expired, the audio/visual device will sound, the mag-lock will release and the IASS will alert the police and the BWI Dispatch of the alarm condition. The security system audio/visual device shall be coded differently from the fire alarm system audio/visual device.
      - The delay on release should be set to 15 seconds.
   D. Signage shall be placed on each egress door, stating "EMERGENCY EXIT ONLY". Delayed egress doors shall be additionally equipped with signage stating "PUSH UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS".
   E. The upper level emergency egress stairwell door in all holdrooms will be the secured door (with IASS). Only approved exceptions will allow the secured door to be on the lower level (ramp level). The designer, MAA Security and the tenants shall decide which stairs will be utilized by airline personnel who may not have a BWI Marshall Security Badge, but need access to lower level operations areas.
   F. The door control microprocessor shall be provided with a battery backup power supply.
   G. All door status contacts are to be interfaced with the door control panel that is designed to send an immediate local and a remote alarm of unauthorized access to the Dispatch Center (DC). The panel is to be interfaced with the local door control microprocessor that is designed to send an immediate local and a remote alarm of unauthorized access with a local reset. The microprocessor is to be interfaced with the keypad/card reader access device and the secure side magnetic lock release device and be designed to distinguish the difference between an authorized and unauthorized access.
   H. All electronic panic hardware (crash bars) devices are to be directly wired to the magnetic lock to minimize chance of malfunction.
   I. All magnetic locks and access control electronics are to be on dedicated circuits and connected to a dedicated panel.

J. Where egress doors are used in conjunction with operations, the release function from the secured side shall be coordinated with and approved by MAA Security.




*Emergency Egress During Fire Alarm Activation Conditions (Controlled Access Security Systems-Based Systems Only)*




*Emergency Egress During Non-Fire Alarm Activation Conditions*
*(Controlled Access Security System-Based Systems Only)*

3. Knox Box System
   A. The Knox Box System is a high security key box designed to give firefighters and emergency responders immediate access to locked buildings, elevators, and other secured areas. The Knox Box System has been approved by the MAA as a sole source procurement.
   B. Coordinate the number, size, and location of Knox Boxes with the Office of the Fire Marshal.

C. Applicable building contract documents shall include the installation of the Knox Box System. The specifications shall require the contractor to complete the Authorization/Order form and obtain the MAA's authorized signature.

# 13.5 Fire Detection and Fire Alarm Systems at BWI Marshall

## 13.5.1 Existing Fire Detection and Alarm System

The primary fire alarm systems serving BWI Marshall is the Honeywell EBI (Enterprise Building Integration) System).

The signals report to a Honeywell EBI Graphics System located in the BWI Marshall Dispatch Center (BWI Dispatch).

1. Fire Alarm Indicating Devices
   A. Notification Signals:
      - Terminal Building - all areas will be zoned as either a public area or a tenant area.
      - Public areas shall have visual devices (strobe lights) and audible devices (horns). Normal audible notification shall come from terminal-wide public address (PA) system. In the event of a failure of the PA System, horns will be activated manually from the BWI Dispatch. All devices in this zone, horns and strobes, shall be activated separately via manual control from the BWI Dispatch.
      - Tenant areas shall have audio/visual (horn/strobe) notification. Publicly accessible portions of tenant spaces shall have public address speakers for voice fire alarm notification. All devices in this zone shall be automatically activated by the associated FS-90 FACP or the XLS panels.

   B. Remote Annunciators shall not be provided unless otherwise required by the Office of the Fire Marshal.

   C. EBI Central Color Graphic Computers shall be programmed and updated as required by expansions and modifications to the Fire Alarm. System. Cost of programming and computer upgrades shall be included in the construction project along with associated construction costs.
2. Fire Alarm Initiating Devices

   Addressable Interface Units (monitoring modules) shall be used to monitor indicating devices that are not otherwise equipped for multiplexed addressable communication such as sprinkler valve tamper switches.

   A. Manual Pull stations shall be addressable double action type without glass rod inserts. Provide waterproof Lexan covers on pull stations located outdoors and in parking garages.

   B. All surface mounted smoke detectors shall be addressable photoelectric type. Ionization type detectors are not permitted.

   C. Duct Smoke Detectors shall be addressable photoelectric type.

   D. Heat Detectors shall be addressable combination rate of rise and fixed temperature type within air-conditioned spaces.

   E. Pressure Switches for pre-action systems, shall be supplied with addressable monitoring modules.

   F. Water Flow Switches for sprinkler systems, shall be supplied with addressable monitoring modules for alarm conditions.

   G. Fire Extinguishing System Control Panels for fire suppression systems (such as carbon dioxide systems, clean agent, foam systems, etc.) shall be supplied with addressable monitoring modules.
3. Fire Alarm Supervisory / Control Devices

Special provisions for exhausting noxious or hazardous atmospheres shall be designed on a per project basis. The design shall utilize HVAC systems and controls; zoning strategies and supplemental exhaust. Additional requirements include:

### 13.5.2 New Fire Detection and Alarm System

1. Design Requirements of Local Authority Having Jurisdiction:
   The Office of the Fire Marshal is the local Authority Having Jurisdiction for MAA owned facilities. The Consultants must coordinate with the Office of the Fire Marshal during the design of fire detection and alarm systems. Submit relevant drawings and specifications to MAA FDE for transmittal to the Office of the Fire Marshal for review at each required submission. At a minimum MAA recommends meeting with the Office of the Fire Marshal prior to 50% completion of design. General requirements of the Office of the Fire Marshal include, but are not limited to, the following:
2. The Fire Detection and Alarm System shall comply with the following requirements:
   A. Conductors and Circuit Type:
      - Initiating circuits shall be Class A
      - Indicating circuits shall be Class A
      - Only copper conductors shall be used. Conductor wire shall be solid. Stranded conductors will not be allowed. The only exception allowed for stranded wire will be for the installation of speakers in a fire alarm controlled voice evacuation system.

   B. Conductor Size:
      - Initiating circuits shall be a minimum of No. 14 AWG twisted pair. No. 16 AWG may be used, if pre-approved by the Office of the Fire Marshal, for initiating circuits, depending on electrical system design and manufacturer's requirements. No. 18 AWG shall not be permitted.
      - Indicating circuits shall be a minimum of No. 12 AWG.

   C. Conductor Requirements:
      - Insulation - THHN or THHW (NEC Article 310, Table 31016).
      - Voltage Rating· 600 volt.
      - Temperature Rating· 90°Cl194°FP.
      - No. 14 AWG shall have 6 turns per foot.
      - No. 16 AWG shall have 10 turns per foot.

   D. Color Codes:
      - Work on new systems shall comply with equipment manufacturer's requirements.

   E. Work on existing systems shall match existing color-coding of wire in Chapter 14 Electrical.
   Conduit:
      - All fire alarm wiring shall be in conduit complying with applicable NEC articles. (Exception: Existing speaker wiring which serves as part of the PA portion of the fire alarm system may remain as presently installed, without conduit, unless an area is renovated to an extent that the Office of the Fire Marshal determines that encasement in conduit is required.)

   F. Identification of conduit and junction boxes will be done with red paint and wording that clearly identifies the installation as being a fire alarm system. Panel Connections:
      - Shall be on the left hand or right hand sides. No connections shall be done from the bottom.
      - Top mount connections shall be permitted only if waterproof connectors are used.

   G. Power Supply:

- All fire alarm systems shall be provided with a primary and a secondary power supply.
- Secondary power shall automatically supply the energy to the system within 30 seconds. Secondary power shall be from a storage battery capable of operating the complete alarm system in normal or supervisory (non-alarm) mode for a period of 24 hours and at the end of this period, have sufficient capacity to operate the system, including alarm indicating devices in either alarm or supervisory mode for a period of 15 minutes. This requirement applies to new panel installations and any existing panels affected by renovation work.
- The batteries in all Fire Alarm Control Panels (FACPs) shall be supervised.
- An engine-driven generator with automatic transfer switch arranged in accordance with NFPA 72 may be used for secondary power in lieu of storage batteries.

H. Fire Alarm Control Panel Location:

- Shall be determined by the Office of the Fire Marshal only.
- Shop drawings shall include a floor plan showing the location of the fire alarm panel.
- Fire alarm system zones shall follow fire protection sprinkler zones as appropriate.

3. All duct type smoke detectors shall be provided with remote test switches and indicator lights with identification signage. The test switches shall be readily accessible and have readily visible (below ceiling) indicators. Smoke detectors shall be provided with two sets of contacts. One set for alarm and one set to shut down related HVAC equipment. All duct detectors shall be accessible for inspection, maintenance, repair and replacement.
4. All existing sprinkler water flow, switches and tamper switches shall be connected to the Honeywell Enterprise Building Integration (EBI) system and alarm system.
5. The Honeywell EBI Graphical Central Computer shall be programmed with a specific designation of the alarm location (for example, boarding bridge gate number or other geographic locator).
6. Install a dedicated MAA "IN-HOUSE" telephone adjacent to all fire alarm control panels (FACP). This requirement applies to new panel installations and any existing panels affected by renovation work. Design shall include an empty conduit between the proposed telephone location and the nearest telephone closet. Coordinate with MAA Telecom Section for MAA to install the telephone
7. YOU ARE HERE" designation and the egress paths clearly shown on a floor plan. Permanent signage, with the capability for changing inserts, shall be specified to be included in the construction contract. See Chapter 13.3.1 Terminal Evacuation Plans. Provide a floor plan submittal showing the proposed locations of the evacuation plans(s) for approval by the Office of the Fire Marshal.
8. Signs shall have red lettering and a white background encased or enclosed in an approved box. Provide directional exit signs in the main corridor of the concourses (piers) to direct occupants to the exit stairs along the exterior holdroom walls.

### 13.5.3 Fire Detection Systems Table

| AUTOMATIC FIRE AND SMOKE DETECTION SYSTEMS REQUIRED | | | |
|---|---|---|---|
| **Areas Protected** | **Combined Rate-of-Rise and Fixed Temperature Heat Detectors** | **Heat Detection Only** | **Smoke Detection** |
| Storage Rooms | | | X |

| AUTOMATIC FIRE AND SMOKE DETECTION SYSTEMS REQUIRED | | | |
|---|---|---|---|
| **Areas Protected** | **Combined Rate-of-Rise and Fixed Temperature Heat Detectors** | **Heat Detection Only** | **Smoke Detection** |
| Kitchens | | X | |
| Communication Rooms | X | | X |
| Electrical Sub-Station Rooms | X | | X |
| Tenant Space Transformer Rooms | | | X |
| Hazardous Materials Storage Rooms | | | X |
| Mechanical Rooms | | | X |
| Bag Belts at fire rated assemblies | | | X (Note 1) |
| Warehouses | | | X |
| Airfield Light Vaults | | | X |
| Automatic Smoke Doors at Pedestrian Tunnels | | | X (Note 2) |
| Automatic Smoke Doors at Skywalks | | | X (Note 2) |

NOTES FOR TABLE "AUTOMATIC FIRE AND SMOKE DETECTION SYSTEMS REQUIRED"

1. Smoke detectors are required on both sides of fire rated assemblies where bag belt penetrations occur. They are to activate the fire shutters at each opening.
2. Smoke detectors are required on both sides of smoke doors at Skywalks and Pedestrian Tunnels. They are to activate the smoke doors or fire doors at each opening.
3. Wherever "Heat Detection" is required above, combination Rate-of-Rise and Fixed Temperature (ROR-FT) detectors may be used except where specifically "Heat Detection Only" is listed (e.g. – Break rooms with kitchenette, Elevator shunt trip, Kitchens). In "Heat Detection Only" locations, combination ROR-FT detectors may not be used, however it is permissible to install ROR-FT detectors in those locations if only the FT portion of the combination detector is wired to be functional for detection notification.
4. Fire Alarm Control Panels (FACP) are not to be set to provide automatic building evacuation signaling in public areas upon receipt of a water flow, smoke, heat detection signal, or manual pull station activation, but are to provide automatic evacuation signaling in tenant areas. They are to transmit a fire alarm signal to the Emergency Communications Center (BWI Dispatch). All FACPs are to be non-self-resetting.

### 13.5.4 Manual Fire Alarm Pull Station Table

| NFPA 72 MANUAL FIRE ALARM PULL STATIONS REQUIRED | |
|---|---|
| **Areas Protected** | **Manual Pull Station** |
| Exit Doors and Egress Stairwells | X (Note 1) |
| Fire Doors at Skywalks | X (Note 2) |

NOTES FOR TABLE "NFPA 72 MANUAL FIRE ALARM PULL STATIONS REQUIRED"

1. Fire alarm pull stations are required at each main exit door, each egress stair, and at each vestibule leading to the outside. They are not required at tenant space public entrances/exits.
2. Fire alarm pull stations are required on the terminal side of skywalk doors and on the parking garage side of skywalk doors.

# 13.6 Fire Suppression Systems

## 13.6.1 Dry Pipe Sprinkler Systems

1. All dry sprinkler piping NPS 2-inch and smaller: Galvanized, standard weight (Schedule 40) steel pipe with threaded ends; cast- or malleable-iron (galvanized) threaded fittings; and threaded joints.
2. All dry sprinkler piping NPS 2-1/2 inches to NPS 8-inches: Galvanized, standard weight (Schedule 40) steel pipe with grooved ends; steel, grooved-end (galvanized) fittings; steel, keyed couplings; and grooved joints. Gasket seals for grooved end couplings shall be approved by the pipe manufacturer for dry pipe applications.
3. All dry sprinkler piping NPS 10 inches or larger: Galvanized, (Schedule 30) steel pipe with grooved ends; steel, grooved-end (galvanized) fittings; steel, keyed couplings; and grooved joints. Gasket seals for grooved end couplings shall be approved by the pipe manufacturer for dry-pipe service applications.

## 13.6.2 Wet Pipe Sprinkler Systems

| AUTOMATIC FIRE SUPPRESSION SYSTEMS REQUIRED | | | | | |
|---|---|---|---|---|---|
| **Areas Protected** | **Special Agent Suppression Systems** | **NFPA 17A Type, Wet, Hood Systems** | **Wet Automatic Sprinklers** | **Dry Automatic Sprinklers (Non Pre-Action)** | **Dry Automatic Sprinklers (Pre-Action)** |
| Terminals, Concourses, and Public Areas, Tenant Spaces, etc. | | | X | | |
| Critical Communications Rooms (Note 1) | X | | | | |
| Skywalks | | | X | | |
| Electrical Sub-stations, Interior, (13.8 KVA Incoming) | | | | | X |
| Main Electrical Rooms | | | | | X (Note 2) |
| Cooking Hoods, Class I | | X | | | |
| Drive-Thru Tunnels | | | | X | |

NOTES FOR TABLE "AUTOMATIC FIRE SUPPRESSION SYSTEMS REQUIRED" (MUST BE COMPARED WITH OT MANUAL)

1. Examples of critical communications rooms are those related to:
   a. Airfield Lighting.
   b. Emergency Paging Systems.
   c. Emergency Communications for consolidated Police and Fire (BWI Dispatch).
   d. Computer Servers.
   e. Main Telephone Rooms.
   f. Critical Computer Systems.
   g. Fire Alarm Servers.
   h. "IDF" Emergency Paging Rooms (fiber optics in/out and data routers for networks).

i. Other rooms, or spaces, as may be designated critical to operations or life safety by Office of the Fire Marshal or MAA or FAA.

j. "Non-critical" telephone closets of 24 square feet, or less, do not receive automatic fire suppression systems. They are to be provided with automatic fire detection only. Refer to the detection requirements for further information.

2. Main Electrical Rooms are to be provided with a sprinkler system activated shunt trip to deactivate electrical switchgear.
3. Fire sprinkler systems are to be designed to meet the requirements of NFPA 13 Hazard Classifications, as follows:
   a. All areas within the BWI terminal are to be considered as "Ordinary Hazard, Group II".
   b. Cargo Buildings and Freight Terminals are to be designed for "Extra Hazard".
   c. Areas outside of the BWI terminal (MTN, CRCF, MAC Building, etc.) shall be designed in accordance with NFPA 13.
4. "Fuel Farms" are to be protected with sub-surface automatic foam fire suppression systems.
5. Although there are existing CO2, clean agent, and Halon 1301 systems in some protected areas, they are not to be used in new construction without the approval of the Office of the Fire Marshal. When performing work in such an existing area, consult with the Office of the Fire Marshal for guidance.

# 13.7 Fire Hydrants

## 13.7.1 General Fire Hydrant Requirements & Specifications

1. Specify fire hydrants manufactured by American Darling, Model B-62-B; Kennedy Valve, Model K-81-A; or Mueller, Super Centurion 250.
2. Hydrant valve opening shall be at least 5-inch diameter, net. Inlet connection shall be 6-inch mechanical joint with accessories (glands, plain rubber gaskets, and stainless steel bolts and nuts).
3. Hose connections shall consist of two 2 1/2 -inch diameter hose connections and one 4 1/2 -inch diameter steamer or pumper connection threaded as follows: the 2 1/2 -inch nose nozzles shall have National Standard threads and the pumper connection shall have:
   A. 4-1/2" NST outlet, for hydrants being installed on the public (non-air) side of the Terminal.
   B. 5" Storz connections, for hydrants being installed on the (ramp) airfield side of the Terminal, Storz cap shall include some means to reduce pressure.
4. Operating nut shall be 5 sided, 1 5/16 inches from point to flat, and shall turn left (counterclockwise) to open.
5. Outer casting shall be one-piece cast iron, designed to permit its extension without excavating.
6. Hydrant design shall be such that when the barrel is broken, it may be replaced without excavating or breaking adjacent pavement; that the entire barrel, including all working parts, along with the main and waste valve seats, may be removed for inspection or repair without excavating or disturbing the ground; and that underground flanges with bolts and nuts are eliminated.
7. The main valve seal shall be compression type sealing against a bronze seat and the valve shall open against pressure.
8. Between elbow and top cap, the barrel shall be made in two parts connected by a swivel segment to permit facing the nozzles in any direction.
9. Bonnet shall be bolted to the standpipe and shall have cast on the top an arrow and the word "Open" indicating the direction for opening.
10. For ramp-side hydrants, Fire Hydrant shall be set within a gravel or crushed stone drainage, well extending the full width of the trench.
11. Where hydrants are to be relocated, the Contractor shall ascertain whether or not the hydrant valve has been restrained before removing the hydrant to be relocated. The lead pipe shall be capped and blocked so that service can be restored to the parent main pending the removal or plugging of the mainline tee.
12. The outside of all fire hydrants above the breakaway flange shall be painted with two coats of OSHA orange industrial enamel paint, as manufactured by Sherwin Williams, or equal. The riser pipe from ground to breakaway flange shall be painted with two coats gloss black industrial enamel paint as manufactured by Sherwin Williams, or equal before installation. The Hydrant bonnet shall be painted to indicate its gallons per minute (GPM) per NFPA 291.
13. International Symbol Signs meeting the requirements of NFPA 170 shall be attached on the Terminal siding located 10 feet above the ramp side fire hydrants, each as a 10" by 10" white on red reflective symbol sign. (See attached NFPA 170 Fire Safety Symbols).
14. All fire Hydrants at Martin's Airport shall be designed and installed in accordance with the Baltimore County Fire Department specifications.

## 13.7.2 Underground Fire Hydrants (Non-Aircraft Loading Areas)

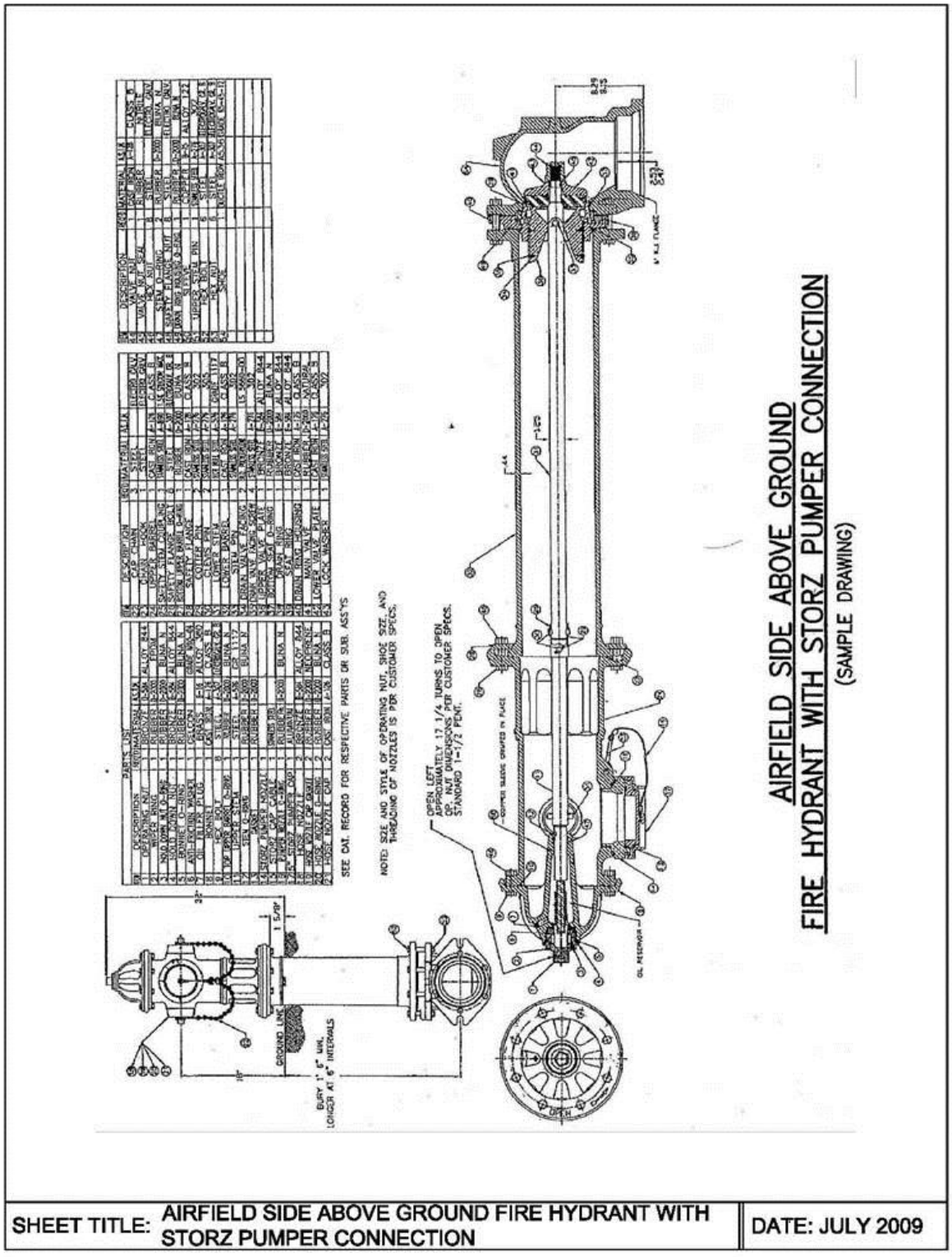
Flush type fire hydrants shall be Mueller or approved equal with a 5 sided 5/16” operating nut, two 2½” diameter hose connection (with National Standard threads) and a 4½” diameter steamer or pumper connection (with Baltimore City threads).

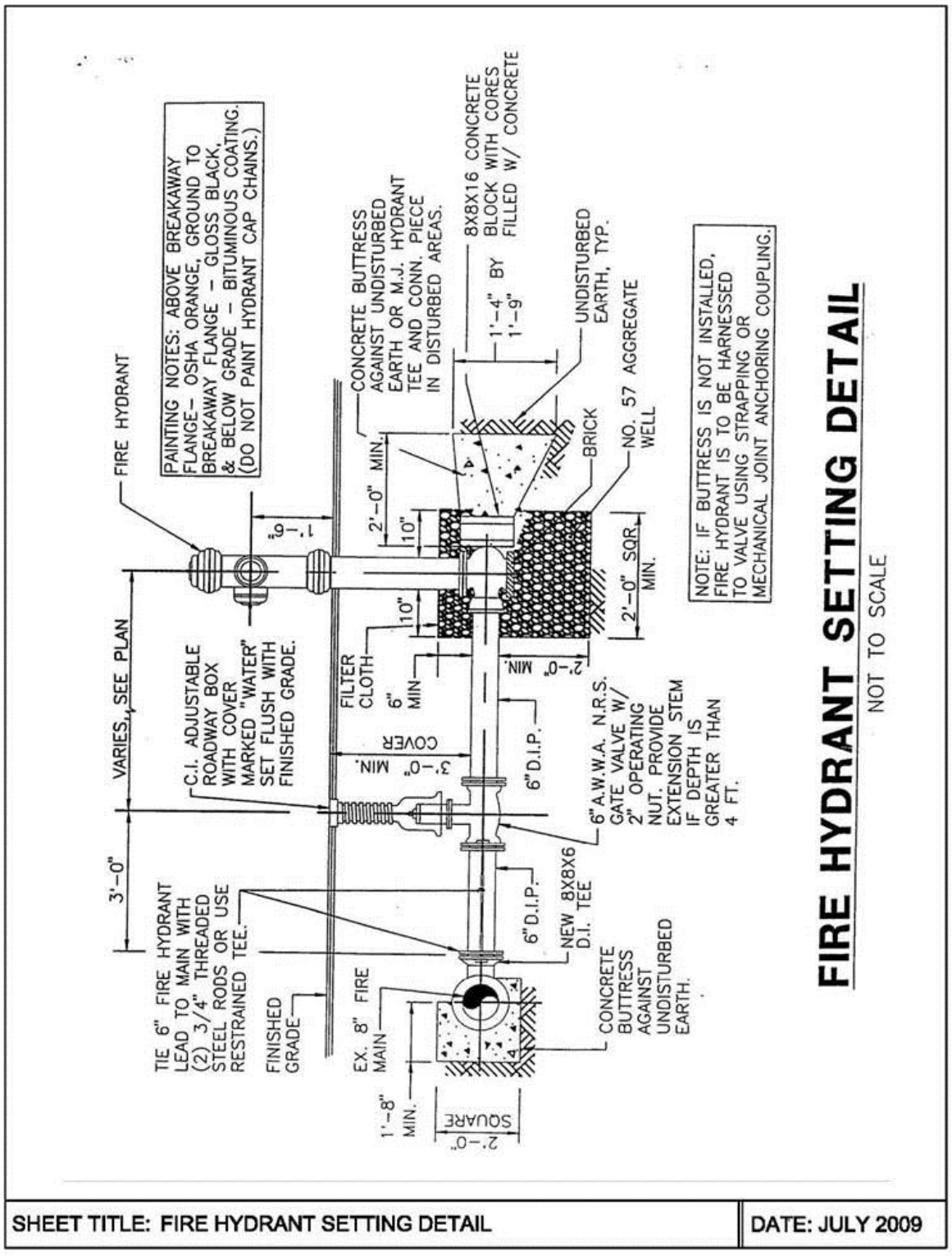
Flush box shall be constructed of ASTM A126 Class B cast iron, with “Fire Hydrant” wording cast in cover.

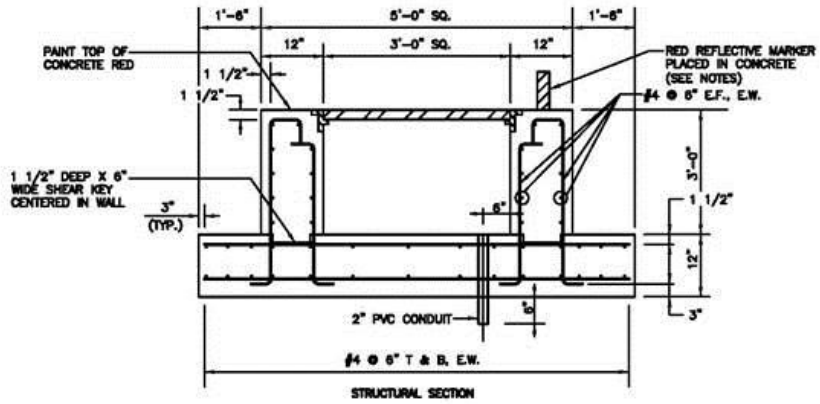
### 13.7.3 Underground Fire Hydrants (Aircraft Loading Areas)

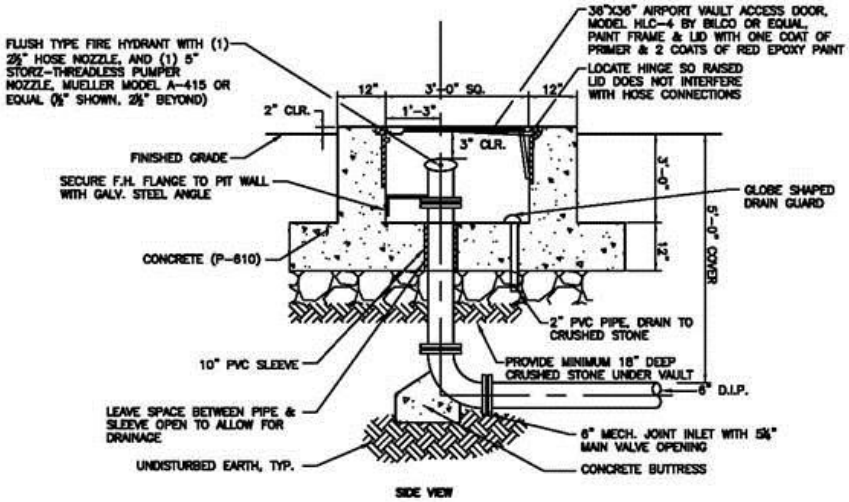
Flush type fire hydrants shall be Mueller or approved equal with a 5 sided 5/16” operating nut, two 2½” diameter hose connection (with National Standard threads) and a 5” diameter Storz pumper connection.

Designer shall provide details for a reinforced concrete structure around the underground fire hydrant. The cover shall be 36” x 36” Model HLC-4 by Bilco or equal, suitable for aircraft loading. Structure shall have a door with flush mounted hinges and stainless steel hardware, spring cushion operators, and hold open arm. Cover shall be painted red with a white Fire Hydrant Symbol, which is a minimum 2 feet long, painted to match the NFPA 170 Figure 4-2.5 (See the following exhibits).


AIRFIELD SIDE ABOVE GROUND
FIRE HYDRANT WITH STORZ PUMPER CONNECTION
(SAMPLE DRAWING)
SEE CAT. RECORD FOR RESPECTIVE PARTS OR SUB. ASS'YS
NOTED SIZE AND STYLE OF OPERATING NUT, SHOE SIZE, AND THREADING OF NOZZLES IS PER CUSTOMER SPECS.
OPEN LEFT
APPROXIMATELY 17 1/4 TURNS TO OPEN.
OPERATING DIMENSIONS PER CUSTOMER SPECS.
STANDARD 1-1/2 PENT.
GROUND LINE
BURY 1' 6" MIN. LONGER AT 6" INTERVALS
SHEET TITLE: AIRFIELD SIDE ABOVE GROUND FIRE HYDRANT WITH STORZ PUMPER CONNECTION
DATE: JULY 2009


FIRE HYDRANT SETTING DETAIL
NOT TO SCALE
FIRE HYDRANT
PAINTING NOTES: ABOVE BREAKAWAY FLANGE– OSHA ORANGE, GROUND TO BREAKAWAY FLANGE – GLOSS BLACK, & BELOW GRADE – BITUMINOUS COATING. (DO NOT PAINT HYDRANT CAP CHAINS.)
CONCRETE BUTTRESS AGAINST UNDISTURBED EARTH OR M.J. HYDRANT TEE AND CONN. PIECE IN DISTURBED AREAS.
8X8X16 CONCRETE BLOCK WITH CORES FILLED W/ CONCRETE
1'-4" BY 1'-9"
UNDISTURBED EARTH, TYP.
NO. 57 AGGREGATE WELL
BRICK
NOTE: IF BUTTRESS IS NOT INSTALLED, FIRE HYDRANT IS TO BE HARNESSED TO VALVE USING STRAPPING OR MECHANICAL JOINT ANCHORING COUPLING.
1'-6"
2'-0" MIN.
10"
10"
2'-0" SQR. MIN.
VARIES, SEE PLAN
C.I. ADJUSTABLE ROADWAY BOX WITH COVER MARKED "WATER" SET FLUSH WITH FINISHED GRADE.
FILTER CLOTH
6" MIN
2'-0" MIN.
COVER
3'-0" MIN.
6"D.I.P.
6"A.W.W.A. N.R.S. GATE VALVE W/ 2" OPERATING NUT. PROVIDE EXTENSION STEM IF DEPTH IS GREATER THAN 4 FT.
3'-0"
TIE 6" FIRE HYDRANT LEAD TO MAIN WITH (2) 3/4" THREADED STEEL RODS OR USE RESTRAINED TEE.
6"D.I.P.
NEW 8X8X6 D.I. TEE
FINISHED GRADE
EX. 8" FIRE MAIN
CONCRETE BUTTRESS AGAINST UNDISTURBED EARTH.
1'-8" MIN.
2'-0" SQUARE
SHEET TITLE: FIRE HYDRANT SETTING DETAIL
DATE: JULY 2009




NOTES:

1. FLUSH TYPE FIRE HYDRANTS SHALL BE FURNISHED WITHOUT THE ENCLOSURE BOX. PROVIDE MINIMUM ONE WRENCH PER HYDRANT AND ANOTHER TWO WRENCHES TO BE TURNED OVER TO THE BWI FIRE DEPARTMENT. WRENCHES SHALL BE SUPPLIED BY THE HYDRANT MANUFACTURER. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL VERIFY THAT THE APPROVED HYDRANT AND WRENCHES WILL FUNCTION PROPERLY INSIDE THE PROPOSED VAULT. ADJUST VAULT DIMENSIONS AS REQUIRED SO OPERATION OF WRENCHES WILL NOT INTERFERE WITH THE SIDES OF THE VAULT AND THE HINGES/ LIFTING MECHANISM OF THE COVER HATCH.
2. THE 36"X36" COVER SHALL BE SUITABLE FOR AIRCRAFT LOADING TO WITHSTAND A LIVE LOAD OF 200 POUNDS PER SQUARE INCH PLUS 30% IMPACT. COVER SHALL BE MADE OF STEEL PLATE, WITH STEEL CHANNEL FRAME AND ANCHOR FLANGES. PROVIDE DOOR WITH FLUSH MOUNTED HINGES & STAINLESS STEEL HARDWARE, SPRING CUSHION OPERATORS, & HOLD OPEN ARM.
3. PROVIDE NATIONAL STANDARD THREADS ON THE 2-½" HOSE CONNECTION, AND BALTIMORE CITY STANDARD THREADS ON THE 4-½" HOSE CONNECTION.
4. ON THE ACCESS DOOR, OVER THE RED PAINT, PROVIDE A WHITE FIRE HYDRANT SYMBOL WHICH IS A MINIMUM OF 2 FEET LONG, PAINTED TO MATCH THE NFPA 170 FIGURE 4-2.5.
5. RED REFLECTIVE MARKER SHALL COMPLY WITH FAA AC 150/5345-39: L-853, MODEL TRM (TAXIWAY REFLECTIVE MARKER) 853-CO-24-R-3W BY CROUSE-HINDS OR EQUAL.

**FLUSH TYPE HYDRANT AND VAULT DETAIL**

NOT TO SCALE

| SHEET TITLE: FLUSH TYPE HYDRANT AND VAULT DETAIL (FOR AIRCRAFT MOVEMENT AREA ONLY) | DATE: JANUARY 2015 |
|---|---|

**4-2.5* Fire Hydrant (All Types).**

*Characteristics:* Square field; red background; white symbol.

*Application:* The identification and location of a fire hydrant.

*Example:* The location of fire hydrants, wall hydrants, underground hydrants, or other fire-fighting water supplies.

**4-2.6 Automatic Sprinkler Control Valve.**

*Characteristics:* Square field; red background; white symbol.

*Application:* The identification and location of an automatic sprinkler control valve.

*Examples:*

- The location of control valves for automatic sprinkler systems.
- On doors of rooms containing control valves.

**4-2.7 Electric Panel or Electric Shutoff.**

*Characteristics:* Square field; blue background; white symbol.

*Application:* The identification and location of an electrical panel or other electric shutoff device.

*Example:* The location of electric panels or other electric control devices that can be located in basements or mechanical rooms.

**4-2.8 Gas Shutoff Valve.**

*Characteristics:* Square field; red background; white symbol; red letter G.

*Application:* The location of a gas shutoff valve.

*Examples:*

- The location of gas shutoff valves.
- On doors of rooms containing gas shutoff valves.

**4-2.9 Fire-Fighting Hose or Standpipe Outlet.**

*Characteristics:* Square field; red background; white symbol.

*Application:* The location of a fire-fighting hose or a standpipe outlet.

*Examples:*

- The location of interior fire-fighting hose stations and standpipe outlets in buildings and structures.
- The location on bridges or elevated highways.

**4-2.10 Fire Extinguisher.**

*Characteristics:* Square field; red background; white symbol.

*Application:* The location of a fire extinguisher.

*Example:* The location of fire extinguishers in buildings and exterior locations.

**4-2.11 Directional Arrow.**

*Characteristics:* Square field; background (red or blue) to correspond to accompanying sign; or white symbol.

*Application:* Direction to the location of fire-fighting equipment or utility. Always used in conjunction with, and adjacent to, another symbol indicating the particular equipment or utility.

**4-2.12 Diagonal Directional Arrow.**

*Characteristics:* Square field; background (red or blue) to correspond to accompanying sign; white symbol.

*Application:* Direction to the location of fire-fighting equipment or utility. Always used in conjunction with, and adjacent to, another symbol indicating the particular equipment or utility.

## Contractor's Material and Test Certificate for Underground Piping

**PROCEDURE**

Upon completion of work, inspection and tests shall be made by the contractor's representative and witnessed by an owner's representative. All defects shall be corrected and system left in service before contractor's personnel finally leave the job.

A certificate shall be filed out and signed by both representatives. Copies shall be prepared for approving authorities, owners, and contractor. It is understood the owner's representative's signature in no way prejudices any claim against contractor for faulty material, poor workmanship, or failure to comply with approving authority's requirements or local ordinances.

| | | | |
|---|---|---|---|
| Property name | | Date | |
| Property address | | | |
| Plans | Accepted by approving authorities (names) | | |
| | Address | | |
| | Installation conforms to accepted plans | ☐ Yes | ☐ No |
| | Equipment used is approved<br>If no; state deviations | ☐ Yes | ☐ No |
| Instructions | Has person in charge of fire equipment been instructed as to location of control valves and care and maintenance of this new equipment?<br>If no, explain | ☐ Yes | ☐ No |
| | Have copies of appropriate instructions and care and maintenance charts been left on premises?<br>If no, explain | ☐ Yes | ☐ No |
| Location | Supplies buildings | | |
| Underground pipes and joints | Pipe types and class | Type joint | |
| | Pipe conforms to _____ standard<br>Fittings conform to _____ standard<br>If no, explain | ☐ Yes<br>☐ Yes | ☐ No<br>☐ No |
| | Joints needing anchorage clamped, strapped, or blocked in accordance with _____ standard<br>If no, explain | ☐ Yes | ☐ No |
| Test description | Flushing: Flow the required rate until water is clear as indicated by no collection of foreign material in burlap bags at outlets such as hydrants and blow-offs. Flush at flows not less than 390 gpm (1476 L/min) for 4 in. pipe, 880 gpm (3331 L/min) for 6 in. pipe, 1560 gpm (5905 L/min) for 8 in. pipe, 2440 gpm (9235 L/min) for 10 in. pipe, and 3520 gpm (13,323 L/min) for 12 in. pipe. When supply cannot produce stipulated flow rates, obtain maximum available.<br>Hydrostatic: All piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested at 200 psi (13.8 bar) or 50 psi (3.4 bar) in excess of the system working pressure, whichever is greater, and shall maintain that pressure ± 5 psi for 2 hours.<br>Hydrostatic Testing Allowance: Where additional water is added to the system to maintain the test pressures required by 10.10.2.2.1, the amount of water shall be measured and shall not exceed the limits of the following equation (For metric equation, see 10.10.2.2.4):<br>$L = \frac{SD\sqrt{P}}{148{,}000}$<br>$L$ = testing allowance (makeup water), in gallons per hour<br>$S$ = length of pipe tested, in feet<br>$D$ = nominal diameter of the pipe, in inches<br>$P$ = average test pressure during the hydrostatic test, in pounds per square inch (gauge) | | |
| Flushing tests | New underground piping flushed according to _____ standard by (company)<br>If no, explain | ☐ Yes | ☐ No |
| | How flushing flow was obtained<br>☐ Public water ☐ Tank or reservoir ☐ Fire pump | Through what type opening<br>☐ Hydrant butt ☐ Open pipe | |
| | Lead-ins flushed according to _____ standard by (company)<br>If no, explain | ☐ Yes | ☐ No |
| | How flushing flow was obtained<br>☐ Public water ☐ Tank or reservoir ☐ Fire pump | Through what type opening<br>☐ Y connection to flange and spigot ☐ Open pipe | |

© 2007 National Fire Protection Association NFPA 24 (p. 1 of 2)

FIGURE 10.10.1 Sample of Contractor's Material and Test Certificate for Underground Piping.

| SHEET TITLE: | CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING | DATE: JULY 2009 |
|---|---|---|

24–18 INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES

| | | |
|---|---|---|
| Hydrostatic test | All new underground piping hydrostatically tested at _____ psi for _____ hours | Joints covered ☐ Yes ☐ No |
| Leakage test | Total amount of leakage measured _____ gallons _____ hours | |
| | Allowable leakage _____ gallons _____ hours | |
| Hydrants | Number installed / Type and make | All operate satisfactorily ☐ Yes ☐ No |
| Control valves | Water control valves left wide open. If no, state reason | ☐ Yes ☐ No |
| | Hose threads of fire department connections and hydrants interchangeable with those of fire department answering alarm | ☐ Yes ☐ No |
| Remarks | Date left in service | |
| Signatures | Name of installing contractor | |
| | Tests witnessed by | |
| | For property owner (signed) / Title / Date | |
| | For installing contractor (signed) / Title / Date | |
| Additional explanation and notes | | |

© 2007 National Fire Protection Association NFPA 24 (p. 2 of 2)

FIGURE 10.10.1 *Continued*

| | |
|---|---|
| SHEET TITLE: CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING | DATE: JULY 2009 |

## 13.7.4 Construction Phasing for Fire Hydrants and Water Mains

In accordance with Title 29 06.01, State Fire Prevention Code, the following applies to new construction: Section 41-2, Fire Safety During Construction, subsection 41-2.3.2, Water Supply – "Where underground water mains and hydrants are to be provided, they shall be installed, completed, and in service prior to construction work." Office of the Fire Marshal will allow the pad to be installed and the steel to be erected prior to the underground water mains and hydrants being in service.

# 13.8 Use, Occupancy and Construction Types

## 13.8.1 Use Classifications

The following use classifications are used by the Office of the Fire Marshal for various airport spaces. In the case of unusual spaces, consult the Office of the Fire Marshal to determine the assigned use classification.

| USE CLASSIFICATIONS | | |
|---|---|---|
| **Space or Area** | **Use Classification Assigned by AHJ** | |
| Airline Ticket Counter | **A-3** | Public Assembly (Public Areas) |
| Airline Ticket Office (ATO) | **B** | Office (Private Areas) |
| Baggage Claim | **A-3** | Public Assembly (Public Areas) |
| Baggage Make-Up / Baggage Screening | **S-1** | Moderate Hazard Storage |
| Baggage Service Office (BSO) | **B** | Office |
| Holdrooms | **A-3** | Public Assembly (Public Areas) |
| Offices | **B** | Office |
| Restaurant/Food Court Tenants | **A-3** | Public Assembly |
| Storage (Non-Hazardous) | **S-1** | Moderate Hazard Storage |
| Stores, Retail | **M** | Mercantile |
| Utility (Electrical, etc.) | **S-1** | Moderate Hazard Storage |

## 13.8.2 Existing Construction Types and Use Group and Smoke Separations

1. The AHJ has determined the following Construction Types for the various portions of the BWI Marshall Terminal complex and the required Use Group and Smoke Separations:

| Location | Use Group Separations (and Smoke Separations) | Construction Type | Code Built Under |
|---|---|---|---|
| A/B Terminal | Mixed Use (Smoke Separation Required Between Tenants & Mall) | IBC Type IB | IBC 2000 NFPA 101-2000 |
| A Concourse | Mixed Use (Smoke Separation Required Between Tenants & Mall) | IBC Type IB | IBC 2000 NFPA 101-2000 |
| B Concourse | Mixed Use (Smoke Separation Required Between Tenants & Mall) | IBC Type IB | IBC 2000 NFPA 101-2000 |
| B-C Connector | Mixed Use (Smoke Separation Required Between Tenants & Mall) | IBC Type IB | IBC 2009 NFPA 101-2009 |
| South Terminal | Separated Uses (Smoke Separations Required Between Tenants and Mall) | IBC Type IB | Unknown |
| Central Terminal | Separated Uses (Smoke Separations Required | Undocumented Construction Type | Unknown |

| | | | |
|---|---|---|---|
| | Between Tenants and Mall) | | |
| North Terminal | Separated Uses<br>(Smoke Separations Required Between Tenants and Mall) | IBC Type IB | Unknown |
| North Terminal Extension (Between D and E) | Separated Uses<br>(Smoke Separations Required Between Tenants and Mall) | Undocumented Construction Type | Unknown |
| C Concourse | Mixed Use<br>(Smoke Separation Required Between Tenants & Mall) | IBC Type IB | IBC 2012 |
| D Concourse Including DX & DY<br>D E Connector | Mixed Use<br>(Smoke Separation Required Between Tenants & Mall) | Undocumented Construction Type/IIA<br>IBC Type IB/NFPA 101 II | Unknown<br>BOCA<br>IBC 2012 |
| E Terminal &<br>E Concourse<br>E Concourse Extension | Covered Mall<br>(No Smoke Separations Required Between Tenants and Mall) | Type IIB, Protected Column, Unprotected Roof<br>Type IIA/NFPA 101 II | BOCA 1993<br>IBC 2012 |
| E Concourse Extension | | | |

2. Upper Level Tenant Smoke Separation Requirements

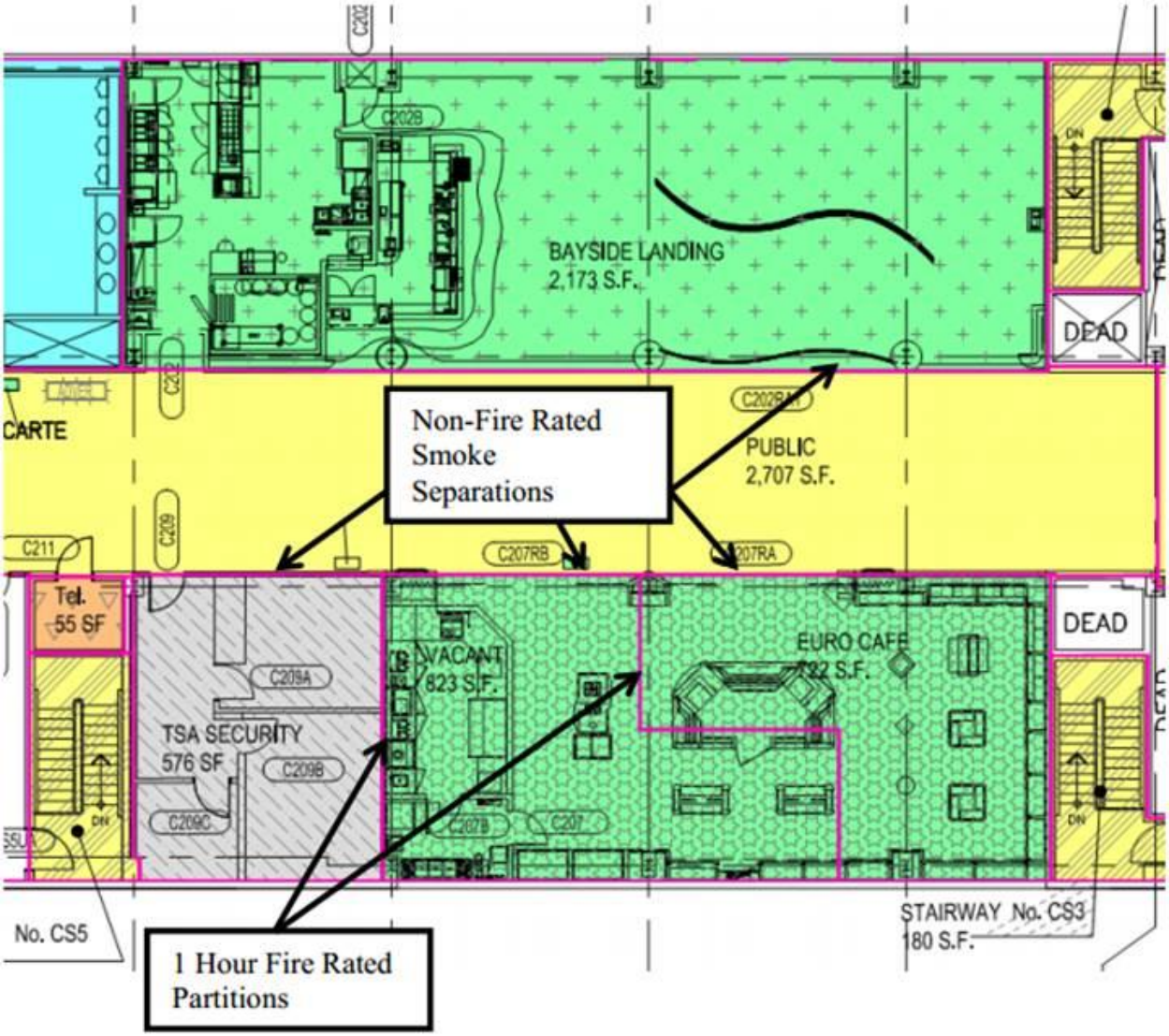
   The following smoke separation requirements shall apply:

   A. Smoke separations are required in retail storefront areas and other tenant spaces (except Holdrooms) that directly front on public circulation areas and public corridors. Smoke separations are not required to be fire endurance rated, but must be of non-combustible construction and must extend tight to the underside of the roof or floor deck above and be constructed to resist smoke from entering the public circulation space from the tenant space.

   B. Exception – Kiosk vendors, mobile vendor carts, and other small tenant spaces may be exempted from smoke separation requirements, subject to determination by the Office of the Fire Marshal.

   C. All duct penetrations of smoke separations shall be provided with UL listed, self-resetting, electrically actuated, smoke dampers. ASTM D635 compliant plastics are required to be applied to storefront grilles when comprising a portion of a smoke separation.

   D. Solid faced rolling doors are permitted to be used as smoke doors. All gaps must be sealed to resist migration of smoke.

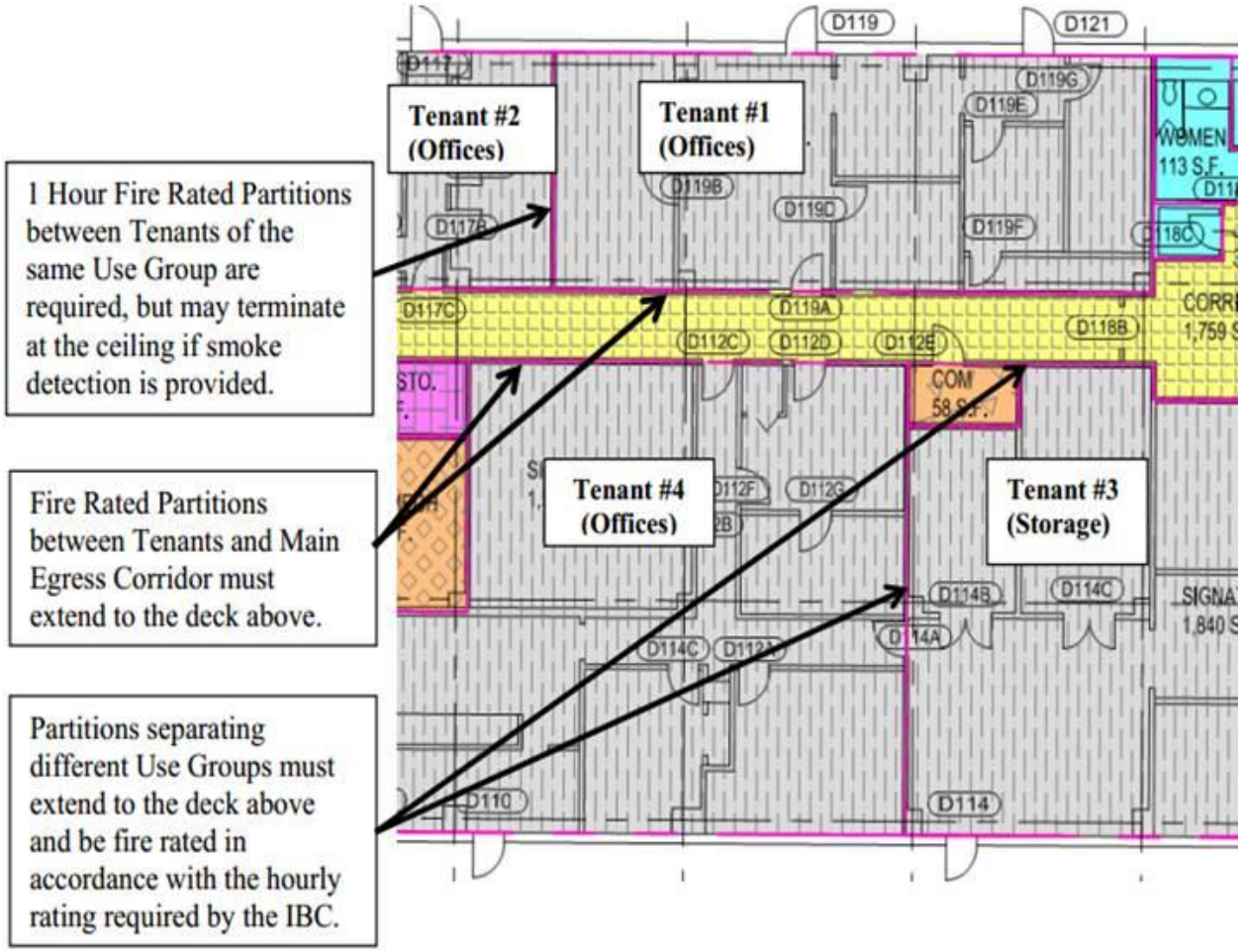



*Example 1: Concourse Level*

3. Lower Level Tenant Separation Requirements

Use Group Separations:

Fire rated fire separation walls are required between adjoining tenant spaces and also between tenant spaces and service corridors serving multiple tenants. If separating Use Groups, the fire rated walls are required to extend tightly to the underside of the floor or roof deck above with all ductwork penetrations provided with U.L. listed, self resetting, electrically actuated fire dampers shall be installed and all wiring penetrations protected in accordance with a U.L. listed penetration protection design. Fire rated separation walls between Use Groups shall comply with the fire rating requirements of the IBC and shall be constructed of non-combustible materials. Tenant Separations, Same Use Group: Fire rated fire separation walls are required between adjoining tenant spaces and also between tenant spaces and service corridors serving multiple tenants. If ceiling-mounted area smoke detection is provided within the tenant spaces, the fire separation wall may terminate at the underside of a UL listed fire rated floor-ceiling Assembly. Fire rated separation walls separating tenants shall be one (1) hour fire rated and constructed of non-combustible materials.




*Example 2: Lower Level – Fire Rated Partitions*

Note: Where a one (1) hour fire rated tenant separation is required for a new tenant that could potentially disturb an existing adjacent tenant space, the new tenant space may be separated in accordance with Figure 1 or Figure 2 below, an alternate U.L. listed one (1) hour rated assembly. In such case, the fire separation partition shall extend on either the ceiling or to the deck above, as appropriate per Paragraph 7 above.

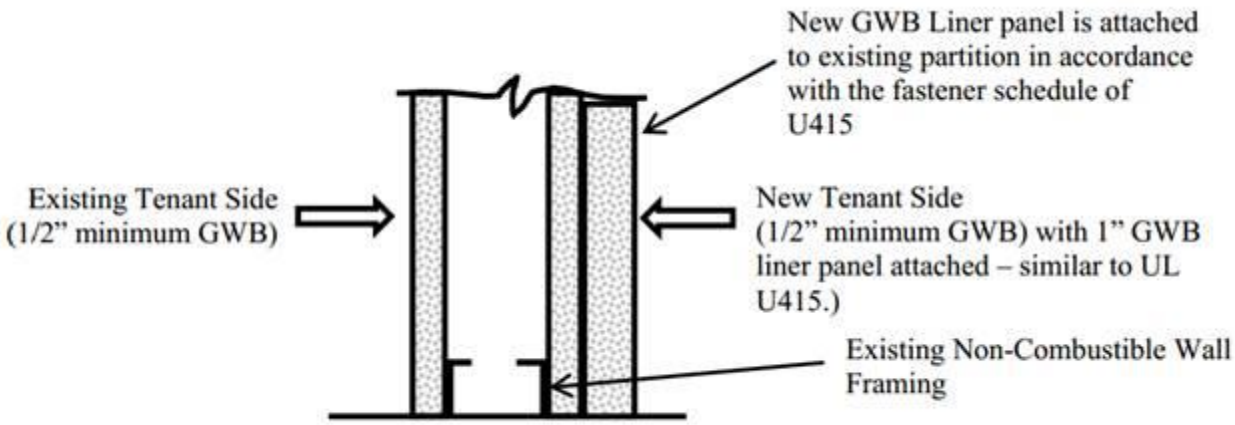



*Figure 1– Condition where ½" drywall is on one, or both, sides of an existing tenant separation partition and does not currently provide a 1 hour rating without additional GWB liner panel being installed.*

| 1-Hour Fire-rated Construction | Non-loadbearing | | Acoustical Performance | | Reference | |
|---|---|---|---|---|---|---|
| Construction Detail | Description | Test Number | STC | Test Number | ARL | Index |
| wt. 8<br>3⅛" | • 5/8" Sheetrock Firecode Core gypsum panels, joints finished<br>• 2-1/2" USG C-H Studs 25 gauge 24" o.c.<br>• 1" Sheetrock gypsum liner panels | UL Des U415, System A or U469 | 39 | USG-040901<br>Based on 4" C-H studs 25 gauge | SA926 | 1 |

*Figure 2– Condition where 5/8" "Fire Code" drywall existing on only one side of the tenant separation partition and a gypsum liner panel is installed to completed the required separation.*

### 13.8.3 Procedures for Determining Occupancy Loads and Minimum Required Egress Capacities for Concourses

1. Overview

   This Policy shall be used in the planning and construction of all new Concourses, and in modifications or expansion of existing Concourses at BWI Marshall that affect egress capacity or occupant loads. It also applies to all future terminal development involving Concourse egress. It is intended to provide consistent and documented methods established by the Fire Marshal as the Authority having Jurisdiction (AHJ) for fire code enforcement at BWI Marshall Airport.
2. Egress and Occupant Loads:
   A. An emergency egress plan from tenant spaces is required.
   B. All travel distances from the Concourses must be taken to the non-secure side of the Security Checkpoint or to the nearest stairwell.
   C. The occupancy load for each tenant space must be calculated and shown on the plans.
   D. A performance based "Life Safety Evaluation", developed in accordance with NFPA 101, is required for all projects serving an occupant load of more than 6,000 persons. Significant alterations or additions to existing spaces may be required to comply. Check with the Office of the Fire Marshal regarding your project. A Professional Engineer who is licensed to practice in Maryland, and who is a Fire Protection Engineer, must prepare the Life Safety Evaluation.
3. Emergency Egress Capacity Requirements

Emergency egress capacity requirements for Concourses A and B are based on the Model Codes (NFPA 101, IBC), except as modified in the CHECCG. A Fire Protection Engineer, who is a licensed Professional Engineer in the State of Maryland, shall prepare any such required egress capacity and occupant load calculations, with supporting justification, for review of the Office of the Fire Marshal for any modifications or expansions of a Concourse that affect egress or occupant loads.

The following criteria shall be followed when evaluating Emergency Egress Capacity:

A. Egress components from Concourses must be sized to provide at least 50% of the Concourse occupant load through the front/main exit. The main/front exit of the Concourse is considered the egress route into the Terminal Building. Egress via an adjacent secure corridor that connects Concourses may also be considered contributing to the front/main exit egress capacity provided that the secure corridor leads to egress to the Terminal building or to a space designed to meet the requirements of NFPA 101, most recent adopted Edition, for "Horizontal Exits".

B. Egress components from Concourses must be sized to provide at least 100% of the Concourse occupant load through the Concourse egress stairs to the airfield-side apron to accommodate an incident that could block the front/main exit. The Fire Marshal has determined that a potential exists for an incident rendering the front Concourse exits possibly inaccessible or no longer well defined during the incident.

- Exception 1: In existing Concourses, where 100% occupant load egress stair capacity is not currently provided, upgrading the stair capacity to achieve 100% capacity is not required unless the Concourse footprint is being increased in area.
- Exception 2: In existing Concourses, where 100% occupant load egress stair capacity is not currently provided, upgrading the stair capacity to achieve 100% capacity is not required if the Concourse area is being increased in order to improve existing deficient egress via the required front exit (as per paragraph A above).

C. If there are more stringent egress requirements of the IBC, they shall apply.

### 13.8.4 Procedures for Holdroom Sizing

1. Overview & Purpose

A. This method shall be used in the planning and construction of aircraft boarding holdrooms in all new Concourses, and in modifications or expansion of existing holdrooms within existing Concourses A, B, C, D and E at BWI Marshall Airport. It applies to all future terminal development involving concourse holdroom sizing. It is intended to provide consistent and documented methods as established by the Office of the Fire Marshal as the Authority Having Jurisdiction (AHJ) for fire code enforcement at BWI Marshall Airport.

B. These criteria are intended to result in avoiding unsafe conditions and overcrowding, which could otherwise result from unanticipated events (e.g. air traffic delays, inclement weather, etc.) Experience shows that such delays can lead to the unplanned accumulation of passengers awaiting departing flights, which can present an unsafe condition if not properly designed for in advance.

2. Definitions

The following terms are defined for use in the application of these Procedures for Holdroom Sizing .

A. Minimum Holdroom Area (MHA): The total required gross square footage of space to be provided for passenger waiting purposes serving a Gate(s), based upon the Formula in the CHECCG. The MHA may include columns, seats, queuing lines and check-in desk areas, as well as general passenger seating and standing areas, and other waiting areas within the

holding room or area. However, required egress aisles, or egress corridors, leading to required exits may not be credited toward the total required MHA space due to code requirements that they be kept free and clear at all times for emergency egress use.

B. Design Population (DP) is the number of passengers to be used in the Formula found in the CHECCG for determining minimum required holdroom area for single or shared holdrooms. The aircraft type shall be based on the MAA Aircraft Parking Plan for the holdroom(s) being evaluated. Shared holdrooms are those that are either contiguous or which meet the adjacency criteria of this Section, supporting more than one aircraft. The DP shall be developed based on the following criteria.
   - Single Holdrooms: The design population for single holdrooms shall be in compliance with the
   - Shared Holdrooms are contiguous holdroom areas that support more than one aircraft gate. The design population for shared holdrooms shall equal 100% of the seating capacity of the largest mix of aircraft that can be simultaneously parked at the gates being supported by the shared holdroom area, based on the MAA Aircraft Parking Plan

C. MAA Aircraft Parking Plan: An exhibit that indicates the largest mix of aircraft that can be simultaneously parked at each gate position supported by a holdroom as set forth by the MAA and is subject to periodic revision by the MAA. An updated aircraft-parking plan is to be provided to the Office of the Fire Marshal by MAA for reference each time that subsequent revisions by MAA occur.

D. Adjacency: A condition under which holdrooms can be designed to serve two or more gates by providing credit for proven “surplus” unoccupied area in one holdroom to enhance one or more other holdrooms’ required area. Adjacent holdrooms may be immediately adjacent areas, and may also include those areas on opposite sides of a common public circulation area. For a hold room to be considered for adjacency credit, the travel path from said hold room to the Gate served must be unimpeded by moving walks, or other similar obstructions, and must be reasonably expected to provide usable passenger accommodation for the intended Gate.

E. Gate Module refers to a concept that is based on any aircraft ranging from ADG-II up to ADG V aircraft, to park at any gate, depending on airline fleet mix and simultaneous parking capability. The Gate Module aligns gate and holdroom capacity to the current and projected pattern of gate utilization by an airline. An MAA issued modular gate and holdroom plan (MAA Aircraft Parking Plan) is intended to provide an observable means to monitor for compliance and mitigate the need for code review whenever an airline changes equipment gauge. Some examples of Gate Modules are as follows.

3. Holdroom Sizing Criteria

A. New Construction

- The required minimum holdroom area (MHA) for a holdroom serving a single gate for new construction is determined per Formula 2, below. Adjacency credits established in 15.0.7.4.3 may be used to compensate for meeting this area requirement.

  ***[Formula 2]*** **MHA (sf) = 15.5 (square feet per passenger) X DP (passengers)**

- The minimum holdroom area for a “Gate Module” is based on a gate fleet mix of up to a three aircraft module established by an airline and MAA. Aggregate holdroom area, based on the associated fleet mix shall be in accordance with this Policy. Adjacency credits established in 15.0.7.4.3 may be used to compensate for meeting this area requirement.

B. Existing Conditions
   - No code related improvements are required concerning existing holdroom size and egress if existing holdrooms are expanded within current exterior wall limitations of the

concourse, and the Concourse building footprint is not increased, subject to paragraph b., below.

- If existing egress conditions are not in compliance with the NFPA 101 Life Safety Code (current adopted Edition) for "Existing Buildings", those conditions must be corrected to the extent specified by the AHJ.
- No decreases in existing egress capacity, or width of main circulation corridor serving the concourses, will be permitted unless supporting calculations are provided to the AHJ, which justify the reduction based on current applicable code requirements and conformance with policies established by the AHJ. A Maryland licensed Fire Protection Engineer shall prepare any such calculations and supporting justification.
- No decrease in existing undersized holdroom area(s) will be permitted unless there is a corresponding reduction in aircraft size (i.e. - passenger seat counts) in the aircraft serviced at the subject gate, and the resulting holdroom area(s) satisfies this holdroom sizing Policy.
- In the event that the MAA Aircraft Parking Plan is modified such that an aircraft of larger seating capacity is designated for an existing Gate served by an existing holdroom (or a combination of Gates served by an existing shared holdrooms), the existing holdroom(s) may remain at its existing size so long as the holdroom does not thereby become undersized by more than 20% of the required area. Adjacency credits may be applied in determining the adequacy. If the holdroom becomes undersized by more than 20%, even with adjacency credits applied, a reconfiguration of the holding area or room shall be required to bring it into compliance with the CHECCG, if deemed necessary by the Office of the Fire Marshal for life safety reasons.
  **Note: In no case, shall a hold room be permitted to be reduced below its 100% compliant size (as determined by this Standard) in order to increase leased space as a result. The 20% accommodation is intended solely to address extremely difficult circumstances in bringing existing conditions up to compliance with required hold room areas generated by the introduction of aircraft of larger seating capacity to existing Gates.**
- The determination of whether an individual hold room is undersized by more than 20% shall be in accordance with the following method:
  **Example of Hold Room Deficiency Calculation**
  Assume in this example an existing hold room area of 2,300 square feet serving a gate utilizing a 737-700 aircraft (137 seats). If a 737-800 aircraft is intended to replace the 737-700 aircraft with 176 seats, the new hold room area percent deficiency is calculated as follows:

| | |
|---|---|
| New Required Hold Room Area = 176 pax x 15.5 sf/pax = 2,728 sf. | |
| | |
| $\frac{\text{New Required Hold Room Area - Existing Hold Room}}{\text{(New Required Hold Room Area)}}$ | = % deficiency |
| | |
| $\frac{\text{2,728 sf - 2,300 sf}}{\text{2,728 sf}}$ | = 15.69% deficiency |

C. Adjacency Credits

Adjacency is a condition in which surplus space from adjacent or nearby holdrooms may be credited to other holdroom area(s) for passenger seating purposes, subject to the following conditions. It is not required that areas be contiguous in order to qualify for adjacency credits so long as the following criteria are met:

- Holdrooms being considered for adjacency area credits must have surplus capacity for such purposes, after an analysis has been made in accordance with the CHECCG. (Exception - If Gates are unleased, those areas may be automatically credited toward adjacency credit so long as they meet the criteria of paragraphs b and c as follows).
- In order to qualify for adjacency credit, the spaces must not be separated by other uses or by significant obstructions which would hinder the ability of passengers to migrate easily between the two areas while awaiting boarding at their assigned gate. Holding spaces on the opposite side of a Concourse are eligible for consideration of adjacency credits.
- In order to qualify for adjacency credit, passengers in adjacent areas must be able to have a generally unobstructed line of sight to the holdroom of their boarding gate and the ability to hear public address boarding announcements and flight updates for their flight.

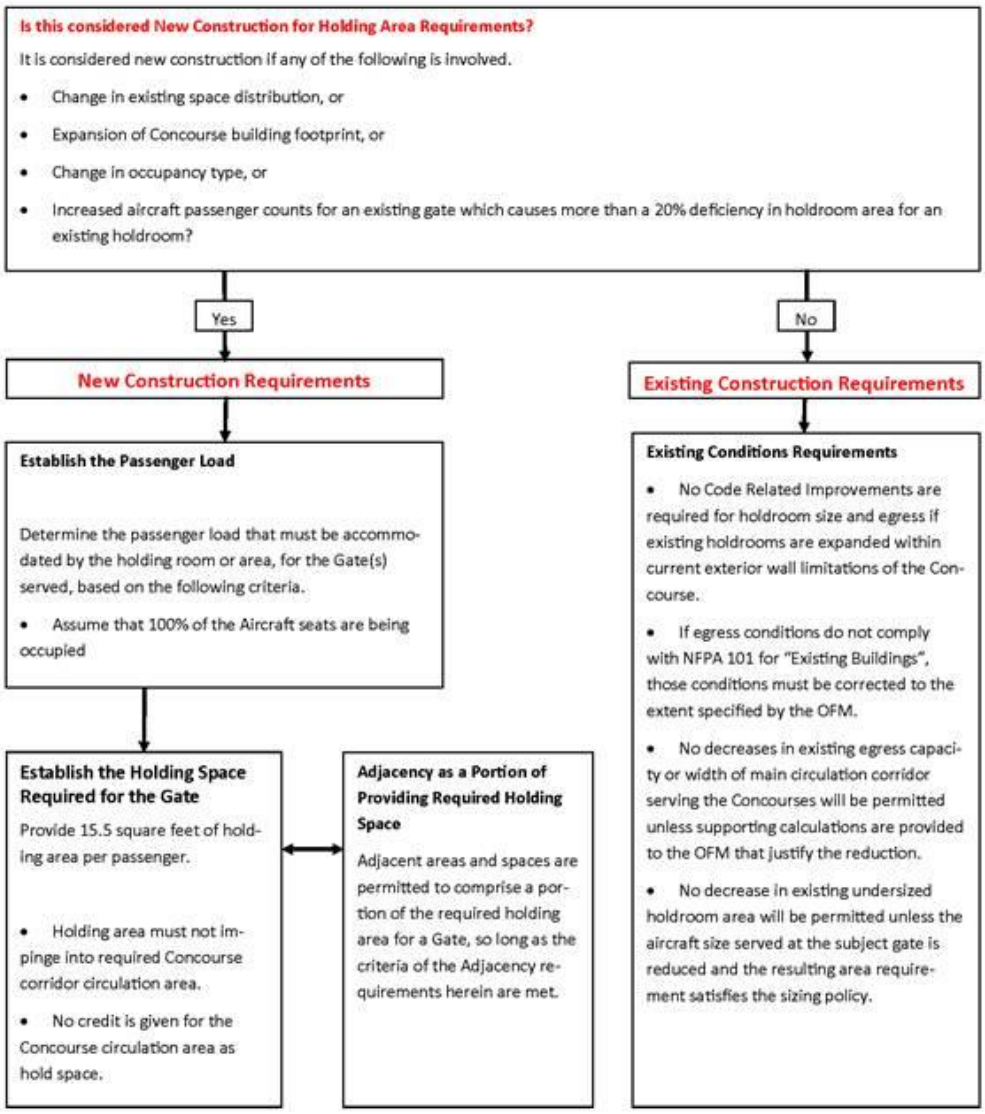
D. Holdroom Distribution and Balance for New Construction

- The holdroom area required by this Policy is intended to represent an aggregate amount of area distributed throughout the Concourse to best serve the aircraft-parking plan. The apportionment of holding areas is expected to be of reasonable balance and distribution throughout the Concourse so as to minimize potential overcrowding of any specific holding room or area.
- The aggregate holdroom area shall be capable of adequately meeting the requirements of this Policy, the CHECCG and the MAA Aircraft Parking Plan.
- In the event that a new (constructed after the date of adoption of this Policy) individual hold room experiences a negative balance of available passenger holding area square footage of 20% or more on a regular basis (based on a comparison of required area per Formula 2 versus available area, and after taking into account all available adjacency credits), a reconfiguration of the holdroom shall be required to bring it into conformance with the CHECCG, if deemed necessary by the Office of the Fire Marshal for life safety reasons.

  **Note: In no case, shall a hold room be permitted to be reduced below its 100% compliant size (as determined by this Standard) in order to increase leased space as a result. The 20% accommodation is intended solely to address extremely difficult circumstances in bringing existing conditions up to compliance with required hold room areas generated by the introduction of aircraft of larger seating capacity to existing Gates. The method of calculation shall be in accordance with the CHECCG.**

E. Determination of New Construction or Existing Conditions Requirements

The following matrix may be used to ascertain whether Holding Areas shall comply with New Construction or Existing Conditions Requirements:


Is this considered New Construction for Holding Area Requirements?
It is considered new construction if any of the following is involved.
• Change in existing space distribution, or
• Expansion of Concourse building footprint, or
• Change in occupancy type, or
• Increased aircraft passenger counts for an existing gate which causes more than a 20% deficiency in holdroom area for an existing holdroom?
Yes
No
New Construction Requirements
Existing Construction Requirements
Establish the Passenger Load
Determine the passenger load that must be accommodated by the holding room or area, for the Gate(s) served, based on the following criteria.
• Assume that 100% of the Aircraft seats are being occupied
Establish the Holding Space Required for the Gate
Provide 15.5 square feet of holding area per passenger.
• Holding area must not impinge into required Concourse corridor circulation area.
• No credit is given for the Concourse circulation area as hold space.
Adjacency as a Portion of Providing Required Holding Space
Adjacent areas and spaces are permitted to comprise a portion of the required holding area for a Gate, so long as the criteria of the Adjacency requirements herein are met.
Existing Conditions Requirements
• No Code Related Improvements are required for holdroom size and egress if existing holdrooms are expanded within current exterior wall limitations of the Concourse.
• If egress conditions do not comply with NFPA 101 for "Existing Buildings", those conditions must be corrected to the extent specified by the OFM.
• No decreases in existing egress capacity or width of main circulation corridor serving the Concourses will be permitted unless supporting calculations are provided to the OFM that justify the reduction.
• No decrease in existing undersized holdroom area will be permitted unless the aircraft size served at the subject gate is reduced and the resulting area requirement satisfies the sizing policy.

# 13.9 Other Life Safety Provisions & Requirements

## 13.9.1 Automated External Defibrillator (AED)

A. Designer shall add a note on the drawings to state:
"When construction requires the temporary or permanent relocation of an AED, the Contractor shall be responsible to do the following regarding the AED and the cabinet in which it is stored:

a. For the AED: Notify the Fire Rescue Department (FRD) to schedule an EMS lieutenant to supervise the removal of the AED. Deliver the AED to the Fire Station and obtain a "Received Property" receipt from the person who receives the AED at the Fire House. All AED's are monitored by the CASS and will alarm upon cabinet being opened.

b. For the AED Cabinet: If the cabinet must be removed to accommodate construction, the Contractor shall remove it and deliver it to the Fire Station and obtain a "Received Property" receipt from the person who receives the cabinet at the Fire House.

c. Reinstallation: The Contractor shall retrieve the AED and the cabinet from the Fire House and reinstall them as soon as possible after construction in the affected area is complete. As required by the Fire Marshal, reinstallation may be required prior to Substantial Completion of the entire project.

Designer shall add the following notes on the drawings stating:

When construction requires the temporary or permanent relocation of an AED, the Contractor shall be responsible to do the following regarding the AED and the cabinet in which it is stored:

## 13.9.2 Kitchen Hoods, HVAC and Natural Gas

1. Exhaust Hood Design
   A. For Exhaust Hood requirements see Chapter 11 HVAC.
2. Air Balance
   A. For Air Balance requirements see Chapter 11 HVAC.
3. Exhaust Air Ducts and Exhaust Fans for Kitchen Hoods
   A. For Exhaust Air Ducts and Exhaust Fans requirements see Chapter 11 HVAC.
4. Smoke Control and HVAC
   A. For Smoke Control and HVAC requirements see Chapter 11 HVAC.
5. Natural Gas Design and Installation
   A. For Natural Gas Design and Installation requirements see Chapter 11 HVAC.

## 13.9.3 Electrical Distribution Systems and Emergency Power Requirements

1. For Electrical Distribution Systems and Emergency Power requirements see Chapter 14 Electrical.
2. Lightning Protection Systems requirements see Chapter 14.2 Grounding and Lightning Protection.

## 13.9.4 Exit Signs

1. All exit signs shall consist of red letters on a contrasting background, in accordance with NFPA 101. This type of sign is to match the existing area. For additional requirements.

### 13.9.5 Door Numbering and Signage

1. Door number designations will be provided by the Office of the Fire Marshal.
2. Door numbering signs shall be installed centered on the door frame head on the exterior (public) side of the door. The sign shall be plastic engraved and shall list the MAA door number. Sign size 1-1/2” x 4” with self-adhesive tape for mounting. It will have a black background with white letters. See Chapter 17 Signage and Graphics for additional information.
3. Overhead Door signs shall be installed centered (if possible) on the frame on the exterior side of door. The sign shall be metal engraved 4”x10” with White letters on a Black background. Fastened to the frame by screws. Door number will be provided by the Office of the Fire Marshal.

## 13.10 Pre-Occupancy Fire Inspection Checklist

A Pre-Occupancy Fire Inspection checklist (a form provided by the Office of the Fire Marshal) is available for use at Office of the Fire Marshal. This form may be used for self-checking readiness for inspection but is not all inclusive and does not relieve the user of any compliance requirements not listed.

This checklist will be incorporated into the contract documents by the Designer.

## Chapter 14 Electrical

# 14.0 Introduction

The electrical systems for all facilities shall be based on proven design principles and the NFPA 70 Electrical Code. The final configuration, selection and sizing of the electrical system shall be determined by the designer during detailed design phase. The design shall utilize state of the art technology in available equipment and components. The electrical system shall be flexible to accommodate changes, additions and modifications as necessary. Straight forward designs shall be safe, reliable and cost effective.

Accessibility, ease of erection and dismantling of all the components of the system shall be a priority.

# 14.1 General Electrical Requirements

## 14.1.1 UPS Protection

All contract documents for retrofitting, modifying, or new building construction, which involve data jacks, cabling, etc., shall be designed to include, at a minimum, one duplex outlet on a UPS circuit adjacent to each data jack location. This requirement is in addition to any convenience outlet requirements, and is to provide UPS protection for each PC-CPU and future telephone system which is deployed.

## 14.1.2 Total Harmonic Distortion

1. In order to minimize potential effects of harmonics from: Frequency Converters (including 400 hertz ground power units for aircraft), and Uninterruptible Power Supplies (UPS) of 30,000 volt-ampere capacity or greater, the technical specifications for each piece of such equipment must include the following requirements:
   a. Harmonics Content: total harmonic distortion (THD) of the input current waveform, as measured at the input terminals where the equipment is connected to the premises electrical system, shall be 30% or lower whenever the load on the equipment is 50% of its rated output or higher, independent of external filters.
   b. Power Factor: the input power factor measured at the input terminals, where the equipment is connected to the premises electrical system, shall be 90% or higher whenever the load on the equipment is 50% of its rated output or higher.
2. For Adjustable Frequency Drives (AFDs) for motors 25 horsepower or larger, the technical specifications for each piece of such equipment must include the following requirements:
   a. Harmonics Content: total harmonic distortion (THD) of the input current waveform, as measured at the input terminals where the equipment is connected to the premises electrical system, shall be 15% or lower, and the THD of the voltage waveform shall be 3% lower whenever the load on the equipment is 50% of its rated output or higher, independent of external filters.
   b. Power Factor: the input power factor measured at the input terminals where the equipment is connected to the premises electrical system, shall be 90% or higher whenever the load on the equipment is 50% of its rated output or higher.
3. Branch Circuits: All circuits shall have a dedicated neutral conductor.
   a. The ungrounded and grounded conductors of each branch circuit shall be grouped by wire ties or similar means in at least one location within the panelboard or other point of origin, splice or terminations point.

In addition, for Adjustable Frequency Drivers of 300 horsepower or more or a group of Drives with horsepower adding to the 500 horsepower or more, a system study shall be performed by the designer to demonstrate compliance with IEEE Std 519-1992 Tables 10.2 and 10.3. The point of common coupling for the study shall be the immediately upstream medium voltage to low voltage substation in the Airport distribution system. If the study indicates that the IEEE standard cannot be met with above THD limits, then the designer shall specify lower limits so that the IEEE Standard requirements are met.

## 14.1.3 Approved Testing Laboratories

All equipment and materials shall be tested and labeled by a nationally recognized testing laboratory. A current list of recognized laboratories should always be available on the following website, and should be regularly referred to for updates: MD Fire Marshal - Code Enforcement, Approved Contractors, & Regulations

Background:
Electrical Testing Laboratories are qualified private organizations that meet the requirements in 29 CFR 1910.7 to perform independent (i.e., third-party) safety testing and product certification, and thereby receive OSHA recognition. To be recognized by OSHA, an organization must: (1) Have the appropriate capability to test and evaluate products for workplace safety purposes; (2) be completely independent of the manufacturers, vendors, and users of the products for which OSHA requires certification; (3) have internal programs that ensure proper control of the testing and certification process; and (4) establish effective reporting and complaint handling procedures (29 CFR 1910.7(b)).

Any testing laboratory that is listed or otherwise recognized by the U.S. Department of Labor, Occupational Safety and Health Administration, National Voluntary Laboratories Accreditation Program (NVLAP), International Accreditation Service, Inc., or the International Code Council, is automatically accepted by the Office of the Maryland State Fire Marshall and Maryland Aviation Administration.

## 14.1.4 Aluminum Electrical Wire

No aluminum electrical wire shall be permitted at BWI Marshall and MTN Airports.

## 14.1.5 Final Cleaning of Electrical/Communication/IT Closets

All projects involving modifications to or in electrical, communication, and/or IT closets/rooms shall provide language within the specification requiring the entire area be cleaned by the contractor prior to demobilization, including removal of all debris, surface dust, etc.

## 14.1.6 Medium Voltage Cable Terminations

Components used for medium voltage cable terminations at equipment connections and splices, such as tubing used for sealing cable jackets shall bear a manufacturer's name and product series identifier.

Wherever practicable, cold shrinkable tubing shall be specified in preference to heat shrinkable tubing, to minimize potential damage from overheating and need for high levels of workmanship on the part of the installer.

## 14.1.7 Transformers

### 14.1.7.1 Transformer Safety Markings

A. Transformers shall be marked around visible edges with a 2-inch red reflective tape. The tape shall be installed so that 1 inch of material is on either side of the edge.
B. Existing transformers shall meet the Transformer Safety Marking requirements (Paragraph 18.1.7.1.A) when an existing transformer is in a location where there is a proposed change of use and/or alteration being made either to the area around the transformer or to the space the transformer is serving.

### 14.1.7.2 Transformer Sizing

Transformers for tenant improvement projects shall be sized on the basis of calculated/demand load plus 25% or the connected load, whichever is higher. The designer shall submit complete set of calculations and demand factors for both calculated/demand load and connected load as part of permit drawing submission for the approval of MAA.

### 14.1.7.3 Transformer Location

No transformer above 10KVA shall be permitted above ceilings.
Exceptions:

1. Specialty transformers for low voltage lighting, neon lighting, or other similar systems shall be reviewed on a case-by-case basis.
2. When an existing transformer is in a location where there is no change of use, change of occupancy, or significant alteration either to the space being served or the area around the transformer, subject to the discretion of the Authority Having Jurisdiction (AHJ).
3. Transformers permitted in writing by the AHJ.

# 14.2 Grounding and Lightning Protection

## 14.2.1 Grounding

Whenever grounding electrode conductors are bonded to ground rods or other grounding electrodes, bonds shall be exothermic welds. Exothermic welds shall be coated against corrosion where direct buried.

Ground Rods: Ground Rods shall be ¾" in diameter, 10' long as a minimum. Materials of construction shall be copper-coated steel as a minimum. Ground rods shall be designed and installed per the National Electric Code.

## 14.2.2 Surge Suppression, Bonding and Grounding for Outdoor Systems

Surge Suppression, Bonding and Grounding, shall be included in the specifications and plans for the following outdoor installations:

- Parking and Revenue Control Systems
  - Closed Circuit Television System (CCTV) Installations
  - Access Control
  - Any unprotected system that may be struck by lightning that would conduct the lightning energy to the inside of the facilities.

**Note**: Equipment product catalog numbers included in this design standard are for equipment manufactured and provided by Emerson Network Power, EDCO, Transient Voltage Surge Suppression, or by General Electric but these are not meant to be sole source or proprietary specifications. Products by other manufacturers, which meet or exceed the specifications of the named products and include salient features matching those named may be specified, and used.

### 14.2.2.1 Protection for Parking and Revenue Control Systems

Surge suppression devices shall be installed on all electrical conductors connected to lane toll equipment (revenue plaza equipment, ticket dispensers (spitters) and gates). Typical installations include data cabling (RS-422 for example) and electrical power circuits that feed the lane equipment, and booths.

<u>Protection for Data Cabling</u>

The RS 485/RS-422 circuits shall be protected with an EDCO PC-642-008LC signal line protection device. This device provides two stages of protection with an 8-volt clamp which coordinates well with the 6-volt normal operating voltages on RS-422/485 circuits. The LC suffix indicates low capacitance which allows the suppressor to operate at higher data rates. The EDCO PC series suppressor modules shall be ordered with a model PC-BIB base assembly. The first stage (odd numbered) terminals shall be connected to the field-side wiring and that the second stage (even numbered) terminals shall be connected to the equipment-side cabling to the protected equipment.

Many locations run RS-422 cables from lane-to-lane in a daisy-chain fashion (parallel connections). In these locations the inter-lane cabling shall be bridged in and then out to the next lane on the field-side wiring of the suppressor. This requires separate inbound and outbound inter-lane cables connected to the field-side of the suppressor with a short pigtail data cable between the suppressor equipment-side and the lane equipment. A suppressor shall be installed on the end of the inter-lane cabling where it

attaches to an isolator or protocol converter. **Figure 1** below shows the inter-lane cabling configuration graphically.

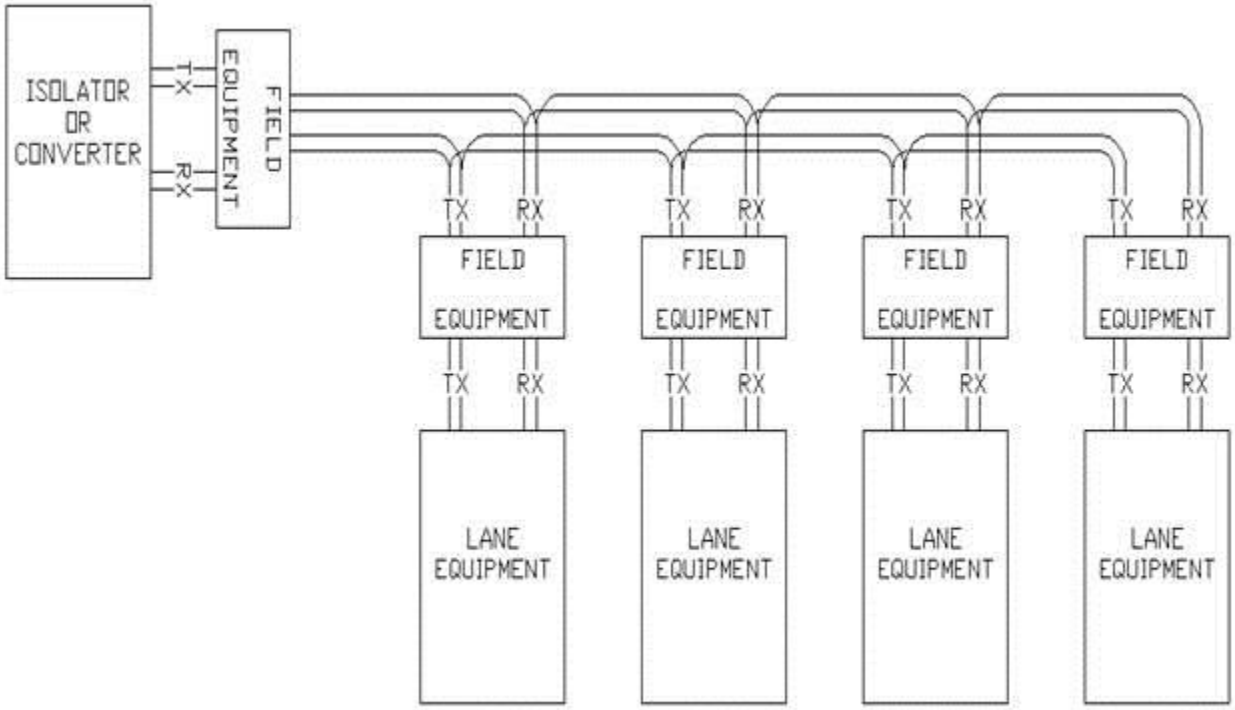



*Figure 1 – Inter-Lane Cabling Configuration*

Power ground wires and signal suppressor ground wires shall be as short as possible and be bonded to the equipment chassis as physically close to the suppressor as possible. This will minimize the effects of inductive voltage drop across these conductors and help control the voltage excursions that occur during a surge between the protected conductors and the equipment chassis. **Figure 2** below from the EDCO suppressor's application notes depicts these details.

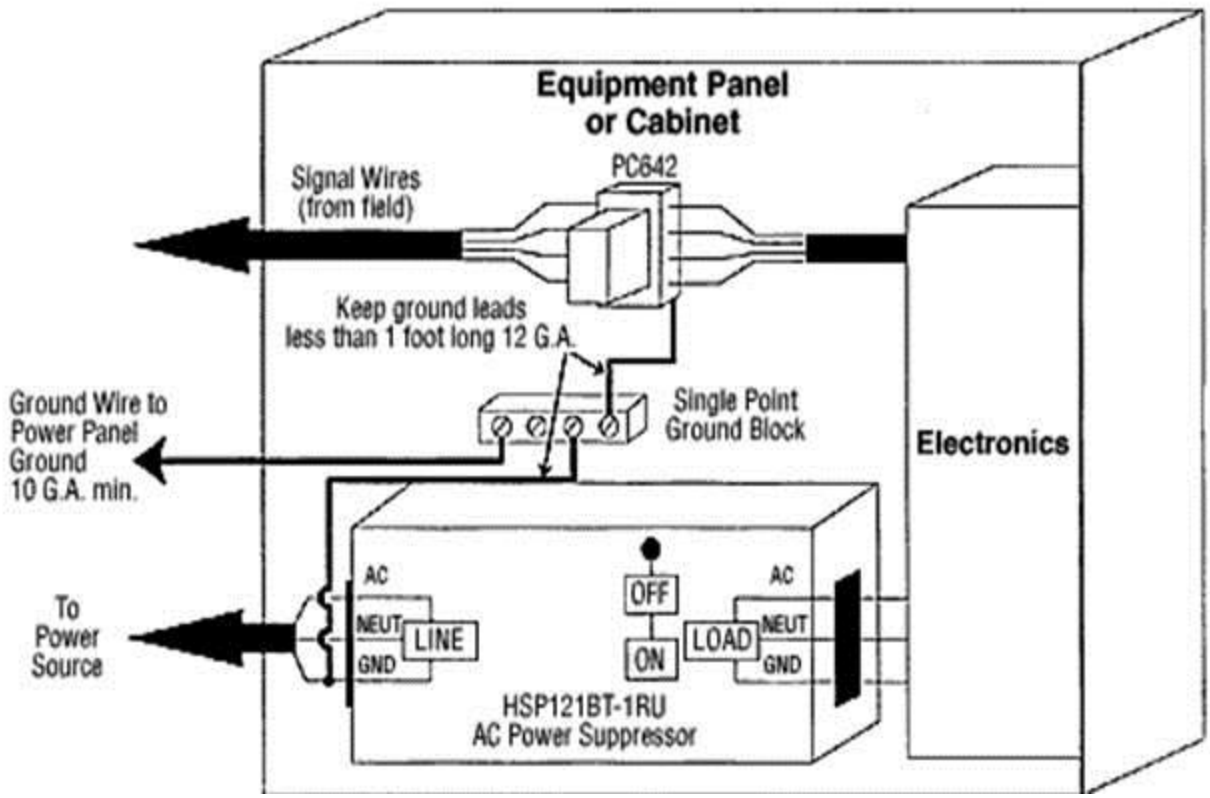



*Figure 2 – Chassis Bonds for Suppressor Grounds*

Protection for 120 Volt AC Powered Equipment

The 120 Vac powered cashier interface terminals, ticket spitters and gates shall be protected with either an EDCO model HSP121BT or a model HSP121A surge suppressor.

The EDCO HSP121BT has an external barrier strip which is suitable for installation inside ticket spitters, and gate operator housings that are not normally accessible to the cashier or others.

The EDCO HSP121A is mounted in a NEMA enclosure and has an internal terminal strip and knockouts that will accept conduit fittings or cord strain relief fittings. The EDCO HSP121A shall be used inside the cashier booths for protection of the cashiers' interface terminals. Using a cord strain relief fitting, the device shall be hard wired in series with the power input to the UPS at the booths. This will help ensure that the cashiers do not plug heaters into an unused receptacle protected by the surge suppression device as these devices are only rated for 15 amperes.

At the gates, these units shall be used to protect the 120 Vac feed to the controllers with the 120 Vac for the motors taken off upstream of the device. Motor loads shall not be fed through the surge suppressors.

The central equipment is typically located at the equipment cabinet in the Toll Plaza Administration building. The power equipment in the closet cabinet is usually supported by one or two plug-strips. An EDCO TS-1200G suppressor which will plug into one of the receptacles located in the cabinet shall be used. The plug-strip(s) can then be plugged directly into the EDCO TS-1200G. The "G" in the part number

is an external binding post ground terminal. It connects to the internal grounds in the suppressor and provides a good point to attach the ground leads from the data line suppressors.

#### 14.2.2.2 Protection for Closed Circuit Television Systems

Remote Closed Circuit Television (CCTV) cameras located at gates and parking areas are particularly susceptible to damage from lightning, largely due to the high level of exposure to direct lightning strikes or strikes in near proximity.

Protection for CCTV Cameras

The CCTV cameras typically include pan tilt assemblies, and are integrated units requiring 24 Vac power, RS-485 4-wire pan-tilt-zoom control and a coaxial video connection. A NEMA 4X rated equipment enclosure is typically installed at the base of each tower. This enclosure contains a quad electrical receptacle, a fiber-optic transceiver for video and control, a power transformer for camera power and a separate power transformer for the fiber-optic transceiver. Adequate space must be provided in the enclosure for the required surge suppression devices.

**Figure 3** below depicts several measures that shall be taken at typical tower locations. An air terminal, fashioned from a galvanized ground rod shall be installed to protect the camera housing from direct lightning strike currents. A ground rod and bonding conductor to the tower shall be added to improve the ground resistance of the tower foundation. Continuous steel conduit shall be installed from the camera housing to the equipment enclosure to help shield the camera cabling from induced voltage if the tower is struck by lightning.

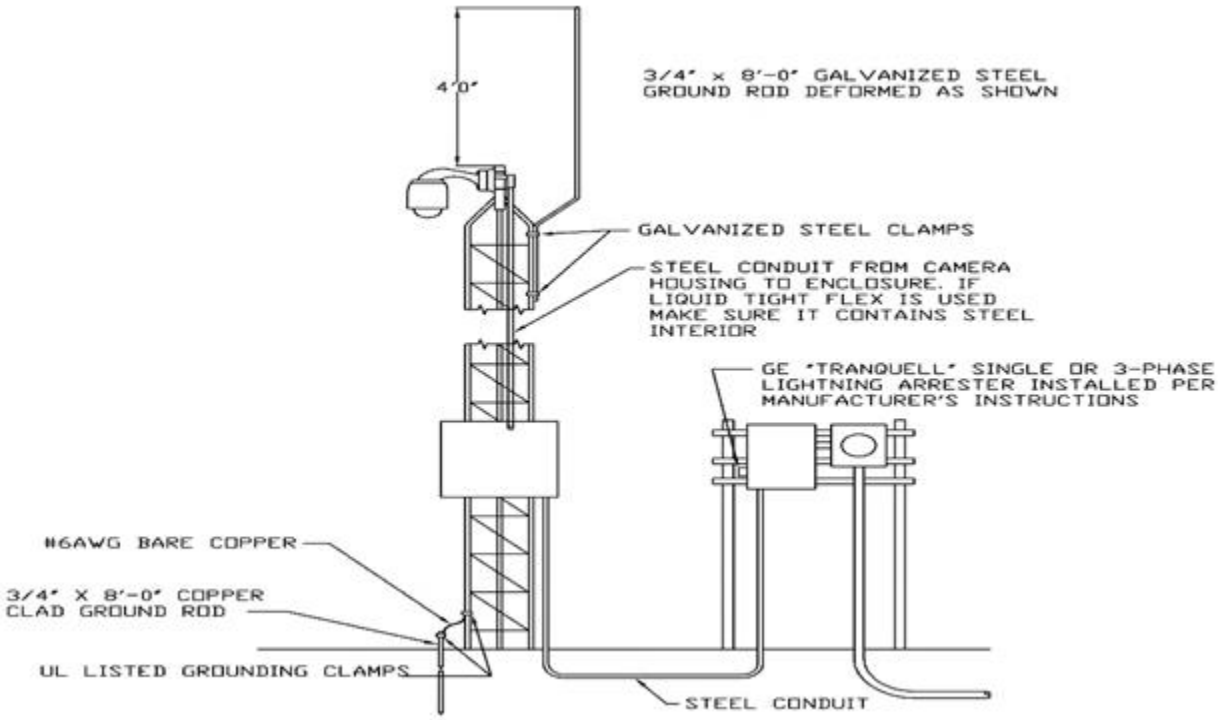



*Figure 3 – CCTV Camera Tower Recommendations*

Because of the relatively high exposure of these sites a high energy Metal Oxide Varistor (MOV) arrester shall be installed at the electrical panel serving each camera tower. The product recommended is a General Electric Tranquell device in either a 120/240 Vac single phase or 120/208 Vac three phase configuration. These units install in a knockout in the panel and either is directly connected to the buses or connected through a 30-ampere breaker. These units are rated for 10,000 ampere Category C exposure conditions and they will provide a first stage clamp down to a level between 2 kV and 3 kV. This provides an additional level of protection that will help extend the lifespan of suppressors installed inside the camera cabinet.

**Figure 4** below shows the recommended configuration for the CCTV power, video and RS-422 pan-tilt-zoom control circuits at the base of the tower. These enclosures are typically equipped with quad 120 Vac receptacles to plug-in the camera power transformer and the plug-in DC supply for the fiber transceiver. Protect these receptacles with an EDCO HSP-121A, NEMA 4X, 120 Vac, suppressor. This suppressor (shown as A on Figure 4) is shown interconnecting these receptacles with the incoming power conductors. This suppressor will control voltage excursions from line-to-neutral and from line-to-ground to about 300-400 volts during 10 kiloampere Category C surge conditions. These suppressors are required in these locations due to the high exposure levels to direct lightning.

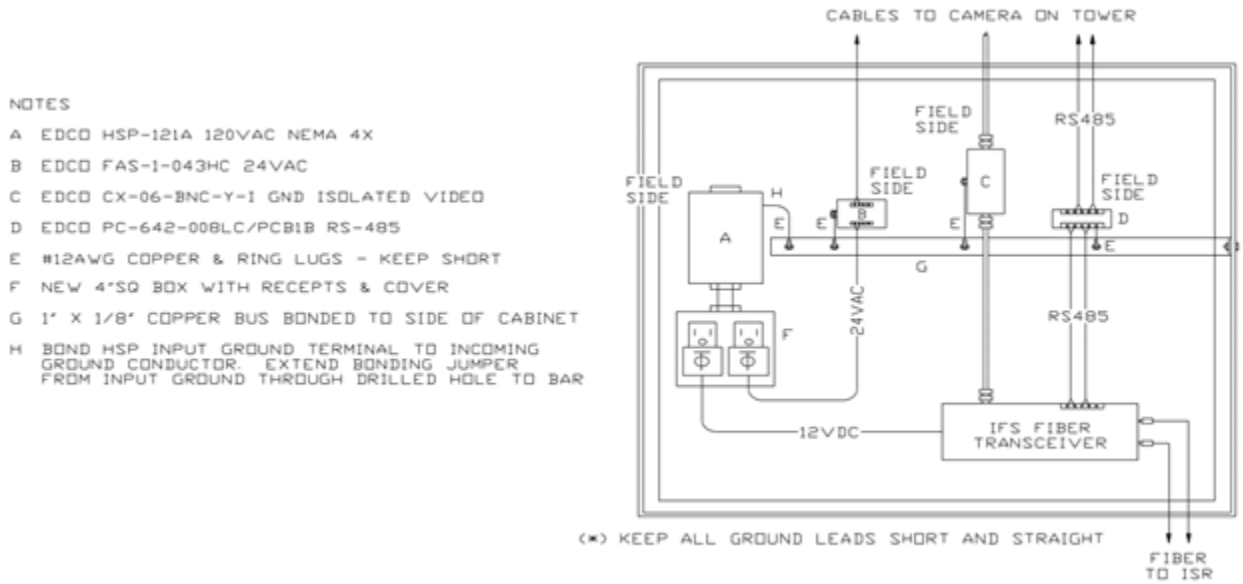



*Figure 4 – CCTV Equipment Enclosure Recommended Configuration*

An EDCO FAS-1-043HC, two-stage, suppression shall be installed to protect the 24 Vac power conductors to the camera assembly. This suppressor uses series inductors between the first and second stage rather than resistors, allowing it to pass several amperes of current.

An EDCO CX-06-BNC-Y-I, coaxial suppressor (shown as B on Figure 4) shall be installed to protect the camera video cable. This suppressor uses a female BNC connector on both the field-side and equipment-side. A clamp voltage of 6-volts is recommended as the peak-to-peak video levels should be around one volt.

An EDCO PC-642-008LC/PCB1B, two-pair low capacitance suppressor (shown as D on Figure 4) shall be installed to protect the RS-485 circuits with a clamping voltage of eight volts. This is consistent with the 6-volt operating range for the suppressor. This suppressor is polarity insensitive. The part number for this unit also includes a plug-in screw terminal base.

A copper ground bus (shown as G on Figure 4) shall be installed to terminate the ground leads for the suppressors. A flat conductor provides a significantly lower inductance than a round conductor, which is a major factor in having the suppressors track each other during high levels of lightning current. The bus bar is shown bonding to the side of the cabinet with stainless steel hardware and star washers to ensure that potentials inside the enclosure remain consistent with each other.

The power suppressor has a terminal strip for line, neutral and ground on both the unprotected and protected side. Line, neutral and ground conductors shall terminate on these strips. In addition, a #12 AWG copper conductor is shown between the unprotected ground terminal and the copper bus for the cabinet. This will help to ensure that the ground reference for the power suppressor and ground leads for the other suppressors track each other during surge handling.

Properly connect the suppressors with their unprotected or field-side wiring terminals to the cabling leaving the enclosure. If connected backwards, the more sensitive (but faster acting) second stage will be exposed to excessive current and the suppressors may be damaged by the first lightning event.

Separation of cabling is required to minimize coupling between protected and unprotected cabling. If it is necessary to cross these cables over each other, make the crossover using right angles. This will help to minimize the inductive and capacitive coupling of energy between protected and unprotected circuits.

Protection is not provided for the 12 Vdc power supply to the IFS transceiver as this power circuit does not leave the enclosure.

#### 14.2.2.3 Protection for Access Control System Gates

Due to the exposed location of access control components located at vehicular gates, there is likely to be damage by direct or nearby lightning strikes and the metallic fencing's ability to conduct nearby strikes to the gate locations.

**Figure 5** shows the recommended method for protecting the access control equipment at the gates. Install an EDCO HSP-121A, two-stage hybrid, NEMA 4X, suppressor (See A on Figure 5) on the exterior of the access control enclosure to protect the power conductors. This approach is recommended as access control enclosures typically have insufficient space to place the suppressor in the housing. The incoming 120 Vac power entering the enclosure is looped out, through the suppressor and back into the enclosure where it is hard-wired to the 27 Vdc regulated switching power supply.

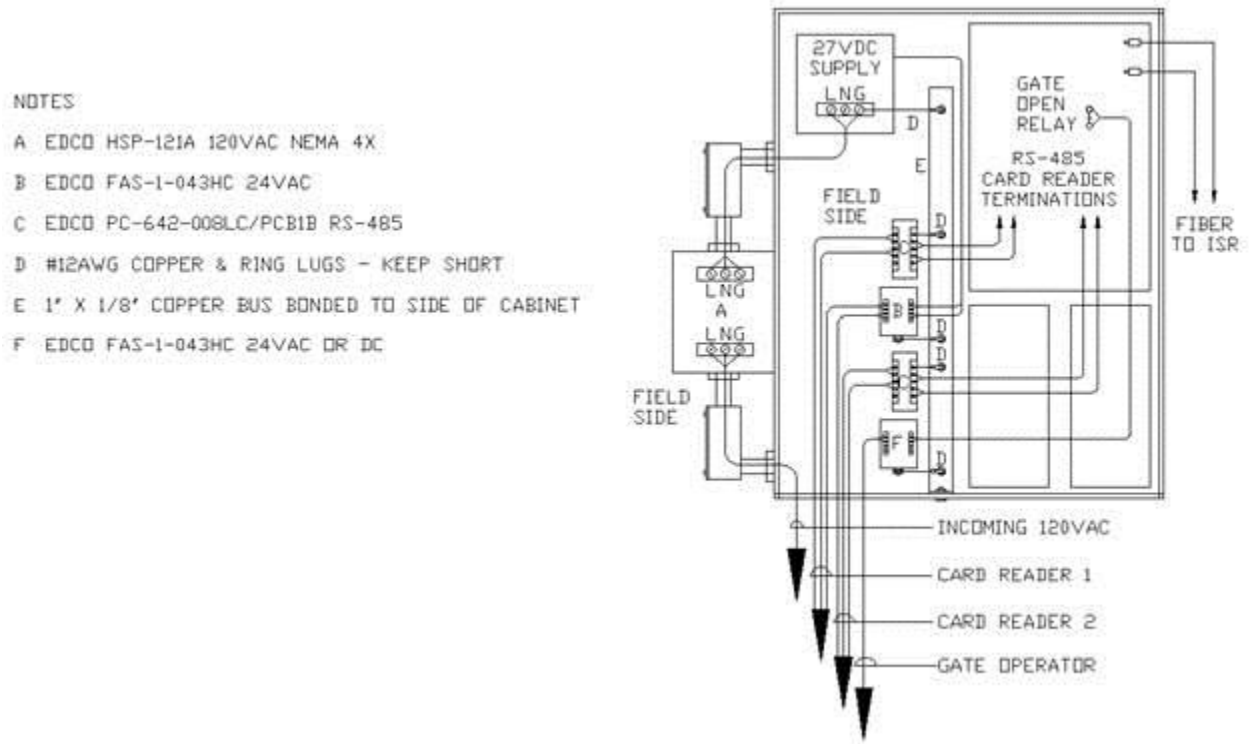



*Figure 5 – Gate Access Control Recommended Configuration*

An EDCO FAS-1-043HC, two-circuit, 24 Vac, suppressor shall be installed at each gate to protect the wiring to the two card readers. This EDCO AC suppressor was chosen for this application as the 27 Vdc used to power the remote readers is on the upper limit of what a 24 Vdc suppressor will tolerate. Since peak voltage on an AC circuit is 1.41 times the RMS value, the clamping threshold for the AC suppressor is actually set at 43-Volts. The suppressors for card reader power utilize a series inter-stage inductor rather than resistors making them suitable for this type of powering application.

Use EDCO PC-642-008LC/PCB1B, low capacitance, 8-volt, RS-485, suppressors for protection of the card reader data circuits. These suppressors shall include a plug-in screw terminal base that can be secured to the back or side panels in an enclosure.

In the event that Wiegand readers are ever required, the same manufacturer makes a 5-conductor Wiegand protector in the same package.

In lower exposure areas, there would not be concern about circuits that leave the enclosure isolated by a dry relay contact. Cases of welded relay contacts, contacts burned open and even miniature relays which were completely disintegrated have occurred in high exposure level situations. When this occurs there is often collateral damage to other components on the circuit board.

A 24 Vac suppressor shall be specified for in high exposure level situations. This is usable with AC or DC control voltages of up to about 30 volts as the clamping threshold is set at 43 volts. If higher voltages are required, a different suppressor may be utilized with a clamp setting that is workable with the voltage being switched.

All of the rules and guidelines recommended for the CCTV enclosure apply to the card access installation. This includes separation of protected and unprotected conductors and keeping ground leads short.

No detail was produced for the remote card readers themselves. These readers shall be equipped with one of the reader power suppressors (also available in a single pair configuration) and an RS-485 suppressor installed in the junction box behind the reader. Bond suppressor grounds to the metallic housing for the reader and reader pedestal.

# 14.3 Power Distribution System and Equipment

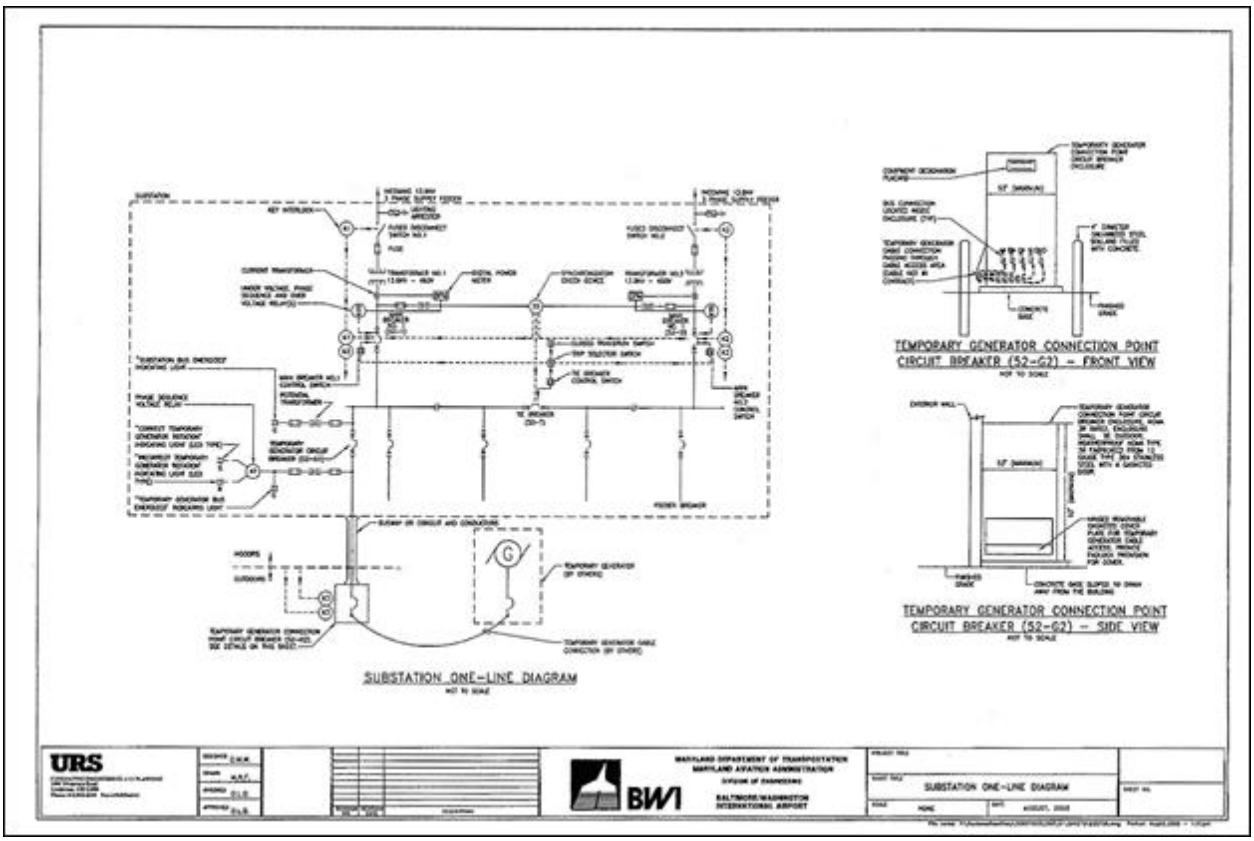
## 14.3.1 Substations

Below outlines the requirements for 13,800-480 volt electrical substations.

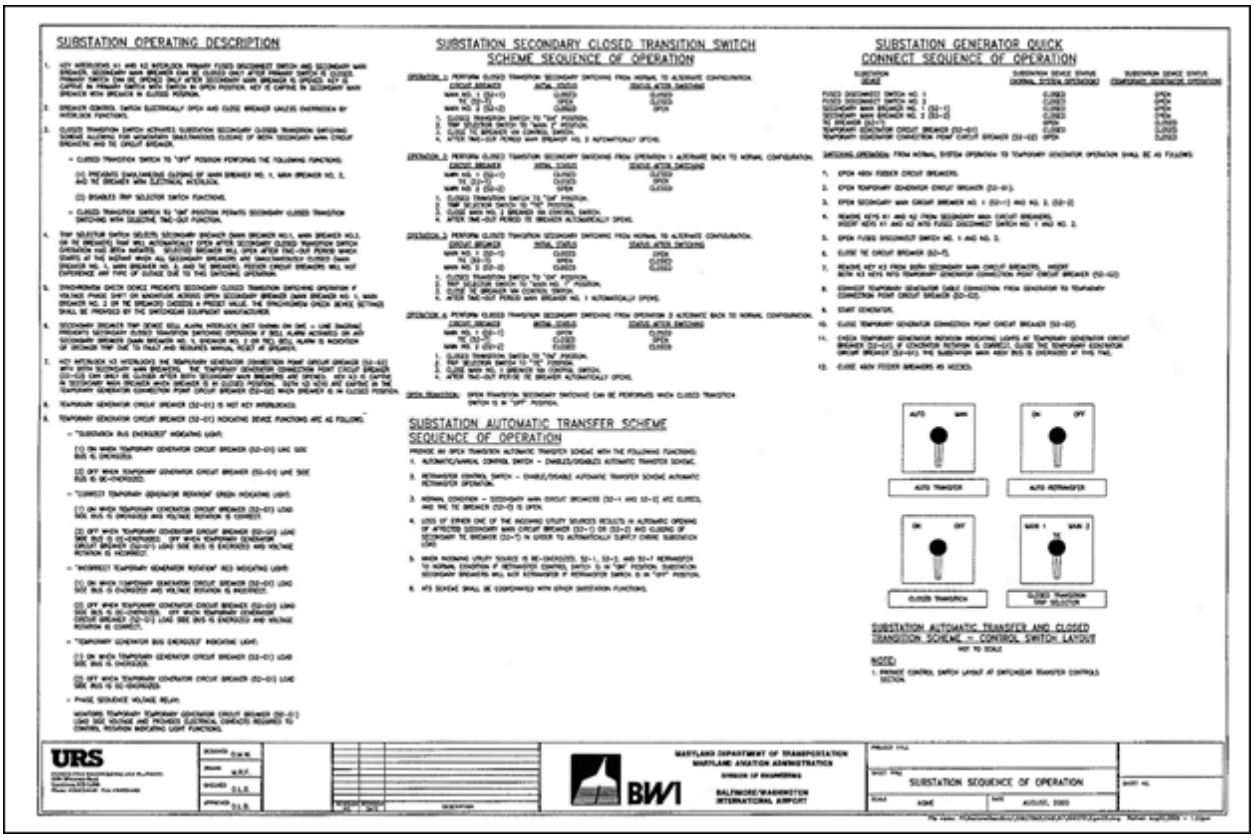
1. All equipment and installations shall be in accordance with the National Electrical Code (NEC) per edition approved and specified in the Maryland Model Performance Code.
2. All equipment locations shall be coordinated with the MAA Office of Engineering & Construction.
3. Substations shall be 13,800-480 volt, secondary selective configuration consisting of two primary (13,800 volt) feeders, two primary fused load interrupter switches, two power transformers, two secondary (480 volt) main circuit breakers, one tie breaker, and feeder breakers. All current carrying parts of the substation and related components shall be copper. Each substation shall be supplied by one North feeder and one South feeder originating from switchgear supplied from the BWI Marshall North and South substation respectively. Refer to Substation one-line diagram and the substation sequence of operation details for additional information. The current BWI Marshall medium voltage one-line diagram is included on the following pages.
4. The secondary main and tie circuit breakers shall be electrically operated draw-out type low voltage power circuit breakers or insulated case circuit breakers.
5. The feeder circuit breakers shall be manually operated draw-out type low voltage power circuit breakers, insulated case circuit breakers or molded case circuit breakers mounted in continuous metal enclosed switchgear or switchboard enclosure(s).
6. All substation short-circuit ratings shall be adequate for the combined available fault current contribution due to secondary closed transition switching. The available fault current shall be calculated for the moment that both secondary main breakers and the tie breaker are simultaneously closed and both transformers are energized from their primary source.
7. Ground fault protection shall be provided for all substation 480 volt circuit breakers including secondary main circuit breakers, tie breaker and all feeder breakers. Ground fault protection for 3 phase, 4 wire, solidly ground systems shall utilize current transformer (CT) sending for all phase and neutral conductors. Three (3) phase underground systems shall include a ground fault sensing and indication system.
8. Substations shall include a semi-automatic secondary closed transition switching scheme that allows for momentary simultaneous closing of both secondary main circuit breakers and tie circuit breaker for maintenance switching purposes. The closed transition scheme and associated components shall be designed and manufactured by the substation equipment manufacturer and designed specifically for this application. All components shall be integral to the substation. Refer to Substation one-line diagram and the substation sequence of operation details for additional information.

   The designer shall contact MAA maintenance personnel to see if any operating problems have occurred recently with closed transition operation at existing substations. If so, the designer shall request that BGE perform a circulating study. The designer shall make recommendations based on the results of the study.

   The designer shall contact BGE to see if any changes have been made that could affect the synchronization of incoming feeders and closed transition operation. If so, the designer shall request that BGE perform a circulating study. The designer shall make recommendations based on the results of the study.




*Substation One-Line Diagram*




*Substation Sequence of Operation*

9. Substations shall include a secondary automatic transfer scheme that will automatically open one secondary main breaker and close the tie breaker in order to transfer all load to one primary feeder if abnormal voltage is detected on one of the two incoming substation primary feeders. Since there is an automatic transfer on the primary feeders to the substations, the automatic secondary transfer should incorporate time delays of sufficient length to allow the primary transfer to occur prior the secondary transfer. Refer to Substation one-line diagram and the substation sequence of operation details for additional information.
10. Substations shall include an emergency power quick connect system which includes a permanent connection point for a temporary electric generator in order to supply temporary power to the entire substation in the event of a complete substation power outage. The quick connect system shall include a temporary generator circuit breaker (52-G1) (located within the substation), temporary generator connection point circuit breaker (52-G2) (located outdoors, remote from the substation at an area easily accessible to the temporary generator), feeder from 52-G1 to 52-G2, and control system. The location of the temporary generator connection point enclosure shall be approved by the BWI Marshall Office of Airfield Operations and Security, as well as the Office of Maintenance and Utilities. Refer to Substation one-line diagram and the substation sequence of operation details for additional information.

    Circuit breaker 52-G1 and 52-G2 shall be manually operated. Circuit breaker 52-G1 and 52-G2 and the feeder shall have a rated ampacity equal to the substation main circuit breakers.

The temporary generator connection point circuit (52-G2) shall be installed in a pad-mounted enclosure of sufficient size and configuration to allow for temporary generator cable connections. The enclosure shall have the following options: NEMA 3R 12-gauge type 304 stainless steel construction, gasketed door, front accessible only, padlock provision, key interlock, internal heater (with thermostat and internal control power transformer), internal hinged dead front door (that allows breaker to be operated with no possible access to energized parts), temporary generator cable access area, and number of cables. The entire enclosure shall be rated NEMA 3R while-in-use when temporary generator cables are connected and operational. All components of the temporary generator connection point circuit breaker shall be specifically designed for this purpose and manufactured by the circuit breaker manufacturer or by the circuit breaker manufacturer factory authorized field service organization. An 8-1/2" x 11" aluminum sign attached to outside of the enclosure shall be installed with the following wording: "Substation _____ Generator Connection." The name of the substation shall be filled in the blank space.

Attach a 10" x 4" self-adhesive engraved, laminated acrylic sign 1/8" thick to the exterior of the quick connect enclosure stating the phase rotation for connecting a portable generator. This sign shall include the wording in white text (size 3/8") with a red background stating,

SUBSTATION ____ (Blank to be filled in with substation number)
QUICK CONNECT CABINET
CONNECT GENERATOR AS FOLLOWS:
CABINET LEAD COLORS: B O Y
GENERATOR LEAD COLORS: B O Y

Quick connects that have a phase rotation of C-B-A shall have the leads swapped so the generator temporary connection will follow an A-B-C phase rotation and shall include a sign inside the quick connect enclosure with the same specifications as the exterior sign and with the wording,

SUBSTATION ____ (Blank to be filled in with substation number)
QUICK CONNECT CABINET
PHASE A AND C HAVE BEEN SWITCHED
TO MATCH THE PHASE ROTATION
OF SUBSTATION _____ (Blank to be filled in with substation number)

Placards shall not overlap or cover existing signage on the equipment required by code. Samples of the exterior and interior quick connect placards have been included at the end of this DST.

11. Contract documents shall require performance of a short-circuit and coordination study during construction to establish settings for all new adjustable system protection devices. All new devices shall be selectively coordinated with existing devices and operating schemes including but not limited to, overload/short-circuit protection and automatic transfer schemes.
12. Contract documents shall require furnishing and installation of permanently attached engraved instruction placards including substation one-line diagram and all substation sequence of operations. Locate on placard at substation interior wall with an emergency lighting fixture with integral battery back-up in close proximity. Locate one placard on the inside of the temporary generator connection point circuit breaker enclosure.

13. Contract documents shall require furnishing and installation of a framed wall-mounted one-line diagram for the substation and the entire downstream distribution system. Locate with substation room.

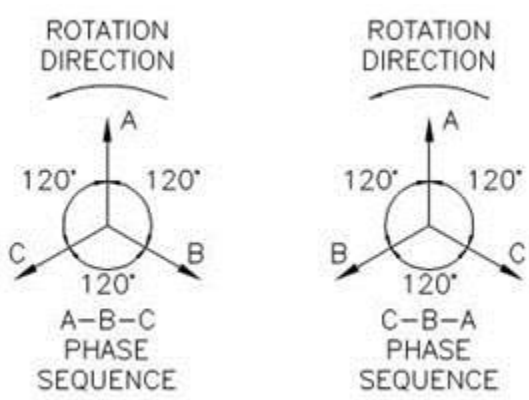
## 14.3.2 Medium Voltage Electrical Phasing and Rotation (BWI Marshall only)

This section details the electrical phasing and rotation conditions for the BWI Marshall medium voltage electrical distribution system.

### 14.3.2.1 Background

The BWI Marshall Airport medium voltage distribution system is a three-phase system. The phases are labeled A, B and C in accordance with industry standard practices. System phase rotation must be consistent where multiple power sources are available for the following reasons: (1) for system identification and safety purposes, (2) to provide correct system rotation, and (3) to allow for the use of alternate distribution system configurations made possible by using Airport tie circuit breakers.

The term rotation refers to the order that the phases reach their maximum instantaneous line-to-neutral voltage value. There are two possible system rotations, ABC (positive sequence) or CBA (negative sequence). The rotation of the system determines the direction that a three-phase motor will spin when connected to the system. A three- phase motor connected to an ABC system will rotate in the opposite direction as compared to a CBA system. This is particularly important for HVAC and other three-phase motor equipment, since the rotation of the equipment is based on the electrical connection. The figure below shows the vector diagram for each of the two system phase rotations.




*Two-system Phase Rotations*

The existing medium voltage distribution system at BWI Marshall is shown in the following Airport Wide Phase Rotation Drawing with the Sheet Title “Single Line Diagram with Phase Rotation”. The single line diagram shows the power distribution from the primary of each power transformer located in the BWI Marshall North and South substations through the three 13.8 kV switchgears and to 480 V substations. The phase rotation at each switchgear and substation is shown on the Single Line Diagram.

The Table titled “Switchgear, Substation and Quick Connect Switches-Phase Rotation” summarizes the phase rotation for each switchgear, substation and quick connect cabinet at BWI Marshall Airport. The

actual phase rotation shown for the electrical equipment in this Table was measured and verified in 2014.

The BWI Marshall system has adopted labeling and color coding for all 480 VAC conductors as an ABC rotation, where at 480 VAC, 3-phase equipment, phase A is color coded Brown, Phase B is color coded Orange and Phase C is color coded Yellow, following the B-O-Y conventional nomenclature. As an example of how the color coding is implemented at BWI the color coding of the power conductors for substations ST-TU and A1 are as follows:

Substation ST-TU has a phase rotation ABC, and the color coding of the substation feeder conductors on the load side of the substation breaker looking into the front of the breaker is left terminal lug, Brown, center terminal lug, Orange and right terminal lug, Yellow. The motors connected from this substation will follow the connections Phase A to Phase A, Phase B to Phase B and Phase C to Phase C. The color coding of the connection of these feeder conductors at the motor will be the same as at the substation.

In the case of Substation A1, which has a CBA rotation, this requires that in order for a three phase motor to turn in the correct rotation, the power wiring connection at the motor will have the A and C phase conductors switched. The color coding for the feeder conductors on the load side of the substation breaker looking into the front of the breaker will be left terminal lug, Brown, center terminal lug, Orange and right terminal lug, Yellow. The color coding of the connection of these feeder conductors at the motor will be the same as at the substation. The correct motor rotation will be accomplished by switching the A and C phase motor leads, where motor lead phase A will be connected to feeder conductor phase C and motor lead phase C will be connected to feeder conductor phase A.

#### 14.3.2.2 Design

The Designers and Contractors shall consider the phase rotation differences that exist within the BWI Marshall Airport electrical power distribution system, particularly for Projects where equipment is powered from substations that do not have matching phase rotations.

The electrical power system designs that are performed at the BWI Airport North and South substations will require that the phase rotation remain consistent with that already established. The existing phase labeling shall remain and the designer shall contact BGE at 410-291-3156 to coordinate all work at the North and South substations.

#### 14.3.2.3 Generator Connections

AC Generator electrical phase sequence must match plant and utility electrical phase sequence. When three-phase temporary generators are used on the BWI Marshall Airport distribution system, the generator will be connected to the quick connect breaker conductors in an ABC rotation. The following Table, “Switchgear, Substation and Quick Connect switches – Phase Rotation” shows that the quick connects for substations A1, B1, B2 and ST-BC have a rotation CBA. In order to keep the temporary generator connections consistent for all of the quick connects at BWI Marshall Airport, the A and C phase leads from the quick connect breaker for the A1, B1, B2 and ST-BC quick connect breakers have been switched. Temporary generator rotation shall be electrically tested by the Contractor prior to connecting to the BWI Marshall system. Generators connected to BWI Marshall 13.8 kV – 480 VAC unit substation emergency power quick connect systems shall be tested for proper rotation using the voltage phase sequence relay and associated generator rotation indicating light that is permanently installed on the quick connect breaker in most substations. A substation quick connect sequence of operation placard is required by the MAA Substation Design Standard (Chapter 14.3.1 Substations) to be located at

the substation and on the temporary generator connection point circuit breaker. This placard explains the use of the quick connect scheme including the generator rotation indicating light.

#### 14.3.2.4 Identification Placards

Placards with phase rotation information are installed at all switchgears, substations and quick connect switches at BWI Airport. The Designer shall include phase rotation placards as required by these Standards for new switchgears, substations, and quick connect switches as described below. Placards shall not overlap or cover any existing signage or labeling on the electrical equipment as required by code.

Switchgears

The Designer shall include phase rotation placards as required by these Standards for new switchgear at BWI Marshall Airport. The Designer shall note in the Contract Documents to: “Attach a 6” x 3” self-adhesive engraved, laminated acrylic sign 1/8” thick to the exterior of switchgear stating the phase rotation. This sign shall include the wording in white text (size 3/8”) with a red background stating,

SWITCHGEAR ____ (Blank to be filled in with Switchgear number)
PHASE ROTATION
A-B-C (OR C-B-A AS VERIFIED)

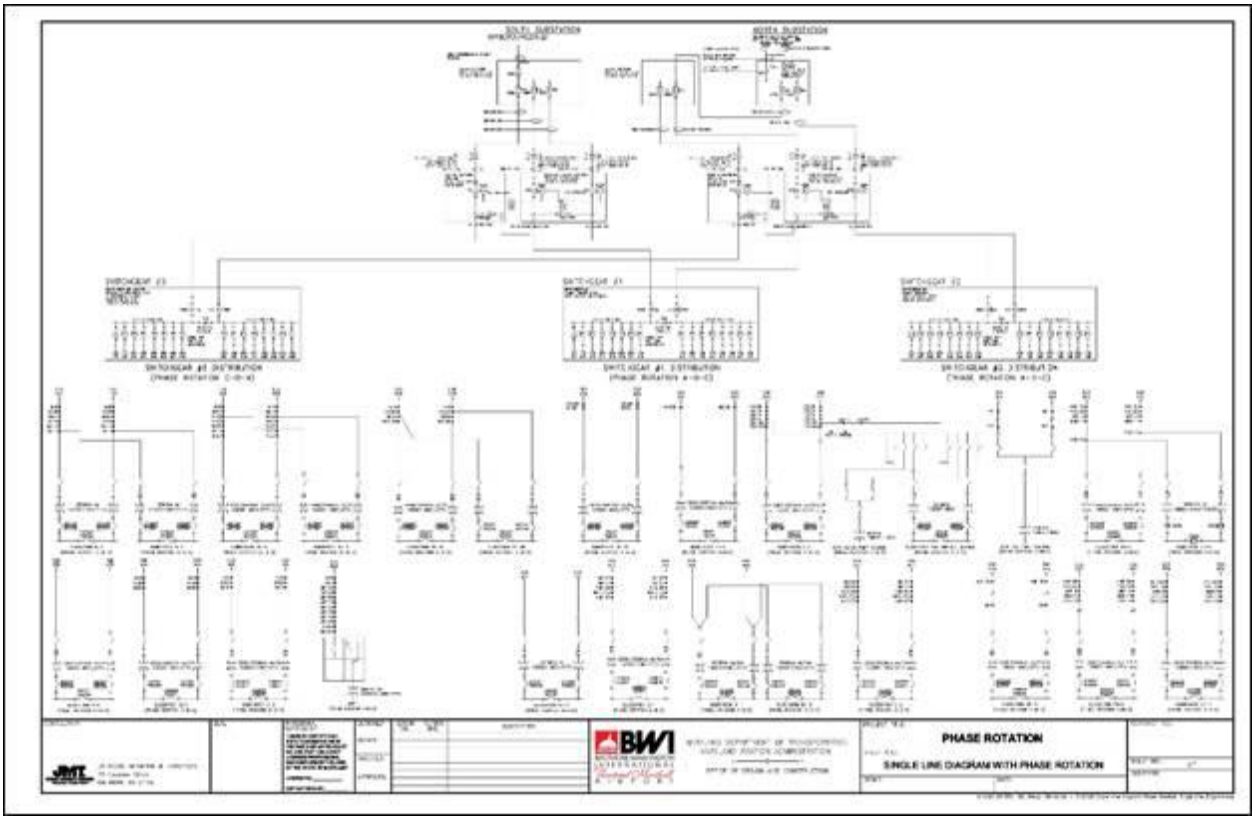
Substations

The Designer shall include phase rotation placards as required by these Standards for new Substations at BWI Marshall Airport. The Designer shall note in the Contract Documents to: “Attach a 6” x 3” self-adhesive engraved, laminated acrylic sign 1/8” thick to the exterior of the substation stating the phase rotation. This sign shall include the wording in white text (size 3/8”) with a red background stating,

SUBSTATION ____ (Blank to be filled in with Switchgear number)
PHASE ROTATION
A-B-C (OR C-B-A AS VERIFIED)

Quick Connect Switches

The details for the quick connect placards both exterior and interior (where required) are as described in Chapter 14.3.1 Substations, Item 8.
Sample templates for each of the placards described above are included in the following pages.




*Single line diagram with phase rotation*

## SWITCHGEAR, SUBSTATION AND QUICK CONNECT SWITCHES PHASE ROTATION

| SUBSTATION | FED FROM SWITCHGEAR/ AS INDICATED | MEDIUM VOLTAGE FEEDER NUMBER | PHASE ROTATION | QUICK CONNECT PHASE ROTATION |
|---|---|---|---|---|
| A1-NORTH | 3 | N33 | CBA | CBA* |
| A1-SOUTH | 3 | S33 | CBA | CBA* |
| B1-NORTH | 3 | N34 | CBA | CBA* |
| B1-SOUTH | 3 | S34 | CBA | CBA* |
| B2-NORTH | 3 | N35 | CBA | CBA* |
| B2-SOUTH | 3 | S35 | CBA | CBA* |
| PG-1-NORTH | 3 | N32 | ABC | NO QUICK CONNECT |
| PG-1-SOUTH | 3 | S32 | ABC | NO QUICK CONNECT |
| ST-TU-NORTH | 3 | N32 | ABC | ABC |
| ST-TU-SOUTH | 3 | S32 | ABC | ABC |
| ARFF | 3 | N38 | ABC | NO QUICK CONNECT |
| UP-1-NORTH | 2 | N28 | ABC | ABC |
| UP-1-SOUTH | 2 | S28 | ABC | ABC |
| UP-2-NORTH | 2 | N26 | ABC | ABC |
| UP-2-SOUTH | 2 | S26 | ABC | ABC |
| UP-3-NORTH | 2 | N25 | ABC | ABC |
| UP-3-SOUTH | 2 | S25 | ABC | ABC |
| UP-4-NORTH | 2 | N25 | ABC | NO QUICK CONNECT |
| UP-4-SOUTH | 2 | S25 | ABC | NO QUICK CONNECT |
| PG-2-NORTH | 2 | N27 | ABC | ABC |
| PG-2-SOUTH | 2 | S27 | ABC | ABC |
| ST-AB-NORTH | 3 | N36 | CBA | NO QUICK CONNECT |
| ST-AB-SOUTH | 3 | S36 | CBA | NO QUICK CONNECT |
| ST-BC-NORTH | 3 | N36 | CBA | CBA* |
| ST-BC-SOUTH | 3 | S36 | CBA | CBA* |
| DY-1-NORTH | 1 | N11 | ABC | ABC |
| DY-1-SOUTH | 1 | S11 | ABC | ABC |
| DY-2-NORTH | 1 | N16 | ABC | ABC |
| DY-2-SOUTH | 1 | S16 | ABC | ABC |
| D-1-NORHT | 1 | N16 | ABC | ABC |
| D-1-SOUTH | 1 | S16 | ABC | ABC |
| NT-D-NORTH | 1 | N13 | ABC | ABC |
| NT-D-SOUTH | 1 | S13 | ABC | ABC |
| RW 15R PUMP STA. | 2 | N24/S24 | CBA | NO QUICK CONNECT |
| E-1-NORTH | 1 | N15 | ABC | ABC |
| E-1-SOUTH | 1 | S15 | ABC | ABC |
| E-2-NORTH | 1 | N17 | ABC | ABC |
| E-2-SOUTH | 1 | S17 | ABC | ABC |

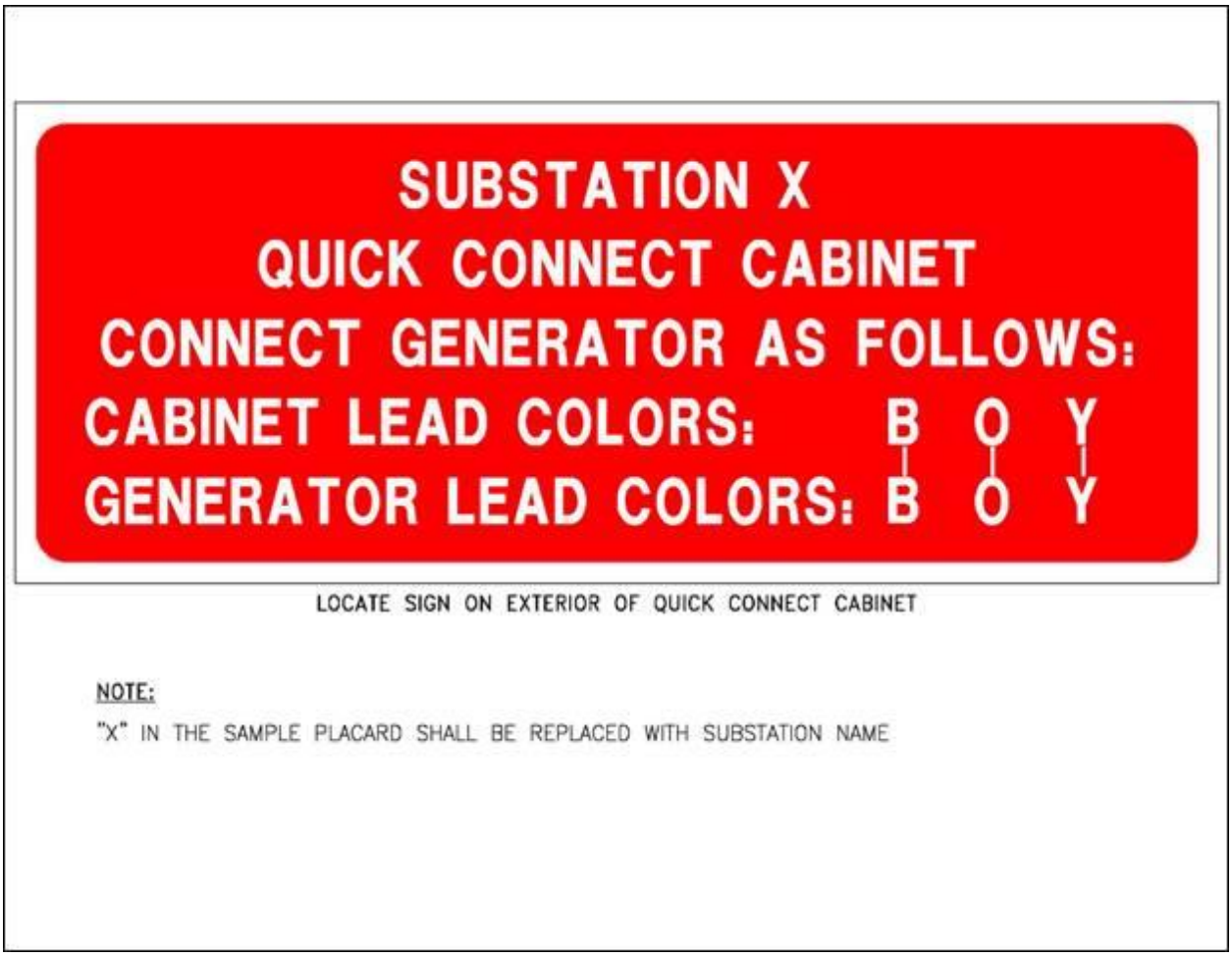
*Switchgear, substation and quick connect switches phase rotation 1*

## SWITCHGEAR, SUBSTATION AND QUICK CONNECT SWITCHES PHASE ROTATION

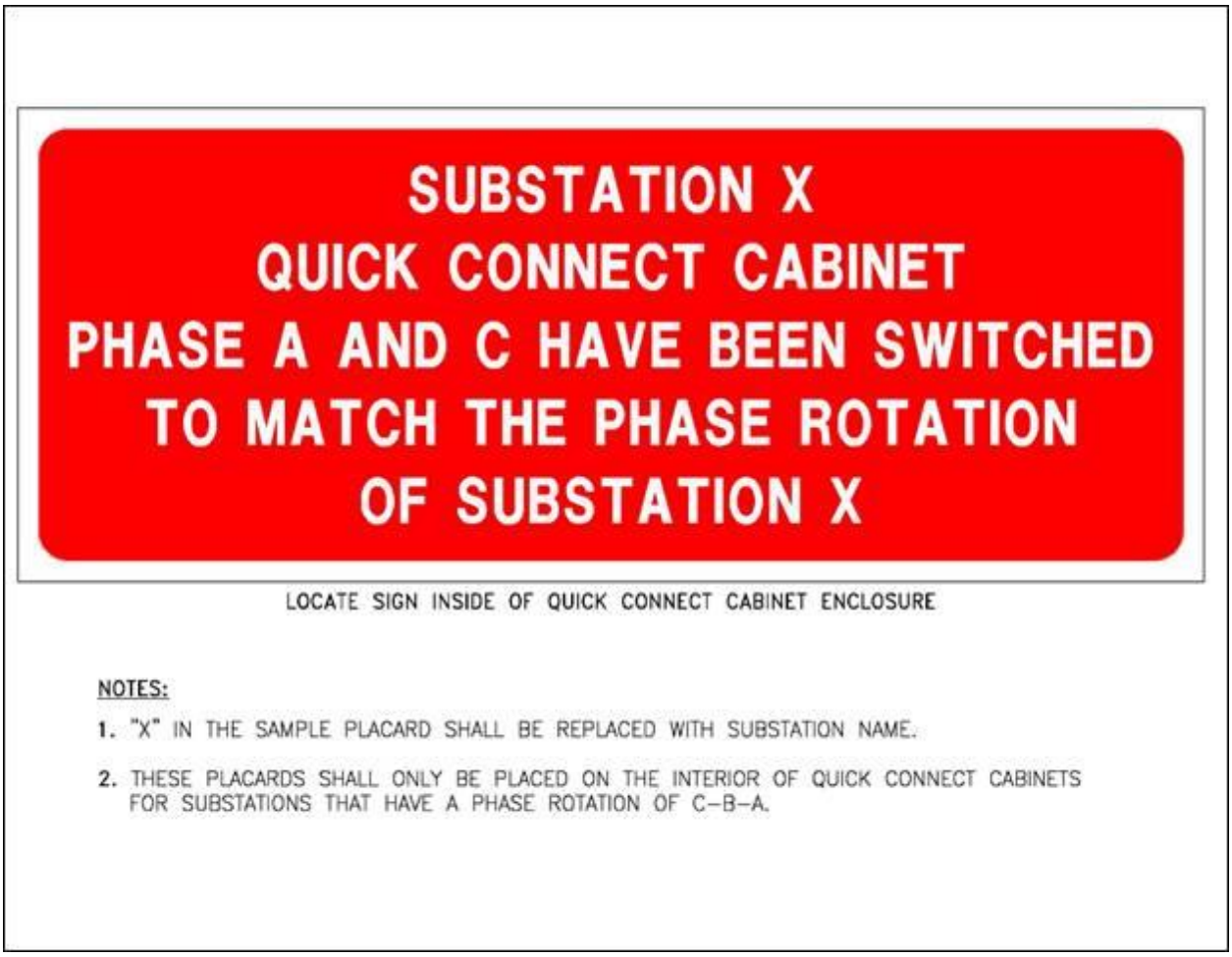
| SUBSTATION | FED FROM SWITCHGEAR/ AS INDIACTED | MEDIUM VOLTAGE FEEDER NUMBER | PHASE ROTATION | QUICK CONNECT PHASE ROTATION |
|---|---|---|---|---|
| NT-CT-NORTH | 1 | N12 | ABC | ABC |
| NT-CT-SOUTH | 1 | /S12 | ABC | ABC |
| B-3-NORTH | 3 | N31 | CBA | NO QUICK CONNECT |
| B-3-SOUTH | 3 | S31 | CBA | NO QUICK CONNECT |
| B-4-NORTH | 3 | N31 | CBA | NO QUICK CONNECT |
| B-4-SOUTH | 3 | S31 | CBA | NO QUICK CONNECT |
| C-1-NORTH | 1 | N14 | ABC | ABC |
| C-1-SOUTH | 1 | S14 | ABC | ABC |
| AIRFIELD LIGHTING-NORTH | 1 | N14 | ABC | ABC |
| AIRFILED LIGHTING-SOUTH | 1 | S14 | ABC | ABC |
| SWITCHGEAR 1 | 34.5 KV NORTH SUBSTATION | NT1 | ABC | NOT APPLICABLE |
| SWITCHGEAR 1 | 34.5 KV SOUTH SUBSTATION | ST1 | ABC | NOT APPLICABLE |
| SWITCHGEAR 2 | 34.5 KV NORTH SUBSTATION | NT2 | ABC | NOT APPLICABLE |
| SWITCHGEAR 2 | 34.5 KV SOUTH SUBSTATION | ST2 | ABC | NOT APPLICABLE |
| SWITCHGEAR 3 | 34.5 KV NORTH SUBSTATION | NT3 | CBA | NOT APPLICABLE |
| SWITCHGEAR 3 | 34.5 KV SOUTH SUBSTATION | ST3 | CBA | NOT APPLICABLE |

* The quick connect breaker feeder conductors are labeled and color coded with A-phase breaker connection as C-phase and C-phase breaker connection as A-phase.

*Switchgear, substation and quick connect switches phase rotation 2*

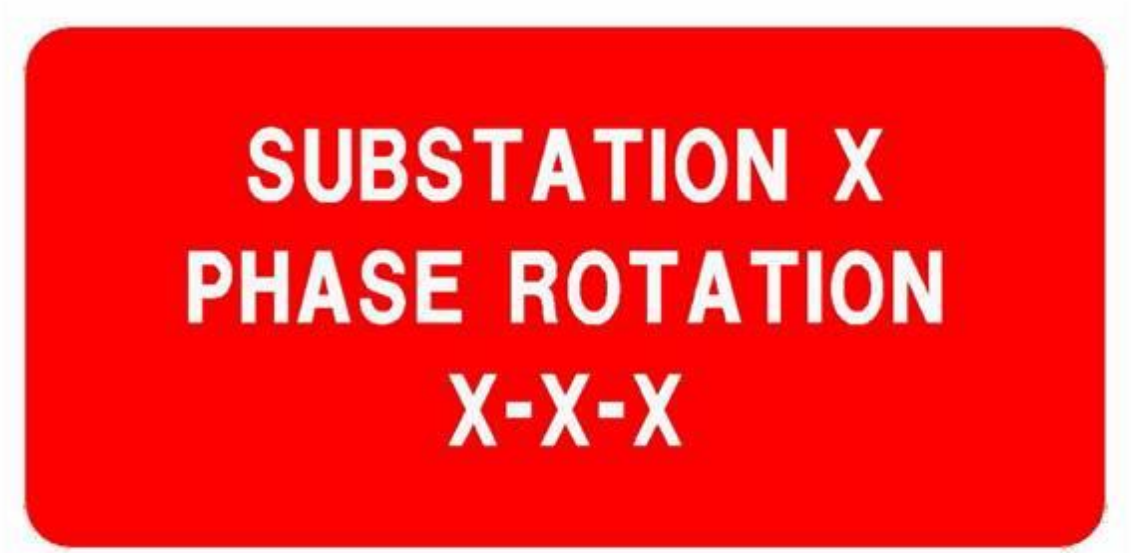



*Sample placard for exterior of quick connect cabinet*




*Sample placard for interior of quick connect cabinet*

SAMPLE SWITCHGEAR PLACARD




SAMPLE SUBSTATION PLACARD

NOTE:

"X" IN THE SAMPLE PLACARD SHALL BE REPLACED WITH SWITCHGEAR OR SUBSTATION NAME AND RESPECTIVE PHASE ROTATION

*Sample placard for switchgear and substations*

# 14.4 Equipment

## 14.4.1 Panelboards (Power and Lighting)

BWI Marshall and MTN Airport projects shall only specify Square-D 120/208 circuit breaker panelboards. Accordingly, "No substitutions will be accepted" shall be used when specifying Square-D circuit breaker panelboards.

## 14.4.2 Raceways

### 14.4.2.1 Raceways – Within Buildings

Indoor wiring methods:

1. Exposed where subject to physical damage: Rigid galvanized steel (RGS) conduit from slab up to 10 feet above finished floor. Electrical metallic tubing (EMT) above 10 feet above finished floor.
2. Exposed where not subject to physical damage: EMT.
3. Concealed: EMT
4. Concealed where installing/fishing new wiring in existing wall or partition: Flexible metal conduit (FMC) or metal clad cable (MC). FMC and MC shall be directly connected to junction box located directly above existing wall or partition.
5. Connection to vibrating equipment (Including transformers and hydraulic, pneumatic, electric solenoid, or motor-driven equipment): Liquid tight flexible metal conduit (LFMC) or FMC. Use maximum of 6 foot length. Connections in wet or damp environments shall use LFMC.
6. Final connection to recessed and semi-recessed lighting fixtures: FMC or MC. Use maximum of 6 foot length from fixture to junction box only.
7. Minimum raceway size: Minimum Electrical raceway shall be ¾ inch and Minimum Communications raceway shall be 1 inch.
8. The use of any type flexible raceway or flexible cable other than those specifically mentioned above will not be accepted unless approved in advance.
9. In approved tenant spaces, MC Cable shall be permitted to be used for branch circuit wiring drops and lighting. Daisy-chained wiring is permitted. All home runs shall be installed in conduit from the panel to the main installation area, sleeved and fireproofed through walls and terminated with a junction box. All conduit, junctions, boxes, and device plates shall be properly labeled.
10. All spare and electrical conduits 1" and larger must have a bushing installed.
11. All fittings (couplings, connectors, etc.) for metal conduit shall be steel, set screw or compression type. No malleable of aluminum fittings will be considered.
12. Fittings for all flexible metallic conduits shall be steel T&B Tite-Bite style or equivalent. No malleable or aluminum fittings will be considered.
13. All Conduit Outlet Bodies (LB's, T's, etc.) not subject to physical damage must of Iron construction Crouse-Hinds Form 5, 7, 8, or equivalent. No Aluminum will be considered.
14. All Conduit Outlet Bodies and Device Boxes (LB's, T's, FS, FD, etc.) installed where subject to physical damage must be of Malleable Iron construction Crouse-Hinds Form 5 or equivalent. No aluminum will be considered.

Cable tray shall be permitted for low voltage communication wiring/cable only. All fire alarm and security related wiring/cable shall be installed in a raceway system as detailed in indoor wiring methods 1 through 8 shown above. Public Address System wiring if used to convey voice messages for public space evacuation, as required by the Office of the Fire Marshal, shall be considered fire alarm wiring and shall be installed in a raceway system and protected in accordance with NFPA 72.

All raceways and cables shall be properly installed and supported in accordance with the National Electrical Code (NEC) and the Code of Maryland Regulations (COMAR). All new construction materials shall be fire retardant. All new wiring/cable shall be plenum-rated. Cable and raceways shall be permanently labeled at a minimum of every 50 feet, at all junction boxes and at all terminations. Label information shall include equipment type/usage, supply panelboard/equipment and circuit number. Wherever old raceways, wiring and/or cables are to be abandoned, they shall be removed.

Metal Conduit Fittings: All fittings, coupling, etc. for metal conduit shall be steel, set screw or compression type. No malleable fittings will be considered.

Grounding: A ground wire properly sized to the largest phased conductor shall supplement all metallic conduits. Ground wire shall be identified by either green insulation coating or by the use of green tape.

### 14.4.2.2 Raceways – Underground

Marking tape indicating "Electrical Cable Buried Below" shall be installed. The tape should be 3" wide and positioned 8"-12" deep below top of ground, or 4" wide and positioned at a maximum 3"-6" deep below the bottom of pavements.

### 14.4.2.3 Raceways – Labeling

A. All labels shall be mechanical; no handwritten labels unless otherwise approved.
B. Cable and raceways shall be permanently labeled at a minimum of every 50 feet, every 25 feet when view is obstructed, and within 5 feet of any wall or floor/ceiling penetration at all junction boxes, terminations, and within 12 inches of electrical panel.
C. The area to be labeled shall be cleaned prior to labeling.
D. Labeling shall include: Type/Usage, Panelboard/Equipment, Circuit Number
E. For labeling requirements of installations consisting of multiple systems occupying the same space, see Chapter 14.4.2.4 Raceways – Voltages.
F. Wall switches, receptacles, occupancy sensors, wall dimmers, device plates and box covers, poke-through fittings, access floor boxes, photocells, time clocks, and other similar outlets shall be identified externally with circuit numbers and source. In areas exposed to the public, identification~~s~~ should be made on the back side of device covers. Use machine-generated labels or neatly, handwritten permanent marker.
G. All Panelboard circuit directories shall be updated and mechanically generated. No handwritten updates or changes shall be made.

### 14.4.2.4 Raceways – Voltages

A. Wiring derived from different system voltages of 50V-600V shall be installed in separate conduits. Cables and conductors shall not occupy the same installation space (i.e. cable tray, metal wireways, compartment, enclosure, manhole, outlet box, device box, raceway, or similar fitting) unless critical to the operation of installed equipment (motor starters, relays, contactors, etc.).

   *Exception #1: Wiring of different voltages may be permitted to be installed in the same junction box provided that a barrier is installed to separate the voltages.*

   *Exception #2: Wiring of different voltages may be installed in cable tray and metal wireways (troughs) provided that the raceway is labeled "Multiple Voltages Present" at no more than 6'*

*intervals when installed above a suspended ceiling, under a raised floor, or similar location and no more than 15' where installed elsewhere. Labeling shall be sized to ensure visibility from any access point.*

B. Class 2 and 3 cables shall be permitted to share the same raceway as 50V-600V wiring when in compliance with NEC 725.55.
C. No wiring other than the primary voltage indicated shall be installed in electrical panels.
D. Wiring color code shall be standardized as follows:

| | |
|---|---|
| 120/208, 120/240 | Black, Red, Blue and White |
| 277/480 and higher | Brown, Orange, Yellow, and Gray |

#### 14.4.2.5 Raceways – Workmanship

A. Neat and Workmanlike Manner: Executed and/or installed in a skilled manner; e.g., plumb, level, square, in line, undamaged and without marring adjacent work. Conduits shall be run parallel to and/or perpendicular to the building structure.
In addition, Electrical work should be installed in accordance with ANSI/NECA 1-2006: Standard for Good Workmanship in Electrical Construction.
B. Conduits shall be supported within 2 feet of the beginning of a 90° bend or offset.
C. Performance of Work - All electrical work performed shall be under the direction of a master electrician licensed in the State of Maryland or in the county where the work is performed. In addition, all electrical work shall be performed by or under the direct supervision of a Journeyman electrician.

### 14.4.3 Receptacles

#### 14.4.3.1 Electrical Receptacles in offices, other spaces and non-public corridors

Duplex receptacles shall be rated at 20 amperes, 125 volts, and be polarized, parallel blade type with ground and National Electrical Manufacturer's Association (NEMA) 5-20R configuration. Receptacles equivalent in quality to Pass & Seymour (P&S) Catalog number 5362, heavy duty specification grade, should be specified. The receptacles shall be side wired.

#### 14.4.3.2 Electrical Receptacles in Airport Terminal public corridors, Ticketing Areas, and Baggage Claim Areas

Receptacles for these, and other areas subject to heavy use by housekeeping and cleaning machinery, should be equivalent in quality to Pass & Seymour (P&S) Catalog number 5362A, extra heavy duty. Receptacles shall be side wired, and spaced no more than 100 feet apart. These receptacles shall be placed on dedicated circuits, that is, they shall be isolated from receptacles in other types of spaces. In addition, no more than two receptacles shall be placed on the same circuit.

#### 14.4.3.3 Cover plates for receptacles shall be brushed stainless steel.

Receptacles shall be identified by color-coding the face and body according to type of circuit they are connected to, per the following:

- Regular Power — Brown or Ivory
- Uninterruptible Power Supply (UPS) — Red
- Isolated Ground — Orange/or Ivory with Orange Triangle

### 14.4.4 Charging Stations

#### 14.4.4.1 Charging Stations - General

The purpose of this section is to define parameters for the installation of charging stations for personal electronic devices in common use hold rooms and public spaces within the airport terminal. The intent of the standard is to provide adequate and convenient charging stations for use by the traveling public. Ultimate layouts for charging stations will be on an installation by installation basis but must provide the charging station types and density prescribed.

#### 14.4.4.2 Charging Station – Types

A mixture of duplex receptacles and 5v USB receptacle will be provided. Duplex receptacles for charging stations will meet the requirements of Chapter 14.4.3.1 Electrical Receptacles in offices, other spaces and non-public corridors. Electrical Receptacles in offices, other spaces, and Nonpublic Corridors. Induction type charging stations can be utilized for one third (1/3) of the positions required in Chapter 14.4.4.3 Charging Station – Density.

Stations can be for either standing or seating in a chair or stool. They should discourage sitting on the floor.

A. Standing stations
   Each standing/wall mounted station will include both receptacle types and a shelf or counter surface suitable for writing or supporting a laptop computer. Standing stations shall be located so as not to impede general pedestrian circulation, restrict egress pathways, and be ADA compliant.
B. Sitting Stations
   Sitting stations will include both receptacle types and will be either mounted directly on the furniture or on a wall receptacle at a height that provides convenient access from the associated seating. Furniture mounted units will be in 'InFlex' system by Acronas or an approved equal. Receptacles mounted on seating that is not located against a wall will be powered by recessed floor mounted receptacles. Cords from these receptacles will be managed and will not be readily accessible or pose a tripping hazard. Wall outlets providing power for adjacent seating stations should be positioned below the back of the seating to discourage disconnecting the power cords.

#### 14.4.4.3 Charging Station – Density

A. Hold Rooms
   Charging Stations will be installed with a duplex receptacle for every two hundred (200) square feet and one USB outlet per every five hundred (500) square feet of hold room as defined in the Space Allocation Plan. New installations requiring freestanding seating with floor mounted outlets will require seating plans to be reviewed and approved by the MAA Office of Engineering and Construction and the Fire and Rescue Division.
B. Public Areas
   Charging Stations in corridor areas will be installed with two (2) duplex receptacles and four (4) USB receptacles per three hundred (300) linear feet of corridor. Charging Stations in public lounge areas will be installed at the same density as hold rooms.

   Charging Stations in other public areas will be installed on an installation by installation basis.

#### 14.4.4.4 New Construction

All new terminal construction shall be designed to include charging stations. Designs shall meet the charging station density requirements and provide all required infrastructure including adequate power supply. Charging station types and locations shall be approved by the MAA.

# 14.5 Emergency and Standby Power Systems

## 14.5.1 Diesel Powered Engine – Generator Load Bank

Permanent diesel powered engine-generator sets provided to power: emergency (Level 1 per National Fire Protection Association NFPA 110 Emergency and Standby Power Systems): legally required standby (Level 2 per NFPA 110): or optional standby circuits shall be designed to include a permanent load bank to provide electrical loading for testing and exercising the generator-set. Load banks shall be sized to provide at least 50 percent of the engine-generator set nameplate kilowatt rating. Load banks shall, if practical, be mounted next to the engine radiator and be connected to outside air duct for the radiator.

Include in requirements for the Automatic Transfer Switch associated with each engine-generator set an engine exerciser and requirements for setting it for at least 30 minutes exercise loading at least once a week.

Load banks shall be equipped with automatic controls so that the test or exercise load is automatically replaced with the emergency loads in the event of failure of the normal power source during the test.

## 14.5.2 Permitting and Review Requirements

Provision of fuel-powered generators shall be subject to review and permitting requirements of Design Standard Chapter 4.6.3 Fuel Burning Equipment Permitting Process.

## 14.6 Metering of Power

Each substation at BWI Marshall and Martin State Airports shall be provided with secondary watt-hour demand meters. All watt-hour demand meters shall have digital readout and pulse output for future remote monitoring.

Watt-hour meters shall be provided by tenants drawing 150 kVa electrical load or more. These meters must be compatible with MAA Power Monitoring System (Square-D Power Logic System). A one (1) inch conduit with communication cable shall be installed from each meter to the nearest approved MAA power monitoring closet. All other tenants drawing less than 150 kVa electrical load shall provide a one (1) inch conduit from their electrical panel to the nearest approved MAA power monitoring closet.

Metering at substations shall be compatible with Square-D Power Logic System.

For double ended substations, a meter shall be provided on each side of the double ended switchgear. A meter shall be provided for each breaker in the substation. Meter shall measure all of the following: voltage; current; power; power factor; frequency; kilowatt-hours; and demand. Unit shall have the following additional features: four (4) optically isolated status inputs; two (2) optically isolated RS485 communications ports; and Modbus and DNP communications protocol. In addition, one meter in any group shall have an internal modem. An auxiliary contact on each main and tie circuit breaker shall be wired to the status inputs on one power meter. The transformer over-temperature alarm on each transformer shall be wired to a status input on the associated power meter. The RS485 ports on all meters shall be daisy-chained together. With prior coordination with MAA's Office of Technology, a category six (6) communication cable with one spare cable shall be extended from the meter with the internal modem to the nearest MAA communication closet.

# 14.7 Temporary Electric Power Service

For temporary electric power service during construction, designers shall include the following requirements in the specifications. These requirements are usually found in:

Technical Specifications
Temporary Facilities and Control
Section 01500

Part 2 – Products
2.2 Equipment

H. Power Distribution System: Service entrance drop cable to the first disconnect may be aluminum, subject to conditions specified in Part 3 of this specification. Circuit wiring conductors, inward from the first disconnect, shall be copper.

I. Power Distribution System Circuits: Circuits for temporary power distribution and lighting, not exceeding 125 volts AC, 20 ampere rating, may be permitted to use nonmetallic sheathed cable, provided that:
   a. The installation meets requirements of the NEC, and
   b. The cables are installed overhead and left exposed for surveillance.

Add the following new language to:

"Part 3 – Execution", under Section 3.2 Temporary Utility Installation

If, as allowed under Part 2 – Products above, aluminum conductors are used for service drops, they shall be inspected monthly for the duration of their use. A written report on the cable condition shall be submitted to the MAA's authorized inspection firm.

## 14.7.1 Back-up Generator Requirements for Electrical Work (BWI Marshall Only)

This standard includes requirements for temporary emergency electrical generators for use during construction activities at Baltimore/Washington International Thurgood Marshall Airport (BWI Marshall). This standard addresses temporary generator requirements resulting from outages on the BWI Marshall distribution system from the utility service entrance locations down to and including the BWI Marshall customer utilization voltage equipment. During the planning and design phase, a study by the Engineer shall be conducted to determine the requirements of backup generator(s). Based on cost and the Engineer's recommendation, the MAA Project Manager shall determine if a backup generator is necessary.

The BWI Marshall medium voltage distribution system consists of the following major components:

1. Two utility service entrance substations designated North Substation and South Substation. These substations are located approximately on opposite sides of the Airport and are each supplied from a separate utility company feeder.
2. Multiple switchgear locations designated Switchgear #1, Switchgear #2 and Switchgear #3 (future, anticipated on-line May, 2004). Each switchgear is supplied by two feeders, one feeder from the North Substation and the other from the South Substation.

3. Multiple customer utilization voltage equipment (13,800 volt primary voltage, 480 volt or 4,160 volt secondary voltage) consisting of a double-ended unit substation, single ended unit substation or separate entrance transformer. All customer utilization voltage equipment is supplied from Switchgear #1, Switchgear #2 or Switchgear #3. Most of the customer utilization voltage equipment consists of double ended unit substations supplied by both a north and south switchgear feeder. The remaining customer utilization voltage equipment locations are supplied by a single switchgear feeder.

The designer shall perform the following activities during the design phase of the project:

1. Contact the Maryland Aviation Administration (MAA) to obtain a current BWI Marshall medium voltage distribution system diagram that shows all electrical equipment from the North and South Substations down to and including all customer utilization voltage equipment at the secondary voltage level.
2. Develop and submit for approval a project specific electrical equipment outage and equipment switching schedule including, but not limited to, the location, number, duration and time of day for all anticipated electrical outages and associated equipment switching activities for all BWI Marshall distribution system electrical equipment from the North and South Substations down to and including all customer utilization voltage equipment at the secondary voltage level. An outage is defined as the electrical de-energization of any electrical equipment within the scope of this standard for any length of time. All outages shall be included regardless of duration. Whenever equipment is supplied by both a north and south feeder, the de-energization of one of the two feeders shall be considered an equipment outage. All switching activities shall be included regardless of outage impact.
3. Develop and submit for review a project specific temporary emergency electrical generator plan including proposed temporary emergency generator set size(s) as required for the electrical outages and/or switching operations. MAA shall be contacted for specific generator requirements.
4. Include all temporary generator requirements in the bid documents for the project.
5. All temporary emergency electrical generator requirements shall be coordinated with and approved by MAA Operations and MAA Maintenance on a case-by-case basis.

Electrical outages shall be scheduled in accordance with, but not limited to, the following requirements:

1. All work that may potentially cause any electrical outage shall be performed during non-peak hours (usually from 12:00 midnight through 5:00 AM) unless otherwise approved by MAA. The designer shall obtain the Engineer's approval for electrical outage periods.
2. Equipment outages shall be allowed on only one major electrical equipment item at any one time unless otherwise approved by MAA.
3. All outage durations shall be kept to a minimum.
4. Any work requiring a sustained electrical outage shall be performed continuously around the clock until work is completed unless otherwise approved by MAA.
5. Whenever equipment is supplied by both a north and south feeder, at least one feeder shall remain connected and active unless otherwise approved by MAA. The de-energization of one of the two supply feeders (North or South) shall be considered an outage for the purpose of this standard.

Temporary emergency electrical generators shall be diesel powered, low noise, self-contained on a dedicated containerized mobile trailer with integral fuel tank and fuel spillage containment system.

## 14.8 Airfield Electrical

On airfield work which requires temporary wiring of lights, signs, etc. – the temporary wiring shall be buried, placed in conduit and/or marked to prevent damage to cable or exposure to hazard by operations and maintenance personnel. All areas disturbed by temporary wiring shall be returned to its original condition following removal of the temporary wiring.

# Chapter 15 Lighting

## 15.1 Interior Lighting

The Maryland Aviation Administration is committed to using lighting products that maximize energy efficiency and promote light quality. New lighting designs will receive review from the Office of Engineering and Construction and the Office of Maintenance & Utilities (OMU).

### 15.1.1 Light Emitting Diodes (LED) Light Fixtures

LED lighting shall be considered for all new building/areas and existing building/area upgrades where practical. The lighting design shall consider selecting fixtures that the manufacturers will support for a minimum of 20 years.

Table 15.1.1 provides a list of acceptable LED lighting fixtures for BWI Marshall & MTN Airports. As the technology advances, the manufacturer product numbers may change, but the proposed fixture shall meet or exceed the specifications in Table 15.1.1.

As of this revision, LED fixtures must meet one of two certifications. The certifications include fixtures that are Design Lights Consortium qualified products and/or labeled as Energy Star.

Table 15.1.1 Acceptable LED Lighting Fixtures for BWI Marshall and MTN Airports

| 2x2 Lensed | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Metalux 22GR LED | 2000<br>2400<br>2800<br>3200<br>3600<br>4000<br>4300 | 2084<br>2432<br>2804<br>3212<br>3598<br>4016<br>4310 | 21<br>24<br>29<br>34<br>39<br>46<br>50 | 99.2<br>101.3<br>96.7<br>94.5<br>92.3<br>87.3<br>86.2 | 85 | 3000K<br>3500K<br>4000K<br>5000K | L70 - 60,000 | NOTE 1, 2, 3 | Universal | 5-years | DLC C |
| Lithonia Lighting 2TLED | 2000<br>3300<br>4000 | 2092<br>3339<br>3921 | 18<br>29<br>35 | 116.2<br>115.1<br>112 | 82 | 3000K<br>3500K<br>4000K<br>5000K | L90 - 60,000 | NOTE 4, 5, 6, 7, 8, 9, 10 | Universal | 5-years | DLC C |
| Williams LPT-22 | 3000<br>4300 | 3000<br>4332 | 33<br>50 | 90.9<br>86.6 | 82 | 3000K<br>3500K<br>4000K | L85 - 50,000 | NOTE 19, 21, 22 | Universal<br>120V<br>277V | 5-years | DLC C |
| **2x4 Lensed** | | | | | | | | | | | |

| Manufacturer/Product Number | Lumen Output | Delivered Lumens* | Wattage | Fixture Efficacy (LPW) | CRI | CCT* | Rated Life (hours) | Driver | Voltage | Warranty | Certi |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Metalux 24GR LED | 3000 | 3009 | 28 | 107.5 | 85 | 3000K | | NOTE 1 | Universal | 5-years | |
| | 3400 | 3416 | 32 | 106.8 | | 3500K | | 2, 3 | | | |
| | 3800 | 3766 | 36 | 104.6 | | **4000K** | | | | | |
| | 4200 | 4249 | 38 | 111.8 | | 5000K | | | | | |
| | 4800 | 4841 | 44 | 110 | | | L70 - 60,000 | | | | DLC C |
| | 5600 | 5553 | 52 | 106.8 | | | | | | | |
| | 6400 | 6398 | 61 | 104.9 | | | | | | | |
| | 7200 | 7174 | 64 | 112.1 | | | | | | | |
| | 8500 | 8513 | 79 | 107.8 | | | | | | | |
| | 9000 | 9020 | 86 | 104.9 | | | | | | | |
| Lithonia Lighting 2TLED | 3000 | 3097 | 25 | 123.9 | 85 | 3000K | | NOTE 4, | Universal | 5-years | |
| | 4000 | 3946 | 32 | 123.3 | | 3500K | L90 - 60,000 | 5, 6, 7, | | | DLC C |
| | 4800 | 4866 | 40 | 121.7 | | **4000K** | | 8, 9, 10 | | | |
| | 6000 | 5589 | 47 | 118.9 | | 5000K | | | | | |
| | 7200 | 7729 | 67 | 115.4 | | | | | | | |
| Williams LPT-24 | 4200 | 4296 | 39 | 110.2 | 83 | 3000K | | NOTE | Universal | 5-years | |
| | 6700 | 6876 | 65 | 105.8 | | 3500K | L85 - 50,000 | 19, 21, | 120V | | DLC C |
| | 9000 | 8731 | 87 | 100.4 | | **4000K** | | **22** | 277V | | |

| 1x4 Lensed | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Metalux 14GR LED | 2000 | 2084 | 21 | 99.2 | 85 | 3000K | | NOTE 1, | Universal | 5-years | |
| | 2400 | 2432 | 24 | 101.3 | | 3500K | | 2, 3 | | | |
| | 2800 | 2804 | 29 | 96.7 | | **4000K** | L70 - 60,000 | | | | DLC C |
| | 3200 | 3212 | 34 | 94.5 | | 5000K | | | | | |
| | 3600 | 3598 | 39 | 92.3 | | | | | | | |
| | 4000 | 4016 | 46 | 87.3 | | | | | | | |
| | 4300 | 4310 | 51 | 84.5 | | | | | | | |
| Columbia Lighting LLT14 | 1950 | 1950 | 22 | 88.6 | 82 | 3000K | L80 - 50,000 | NOTE | Universal | 5-years | DLC C |
| | 2400 | 2400 | 27 | 88.9 | | 3500K | | 10, 14, | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3100<br>3800 | 3100<br>3800 | 36<br>45 | 86.1<br>84.4 | | **4000K** | | **15** | | | |
| Lithonia Lighting TL4 | 2000<br><br>3000<br>4000<br>4800<br>6000 | 2276<br><br>3234<br>4107<br>4932<br>5582 | 21<br><br>30<br>39<br>47<br>55 | 108.4<br><br>107.8<br>105.3<br>104.9<br>101.5 | 82 | 3000K<br><br>3500K<br>**4000K**<br>5000K | L90 - 60,000 | NOTE 4,<br><br>5, 6, 7, 8, 9 | Universal | 5-years | DLC C |

| 2x2 Direct/Indirect | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Metalux 22CZ | 2000<br>2400<br>2900<br>3400<br>3900<br>4400 | 2166<br>2547<br>3077<br>3603<br>4118<br>4630 | 19<br>23<br>29<br>35<br>42<br>50 | 114<br>110.7<br>106.1<br>102.9<br>98<br>92.6 | 85 | 3000K<br>3500K<br>**4000K**<br>5000K | L70 - 117,000 | NOTE 1, 2, 3 | Universal | 5-years | DLC C |
| Lithonia Lighting 2VTL2 | 2000<br>3300<br>4000 | 2267<br>3717<br>4334 | 20<br>35<br>42 | 113.4<br>106.2<br>103.2 | 82 | 3000K<br>3500K<br>4000K<br>5000K | L90 - 60,000 | NOTE 4, 5, 6, 7, 8, 9, 10 | Universal | 5-years | DLC C |
| Williams LT-22 | 2200<br>3400 | 2115<br>3559 | 21<br>36 | 100.7<br>98.9 | 82 | 3000K<br>3500K<br>**4000K** | L85 - 50,000 | NOTE 19, 21, 22 | Universal 120V 277V | 5-years | DLC C |

| 2x4 Direct/Indirect | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Metalux 24CZ | 3000<br>3500<br>4000<br>4500<br>5000<br>5500<br>6000<br>6500<br>7000 | 3098<br>3641<br>4152<br>4694<br>5199<br>5724<br>6344<br>6888<br>7460 | 25<br>30<br>34<br>40<br>45<br>51<br>57<br>62<br>69 | 123.9<br>121.4<br>122.1<br>117.4<br>115.5<br>112.2<br>111.3<br>111.1<br>108.1 | 85 | 3000K<br>3500K<br>**4000K**<br>5000K | L70 - 117,000 | NOTE 1, 2, 3 | Universal | 5-years | DLC C |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7500 | 7905 | 75 | 105.4 | | | | | | | |
| Lithonia Lighting 2VTL4 | 3000<br>4000<br>4800<br>6000<br>7200 | 3096<br>3938<br>4858<br>5583<br>7705 | 25<br>32<br>40<br>47<br>68 | 123.8<br>123.1<br>121.5<br>118.8<br>113.3 | 82 | 3000K<br>3500K<br>**4000K**<br>5000K | L90 - 60,000 | NOTE 4, 5, 6, 7, 8, 9, 10 | Universal | 5-years | DLC C |
| Williams LT-24 | 3000<br>4300<br>7300 | 3066<br>4548<br>7462 | 29<br>40<br>71 | 105.7<br>113.7<br>105.1 | 82 | 3000K<br>3500K<br>**4000K** | L85 - 50,000 | NOTE 19, 21, 22 | Universal 120V 277V | 5-years | DLC C |

| 1x4 Direct/ Indirect | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Metalux 14AC | 2000<br>2500<br>2900<br>3500<br>3900<br>4400 | 2141<br>2460<br>2889<br>3638<br>4066<br>4709 | 20<br>25<br>28<br>37<br>47<br>53 | 107.1<br>98.4<br>103.2<br>98.3<br>86.5<br>88.8 | 82 | 3000K<br>3500K<br>**4000K** | L70 - 117,000 | NOTE 1, 2, 3, 23 | Universal | 5-years | DLC C |
| Lithonia Lighting VTL4 | 2000<br>3000<br>4000<br>4800<br>6000 | 2051<br>2899<br>3710<br>4757<br>5432 | 20<br>29<br>41<br>47<br>55 | 102.6<br>100<br>90.5<br>101.2<br>98.8 | 82 | 3000K<br>3500K<br>**4000K**<br>5000K | L90 - 60,000 | NOTE 4, 5, 6, 7, 10 | Universal | 5-years | DLC C |
| Williams LT-14 | 3000<br>4700 | 3026<br>5136 | 29<br>49 | 104.3<br>104.8 | 82 | 3000K<br>3500K<br>**4000K** | L85 - 50,000 | NOTE 19, 21, 22 | Universal 120V 277V | 5-years | DLC C |

| 4' Lensed Strip Fixture | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Lithonia Lighting WL4 | 2000<br>3000<br>4000 | 2255<br>3251<br>4325 | 19<br>29<br>40 | 118.7<br>112.1<br>108.1 | 82 | 3000K<br>3500K<br>**4000K**<br>5000K | L90 - 60,000 | NOTE 4, 5, 10 | Universal | 5-years | DLC C |
| Metalux 4SLWP | 3900<br>4000 | 3910<br>4330 | 40<br>47 | 97.8<br>92.1 | 80 | **4000K** | L70 - 50,000 | NOTE 14 | Universal | 5-years | DLC C |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Columbia Lighting LCL4 | 2500<br>5000<br>6100<br>10100 | 2500<br>4992<br>6050<br>10080 | 25<br>48<br>55<br>96 | 100<br>104<br>110<br>105 | 80 | 3000K<br>3500K<br>**4000K**<br>5000K | L80 - 50,000 | NOTE 4, 5, 10 | Universal | 5-years | DLC C |

| 4' Enclosed & Gasketed Strip Fixture | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Columbia Lighting LXEM4 | LW<br>ML<br>HL<br>VL<br>XL | 4450<br>5350<br>6400<br>8150<br>10750 | 36<br>47<br>52<br>68<br>102 | 123.6<br>113.8<br>123.1<br>119.9<br>105.4 | 80 | 3000K<br>3500K<br>**4000K**<br>5000K | L80 - 60,000 | NOTE 10, 14, 15 | Universal | 5-years | DLC C |
| Williams 4VT2 | 5000<br>7900 | 5000<br>7900 | 47<br>82 | 106.4<br>96.3 | 82 | 3000K<br>3500K<br>**4000K**<br>5000K | L85 - 50,000 | NOTE 11, 12, 13, 18, 19 | Universal<br>120V<br>277V | 5-years | DLC C |
| Lithonia Lighting VAP | 4000<br>6000<br>12000 | 4428<br>6150<br>10236 | 44<br>64<br>109 | 100.6<br>96.1<br>93.9 | 90 | 3000K<br>3500K<br>**4000K**<br>5000K | L85 - 60,000 | NOTE 15 | Universal<br>120V<br>277V<br>480V | 5-years | DLC C |

| 2x4 High Bay Linear Fixture | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Lithonia Lighting IBH | 9000<br>12000<br>15000<br>18000<br>24000<br>30000 | 9366<br>13248<br>15370<br>20112<br>24737<br>30730 | 97<br>129<br>152<br>199<br>253<br>305 | 96.6<br>102.7<br>101.1<br>101.1<br>97.8<br>100.8 | 80 | **4000K**<br>5000K | L70 - 97,000 | NOTE 14, 15 | Universal<br>120V<br>277V | 5-years | DLC C |
| Williams GL-4 | 15000<br>20000<br>26000<br>30000 | 15470<br>20450<br>27050<br>30430 | 149<br>174<br>238<br>272 | 103.8<br>117.5<br>113.7<br>111.9 | 82 | 3500K<br>**4000K**<br>5000K | L85 - 50,000 | NOTE 14, 15 | Universal<br>120V<br>277V | 5-years | DLC C |
| Metalux HB | 12000<br>18000<br>24000 | 12505<br>19358<br>24002 | 104<br>152<br>203 | 120.2<br>127.4<br>118.2 | 80 | 4000K<br>**5000K** | L70 - 142,000 | NOTE 14, 15, 23 | Universal<br>120V<br>277V | 5-years | DLC C |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30000 | 29302 | 228 | 128.5 | | | | | | | |
| | 36000 | 35944 | 307 | 117.1 | | | | | | | |

| 6” Open Downlight | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Gotham 6" Evo | 1000 | 1059 | 12 | 88.3 | 85 | 2700K | | NOTE 4, | Universal | 5-years | |
| | 1500 | 1572 | 19 | 82.7 | | 3000K | | 5, 6, 7, | 120V | | |
| | 2000 | 2058 | 24 | 85.8 | | **3500K** | | 8,9,12, | 277V | | |
| | 2500 | 2612 | 30 | 87.1 | | 4000K | L70 - | 13 | | | Ener |
| | 3000 | 3077 | 37 | 83.2 | | | 60,000 | | | | |
| | 3500 | 3591 | 43 | 83.5 | | | | | | | |
| | 4000 | 4046 | 49 | 82.6 | | | | | | | |
| | 4500 | 4555 | 47 | 96.9 | | | | | | | |
| Portfolio LD6A 6LMH | 1000 | 1013 | 15 | 67.5 | 80 | 2700K | | NOTE | Universal | 5-years | |
| | 1500 | 1421 | 23 | 61.8 | | 3000K | L70 - | 10, 15 | 120V | | Ener |
| | 2000 | 2202 | 32 | 68.8 | | **3500K** | 50,000 | | 277V | | |
| | 3000 | 2644 | 44 | 60.1 | | 4000K | | | | | |
| Lithonia Lighting LDN6 | 600 | 670 | 12 | 55.8 | 80 | 2700K | | NOTE | 120V | 5-years | |
| LO6 | 1000 | 1090 | 18 | 60.6 | | 3000K | L70 - | 10, 15 | 277V | | Ener |
| | 1500 | 1640 | 26 | 63.1 | | **3500K** | 50,000 | | | | |
| | 2000 | 2140 | 35 | 61.1 | | 4000K | | | | | |

| 6” Open Wallwash | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Manufacturer/Product Number** | **Lumen Output** | **Delivered Lumens*** | **Wattage** | **Fixture Efficacy (LPW)** | **CRI** | **CCT*** | **Rated Life (hours)** | **Driver** | **Voltage** | **Warranty** | **Certi** |
| Gotham 6" Evo WW | 1000 | 1029 | 12 | 85.8 | 85 | 2700K | | NOTE 4, | Universal | 5-years | |
| | 1500 | 1506 | 19 | 79.3 | | 3000K | | 5, 6, 7, | 120V | | |
| | 2000 | 1982 | 24 | 82.6 | | **3500K** | | 8,9,12, | 277V | | |
| | 2500 | 2459 | 30 | 82 | | 4000K | L70 - | 13 | | | Ener |
| | 3000 | 2993 | 37 | 80.9 | | | 60,000 | | | | |
| | 3500 | 3412 | 43 | 79.3 | | | | | | | |
| | 4000 | 3888 | 49 | 79.3 | | | | | | | |
| | 4500 | 4365 | 47 | 92.9 | | | | | | | |
| Portfolio LD6A 6LM111H | 1000 | 1768 | 15 | 117.9 | 80 | 2700K | | NOTE | Universal | 5-years | |
| | 1500 | 1462 | 23 | 63.6 | | 3000K | L70 - | 10, 15 | 120V | | Ener |
| | 2000 | 2356 | 32 | 73.6 | | **3500K** | 50,000 | | 277V | | |
| | 3000 | 2780 | 44 | 63.2 | | 4000K | | | 277V | | |
| Lithonia Lighting LDN6 | 600 | 670 | 12 | 55.8 | 80 | 2700K | L70 - | NOTE | 120V | 5-years | Ener |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LW6 | 1000 | 1090 | 18 | 60.6 | | 3000K | 50,000 | 10, 15 | 277V | | |
| | 1500 | 1640 | 26 | 63.1 | | **3500K** | | | | | |
| | 2000 | 2140 | 35 | 61.1 | | 4000K | | | | | |

** Delivered lumens value is based on CCT option shown bold in column*

1. Cooper Controls 0-10V Dimming driver
2. Cooper Controls Step-Dim driver
3. Cooper Controls Fifth light DALI driver (10-100% Dimming)
4. eldoLED dims to 1% (0-10 volt dimming)
5. eldoLED SOLOdrive 0-10V dimming driver. Minimum dimming level <1%.
6. eldoLED SOLOdrive DALI dimming driver. Minimum dimming level <1%.
7. eldoLED POWERdrive DMX with RDM (remote device management). Minimum dimming level <1%. Includes termination resistor.
8. Dims to 1%, XPoint wireless enabled
9. Dims to dark, XPoint wireless enabled
10. Step-level dimming
11. Philips Xitanium 0-10V dimming driver. Minimum dimming level 10%
12. Lutron® Hi-Lume® 2-wire forward-phase dimming driver. Minimum dimming level 1%
13. Lutron® Hi-Lume® 3-wire or EcoSystem® dimming driver. Minimum dimming level 1%
14. Fixed Output
15. 0-10V dimming
16. Osram Sylvania LED dimming driver prewired for 0-10V controls
17. Philips Xitanium LED driver prewired for non-dimming applications
18. Philips Xitanium DALI dimming driver
19. Philips Xitanium 40% step dimming driver
20. Philips Xitanium Mark X line voltage dimming driver
21. ULT driver prewired for non-dimming driver
22. ULT driver prewired for 0-10V dimming applications
23. Cooper Controls Fifth light DALI driver (1-100% Dimming)

### 15.1.2 Fluorescent and High Intensity Discharge Light Fixtures

All projects that require fluorescent and high intensity discharge (HID) fixtures shall be designed to specify light fixtures that require lamps that the OMU currently keeps in stock. The following Table 15.1.2 has been prepared as a list of acceptable general purpose lamps for the BWI Marshall and MTN Terminals use. Approval for any lamps not listed in this table must be obtained from OMU.

Neon and cold cathode lighting are not acceptable for general purpose lighting. The use of neon or cold cathode in combination with LED for signage and retail use will be reviewed on a case by case basis by OMU, Office of Commercial Management, and the Office of Engineering & Construction.

Maximum fluorescent tube length shall be 4 feet; No U shaped fluorescent tubes shall be used.

The use of dimming systems shall be limited. When applicable, the design shall be kept small in size – that is: simple, manually controlled, and not connected to the building-wide control system. Dimming systems should avoid complicated operating scenarios that would be difficult to maintain. Dimming

system plans and details shall be submitted to the OMU for review. Specifications for comprehensive field commissioning and OMU training shall be included for any dimming control systems.

Table 15.1.2 Acceptable General Purpose Lamps for BWI Marshall and MTN Airports

| Fluorescent Tube | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Type of Lamp | Lamp ID Code | Manufacturer | Product Code | Approved Equal | Life, hours@ 12 hours/ start | Base Type | Lamp Watts | CRI | Color Temp-erature | Locat |
| | 2 Foot 17 Watts T8 | F17T8/XL/SPX41/ ECO | General Electric | 15484 | Osram Sylvania, Philips | 24,000 | G13 Medium bi-pin | 17W | 80+ | 4100K | Term and o Build |
| | 3 Foot 32 Watts T8 | F25T8/XL/SPX41/ ECO | General Electric | 15491 | Osram Sylvania, Philips | 24,000 | G13 Medium bi-pin | 25W | 80+ | 4100K | Term and o Build |
| | 4 Foot 28 Watts T8 | F28T8/XL/SPX41/ ECO | General Electric | 72866 | Osram Sylvania, Philips | 30,000 | G13 Medium bi-pin | 28W | 80+ | 4100K | Term and o Build |
| | 4 Foot 32 Watts T8 | F32T8/XL/SPX50/ ECO | General Electric | 16313 | Osram Sylvania, Philips | 36,000 | G13 Medium bi-pin | 32W | 80+ | 5000K | Daily Hou Gara |
| | 4 Foot 49 Watts T5 HO | F54T5/841/HO/EA/ ALTO49W ECO | Philips | 22052-5 | General Electric | 40,000 | Miniature bi-pin | 49W | 85+ | 4100K | High Lightin Term and o build |

-

| Self-Ballasted Fluorescent Spiral | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Type of Lamp | Lamp ID Code | Manufacturer | Product Code | Approved Equal | Life, hours@ 12 hours/ start | Base Type | Lamp Watts | CRI | Color Temp-erature | Locat |
| | 15 Watt T3 | FLE15HT3/2/841 | General Electric | 25183 | TCP, Maxlite | 8,000 | Medium E26 | 15W | 80+ | 4100k | Term and o Build |
| | 20 Watt T3 | FLE20HT3/2/841 | General Electric | 25186 | TCP, Maxlite | 8,000 | Medium E26 | 20W | 80+ | 4100k | Term and o Build |

-

| Compact Fluorescent Plug-in | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Type of Lamp | Lamp ID Code | Manufacturer | Product Code | Approved Equal | Life, hours@ 12 hours/ | Base Type | Lamp Watts | CRI | Color Temp-erature | Locat |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | start | | | | | |
| | 27 Watt PL | PLT32W/ 841/XEW/ 4Pin /ALTO27W | Philips | 26872-2 | Osram Sylvania, | 20,000 | 4 pin GX24Q4 | 27W | 80+ | 4100K | Down in Terr & Pi |
| | 42 Watt PL | F42BX/SPX41/A/4P | General Electric | 97636 | Sylvania, Philips | 17,000 | 4 pin GX24Q4 | 42w | 82 | 4100k | Lower Arrival |

-

| Pulse Start Metal Halide | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Type of Lamp | Lamp ID Code | Manufacturer | Product Code | Approved Equal | Life, hours@ 12 hours/ start | Base Type | Lamp Watts | CRI | Color Temp-erature | Locat |
| | 70 Watt, ED17, Universal Operating Position | MH 70W/U/PS | Venture | 78138 | Osram Sylvania, Philips, General Electric | 30,000 | Medium E26 | 70W | 65+ | 4000K | Dai Gara |
| | 150 Watt, ED17, Universal Operating Position | MH 150W/U/PS | Venture | 99584 | Osram Sylvania, Philips, General Electric | 15,000 | Medium E26 | 150W | 68+ | 4000K | Lower Arrival Roa cross |
| | 320 Watt, ED28, Vertical Operating Position | MS 320W/V/PS/740 | Venture | 59194 | | 20,000 | Mogul E39 | 320W | 68+ | 4000K | Hou Garage Fixtu |

-

| Ceramic Metal Halide | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Type of Lamp | Lamp ID Code | Manufacturer | Product Code | Approved Equal | Life, hours@ 12 hours/ start | Base Type | Lamp Watts | CRI | Color Temp-erature | Locat |
| | 39 Watt Par 30, 25 Degree Beam, Screw Base | CMH39/PAR30/FL25 | General Electric | 42067 | Osram Sylvania, Philips | 10,000 | Medium E26 | 39 W | 81 | 3000K | Pier Low Bagg Claim W Wa |
| | 70 Watt, ED 17, Open Rated, Universal Operating | CMH70/C/U/830/MED/O | General Electric | 31070 | Osram Sylvania, Philips | 16,000 | Medium E26 | 70W | 80 | 3000K | Open I Applica |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Position | | | | | | | | | | | |
| 70 Watt Par 30, 40 Degree Beam, Screw Base | CMH70/PAR30L/830/FL | General Electric | 22159 | Osram Sylvania, Philips | 10,000 | Medium E26 | 70W | 82 | 3000K | Red Co Acce Ligh |
| 70 Watt, Screw Base | CMH70/U/830/MED | General Electric | 22119 | Osram Sylvania, Philips | 16,000 | Medium E26 | 70W | 80 | 3000K | Ma Term Conco |
| 70 Watt, T6, Bi-Pin | CMH70/TU/830/G12 | General Electric | 20016 | Osram Sylvania, Philips | 15,000 | G12 Bi-Pin | 70W | 83 | 3000K | Ma Term Conco |
| 100 Watt Par 38, 25 Degree Beam, Screw Base | CMH100/PAR38/FL25 | General Electric | 45681 | Osram Sylvania, Philips | 15,000 | Medium E26 | 100W | 81 | 3000K | Ma Term Conco and P Light E |
| 150 Watt, T6, Bi-Pin | CMH150/TU/830/G12 | General Electric | 20017 | Osram Sylvania, Philips | 15,000 | G12 Bi-Pin | 150W | 82 | 3000K | Pier Exte Canc |
| 150 Watt, ED 17,Open Rated, Universal Operating Position | CMH150/C/U/942/ MED/O | General Electric | 31067 | Osram Sylvania, Philips | 15,000 | Medium E26 | 150W | 90 | 4200K | Ma Term Conco |

### 15.1.3 Lamps

Fixtures used at BWI Marshall and MTN airports shall be specified to use the types of LED fixtures in the Table 15.1.1 and fluorescent and metal halide lamps in Table 15.1.2, below:

Approved equal lamps, or proposed substitutes shall have equal or better characteristics in the “Life”, and Color Rendering Index (“CRI”), columns, compared to the specified fixtures and/or lamps, and shall have similar color temperatures, lumen output, and efficiency.

### 15.1.4 Lamp Ballasts and Drivers

Metal halide ballasts shall be electronic, for Pulse-start or Ceramic Metal Halide lamps.

Linear Tubular fluorescent ballasts shall be high efficiency and electronic, compatible with lamps listed below.

Compact fluorescent ballasts shall be electronic rapid-start, with end of lamp life cut-off circuiting and keyed, quick connect nylon plugs for secondary and primary wiring.

LED drivers shall be as noted in Table 15.1.1. Approval for any lamps not listed in this table must be obtained from OMU.

Remote ballasts and drivers shall not be permitted. The use remote ballasts or drivers for decorative or retail use will be reviewed on a case by case basis by OMU, Office of Commercial Management, and the Office of Engineering & Construction.

# 15.2 Exterior Lighting

## 15.2.1 Apron Lighting

All lightpoles and fixtures shall be specified based on aesthetics, design parameters, and replacement/maintenance considerations. Designers shall match existing products when modifying and/or expanding existing facilities. A list of lamps that are kept in stock is available for inspection by designers in the Office of Engineering & Construction, Architectural Section. In addition, all designs shall be coordinated with the MAA's Architect in the Office of Engineering & Construction, Architectural Section for aesthetics.

Consultants shall provide MAA's Architect and the Office of Maintenance and utilities (OMU) with cut-sheets on every light fixture and lamp proposed for MAA projects prior to final design for their review and approval.

Exterior lighting on the airfield ramp shall meet the performance required by latest FAA AC 150/5300-13A Appendix 5. The FAA AC 150/5300-13A, Appendix 5 states, "The area light beams must be directed downward and away from runway approaches and control towers. Shielding of the lights may be needed to minimize unwanted glare. Area light spread should cover all aircraft service areas uniformly. Refer to Illuminating Society of North America (IES), Recommended Practice for Airport Service Area Lighting, for additional guidance on apron lighting." The use of Light Emitting Diode (LED) type lamps in fixtures shall be specified for new and where practical for upgrade/replacement apron lighting as long as the criteria specified in the IES recommended practice for airport service area lighting are met.

Lamination levels must be uniform and consistent. The consultant shall provide the contractor with limitation chart/curves for each lightpole proposed or to be modified as part of the bid documents.

Each pole shall bear an identification tag (engraved on aluminum plate) which shall list the manufacturer, model number, date of manufacture, and date of installation.

Heights of the poles should match existing for all reconstruction and retrofit projects. Designers shall coordinate each lightpole installation(s) with and submit an Airport Zoning Application to MAA's Office of Planning and comply with all State and Federal regulations. The designer is fully responsible to check Part 77 for all lightpoles proposed or to be modifies. Lightpole height (including and lightning rods) shall not penetrate any navigational surfaces, i.e. FAR Part 77. If penetration is unavoidable, Federal Aviation Administration approval must be acquired (Refer to Design Procedures, Section 4.2).
The designer must also check for any glare or line of sight issues when designing and locating lightpoles.

The designer shall design the lightpoles to accommodate installation of banners on lightpoles, if requested by MAA. The designer must inquire from the MAA Project Manager for any banner provisions and/or if any banners will be attach to the lightpoles.

Lightening protection and design must meet the current IES standards.

Color shall be black and smooth, unless otherwise approved by MAA's Architect in writing. Arms, luminaries, and all other attachments shall be provided in matching color.

### 15.2.1.1 Apron Lightpole Lowering Devices

All apron lightpoles installed at a height above 35 feet shall be designed and specified to include lowering devices for luminaries and their mounting assemblies. The height shall be measured from finished grade to top of lightpole mast, excluding lightning rod.

An external portable winch unit shall be used to lower the luminaire assembly down to the pole base for servicing.

Lowering Device Specification Requirements:

Lowering device specifications shall include the following requirements:

The lowering device shall be designed per the current American Association of State Highway and Transportation Officials (AASHTO) standards.

Comply with AASHTO LTS (Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals). Verify current edition used by MAA.

Lowering device light fixtures and lightpoles shall be manufactured and tested as one system and be provided and warranted by one manufacturer. Hoist cables for lowering device shall be stainless steel aircraft type, internal to lightpole, and factory installed.

A power outlet for testing of luminaries in the lowered position shall be provided.

Portable Winch Unit and Transformer Requirements to be specified:

For projects consisting of three (3) lightpoles or more, the contractor shall provide two (2) portable winch units. MORI forms must be prepared and submitted by the designer.

For projects consisting of two (2) lightpoles or less, lightpoles shall be by the same pole manufacturer currently used at BWI Marshall and/or MTN Airports. This will eliminate the need for providing a new portable winch unit. Designer shall coordinate with Procurement for the need of a sole source justification for the lightpole(s).

Portable winch units shall be 120-volt and be provided with wired remote controller, with cabling length of 15 feet minimum.

Transformer for portable winch unit shall also be portable, totally enclosed, permanent, primary and secondary, twist-locking plug connectors on pigtails to match pole-base power outlet and winch plug.

Primary of transformer shall be rated at the lighting-circuit voltage; secondary shall be rated at the voltage of the portable winch unit (120-volt).

## 15.2.2 Airfield Lighting and Visual Aids Systems and Fixtures

### 15.2.2.1 Light Fixtures

A. Light Emitting Diode (LED) type lamps in fixtures shall be specified for new airfield lighting projects at BWI Marshall and MTN Airports because of longer lamp life and lower energy consumption. ADB airfield lighting fixtures shall be used as the basis of design.

B. All fixtures used on BWI Marshall or MTN lighting projects shall be FAA approved types, with the type of lamp specified by the Designer. Fixtures shall be certified under the Airport Lighting Equipment Certification Program described in FAA AC 150/5345-53, latest edition, and shall be of a type listed in Appendices 3 and 4 of the AC. Updates to the AC Addendum list of FAA approved fixtures are made periodically. Consult the FAA Advisory Circular web page to search for the most recent edition of FAA AC 150/5345-53 and to obtain the latest Addenda.
The Designer shall include within Technical Specification L-125, "Installation of Airport Lighting Systems", the applicable FAA approved fixtures listed in the most recent edition of FAA AC 150/5345-53.

C. The current FAA AC 150/5345-53 Addendum list has added a special designation for LED equipped fixtures. The fixture type now has an (L), following the last letter after the L- number designation to indicate an LED lamp is required. Example:

L-850A uses an incandescent lamp
L-850A (L) uses an LED lamp

In-pavement light fixtures shall be specified to be Class 2, Style 3. The class and style designation must be indicated in the Contract Documents. Class 2 indicates that the light fixture is constructed to accommodate base mounting. The Style 3 fixture is defined as having a maximum height of ¼ inch above finished grade and is intended to prevent damage to in-pavement light fixtures during snowplowing operations.

D. LED light and incandescent sourced lights, shall not be mixed in a run of fixtures. Do not insert a series of LED lights within a length of incandescent lights, unless there is a change in direction. Every effort shall be made by the designer to minimize transitions from one type of light to the other.

E. LED lights shall be specified without heaters unless the designer is otherwise advised by the MAA Project Manager of a project specific requirement.

F. Steel reinforcing cages shall be provided on all in-pavement lights installed in both asphalt and concrete pavements. Steel reinforcing cages shall be in accordance with the Steel Reinforcing Cage detail. Steel Reinforcing Cage detail is attached to this section.

#### 15.2.2.2 Lockout / Tag-out for Airfield Lighting for S-1 Series Plug Cutouts

All S-1 series plug cutouts shall be the lockable type. The following is the specification for the S-1 series plug cutout:

- SERIES PLUG CUTOUT TYPE S-1. S-1 series plug cutouts shall be lockable, individually keyed with two keys, capable of carrying 20 Amperes, and shall have four contacts that close the circuit between the regulator and series lighting loop. The body shall be constructed of high strength plastic. The series plug cutout shall be protected against arcing. Porcelain bodies shall not be used.

#### 15.2.2.3 Airfield Lighting Cable

A. Cables for Airfield Lighting Circuits shall be FAA L-824, 5kV, Type B cable with EPR (Ethylene Propylene Rubber) insulation and CPE (Chlorinated Polyethylene) Jacket. Underground cable shall conform to the requirements of FAA AC 150/5345-7 or latest edition, be provided by an FAA certified manufacturer and conform to the following additional specifications:
   - Cable shall be insulated and jacketed copper, #8 AWG, 7 strand (19 strand is acceptable).

- Cable shall be single conductor, suitable for direct burial and/or raceway installation in wet conditions, and shall be rated for a minimum 90° C for continuous service and130° C, for short circuit conditions.

G. Available Manufacturers: Certified L-824, 5kV, Type B cable manufacturers are listed in FAA AC 150/5345-53 or latest edition, and shall be listed in the current Addendum to Appendices 3 and 4. Updates to the Addendum list of FAA approved cables are made periodically. Consult the FAA Advisory Circular web page to search for the most recent edition of FAA AC 150/5345-53 and to obtain the latest Addenda.

B. There may be lead times of up to 16 weeks for cables, thus phasing of deliveries, contract completion time, and/or advance ordering should be considered by the designer.

C. Permanent wiring shall be placed in conduit.

### 15.2.2.4 Airfield Lighting Cable Identification Tags

Designers shall include the following information on the contract documents:

A. Identification tags shall be provided for each cable entering and/or leaving manholes, handholes, junction boxes, and light fixture cans.

B. All tags shall be plastic "phenolic" tags with colors as shown in the table below.

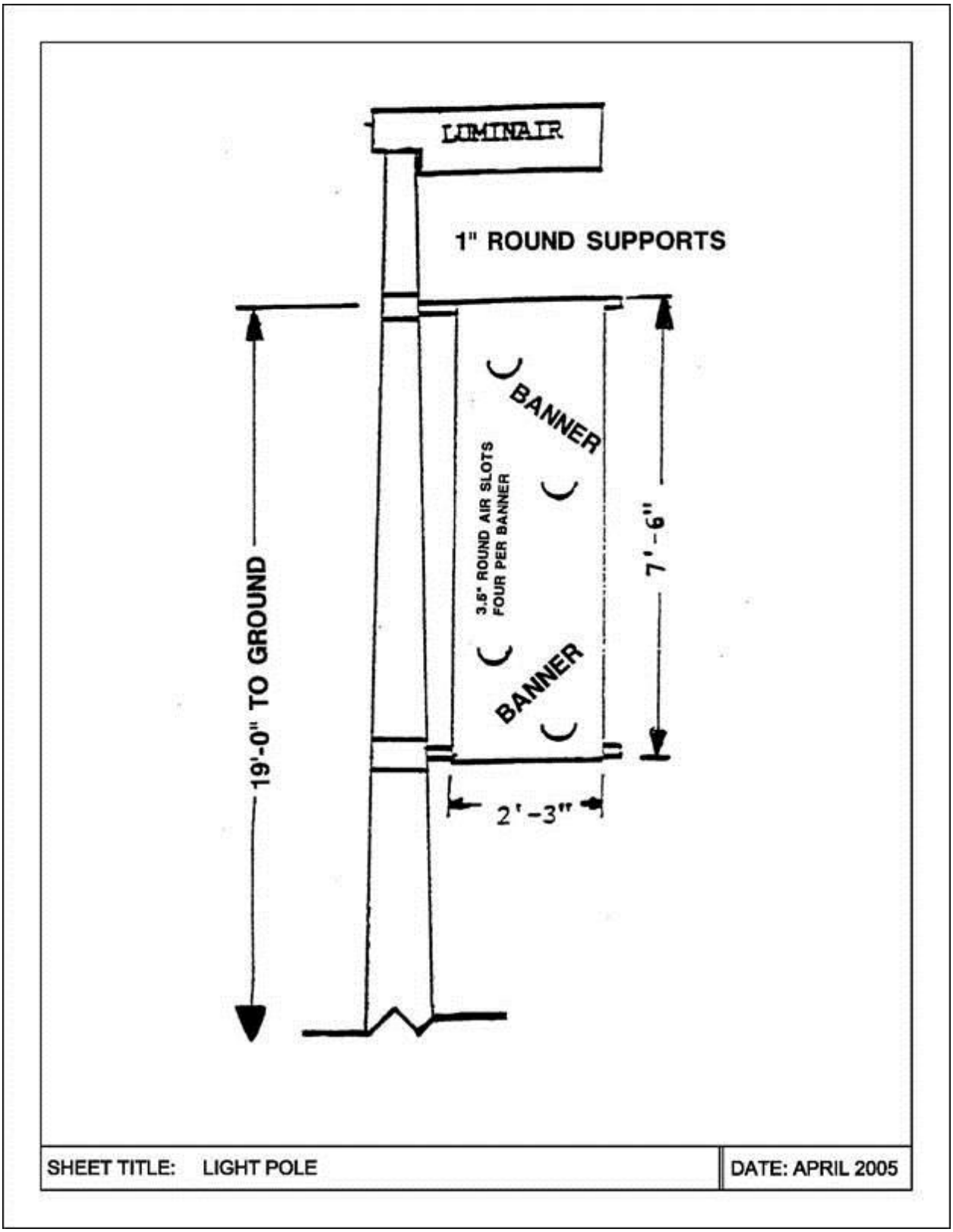
C. Two heavy-duty UV resistant black nylon ties shall be used to secure each tag to the cable.

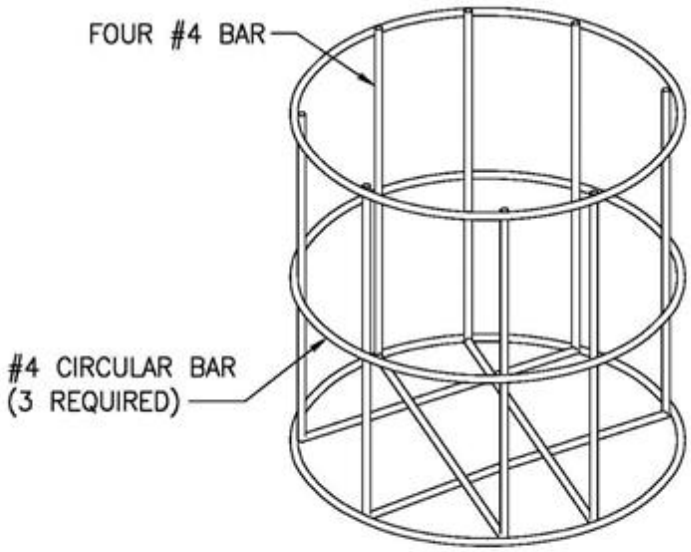
| Identification | Tag Color | Engraved Letter Color |
|---|---|---|
| Primary Distribution | Red | White |
| Runway Edge | White | Black |
| Controls | Black | White |
| Taxiway Edge or Centerline | Blue | White |
| Runway Touchdown and Centerline | Yellow | Black |
| FAA and Communication | Green | White |
| Secondary Power | White | Red |
| Spare Wire | Orange | White |

Additionally, cable identification tags shall be in accordance with the Cable Identification Tag detail. Cable Identification Tag detail is provided attached to this section.

### 15.2.2.5 Airfield Lighting Fixture Identification Tags

Fixture identification tags shall be provided for all elevated light fixtures on the runways and taxiways. Fixture identification tags shall be in accordance with the Fixture Identification Tag detail shown on. Fixture Identification Tag detail is attached to this section.


LUMINAIR
1" ROUND SUPPORTS
BANNER
3.5" ROUND AIR SLOTS
FOUR PER BANNER
BANNER
19'-0" TO GROUND
7'-6"
2'-3"
SHEET TITLE: LIGHT POLE
DATE: APRIL 2005




NOTE:

1. STEEL REINFORCEMENT SHALL CONFORM TO ASTM–A184, STANDARD SPECIFICATION FOR FABRICATED DEFORMED STEEL BAR MATS FOR CONCRETE REINFORCEMENT, OR ASTM–A704, STANDARD SPECIFICATION FOR WELDED STEEL PLAIN BAR OR ROD MATS FOR CONCRETE REINFORCEMENT.

| SHEET TITLE: STEEL REINFORCING CAGE | DATE: FEB. 2010 |
|---|---|

### 15.2.3 Landside Lighting (Parking and Roadways)

All light poles and fixtures shall be specified based on aesthetics, design parameters, and replacement/maintenance considerations. Consultants shall match existing products when modifying and/or expanding existing facilities. A list of lamps that are kept in stock is available to Consultants in the Office of Engineering & Construction, Architectural Section. New parking lots and roadways shall be designed with LED pole mounted light fixtures. In addition, all designs shall be coordinated with the MAA's Architect in the Office of Engineering & Construction for aesthetics.

Consultants shall provide MAA's Architect and the OMU with cut-sheets on every light fixture and lamp proposed for MAA projects. LED fixtures shall be considered for all new areas and existing area upgrades where practical.

Light poles shall be round tapered aluminum poles with steel anchor bolts, transformer base, 2" x 4" handhole and a smooth black finish. Poles shall meet the performance of #RTA30.

Luminaries shall meet the performance of Holophane (Mongoose LED) cast aluminum housing, LED light engines with L70 greater than 100,000 hours, 5000K color temperature, 15,000-36,000 lumen output, luminaries with 5-3/4" arms and smooth black finish, and DLC qualified. Existing luminaries that are to be matched are 250W, 400W, or 1000W, HPS at 277V with a separate grounding wire.

Each pole shall bear an identification tag (engraved on aluminum plate) which shall list the manufacturer, model number, date of manufacture, and date of installation.

The need to install banners on light poles shall be coordinated with MAA's Project Manager and OMU. Light poles, banner supports, and foundations shall be designed for banners, when required by MAA. The banner supports and hardware shall be coordinated with and approved by OMU. Harmonics shall be considered for lighpoles with banners.

Notwithstanding; FAA Part 77, heights of the poles should match existing for all reconstruction and retrofit projects. Designers shall coordinate each light pole installation(s) with and submit an Airport Zoning Application to MAA's Office of Planning and comply with all Local, State and Federal regulations. Light pole design shall not penetrate any navigational surfaces, i.e. FAR Part 77. If penetration is unavoidable, Federal Aviation Administration approval must be acquired (Refer to Design Procedures, Chapter 4.2 FAA Requirements for Proposed Development.)

Parking lot concrete foundation heights shall extend a minimum of 2-1/2 feet above finished grade to resist vehicle impact.

Color shall be black and smooth, unless otherwise approved by MAA's Resident Architect. Arms, luminaries, and all other attachments shall be provided in matching color.

# 15.3 Airfield Lighting Counterpoise for Lightning Protection

## 15.3.1 Purpose

Per FAA AC 150/5340-30H, Design and Installation Details for Airport Visual Aids, Paragraph 12.5 or as amended, "The purpose of the counterpoise or lightning protection system is to provide low resistance preferred paths for the energy of lightning discharges to enter the earth and safely dissipate without causing damage to equipment or injury to personnel. The counterpoise is a separate system and must not be confused with equipment safety grounds that provide personnel protection from electrical shock hazards." Equipment safety grounds shall be provided per Paragraph 12.6 of the above cited Advisory Circular, and as amended later.

## 15.3.2 Lightning Protection Requirements for Airfield Lighting Equipment

To provide a level of protection from lightning strikes to underground power and control cables for airfield electrical equipment owned and maintained by the BWI Marshall and MTN Airports, all projects shall include installation of counterpoise wire above the wiring and conduit intended to be protected. Following are installation requirements for the installation of counterpoise wire:

1. The Counterpoise conductor shall be a bare solid copper wire, #6 AWG.
2. Counterpoise shall be connected to ground rods spaced a maximum of 500 feet apart.
3. Counterpoise shall be bonded to ground rods in accordance with Section 15.3.3.
4. Ground Rods shall be copper or copper-clad steel, 10 feet long by 3/4-inch diameter, minimum.
5. Ground rods shall be installed a minimum of 6" deep to top of ground rod.
6. Include provisions in the contract documents that if the resistance to ground of a ground rod exceeds 25 ohms, a supplemental ground rod shall be added.
7. Counterpoise shall be connected to an exterior ground lug on ALL Light Bases that are intended to contain wiring for Airport-Owned and Maintained Lighting, Navigational Aids (Navaids), and other miscellaneous Airfield Electrical Equipment. This includes, but is not limited to, all inpavement and elevated light base cans and sign base cans.
8. A rebar cage shall be installed around inpavement light bases in rigid pavement as well as in concrete encasement for light bases installed in flexible pavement. The counterpoise shall be bonded to the rebar cage.
9. Coat any exposed copper/brass at connections or bonds to base cans with a 6 mil layer of 3M ScotchKote electrical coating or approved equal.
10. Counterpoise connections shall be UL listed for direct earth burial.
11. Specifications shall require installation to comply with applicable requirements of NFPA 780, Standard for the Installation of Lightning Protection Systems.
12. At the Airfield Lighting Vault or other power source, bond counterpoise to vault or power source equipment grounding system.

## 15.3.3 Bonding

Whenever counterpoise wires are bonded to ground rods or other grounding electrodes, bonds shall be exothermic welds. Exothermic welds shall be coated against corrosion where direct buried.

Counterpoise Wire Installation - Provide Counterpoise wire in accordance with the following table:

| Counterpoise Wire Requirements | |
|---|---|
| **Duct or Conduit Installation Method and Configuration** | **Counterpoise Wire Installation Requirements** |
| Single conduit, all sizes, not adjacent to pavement edge | 4” above line to be protected |
| Single conduit, all sizes, running beneath pavement (apron area, paved shoulders) | 4” above line to be protected |
| Single conduit, all sizes, running adjacent to edge of pavement, in grass area | 8” below grade and located half the distance from edge of pavement to the conduit run centerline. |
| Multiple conduits and ductbanks, all widths and depths | Height of Counterpoise wire above conduit(s) to be protected shall be within a 45-degree zone of protection below the counterpoise. Provide number of Counterpoise wires as required to meet protection zone criteria. Minimum cover over counterpoise shall be 12”. |
| Directionally drilled conduit, single, double or in group of three | None – provide ground rod at each end of directionally drilled conduit and bond to counterpoise of circuit being placed in directionally drilled conduits. |
| Group of 4 or more directionally drilled conduits | #6 AWG, Minimum, in separate directionally drilled sleeve, centrally located. Provide ground rod at each end of directionally drilled conduit and bond to counterpoise wire. |
| Conduits in steel casing | None – Provide ground rod at each end of casing and bond with #6 counterpoise wire. |
| Buried FAA cables | Refer to FAA Design Standard 19e or latest edition. |

Required Specification Sections:

To supplement the above design standard items, include in the contract documents the following specification sections from Advisory Circular 150/5370-10D (or current edition), ITEM L-108 UNDERGROUND POWER CABLE FOR AIRPORTS.

1. 108-3.7 EXOTHERMIC BONDING
2. 108-3.8 TESTING

## Chapter 16 Building Systems

# 16.1 Building Automation System

Building Automation System (BAS) for the Baltimore Washington International Thurgood Marshall Airport (BWI Marshall Airport) shall be provided as outlined herein and according to the referenced Specifications located in Appendix D - Standard Specifications and guidelines described below.

The existing BWI Marshall Airport Building Automation System (BAS) is a Johnson Controls (JCI) Metasys system incorporating JCI legacy N2 protocol (old system) and BACnet MS/TP (New system). All current and future BAS modifications and additions must be performed by an authorized factory branch of Johnson Controls and will be required to communicate through the BWI Marshall Airport BAS site director which is a JCI Metasys ADX server.

The existing BAS system currently communicates on both Arcnet and Ethernet. Only minor modifications or additions will be performed with the JCI N2 protocol, except for remote facilities. Programming and modifications to the existing Person Machine Interface (PMI) archive and Network Integration Engine (NIE), and ADX server must be performed by persons regularly employed by Johnson Controls. BAS modifications or additions of size, such as additions of multiple HVAC systems or units, are required to communicate on the BWI Marshall Airport Ethernet through a JCI Network Automation Engine (NAE) or JCI Network Control Engine (NCE) on BACnet MS/TP at a baud rate of 38400. All work must be performed by an authorized representative of Johnson Controls, and any available software updates must be identified during design, so updates occur as part of the execution of the project.

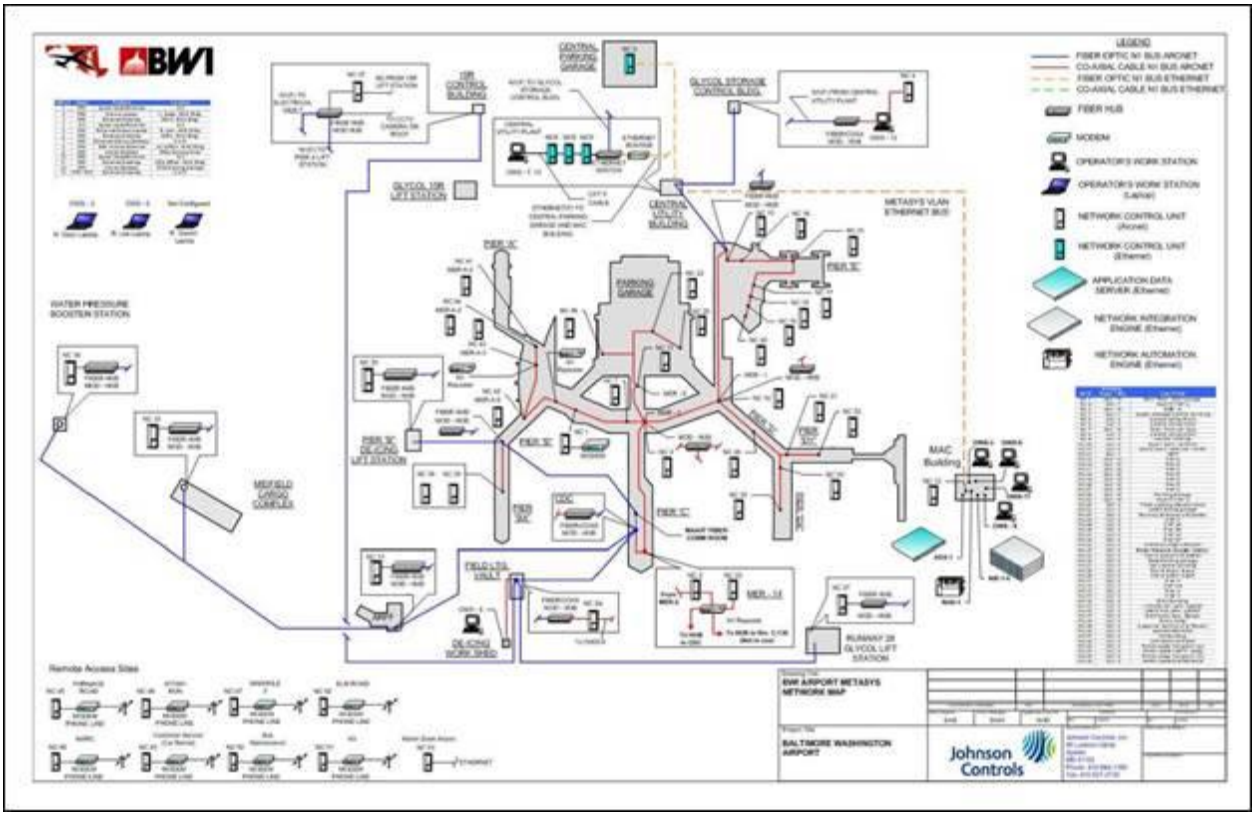
The old version of BAS is based on N2 protocols and covers majority of the Airport BAS system.

The new BAS system is a BACnet, Web-Based, JCI Metasys system that was installed in 2009.

The server that serves the BACnet, Web-based controls, is located in the MAC Building. A combination of one Application and Data Server (ADS), four Network Integration Engines (NIE's) and one Network Automation Engine (NAE) are major components of the server. The ADS provides 25 simultaneous access on the BWI Marshall Airport Ethernet system. Four Operator's Work Station (OWS) are also located in the MAC Building.

Refer to Metasys Network Map at BWI Marshall Airport detail on the following page for all existing controls and communication network.

The NIE integrates the old Metasys N2-based BAS into the new generation of technology that includes the internet, Information Technology (IT) and enterprise level global communication.




*Metasys Network Map*

All new controls shall be BACnet MS/TP direct digital controls as manufactured by Johnson Controls, except for remote facilities. A minimum of one Network Automation Engine (NAE) shall be installed as a Web-based extension to the existing Metasys ADX server network.

The old NC system shall be removed for major renovations where required and replaced with new NAE system. A major renovation is defined as a project that involves modification to the source component(s) of an HVAC system such as an air handler or central plant modification. Minor renovations involve the sub-systems or terminal units such as the VAV boxes, unit heaters, convectors, fan coil units, and space reheats. Each application needs to be explored for availability of BACnet network near the project location to identify the most cost effective approach, and impact on future projects.

New controls shall be designed and installed to meet the project specific requirements, MAA standards and sequence of operation. All new or updated software shall be installed in control units and operator workstations. Connect and configure equipment software to achieve sequence of operation.

Remote Facilities: There are several remote buildings and facilities that communicate with the existing BWI Marshall BAS (METASYS) by dial-up modem and they cannot be upgraded to the new system. These facilities are; Furnace Road, Stony Run, Manhole 2, Elm Road, MARC, Customer Service (Car Rental), Bus Maintenance, and K9. These facilities shall be handled separately, on a case-by-case basis and upgraded when a proper line of communication and network is available.

Ventilation shall be based on Demand-Controlled Ventilation (DCV), using $CO_2$ sensors. DCV shall be based on the indoor $CO_2$ level, compared with outside $CO_2$ level, to make adjustment to the rate of outside air to the building. $CO_2$ sensors shall be installed in spaces, return air duct, supply air duct as required and outside as a reference point to the inside level of the $CO_2$. Minimum outside air shall be provided for pressurization, exhaust systems, and to meet non-human pollutant levels as required. Refer to Chapter 16.1.2 Existing Demand-Controlled Ventilation (DCV) Software for a sample of DCV program/ software description.

Airflow Measuring System shall be Thermal Dispersion type. Refer to Appendix D - Standard Specifications for partial language that shall be used when specifying Airflow Measuring System at BWI Marshall Airport.

Flow meters shall be turbine type. Refer to Appendix D - Standard Specifications for partial language that shall be used when specifying flow meters at BWI Marshall Airport.

Spare Parts: Projects that involve the removal or replacement of N2 legacy equipment will require that all N2 application specific controllers and NCM supervisory controllers be turned over to the MAA as spare parts. Major renovations and additions utilizing BACnet MS/TP can require one application specific controller (FEC product) as a spare for each type utilized for the project.

Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

Control system shall include the Building Lighting Control System. Guidelines for the lighting controls are defined in the electrical specifications. The current standard for lighting control integration with the BAS system is BACnet MS/TP “smart breakers”. A notation on the mechanical plans and BAS specification should be made, so the mechanical contractor (the typical contracting agent for BAS) carries the BAS networking of the lighting controls in their scope of work.

Designers shall coordinate with Johnson Controls throughout the design process for modifications or additions to the BWI Marshall Airport BAS. Contact Mr. Erik Badders (410-527-2607/erik.a.badders@jci.com) at Johnson Controls, so existing BAS capacity can be assessed and proper implementation of new Metasys controls occurs.

### 16.1.1 Design Guidelines

Designers shall prepare design drawings and specifications as follows:

1. Review, revise and update part one of the BAS specifications as required to suit the project scope of work.
2. Review, revise and update part two of the BAS specifications as required to suit the project scope of work.
3. Include part three, execution, in accordance with MASTERSPEC and project scope of work.
4. Provide sequence of operation and show on the drawings.
5. Provide general controls riser diagram.

6. Provide equipment controls riser diagrams, including, but not limited to, air handling units, pumps, exhaust fans, VAV boxes, heat exchangers, fan coils, unit heaters, cabinet heaters, chillers, cooling towers and boilers.
7. Provide composite BAS riser diagram of entire system, showing locations of all controllers, including but not limited to terminal equipment controllers (VAV boxes, reheat coils, finned tube, etc.) for new and existing.
8. All control valves for chilled and heating water systems shall be two way valves unless approved by the MAA for using three way valves or as required by the specific project requirements.
9. All control dampers shall be low leakage type.
10. All actuators for valves and dampers shall be electric type except for large valves and dampers that pneumatic actuators can be provided where pneumatic system is available or new pneumatic system is required due to the size of the project.
11. Provide all required software for all equipment controllers and equipment, including but not limited to ADX, NAE, NIE, FEC, etc. Install all required software on the two (2) MAA provided laptops. Provide all wiring, cables and all devices necessary to connect to controllers and the network. Provide training on all software and systems.
12. Include BAS commissioning by the BAS supplier (JCI) in the specifications as required. Coordinate with the MAA.
13. Coordinate Variable Frequency Drives (VFD) operation with the sequence of operation and JCI.
14. VFD's shall have minimum analog and digital inputs and outputs as shown on the sample specification. Coordinate with electrical for the VFD's requirements. Refer to Appendix D - Standard Specifications for VFD's special requirements.
15. Provide additional work station and laptops as required. Coordinate with the MAA.
16. Review, revise and update warranty for the BAS system. Coordinate with the MAA.
17. Provide composite list of all required software, hardware, controllers, sensors, etc., required for the operation of the Metasys Extended Architecture system.
18. Include controls for lighting, emergency generators, switchgear/substation, and other systems and equipment as required by the scope of the work.

### 16.1.2 Existing Demand-Controlled Ventilation (DCV) Software

The following describes the existing DCV software at BWI Marshall Airport. Designers shall ensure that all future designs are compatible with the following:

1. Ventilation Control Application.
   a. ASHRAE Standard 62-2004, Ventilation for Acceptable Indoor Air Quality, provides a procedure to determine outdoor air flow rates for buildings: The "Ventilation Rate Procedure."
   b. Hardware and software for DCV shall be designed and installed to respond to $CO_2$ level in less than five (5) minutes.
2. Software Features: The following software features shall be part of the DCV application.
   a. $CO_2$ Multiplexer--Controls the sampling sequence and storing of the three measured $CO_2$ concentrations.
   b. $CO_2$ Sensor Autozero function--Causes the controller to read outdoor air $CO_2$ concentrations for one hour each day for the auto zeroing algorithm in the $CO_2$ sensor.
   c. Outdoor Air Flow Calculator--Uses the $CO_2$ concentration data to calculate the outdoor air flow rate.
   d. Outdoor Air (ODA) Flow Controller--Uses the outdoor air flow rate as a controlled variable input for closed loop PI control of outdoor air flow. The primary setpoint is determined by the Outdoor Air Flow Controller's Setpoint Selector.

e. Outdoor Air Flow Controller Backup--Takes over control when the ODA Flow Calculator output is not dependable for any reason. This is a redundancy that is not required for outdoor air flow control but is provided for space pressurization considerations.
f. Outdoor Air Flow Setpoint Selector (with $CO_2$ High Limit Control)--The Setpoint Selector determines the setpoint of the Outdoor Air Flow Controller based on the highest of three signals: Scheduled setpoint based on estimated occupancy, space pressurization (i.e., volume matching) setpoint, and the $CO_2$ high limit control setpoint. The $CO_2$ high limit control function supplements the scheduled outdoor air flow function, addressing any higher than expected occupancy periods.
g. Return Air $CO_2$ Alarm capability--Alerts building operators to conditions of high $CO_2$ levels, indicating loss of ventilation control, or conditions of low $CO_2$ levels indicating a $CO_2$ sensor fault.
h. Controller Manager--Selects between the Outdoor Air Flow Controller and the conventional discharge air temperature controller/economizer for control of the mixed air dampers.
i. $CO_2$ Concentration Values Check--Warns the operator if the $CO_2$ concentration values are not in the proper relationship; supply air $CO_2$ concentration should be higher than that of the outdoor air and lower than that of the return air.
j. Lead Ventilation--Provides ventilation prior to occupancy, diluting building source contaminants to acceptable levels.
k. Trend Tool--This Excel worksheet, in conjunction with an OWS and Metalink™, provides expanded graphic presentation of trend data.
l. Outdoor Air Actuator Ramp Generator--Diagnostic software process compound ramps outdoor air damper through 0%, 50% and 100% positions for precommissioning tests and ventilation control verification.
m. Trend Automator--Starts and stops trending of object attributes when the air handling unit is started and stopped. This avoids wasted disk space which occurs if trending continues during equipment off periods.
n. Reliability Checker--Replaces unreliable trend data with zero.
o. Outdoor Air Flow Calculator - Energy Balance Method--Uses mixed, return and outdoor air temperature data to calculate the outdoor air flow rate for comparison purposes (not for control).

3. Measurement of Outdoor Air Flow Rate

The following are methods/options that can be used for measuring the Outdoor Air Flow Rates.

- Option 1 requires specific software as described in this section and is being used at BWI Marshall Airport.
- Option 2 requires modified software, written specially for multiple $CO_2$ sensors, and operating with a dedicated Outdoor Air Flow Measuring system.

The preferred option shall be based on the latest installations at BWI Marshall Airport and shall be reviewed and approved by the MAA prior to design and installation.

<u>Option 1:</u>

a. Outdoor air flow is measured indirectly, using the "$CO_2$ Concentration Balance" measurement method. In the "$CO_2$ Concentration Balance" method, the outdoor air flow is calculated from supply air flow (measured directly via airflow measuring station), and from three $CO_2$ concentrations. Outdoor, supply, and return air $CO_2$ concentrations are used to compute the fraction of outdoor air in the supply air stream. This provides a

calculated outdoor air flow value as a controlled variable input for the Outdoor Air Flow Controller.

b. The volumetric concentration balance for the outdoor and return air streams being mixed can be calculated for any "tracer gas" injected into the air streams. Since human respiration generates significant amounts of $CO_2$ in the return air stream and $CO_2$ sensors are available, $CO_2$ is a good tracer gas for this method.

Option 2:

a. Provide duct-mounted air flow measuring system for outdoor air flow measuring and multiple $CO_2$ sensors for supply and/or return air ducts and outdoor air. The $CO_2$ measurement program shall be modified if duct-mounted air flow measuring is utilized and multiple $CO_2$ sensors are installed.

4. Implementation of Outdoor Air Flow Software Control Strategies

a. The multiplexed method of $CO_2$ measurement that is used to provide accurate $CO_2$ concentration values for the Outdoor Air Flow Calculator has additional capabilities in that it can compensate for exhaust air bypass and mixing plenum air leaks. It is the only method that can distinguish between outdoor and re-entrained return or exhaust air.

b. The method is derived from equations describing the mixing of the outdoor and return air streams in a common air handling unit. Each of these air streams contains some concentration of the tracer gas, $CO_2$

c. The outdoor air flow rate can then be determined as

$$CFM_{OA} = \frac{CO_{2,RA} - CO_{2,SA}}{CO_{2,RA} - CO_{2,OA}} \quad CFM_{SA}$$

using the supply air volumetric flow rate in CFM (or $m^3$/sec) and the $CO_2$ concentrations in ppm (parts per million).

d. The expression CO2,RA-CO2,SA / CO2,RA-CO2,OA can be viewed as a "flow coefficient" that determines the "outdoor air fraction" in the supply air. The typical return air CO2 concentration in an occupied building is in the range of 500 to 1000 ppm while the outdoor air CO2 concentration is in the range of 350 to 450 ppm. The mixing of the outdoor and return air streams will always cause the supply air CO2 concentration to be higher than that of the outdoor air and lower than that of the return air. When the outdoor and exhaust air dampers are fully closed and all the return air is being recirculated, the supply air CO2 concentration is equal to that of the return air and the flow coefficient will have a value of zero, correctly indicating that no outdoor air is being introduced into the space. When the outdoor and exhaust air dampers are fully open, the supply air CO2 concentration is equal to that of the outdoor air and the flow coefficient will have value of one, indicating that the air handling unit is using 100% outdoor air.

e. Single CO2 sensor with a sampling air pump and appropriate software is used to measure and store, in sequence, CO2 concentrations of the three air streams. Two solenoid air valves are used to connect the appropriate sampling line to the air sampling pump and to the sensor. Adequate time is provided for purging each sampling line and for the time response of the CO2 sensor.

f. With the use of a single CO2 sensor, the relative differences between CO2 concentrations can be measured with an error of less than 5 ppm. The effect of sensing errors such as drift, temperature effect and short term output variations will be identical for all three CO2 measurements. Because the flow coefficient requires only calculation of the ratio of the CO2 differentials, the identical errors in the individual measurements will cancel out. Only infrequent field calibration of the CO2 sensor is required because only the differentials are used, rather than absolute values.

g. The return air CO2 concentration, one of the three CO2 concentrations read and stored during the multiplexing cycle, can be utilized in some cases for purposes other than indirect outdoor air flow calculation. For example, it can be used for CO2 high limit control and for Return Air CO2 Alarms. For these applications, when an absolute CO2 measurement is needed, accurate CO2 sensor calibration is required.

5. $CO_2$ Sensing Point Location:

a. Selection of the $CO_2$ sensing locations should be as follows. The sampling tube (typically a 1/4 inch diameter plastic tube) is inserted into the duct in any convenient and easily accessible section of the ductwork. Note that, contrary to temperature sensing, the $CO_2$ concentration in mixed air is identical to the $CO_2$ concentration in the supply air. Therefore, there is never any need to sense $CO_2$ in the mixed air plenum where an averaging sensing probe would be required. Because the $CO_2$ concentration of an air stream is not affected by heating coils, cooling coils or humidifiers, the sensing point for the supply can be located downstream of the supply fan to ensure that the outdoor and return air streams are well mixed and have minimum stratification. The return air sensing point can be located in the return air duct, upstream or downstream of the return fan.

b. The supply air sensing point is subject to the fastest changes in $CO_2$ concentration, as the linked dampers change position. When presented with choices regarding equipment location, mount the controller in a location that will minimize the length of the supply air sensing tube, using a tube of up to 30 feet, in length.

c. The outdoor air sensing point should be located in free air outside the building or, alternatively, in the outdoor air intake. If the outdoor air $CO_2$ sample is obtained from a location that is isolated from the building exhausts, the $CO_2$ Concentration Balance method will automatically compensate for air which short-cycles from the exhaust louvers to the outdoor air intake. Either location compensates for air which short-cycles from the fan room into the mixing plenum. By placing the outdoor air $CO_2$ sensing point in a location that is isolated from the building exhausts, this method allows calculation of the true fresh air portion of the outdoor air flow intake from the three $CO_2$ measurements and the supply air flow. The outdoor $CO_2$ sensing point, if placed in the outdoor air intake duct for convenience reasons, should be placed far enough on the upstream side of the outdoor air damper so that its reading is not affected by a possible “backwash” of the mixed air at larger outdoor air damper openings. A good practical test is to check the outdoor air $CO_2$ sensing point reading while positioning the outdoor air damper from its fully closed to its fully open position and verify that the sensor reading does not change.

## 16.2 Controlled Access Security System (CASS)

Security Systems Technical Specifications that have been developed for use at BWI Marshall.

Security System specifications must be requested from the MAA's Engineering Document Manager on a project-by-project basis. No alternations are to be made to the Security Systems Technical Specifications without written approval from MAA's Project Manager. Additional Security System specifications covering general conditions or project specific requirements may be required. Any additional or new specification documents pertaining to Security Systems shall be afforded the same level of SSI protection as the standard Security System specifications.

Security System design shall be produced as separate and unique sections in the Contract Technical Specifications. All information pertaining to the Security System design must be clearly tagged as Security Sensitive Information (SSI). All Security System submittals and Contract Documents must be labeled, bound, and transmitted separately. These documents shall be protected when being transmitted or transferred using encrypted files with passwords to prevent unauthorized access. These documents must also carry the following statement:

> WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR Part 15 and 49 CFR Part 1520.

## 16.3 CCTV

Security Systems Technical Specifications that have been developed for use at BWI Marshall.

Security System specifications must be requested from the MAA's Engineering Document Manager on a project-by-project basis. No alternations are to be made to the Security Systems Technical Specifications without written approval from MAA's Project Manager. Additional Security System specifications covering general conditions or project specific requirements may be required. Any additional or new specification documents pertaining to Security Systems shall be afforded the same level of SSI protection as the standard Security System specifications.

Security System design shall be produced as separate and unique sections in the Contract Technical Specifications. All information pertaining to the Security System design must be clearly tagged as Security Sensitive Information (SSI). All Security System submittals and Contract Documents must be labeled, bound, and transmitted separately. These documents shall be protected when being transmitted or transferred using encrypted files with passwords to prevent unauthorized access. These documents must also carry the following statement:

> WARNING: This record contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552 and 49 CFR Part 15 and 49 CFR Part 1520.

## 16.4 Interface of Fire Alarm and Security System

Please refer to Chapter 13.4 Interface of Fire Alarm Life Safety and Security Systems at BWI Marshall.

# Chapter 17 Signage and Graphics

## 17.1 Exterior Signage

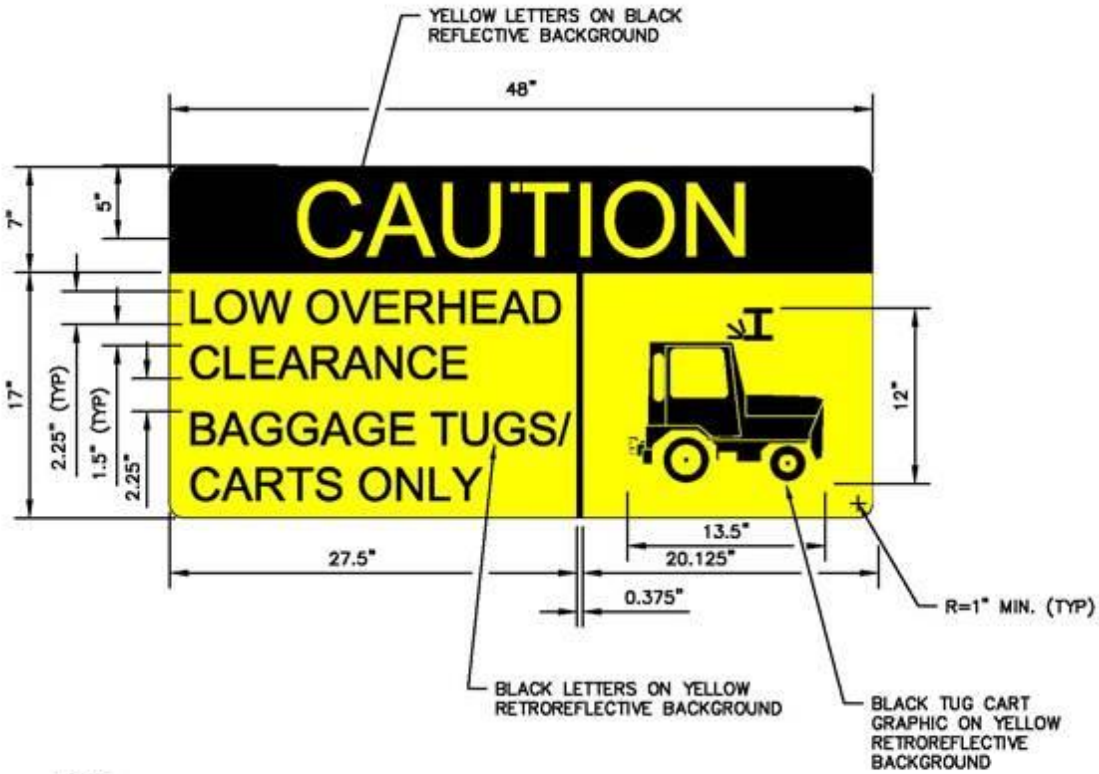
### 17.1.1 Apron/Airfield Signage

#### 17.1.1.1 Electrical Characteristics of Airfield Signs

Each circuit shall be designed to handle all combinations of VA loading and power factor or the Designer shall ensure that sign electrical characteristics, not covered by FAA Specifications, are included in the contract specifications, as appropriate. This is to help alleviate the substantial variances in volt-amp loading and power factor, from manufacturer to manufacturer as well as manufacturers who produce both high and low VA loading versions of the same sign.

### 17.1.2 Baggage Makeup Area Exterior Overhead Signage

All vehicle entrances to and exits from baggage make-up areas shall have a sign installed to caution drivers of possible low overhead clearances inside the baggage make-up area per the standard detail on the following pages. Exits are included in order to account for all driver situations. Signs are to be mounted centered above doors whenever possible. When signs cannot be mounted above, signs are to be mounted to the left or right of the door with the top of the sign aligned with the top of the doorway, or as determined by the Engineer. Sign detail follows.




NOTES:

1. FONT TYPE: CLEARVIEWHWY-4-B
2. SIGN MATERIAL: ALUMINUM, 0.04" THICKNESS
3. ATTACHMENT METHOD: GALVANIZED HOLLOW MASONRY ANCHORS OR STAINLESS STEEL SHEET METAL SCREWS AND WASHERS, AS RECOMMENDED BY THE ENGINEER, PLACED IN EACH CORNER AND 24" O.C. MAX
4. INSTALL SIGN AT EACH ENTRY TO AND EXIT FROM BAGGAGE MAKE-UP AREAS. SIGN SHALL BE MOUNTED CENTERED ABOVE DOOR WHENEVER POSSIBLE. WHEN SIGN CANNOT BE MOUNTED ABOVE DOOR, SIGN SHALL BE MOUNTED TO LEFT/RIGHT WITH THE TOP OF THE SIGN ALIGNED WITH THE TOP OF THE DOORWAY, OR AS DETERMINED BY THE ENGINEER.

| SHEET TITLE: BAGGAGE MAKE-UP AREA OVERHEAD CAUTION SIGN | DATE: JAN. 2015 |
|---|---|

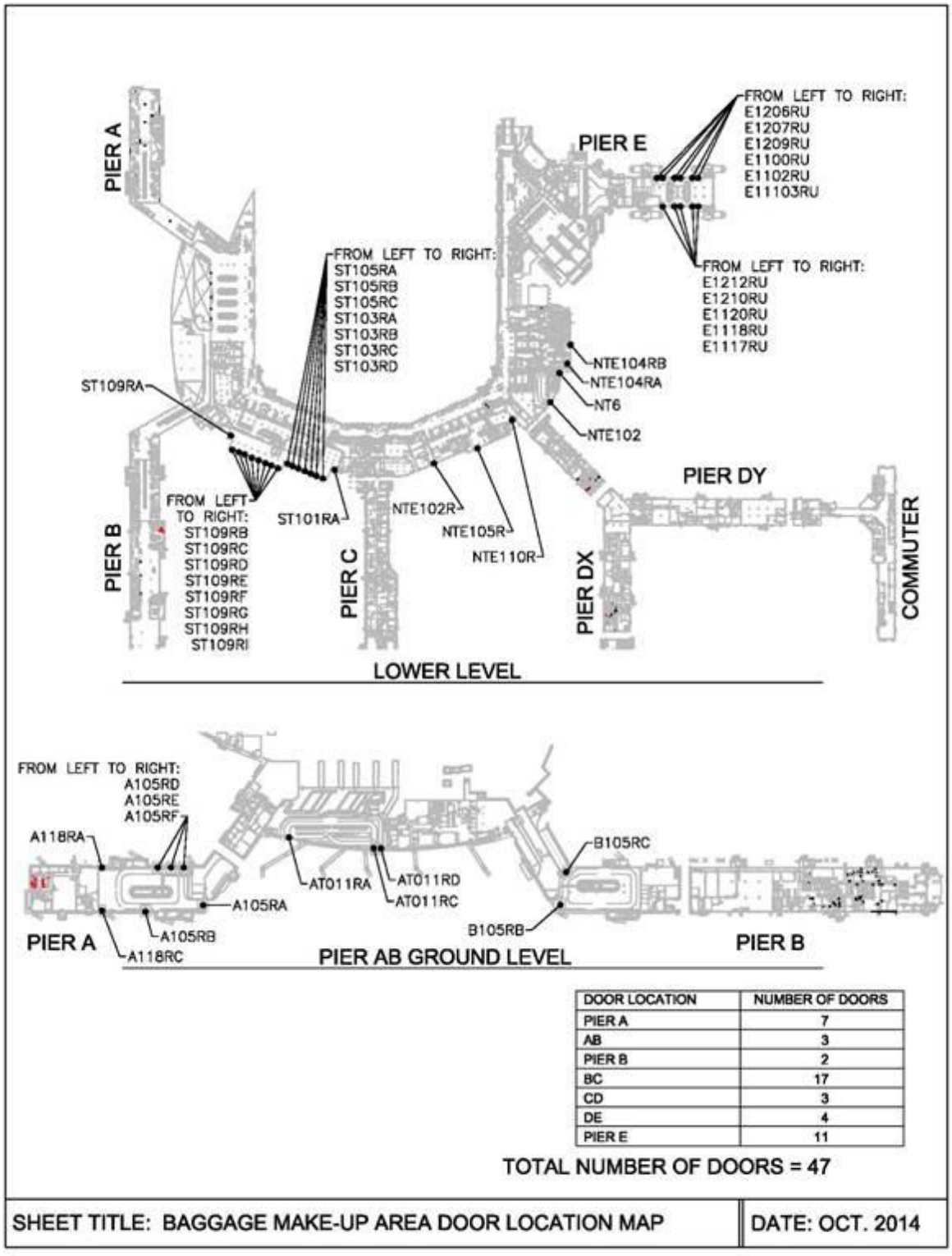
## 17.2 Interior Signage

The graphic style for BWI Marshall signage is Helvetica Regular. All sign boxes shall be internally lighted. Sign boxes in the Domestic Terminal shall be black and those in the International Terminal shall match Benjamin Moore 1608 Grey. New signs shall match the Airport's Standard.

LED Signs shall match the existing signs manufactured by Winona Lighting, Cole Lighting, or Bergen Art Metal. LED message center shall be manufactured by Salescaster Displays or approved equal.

### 17.2.1 Exit Signs

All exit signs shall consist of red letters on a contrasting background, in accordance with NFPA 101. This type of sign is to match the existing area.




| DOOR LOCATION | NUMBER OF DOORS |
|---|---|
| PIER A | 7 |
| AB | 3 |
| PIER B | 2 |
| BC | 17 |
| CD | 3 |
| DE | 4 |
| PIER E | 11 |

## 17.2.2 Identification Signage

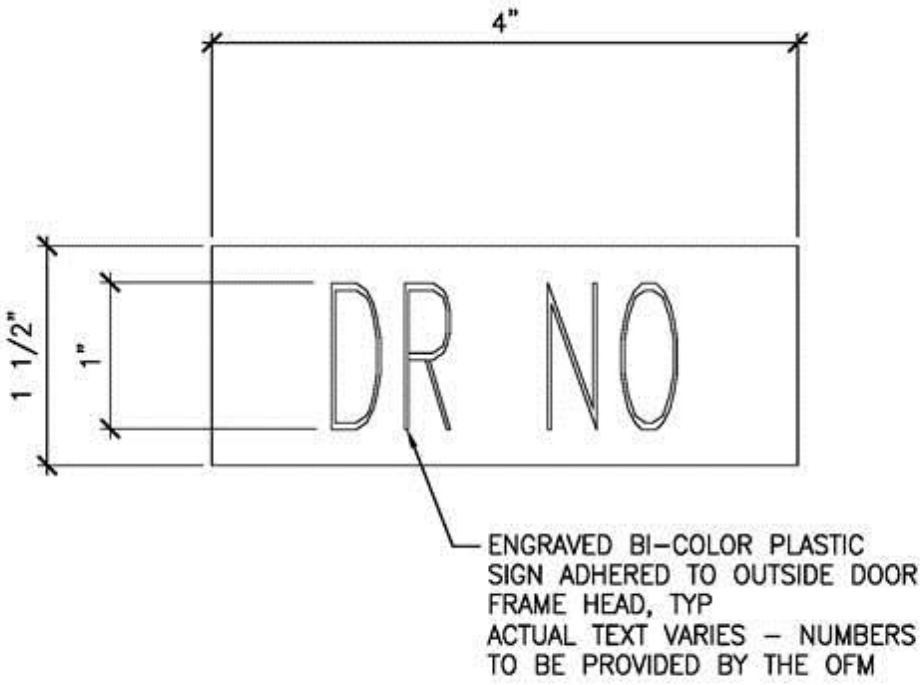
### 17.2.2.1 Door Identification Signs

Door identification signs will be provided as outlined below. Designer is responsible for developing a suitable sign attachment method for approval by the MAA Project Manager and the Office of the Fire Marshal.

1. "SPRINKLER CONTROL VALVES" and "SPRINKLER/STANDPIPE CONTROL VALVES": Metal type sign with black background and reflective white letters. These signs will be placed both indoors and outdoors. Sign size shall be 10" x 6". The sign shall be placed on the door closest to the valves.
2. Manual Fire Pull Sign (MFP 1111): The sign shall be used to identify the location of "Manual Fire Pull" stations at exit doors leading to the aircraft apron. The MFP shall be constant for all signs but the 4-digit number will change. The last four digits of the 12-digit fire alarm number shall be used. The sign shall be placed on the exterior doors as high as possible. Metal type sign with black background and white reflective letters and numbers. Sign size shall be 2" x 6".
3. Electrical Substations ("WARNING ELECTRIC SUBSTATION PROTECTED BY WET SPRINKLER SYSTEM"): This sign shall be used to identify the location of Electrical Substations. Metal type sign with black background and white reflective letters shall be placed on the outside of the door. Sign size shall be 6" x 12".
4. Standpipe Connection ("Fire Dept. Standpipe Connection"): This sign shall be made like a bumper sticker. It will be used indoors only and placed on smooth metal or glass. It will be placed over existing signage on glass that is stenciled on the interior of the glass. The sign contractor shall determine the sign size (minimum 10" x 3"), color and size of the lettering. The locations and placement shall be field determined.
5. Fire Command Room ("FIRE COMMAND ROOM FAP-HVAC-PA): Metal engraved or plastic engraved type sign with black background and white reflective letters is required. The sign will be placed on the outside of the door. Sign size 9" x 11".

#### 17.2.2.2 Door Numbering Signage

Door numbering signs will be installed centered on the doorframe head on the exterior (public) side of the door. The sign shall be plastic engraved and shall list the MAA door number. Sign size 1-1/2" x 4" with self-adhesive tape for mounting. It will have a black background with white letters. Door number designations will be provided by the Office of the Fire Marshal.




MAA DOOR NUMBER PLAQUE

| SHEET TITLE: MAA DOOR NUMBER PLAQUE | DATE: JULY 2009 |
|---|---|

**SPRINKLER CONTROL VALVES**

*Sign type No. 1*

**SPRINKLER / STANDPIPE CONTROL VALVES**

*Sign type No. 2*

Metal type sign with red background and reflective white letters. These signs will be placed indoors and outdoors.

Sign size: 1 Wx6"

The sign shall be placed on the door closest to the valves.

**MFP 1111**

*MFP Sign*

This sign shall be used to identify the location of "Manual Fire Pull" stations at exit doors leading to the aircraft apron.

The MPP shall be constant for all signs; the Cdigit number will change. The last four digits of the 12-digit fire alarm number shall be used. The sign shall be placed on the exterior of doors as high as possible.

Metal type sign with red background and white reflective letter and numbers.

Sign size 2'1x 6"

**WARNING**
**ELECTRIC SUBSTATION**
**PROTECTED BY WET**
**SPRINKLER SYSTEM**

*Electrical Substation Warning Sign*

This sign shall be used to identify the location of Electrical Substations.

Metal type sign with red background and white reflective letters shall be placed on the outside of the door.

Sign size 6'x 12"

**FIRE**
**COMMAND**
**ROOM**
**FAP-HVAC-PA**

*Fire Command Room Sign*

Metal type sign with red background and white reflective letters. The sign will be placed on the outside of the door.

Sign size 9"x11"

**Fire Dept. Standpipe**
**Connection**

*Standpipe Connection Sign*

This sign shall be made like a bumper sticker. It will be used indoors only and placed on smooth metal or glass. It will be placed over existing signage on glass that is stenciled on the interior of the glass.

The sign contractor shall determine the sign size (minimum 10”x3"), color and size of the lettering.

The locations and placement shall be field determined.

## 17.3 Temporary Partition Wall Graphics

If a project (exterior or interior) involves the installation of construction or temporary partition wall(s) or barricade(s) with exposure to the public, the designer shall include in the plans and specifications the provisions for installation of informational signs (i.e., Excuse Our Appearance, While We Are Under Construction; Pardon the Dust, Construction Underway; Pardon the Mess, We Are Making Progress; etc.) and graphics if available (e.g., 3D images or renderings of the proposed work) on the public side of the wall or barricade. The size and content of the informational signs and graphics shall be coordinate with the MAA's Task Manager, Office of Transportation and Terminal Services, Office of Marketing, Communications and Customer Service, the Airport's Master Concession Developer through the Office of Commercial Management, and other appropriate MAA staff.

# Chapter 18 Passenger Boarding Bridges

## 18.1 General

The information below outlines the basic requirements for Passenger Boarding Bridge (PBB) design for MAA projects. It is important to note that ALL PBBs at BWI Marshall are owned by the MAA and therefore must be consistent with MAA's basic parameters so that maintenance and operation of the bridges are simplified. The initial steps in design and procurement of the PBBs are as listed below. In addition, please refer to the Specification 347713X_Apron Drive Passenger Boarding Bridges included in Appendix D - Standard Specifications for further details regarding PBB design.

# 18.2 Initial Steps

## 18.2.1 Step One – Programming

The design consultant shall establish the Aircraft Fleet Mix that will be utilizing each existing or proposed passenger boarding bridge (PBB) in coordination with the following MAA Departments:

- Design – The assigned Task Manager will assist and coordinate the definition and extent of the project effort.
- Airport Operations – The representative will coordinate current and proposed use and schedule for the gate where the bridge will be installed and highlight any unique issues associated with each gate installation (schedule, fleet mix, existing conditions, etc).
- Commercial Management – The representative will assist with airline coordination and development with the fleet mix requirements and typical accessories (Chapter 18.4 Typical Accessories) that are to be included. Typically, the fleet mix should have the most flexibility between the airline projected to use the gate and the needs of Operations. All parties shall be consulted in order to arrive at a design solution that most efficiently addresses the consensus of needs for the airport while meeting all of the code requirements in the process.
- Planning/Fire Marshal – The representative will assist with approval of holdroom sizing requirements.
- Maintenance and Utilities – The representative will assist with the electrical sub-metering requirements.

## 18.2.2 Step Two – Site Evaluation

The design consultant shall inspect and evaluate existing and proposed site conditions that may impact the operational capabilities of each PBB. Some of the limiting site conditions that may be encountered are the following:

- Obstacles on or adjacent to the terminal or PBB that may inhibit the PBBs rotation (i.e. – light poles, building soffits and overhangs, trash compactors, access to garage or person doorways, pantograph mounting brackets, etc.).
- Obstacles on or adjacent to the terminal or PBB that may inhibit the PBBs extension and/or retraction (i.e., PC Air Units, 400 Hertz Units, Roof Mounted Vents, etc.).

In the event an existing foundation is being modified or a PBB is being relocated, the existing site condition, bolt pattern, systems, etc. shall be inventoried and confirmed prior to commencing design.

## 18.2.3 Step Three – Design

The design consultant shall select a standard PBB Model/Size that will accommodate the fleet mix of aircraft for each gate which can be used as the prototype for purposes of bidding. The PBB sizing shall be based on and meet the requirements as outlined in Chapter 18.3 Requirements.

As part of Step Three a design report is to be provided with signed and sealed calculations as required. The report shall include site plans for each gate showing the proposed fleet mix, swing of each gate including minimum and maximum PBB lengths, and any additional information for future reference.

# 18.3 Requirements

## 18.3.1 Slope and Code Requirements

The operation of a PBB shall satisfy American Disabilities Act (ADA) slope requirements for enplaning and deplaning passengers from each aircraft in the fleet mix for each respective gate. Each tunnel of the designed and specified PBB shall not exceed a 1/10 or 10 percent slope. At BWI Marshall the slope of each tunnel of a PBB shall be calculated by subtracting the center of cab elevation from the center of rotunda elevation, and dividing by the horizontal distance from the center of the cab to the center of the rotunda. The cab elevation shall equal the sill height of the aircraft.

$$\text{PBB Slope} = \frac{RE - CE - (T - 1)*0.5}{X}$$

Where: RE = Rotunda Elevation
CE = Cab Elevation
T = Number of Tunnels
X = Distance from Center of Cab to Center of Rotunda

Typically projects installing and/or modifying PBBs should be designed and specified to allow the operation of the PBB(s) to access the forward two (2) left passenger (L1 and L2) doors of the aircraft where applicable. However, the designer should confirm these parameters with the departments mentioned above prior to completion of the design.

The operation of a PBB shall satisfy National Fire Protection Agency NFPA 415 requirements outlining the protection and safety of the passengers utilizing the PBB. PBB's shall conform to Section 12.4.10 of NFPA 101 Life Safety Code.

## 18.3.2 Structural Analysis

A structural analysis of the PBB foundation must be performed. The design consultant shall verify the adequacy of any existing foundation for any relocations, additions, modifications, etc. For new installations, the foundation system shall be designed with the intended PBB to be used based on Step 3 above. The analysis and/or design shall be signed and sealed by a professional engineer registered in the state of Maryland.

## 18.3.3 Contract Technical Specification

The installation of a PBB regardless if new or relocated, shall have a Technical Specification. The standard technical Specification 347713X_Apron Drive Passenger Boarding Bridges is included in Appendix D - Standard Specifications. It is important to note the technical specification needs to have the following acceptance testing and pavement marking:

Contractor Testing Requirements

The operation of a PBB shall undergo a test for the most demanding aircraft docking procedures to ensure proper mating of the PBB to the aircraft. Temporary tape shall be utilized for the stop bar and lead-in lines for the aircraft test park. Following a successful test, the final pavement marking for the aircraft may then take place.

Pavement Marking

The operation limits of a PBB shall be outlined by pavement marking to indicate the limits of travel to enhance the safety of persons on the apron hardstand and protect the PBB from vehicular conflicts. The pavement marking shall consist of three (3) 6-inch wide yellow reflectorized stripes separated by two (2) 6-inch spaces. The marking shall encompass and allow for the PBB to be extended to its furthest docking position, allow for the PBB to be contracted to its storage or staging position, while providing the necessary clearances for the oversized baggage slide and other hardware attached to the PBB at all times during its swept path. The limits depicted by the marking shall coincide with the limit switches set in the PBB itself. As a result, the pavement markings shall be set in the field after the PBB operations at each individual gate have been accepted and set. The quantity of marking is estimated by the design consultant based on the anticipated PBB movements outlined above, and presented to the contractor in square footage of marking required for bidding purposes. The limits of the pavement marking shall be as-built by the contractor in the field and provided back to the engineer of record and owner.

### 18.3.4 Remove and Dispose of Bridge

If a bridge is to be removed and disposed, the MAA Office of Maintenance and Utilities (OMU) shall be notified so that usable parts can be salvaged prior to the removal (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

# 18.4 Typical Accessories

The following accessories are typically included and installed on a PBB and shall be discussed and confirmed with the Task Manager during the design effort and specified by the design consultant. As the MAA owns the PBB, they do not typically provide for or own the preconditioned air units or 400 Hz systems at domestic gates. Designer is to confirm whether these items are to be provided.

## 18.4.1 Pantograph or Cable Conveyance System

Any new or relocated PBB shall be provided with a cable conveyance system of sufficient capacity to accommodate PC Air and 400 Hz units for the design aircraft fleet mix at the gate for which the PBB is intended. At a minimum, one four-inch (4") diameter aluminum pantograph will be provided, with length to cover the movable sections of the PBB for routing power to the PC Air and 400 Hz units. (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

## 18.4.2 Telephone

The PBB manufacturer shall make provisions for telephone service. There shall be one telephone outlet integrated in the cab area of the PBB. As a result, the design consultant shall coordinate with MAA's Office of Airport Technology and shall provide adequate information in the plans and specifications to ensure that telephone service is provided at the PBB (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

## 18.4.3 Pre-Conditioned Air

The MAA does not typically provide Pre-Conditioned Air (PCA) units at domestic gates as previously noted. PCA units are typically owned by the airlines. If a PBB with a PCA unit is being relocated, the airline who owns the gate is to remove and reinstall on the PBB placed at the gate. This includes new or relocated PBBs.

PCA units installed on PBBs require structural and electrical load calculations to ensure the electrical loads can be supported by both the PBB and the electrical infrastructure. As a result, the design consultants shall provide adequate information in the plans and specifications to ensure that the load requirements, the power requirements, and contractual arrangements are satisfied. For additional requirements including utility metering installation requirements, refer to Section 9.5 Pre-Conditioned Air and 400 Hertz Systems and Associated Loading Bridge Requirements Chapter 14.1.2 Total Harmonic Distortion (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications). The Designer shall locate the units based on the combined geometry of the PBB and aircraft layout to ensure that there are no conflicts with the equipment placement.

## 18.4.4 400 Hertz Point-of-Use

The MAA does not typically provide 400 Hertz (Hz) units at domestic gates as previously noted. 400 Hz units are typically owned by the airlines. If a PBB with a 400 Hz unit is being relocated, the airline who owns the gate is to remove and reinstall on the PBB placed at the gate. This includes new or relocated PBBs.

400 Hz Point-of-Use (POU) units installed on PBB(s) require structural and electrical load calculations to ensure the loads can be supported by both the PBB and the electrical infrastructure. As a result, the design consultant shall provide adequate information in the plans and specifications to ensure that the load requirements, the power requirements, and contractual arrangements are satisfied. For additional requirements including utility metering installation requirements, refer to Chapter 18.5 Pre-Conditioned

Air and 400 Hertz Systems, Associated Loading Bridge Requirements, and Chapter 14.1.2 Total Harmonic Distortion (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications). The Designer shall locate the units based on the combined geometry of the PBB and aircraft layout, and capability to accommodate regional jets to ensure that there are no conflicts with the equipment placement.

### 18.4.5 Electrical Submetering

Electrical submetering is on all existing PBBs. Electrical submetering shall be checked for on existing gates during design, added to new gates, and coordinated with the MAA Project Manager during design.

### 18.4.6 Adjustable Cab Floor (Articulating Cab Floor (ACF))

All BWI Marshall PBBs shall be Regional Jet (RJ) capable. PBBs to be utilized for mating to regional jets shall be equipped with an adjustable cab floor to allow proper mating to the regional jet aircraft while preserving the ability of the PBB to be utilized for wider bodied aircraft. RJ capable bridges include the following:

- Floor flap adjustment for RJ doors.
- Fold out hand rails necessary for extension into the RJs with retractable air stairs.
- Additional cushion on PBB for contact mating of bridge and aircraft fuselage.

The design consultant shall provide the minimum and maximum height ranges required to be serviced at each individual gate by the PBB. The designer shall identify to the MAA Project Manager and identify in the design report any restriction to larger aircraft using the PBB as a result of the RJ usage.

### 18.4.7 Task Lighting

Task Lighting installed on PBBs shall consist of two (2) floodlight fixtures. The first floodlight fixture shall be mounted 4 feet above the top of the PBB on the right side of the PBB to illuminate the apron area in the swept path of the PBB. The second floodlight fixture shall be mounted 10 feet above the left side of the PBB on the left side of the PBB to illuminate the apron area adjacent to the aircraft (See Typical Task Light Fixture Mounting Detail).

The floodlight fixtures require structural and electrical load calculations to ensure the added structural and electrical loads can be supported by both the PBB and the electrical infrastructure (See Task Lighting Mounting Detail - Elevation on the following pages). All calculations shall be signed and sealed by a professional engineer for the respective design responsibility and included in a design report. Task Lighting installations shall contain two (2) LED 60-minute rotary timers to minimize lighting costs (See Task Lighting Wiring Diagram on the following pages) (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

### 18.4.8 Solid Tires

Solid Rubber Tires shall be included in the specification requirements for all BWI Marshall PBBs.

### 18.4.9 Gate Identification Signs

Three Sided Gate Identification Signs shall be installed on new or relocated PBBs (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

### 18.4.10 Baggage Slides

Automated baggage slides are not to be provided with new (or relocated) bridges. The designer shall coordinate with MAA Commercial Management to confirm. The designer shall also coordinate with

Commercial Management to confirm current accessories located at each gate (i.e. - cover, motorized lifting platform, etc.) and airline preferences, if any.

### 18.4.11 Subflooring

Subflooring on new PBB's shall be galvanized/galvanealed smooth steel or three quarter inch (3/4") marine grade plywood.

### 18.4.12 Finished Flooring

Cab flooring shall be of ribbed rubber (see Specification 347713X Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications for additional detail). Carpet shall be installed on the flooring of the PBBs (See Specification 347713X Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications). Per NFPA 415, carpet shall meet the requirements for Class-I carpet flame spread rating.

Designers shall specify an additional 10% of carpet quantity in each contract to be used as MROI (a.k.a. attic stock). The amount shall be confirmed with MAA Office of Maintenance and Utilities – Division of Contract Support. (Refer to DST Chapter 4.5 Maintenance Repair and Operating Items MROI).

### 18.4.13 Exterior Finishes

Surface preparation, primer, and finish coat for the PBBs shall be provided (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

### 18.4.14 Canopy

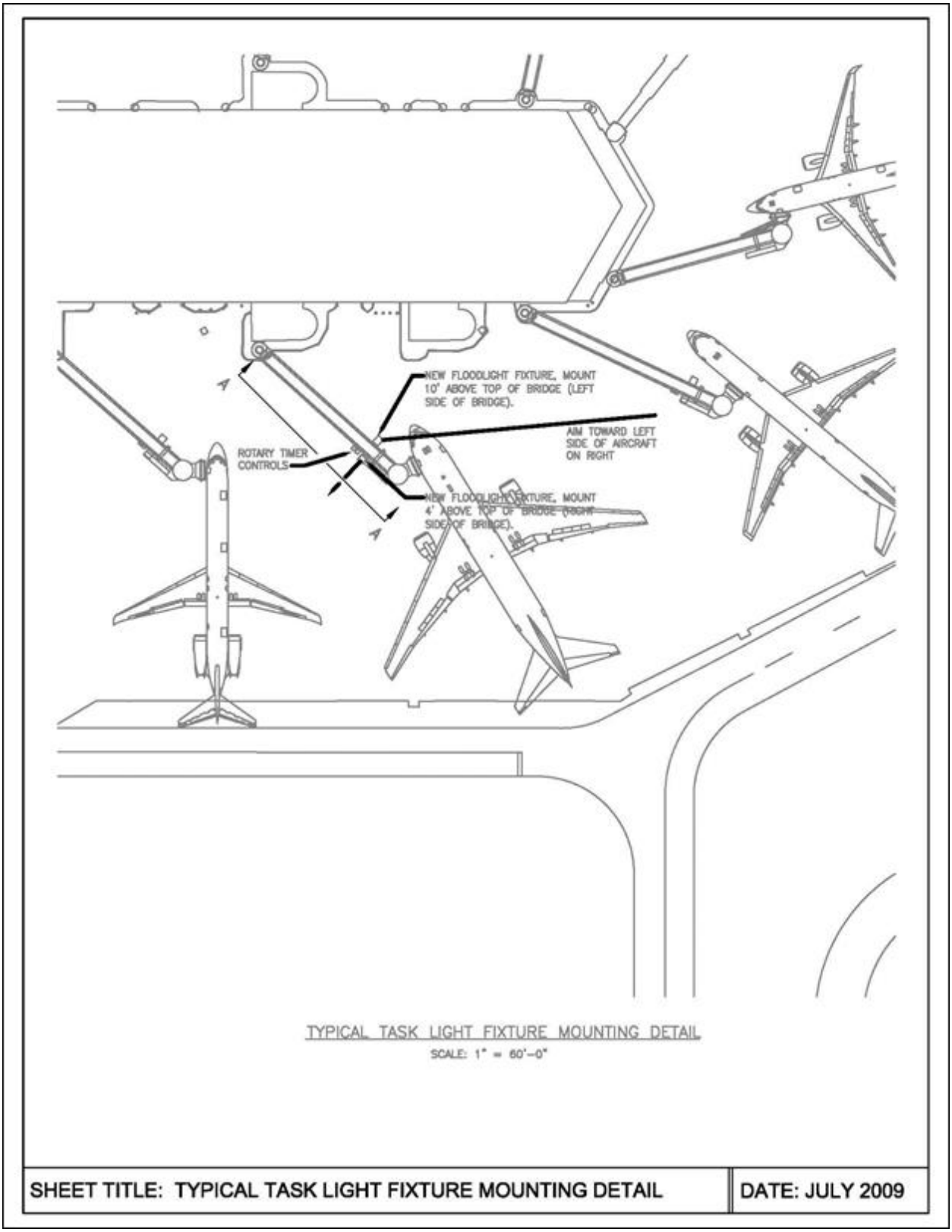
In order to satisfy NFPA 415, the PBB canopy is required to be lowered to mate with the aircraft fuselage. To ensure the PBB operator lowers to the canopy, the PBB manufacture shall include the lowering of the canopy in the sequence of operation, or program an alarm to sound as a reminder. (See Specification 347713X_Apron Drive Passenger Boarding Bridges in Appendix D - Standard Specifications).

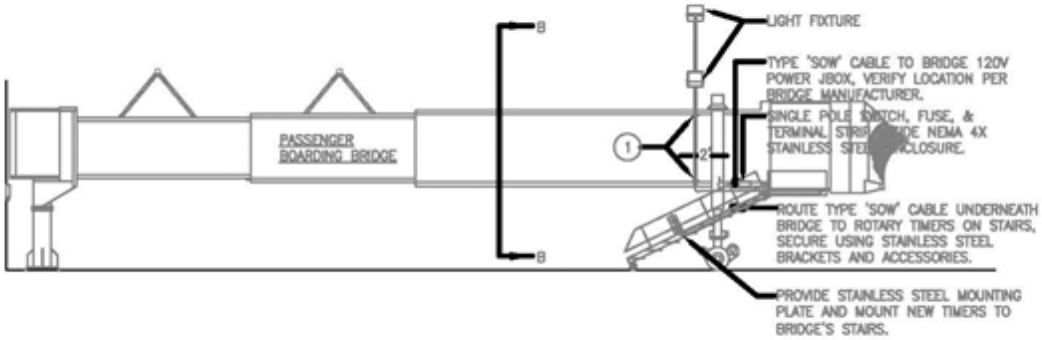
### 18.4.15 Occupancy Sensors

Occupancy Sensors shall be installed on new or relocated PBBs to automatically turn off the interior lights and exhaust fans when the PBB is not in use.

### 18.4.16 Relocated Bridge

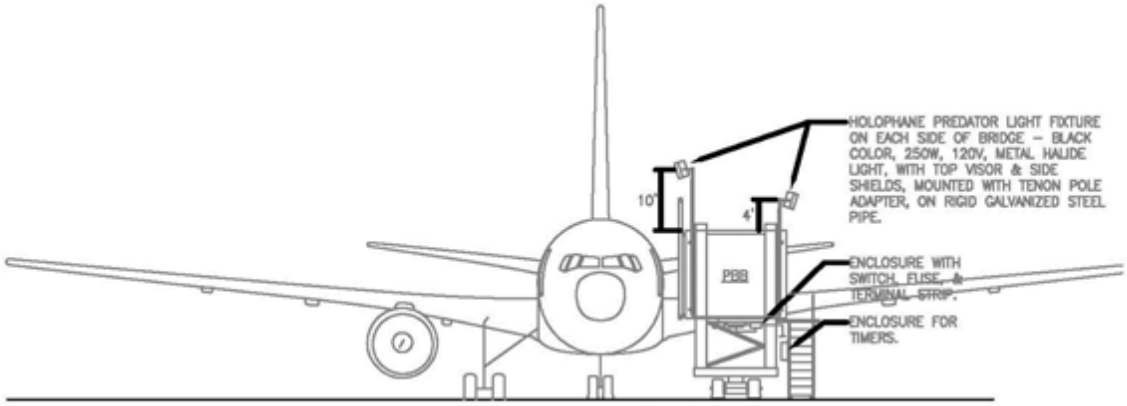
If a bridge is to be relocated from one (1) location to another, the bridge shall be reviewed for code compliance and refurbished to meet current codes.


NEW FLOODLIGHT FIXTURE, MOUNT 10' ABOVE TOP OF BRIDGE (LEFT SIDE OF BRIDGE).
AIM TOWARD LEFT SIDE OF AIRCRAFT ON RIGHT
ROTARY TIMER CONTROLS
NEW FLOODLIGHT FIXTURE, MOUNT 4' ABOVE TOP OF BRIDGE (RIGHT SIDE OF BRIDGE).
A
A
TYPICAL TASK LIGHT FIXTURE MOUNTING DETAIL
SCALE: 1" = 60'-0"
SHEET TITLE: TYPICAL TASK LIGHT FIXTURE MOUNTING DETAIL
DATE: JULY 2009




ELEVATION VIEW AA – TYPICAL TASK LIGHT FIXTURE MOUNTING DETAIL

NOT TO SCALE




ELEVATION VIEW B–B

NOT TO SCALE

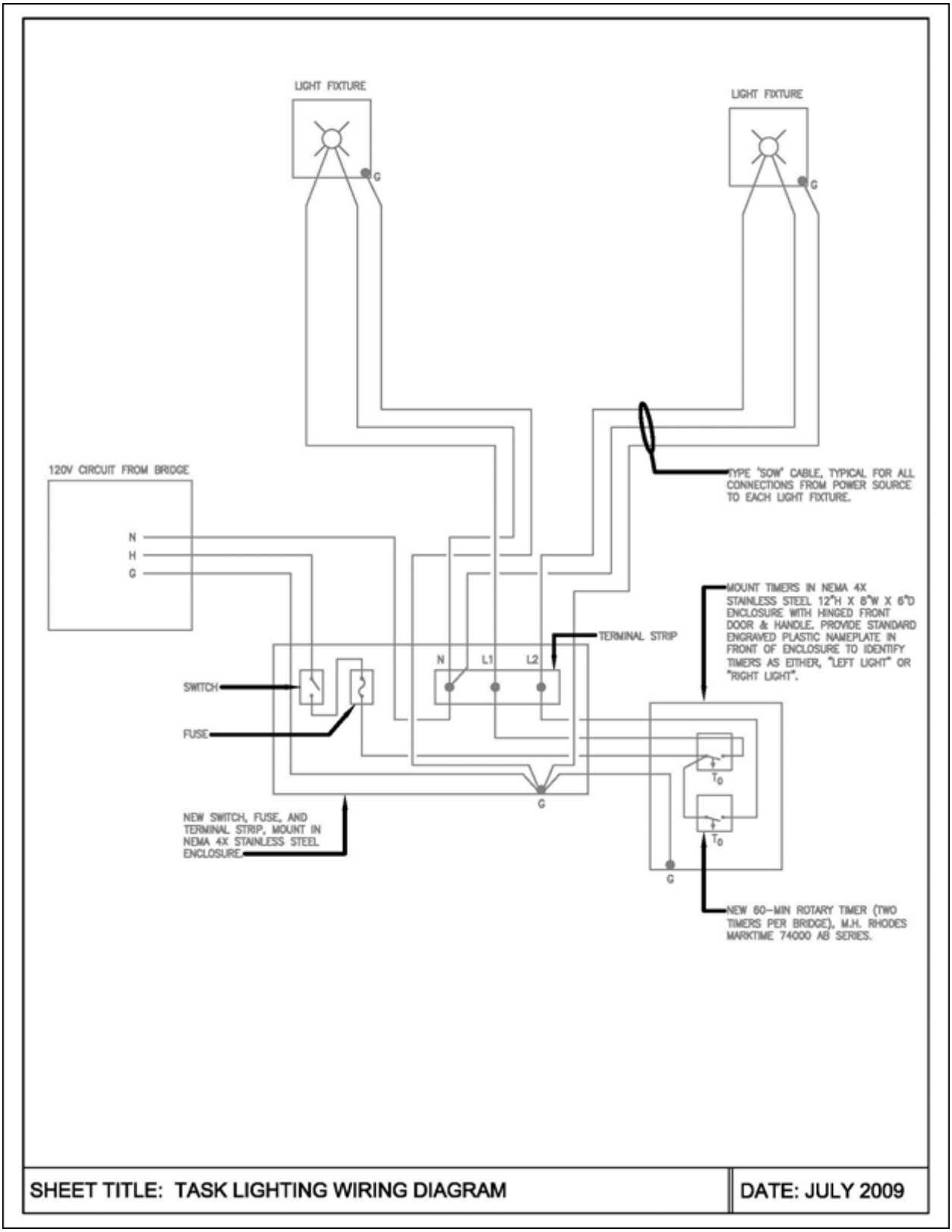
## GENERAL NOTES:

1. COORDINATE WITH THE BRIDGE MANUFACTURER TO PROVIDE A 120V CIRCUIT FOR THE TASK LIGHTING FIXTURES. DO NOT CONNECT TO BRIDGE CONTROL CIRCUIT.
2. PROVIDE NOTES ON DRAWINGS FOR CONTRACTOR TO COORDINATE ADJUSTMENT OF AIMING.
3. PROVIDE TYPE 'SOW' CABLES FOR ALL WIRING ON BRIDGE.

## DRAWING NOTES:

(1) PROVIDE LIGHT POLE OF ADEQUATE LENGTH AND SIZE TO SUPPORT FIXTURE AT REQUIRED HEIGHT WITHOUT OVERSTRESS OF POLE FROM APPLIED LOADS. THE POLE SHALL BE ADEQUATELY ANCHORED TO THE PASSENGER BOARDING BRIDGE (PBB) FRAMING. ANCHORAGE TO THE PBB SHALL NOT OVERSTRESS OR OTHERWISE WEAKEN THE STRUCTURAL INTEGRITY OF THE PBB OR ANY OF ITS COMPONENTS. ALL COMPONENTS OF THE LIGHT POLE MOUNTING AND ANCHORAGE SHALL BE GALVANIZED AND ALL MODIFICATIONS TO THE PBB SHALL BE TREATED FOR CORROSION PROTECTION. ALL NEW MEMBERS, BRACKETS, CONNECTIONS, BOLTS AND /OR WELDS SHALL COMPLY WITH THE APPLICABLE SECTIONS OF THE IBC AND AISC AND AWS REQUIREMENTS.

| SHEET TITLE: TASK LIGHTING MOUNTING DETAIL - ELEVATION VIEWS | DATE: JULY 2009 |
|---|---|


LIGHT FIXTURE
G
LIGHT FIXTURE
G
120V CIRCUIT FROM BRIDGE
N
H
G
TYPE "SOW" CABLE, TYPICAL FOR ALL CONNECTIONS FROM POWER SOURCE TO EACH LIGHT FIXTURE.
MOUNT TIMERS IN NEMA 4X STAINLESS STEEL 12"H X 8"W X 6"D ENCLOSURE WITH HINGED FRONT DOOR & HANDLE. PROVIDE STANDARD ENGRAVED PLASTIC NAMEPLATE IN FRONT OF ENCLOSURE TO IDENTIFY TIMERS AS EITHER, "LEFT LIGHT" OR "RIGHT LIGHT".
TERMINAL STRIP
N
L1
L2
SWITCH
FUSE
G
NEW SWITCH, FUSE, AND TERMINAL STRIP, MOUNT IN NEMA 4X STAINLESS STEEL ENCLOSURE
G
NEW 60-MIN ROTARY TIMER (TWO TIMERS PER BRIDGE), M.H. RHODES MARKTIME 74000 AB SERIES.
SHEET TITLE: TASK LIGHTING WIRING DIAGRAM
DATE: JULY 2009

# 18.5 Pre-Conditioned Air and 400 Hertz Systems

An airline (tenant) assigned gates on a preferential use basis will be responsible for the installation and maintenance of PC and 400 Hz equipment on its preferential use passenger boarding bridges. Upon terminating the preferential use of the gate, the airline shall remove, at its sole expense, the PC Air and 400 Hz equipment.

MAA, which owns and assigns the common use gates, will be NOT responsible for the installation and maintenance of the PC Air and 400 Hz equipment on the common use passenger boarding bridge(s). MAA will determine the need and timetable for providing this equipment.

## 18.5.1 Design and Construction Requirements

1. Loading Bridge Requirements: Loading Bridges shall be specified to readily accept PC Air and 400 Hz equipment. In circumstances where the PC Air and 400 Hz equipment is to be installed at a later date, the loading bridge shall be specified to allow installation of the heaviest Point of Use (POU) equipment which satisfies the largest aircraft requirements of that gate.
2. All PC Air and 400 Hz equipment for preferential use and common use gates shall be designed and constructed to include separate metering, allow separate billing of electrical usage, and connection to MAA's METASYS Building Management System.
3. All PC Air and 400 Hz equipment installed at existing gates and passenger boarding bridges shall be POU units.
4. All PC Air and 400 Hz equipment installed at newly constructed terminals and concourses shall be POU units. Centralized systems will be considered by MAA when the installer can meet the following requirements:
   a. Demonstrates through cost benefit analysis the viability of the central system.
   b. Agrees to lease all areas associated with the central system equipment.
   c. Satisfies all concerns related to location of equipment in the building and on the aircraft ramp, line-of-sight issues, aesthetic issues, real estate issues, and operational issues.
   d. For centralized PC Air, the glycol loop piping shall be constructed with soldered or welded joints (not threaded), and will be placed in the lower level only, keeping it out of public spaces. All main supply piping for the glycol loop shall be located in the interior of the building.
   e. For 400 Hz systems, all main supply conduits and wires shall be located in the interior of the building, except for branch conduit and wire needed for connection to the passenger boarding bridge. 400 Hz systems are known to produce harmonics. In order to mitigate the harmonic effects, each piece of 400 Hz equipment must comply with the following performance criteria:
5. All PC Air and 400 Hz units shall be located on the underside of the passenger boarding bridges when possible. In situations where the PC Air unit prohibits the PBB from lowering to the required height to mate to an RJ Aircraft, the unit may be required to be installed on top of the PBB. No ground mounted units are permitted.
   a. Harmonics content: total harmonic distortion of the input current wave form, as measured at the input terminals, shall be 30% of the lower whenever load is 50% of rated output or higher.
   b. Power factor: the power factor measured at the input terminals shall be 90% or higher whenever load is 50% of rated output or higher.
6. Minimum height restrictor brackets shall be placed on all vertical lift columns to protect bridge-mounted equipment

7. Installation of the PC Air and 400 Hz equipment on the passenger boarding bridge should not affect the structural integrity, operation, or the warranty of the passenger boarding bridge.
8. Building Permit Approval: An airline (tenant) installing PC Air and 400 Hz equipment at its preferential use gate(s) will be required to obtain an MAA building permit. Notwithstanding the other requirements of the building permit process, the airline will be required to coordinate the installation of PC Air and 400 Hz equipment with MAA's passenger boarding bridge repair and maintenance contractor. MAA's contractor will review and inspect the installation. In addition, catalog cuts and data for all proposed equipment should be submitted to MAA for review and approval.

### 18.5.2 Metering

This design standard is intended to require that all electrical power used for bridge power 400 Hertz, ground power and Pre-conditioned Air for boarding bridges be metered.

Provision of 400 Hertz and Pre-Conditioned Air at loading bridges that do not currently have them shall be a shared responsibility between MAA and the tenant. The tenant shall be responsible for providing the equipment as necessary, installing panels, wiring, and conduits, disconnect switches, and related equipment to provide the electrical infrastructure necessary to support the improvements.

The tenant shall obtain a building permit for the proposed improvements. The MAA shall be responsible for providing metering of the additional electrical service and modifications to the accounting system necessary to reflect the proposed service. Coordination of the timing of the improvements shall be the responsibility of the tenant.

The airport currently has a centralized metering data collection system. The meters required will be tied into the existing system, so that the Maryland Aviation Administration can charge these tenants to recover costs incurred by the airport for providing electrical power.

Electrical power is used at boarding bridges in three ways:

1. To position bridges up to aircraft doors, and maintain bridges at an elevation matching the door height while the aircraft is parked at the gate (Bridge Power).
2. To provide ground power to operate electrically powered aircraft equipment, which uses power at 115 volts, alternating 400 times per second (400 Hertz), or in some cases at 28 volts Direct Current (DC).
3. To provide heated or cooled air to aircraft, called "Pre-conditioned Air" or PC Air (PCA).

Existing loading bridges at BWI Marshall are outfitted with Bridge Power and various combinations of 400 Hertz and PCA units, powered in varying ways as outlined below:

Gates at Terminal A/B have a common circuit for Bridge Power and PCA at each gate. 400 Hertz is provided from a centralized system utilizing two motor generator sets.

Some bridges on Piers C, D, and the International Terminal have bridge-mounted 400 Hertz units, so called "Point of Use" or POU units. Some bridges are equipped with PCA units.

The existing bridge-mounted installations include the following arrangements:

- Bridge Power only, no PCA or 400 Hertz
- Same circuit for Bridge Power, PCA and bridge-mounted 400 Hertz (POU)

- Same circuit for Bridge Power and PCA (or 400 Hertz)
- Individual circuits for Bridge Power, PCA and/or 400 Hertz

Loading Bridge Metering Requirements:
New or renovated loading bridges shall have individually metered circuits for:

A. Bridge Power
B. PCA (if equipped on bridge)
C. 400 Hertz (if equipped on bridge, whether POU or Centralized)

The meter for each circuit shall be one of the following listed below and be fully compatible with the existing Square-D TMSCE (Tenant Metering Software Commercial Edition), Version 2.5 or higher and the System Management Software (SMS).

A. High Density Metering (HDM) enclosure with PM750 meters (one meter per circuit). Provide 120V control power to HDM enclosures as necessary.
B. Enhanced Enercept Meter, rated for circuit.

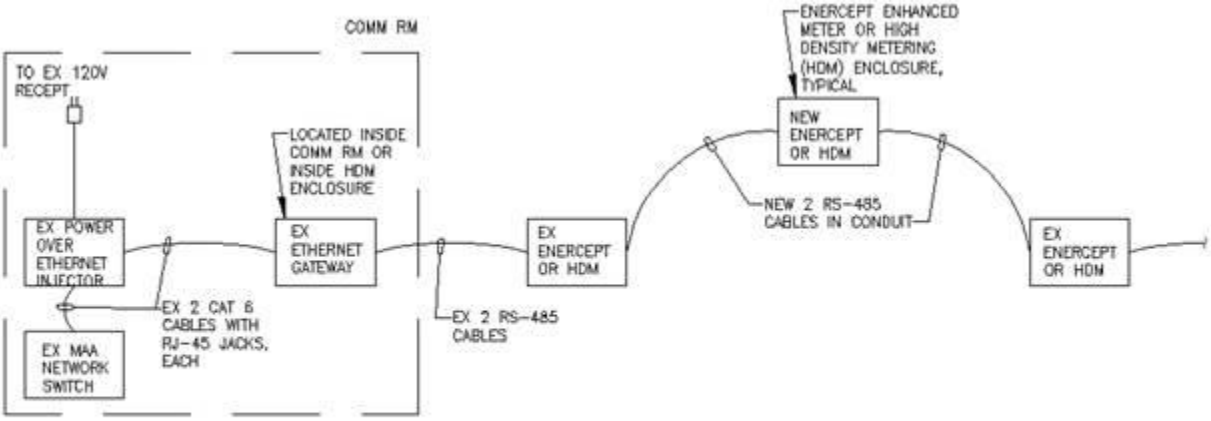
Daisy-chain connect each Enhanced Enercept meter to the existing metering network using two RS-485 cables (1 cable as spare) in 1" conduit. RS-485 cable shall be 600V rated Belden 1120A, or approved equal. Refer to the one-line diagram, "Typical Meter Loop One-Line."

Daisy-chain connect the HDM enclosure to the existing metering network using two plenum-rated RS-485 cables (1 cable as spare). RS-485 cable shall be 300V rated Belden 82841 cable, or approved equal.

Each RS-485 daisy-chain network shall provide maximum 32 devices at cable length of maximum 4000 feet.

Provide testing and verifications procedure to ensure functionality of meters.

The existing TMSCE and SMS software shall be updated to reflect the new work.




TYPICAL METER LOOP ONE-LINE
NOT TO SCALE

## 18.6 Grounding Protection

A ground rod is required at each passenger boarding bridge pedestal base. The ground rod shall be connected to the pedestal in accordance with Chapter 14.2.1 Grounding.

## 18.7 Fire Safety Requirements

All PBBs shall comply with NFPA 415. Documents stating the PBB meets NFPA 415 shall be supplied as part of the PBB submittal (See Specification 347713X_Apron_Drive_Passenger_Boarding_Bridges in Appendix D - Standard Specifications).

Any modifications that are made to PBBs to accommodate regional jets shall meet the 5-minute fire resistance rating requirements of NFPA 415, and interior finishes shall be class "A" rated in accordance with NFPA 415.

Any modifications for PBBs to accommodate regional jets shall be subject to approval of the Office of the Fire Marshal and shall be provided for review and acceptance before use.

# 18.8 AIRPortal Submission Requirements

## 18.8.1 Passenger Boarding Bridge Information to Document

All PBB installation or modification work shall require the submission by the Contractor of relevant data to MAA for the updating of the AIRPortal Gate Management System.

This includes:

1. Manufacturer
2. Model Number
3. Serial Number
4. Capacity Number
5. Rotunda Elevation, surveyed in feet
6. Year Purchased
7. Cab Floor Elevation, surveyed in feet
8. Ramp Elevation at Stop Bars
9. Operational Ranges including, but not limited to, height and swing
10. Aircraft Fleet Mix for which stop bar markings are provided in descending order of size with length taking priority over wingspan
11. Accessories including, but not limited to, PC Air, 400Hz, Regional Jet support, and slides
12. Photos of interior and exterior
13. Photos of stop bar markings and lead-in lines
14. Gate restrictions and/or rules

This information shall be submitted to the MAA Project Manager following installation and initial testing, and prior to final commissioning of the PBB.

## 18.8.2 Photographic Documentation Procedure

Please refer to Chapter 5.4.2 Additional Guidelines for instructions on capturing images.

## Chapter 19 Baggage Handling Systems

# 19.0 Introduction

This standard is based on US airport baggage handling system applications and the design philosophies that have evolved / been established from projects already completed at BWI Marshall. Exceptions to these guidelines do exist. The baggage handling systems standards herein are for conventional slider bed conveyors, recirculating carousels, and checked baggage inspection systems as are being designed/installed in 2008. The standards are performance guidelines for either design/bid/build or design/build procurements. These standards can be utilized with all forms of TSA baggage screening equipment and protocols.

# 19.1 General Codes and Criteria

A. BHS equipment shall be designed to meet OSHA, NEMA, NFPA, FAR requirements, as well as all local codes.

B. For all Baggage conveyor projects involving Baggage Security Screening, obtain and comply with the latest version of the TSA document, 'Planning Guidelines and Design Standards for Checked Baggage Inspection Systems' (PGDS).

C. Designs shall be based upon key parameters and metrics such as:
- Federal Aviation Administration's Terminal Area Forecast (TAF) and specific airline-user flight schedules
- Airline's Passenger Level-of-Service and operational procedures
- Current and future EDS technology and TSA requirements
- Airport development/master plans
- Airport and Passenger characteristics
- Aircraft Models
- Passenger Arrival Curves
- Bags per Passenger
- Load Factors
- Gate Utilization

D. Checked Baggage Inspection Systems (CBIS) shall be designed to be efficient and cost effective. CBISs shall be designed to maximize equipment utilization and minimize systems jams, faults, and errors. All designs shall provide ample clearance for equipment replacement and maintenance while maximizing conveyor layout economy.

E. The BHS shall be capable of processing standard baggage sizes up to 54" in length, 34" in height and 34" in width respectively. The smallest piece of luggage that a standard BHS must accommodate is 12" long, 3" high, and 3" wide; all baggage under these dimensions shall be processed in tubs, provided by the airlines. The maximum weight for standard luggage is 100 lbs.

F. The BHS shall be specified to be installed with industry standard conveyor components, with 39" Between Guide (BG) segments for the transport of standard sized baggage.

G. The BHS must accommodate oversize (O/S) baggage not exceeding 72" in length, 42" in height, 42" in width and 150 lbs in weight.

H. Conveyor right-of-way envelopes shall be no less than 4.5' wide and 4.5' high without catwalk, and no less than 7' wide by 4.5' high with catwalk. Catwalk height clearance should be as tall as possible.

I. Refer to the confined space sections (Chapter 6.2.2 Confined Space Requirements for Designers) within this manual with regards to classifying the catwalk spaces.

J. All proposed baggage claim devices installed at BWI Marshall Airport shall be designed to prevent unauthorized access from the non-secure areas into the SIDA while the device is unattended. If the installation does not characteristically prevent such access, the design shall provide a "bag cage" or similar enclosure on the SIDA side. The design shall specify the enclosure be configured to open and close via CASS and all controls shall be incorporated into the belt control logic.

Designer shall meet with MAA Security at concept design phase to obtain approval of method(s) used to prevent unauthorized access from baggage claim devices to the SIDA.

## 19.2 Performance

BHS and CBIS shall meet the following performance criteria:

A. Baggage spacing (space between head and tail end of adjacent bags) shall be regulated to comply with current and future EDS technology requirements.
B. Speeds between two adjacent belts shall not vary more than 30% from sending to receiving conveyor.
C. CBIS/BHS shall transport all baggage from originating locations to security screening areas and then transport cleared bags to makeup, within the user's (airline and TSA) designated time frame. The designer shall model the entire system with EDS which is given by TSA to ensure that the maximum time of a bag in the system is not exceeded.
D. Existing system shall be tied into new system.
E. CBIS/BHS shall queue bags into security areas to allow for varying processing times and efficiently feed TSA workstations as they become available.
F. Configure merges prior to make up units in a manner that does not cause dieback into the security screening matrix.
G. The BHS/CBIS shall not have jams in excess of 1%, based on number of checked bags over the course of an hour.
H. The maximum percentage of error bags entering the CBRA shall be 2% of the total bags for systems without a reinsertion line and 3% for systems with a reinsertion line, in a 24 hour period of time.
I. ATR's misread rate shall not exceed 5% during normal operation.
J. BMA's misread rate shall not exceed 5% during normal operation.
K. Bag tracking error rate (Lost in track, Added bags, or Missing bags) shall not exceed 0.5%.
L. Fail Safe operation activation shall not exceed 0.5% of total bag volume.
M. All conveyor input lines that feed an EDS matrix shall have a minimum capacity of 1800 bags/hour.

## 19.3 Mechanical Components

Conform to the following standards of mechanical components for BHS/CBIS for MAA projects:

A. The standard baggage clearance shall be 36” above TOB.
B. The maximum incline or decline angle for all non-tracked conveyors shall be 18°.
C. The maximum incline or decline angle for all tracked conveyors shall be 15°.
D. Slider-bed conveyor construction shall be 39” Between Guides (BG).
E. Oversize Slider-bed conveyor construction shall be 42” BG.
F. Install brake motors on incline and decline conveyors to keep belts from drifting under load.
G. Motors/Gearboxes:
   1. For standard drive units, specify right angle drives as first preference.
   2. Where space is constrained, or drive units will not fit on either side of conveyor, use under-slung drives.
   3. All motors shall have a “C” faced flange and be listed and labeled by the Underwriters Laboratories (UL).
   4. All motors shall have “Class F” insulation and shall have a service factor of 1.25
H. VFD’s shall be utilized on all conveyors upstream of EDS machines, with the possible exception of the take-away conveyors in the public spaces. VFD’s shall be utilized on all conveyors within the CBIS portions of the systems. VFD’s shall be utilized on all conveyors in any tracking zones.
I. Power Face Diverters (PFD) shall have a minimum throughput of 40 bags per minute and at least 5 years of proven successful operation in conveyor systems.
J. Tapered side guard guides (wedges) shall be provided for centering bags before EDS. The guides shall be formed with stainless steel, minimum 10-gauge, Type 304 with #4 brushed finished. All connections shall be smooth and flush without openings. The guides shall be provided with all necessary stiffeners.
K. Vertical Diverters shall have a minimum throughput of 30 bags per minute and at least 5 years of proven successful operation in conveyor systems.
L. Conveyor support structure shall be designed for a minimum of 183 lbs. per linear foot of live load.
M. Catwalk alongside conveyors shall be provided where conveyor TOB elevations are greater than 7’-0” AFF. Catwalk shall be of 30” wide with open grating, and fixed kneeling plates at drive locations.
N. Provide ladders and/or crossovers at all locations identified as bag jam points, at control stations, at conveyor access points, and as required by code to properly access and maintain conveyors.
O. Handrails shall be provided on all catwalks except where adjacent to conveyor.
P. Protect all BHS equipment from damage caused by tug/cart movement using guardrails and/or pipe rails.
Q. Each conveyor section shall be permanently and indelibly marked with its respective number as shown on BHS Contractor’s shop drawings for conveyor identification. Each conveyor number shall be carefully and neatly painted or stenciled in a contrasting color, nominally 4” high, in a conspicuous location on the conveyor drive. Temporary markings on the conveyors or other equipment shall be made with a medium which is readily removable with water or a readily available commercial solvent, such that they may be removed without requiring refinishing of the surface on which they appear.

## 19.4 Electrical Controls

Conform to the following standards of electrical components for BHS/CBIS for MAA projects:

A. Remote access to the BHS control system head-end shall be provided through a Virtual Private Network (VPN) connection.

B. E-Stops shall be incorporated into the design at a minimum of every 25' along each conveyor line.

C. High resolution, shaft mounted tachometers/encoders shall be provided in tracking zones.

D. Baggage Measurement Array (BMA) technology with a history of at least 5 years proven successful operation in conveyor systems shall be provided.

E. Stack light colors within Screening area.

1. Stand-Alone and Mini-Inline Systems (As defined by the PGDS):

| | |
|---|---|
| Green | Cleared Bag |
| Red | Alarmed Bag |
| Amber | Unknown Bag |
| White | EDS/BHS Communications Error |

2. Medium Speed and High Speed Inline Systems (As defined by the PGDS):

| | |
|---|---|
| Green | Normal Run |
| White | EDS/BHS Communications Error |
| Amber | BHS Fault |
| Red | Start Up |
| Blue | Failsafe |

All screening area stack lights shall be equipped with audible alarms.

F. Photoelectric sensors shall be retro-reflective type with polarized lenses.

G. When integrating L3-Examiner 6000's with the BHS, require one MVI card for each EDS device. [Note - other EDS, and later generations of L3 equipment may not require the MVI communications cards.]

H. When a new section of BHS (or CBIS) is being integrated into an existing system, replace the existing PLC with a new control unit to control the entire system. In other words, do not attempt to integrate the new PLC with the existing.

I. Meet or exceed the EDS manufacturer's electrical requirements.

J. One Operator Interface Terminal (OIT)/Human Machine Interface (HMI) shall be provided per Motor Control Panel, to display subsystem diagnostic, maintenance, and control information.

K. Each conveyor motor shall have one heavy duty, 480V, 3 Phase, NEMA 1 disconnect switch and an auxiliary contact to report status of disconnect to PLC for system monitoring.

L. Each Automatic Tag Reader (ATR) shall be a minimum of ten head array and a history of 5 years of proven successful operations in conveyor systems.

M. BHS Contractor shall provide software and hardware consistent with industry standards such as:

1. Windows based software platform;
2. Operating system and Graphic User Interface (GUI) shall be user friendly and capable of simultaneously handling multiple programs while incorporating Object Linking and Embedding (OLE); and,
3. Shall not be Proprietary, or 'Sole Source' hardware or software.

N. PLC System and Centralized Supervisory computers shall be fully redundant to meet the specific functional requirements of the BHS for maintenance information. The controls system shall constantly update the BHS control room's Graphic User Interface(s).

## 19.5 Outbound Conveyor System

The following design standards shall be met:

A. Ticket Counter/Curbside - Standard ticket counter or curbside load conveyor belt speed shall be 90 Feet per Minute (FPM).
B. Meet or exceed structural floor slab requirements per machine, as stated by EDS supplier.
C. Comply with TSA and FAA noise requirements for staffed areas.
D. Provide a tug aisle clear height of 8’-0” (minimum) from finished floor to lowest hanger or drive component.
E. Make-up unit control stations shall be located within a 16” to 22” arm reach from the perimeter of the unit.

## 19.6 Inbound Conveyor System

The following design standards shall be met:

A. Design the length of each load belt for a four (4) cart tug train.
B. Make provisions for an unimpeded thirty six (36) inch personnel work space between the load belt and the tug train parking lane.
C. The standard tug train parking lane shall be seven (7) feet wide.
D. Top of Bed elevations for load belts shall be 1’-6” AFF.
E. Load belt speeds shall be 90 fpm.
F. Claim Unit speed shall be 90 fpm.
G. Claim Unit finishes which are visible to the public shall be stainless steel finish.
H. Claim Unit drive motor (primary and redundant) will be capable of starting the carousel under full load conditions.

## 19.7 Testing and Commissioning

Conform to the following standards for testing and commissioning of BHS/CBIS for MAA projects:

A. TSA certification testing procedures shall be performed as defined in the TSA document, 'Planning Guidelines and Design Standards for Checked Baggage Inspection Systems', latest edition.

B. Static and dynamic functionality testing, as well as a system throughput test or system 'stress test', shall be performed.

## 19.8 Warranty/Maintenance/Training/Manuals

Conform to the following standards for BHS/CBIS Warranty Issues and Maintenance Manuals for MAA projects:

A. The BHS Contractor shall provide one (1) year of Extended Warranty Services including Operation and Maintenance in addition to standard one (1) year general contractor warranty.
   1. On outbound systems with CBIS, provide a minimum of 40 hours training, flexible over all shifts. The training shall be divided up into:
   2. 8 hours of Operational Training for airline personnel.
   3. 8 hours of Operational Training for TSA personnel.
   4. 24 hours of maintenance training for designated operation and maintenance personnel.

B. Draft copies of the Operation and Maintenance (O&M) Manuals shall be submitted 120 calendar days prior to substantial completion and final copies shall be submitted 30 calendar days prior to substantial completion. The final copies of the O&M Manuals shall be bound in an orderly manner in loose-leaf lockable 3-ring binders with complete table of contents. Manuals shall include the as-built drawings, operating and maintenance instructions, wiring diagrams, connections and complete parts list of all items. Include manufacturer's literature, catalog/cutsheet, sources of purchase and similar information.

## 19.9 Design Coordination Guidelines

Conform to the following Design Coordination Guidelines for MAA BHS/CBIS projects:

A. Coordinate issues with EDS supplier, such as:
   1. Refer to current integration guide for specific EDS machine (to be provided by TSA).
   2. Proper Standard and Emergency power (such as the NFPA 70-700-1).
   3. Uninterrupted Power Supply (UPS) quantities, requirements and locations.

B. Coordinate issues with TSA: The designer shall meet with TSA to determine baggage screening technology and protocol. Designer should also coordinate delivery of survey equipment with schedule for commissioning of BHS.

C. Coordinate new equipment with existing: The designer shall coordinate existing BHS and controls and compatibility with new equipment. They shall also coordinate new / existing electrical systems, as well as Motor Control Panels.

D. Coordinate with electrical and special systems/communications designers for:
   1. Start-up sequence (Audio &Video) and card swipe interface.
   2. Security door integration.
   3. Fire system integration to fire doors and conveyor system.
   4. Smoke detectors and Spark detectors.
   5. Baggage Information Display System (BIDS).
   6. Power requirements for outlets and lighting in TSA and non TSA areas.
   7. Emergency power for TSA and non TSA equipment.
   8. Uninterrupted Power Supply (UPS) quantities, requirements and locations for all TSA equipment such as On Screen Resolution (OSR) workstations and Explosive Trace Detection (ETD) workstations.
   9. Network architecture for TSA and BHS communications including master PLC interface with core switch(s) and primary edge switch(s) connections.
   10. Audio/Video Systems interface for baggage control system oversight.

E. Coordinate with the architectural/structural designer for issues such as:
   1. Spare parts room and maintenance workshop for spare parts and maintenance personnel.
   2. Baggage control room layout and furniture/casework.
   3. Coordinate sizes and locations of wall openings, and associated facility door numbers with MAA-AHJ Fire Marshal.
   4. Specify draft curtains location and wall interface detail.
   5. Coordinate sizes and locations of floor penetrations.
   6. Verify that structure above ceiling hung conveyor can support conveyor equipment.
   7. Design waterproofed server/communication rooms.
   8. Coordinate EDS machine placement for structural support.
   9. Threat Containment Unit/Threat bag removal paths to comply with local LEO procedure.

F. Coordinate with mechanical engineers to:
   1. Identify complete heat dissipation for all electrical and mechanical loads of the baggage handling system.
   2. Coordinate the conditioning of TSA Checked Baggage Reconciliation Area (CBRA) and other equipment such as Baggage Viewing Stations (BVS), ETD, Search Work Stations (SWS), etc. (Check with TSA at the time of design to ensure updated design equipment and requirements, if possible). Ensure that all baggage conveyors and components have appropriate facility identity/numbering.
   3. Verify that all ancillary equipment installed is free from all conveyor clearance spaces.
   4. Confirm adequate EDS air conditioning condensate drainage.

5. Specify proper fire protection over and under required areas according to local code.

G. Safety Standards Coordination: As-Built Plans (Red-lined/CD's), equipment placed and system management systems shall have uniformity of labeling/signage placed in order to implement the appropriate safety standards associated with OSHA/MOSHA Lock-out/Tag-out work place policies for MAA Inspections and Final Acceptance Testing.

# Volume 2

## A.1 Checklist (5 pages)

Click the image to download the document in Adobe PDF format.

**MARYLAND DEPARTMENT OF TRANSPORTATION**
**MARYLAND AVIATION ADMINISTRATION**
**OFFICE OF ENGINEERING AND CONSTRUCTION MANAGEMENT**

**AIRPORT CONSTRUCTION PROJECT CHECKLIST**
**DIVISION OF FACILITIES DESIGN**

**MAA Project No.:** _____

**Project Title:** _____

**FAA Funding?** ____ Yes ____ No **FAA Project No.:** _____

Instructions: All projects designed for the Maryland Aviation Administration, Office of Engineering and Construction Management will be performed in accordance with this checklist. The checklist should be completed as design progresses, and must be included with each submission of design documents. In general, any item on the following checklist which is checked "N/A" (not available or not applicable) should include a short explanation of action taken

Items on the checklist are to be completed by the Engineer, except as noted otherwise. Where checklist items call for approval, coordination, or notification of other agencies, including those outside of MAA, documentation shall be made by the Engineer in writing. If information is not transmitted in a timely manner, the Engineer should send a follow-up request. If no response is received, the Engineer should document such non-response and notify the MAA project manager.

Any changes in project scope, design and/or construction costs, or schedule resulting from design reviews or other causes must be approved by the Manager, Design Services in writing before design work may proceed. There will be no exceptions.

For Federally-funded projects, the FAA Project Checklist (see Schedule B) must also be completed.

| Yes | No | N/A | |
|---|---|---|---|
| ___ | ___ | ___ | 1. Has the Planning Division Checklist been received? Have all items noted in this checklist been addressed and coordinated with the Office of Planning & Environmental Services, and will they have any impact on design? Can design proceed? |
| ___ | ___ | ___ | 2. Have airport property plats and descriptions been reviewed? If the proposed project is not on MAA property, has the project been coordinated with the MAA Division of Real Estate? |

## A.2 Schedule A (3 pages)

Click the image to download the document in Adobe PDF format.

**MARYLAND DEPARTMENT OF TRANSPORTATION**
**MARYLAND AVIATION ADMINISTRATION**
**FACILITIES DEVELOPMENT AND ENGINEERING**

**AIRPORT CONSTRUCTION PROJECT CHECKLIST**
**OFFICE OF DESIGN**
**SCHEDULE A**

**MAA Project No.:** _____

**Project Title:** _____

| Yes | No | N/A | |
|---|---|---|---|
| ___ | ___ | ___ | 1. Has the project been coordinated through the Office of Airport Operations with affected tenants? |
| ___ | ___ | ___ | 2. Has the project been coordinated with the Office of Commercial Management where leases and tenant agreements are affected? |
| | | | **Traffic Control Plan** |
| ___ | ___ | ___ | 1. Has the traffic control plan been coordinated with Airport Operations, State Highway Administration, and county government (i.e., detours, temporary pavement marking, lighting, signage, directional arrow board, etc.)? |
| ___ | ___ | ___ | 2. Have temporary markings on airfield pavements been specified to be painted? (The use of temporary tape markings must be approved by Airport Operations.) |
| ___ | ___ | ___ | 3. Is adequate temporary lighting specified? |
| ___ | ___ | ___ | 4. Are adequate customer/pedestrian protection, temporary signs, dust control measures, etc. specified? |
| | | | **Civil and Landscaping** |
| ___ | ___ | ___ | 1. Have adequate storm water management, erosion and sediment control measures during construction been specified? |
| ___ | ___ | ___ | 2. If needed, have special treatments for establishing ground cover (minimum requirement: topsoil, seed, and mulch) been specified? |
| ___ | ___ | ___ | 3. Have landscaping plans been approved by the MAA Maintenance Division? |
| | | | **Electrical** |
| ___ | ___ | ___ | 1. Have Mode II runway and taxiway signs been specified? |
| ___ | ___ | ___ | 2. Have "switch hitter" runway centerline lights been specified? |

## A.3 Schedule B (2 pages)

Click the image to download the document in Adobe PDF format.

**FEDERAL AVIATION ADMINISTRATION**
**PLANS AND SPECIFICATIONS REVIEW CHECKLIST**

**SCHEDULE B**

**Airport**: _____ **AIP No.**: _____

| Yes | No | Item |
|---|---|---|
| ___ | ___ | 1. Do the plans and specifications cover all the work included in the tentative allocation? If not, please explain. _____ _____ |
| ___ | ___ | 2. Do the plans and specifications include any non-eligible development? |
| ___ | ___ | 3. Have all coordination (sponsor, users, FAA, etc.) comments been satisfied? If not, please explain. _____ _____ |
| ___ | ___ | 4. Has an Engineer's Report been submitted to FAA? |
| ___ | ___ | 5. For projects containing airport paving, has the FAA Pavement Design Form (FAA Form 5100.1) been submitted to the FAA? |
| ___ | ___ | 6. Was a pre-design conference held? |
| ___ | ___ | 7. Are there any waivers to FAA standards included in Engineering Report? Have waivers been: Requested: Yes_____ No _____ Approved: Yes_____ No _____ |
| ___ | ___ | 8. Does the development included in the plans and specifications conform with the approved Airport Layout Plan? If not, please explain. (Note: This can be controlled by including a general layout sheet in the plan set with all grant work items listed in the legend and shown at the location on the airport where it will be constructed. The location and size shown should agree with the approved ALP). _____ _____ |
| ___ | ___ | 9. Are there any special environmental conditions or requirements that need to be incorporated in the plans and specifications? If yes, please explain. _____ _____ |

## Appendix B - Standard Forms

# B.1 Forms and Checklists

### Meeting Minutes Form (.docx, 2 pages)

Click the image to download the document in Microsoft Word format.

*<INSERT YOUR COMPANY LOGO HERE>*

## MEETING MINUTES

| | | | |
|---|---|---|---|
| MEETING DATE: | | MEETING LOCATION: | |
| TASK NUMBER: | | TASK TITLE: | |
| MEETING SUBJECT: | | | |

| | NAME | E-MAIL ADDRESS | PHONE NUMBER |
|---|---|---|---|
| MAA TASK MANAGER: | | | |
| CONSULTANT TASK MANAGER: | | | |
| MINUTES PREPARED BY: | | | |

| | INVITED PARTICIPANTS | ATTENDEES | REPRESENTING | E-MAIL ADDRESS | PHONE NUMBER |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |
| 23 | | | | | |
| 24 | | | | | |
| 25 | | | | | |

*REV. 07/2013*

## Engineer's Report General Summary (.docx, 1 page)

Click the image to download the document in Microsoft Word format.

## ENGINEER'S REPORT GENERAL SUMMARY

| | |
|---|---|
| Date | MM/DD/YYYY |
| Report Phase | ☐ Draft ☐ Draft-Final ☐ Final |
| Airport | ☐ BWI Marshall ☐ Martin State |
| A/E Contract Number | MAA-AE-xx-xxx |
| Task/Subtask Number | xxxx |
| Task Title | xxxx |
| Construction Contract Number | If available |
| Construction Contract Title | If available |
| **CONSULTANT'S CONTACT INFORMATION** | |
| Prime Consultant | xxx |
| Subconsultants Involved | |
| Consultant's Project Manager | |
| Consultant's Task Manager | xxxxxx |
| Task Manager's Phone Number | xxx-xxxx-xxxx |
| Task Manager's Email Address | |

### Consultant Signoff

Consultant signatures below certify that Consultant has reviewed the documents for completeness and coordination per MAA Design Standards and project requirements and attests to their review of said documents as submitted to MAA.

| Position | Name | Signature | Consultant Name |
|---|---|---|---|
| Task/Project Manager | | | |
| QA/QC Manager | | | |

### Professional Certification:

"I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY REGISTERED ARCHITECT/ ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND"

**License Number:** _____

**Expiration Date:** _____

☐ Draft ☐ Draft-Final ☐ Final Submittal 1
MAA-AE-xx-xxx, Task #
*Revised as of: 4/13/2016*

## Standard Cost Estimate (.xlsx, 1 page)

Click the image to download the document in Microsoft Excel format.

<Insert Contract Number>
<Insert AE Task Number> - <Insert Task Title>
CONSULTANT: <Insert Consultant>
<Insert Date>

ESTIMATING LEVEL: ☐ Budget ☐ Concept ☐ 30% ☐ 60% ☐ 100% ☐ Bid

| ITEM | DESCRIPTION | UNIT | UNIT COST | QUANTITY | TOTAL | COMMENT |
|---|---|---|---|---|---|---|
| | | | | | | |
| | CONSTRUCTION COST ESTIMATE | | | | | |
| 1 | | | | | $ - | |
| 2 | | | | | $ - | |
| 3 | | | | | $ - | |
| 4 | | | | | $ - | |
| 5 | | | | | $ - | |
| 6 | | | | | $ - | |
| 7 | | | | | $ - | |
| 8 | | | | | $ - | |
| 9 | | | | | $ - | |
| 10 | | | | | $ - | |
| 11 | | | | | $ - | |
| 12 | Life safety Contingency (If applicable) | | | | $ - | |
| 13 | Stormwater Management Contingency (If applicable) | | | | $ - | |
| 14 | Asbestos/Lead Removal Contingency (If applicable) | | | | $ - | |
| 15 | | | | | $ - | |
| | Special Systems: BAS (Metasys) | | | | $ - | |
| | FAS (Honeywell) | | | | $ - | |
| | CASS | | | | $ - | |
| | CCTV | | | | $ - | |
| | BGE | | | | $ - | |
| | Verizon | | | | $ - | |
| | BHS (Baggage Handling Systems) | | | | $ - | |
| | Other Systems (Specify) | | | | $ - | |
| | | | | | | |
| SUBTOTAL A | | | | | $ - | |
| Temporary Construction Items (shall not exceed 3% of A) | | | | 3% | $ - | |
| SUBTOTAL B | | | | | $ - | |
| Mobilization (shall not exceed 5% of B) | | | | 5% | $ - | |
| SUBTOTAL C | | | | | $ - | |
| Design Contingency (25% of C) | | | | 0% | $ - | |
| SUBTOTAL D | | | | | $ - | |
| General Conditions X% of D (If not included in Unit Costs) | | | | 0% | $ - | |
| Contractor O&P X% of D (If not included in Unit Costs) | | | | 0% | $ - | |
| Construction Security Plan (X% of D) | | | | 0% | $ - | |
| SUBTOTAL E | | | | | $ - | |
| Construction Quality Control Plan (3% of E) | | | | 3% | $ - | |
| SUBTOTAL F | | | | | $ - | |
| Miscellaneous Construction Allowance (Minimum 10% of F) | | | | 0% | $ - | |
| Construction Quality Control Plan (3% of Misc. Construction Allowance) | | | | 3% | $ - | |
| TOTAL CONSTRUCTION COST ESTIMATE | | | | | $ - | |
| | | | | | | |
| | ADDITIONAL PROGRAM COSTS | | | | | |
| Estimated Design Fee (**As Required**-or 10% to 20% of Construction Cost*) | | | | 0% | $ - | |
| Design Fee Contingency (% of Estimated Design Fee) | | | | 15% | $ - | |
| Estimated MAA Project Management Fee (% of Estimated Design Fee) | | | | 10% | $ - | |
| Estimated CMr Fee (% of Construction Cost) | | | | 10% | $ - | |
| TOTAL CAPITAL PROGRAM COST ESTIMATE | | | | | $ - | |
| Escalation Factor X% (If applicable) | | | | 0% | $ - | |
| GRAND TOTAL | | | | | $ - | |

| | | | |
|---|---|---|---|
| **Level of Accuracy** | ☐ Quantity Take-Off | ☐ General Square Foot | ☐ Comparison with other installations/facilities |
| List of Sole Source Items Included in this Contract | 1 | 3 | 5 |
| | 2 | 4 | 6 |
| **List of Assumptions** | | | |

## Knox Box Order Forms (.pdf, 6 pages))

Click the image to download the document in Adobe PDF format.

10/10/2006 12:37 4108597523 BWIFRD PAGE 02

KNOX 2006

Fire/Law Enforcement Rapid Entry System

**AUTHORIZATION ORDER FORM**

800-552-5669 • 623-687-2300 • Fax: 623-687-2290 • WWW.KNOXBOX.COM

Effective January 1, 2006

**Section 1 BILLING INFORMATION - MUST MATCH CREDIT CARD INFORMATION IF USED.**

COMPANY / NAME

DATE ORDERED

STREET (NO P.O. BOXES)

SUITE / BUILDING

CITY

STATE

ZIP CODE

CONTACT NAME

PHONE NUMBER

P.O. NUMBER (GOV. AGENCIES ONLY)

Send this form with payment to:
KNOX COMPANY
1601 W. Deer Valley Road,
Phoenix, AZ 85027

**ORDER WILL NOT BE PROCESSED**
**Section 2** Without Authorized Signature

Baltimore - Wash Intl Airport F/Res
State Aviation BWI Fire/Res
PO Box 8766
Baltimore, MD 21240

Authorized Fire Agency Signature and Date — Print Name Clearly

PS-39-026-02-89
System Code

**IMPORTANT NOTE** - Knox™ Master Keys are provided to authorized fire departments or other registered entities on an as-needed basis solely for use with the Knox Rapid Entry System. No other use of the keys or their associated codes is authorized. Key codes associated with the Knox Master Keys and Keyways remain the property of the Knox Company and are maintained by the Knox Company in Phoenix, Arizona. For questions regarding this policy, contact Knox at 800-552-5669.

**Section 3 ORDER PRODUCT HERE**

| Quantity | Part Number | Amount |
|---|---|---|
| | | Total $ |
| | | Total $ |
| | | Total $ |
| | | If required, add $7.00 per submastered item $ |
| | | Shipping and Handling $ |
| | | Subtotal $ |
| | | No St Tax Sales Tax $ |
| | | Reqd Pre-payment Total $ |

**Shipping & Handling**

| | |
|---|---|
| 1 lb. to 7 lbs. | $7.00 |
| 8 lbs. to 25 lbs. | $17.00 |
| 26 lbs. to 50 lbs. | $30.00 |
| 51 lbs. to 75 lbs. | $40.00 |

*75 lbs.+ call Knox for quote. Alaska, Hawaii, Canada or Priority Shipping, please call for rates.*

**PRE-PAYMENT INFORMATION REQUIRED** — **USE PRICE LIST ON LAST PAGE**

☐ Check or Money Order made payable to: **KNOX COMPANY** Federal I.D. #95-3617858

☐ VISA ☐ AMEX ☐ MC ☐ DISC

CARD NUMBER — EXP. DATE (MM / YYYY) — *Cardholder Signature*

**Section 4 INSTALLATION ADDRESS - REQUIRED BY FIRE DEPARTMENT**

BUILDING NAME (WHERE ITEM WILL BE INSTALLED) - PLEASE TYPE ADDITIONAL INSTALLATION ADDRESSES ON A SEPARATE SHEET (REQUIRED BY FIRE DEPT.)

ADDRESS

CITY

STATE

ZIP CODE

**Fire Department Approval Signature Required to Submaster Items**

☐ Check here to Submaster

Authorized Fire Agency Signature
Submaster fee $7.00 per keyed item.

DIV

REC'D

**Section 5 SHIP TO ADDRESS IS REQUIRED**

SHIP TO CONTACT NAME

COMPANY NAME

STREET ADDRESS (NO P.O. BOXES)

CITY

STATE

ZIP CODE

E-MAIL ADDRESS

## Request for Variance – Interface of Fire Alarm, Life Safety and Security Systems (.pdf, 1 page)

Click the image to download the document in Adobe PDF format.

**AIRPORT WIDE STANDARD FOR INTERFACE OF FIRE ALARM, LIFE SAFETY AND SECURITY SYSTEMS**

**REQUEST FOR VARIANCE**

Name: _____ Date: _____

Company: _____ Tel. No: _____

Project Name: _____ MAA Contract No: _____

MAA Building Permit No. _____

1. Purpose of Variance Request.

2. Related Code References:

3. Justification for Variance (include discussion of design impact; code interpretation: budget increase/decrease; and other relevant facts). (Attach additional sheets as needed).

4. Design and Construction Cost impact if approved: $ _____, $ _____
   Design
   Construction

5. Approval/Disapproval of this request is required by: _____
   (Allow minimum 2 weeks.) .
   Days

***BELOW THIS LINE IF FOR INTERNAL USE ONLY***

A. OFM Comments.

B. Director of Engineering Comments.

C. ☐ Variance approved as submitted.
   ☐ Variance approved with comments incorporated.
   ☐ Variance denied.

_____ _____ ____Yes ___
No
OFM Date

_____ _____ ____Yes ___
No
Operations Manager Date

_____ _____ ____Yes ___
No
MAA Director of Design Date

NOTE: This Request for Variance is applicable to this specific project only.

## Pre-Occupancy Fire Inspection (.pdf, 6 pages)

Click the image to download the document in Adobe PDF format.

Maryland Aviation Administration

**Fire and Rescue Department**
**Office of the Fire Marshal**
Fire Prevention and Inspection Division
**1334-G, Ashton Road, Hanover MD 21076**
**410-859-7511**

## PRE-OCCUPANCY FIRE INSPECTION

[ ] Initial Pre-Occupancy Fire Inspection
[ ] Re-Inspection
[ ] Other _____

[ ] New Construction
[ ] Addition
[ ] Interior Alteration or Renovation

MAA / Facility Name _____

Building #, Address _____

City _____, MD ZIP _____

Inspection conducted by A-FM_____ 410-859-7511/ _____

Date and Time of Inspection _____/_____/_____ _____ [ ] AM [ ] PM

Property Use and Occupancy Classification:
[ ]-[ ]. _____ Use Group (Example: S-1, Storage)

Area of facility _____ (Square Feet)

| **Means of Egress** (Note: All code references refer to NFPA 101, 2006 unless otherwise noted.) | **Yes** | **No** | **Reference** |
|---|---|---|---|
| Paths of egress and exits are readily visible and identifiable | | | 7.2.1.1.2, 7.5.2, 7.7.3, 7.10.1.2, 4.5.3.3 |
| Exits and means of egress are clear and unobstructed (e.g. – no | | | 7.5.1.1, |

## Construction Safety and Phasing Plan Review Checklist (AC 150/5370-2F) (.pdf, 7 pages)

Click the image to download the document in Adobe PDF format.

## Appendix 3. Safety and Phasing Plan Checklist

This appendix is keyed to Section 2. Plan Requirements. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not as a required submittal.

| Coordination | Reference | Addressed | | | Remarks |
|---|---|---|---|---|---|
| **General Considerations** | | | | | |
| Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified. | 205 | ☐ Yes | ☐ No | ☐ NA | |
| Operational safety is a standing agenda item for construction progress meetings. | 205 | ☐ Yes | ☐ No | ☐ NA | |
| Scheduling of the construction phases is properly addressed. | 206 | ☐ Yes | ☐ No | ☐ NA | |
| **Areas and Operations Affected by Construction Activity** | | | | | |
| Drawings showing affected areas are included. | 207.a | ☐ Yes | ☐ No | ☐ NA | |
| Closed or partially closed runways, taxiways, and aprons are depicted on drawings. | 207.a(1) | ☐ Yes | ☐ No | ☐ NA | |
| Access routes used by ARFF vehicles affected by the project are addressed. | 207.a(2) | ☐ Yes | ☐ No | ☐ NA | |
| Access routes used by airport and airline support vehicles affected by the project are addressed. | 207.a(3) | ☐ Yes | ☐ No | ☐ NA | |
| Underground utilities, including water supplies for fire fighting and drainage. | 207.a(4) | ☐ Yes | ☐ No | ☐ NA | |
| Approach/departure surfaces affected by heights of temporary objects are addressed. | 207.a(5) | ☐ Yes | ☐ No | ☐ NA | |
| Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings. | 207.a | ☐ Yes | ☐ No | ☐ NA | |
| Temporary changes to taxi operations are addressed. | 207.b(1) | ☐ Yes | ☐ No | ☐ NA | |

# B.2 SSI Forms

## SSI – Confidentiality and Non-Disclosure Agreement (For Construction Contract Bidders) (.pdf, 3 pages)

Click the image to download the document in Adobe PDF format.

**MAA CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT**
**SENSITIVE SECURITY INFORMATION**
**(For Construction Contract Bidders)**

Date _____

_____ _____
Contract or Building Permit Number Contract or Building Permit Name

1. I, _____, an employee of

_____ ("Contractor"), under contract (the "Contract") with Maryland Aviation Administration (referred to herein as "MAA"), is executing the acceptance of its responsibilities for Airport Security at Baltimore/Washington International Thurgood Marshall Airport (referred to herein as "BWI Marshall") and Martin State Airport.

2. Pursuant to the Contractor's work for MAA under the Contract, the Contractor has and will request that MAA provide it with various documents or other records collectively, "documents".

3. I understand the following with respect to any documents, or information therein, that are provided by MAA to me, or which come into my possession pursuant to the Contractor's work for MAA:

A. These documents may be considered Sensitive Security Information ("SSI") under applicable Federal and State regulations;

B. These documents may be protected from disclosure under the Maryland Public Information Act;

C. These documents may be protected from disclosure under the Federal Freedom of Information Act;

D. These documents are considered by MAA to contain information that is vital to the security and safe operation of BWI Marshall Airport and Martin State Airport, whether or not these documents are otherwise classified by any other entity or law as containing such information;

E. These documents are considered by MAA to possibly contain information that is a trade secret.

Page 1 of 3

## SSI – Confidentiality and Non-Disclosure Agreement (For A/E, CMI, Tenant and Sole Source Provider) (.pdf, 3 pages)

Click the image to download the document in Adobe PDF format.

**MAA CONFIDENTIALITY AND NON-DISCLOSURE AGREEMENT**
**SENSITIVE SECURITY INFORMATION**
**(For A/E's, CMI, Tenants and Sole Source Providers)**

Date _____

| _____ | _____ |
|---|---|
| Contract or Building Permit Number | Contract or Building Permit Name |
| _____ | _____ |
| Task Number | Task Description / Title |

1. I, _____, an employee of

_____ ("Contractor"), under contract (the "Contract") with Maryland Aviation Administration (referred to herein as "MAA"), is executing the acceptance of its responsibilities for Airport Security at Baltimore/Washington International Thurgood Marshall Airport (referred to herein as "BWI Marshall") and Martin State Airport.

2. Pursuant to the Contractor's work for MAA under the Contract, the Contractor has and will request that MAA provide it with various documents or other records collectively, "documents".

3. I understand the following with respect to any documents, or information therein, that are provided by MAA to me, or which come into my possession pursuant to the Contractor's work for MAA:

A. These documents may be considered Sensitive Security Information ("SSI") under applicable Federal and State regulations;

B. These documents may be protected from disclosure under the Maryland Public Information Act;

C. These documents may be protected from disclosure under the Federal Freedom of Information Act;

D. These documents are considered by MAA to contain information that is vital to the security and safe operation of BWI Marshall Airport and Martin State Airport, whether or not these documents are otherwise classified by any other entity or law as containing such information;

Page 1 of 3

## SSI – Contractor Representative Information (.pdf, 1 page)

Click the image to download the document in Adobe PDF format.

**CONTRACTOR REPRESENTATIVE INFORMATION FORM**
***Insert Contract Title***
***Insert Contract No.***

**Date:** _____

**Name:** _____

**Social Security Number:** _____

**Date of Birth:** _____

**Drivers License:** State: _____

Drivers License No.: _____

**Company Name:** _____

**Telephone No.:** _____

**Facsimile No.:** _____

**Email Address:** _____

**I understand that by signing this form, I grant my consent to allow the Maryland Aviation Administration to perform a Transportation Security Administration (TSA) "No Fly List" Security Verification of my background for the purpose of granting limited SSI privileges unto me. I further consent to comply with the requirements of 49 CFR 1520 and I understand and acknowledge that my failure to comply with the requirements of 49 CFR 1520 could result in civil penalties.**

_____
**Signature**

_____
**Print Name**

# B.3 MROI Forms

## MROI – List (.pdf, 1 page)

Click the image to download the document in Adobe PDF format.

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND AVIATION ADMINISTRATION

**Maintenance, Repair and Operating Items List**

| | |
|---|---|
| Construction Contract Number | |
| Construction Task Number (If Applicable) | |
| Construction Contract Title | |
| Design Task Number | |
| Design Task/Subtask Title | |
| Airport | |
| Date | |

MROI LIST

| Specification Section | Material/Product and Description | Quantity | Units | MAA Person Requesting Item |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Notes:** This form is to be completed by the consultant as an identical list to the items approved on the "MROI Approval" form. The completed form is to be inserted in the contract Technical Specifications, Item X-3.

## MROI –Approval List (.docx, 1 page)

Click the image to download the document in Microsoft Word format.

**MARYLAND DEPARTMENT OF TRANSPORTATION**
**MARYLAND AVIATION ADMINISTRATION**

## Maintenance, Repair and Operating Items Approval

| | |
|---|---|
| Construction Contract Number | |
| Construction Task Number (If Applicable) | |
| Construction Contract Title | |
| Design Task Number | |
| Design Task/Subtask Title | |
| Airport | |

MROI LIST

| Specification Section | Material/Product and Description | Quantity | Units | MAA Person Requesting Item |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

MAA REPRESENTATIVES

| OFFICE | SIGNATURE | DATE |
|---|---|---|
| Design and Construction | | |
| Capital Programs | | |
| Procurement | | |
| Maintenance & Utilities (If applicable) | | |
| Information Technology (If applicable) | | |

**Notes:**

1. This form shall be completed by the consultant and included in the Final Design Report. If no design report is prepared, a scanned copy of this form shall be emailed to the MAA Task Manager for inclusion in the task file.
2. Once MAA signatures have been obtained for the approved MROI, designer shall transfer this list to the "MROI List" form, which is to be included in the Technical Specifications behind Item X-3.

## MROI – Record of Delivery (.pdf, 1 page)

Click the image to download the document in Adobe PDF format.

**MARYLAND DEPARTMENT OF TRANSPORTATION**
**MARYLAND AVIATION ADMINISTRATION**

## Maintenance, Repair and Operating Items Record of Delivery

| | |
|---|---|
| **Construction Contract Number** | |
| **Construction Contract Title** | |
| **Contractor Name** | |
| **Airport** | |
| **Date** | |

| MROI Information | | |
|---|---|---|
| | **Description of material** (if known, include the name of product, manufacturer, product line, part number, model, color or other detailed description) | |
| | **Type of material** (for example: spare part, surplus material, salvaged material, supply, or other) | |
| | **Required by** (for example: specification section, note on plans, DCL, RFI, AWO, or other contract reference) | |
| | **Quantity Delivered** (for example: number of items, number of boxes and number of items per box, linear feet, square feet, gallons) | **Delivered:**<br>**Specified:**<br>**Explanation of difference:** |
| | **Price** (for example: invoice, vendor's quote, manufacturer's suggested retail, or other price) | **Unit price:**<br>**Total Value:** |
| | **Location where materials would be installed** (for example: airfield, passenger boarding bridge, restroom, Daily Garage, etc.) | |

| MAA Representatives (For MAA use only) | OFFICE | SIGNATURE | DATE |
|---|---|---|---|
| | **MAA Location Contact for Installation** | Signature: | |
| | | Printed Name: | |
| | **Received by the Resident Engineer** | Signature: | |
| | | Printed Name: | |
| | **Received by MAA, Purchasing and Materials Management** | Signature: | |
| | | Printed Name: | |

**Notes:**

1. One form to be completed by the Contractor for each material to be delivered to the MAA. Completed forms will be submitted to the Resident Engineer.

## Appendix C - Standard Contract Drawings

# C.1 01 Cover Sheets

Click an image to download a single AutoCAD DWG file.

### C.1.1 BWI

*BWI Cover Sheet*

### C.1.2 MTN

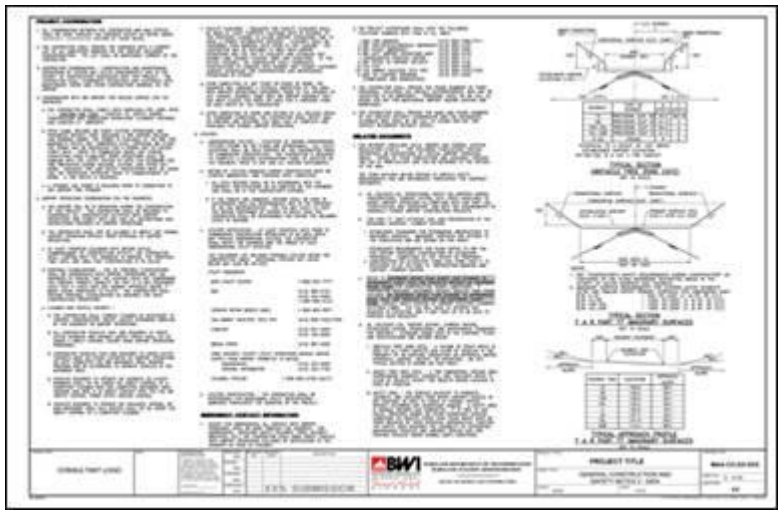
*MTN Cover Sheet*

# C.2 02 General Construction and Safety Notes

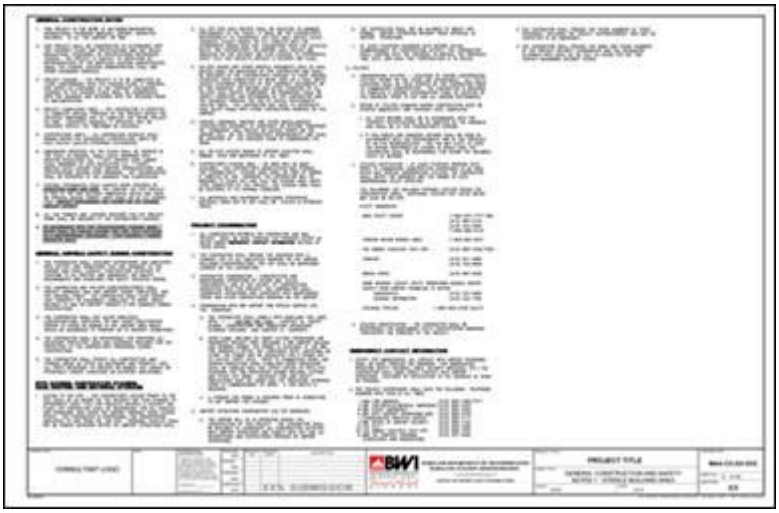
Click an image to download a single AutoCAD DWG file.

## C.2.1 BWI

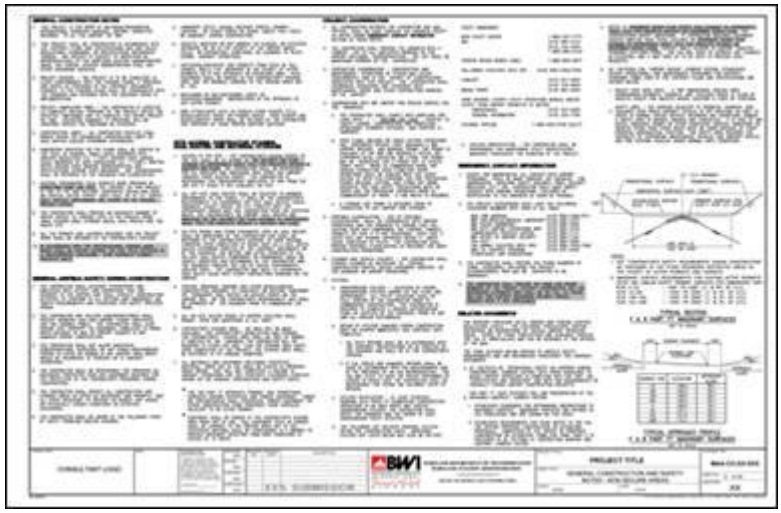
SIDA 1



SIDA 2



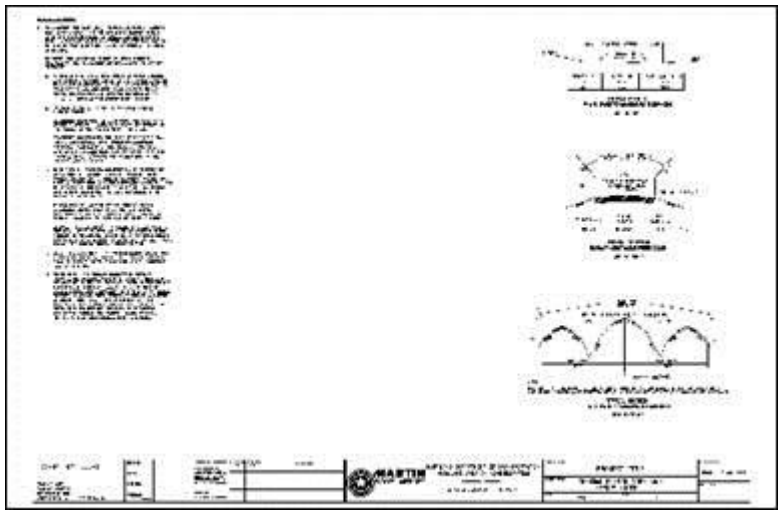
Sterile Building Area



Non-Secure Areas

## C.2.2 MTN

*Sheet 1*

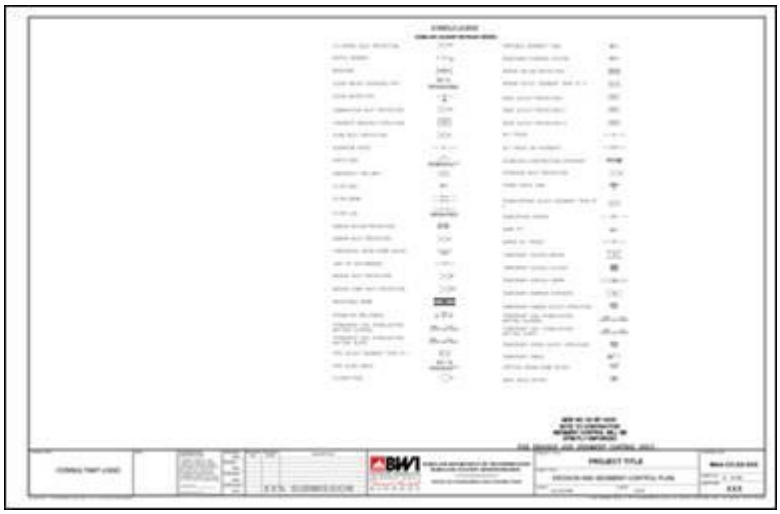


*Sheet 2*

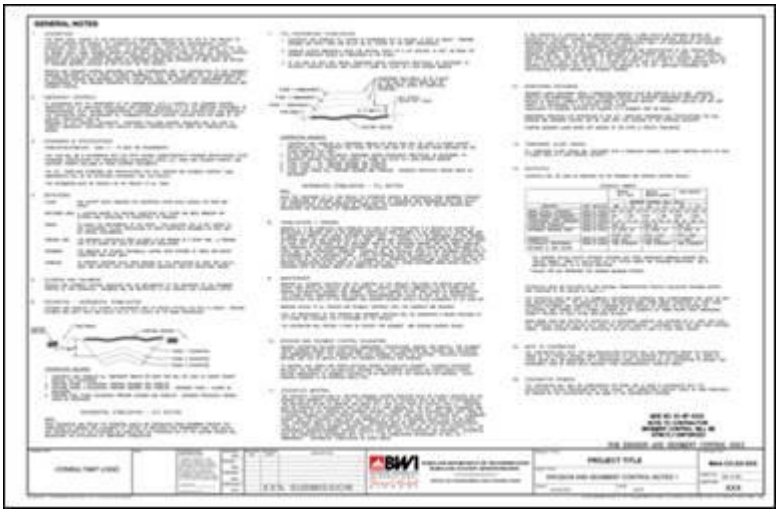
# C.3 03 Erosion and Sediment Control

Click an image to download a single AutoCAD DWG file.

## C.3.1 BWI

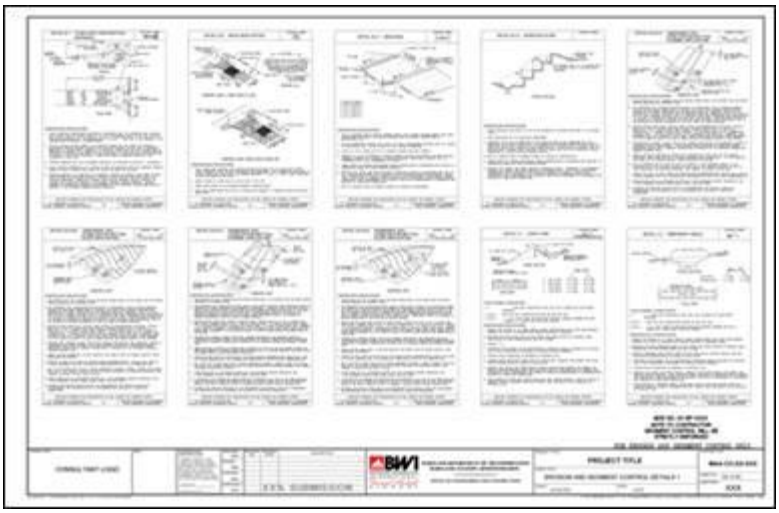


Plan

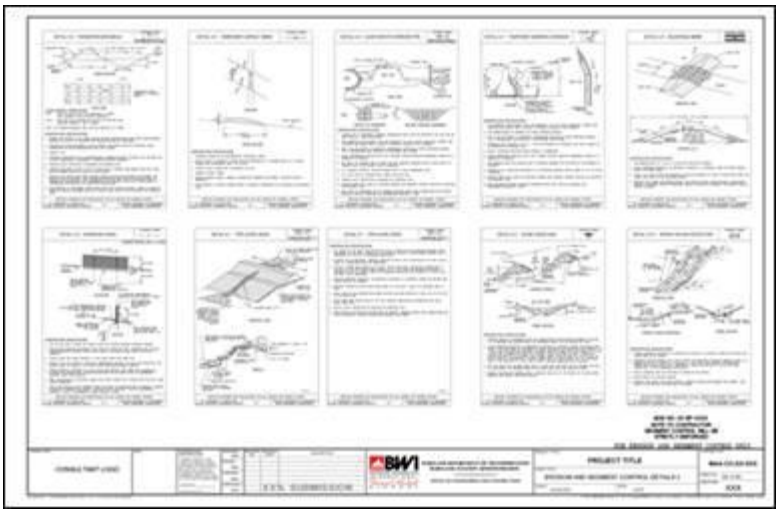


Notes 1

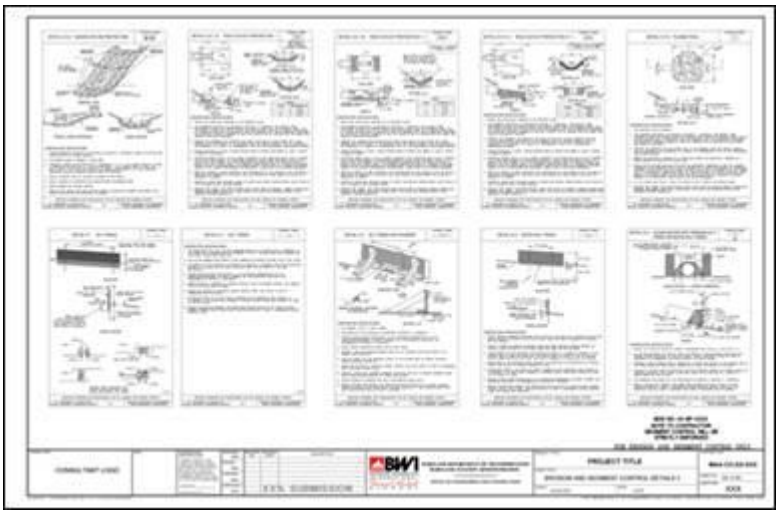
Notes 2



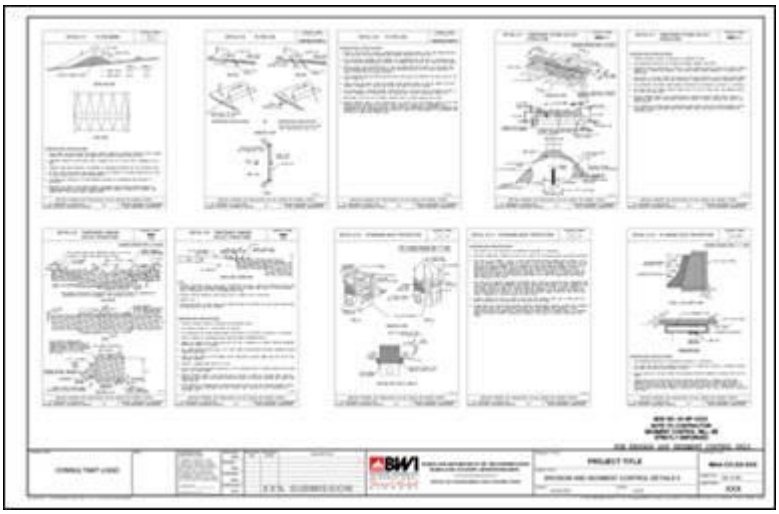
Details 1



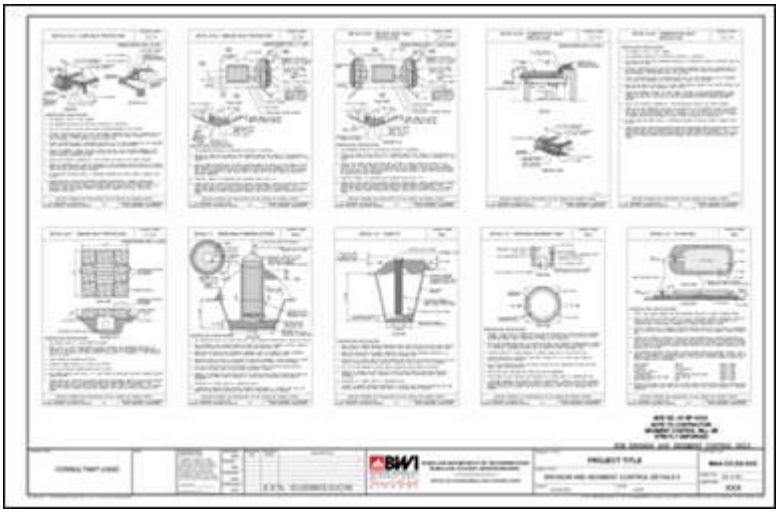
Details 2



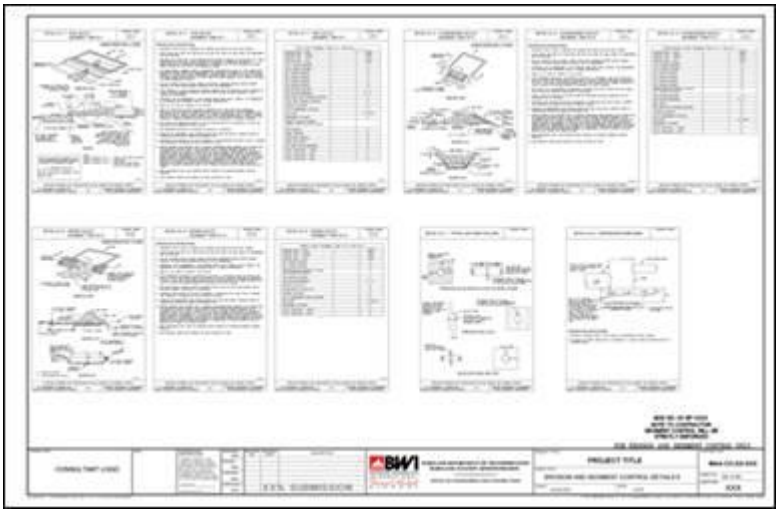
Details 3



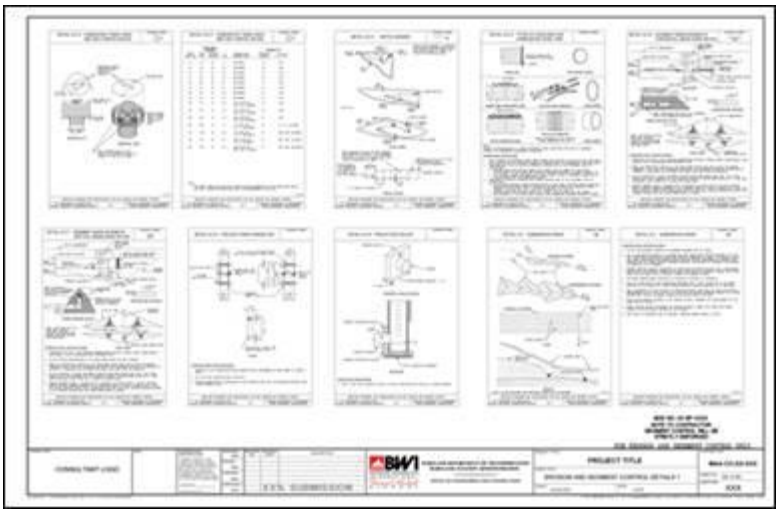
Details 4



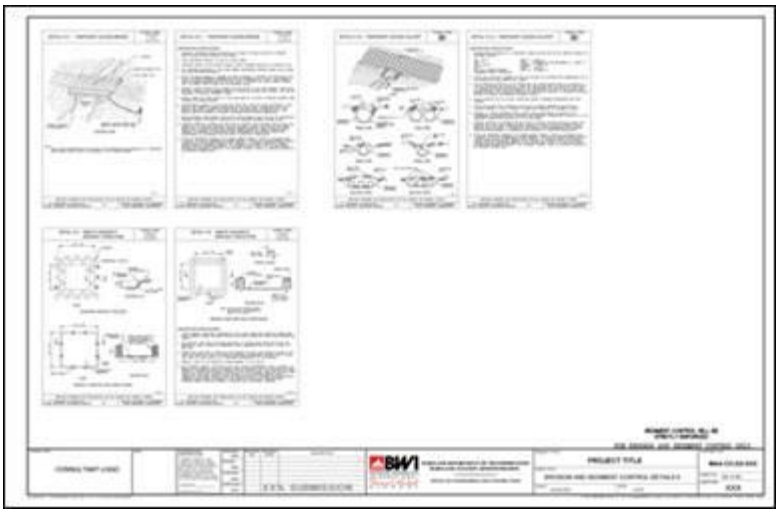
Details 5



Details 6

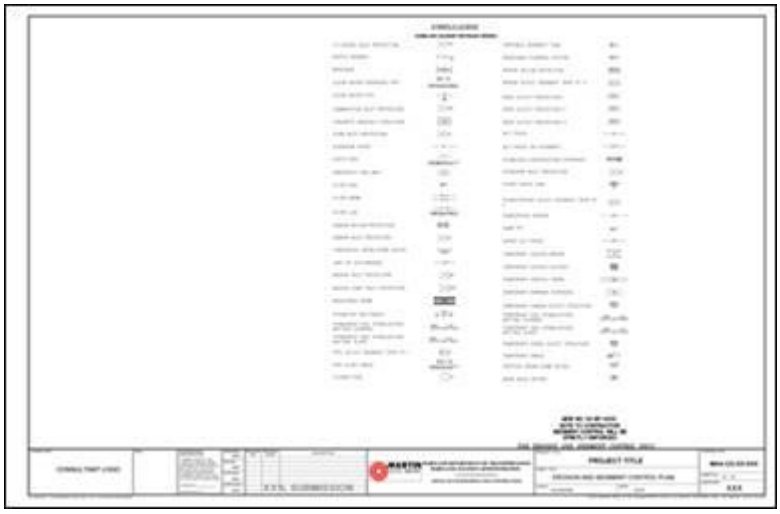


Details 7



Details 8

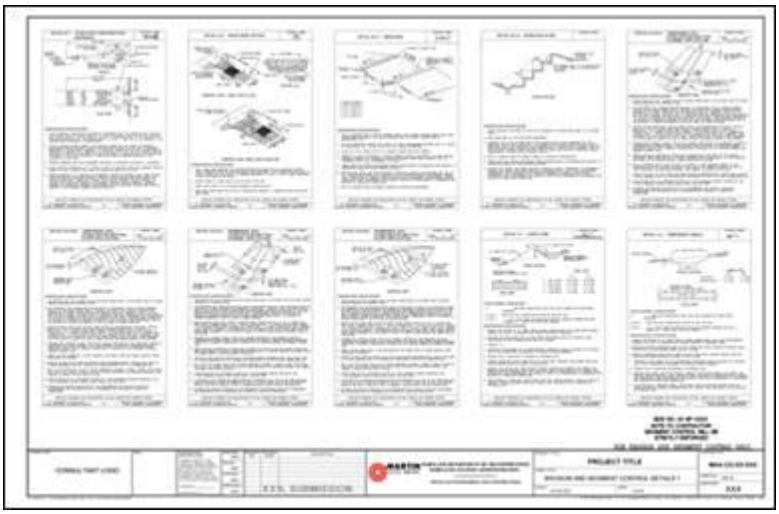
## C.3.2 MTN



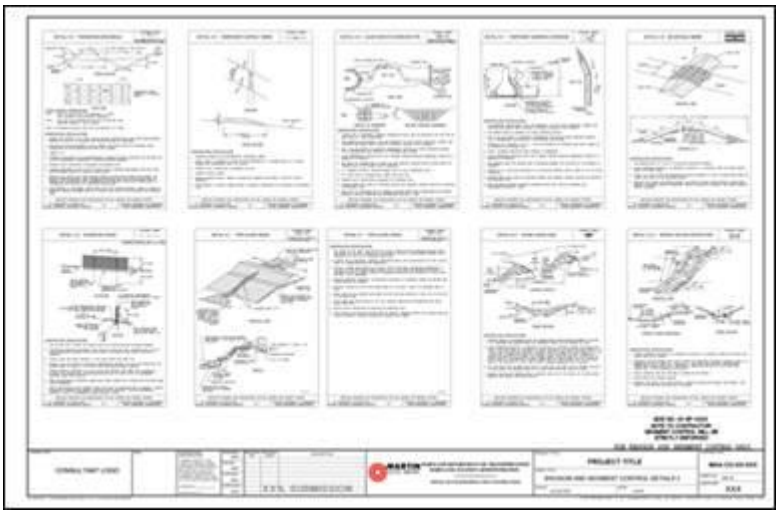
Plan

Notes 1

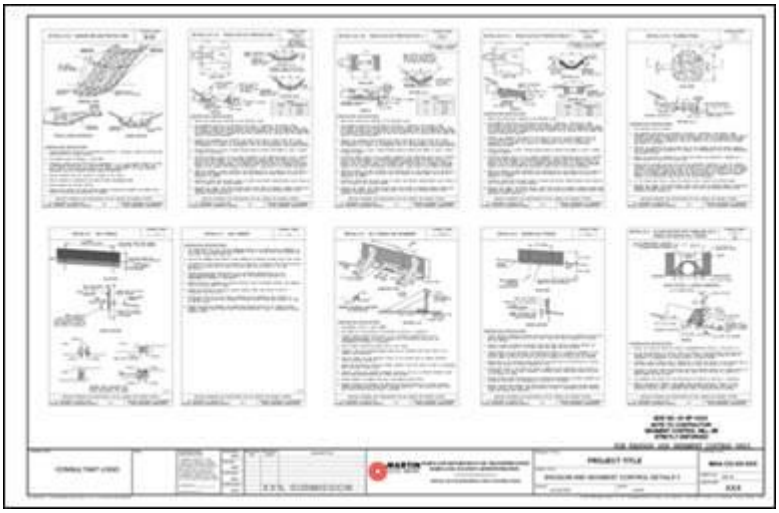
Notes 2



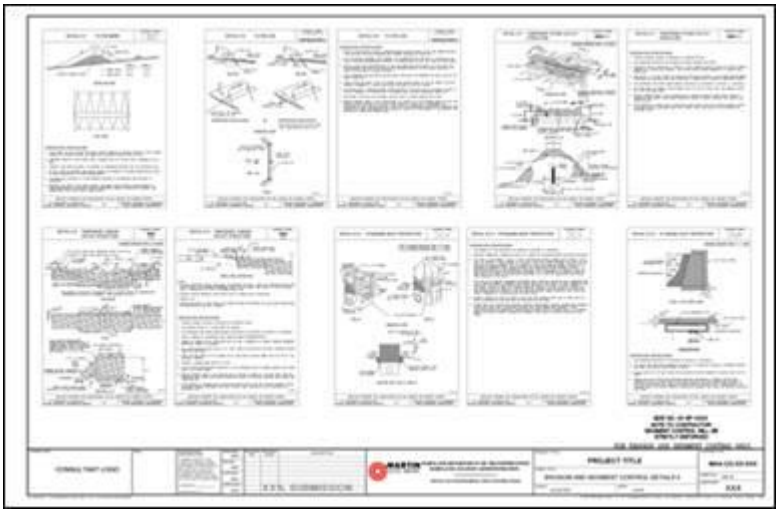
Details 1



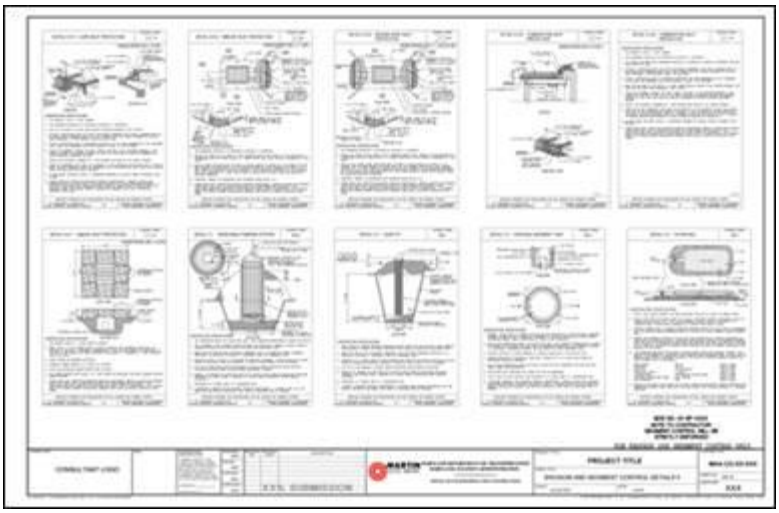
Details 2



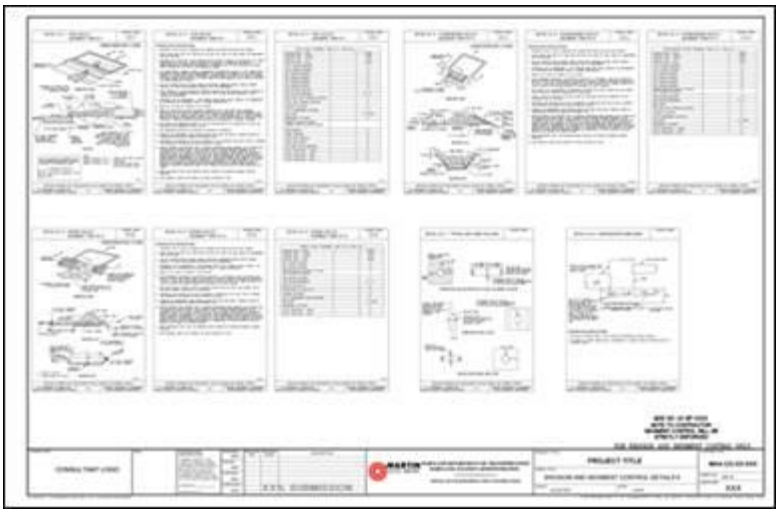
Details 3



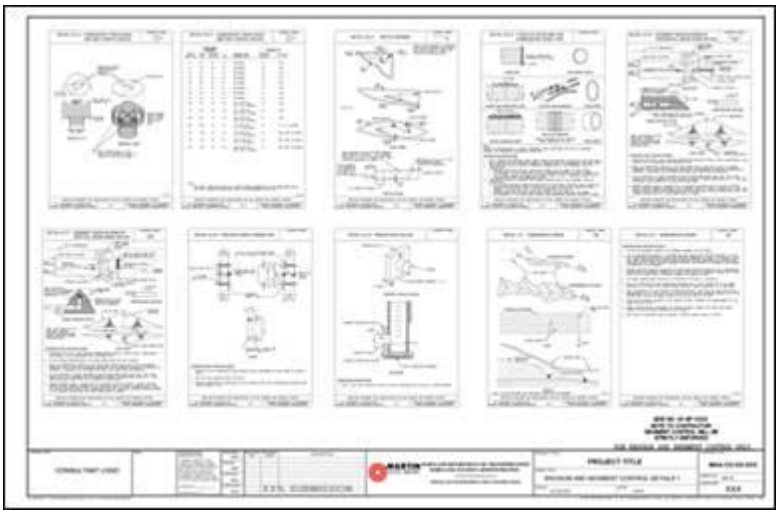
Details 4



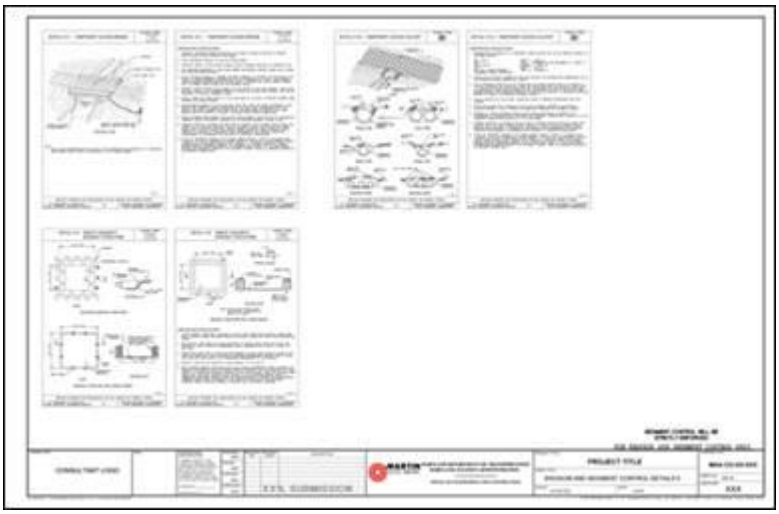
Details 5



Details 6



Details 7

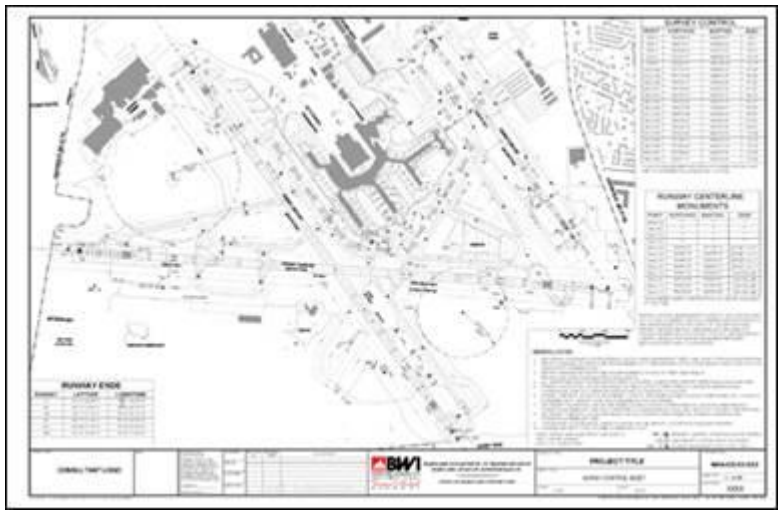


Details 8

# C.5 05 Survey Control

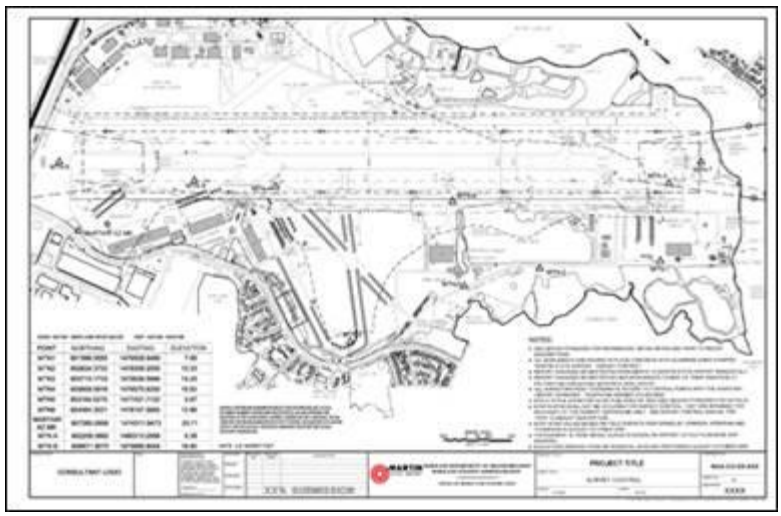
Click an image to download a single AutoCAD DWG file.

## C.5.1 BWI



*BWI*

## C.5.2 MTN



*MTN*

## Appendix D - Standard Specifications

# D.01 Division 01 - MAA Standard Procedures

Click the following links to download the individual specifications in Microsoft Word format.

Specification 010001X Mobilization - Demobilization

Specification 010002X Construction Quality Control Plan (CQC)

Specification 010003X Maintenance, Repair and Operating Items (MROI) with forms

Specification 010004X Temporary Construction Items

Specification 010005X Security Requirements During Construction at BWI

Specification 010006X Security Requirements During Construction at MTN

Specification 010007X Sensitive Security Information (SSI) System Requirements During Construction

Specification 010008X Management of Universal Wastes

Specification 010009X Management of Radioactive Wastes

Specification 010010X Survey Requirements During Construction (AGIS)

Specification 010011X Misc Construction Allowance

Specification 017823X Operation and Maintenance Data

MROI Approval Form

# D.08 Division 08 - Openings (Doors and Windows)

Click the following links to download the individual specifications in Microsoft Word format.

Specification 087100 Door Hardware

# D.23 Division 23 - Heating, Ventilation, & Air Conditioning

Click the following links to download the individual specifications in Microsoft Word format.

Specification 230519 Air Flow Measuring Systems (AFM-AFMS)

Specification 230519 Flow Meter - Turbine Flowmeters

Specification 230900 Building Automation System (BAS)

Specification 231313 Underground Storage Tanks

Specification 231323 Above Ground Storage Tanks

# D.26 Division 26 - Electrical

Click the following links to download the individual specifications in Microsoft Word format.

Specification 262300 Power Monitors for Low Voltage Switchgear

Specification 262416 Panelboards

Specification 262923 Variable Frequency Drives (VFDs)

# D.27 Division 27 - Communications

Click the following link to download the most current set of OT Standards and Specifications from the State of Maryland, Department of Transportation, Maryland Aviation Administration, Office of Technology, in Microsoft Word format. The OT Standards (most current edition) can be found on the MAA Office of Technology Standards and Specifications web page.

# D.28 Division 28 - Electronic Safety and Security

Click the following links to download the individual specifications in Microsoft Word format.

Specification 281301 Controlled Access Security System (CASS)

Specification 282300 Closed-Circuit Television (CCTV) System

Specification 283111 Fire Alarm System

Specification 283200 Flexible Response System

# D.32 Division 32 - Exterior Improvements

Click the following links to download the individual specifications in Microsoft Word or Excel format.

Specification 329000X Landscaping

Specification 329115X Topsoil

Specification 329201X Seeding

Specification 329202X Sodding

Specification 329203X Mulching

Specification 329300X Plant Installation

Approved Installation Methods (.pdf)

Approved Species List (.xls)

# D.33 Division 33 - Utilities

Click the following links to download the individual specifications in Microsoft Word format.

Specification 335103X Natural Gas Distribution

# D.34 Division 34 - Transportation

Click the following links to download the individual specifications in Microsoft Word format.

Specification 347713X Apron Drive Passenger Boarding Bridges

# D.50 Division 50 - FAA Specifications (MAA's Standard Specifications)

Click the following links to download the individual specifications in Microsoft Word format.

Specification L-109 Modifications and Additions to Airfield Lighting Control System

Specification L-125 Installation of Airport Lighting Systems

Specification P-209 Crushed Aggregate Base Course

Specification P-401 Plant Mix Bituminous Pavements

Specification P-501 Portland Cement Concrete (PCC) Pavement (from FAA Airport Construction Standards AC 150/5370-10)

## Appendix E - Survey Control Manuals

# E.1 BWI

### BWI Survey Control Manual (.pdf, 82 pages)

Click the image to download the document in Adobe PDF format.

BALTIMORE/WASHINGTON INTERNATIONAL Thurgood Marshall AIRPORT

**BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT**

# Survey Control Manual

**FEBRUARY 2015**

**Important Note:**

**All Surveys Performed at BWI Thurgood Marshall Airport after September 25, 2008 are to Utilize this Manual and must be tied to the BWI Thurgood Marshall Airport Survey Control Network.**

See MAA Design Standard No. 9.1.1.1

# E.2 MTN

## Martin State Airport Survey Control Manual (.pdf, 29 pages)

Click the image to download the document in Adobe PDF format.

MARTIN STATE AIRPORT

# Survey Control Manual

February 1, 2014

Important Note:

All Surveys Performed at Martin State Airport after February 1, 2014 are to Utilize this Manual and must be tied to the Martin State Airport Survey Control Network.

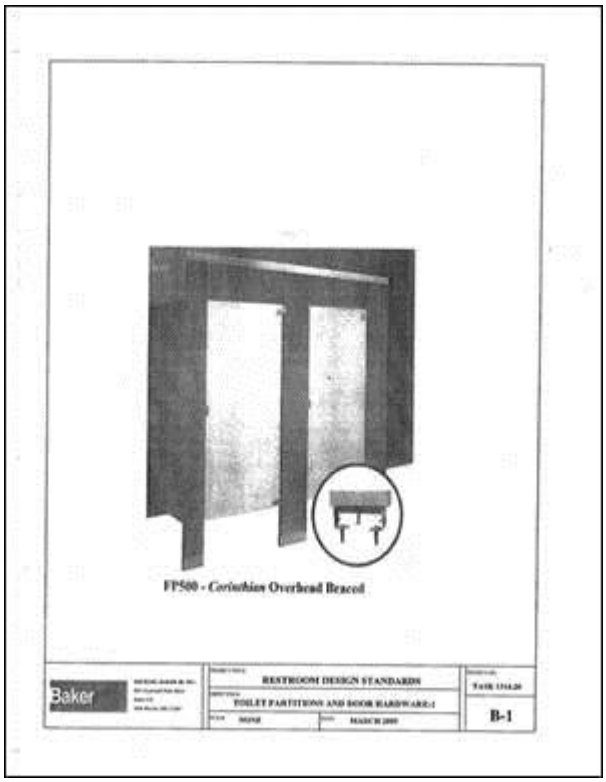
(See MAA Design Standard No. 8.1.1.2)

## Appendix F - Restroom Design Cut Sheets

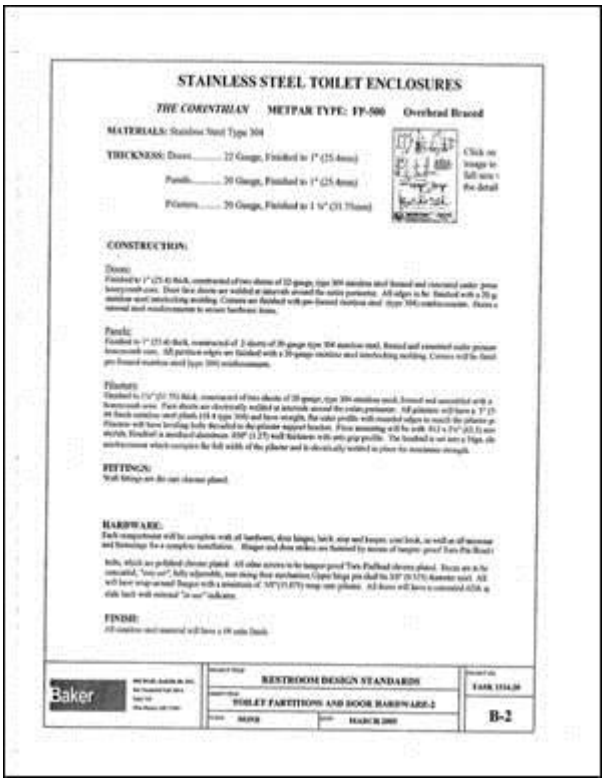
# F.1 Partition Hardware

Click an image to download a single cut sheets in Adobe PDF format.

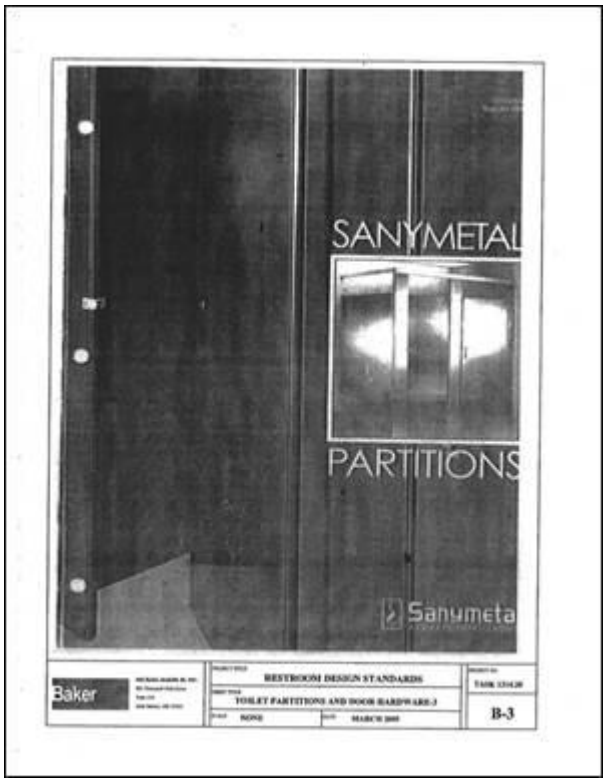
Click Here to download the entire set of Partition Hardware cut sheets (20 pages) in a Single PDF file.



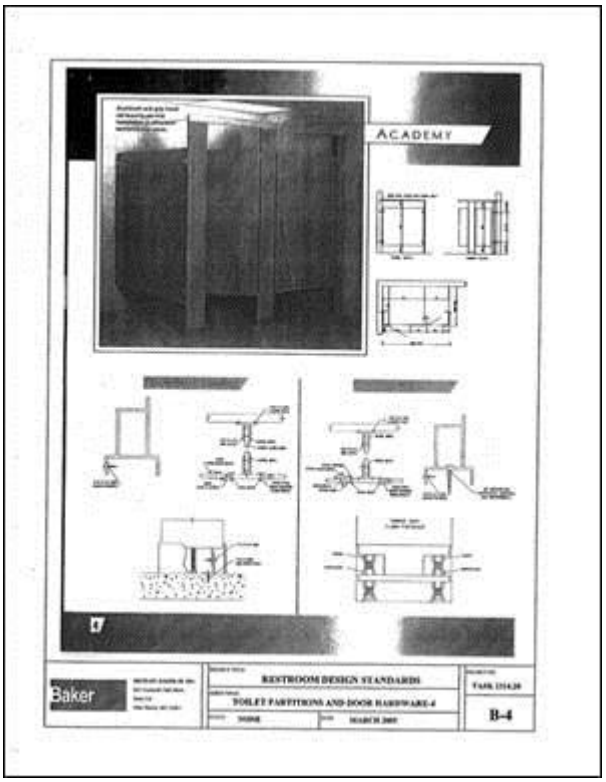

B-1: TOILET PARTITIONS AND DOOR HARDWARE-1



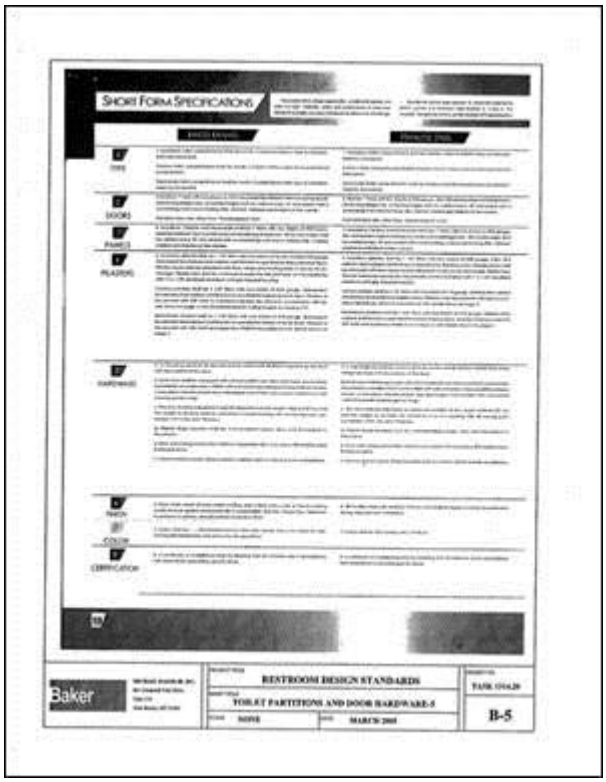

B-2: TOILET PARTITIONS AND DOOR HARDWARE-2



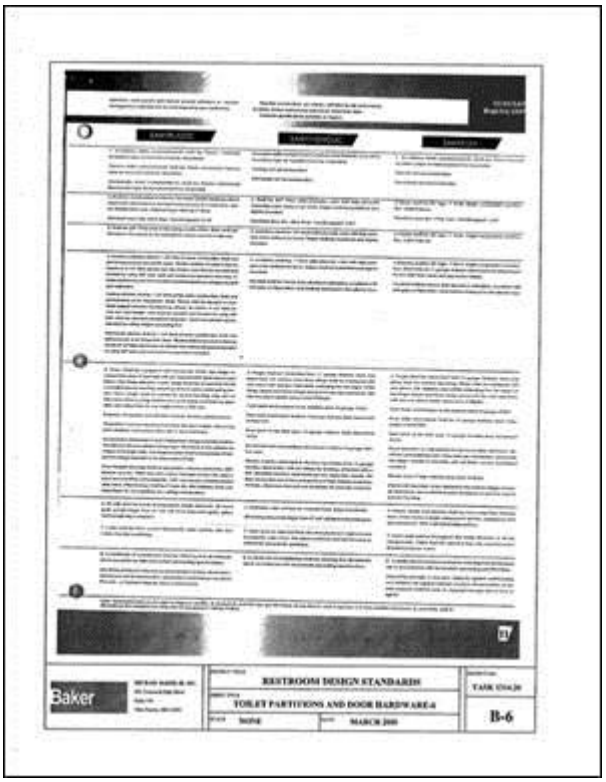

B-3: TOILET PARTITIONS AND DOOR HARDWARE-3



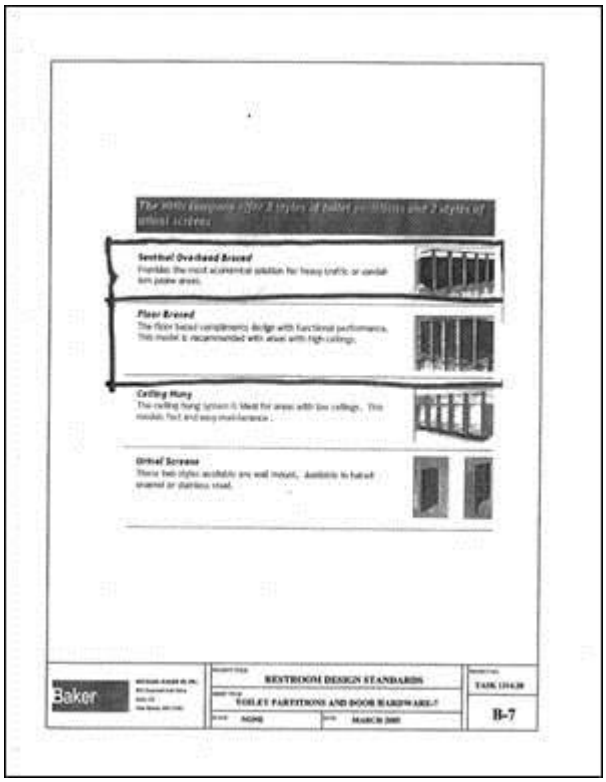

B-4: TOILET PARTITIONS AND DOOR HARDWARE-4




B-5: TOILET PARTITIONS AND DOOR HARDWARE-5



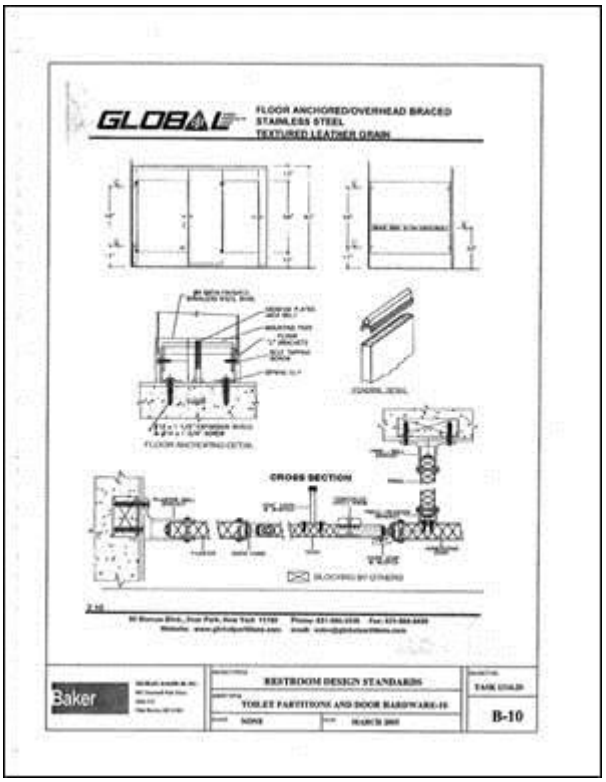

B-6: TOILET PARTITIONS AND DOOR HARDWARE-6



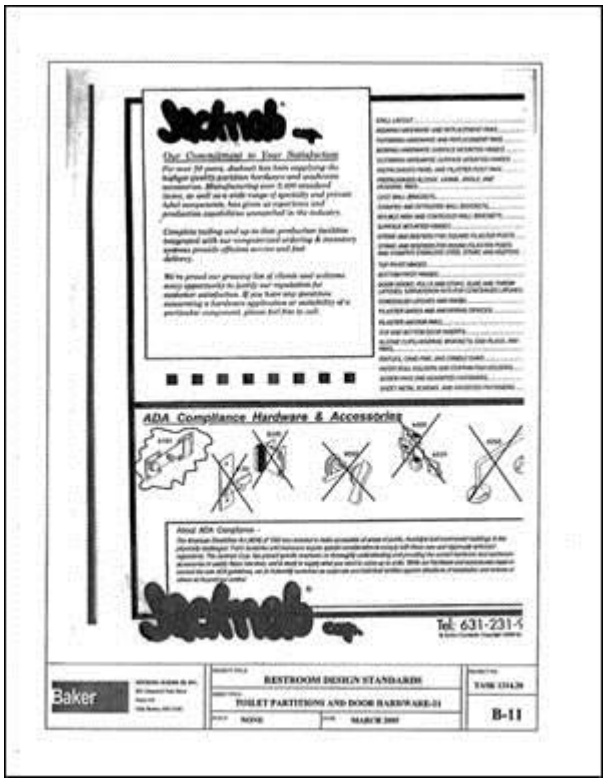

B-7: TOILET PARTITIONS AND DOOR HARDWARE-7

B-8: TOILET PARTITIONS AND DOOR HARDWARE-8

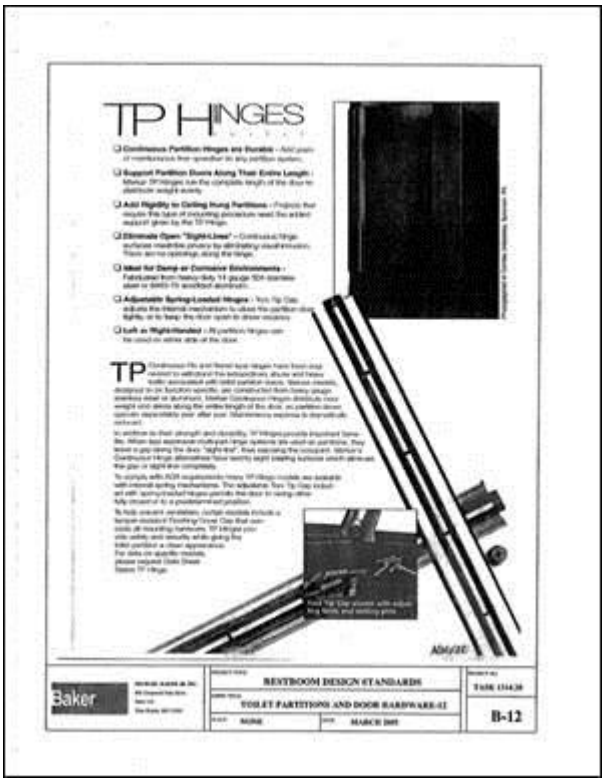
B-9: TOILET PARTITIONS AND DOOR HARDWARE-9



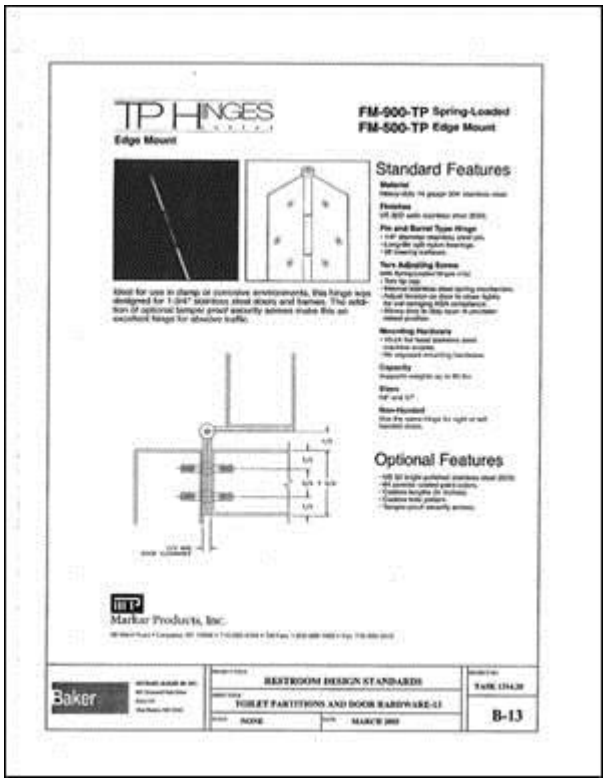

B-10: TOILET PARTITIONS AND DOOR HARDWARE-10



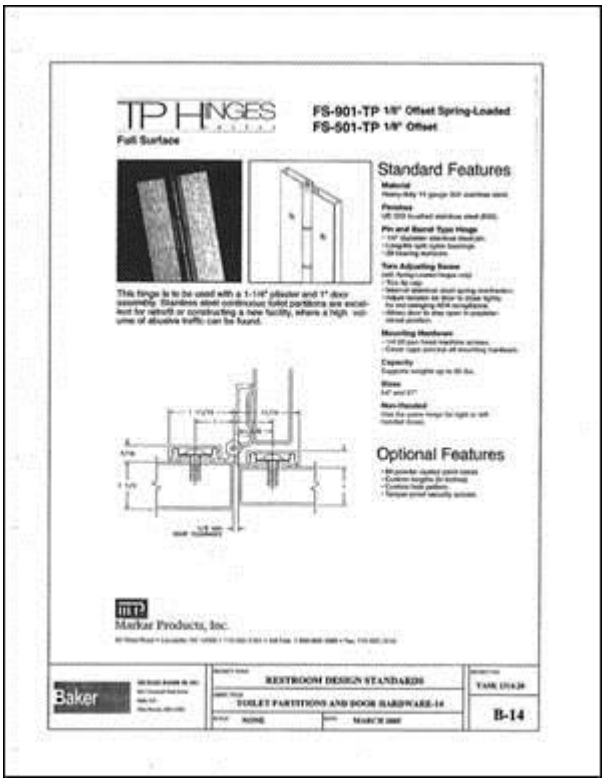

B-11: TOILET PARTITIONS AND DOOR HARDWARE-11




B-12: TOILET PARTITIONS AND DOOR HARDWARE-12

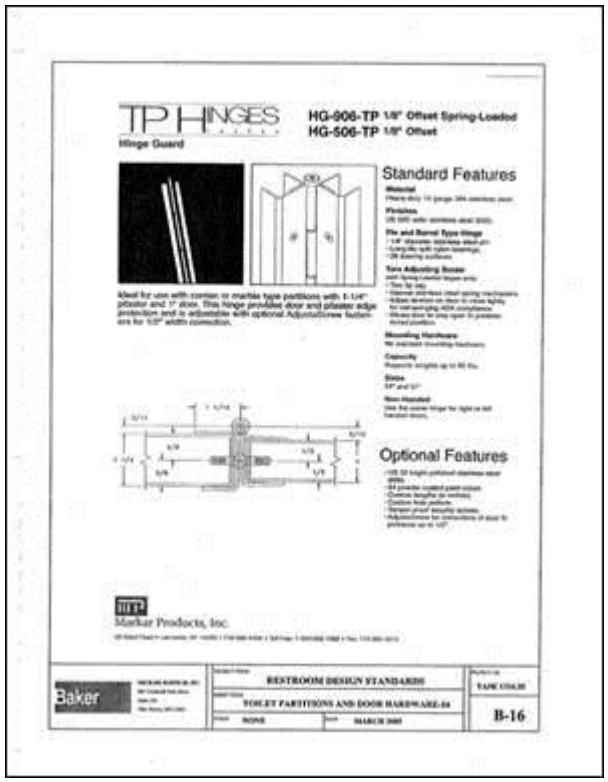



B-13: TOILET PARTITIONS AND DOOR HARDWARE-13

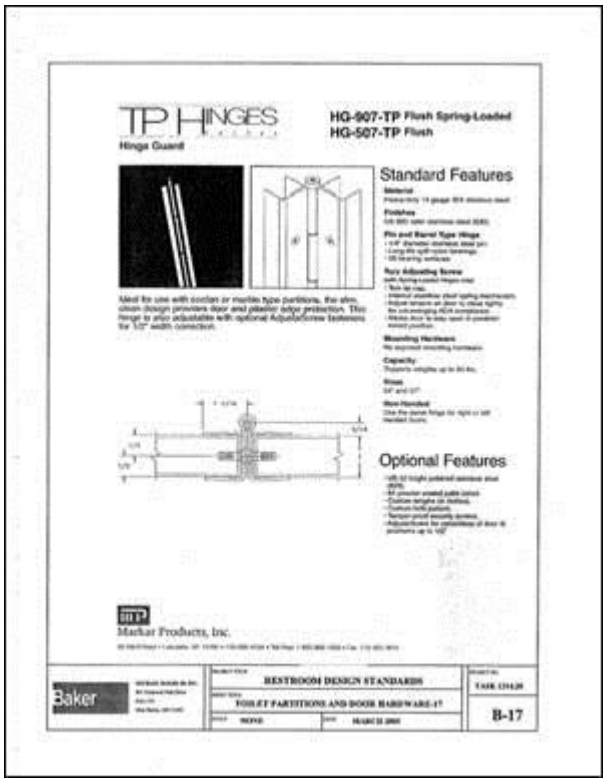



B-14: TOILET PARTITIONS AND DOOR HARDWARE-14

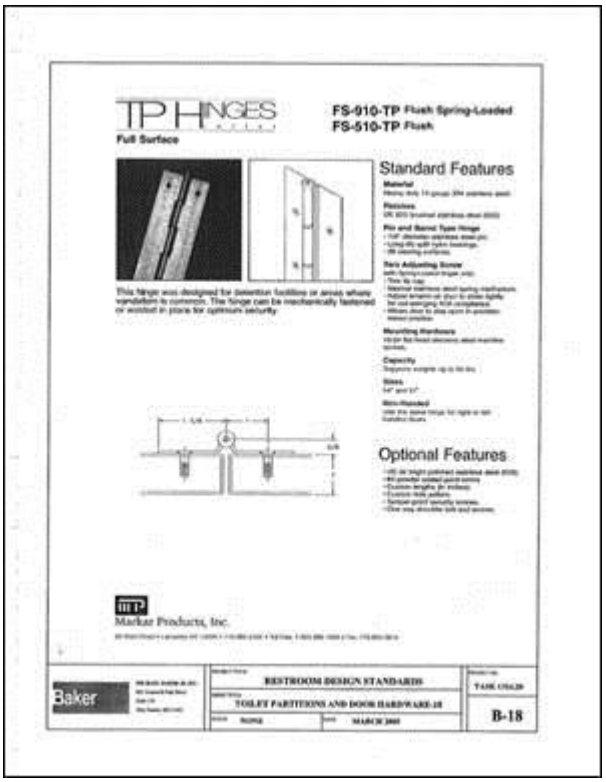
B-15: TOILET PARTITIONS AND DOOR HARDWARE-15



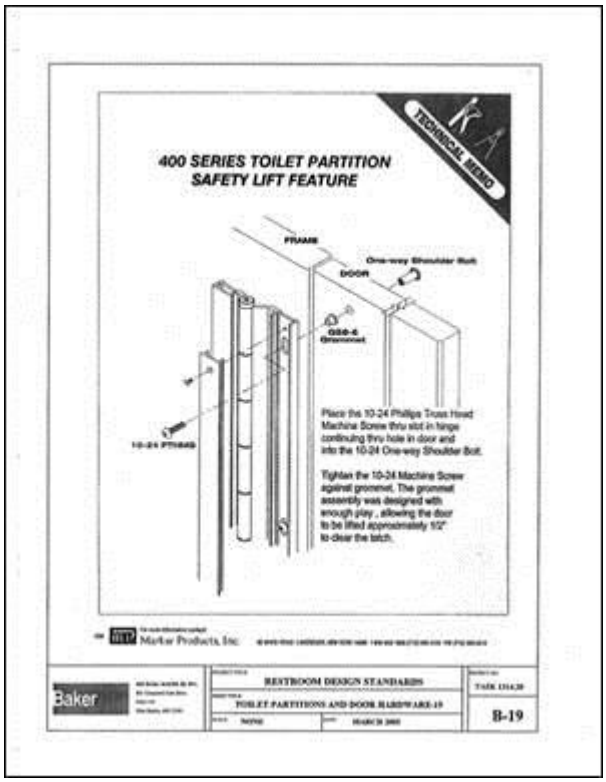

B-16: TOILET PARTITIONS AND DOOR HARDWARE-16




B-17: TOILET PARTITIONS AND DOOR HARDWARE-17




B-18: TOILET PARTITIONS AND DOOR HARDWARE-18




B-19: TOILET PARTITIONS AND DOOR HARDWARE-19

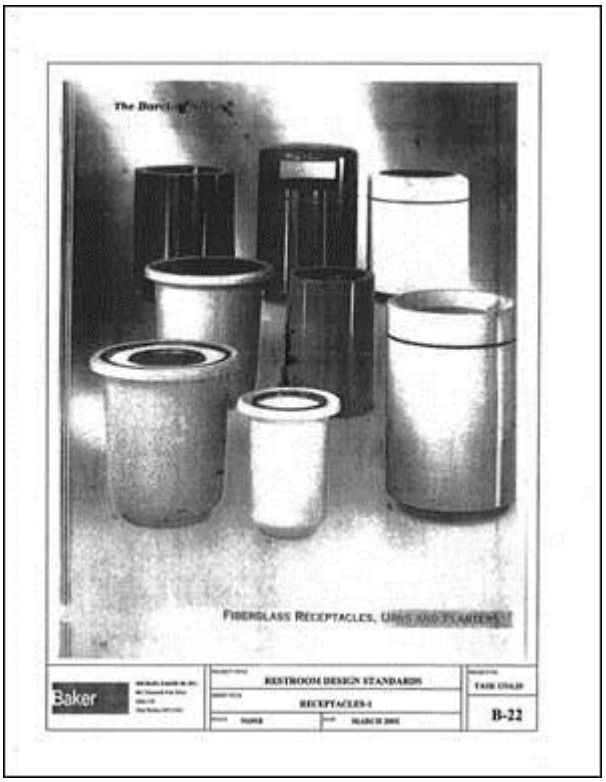
B-20: TOILET PARTITIONS AND DOOR HARDWARE-20

# F.2 Accessories

Click an image to download a single cut sheet in Adobe PDF format.

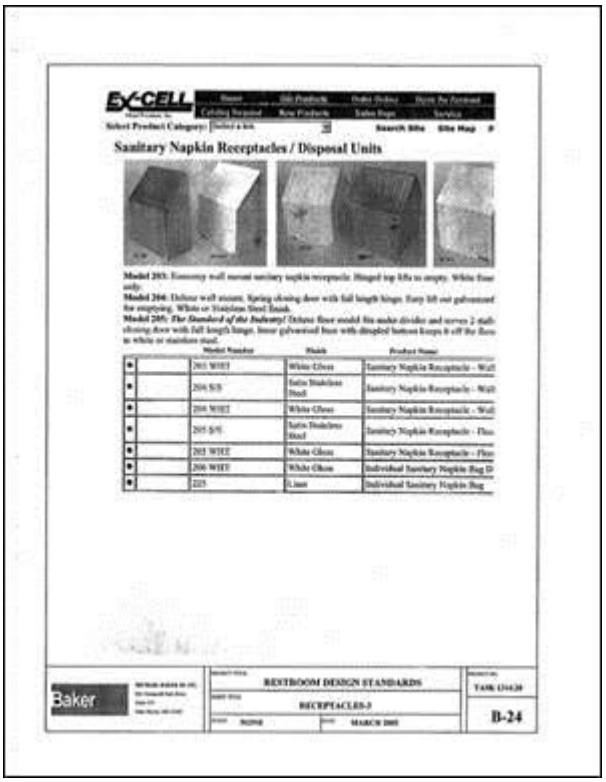
Click Here to download the entire set of Accessories cut sheets (26 pages) in a Single PDF file.

B-21: PAPER TOWEL DISPENSER

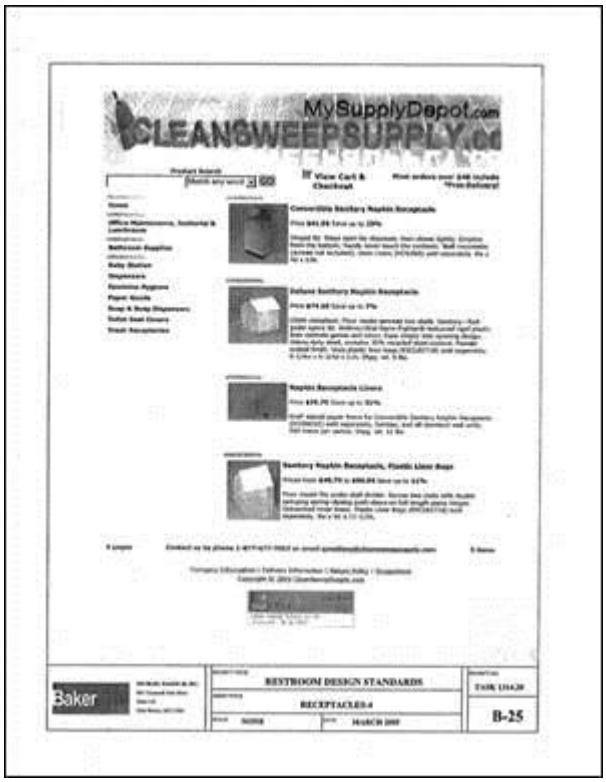



B-22: RECEPTACLES-1

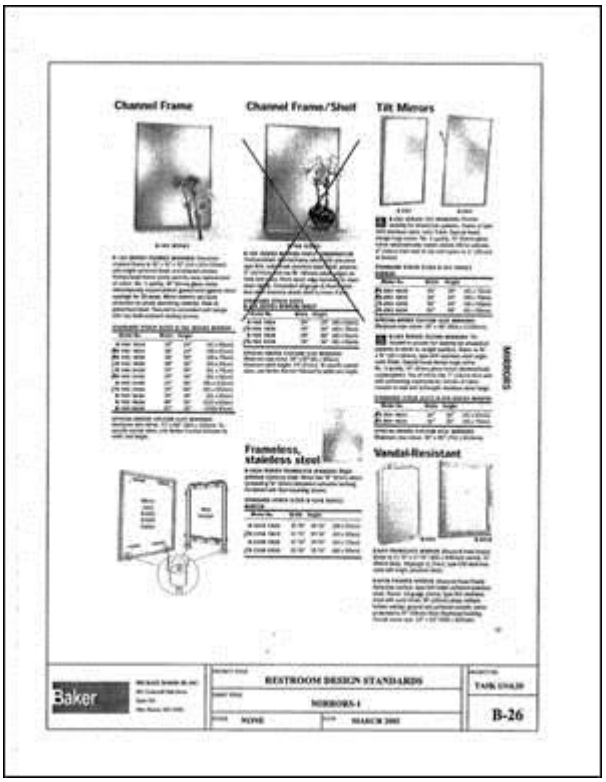
B-23: RECEPTACLES-2



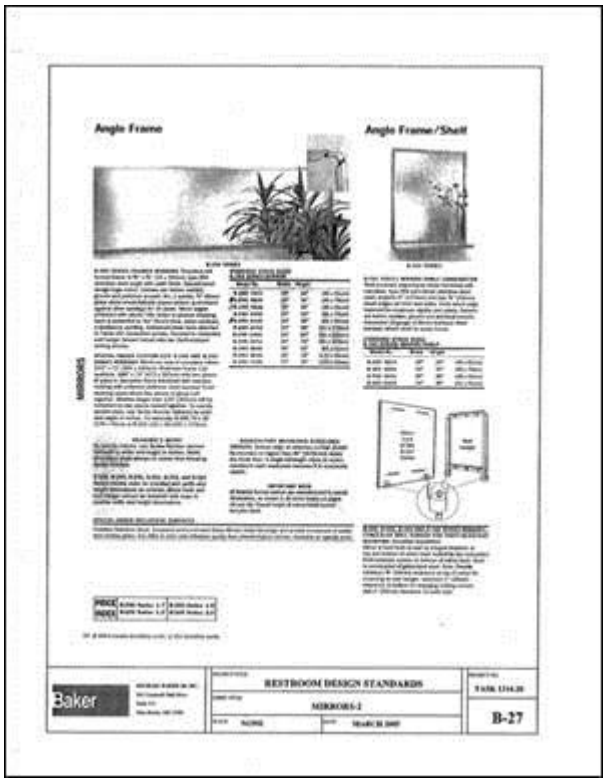

B-24: RECEPTACLES-3




B-25: RECEPTACLES-4

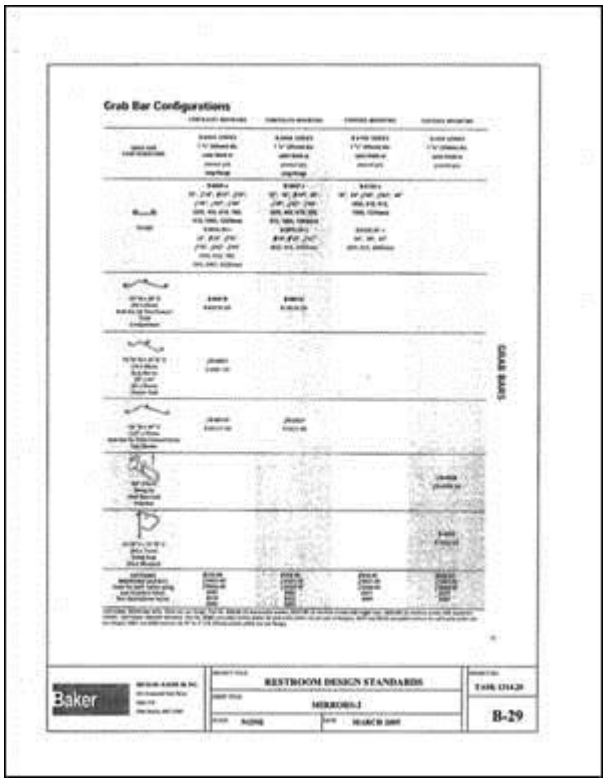



B-26: MIRRORS-1



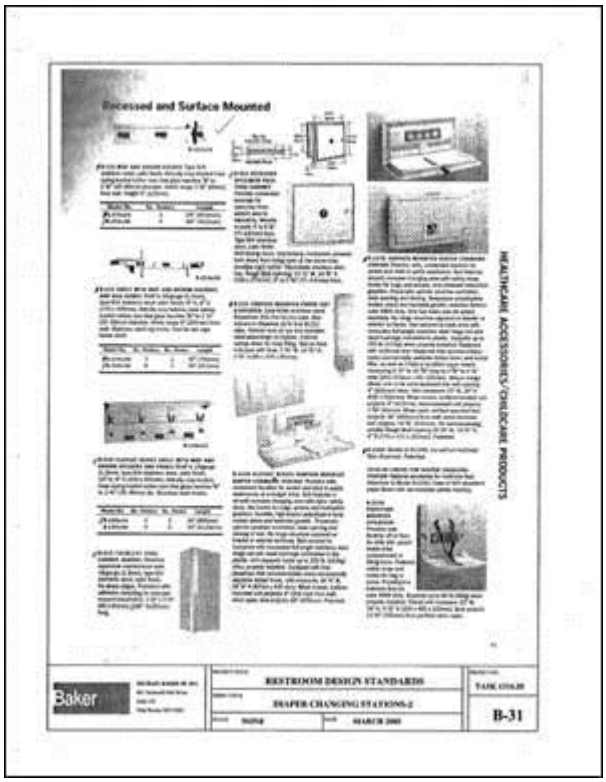

B-27: MIRRORS-2

B-28: GRAB BARS-1

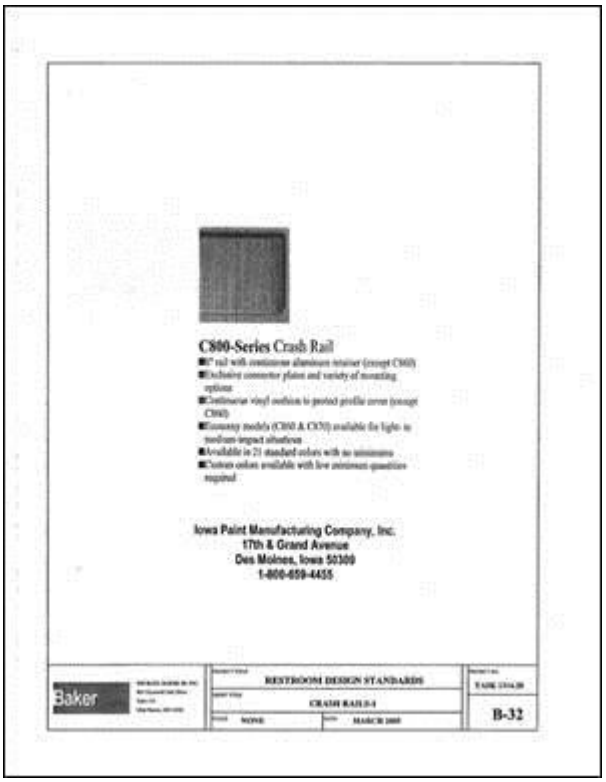



B-29: GRAB BARS-2

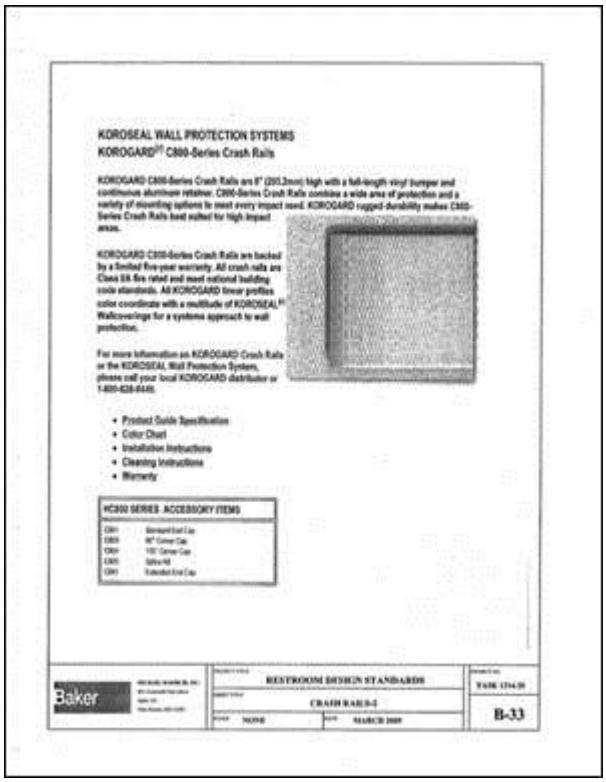
B-30: DIAPER CHANGING STATIONS-1



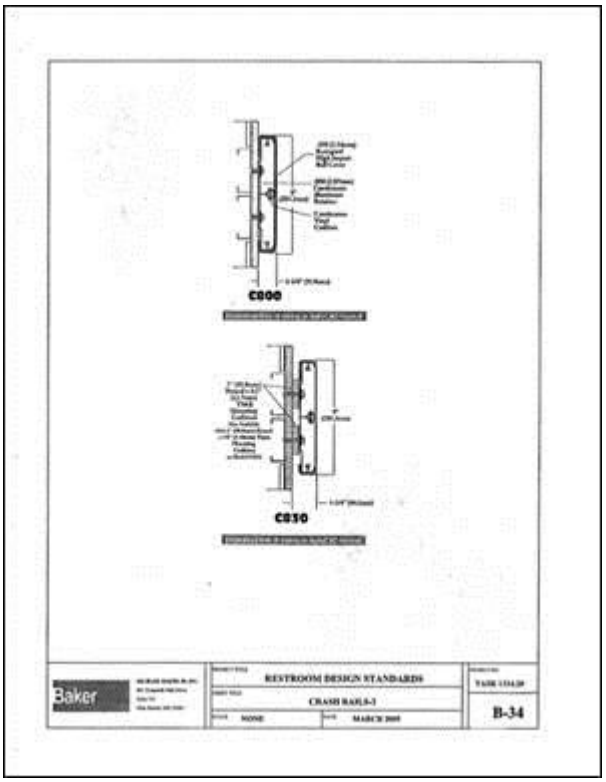

B-31: DIAPER CHANGING STATIONS-2



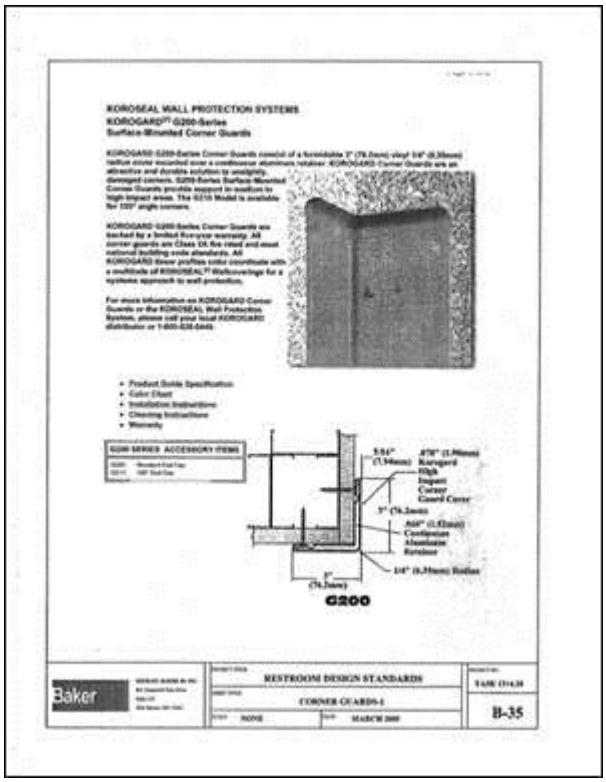

B-32: CRASH RAILS-1



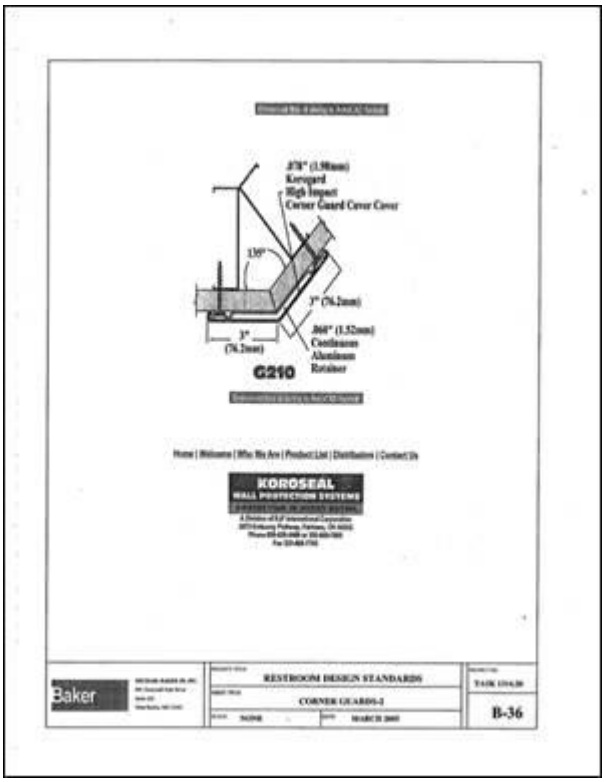

B-33: CRASH RAILS-2



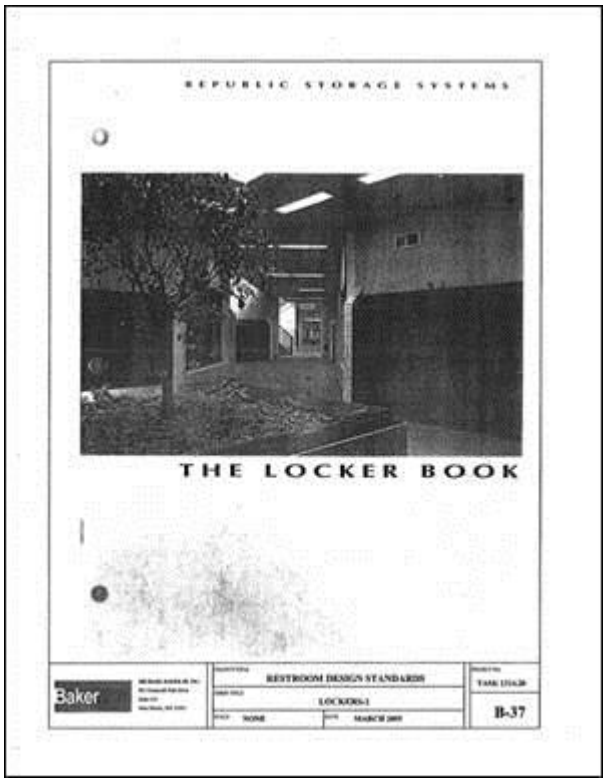

B-34: CRASH RAILS-3



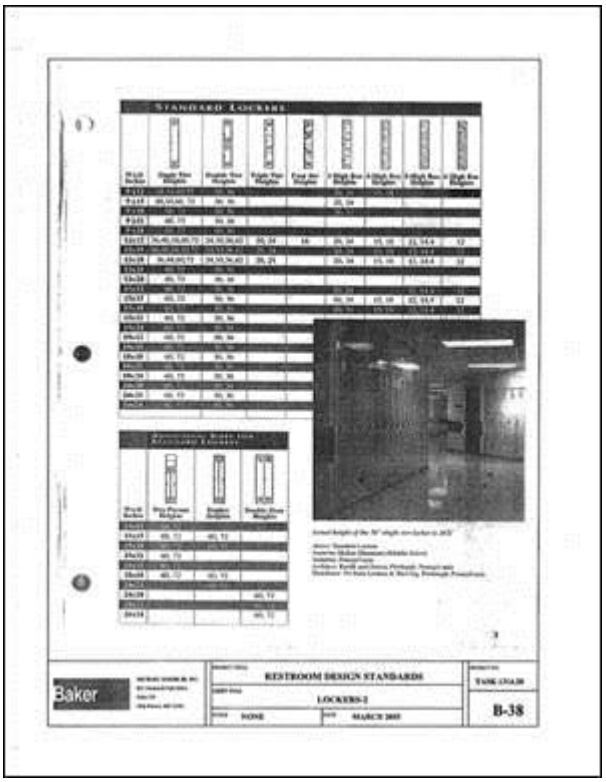

B-35: CORNER GUARDS-1



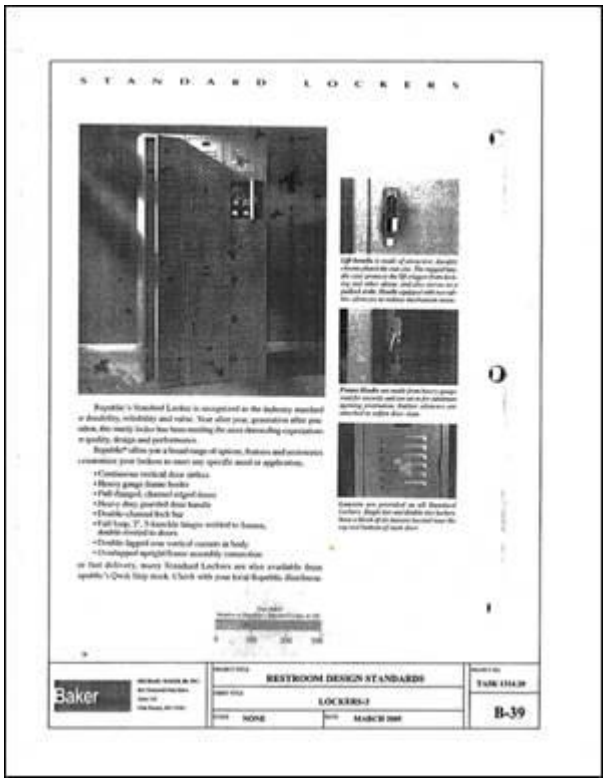

B-36: CORNER GUARDS-2



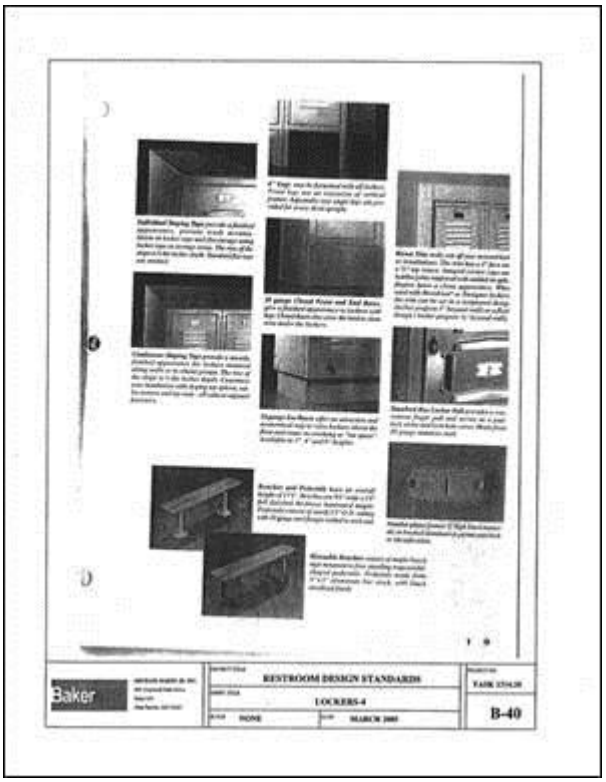

B-37: LOCKERS-1



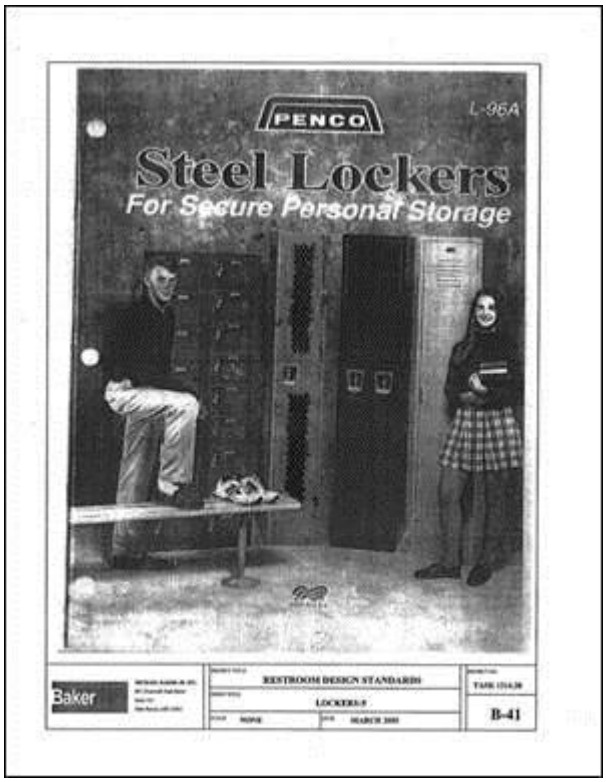

B-38: LOCKERS-2




B-39: LOCKERS-3

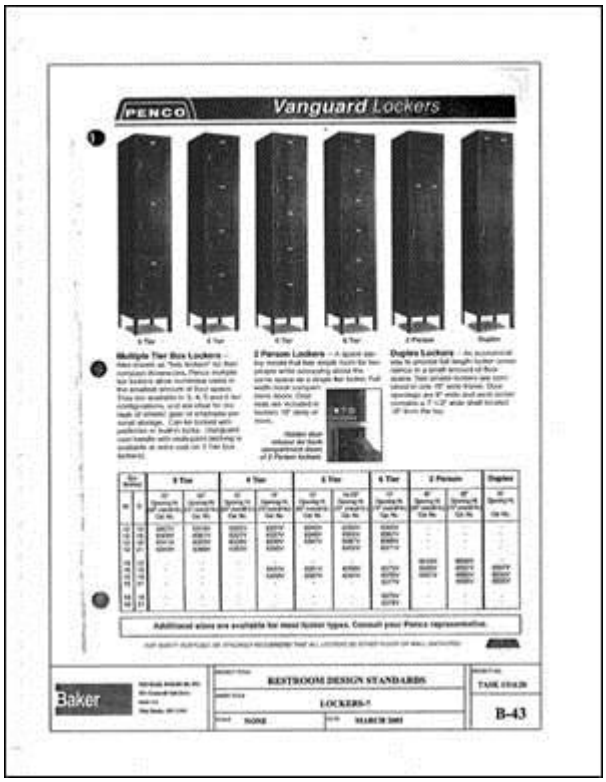



B-40: LOCKERS-4

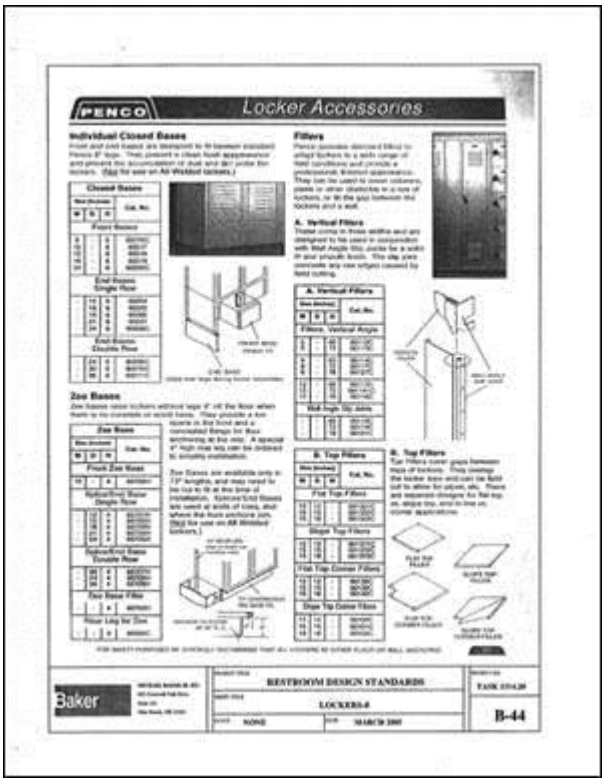



B-41: LOCKERS-5

B-42: LOCKERS-6




B-43: LOCKERS-7




B-44: LOCKERS-8

B-45: LOCKERS-9

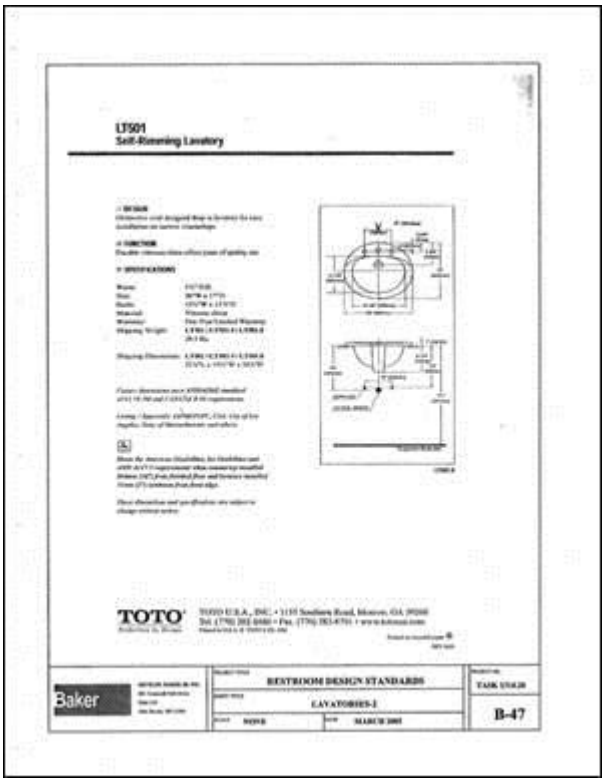
B-63 RESTROOM DOOR LOCKSET

# F.3 Fixtures

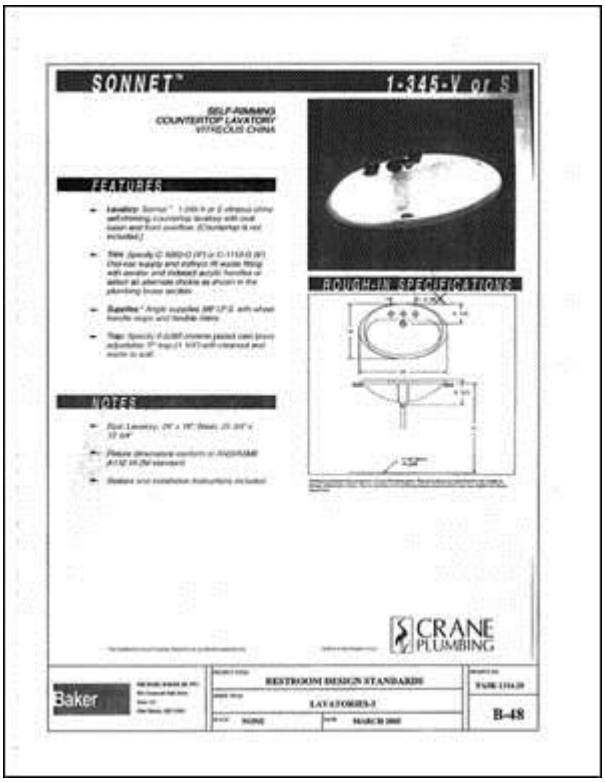
Click an image to download a single cut sheet in Adobe PDF format.

Click Here to download the entire set of Fixtures cut sheets (15 pages) in a Single PDF file.

B-46: LAVATORIES-1




B-47: LAVATORIES-2

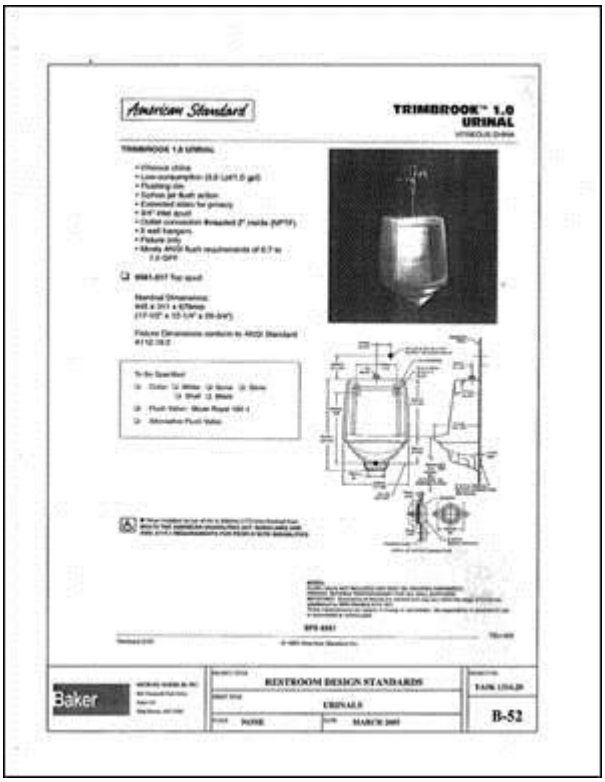



B-48: LAVATORIES-3

B-49: LAVATORIES-4

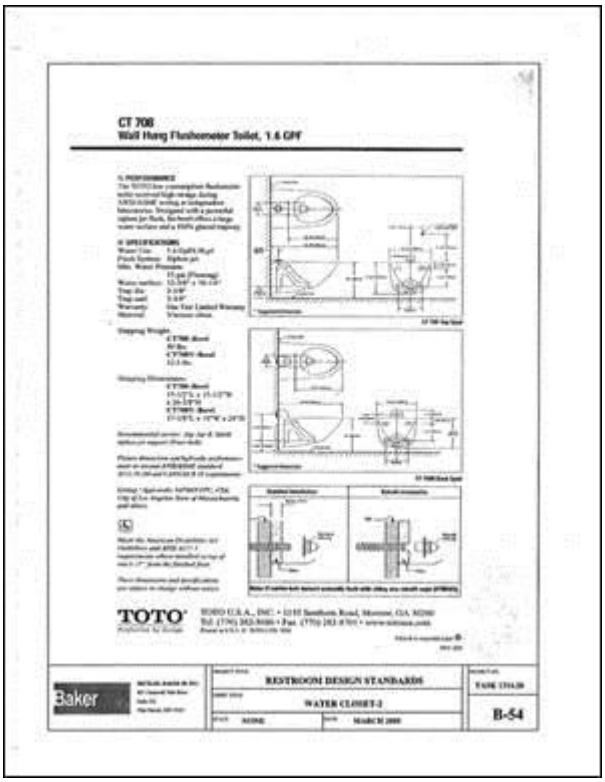
B-50: LAVATORY GUARD-1

B-51: LAVATORY GUARD-2

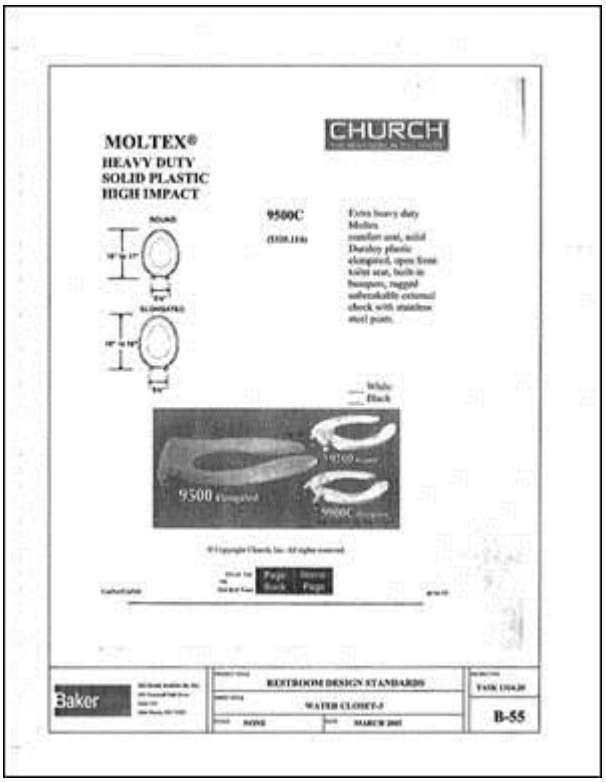



B-52: URINALS

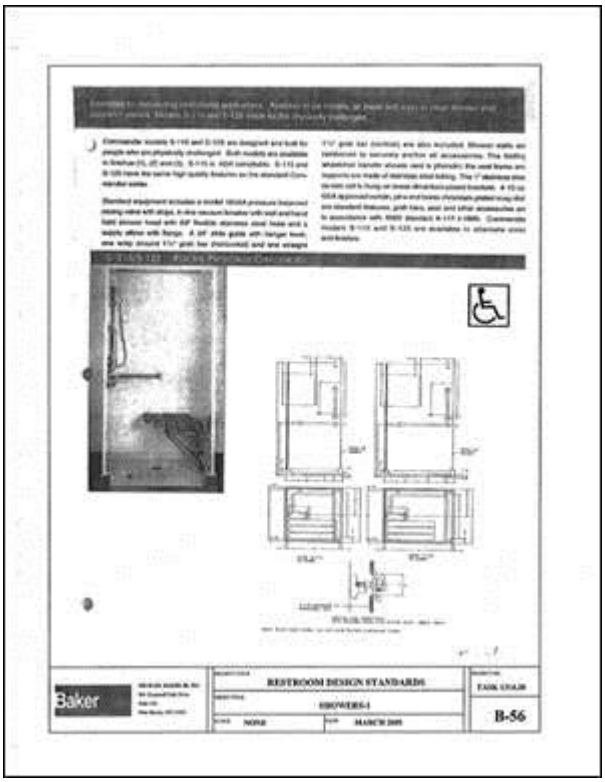
B-53: WATER CLOSET-1




B-54: WATER CLOSET-2

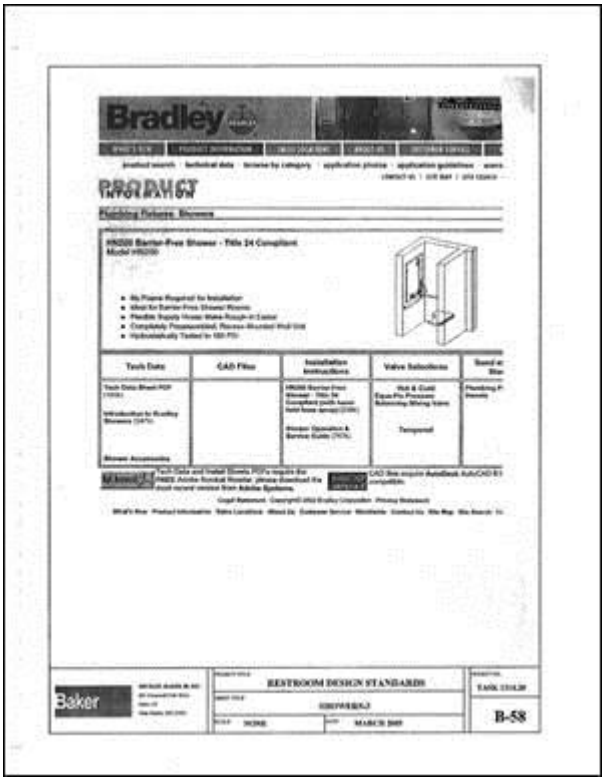



B-55: WATER CLOSET-3




B-56: SHOWERS-1

B-57: SHOWERS-2




B-58: SHOWERS-3

B-59: SHOWERS-4

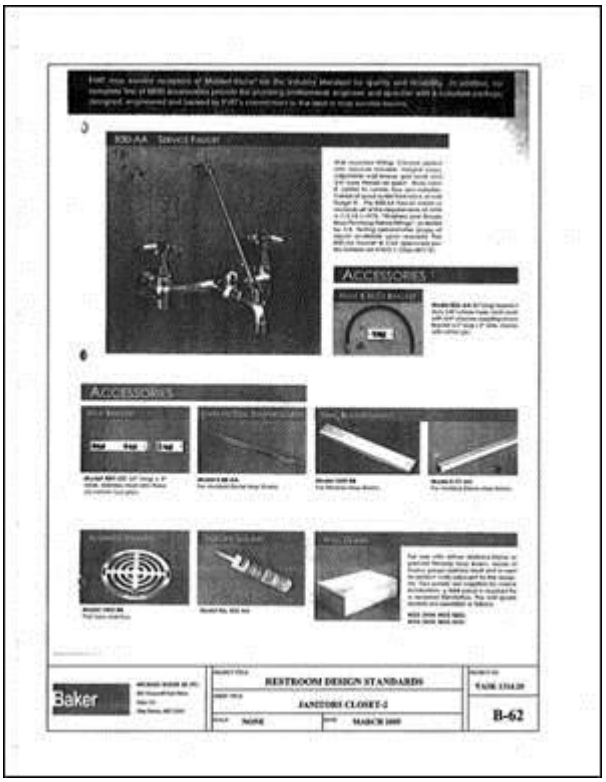
B-60: SHOWERS-5

# F.4 Janitorial

Click an image to download a single cut sheet in Adobe PDF format.

Click Here to download the entire set of Janitorial cut sheets (2 pages) in a Single PDF file.

B-61: JANITORS CLOSET-1




B-62: JANITORS CLOSET-2

## Appendix G - Codes and Standards

# G.1 Enforcement

ENFORCEMENT OF FIRE RELATED CODES AND STANDARDS BY THE MAA OFFICE OF THE FIRE MARSHAL (OFM) AS THE AUTHORITY HAVING JURISDICTION (AHJ)

The Office of the Fire Marshal is the AHJ for the enforcement of the Maryland State Fire Prevention Code, the fire safety aspects of the adopted Building Codes, and all other adopted fire related Codes and Standards for the BWI Marshall and MTN Airports.

The following Codes and Standards are applicable to all new project designs, specifications, construction, and occupancy. The Office of the Fire Marshal enforces them during plan review and inspections as authorized representatives of the Maryland State Fire Marshal. Failure to comply with the fire and life safety related requirements of the Codes and Standards listed herein may result in the withholding of project design approvals, inspection approvals, or occupancy approvals by the Office of the Fire Marshal. Additionally, violations of these codes are subject to the penalties set forth in the Public Safety Article of the Annotated Code of Maryland.

It is recommended that the following resources be used to determine the latest adopted Editions of these Codes and Standards.

For State of Maryland Fire Prevention Code: State of Maryland Fire Prevention Code

For fire related aspects of building codes: State of Maryland Building Codes

# G.2 Adopted Codes and Standards

| Code | Edition |
|---|---|
| State of Maryland Fire Prevention Code | 2015 with State Fire Code amendments/modifications effective 1/1/2016 |
| International Building Code (IBC) | 2015 with DLLR/DHCD modifications |
| International Plumbing Code (IPC) | 2015 |
| International Mechanical Code (IMC) | 2015 with DLLR/DHCD modifications |
| International Existing Building Code (IEBC) | 2015 |
| International Residential Code (IRC) | 2015 with DLLR/DHCD modifications |
| International Energy Conservation Code (IECC) | 2015 |

Applicable COMAR (Code of Maryland) Regulations:

| COMAR Reference | Title | Date |
|---|---|---|
| 05.02.01 | Maryland Model Performance Code | 01 January 2013 |
| 05.02.02 | Maryland Accessibility Code | 2012 |
| 05.02.07 | Maryland Building Performance Standards (MBPS) | 01 January 2015 |
| 09.20.01 | Maryland State Plumbing Regulations | 13 May 2013 |
| 29.06.01.07 | State Fire Prevention Code | 2015 with State Fire Marshal Amendments |

The above applicable COMAR Regulations incorporate by reference, and contain amendments to the following Model Codes:

| Code | Edition |
|---|---|
| International Building Code (IBC) (regarding elevators and conveying systems, safety glazing) | 2015 with DLLR modifications |
| NFPA 1, Fire Code | 2015 with State Fire Marshal Amendments |
| NFPA 54, National Fuel Gas Code | 2012 with DLLR modifications (effective 5/13/13) |
| NFPA 58, Liquefied Petroleum Gas Code | 2011 with DLLR modifications (effective 5/13/13) |
| NFPA 70, National Electrical Code | 2014 with DLLR/DHCD modifications |
| NFPA 101, Life Safety Code | 2015, with State Fire Marshal modifications (effective 1/1/2016) |
| Americans with Disabilities Act Accessibility Guidelines | 15 September 2010 and amended 11 March 2011 |
| National Standard Plumbing Code | 2012 with DLLR modifications (effective 5/13/13) |

# G.3 Other Regulatory Agency Requirements

Additionally, projects must comply with the requirements of several regulatory agencies:

| Agency | Regulation |
|---|---|
| Federal Department of Transportation | |
| Federal Aviation Administration (FAA)<br>Federal Aviation Regulations | Subchapters |
| | Part 77: Objects Affecting Navigable Airspace |
| | Part 139: Certification of Airports |
| | Part 150: Airports |
| | Part 151: Federal Aid to Airports |
| | Part 152: Airport Aid Program |
| Transportation Security Administration (TSA) | 49 CFR Part 1542 |
| Maryland State Highway Administration (SHA) | |
| Maryland Department of Transportation (MDOT) | |
| Maryland Department of the Environment (MDE) | |
| Occupational Safety and Health Administration (OSHA) Codes | |
| Environmental Protection Agency (EPA) Regulations | |
| Codes of Anne Arundel and Baltimore Counties | |
| United States Department of Agriculture | |

American Association of State Highway and Transportation Officials (AASHTO) – Landside (non-airfield) projects shall follow AASHTO publication "A Policy of Geometric Design of Highways and Streets 1990" for all project design criteria. Design exceptions will only be required if the design falls below AASHTO minimum standards. In such cases, the designer shall obtain SHA approval concurrently with MAA approval.

The Designer shall incorporate appropriate references to nationally accepted standards for the design, fabrication and installation of particular equipment. Also, the Designer shall include in the design appropriate reference to the published MAA Directives. These include but are not limited to such topics as: security, vehicle operations, AOA licensing, badging, radio communications, display of signs, and key control.

# Volume 3

## Appendix H - CAD Standard

# Preface

This standard is updated and maintained by the Maryland Aviation Administration (MAA), Office of Engineering and Construction, Division of Engineering. It is based on the U. S. National CAD Standard with adjustments necessary to meet MAA needs. These standards are intended to assist in the production of uniform engineering documents, and provide efficient and effective means for management and technical data control.

This standard provides:
Drawing practices for the preparation of architectural, engineering and space allocation drawings.
Definitions and examples of the types of facility drawings to be prepared by and for the MAA.
Guidelines for the creation of title and index sheets for drawings.
Numbering, coding and identification procedures for drawings, associated lists and documents referenced.
Practices applicable to Computer Aided Design and Drafting (CADD).

Changes from the previous version of this standard focus on:

A. Additional layer definitions required to support the needs of MAA's Runway Safety Area (RSA) Program.
B. Synchronization with updates to MAA's GIS Data Standard.
C. Adherence with FAA Airports GIS Program requirements.
D. Reference to MAA's policy with regard to the handling of Sensitive Security Information (SSI).
E. Updated file and drawing naming conventions.
F. Adding attribute information to features.
G. Topological considerations for CADD data development.

This manual is a living document and MAA will update it to incorporate future engineering drawing practices. The users of this manual are encouraged to suggest revisions or additions to the manual. All requests for enhancements and revisioins should be direct to:

Mr. Ali Logmanni
Manager of Design
Division of Engineering and Construction
P.O. Box 8766
BWI Airport, MD 21240-0766

Or alogmanni@bwiairport.com

# 1.0 Scope

This manual outlines the requirements for the delivery of Computer Aided Design and Drafting (CADD) files to the Maryland Aviation Administration (MAA) by its consultants. This manual establishes standard layers, title blocks, file names, line types and other conventions to be applied to all CADD files delivered to, used by, or developed by MAA. This manual does not define design and drafting procedures for consultants to follow when developing files that are compliant with this standard, but does provide requirements that must be met in the resulting product. This manual also covers standard naming, object properties, delivery format and plotting. Standard naming and delivery format will allow for efficient storage and retrieval of files. Standard layer naming facilitates sharing of information between drawings and better control of drawing objects. Standard object properties will help provide uniform appearance to CADD drawings. Standard plot settings will help overcome problems associated with producing similar looking plots from different plotters.

Consultants are required to follow these standards. MAA will utilize the CADD deliverables to extract valuable information to update MAA AIRPortal GIS database. Effective January 1, 2015, MAA plans to implement automated quality control review of all CADD file deliverables.

## 1.1 Standard Definition

MAA has implemented a series of standards, applications, policies, procedures and a spatial data repository. These serve as a central catalog and repository for engineering information used by MAA. This data is used within applications as well as other MAA systems that require this type of data. It also provides a structured workflow and a means of cataloging, archiving and retrieving project documents and information.

This standard prescribes general requirements for the preparation of and revision to architectural, engineering and space allocation drawings that are prepared by and for the MAA.

## 1.2 Document Classification

This standard shall apply, but not be limited, to the following drawing types regardless of source:

A. Construction drawings for new and existing facilities
B. Installation permit drawings
C. Building permit drawings
D. Space Allocation drawings
E. Design, planning and record drawings

## 1.3 Manual Revisions

Where MAA CADD Standards do not contain the required detail for the work to be performed by the consultant or sub-consultant, additions or revisions to the standards shall be transmitted by the consultant or sub-consultant to the MAA Project Engineer for approval. All issued addenda will become part of the project-specific CADD standards. This manual will be subject to revision in response to changes in technology and by the incorporation of changes to support consultant requirements at MAA's discretion.

### 1.3.1 Change Control

Following is a chronological list of changes made to this document since it was first released. A version number and the date of release are indicated for each revision.

| Version Number | Date of Release | Changes Addressed |
|---|---|---|
| 2015 | January 2015 | Original 2015 Release |

## 1.4 Software Requirements

The MAA requires that all CADD files be in AutoCAD DWG format, the version number to be specified by the MAA Project Engineer and selected from the Approved Software Lists provided in this section. The standards defined in this manual are specifically for AutoCAD environments. Consultants and sub-consultants that do not use AutoCAD are responsible for translating drawings into an AutoCAD DWG format prior to submittal. It is the consultant or sub-consultant's responsibility to ensure that there is no degradation of the accuracy or content of the data in this translation process.

### 1.4.1 Approved Software

The Administration **requires the submission of AutoCAD DWG files that are in AutoCAD 2013 file format.** Consultants and subconsultants may choose to use one or more products that provide additional functionality for specific vertical markets, so long as the DWG drawings delivered:

- Comply with the Autodesk file format referenced
- Only contain standard AutoCAD entities such as lines, polylines, circles, arcs, blocks, text, and dimensions
- Have all elements within the DWG files comply with the MAA CAD Standards

These include AutoCAD-based products (such as AutoCAD Architecture, AutoCAD Civil 3D, AutoCAD Map 3D, and AutoCAD MEP) and non-AutoCAD-based products (such as Autodesk Revit and Autodesk Inventor) that generate certified DWG compliant files. Custom objects in the DWG files that are specific to these products must be converted to standard AutoCAD entities before submitting.

All DWG submittals must be prepared utilizing the eTransmit functionality. A submittal would be one file. (eTransmit creates one ZIP file that contains multiple CADD files)

Electronic/computer files used to produce all engineering drawings and deliverables (such as BIM Models, etc.) may be requested by MAA.

# 2.0 Applicable Standards and Publications

When generating CADD documents the following standards and publications should be referenced for guidance.

## 2.1 MAA Standards Manuals and Applications

This manual is to be used in conjunction with:

- MAA's Design Standards Manual
- MAA's GIS Data Standard, which includes a crosswalk between approved CADD and GIS layers
- MAA GIS Data Standard – Utilities Supplement
- MAA Data Quality Standard
- MAA Data Security Standard
- MAA Naming, Identification & Addressing Standard
- MAA AIRPortal
  - AIRPortal provides access and reference to the most current MAA documentation.
  - The Designer's Tools Document Library provide access to the most current Standard Borders, Title Blocks and Index Sheets
  - From within the MAA internal network (intranet) the URL for AIRPortal is http://airportal (user account required)
  - From the internet, the URL for AIRPortal is https://www.airportal.maa.maryland.gov (user account required)

## 2.2 Government Documents

- NAS-SS-1000 Vol. 6 Facility Requirements for the National Airspace System
- FAA 7350.6 Location Identifiers
- FAA FSEP Facilities, Services and Equipment Profile Orders
- DOT Order 1360.6 Graphic Standards
- FAA Order 1000.15 Glossary
- FAA Order 7340.1 Contractions
- FAA AC 150/5300-16A "General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey", Sept. 15, 2007
- FAA AC 150/5300-17C "Standards for Using Remote Sensing Technologies in Airport Surveys", Sept. 30, 2011
- FAA AC 150/5300-18B "General Guidance and Specifications for Aeronautical Surveys: Airport Survey Data Collection and Geographic Information System Standards", May 21, 2009

## 2.3 Commercial Documents

- ANSI/AWS A2.4 Symbols for Welding & Nondestructive Testing
- ANSI/AWS A3.0 Welding Terms and Definitions
- ANSI B1.1 Unified Screw Threads
- ANSI/1EEE 2.16 Reference Designations for Electrical and Electronics Parts and Equipment
- ANSI/1EEE 91 Graphic Symbols for Logic Functions
- ANSI Y1.1 Abbreviations for use on Drawings and Text
- ANSI Y14.1 Drawing Sheet Size and Format
- ANSI Y14.2 Line Conventions and Lettering
- ANSI Y14.5 Dimensioning and Tolerance

- ANSI Y14.6 Screw Thread Representation
- ANSI Y14.7.1 Gear Drawing Standards - Part 1 for Spur, Helical, Double Helical and Rack
- ANSI Y14.7.2 Gear and Spline Drawing Standards Part 2 - Bevel and Hypoid Gears
- ANSI Y14.13 Mechanical Spring Representation
- ANSI Y14.15 Electrical and Electronics Diagrams
- ANSI Y14.15 Interconnection Diagrams
- ANSI Y14.17 Fluid Power Diagrams
- ANSI Y14.26.3 Dictionary of Terms for Computer-Aided Preparation of Product Definition Data
- ANSI Y32.2 Graphic Symbols for Electrical and Electronic Diagrams
- ANSI Y32.4 Graphic Symbols for Plumbing Fixture for Diagram used in Architecture & Building Construction
- ANSI Y 32.9 Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction United States National CAD Standard, Version 5
- ASME-Y14.38M ASME Drawing & Terminology Standards

## 2.4 Order of Precedence

In the event of conflict between the documents referenced in Chapter 2.2 Government Documents and Chapter 2.3 Commercial Documents and the contents of this manual, the contents of this manual shall be considered the superseding requirement.

This CAD Standard takes precedence over any possible contradictory information in the DST.

# 3.0 General

## 3.1 Drawing Definitions

The following sections define general A/E/C drawing types.

### 3.1.1 Engineering Drawings

Engineering drawings are formal representations used to convey the physical and functional end product design and/or installation requirements of an item. They may include pictorial, graphical, schematic or textual presentations.

### 3.1.2 Construction Drawings

Construction drawings are engineering drawings, which show the design of buildings, structures, or the related construction, and are normally associated with the architectural, construction and civil engineering operations. Construction drawings establish all the interrelated elements of the pertinent services, equipment, utilities, and other engineering skills.

### 3.1.3 Installation Drawings

Installation drawings are engineering drawings, which show the installation requirements of equipment in facilities.

### 3.1.4 Space Allocation Drawings

Space allocation drawings are used to provide an accurate record of existing space, identify tenants and square footages of occupancy.

## 3.2 MAA AIRPortal Designer's Tools

As a consultant performing services for MAA, it is assumed that individuals providing engineering services for MAA have an account to AIRPortal, MAA's system of record. There are multiple applications and resources available through AIRPortal. One such resource is the Designer's Tools document library. In the Designer Tools library, consultants and sub-consultants have access to the most current resources to perform their services in order to prepare MAA-compliant products. Examples are:

- A/E/C CAD Standard Linetypes
- A/E/C CAD Standard Symbols
- Logos
- MAA Additional Topographic Symbols
- MAA Signage Symbols
- Plot Styles (ctb)
- Standard Borders
- Standard Title Sheets
- Layer Templates

## 3.3 Glossary

The following are definitions of terms used in this standard:

| | |
|---|---|
| **AutoCAD** | AutoCAD is a full-featured CADD tool produced by Autodesk Inc. that handles both 2D and 3D (with additional add on) design. The native file format is DWG and it reads and writes DXF files. |
| **CADD** | Computer Aided Design & Drafting. Graphic software used by engineers and |

| | |
|---|---|
| | drafters to create and modify drawings in 2D and 3D. |
| **Drawing Sheet Format** | The sheet boundary lines, and title block geometry used to record administrative information about a CADD file. |
| **Drawing Sheet Sizes** | Standard sheet sizes are determined by the American National Standards Institute. Alphabetic characters name sheet sizes such as D, E, and F |
| **DWG** | AutoCAD's native CADD file format. |
| **DXF** | AutoCAD drawing exchange format for CADD files. |
| **Model File** | Model files are to be used to describe the facility's physical layout and components. This includes the building's walls, doors, windows, structural system, mechanical system, etc. All model files are drawn at full size (1-to-1). Model files can be 2D or 3D. |
| **Model Space** | AutoCAD Model Space is where the user creates a 2D or 3D full size (1-to-1) drawing. Model file types are created in Model Space. |
| **Paper Space** | AutoCAD Paper Space is where the user organizes different layouts for the purpose of plotting to an appropriate drawing scale through the use of viewports. |
| **Plot Stamp** | Plots of CADD drawing files should include a plot stamp, which should include the file name and path, date, time and the user name. |
| **Project Copy** | A project copy drawing is part of the project copy process, which manages concurrent design updates to a single released drawing. |
| **Raster** | Digital image process producing lines made of rectangular dots. Examples of raster formats are TIFF, JPG, BMP, GIF, etc. |
| **Reference File** | A CADD software capability that allows vector or raster files to be attached to sheet files and displayed, plotted, and (in the case of reference design files) used for construction purposes. This capability is generally used as a project organization tool to segregate the sources of project drawing files. Additionally, it allows designers to share drawing information electronically. |
| **Revised Drawing** | A drawing that has been revised or modified after submission. |
| **Sheet File** | Sheet files are to be used to assemble model files, text, title block and other information for plotting purposes. Each sheet file represents one plotted drawing. Generally, sheet files are plotted at 1-to-1 scale. |
| **SSI** | Sensitive Security Information, as defined by the Code of Federal Regulations (49 CFR Part 1520) |
| **TIFF** | Tagged Image File Format, a raster graphics format. |
| **Vector** | Computer graphics comprised of mathematical representation of points, lines and other geometric entities. |
| **Workflow** | Routing process for information or documentation to the users responsible for working on them. |
| **2D** | Two Dimensional |
| **3D** | Three Dimensional |
| **A/E/C** | Architectural, Engineering and Construction |
| **AIA** | American Institute of Architects |
| **ANSI** | American National Standards Institute |
| **GIS** | Geographical Information System |
| **CD-R** | Recordable Compact disk |

## 3.4 Glossary of Acronyms for Use in Airport Documents

See Appendix H-3 - Glossary for additional aviation industry acronyms that should be used in drawings and documents submitted to MAA.

# 4.0 Drawing Requirements

## 4.1 Drawing Production

MAA requires that all CADD files be provided in AutoCAD DWG format in compliant with Chapter 1.4.1 Approved Software, CADD. The standards defined in this manual are specifically for AutoCAD environments. For those consultants and sub-consultants who do not use AutoCAD, it is their responsibility to ensure that files translated to AutoCAD adhere to these standards and that the quality of the data is not degraded in the translation process before delivery.

### 4.1.1 Drawing File Format

Electronic drawings shall be created and maintained in native AutoCAD vector file format (DWG). All drawings shall be void of duplicate entities.

The following should be avoided:

A. Translations between vector file formats (DWG and DGN).

B. Delivery of Drawing Exchange Format (DXF) files, unless mandated by special requirement in this manual.

C. Use of the following CADD entities:
- doughnuts
- segments
- solids and traces
- point entities
- custom fonts

D. patterns or line types or styles

E. special characters such as nested blocks, nested or circular Xrefs (reference files)

F. infinite lines

G. zero length lines

### 4.1.2 Creation of CADD Files

All CADD drawing files should be created at full-scale (1-to-1). Drawing borders are referenced into paper space with insertion point 0, 0 and a scale of 1. Refer to Table 4-1, Scale Factor and Text Height Conversion Chart for standard engineering, architectural and mapping scale factors and text heights to be used in model space for full size drawings.

| Plotted Scale | Scale Factor | Plotted Text Height | | | |
|---|---|---|---|---|---|
| 1/8”=1’-0” | 96 | 9.6” | 12” | 18” | 24” |
| 3/16”= 1’-0” | 64 | 6.4” | 8” | 12” | 16” |
| 1/4”=1’-0” | 48 | 4.8” | 6” | 9” | 12” |
| 3/8”= 1’-0” | 32 | 3.2” | 4” | 6” | 8” |
| 1/2”=1’-0” | 24 | 2.4” | 3” | 4.5” | 6” |
| 3/4”=1’-0” | 16 | 1.6” | 2” | 3” | 4” |
| 1”= 1’-0” | 12 | 1.2” | 1.5” | 2.25” | 3” |
| 1 1/2”=1’-0” | 8 | .8” | 1” | 1.5” | 2” |
| 3”= 1’-0” | 4 | .4” | .5” | .75” | 1” |
| 6”= 1’-0” | 2 | .2” | .25” | .375” | .5” |

| | | | | | |
|---|---|---|---|---|---|
| 12”= 1’-0” | 1 | .1” | .125” | .1875” | .25” |
| 1”= 10’ | 120 | 1’ | 1.25’ | 1.875’ | 2.5625’ |
| 1”=20’-0” | 240 | 2’ | 2.5’ | 3.75’ | 5’ |
| 1”=25’-0” | 300 | 2.5’ | 3.125’ | 4.6875’ | 6.26’ |
| 1”=30’-0” | 360 | 3’ | 3.75’ | 5.625’ | 7.5’ |
| 1”=50’-0” | 600 | 5’ | 6.25’ | 9.375’ | 12.5’ |
| 1”=100’-0” | 1200 | 10’ | 12.5’ | 18.75’ | 25.0’ |
| 1=10 | 10 | 1 | 1.25 | 1.875 | 2.5 |
| 1=20 | 20 | 2 | 2.5 | 3.75 | 5 |
| 1=30 | 30 | 3 | 3.75 | 5.625 | 7.5 |

*Table 4-1, Scale Factor and Text Height Conversion Chart*

#### 4.1.2.1 Drawing Sheet Format

MAA-approved drawing formats include common drawing features such as boundary geometry, title block data, filename, pathname, and title block geometry.

***The most current MAA-approved drawing formats, templates and seed files are stored in AIRPortal > Designer Tools. Consultants and sub-consultants have access to the most current resources to perform their services compliant with MAA’s current standards. Consultants are responsible to review what is on Designer Tools to ensure they are using the most current versions.***

#### 4.1.2.2 Drawing Size

The MAA standard drawing size is ANSI D (22" X 34") full size and ANSI B (11” X 17") half size. Other sizes are allowed only as needed. Drawing sheet size and margins must follow the specifications shown in Table 4-2, Standard Drawing Sizes. These margins are configured in the Standard Borders. Apply ANSI Y14.1 for any information not provided in this standard, but required on drawing sheet size.

| Size Designation | Vertical | Horizontal | Margin | | |
|---|---|---|---|---|---|
| | | | Horizontal | Vertical | |
| | | | | Left | Right |
| ANSI B | 11" | 17" | 0.25" | 0.75" | 0.25" |
| ANSI D | 22" | 34" | 0.50” | 1.50" | 0.50" |

*Table 4-2, Standard Drawing Sizes*

#### 4.1.2.3 Sizing Drawing Formats for Scaled Drawings

Each feature shall be drawn in the CADD model file at full size (1 : 1). The data should be scaled to fit the desired paper size at the correct scale through a view port in paper space. This can be done in AutoCAD using the zoom command and entering *nXP* where *n* is the scale factor required and *XP* remains constant. Table 4-3 provides the necessary scale factors needed to calculate each reduced plot size.

| | Drawing Area Size (H x W) * | Scale Factor nXP |
|---|---|---|

| Plot Scale | B (9.5” x 13.25”) | D (19” x 26.5”) | | |
|---|---|---|---|---|
| 1/8”=1’-0” | 76’ x 106' | 152’ x 212’ | 0.0104XP | Architectural Units |
| 3/16”= 1’-0” | 50.7’ x 70.7’ | 101.3’ x 141.3’ | 0.0156XP | |
| ¼”=1’-0” | 38’ x 53’ | 76’ x 106’ | 0.0208XP | |
| 3/8”= 1’-0” | 25’ x 35’ | 50.7’ x 70.7’ | 0.0312XP | |
| ½”=1’-0” | 19’ x 26.5’ | 38’ x 53’ | 0.0416XP | |
| ¾”=1’-0” | 12.7’ x 17.7’ | 25.3’ x 35.3’ | 0.0625XP | |
| 1”= 1’-0” | 9.5’ x 13’ | 19’ x 26.5’ | 0.0833XP | |
| 1 ½”=1’-0” | 6’ x 8.9’ | 12.7’ x 17.7’ | 0.125XP | |
| 3”= 1’-0” | 3’ x 4.4’ | 6.3’ x 8.8’ | 0.25XP | |
| 6”=1’-0” | 1.6’ x 2.2’ | 3.2’ x 4.4’ | 0.50XP | |
| 12”=1’-0” | 0.8’ x 1.1’ | 1.6’ x 2.2’ | 1XP | |
| 1”= 10’-0” | 95’ x 132.5’ | 190’ x 265’ | 10XP | Decimal Units |
| 1”=20’-0” | 190’ x 265’ | 380’ x 530’ | 20XP | |
| 1”=25’-0” | 237.5’ x 331’ | 475’ x 662.5’ | 25XP | |
| 1”=30’-0” | 285’ x 397.5’ | 570’ x 795’ | 30XP | |
| 1”=50’-0” | 475’ x 662.5’ | 950’ x 1325’ | 50XP | |
| 1”=100’-0” | 950’ x 1325’ | 1900’ x 2650’ | 100XP | |

** NOTE: The area for the title block, notes, legend and key plan have been deducted from the sheet total area.*

*Table 4-3, Sheet Sizes, Drawing Field, and Scale Factors Examples*

### 4.1.3 Borders

Figure 4-1 shows the standard MAA border at the time of this publication. Figure 4-1 shows the title block portion of the MAA border. The bubble call-outs in Figure 4-2 refer to Table 4-4, where each item is described. Consultants should use the standard border sheet that is available AIRPortal > Designer’s Tools.

The standard border includes the following features:

- Border
- Title Block
- Consultant ID Block
- Drawing Field
- P.E. Stamp Box
- Notes
- Legend
- Key Plan
- Graphic Scales
- North Arrow
- Plot Stamp (Full path name, User name, Date, Time)
- Key Plan is to match appropriate MAA Airport and Project Location showing drawing layout.
- MDE SF # when provided by MDE.
- Project Title.

- Contract No.
- Scale (if applicable).
- Date.
- Sheet No.
- Designed.
- Drawn By.
- Checked.
- Any Revision No., Revision Dates and Revision Descriptions as necessary.
- Professional Certification

***The most current MAA-approved drawing formats, templates and seed files are stored in AIRPortal > Designer Tools. Consultants and sub-consultants have access to the most current resources to perform their services compliant with MAA's current standards. Consultants are responsible to review what is on Designer Tools to ensure they are using the most current versions.***

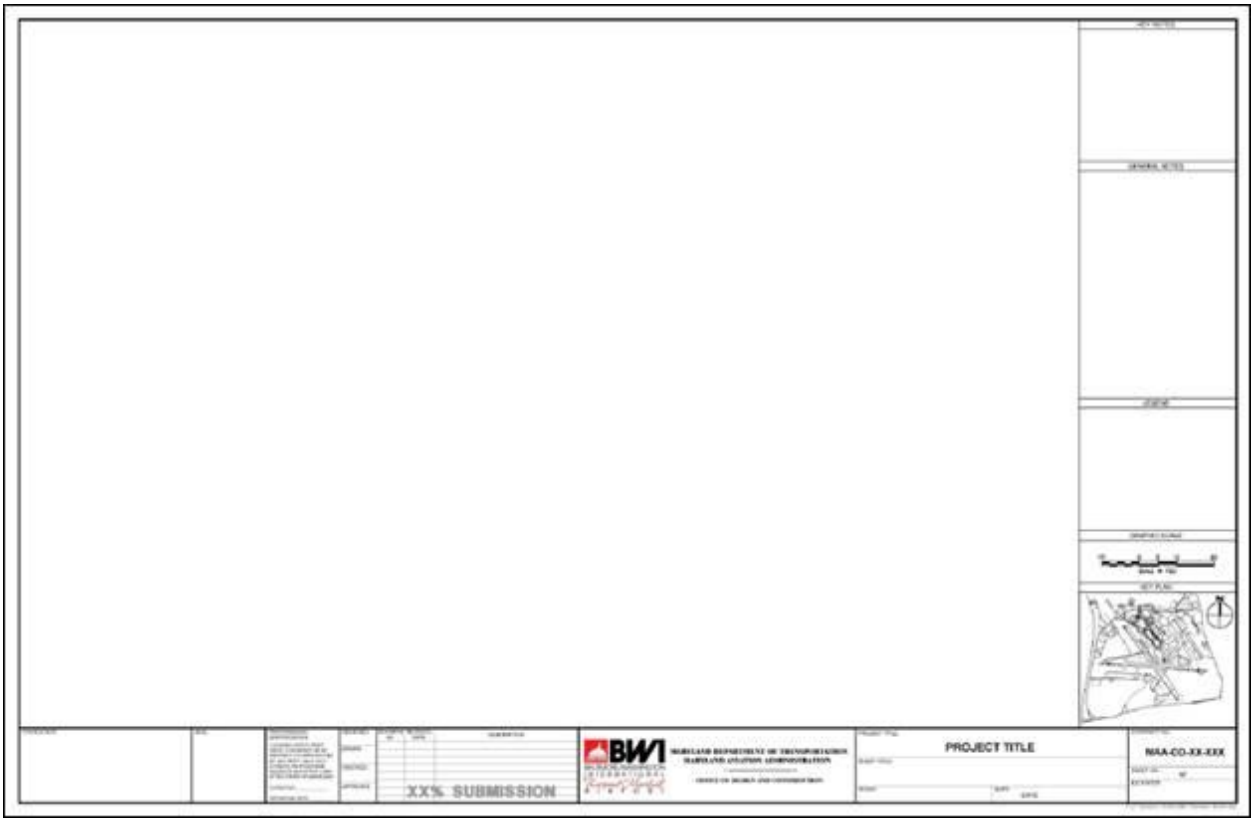



*Figure 4-1, Standard Border*

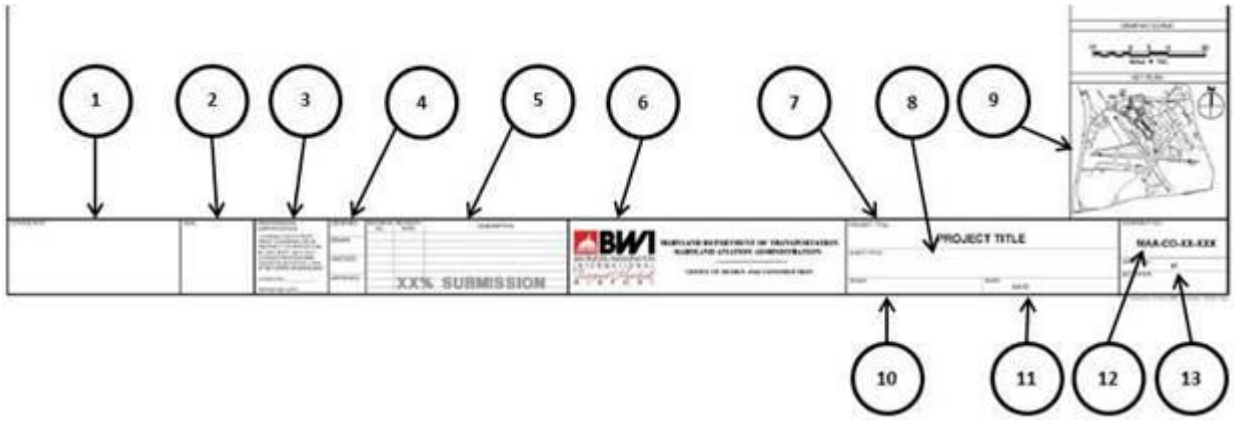



*Figure 4-2, Title Block*

All borders shall include the following information with the exception of the key plan, which applies to plan sheets only:

| ITEM | BLOCK DESCRIPTION |
|---|---|
| 1 | Consultant Name, Address, Logo |
| 2 | Engineer's P.E. Stamp |
| 3 | Engineer's Certification |
| 4 | Initial Block |
| 5 | Revision Date and Description Block |
| 6 | Airport Logo and Name Block |
| 7 | Project Title |
| 8 | Sheet Title |
| 9 | Key Plan |
| 10 | Scale |
| 11 | Date |
| 12 | Contract Number |
| 13 | Sheet Number |

*Table 4-4, Drawing Title Block Descriptions*

The following statement must be placed on all sheets that contain SSI as defined in the Code of Federal Regulations (49 CFR Part 1520). This statement should be placed in the area above the drawing title shown as item 6 in Figure 4-2 above. Individuals preparing or handling SSI, are required to read and abide by the terms and conditions in MAA's Design Standards Chapter 3.1.2 Electronic documents containing Sensitive Security Information (SSI), which define who can handle and how they should handle SSI.

***Warning: This document contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation.***

***Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 USC 552 and 49 CFR Part 15 and 49 CFR Part 1520.***

### 4.1.4 Title Sheets

Figure 4-3 below, shows the standard title sheets for projects at both BWI and Martin State Airport (MTN). Consultants should use the standard title sheet that is available in AIRPortal > Designer's Tools.

***The most current MAA-approved drawing formats, templates and seed files are stored in AIRPortal > Designer Tools. Consultants and sub-consultants have access to the most current resources to perform their services compliant with MAA's current standards. Consultants are responsible to review what is on Designer Tools to ensure they are using the most current versions.***

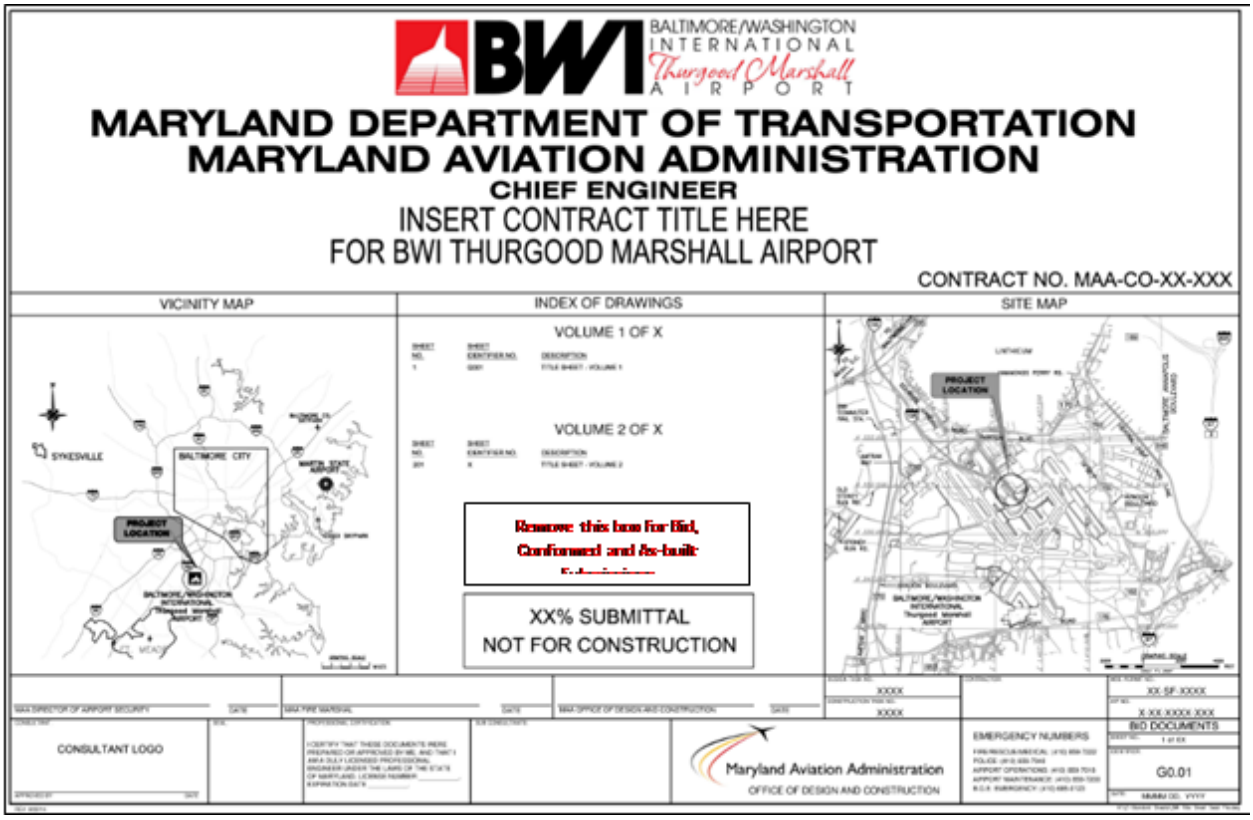
The following information will be included on all title/cover sheets:

- Airport Logo and Name
- Maryland Department of Transportation
- Maryland Aviation Administration
- Chief Engineer
- ***MAA CONTRACT TITLE*** (assigned by MAA )
- Contract No, MAA-CO-00-000 (assigned by MAA Office of Procurement)
- AE Design Task Number
- Construction Task Number (applicable to Comprehensive Construction Projects only)
- Submission Name (e.g. 30% Design, Bid Documents, Conformed, Record, etc.) and date
- Sensitive Security Information (SSI, as defined by 49 CFR Part 1520) statement as it appears below (applicable to document sets containing SSI).
- Vicinity Map and Site Map.
  - The site map should include gridlines that conform to the grid layout defined in the MAA Naming and Addressing Standard.
  - The combined extent of the area covered by all sheets provided should be clearly indicated on the site map.
- Consultant Name Block and Stamp Block
- Signature Blocks Including Signature Line and Date Line for:
  - Airport Security
  - Fire Marshall and
  - MAA Division of Facilities Design
- Drawing Index
  - Should additional space be required provide separate index sheet immediately behind cover sheet.
  - The comment '(contains SSI)' should be added after the title of any documents listed in the Index of Drawings that contain SSI.
  - Project Title
  - Construction Contract Number
  - AIP No. (if applicable) [AIP No. is provided for federally funded projects and shall be obtained from the MAA Director of Capital Programs]
  - Site and Vicinity Maps are to match appropriate MAA Airport and Project Location
  - Index of Drawings (if space is insufficient to list all drawings, use second sheet for Index of Drawings)
  - Design Task Number

- Construction Task Number (if applicable - this number generally applies to on-call construction contracts)
- MDE SF No. (if applicable)
- Index of Drawings.
- Submission Type (30%, 60%, 90%, Bid, Conformed, Record, etc.)
- Professional Certification
- Date

The following statement must be placed on the title sheet of drawing sets that contain SSI as defined in the Code of Federal Regulations (49 CFR Part 1520):

> ***Warning: This document contains Sensitive Security Information that is controlled under 49 CFR Part 15 and 49 CFR Part 1520. No part of this record may be disclosed to persons without a "need to know", as defined in 49 CFR Part 15 and 49 CFR Part 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 USC 552 and 49 CFR Part 15 and 49 CFR Part 1520.***



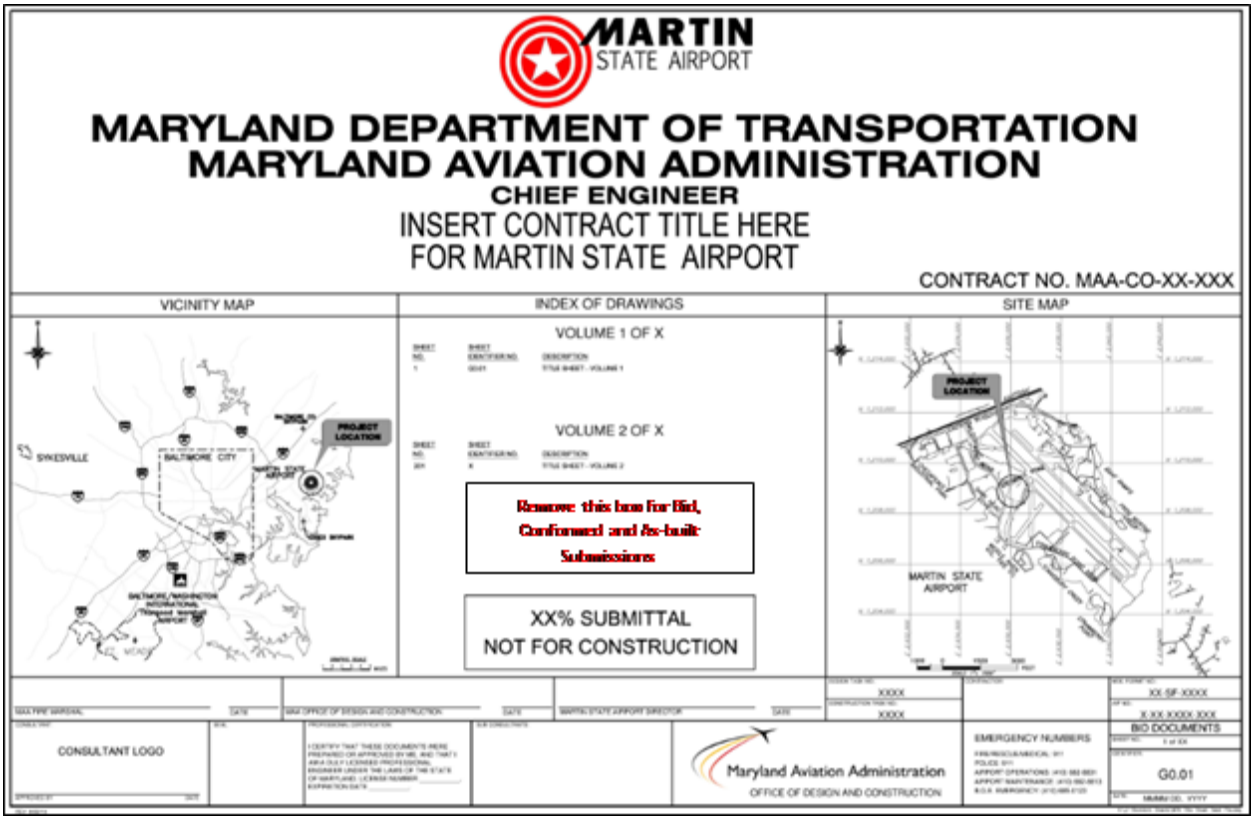



*Figure 4-3, Title/Cover Sheet Layout Samples*

Modifications to the standard cover sheet and border require prior approval of the Office of Engineering and Construction.

### 4.1.5 Drawing Numbering

The drawing sequence number for CADD drawing starts with an upper case letter specifying the discipline followed by a three digit sequential number, starting with 001 within each discipline code (i.e. C001, C002 …, C00n; A001, A002 … A00n). The discipline codes are listed below:

| Discipline Code | Discipline | Discipline Code | Discipline | Discipline Code | Discipline |
|---|---|---|---|---|---|
| A | Architectural | G | General | Q | Equipment-Baggage |
| B | Geotechnical | H | Hazardous Materials | R | Real Estate/Lease |
| C | Civil | I | Interiors | S | Structural |
| D | Demolition | L | Landscaping | T | Telecommunication |
| E | Electrical | M | Mechanical | V | Surveying/Mapping |
| F | Fire Protection | P | Plumbing | Z | Contractor/Shop Drawing |

*Table 4-5, Drawing Number Discipline Codes*

### 4.1.6 Arrangement of Drawings

The drawings in a construction drawing set are listed by discipline in Table 4-6, Construction Drawing Set.

#### *4.1.6.1 Construction Drawing Sets*

The drawings in Table 4-6 are commonly used in identifying a complete set of drawings for the construction of a new facility. Drawing sets for the construction of facility modifications must consist of a subset of the drawings listed in this table. Demolition drawings may be submitted under the Demolition discipline or under another discipline. Construction drawing sets shall be arranged by discipline in the following order, although the exact placement of demolition drawings can vary by project.

| DISCIPLINE | DRAWING CODE | DESCRIPTION |
|---|---|---|
| General | G | Cover, Index, Abbreviations, Symbols, Staging & Safety Plans |
| General | G | Security Plan |
| Real Estate/Lease | R | Property Boundaries And Legal Descriptions |
| Civil | C | Demolition |
| Civil | C | Legend |
| Civil | C | Site |
| Civil | C | Boring Log |
| Civil | C | Under Slab Drainage |
| Civil | C | Building Site Plan |
| Civil | C | Grading Plan |
| Civil | C | Utility Plan |
| Civil | C | Details, Elevations And Sections |
| Civil | C | Site Improvements |
| Civil | C | Layout, Grading, Draining and Landscaping |
| Civil | C | Structural Details |
| Demolition | D | Removal of Existing Construction |
| Hazardous Materials | H | Hazardous Materials |
| Landscaping | L | Legend, Symbols and Abbreviations |
| Landscaping | L | Irrigation Plan |
| Landscaping | L | Planting |
| Landscaping | L | Irrigation and Planting Details |
| Architectural | A | Legend, Symbols and Abbreviations |
| Architectural | A | Floor Plan |
| Architectural | A | Reflected Ceiling Plan |
| Architectural | A | Roof Plan |
| Architectural | A | Elevations |
| Architectural | A | Sections |
| Architectural | A | Details |
| Architectural | A | Millwork |
| Architectural | A | Equipment |
| Architectural | A | Furniture |

| | | |
|---|---|---|
| Interiors | I | Interior Building Elements |
| Structural | S | Legend, Symbols And Abbreviations |
| Structural | S | Structural Foundation Plan |
| Structural | S | Framing and Decking Plan |
| Structural | S | Roof Framing Plan |
| Structural | S | Structural Details |
| Structural | S | Structural Steel Grounding |
| Structural | S | Erection Drawings |
| Mechanical | M | Legend, Symbols And Abbreviations |
| Mechanical | M | Equipment Schedule |
| Mechanical | M | Elevations |
| Mechanical | M | Generator and Fan Room Plan |
| Mechanical | M | Chiller Room Plan |
| Mechanical | M | Mechanical Room Plan |
| Mechanical | M | Roof Plan |
| Mechanical | M | Sections and Details |
| Mechanical | M | Details |
| Mechanical | M | Hot and Cold Piping Diagrams |
| Mechanical | M | Miscellaneous |
| Mechanical | M | Steam Piping Systems |
| Mechanical - HVAC | M | Under Floor Plan |
| Mechanical - HVAC | M | Floor Plan (Room Area) |
| Mechanical - HVAC | M | Ceiling Plan |
| Baggage Handling System | Q | General Notes, Legend and Abbreviations |
| Baggage Handling System | Q | Floor Plans |
| Baggage Handling System | Q | Enlarged Floor Plans |
| Baggage Handling System | Q | Sections |
| Baggage Handling System | Q | Details |
| Baggage Handling System | Q | Controls |
| Plumbing | P | Legend, Symbols and Abbreviations |
| Plumbing | P | Foundation Plan |
| Plumbing | P | Piping Plan |
| Plumbing | P | Riser Diagram |
| Plumbing | P | Sanitary Riser Diagram |
| Plumbing | P | Storm Riser Diagram |
| Plumbing | P | Roof Drain System |
| Plumbing | P | Details |
| Electrical | E | Electrical Demolition |
| Electrical | E | Legend, Symbols and Abbreviations |
| Electrical | E | Single Line Diagrams |
| Electrical | E | First Floor Lighting Plan |
| Electrical | E | Power and Communications Plan |
| Electrical | E | Grounding Plan |
| Electrical | E | Security Plan |
| Electrical | E | Equipment |

| | | |
|---|---|---|
| Electrical | E | Motor Control Schematics |
| Electrical | E | Miscellaneous |
| Electrical | E | Details |
| Electrical | E | Panel Schedules |
| Electrical | E | Airfield Electrical Duct Bank Plan and Profile |
| Telecommunications | T | Legend, Symbols And Abbreviations |
| Telecommunications | T | 1st Floor Communications Plan |
| Telecommunications | T | Details |
| Telecommunications | T | Manhole and Cable Diagrams |
| Fire Protection | F | Legend, Symbols And Abbreviations |
| Fire Protection | F | Sprinkler System |
| Fire Protection | F | Fire Pump Location Plan |
| Fire Protection | F | Alarm Systems |
| Fire Protection | F | Fire Fighting Equipment |
| Fire Protection | F | Stand Pipe System |
| Z-Contractor | Z | Shop Drawings |

*Table 4-6, Construction Drawing Set*

### 4.1.7 Typical Sheets and Layouts for Construction Drawing Sets

The following sections provide examples of drawing sheets that shall always be included in a drawing set.

#### *4.1.7.1 Cover Sheet*

See Figure 4-3, Title/Cover Sheet Layout Samples and AIRPortal > Designer Tools for downloads.

#### *4.1.7.2 Index Sheet*

The index sheet shows a continuation of the drawing list from the title sheet, if required, all abbreviations used in the document set and a legend depicting all existing and proposed symbols. Reference contracts pertaining to the active task document are to be included in the provided attributed block. The consultant or sub-consultant should contact MAA's Office of Engineering and Construction to assist in identifying this list of reference contracts and to obtain copies of the documents from the reference contracts. A sample of each standard Index Sheet is available in AIRPortal > Designer's Tools.

***The most current MAA-approved drawing formats, templates and seed files are stored in AIRPortal > Designer Tools. Consultants and sub-consultants have access to the most current resources to perform their services compliant with MAA's current standards. Consultants are responsible to review what is on Designer Tools to ensure they are using the most current versions.***

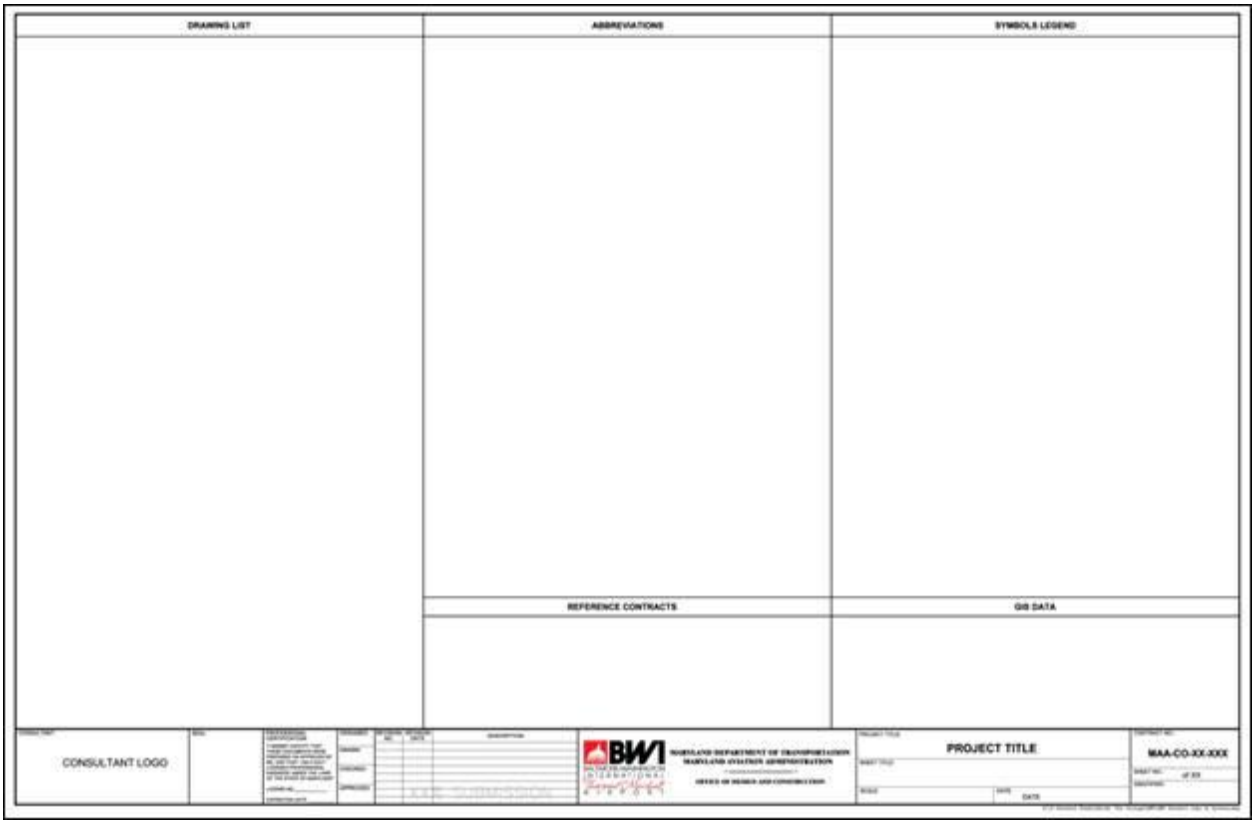



*Figure 4-4, Index Sheet Example*

An example index sheets is shown in Figure 4-4, Index Sheet. The columns shown are for illustration only and may be adjusted to accommodate more or less of one type of information.

#### *4.1.7.3 Other Sheets*

MAA has developed standard General Notes sheets for airside and landside construction projects. These are available through the MAA Design Standards publication. The remainder of the drawing sheets are discipline specific. To provide an example of all such sheets is beyond the intent of this standard. View and download files at AIRPortal > Designer Tools.

### 4.1.8 MDOT/MAA Logo Art

MAA provides the following logos in electronic format for use in CADD documents. These are accessible through AIRPortal > Designer's Tools:

- MAA Logo
- BWI Logo
- Martin State Airport Logo

### 4.1.9 Layers

For layer naming conventions, MAA has adopted the *CADD LAYER GUIDELINES* of the National CAD Standard (NCS), Version 5. Layers commonly used by MAA are listed in Appendix H-1 Layer Development. Additional names as defined by the NCS shall be used as needed, in a manner that is consistent with their definitions. No other layers shall be used without prior written permission from MAA.

#### 4.1.9.1 Sheet File (Paper Space) Layer Assignment

A sheet file is synonymous with a single sheet or page of a plotted CADD drawing file. A sheet file is a selected view or portion of referenced model files within a border sheet. The addition of sheet-specific information (e.g., text, dimensions, and symbols) completes the construction of the document. Table 4-7, Common Sheet File Layers, outlines layers that will be common in all sheet files in a set of construction drawings:

| General Layers | | |
|---|---|---|
| **Name** | **Description** | **Color No.** |
| G-ANNO-DIMS | Dimensions and Leaders | 5 |
| G-ANNO-IDEN | Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s | 7 |
| G-ANNO-KEYN | Key Notes | 7 |
| G-ANNO-LEGN | Legends | 4 |
| G-ANNO-NOTE | Notes | 7 |
| G-ANNO-NPLT | Construction Lines, non-plotting information | 8 |
| G-ANNO-PATT | Cross-hatching, patterns, poche | 5 |
| G-ANNO-REDL | Redline Annotations | 10 |
| G-ANNO-REFR | Reference Files | 7 |
| G-ANNO-REVS | Revisions | 4 |
| G-ANNO-SCHD | Schedules | 7 |
| G-ANNO-SYMB | Miscellaneous Symbols | 4 |
| G-ANNO-TEXT | Miscellaneous text and callouts with associated leaders | 7 |
| G-ANNO-TITL | Drawing Component Titles, Detail Titles, Section Titles, Elevations | 3 |
| G-ANNO-TTLB | Border and title block information | 2 |

*Table 4-7, Common Sheet File Layers*

#### 4.1.9.2 Model File (Model Space) Layer Assignment

A model file contains the physical components or features that make up a building, facility, or site (e.g., columns, walls, windows, ductwork, piping, etc.). Both MAA and NCS layer names consist of a discipline designator, a major category and minor categories. Once the discipline designator, major and minor categories have been determined, a final portion of the layer name indicating status may be added. This describes to the user what the disposition is of the entities on that layer, and helps to determine if that layer should or should not be shown on a particular drawing sheet.

MAA prefers to use a four-letter abbreviation for the status category to stay consistent with the Major and Minor group names, and provide a more intuitive description for the status. Below is a list of common status categories:

| | |
|---|---|
| **PHS#** | Phase of project (#=1-9) |
| **DEMO** | Existing item to be demolished |
| **EXST** | Existing item to remain |

| | |
|---|---|
| **FUTR** | Future work |
| **NEWW** | New work |
| **TEMP** | Temporary work |
| **NICN** | Not in contract |
| **RELO** | Existing item to be relocated |
| **ABND** | Abandoned item |

### 4.1.10 Text Styles/Fonts

The MAA standard fonts include "out of the box" fonts that ship with every installment of *AutoCAD* as well as Windows true type fonts. Any font not meeting this criterion must be submitted to the MAA Project Engineer for approval and inclusion in the project specific standard *Font Library* (.shx or .ttf) file.

All ***Text Styles*** shall use the naming convention, (font name) (_) (text height in decimal equivalent of inches) e.g. *ROMANS_120*

### 4.1.11 Text Justification

All annotation text shall be left justified.

### 4.1.12 Text Heights

The following text heights must be used on all drawings to ensure uniformity in the contract documents.

| ENTITY | PLOTTED TEXT HEIGHT (IN INCHES) |
|---|---|
| Titles | 0.25 |
| Subtitles | 0.175 |
| Normal Text | 0.125 or 0.1 |
| Notes, callouts etc. | 0.125 or 0.1 |

*Table 4-8, Text Heights*

### 4.1.13 Line Widths and Colors

In AutoCAD, each color represents a different line width when plotted. Although other methods exist, this is the accepted MAA Standard. It is preferable to control the line widths in a drawing by assigning a specific color to the layer, instead of assigning a specific color to a single element/entity (line, polyline, arc, etc.). The color of a single element/entity should be set to "BYLAYER", so the layer's color setting can be used to globally change all elements/entities on that layer, both in the model files and sheet files.

Each "sheet file" submitted to the MAA, must be able to be plotted in monochrome and still be legible with distinctions between lines types and other symbology readily apparent. To achieve this, the MAA Standard Pen Settings in Table 4-9, MAA Standard Pen Settings, should be used. Pen widths are specified for only the AutoCAD index colors. Colors 1-9 plot as solid lines, and colors 250-254 plot as screened lines. There is a pen table for both full size (ANSI D) drawings and half-size (ANSI B) drawings:

*MAA Full Size.ctb*

| AutoCAD Color No. | Plotted Pen Width in Inches | Plotted Color | Plotted Line Width |
|---|---|---|---|
| 1 | 0.010 | Black | |
| 2 | 0.012 | Black | |
| 3 | 0.014 | Black | |
| 4 | 0.020 | Black | |
| 5 | 0.024 | Black | |
| 6 | 0.031 | Black | |
| 7 | 0.007 | Black | |
| 8 | 0.005 | Black | |
| 9 | 0.047 | Black | |
| 250 | 0.010 | Dark Grey | |
| 251 | 0.010 | Dark Grey | |
| 252 | 0.010 | Medium Grey | |
| 253 | 0.010 | Light Grey | |
| 254 | 0.010 | Light Grey | |

**Solid Lineweights**

**Screened Lineweights**

*MAA Half Size.ctb*

| AutoCAD Color No. | Plotted Pen Width in Inches | Plotted Color | Plotted Line Width |
|---|---|---|---|
| 1 | 0.005 | Black | |
| 2 | 0.006 | Black | |
| 3 | 0.007 | Black | |
| 4 | 0.010 | Black | |
| 5 | 0.012 | Black | |
| 6 | 0.015 | Black | |
| 7 | 0.004 | Black | |
| 8 | 0.003 | Black | |
| 9 | 0.024 | Black | |
| 250 | 0.010 | Dark Grey | |
| 251 | 0.010 | Dark Grey | |
| 252 | 0.010 | Medium Grey | |
| 253 | 0.010 | Light Grey | |
| 254 | 0.010 | Light Grey | |

**Solid Lineweights**

**Screened Lineweights**

*Table 4-9, MAA Standard Pen Settings*

### 4.1.14 Line Types

The MAA standard linetypes include “out of the box” linetypes (these are linetypes that ship with every installment of AutoCAD) and linetypes defined in the NCS. Linetypes for use on MAA documents are available on AIRPortal > Designer’s Tools.

***The most current MAA-approved drawing formats, templates and seed files are stored in AIRPortal > Designer Tools. Consultants and sub-consultants have access to the most current resources to perform their services compliant with MAA’s current standards. Consultants are responsible to review what is on Designer Tools to ensure they are using the most current versions.***

Any new linetypes created by a consultant must be submitted to the MAAProject Engineer for approval and inclusion in the project specific standard linetype (.lin) file.

It is preferable to control the linetypes in a drawing by assigning a specific linetype to the layer, instead of assigning a specific linetype to a single element/entity (line, polyline, arc, etc.). The linetype of a single element/entity should be set to “BYLAYER”, so the layer’s linetype settings can be used to globally change all elements/entities on that layer, both in the model files and sheet files.

### 4.1.15 Units

The units for all A/E/C drawings shall be U.S. Survey Foot (1200/3937 meters), inches and fractions of an inch, with the smallest fraction normally being 1/8" or as decimals. Dimensions of less than a foot must be shown in inches or fractions of inches, or as decimals inches.

### 4.1.16 Working Units, Coordinate Systems and Drawing Origins

Units should be selected according to the discipline of the drawing, architectural (feet and inches), engineering (feet and tenths), or decimal. References to feet in this document are specifically to the U.S. Survey Foot (1200/3937 meters).

All topography and topography related design including structural and architectural building footprints shall be submitted to, maintained by, and provided by MAA in accordance with the ***Survey Control Manuals***.

The lower left corner of all other drawings should be positioned at the Cartesian coordinate point of 0, 0, 0.

### 4.1.17 Externally Referenced Files

Externally referenced files are related DWGs that are referenced to the current (aka host) DWG to provide additional content. Referenced files can include title/borders, base map information, or other details not included but related to the primary drawing. Figure 4-5, Externally Referenced Files Example, illustrates the concept of how a sheet file drawing is composed using model/design and informational xref files.

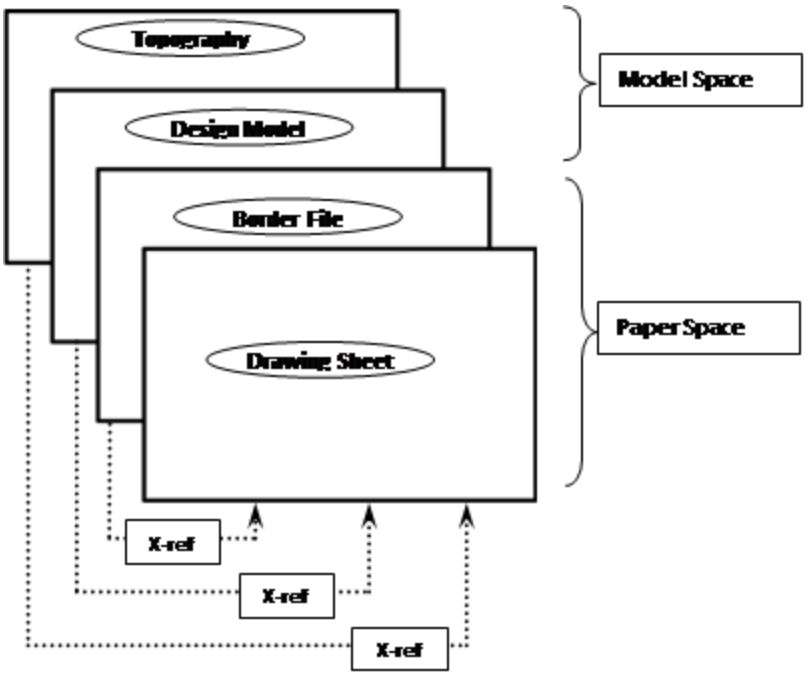



*Figure 4-5, Externally Referenced Files Example*

#### *4.1.17.1 Specific Use of AutoCAD Reference Files*

All files referenced in the host file shall be included in the final drawing package. Nested or circular xref files are not allowed.

Reference files shall be added to all drawings using relative paths only. These paths do not include the drive letter and reflect the location of the reference file as it relates to the active file.

### 4.1.18 Patterning

The patterns (hatching) to be used on MAA drawings include only “out of the box” hatch patterns; customized patterns must not be used.

### 4.1.19 Dimensioning

Refer to the ANSI Y14.5M for additional dimensioning information not provided in this standard.

The distance from the object for the first dimension is 1/2" (0.5”) and each additional dimension is 3/8" (0.375”) further apart. See Figure 4-6, Dimension Directions and Spacing Example, and Figure 4-7, Dimension and Extension Line Spacing Example for dimension examples.

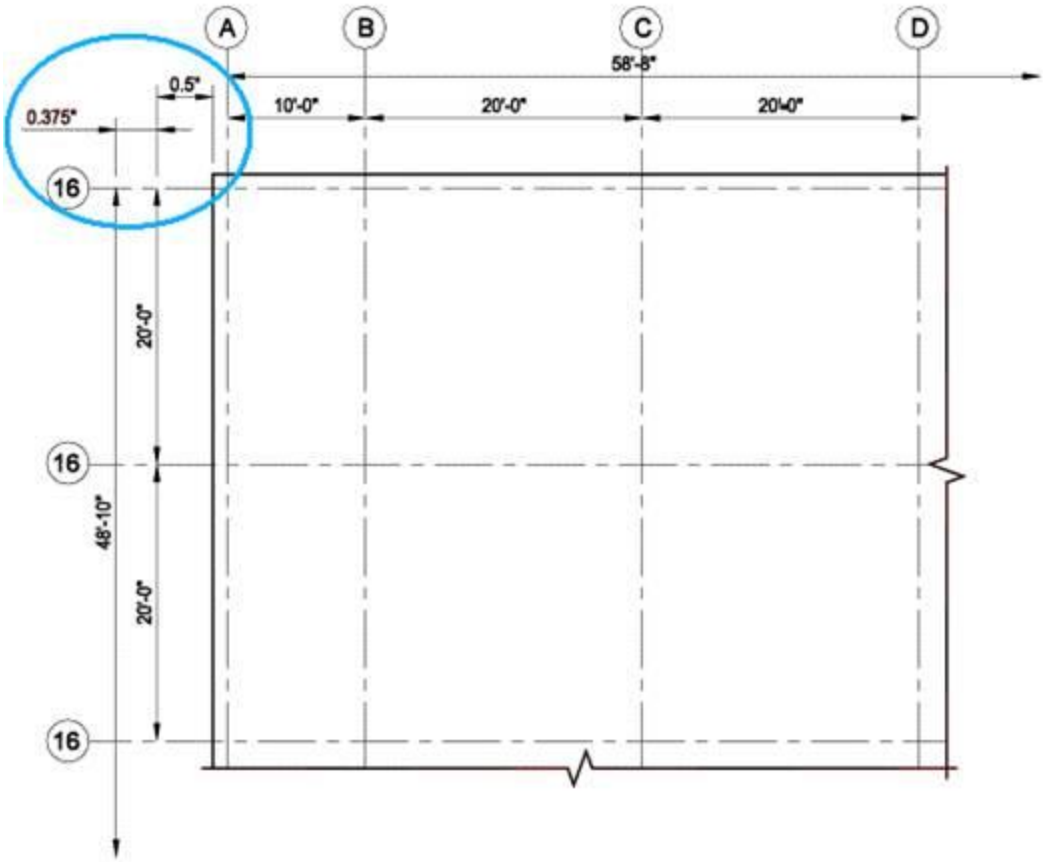



*Figure 4-6, Dimension Directions and Spacing Example*

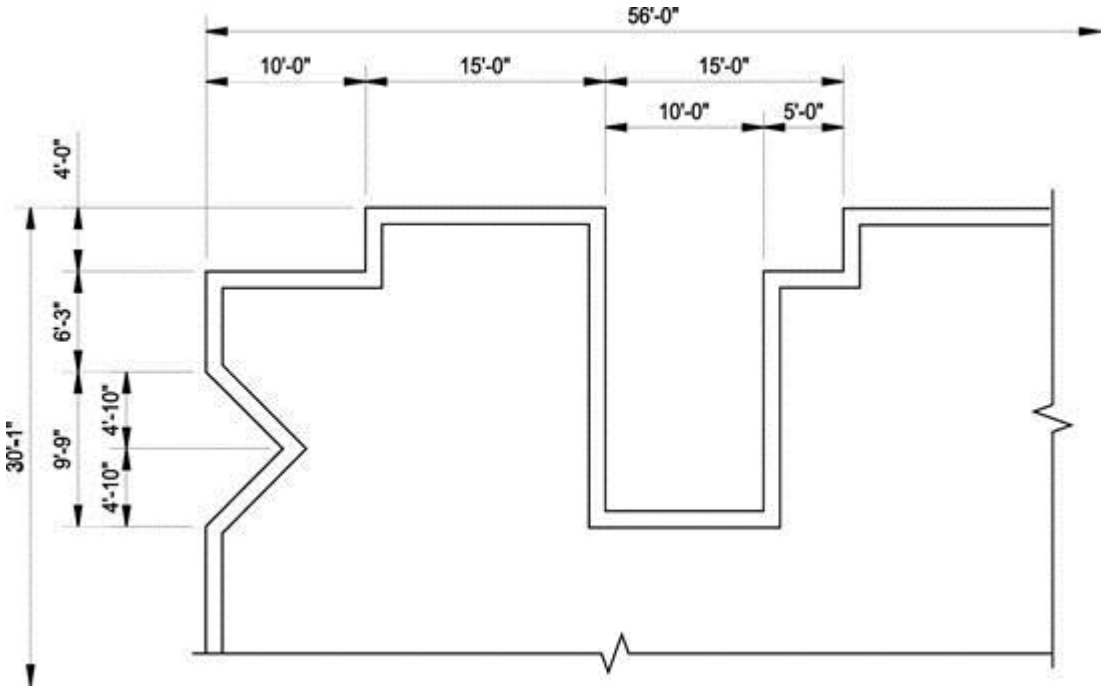


*Figure 4-7, Dimension and Extension Line Spacing Example*

#### 4.1.19.1 Dimension Text Size

All dimensioning text must be placed into the dimension layer. The size of dimension text is the same as the drawing field text (no smaller than 1/10" height, with 1/8" being preferable).

Refer to Table 4-1, Scale Factor and Text Height Conversion Chart for scaling factors and text height.

#### 4.1.19.2 Positioning Dimensions

Figure 4-6, Dimension Directions and Spacing Example and Figure 4-7, Dimension and Extension Line Spacing Example. Refer to these figures for examples.

The following guidelines shall apply:

- Avoid crossing dimension lines.
- Centerlines may be extended and used as extension lines.
- Place longer dimensions outside of shorter ones.
- Do not cover dimensions with patterns in sectioned areas.
- Whenever possible, arrange dimensions so they can be read easily on one continuous line.
- Dimensions are always placed on the drawing so that the text may be read from the bottom or the right.
- Locate dimension lines so that they do not cross extension lines. If it is necessary to dimension at an angle, that angle should be in quadrant between the horizontal and vertical so text may be read between 0 and 90 degrees.
- All text must be located above or centered on the dimension lines.
- The location of text on the dimension line shall be consistent throughout the drawing set.
- Fractions must be located on one line with a space between the whole inch and fraction.
- Make fractions with a slant bar with numbers the same height as text, for example, 1/4".
- All dimension and extension lines shall be created using the “Color 1” line weight.
- Arrowheads and dimension text shall be created using the “Color 1” line weight.
- All text shall be left justified per standard drafting standards.

#### 4.1.19.3 Leaders

When a note or dimension cannot be placed close to an object, a leader may be used. A leader consists of a short horizontal line, an angled line and a terminator. When placing a leader to the left side of a note the horizontal line must be place in line with the top of the note. If the leader is on the right side, the horizontal line is placed at the bottom of the note, see Figure 4-8, Placement of Leaders Example. When a leader points to an object, the angled line must terminate with an arrowhead at its first object line. When the information refers to (applies to, or points to) a surface of an object, use a small filled dot or tilde (~). When the information refers to a bundle or grouping of wires or cables, use a lasso. An example is shown in Figure 4-9, Typical Leaders Example.

All leader lines and arrowheads shall be created using the “Color 1” line weight.

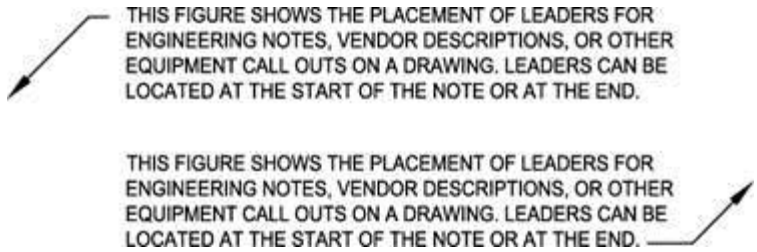



*Figure 4-8, Placement of Leaders Example*

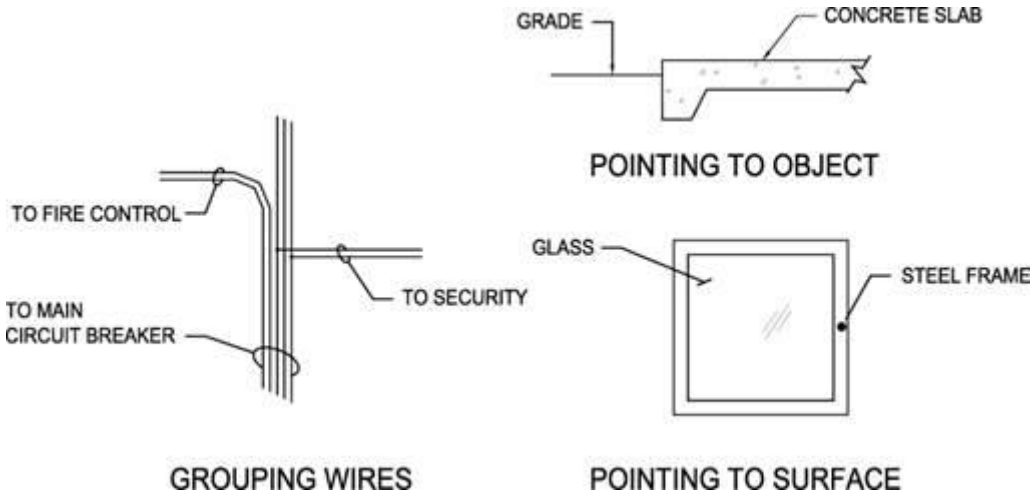



*Figure 4-9, Typical Leaders Example*

#### *4.1.19.4 Arrowheads*

Arrowheads denote termination of dimensions and leader lines and show direction. They must be filled, and must be the same size and style as the arrowheads used in other dimensions. Arrowhead size should be a 3:1 ratio for length to width, and in proportion to any associated text.

### 4.1.20 Symbols

Symbols used in drawings should comply with the NCS and all symbols used in a drawing must be indicated in a legend.

### 4.1.21 Drawing Subtitles

Subtitles must be used on drawings with more than one view or when sections or details are required for clarity and must also be used on drawings with a single view when title block information is inadequate and additional identification is required. Subtitles are always located below and centered on the view to which they apply, except for detail drawings where the title shall be located to the lower left.

Subtitles for plans, standard details, typical details, etc., which are not referenced in other views, consist of two lines. The first line shows the exact title of the view or detail and the second line indicates the scale of the view or detail, along with bar scale, see Figure 4-10, Standard Subtitle Annotation Example.

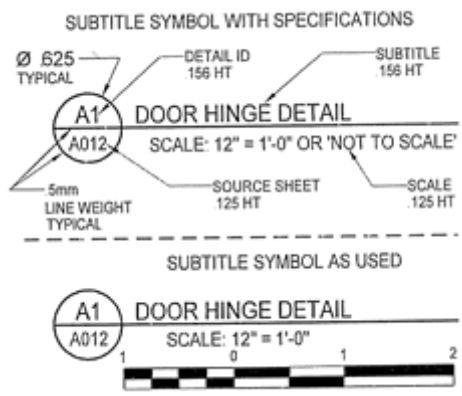



*Figure 4-10, Standard Subtitle Annotation Example*

## 4.1.22 Sections and Details

Sections must be drawn when additional clarification is warranted and details must be created whenever additional clarification is required and a section cannot readily be cut.

### *4.1.22.1 Sections*

Sections must be drawn using the drafting standards shown in Figure 4-11, Standard Section Annotation Example. The three types of section indicators to be used are short sections, extended sections, and offset sections as shown in Figure 4-12, Section Types Example. All sections must be cut toward the top or left side of the drawing, except in unusual situations. In some cases, it may be necessary to cut a short section reading from the left, but this should be avoided if possible.

Sections must appear on the same drawing on which they are cut, if possible. If the section cannot be drawn on the same drawing, it must appear on a separate drawing reserved for sections. Under no circumstances are sections to be scattered indiscriminately throughout the set of drawings.

Section cuts shall be lettered in alphabetical order on each drawing. The letter in the top half of the circle marker must indicate the section letter. The alphanumeric number in the lower half of the circle marker must indicate the drawing on which the section is shown. Heavy dark lines located in the position where the section is cut must indicate the location of the cutting plane.

Offset sections may be used only when section clarity requires adjustment of a portion of the cutting plane. On all section cuts, the circle markers must be placed so they can be read from the direction of cut.

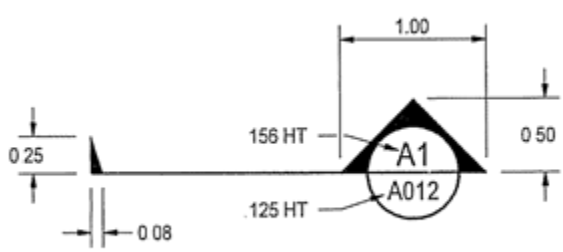


*Figure 4-11, Standard Section Annotation Example*

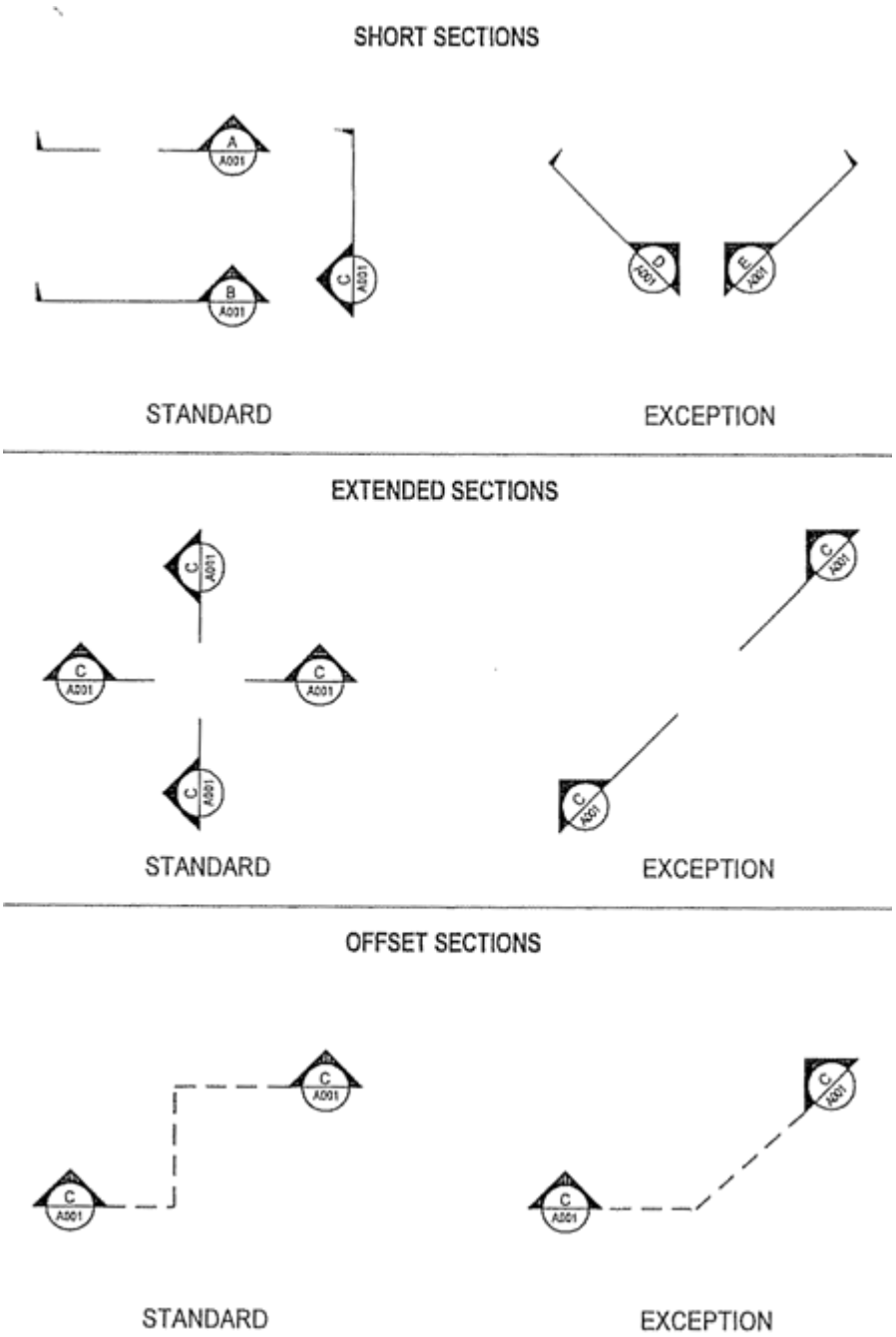



*Figure 4-12, Section Types Example*

### 4.1.22.2 Detail Drawings

The detail must be a section, a plan view, an elevation, or an enlargement. Details must have an alphanumeric (e.g. A1) designation in the upper half of the circle marker. When details are intermixed with sections and it would be difficult to locate a lettered detail on a drawing, the details must be numbered consecutively with the sections. The alphanumeric number in the lower half of the circle

marker must indicate the sheet number on which the details reside (see Figure 4-13, Standard Detail Symbol Example).

When a detail appears more than once on the same drawing, extend a line off the detail, abbreviate the word typical (TYP), and indicate the quantity in parentheses.

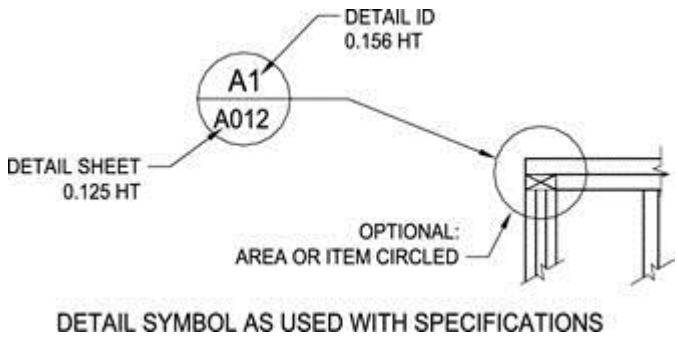



*Figure 4-13, Standard Detail Symbol Example*

### 4.1.23 Revision of Drawings

Changes to contract drawings must be clearly identified and tracked. The following sections outline the required methodologies for incorporating changes to the drawing set.

#### *4.1.23.1 Required Revisions*

Once a drawing has been approved and submitted as final, all subsequent changes shall be recorded as a revision.

#### *4.1.23.2 Revision Methods*

Revisions shall be made by the addition or deletion of information and the changes annotated on drawings.

#### *4.1.23.3 Drawing Practices*

When revising an existing drawing the most recently approved graphic symbols, abbreviations, layer naming requirements, and drawing practices, as documented in this standard, shall be used to incorporate changes or revisions.

#### *4.1.23.4 Identifying Revisions on Drawings*

All revisions shall be identified with a revision cloud and revision number within a triangle for addenda and a square for redline revisions. The revision number in the title block must correspond to the revision number in the drawing area where the change was made.

#### *4.1.23.5 Revision Locations*

The revision location is identified by the revision cloud and only additions or modifications are to be included within the revision cloud.

#### *4.1.23.6 Revision Numbers*

Revisions are to be identified by a sequential number starting at 1. Letters are not to be used for revision identification.

#### 4.1.23.7 Multiple Changes

The same revision number shall identify all changes made to a drawing regardless of number of locations modified that are incorporated at the same time.

#### 4.1.23.8 Revision Block

The revision block size and format shall conform to that in the standard border sheet provided. Only the five most current revisions shall be shown in the revision block and each revision shall be recorded in accordance with the following:

A. The identifying number pertaining to the revision shall be entered in the "REV" column.
B. The date the CADD file changes revision shall be entered in the "DATE" column.
C. A brief description of the change shall be entered in the "DESCRIPTION" column.

#### 4.1.23.9 Redrawn or Replaced Drawings

Drawings are redrawn when manual drawings are converted to CADD or when there are extensive changes to a CADD file. The new drawing shall contain a note referencing the superseded drawing. The note shall be located above the revision block on the new drawing stating:

*"THIS DRAWING SUPERSEDES DRAWING _____, REVISION___, DATED_____." Subsequent revisions to the new drawing shall start with the number 1, regardless of the revision number of the drawing being superseded. A note shall also be located above the revision block on the superseded drawing stating: "THIS DRAWING SUPERSEDED BY DRAWING _____, DATED _____." The statements shall be in letters not less than .125 inches high.*

### 4.1.24 Feature Drawing Rules

Geometric features are objects in drawings that represent specific objects in the real world such as an airfield light, utility conduit, building outline, or property boundary.

#### 4.1.24.1 Allowable Geometry Types

There are three basic types of geometry (i.e., points, lines, and polygons) that are permissible in CADD drawings provided to MAA. Only one geometry type is allowed on layers that contain geometric features, as opposed to annotation or dimension layers. Only one type of geometry should be present on a single layer. The following geometry type definitions are used in accordance with ISO 19107 and in compliance with the Open GIS Consortium Level 0 Profile of GML Version 3.

**Point:** a single location represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 4-14. Blocks can be used to symbolize point features so long as the block is placed on the appropriate layer for that type of feature. The insertion point of the block should be placed at the correct geographic location of the feature. If blocks are used, no additional point object should be placed at the features location.

*Figure 4-14, Example of a Point Feature*

**Line**: straight line connections between two or more discrete locations represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 4-15. Note that line segments (i.e., a straight line connecting two points) and polylines (i.e., one or more connected line segments) are both included in this definition but that arcs (i.e., a curve joining two points) are not.

*Figure 4-15, Example of Line Features*

**Polygons:** A closed connection between three or more discrete locations represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 4-16. A closed polyline can also be used to represent a polygon.

*Figure 4-16, Example of Polygon Features*

**Complex Geometry Types**: Arcs, circles, and ellipses should not be used to represent geographic features. These complex geometry types can be used in details, building faces, and other drawing components that are not intended to be represented in geographic space. This is intended to facilitate data exchange between software that processes these complex data types differently. These shapes may however be represented by polylines or polygons as appropriate. For example, if arcs are used in a CADD drawing, they must first be broken into a line with vertices placed at intervals that are sufficient to maintain the feature's accuracy requirements.

#### 4.1.24.2 Topology Rules

The placement of geometric features in juxtaposition to one another (i.e., next to, connected to, or on top of) is referred to as a topology. Topology rules establish requirements for the placement of features in relation to one another and in relation to features in other Feature Types. Unless stated otherwise, this standard requires the following topological rules:

**Line Feature Types**: Lines should contain one or more line segments with vertices placed at required intervals so the line feature does not stray from the actual feature by more than half the accuracy limit for that feature type, as shown below in Figure 4-17.

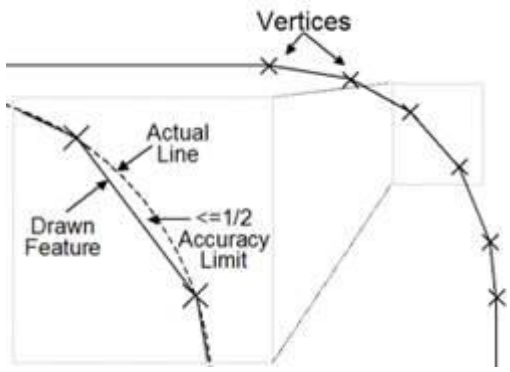



*Figure 4-17, Placement of Vertices Along a Curve*

Lines should begin and end at (snap to) vertices coincident (i.e., exactly at the same coordinate) with features (often point Feature Types) designed to join two or more linear features, as shown in Figure 4-18. An example is electrical conduit lines that are joined only at junction boxes and other similar point features. For lines not naturally joined by physical features (e.g., marking lines), beginning and ending nodes should be placed where an attribute or other property change occurs.

*Figure 4-18, Coincident Line End Points*

Lines should not fall short (i.e. have gaps) or extend beyond (i.e. have dangles) features they are intended to connect to. When lines are connected to features represented by blocks, the line should connect (snap) to the insertion point of the block and not to the outer edge of the block.

**Polygon Feature Types:** Polygons must always be closed, meaning all vertices must be shared by two adjacent line segments forming the edges of the polygon, as shown in Figure 4-19.

*Figure 4-19, Example of Closed and Unclosed Polygons*

Unless otherwise stated, polygons must not overlap other polygons on the same layer, as shown in Figure 4-20. This includes polygons placed on top of other polygons, as well as small overlapping splices because one or more vertices of adjacent sides are not matched. Polygons placed within (e.g., a 'doughnut hole') a larger polygon (e.g., the 'doughnut') which do not overlap are acceptable, because they describe a physically different space from the surrounding polygon.

*Figure 4-20, Examples of Overlapping Polygons*

Polygons must share vertices with adjacent polygons where the real-world features they represent are adjacent, as shown below in Figure 4-21. This rule applies to polygons in the same Feature Type as well as polygons of different but related Feature Types.

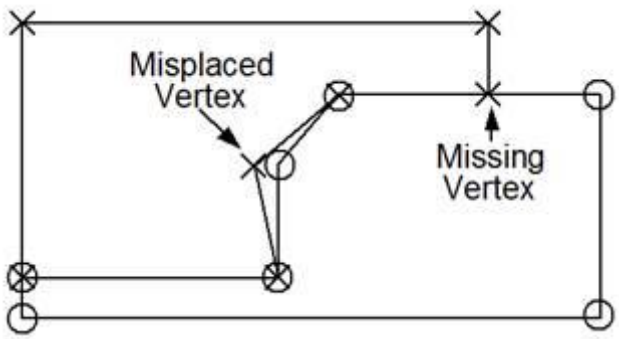



*Figure 4-21, Placement of Vertices of Adjacent Polygons*

#### 4.1.24.3 Layering of Features

Features of the same type and geometry should be the only elements on any specific layer. Text and leaders relevant to feature on a layer should appear on a corresponding but different layer that complies with the layer naming conventions in this standard.

#### 4.1.24.6 Relationship Between GIS & CADD Layers

MAA requires that CADD data be easily convertible into a GIS format to the extent feasible. To accommodate this exchange of data, a crosswalk between CADD and GIS layers has been developed and can be found in Appendix H-4 Crosswalk Relationships.

### 4.1.25 Feature Attribution

In some cases, MAA requires that geometric features in CADD drawings include attributes such as size, material, and condition. These requirements will be defined in individual project statements of work. When MAA requires attributes, they should be attached to geometric objects in drawings via an object data table. If the same set of attributes are required for all features, a single object data table is preferred.

The attributes found in the object data table should align with attributes in MAA's GIS Data Standard for the corresponding GIS layer. For example, points or block symbols on the C-RUNW-ENDP layer, which corresponds to the RunwayEnd GIS layer per the CADD-GIS crosswalk, should include attributes for the runwayEndDesignator, thresholdType, and others. In some cases, the values that can be entered into these attributes will be bound to a domain list. For example, the attribute thresholdType is bound to domain called CodeThresholdType, which allows the values of Normal or Displaced.

Note that the ability to define, enter and edit object data is limited to AutoCAD Map 3D or AutoCAD Civil 3D products. This software will be required to enter such values into DWGs where required by MAA.

Attribution is not the same as annotation.

# 5.0 Electronic Deliverables

## 5.1 General

MAA requires all submittals to be made electronically / digitally.

All CADD drawing files MUST be delivered in AutoCAD DWG and PDF formats. The DWG files MUST be created with the approved software from the list provided in Chapter 1.4 Software Requirements of this manual. Additionally, all DWG submittals must be made utilizing the ***eTransmit*** function within Autodesk products. Instructions appear later in this chapter.

All PDF files shall be created to allow printing but restrict editing by a third party. Each PDF should contain a single sheet drawing. Consultants will use the Standard Drawing File Naming Format shown in Chapter 5.1.2 Electronic File Preparation.

When submitting electronic contract documents to MAA, one sheet file representing each contract drawing shall be submitted in accordance with the MAA Design Standards. Each *sheet file* shall be ready to plot at full-size (1:1) in paper space. Layers must be controlled properly to reflect the document's intended appearance. Use of drawing files with multiple layouts is permitted only in the case of cross sections.

### 5.1.1 Delivery Media

Currently, DWGs and any related documents or files should be submitted on CD or DVD with the read/write session closed to ensure maximum cross platform readability. Electronic delivery via a secure FTP site, on-line document repository, or other system must be approved by the MAA Project Engineer and comply with SSI requirements as needed. All electronic deliverables must be virus free.

### 5.1.2 Electronic File Preparation

Consultants shall deliver one eTransmit zip file containing all sheets, their unbound DWGs and their related files as gathered and presented by the eTransmit functionality. The eTransmit utility will be used to combine each AutoCAD file and its related support files such as raster images, external references, and fonts into a single zip file.

For the PDF version of contract drawings documentation submittals, each PDF file should contain only one contract drawing. The drawings should be organized and submitted in the proper sequence of the drawings set. Each file should follow the "Standard Drawing File Naming Format" as defined in the DST and shown below.

#### *5.1.2.1 Standard Drawing File Naming Format*

**Volume Identifier:** 2 character field should contain "V1", "V2", etc. Used when drawing set is divided in multiple packets or "volumes". Omit field and underscore if all drawings are included in one volume.

**Sheet Sequence:** 4-digit number starting with "0001." Leading zeros are required. The number reflects the sheet sequence as shown in the Index of Sheets. Title Sheet is always "0001". *(Note: When generating sequence number, title sheets are not always represented in the index of sheets.)*
**Insert Identifier:** Single letter characters used for inserting added drawings into an existing sequence. "A" is the first insertion. "B" is the second and so on, through "Z". Where there are no inserted sheets, this field is omitted.
**Sheet Identifier:** Sheet number as shown in drawing title block. Follows existing CAD standards (Example: G0.0, E1.1, C1.0, etc.).
**Sheet Title:** Sheet title as shown as shown in drawing title block. Special characters such as "/", "\", "&", "*" etc. are not permitted.
**SSI Identifier:** Insert the letters "SSI" to identify drawings that contain Security Sensitive Information for special handling. Omit field and preceding underscore if no SSI data present.
**Format Extension:** Application defined code (Example: dwg, dwf, pdf, etc.).

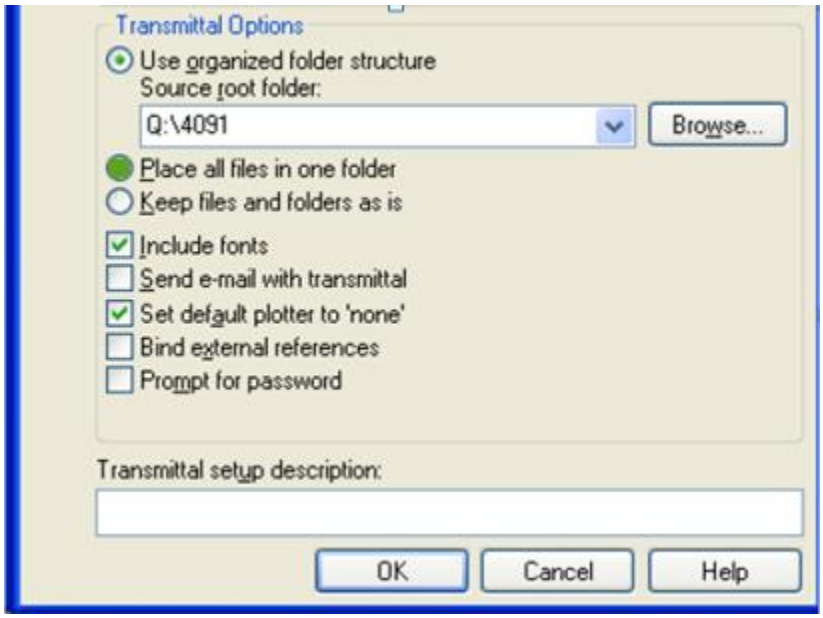
### 5.1.2.2 eTransmit Procedures

A. With a drawing open, choose File > eTransmit
B. In the Create Transmittal dialog box, click Transmittal Setups…

C. In the Transmittal Setups dialog box, click Modify… to modify the Standard setup

D. In the top section of the Modify Transmittal Setup dialog box, set the Transmittal Type and Location information.
   i. In the Modify Transmittal Setup dialog box, choose a transmittal package type of .zip.
   ii. Under File Format, choose 'Keep existing drawing file formats'. If the MAA Project Manager requires the file in an older version of AutoCAD, you can change this setting.
   iii. Under Transmittal file folder, choose the file folder where the transmittal file will be generated.
   iv. Set the Transmittal file name text box to 'Prompt for a filename'

E. In the bottom section of the Modify Transmittal Setup dialog box, set the Transmittal Options
   i. Under Transmittal Options, choose the 'Use organized folder structure' radio button and supply your Source root folder (location where the project root tree structure resides on your server).
   ii. Click the radio button next to 'Place all files in one folder'
   iii. Check the box next to 'Include fonts'
   iv. Check the box next to 'Set default plotter to 'none''
   v. Name your transmittal setup for future use
   vi. Click OK to accept changes and return to the "CREATE TRANSMITTAL" dialog box.




F. In the Create Transmittal dialog box, ensure all necessary files are included in the Files Tree tab. This includes fonts, xref files, ASCII files, etc. Click Add File… to add additional files.
G. Click OK
H. When prompted for a file name, enter a file name that conforms to the naming convention defined in Chapter 5.1.4.1 Standard Drawing File Naming Format.

### 5.1.3 Documentation

All drawing packages submitted to the MAA shall include a transmittal letter containing the same information as on the external media label, and any special instructions for the restoring/transferring of files from the media.

### 5.1.4 Ownership

A statement similar to the following should be included in each contract under which electronic drawings will be delivered:

> *MAA shall have unlimited rights under this contract to all information and materials developed under this contract and furnished to the MAA and documentation thereof, reports and listings, and all other items pertaining to the work and services pursuant to this agreement including any copyright. Unlimited rights under this contract are rights to use, duplicate, or disclose data and information, in whole or part in any manner and for any purpose whatsoever without compensation to or approval from Contractor. The MAA will at all reasonable times have the right to inspect the work and will have access to and the rights to make copies of the above-mentioned items. All digital files and data, and other products generated under this contract shall become the property of the MAA.*

## 5.2 Quality Assurance

This section lists the requirements for the inspection of drawings before they are submitted to MAA, and the engineering data quality assurance process that consultants and contractors must have in place.

### 5.2.1 Responsibility for Quality

The consultant is responsible for seeing that the electronic files are in compliance with MAA standards.

### 5.2.2 Quality Assurance Testing

Quality assurance testing carried out by consultants and contractors should include examining files for entities placed in the proper layer or level, proper drawing and plot parameters, title block is filled out and set correctly, and the drawing is free of unwanted entities. Where specific spatial accuracy is required, additional checking to ensure the accuracy of the data being submitted is required. Where

attribution is required, attributes will be complete and will contain appropriate values. Procedures that MAA will use for acceptance testing and a recommended for consultant and contractor quality assurance are detailed in the MAA Data Quality Standard.

### 5.2.3 Engineering Data Quality Assurance Process

Unless otherwise specified in the contract or order, the contractor/supplier must have an effective quality assurance process for the detailed quality assurance and technical accuracy of all engineering drawings and associated lists to be supplied under the terms of the contract. The procedures of the quality assurance system shall assure the conformance of the engineering drawings and associated lists to the applicable contract provisions. The quality assurance system shall be documented, and subject to the approval of MAA's Project(Task) Manager.

# Appendix H-1 - Layer Development

## H-1.1 Discipline Indicators

The layer name format is organized as a hierarchy. This arrangement allows users to select from a number of options for naming layers according to the level of detailed information desired. Layer names consist of distinct data fields separated from one another by dashes. A detailed list of abbreviations, or field codes, is prescribed to define the content of layers. Most field codes are mnemonic English abbreviations of construction terminology that are easy to remember.

Layer naming generally follows the *CADD LAYER GUIDELINES*, NCS 6.0 Edition, published by the American Institute of Architects (AIA). There are five defined layer name data fields: Discipline Designator, Major Group, two Minor Groups, and Status. Each data field is separated from adjacent fields by a dash ("-") for clarity. Below are guidelines for compiling a layer name, followed by a table of common layer names.

| Layer Discipline Designator | | | |
|---|---|---|---|
| **Discipline Designator** | **Discipline** | **Discipline Designator** | **Discipline** |
| A | Architectural | L | Landscaping |
| B | Geotechnical | M | Mechanical |
| C | Civil | P | Plumbing |
| D | Demolition | Q | Equipment – Baggage |
| E | Electrical | R | Real Estate/Lease |
| F | Fire Protection | S | Structural |
| G | General | T | Telecommunications |
| H | Hazardous Materials | V | Surveying/Mapping |
| I | Interiors | Z | Contractor/Shop Drawing |

*Table A1.1, Layer Discipline Designators*

## H-1.2 Major and Minor Groups

A four-letter major group and either one or two four-letter minor groups follow the discipline designator in a layer name. Common major and minor groups are listed below:

| A | |
|---|---|
| ACID | Industrial waste piping |
| AERI | Aerial |
| AFFF | Aqueous film forming foam |
| AFRZ | Anti-freeze |
| AFLD | Airfield |
| AIRS | Airspace, approach surface |
| ALGN | Alignment |
| ALRM | Alarm |
| ANNO | Annotation |

| | |
|---|---|
| APRN | Apron |
| AREA | Area |
| **B** | |
| BAGS | Baggage system information |
| BCNS | Beacons |
| BEAM | Beam |
| BELL | Bell systems |
| BLDG | Building |
| BORE | Bore |
| BORW | Borrow |
| BRAC | Brace |
| BRIN | Brine |
| **C** | |
| CABL | Cable |
| CATH | Cathode |
| CATV | Cable TV |
| CCTV | Closed Circuit TV |
| CHAN | Channel |
| CHEM | Chemical |
| CIRC | Circuit |
| CLNG | Ceiling |
| CLOK | Clock systems |
| CMPA | Compressed air |
| CNDW | Condenser water |
| CO2S | Carbon Dioxide system |
| COLS | Columns |
| COMM | Communications |
| CNDS | Condensate piping |
| CONT | Controls |
| CTRL | Control panels |
| CWTR | Chilled water |
| **D** | |
| DECK | Deck |
| DECN | Decontamination |
| DETL | Details |
| DIAG | Diagram |
| DICT | Central dictation |
| DISC | Discipline |
| DISP | Displaced |
| DOOR | Door |
| DOMW | Domestic Water |
| DRED | Dredge |
| DUAL | Dual |
| DUCT | Duct |
| DUST | Dust and fume collection |

| | |
|---|---|
| **E** | |
| ELEC | Electrical |
| ELEV | Elevation |
| EMER | Emergency Systems |
| EMCS | Emergency Monitoring Control System |
| EQPM | Equipment |
| EXHS | Exhaust |
| **F** | |
| FEAT | Feature |
| FIXT | Fixture |
| FLOR | Floor |
| FNDN | Foundation |
| FUEL | Fuel lines |
| FURN | Furnishing |
| **G** | |
| GLAZ | Glazed |
| GRAD | Grade |
| GRAT | Grating |
| GRDL | Ground/grade level |
| GRID | Grid |
| GRND | Ground |
| GTHP | Geothermal heat pump |
| **H** | |
| HALN | Halon |
| HELI | Heliport |
| HTCW | High temperature/chilled water |
| HVAC | Heating, ventilation and air conditioning |
| HWTR | Hot water |
| HYDR | Hydraulics |
| **I** | |
| IGAS | Inert gas |
| IW~~ | Industrial waste |
| INSL | Insulation |
| INTC | Intercom/PA systems |
| IRRG | Irrigation |
| **J** | |
| JNTS | Joints |
| JOIS | Joists |
| JACK | Jacks |
| **K** | |
| | |
| **L** | |
| LGAS | Liquid gas |
| LITE | Lighting |
| LSFT | Life safety / egress requirements |

| | |
|---|---|
| LTNG | Lightning protection |
| LO~~ | Lubrication |
| **M** | |
| MACH | Machinery |
| MATL | Materials |
| METL | Metal |
| MDGS | Medical/Dental gas |
| MNST | Monitoring stations |
| **N** | |
| NGAS | Natural gas |
| NURS | Nurse call/paging systems |
| **O** | |
| OPNG | Opening |
| OVRN | Overrun |
| **P** | |
| PADS | Pads |
| PATT | Pattern (hatching) |
| PENE | Penetrations |
| PIPE | Piping |
| PRKG | Parking |
| PLAN | Plan, blueprint |
| PLNT | Plants/vegetation |
| POLE | Utility pole |
| POLL | Pollution |
| POWR | Power |
| PRIM | Primary electrical cable |
| PROC | Process piping |
| PROF | Profile |
| PROP | Property |
| PROT | Protection |
| PVMT | Pavement |
| **Q** | |
| | |
| **R** | |
| RAIL | Railroad |
| RATE | Rating |
| RCOV | Recovery |
| REFG | Refrigeration |
| REIN | Reinforcement |
| ROAD | Roadway |
| ROOF | Roof |
| RUNW | Runway |
| RWTR | Raw water |
| **S** | |
| SFTY | Safety |

| | |
|---|---|
| SAMP | Sample |
| SEAP | Seaplane |
| SECD | Secondary electrical cable |
| SECT | Section |
| SERT | Security systems |
| SITE | Sitework |
| SLAB | Slab |
| SOUN | Sound systems |
| SPCL | Special |
| SPPT | Support |
| SPRN | Sprinkler |
| SSWR | Sanitary sewer |
| STAT | Status |
| STEM | Steam |
| STOR | Storage |
| STRC | Structures |
| STRM | Storm sewers/drain |
| STRS | Stairways |
| SURV | Survey |
| **T** | |
| TAXI | Taxiway |
| TOPO | Topography |
| TRAF | Traffic |
| TRUS | Trusses |
| TVAN | TV antenna systems |
| **U** | |
| UTIL | Utilities |
| **V** | |
| | |
| **W** | |
| WALL | Wall |
| WATR | Water |
| **X** | |
| | |
| **Y** | |
| | |
| **Z** | |
| ZONE | Zoning |

*Table A1.2, Major and Minor Groups*

## H-1.3 Status Indicators

Once the discipline designator, major and minor categories have been chosen, the final portion of the layer name is the status. This describes to the user what the disposition is of the entities on that layer, and helps to determine if that layer should or should not be shown on a particular drawing sheet. Note

that AutoCAD uses a single letter abbreviation for its status categories. MAA prefers to use a four-letter abbreviation to stay consistent with the Major and Minor group names, and provide a more intuitive description for the status. Below is a list of common status categories:

| Indicator | Status |
|---|---|
| PHS# | Phase of project (#=1-9) |
| D | Existing item to be demolished |
| E | Existing item to remain |
| F | Future work |
| M | Existing item to be moved |
| N | New work |
| T | Temporary work |
| X | Not in contract (not included in AutoCAD layer naming routine) |
| A | Abandoned item (not included in AutoCAD layer naming routine) |

*Table A1.3, Layer Status Indicators*

## H-1.4 Print File Layer Assignment

A sheet file is synonymous with a single sheet or page of a plotted CADD drawing file. A sheet file is a selected view or portion of referenced model files within a border sheet. The addition of sheet-specific information (e.g., text, dimensions, and symbols) completes the construction of the document. Table 4-7, Common Sheet File Layers, outlines layers that will be common in all sheet files in a set of construction drawings:

| General Layer Names | General Layer Descriptions | Color # |
|---|---|---|
| G-ANNO-DIMS | Dimensions and Leaders | 5 |
| G-ANNO-IDEN | Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s | 7 |
| G-ANNO-KEYN | Key Notes | 7 |
| G-ANNO-KEYP | Kay Plan | 8 |
| G-ANNO-LEGN | Legends | 4 |
| G-ANNO-NOTE | Notes | 7 |
| G-ANNO-NPLT | Construction Lines, non-plotting information | 8 |
| G-ANNO-PATT | Cross-hatching, patterns, poche | 5 |
| G-ANNO-REDL | Redline Annotations | 10 |
| G-ANNO-REFR | Reference Files | 7 |
| G-ANNO-REVS | Revisions | 4 |
| G-ANNO-SCHD | Schedules | 7 |
| G-ANNO-SYMB | Miscellaneous Symbols | 4 |
| G-ANNO-TEXT | Miscellaneous text and callouts with associated leaders | 7 |
| G-ANNO-TITL | Drawing Component Titles, Detail Titles, Section Titles, Elevations | 3 |
| G-ANNO-TTLB | Border and title block information | 2 |

*Table A1.4, Common Sheet File Layers*

## H-1.5 Model File Layer Assignment

A model file contains the physical components or features that make up a building, facility, or site (e.g., columns, walls, windows, ductwork, piping, etc.). Both MAA and NCS layer names consist of a discipline designator, a major category and minor categories. Once the discipline designator, major and minor categories have been determined, a final portion of the layer name indicating status may be added. This describes to the user what the disposition is of the entities on that layer, and helps to determine if that layer should or should not be shown on a particular drawing sheet.

MAA prefers to use a four-letter abbreviation for the status category to stay consistent with the Major and Minor group names, and provide a more intuitive description for the status. Below is a list of common status categories and their recommended properties:

| STATUS | DESCRIPTION | COLOR | LINETYPE |
|---|---|---|---|
| A | Abandoned item | 3 | Hidden |
| D | Existing item to be demolished | Equal Color* | Hidden |
| E | Existing item to remain | 252 | Continuous |
| F | Future work | Equal Color + 1** | Continuous |
| M | Existing item to be relocated | Equal Color + 2** | Continuous |
| N | New work | Original Color | Continuous |
| T | Temporary work | 174 | Hidden2 |
| X | Not in contract | 7 | Continuous |
| PHS# | Phase of project (#=1-9) | *Varies* | *Varies* |

*Table A1.5, MAA Standard Pen Settings*

*Equal Color = current color being used by the layer to which the status will be added
**Equal Color + (x) = add 1 or 2 to the current color number being used by the layer to which the status will be added

### H-1.5.1 (A) Architectural Layers

| GENERAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| A | ANNO | KEYN | | | Reference keynotes with associated leaders |
| A | ANNO | NOTE | | | General notes and general remarks |
| A | ANNO | NPLT | | | Non-plotting graphic information |
| A | ANNO | PATT | | | Miscellaneous patterning and hatching |
| A | ANNO | REFR | | | Reference files |
| A | ANNO | SYMB | | | Miscellaneous symbols |
| A | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |

| AREA INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | AREA | LINE | | | Architectural area calculation boundary lines |
| A | AREA | OCCP | | | Occupant or employee names |
| A | AREA | PATT | | | Area cross hatching |
| **BAGGAGE SYSTEM INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | BAGS | CART | | | Cart/Tug |
| A | BAGS | CATW | | | Catwalk |
| A | BAGS | CLMD | | | Claim Device |
| A | BAGS | CONV | | | Baggage Conveyor |
| A | BAGS | CRBS | | | Curbside Baggage Conveyor |
| A | BAGS | CTRL | | | Control |
| A | BAGS | DIMS | | | Dimension |
| A | BAGS | DOOR | | | Doors |
| A | BAGS | ELEV | | | Elevation |
| A | BAGS | EQPM | | | Equipment |
| A | BAGS | ICNV | | | Inbound Baggage Conveyor |
| A | BAGS | IOSZ | | | Inbound Oversized Baggage Conveyor |
| A | BAGS | MATC | | | Match Lines |
| A | BAGS | MKUP | | | Make-Up Device |
| A | BAGS | NOTE | | | Notes |
| A | BAGS | OCNV | | | Outbound Baggage Conveyor |
| A | BAGS | OOSZ | | | Outbound Oversized Baggage Conveyor |
| A | BAGS | RAIL | | | Guardrail |
| A | BAGS | RWAY | | | Right-of-Way |
| A | BAGS | SCDR | | | Security Door |
| A | BAGS | SCNU | | | Screening Unit |
| A | BAGS | TCBC | | | Ticket Counter Baggage Conveyor |
| A | BAGS | TEMP | | | Temporary |
| A | BAGS | TTLB | | | Title Block |
| A | BAGS | TTRY | | | Tilt-Tray Baggage System |
| A | BAGS | VPRT | | | View Port Layer for Paper Space |
| A | BAGS | XFER | | | Transfer Baggage Conveyor |
| A | BAGS | XRAY | | | X-Ray Unit |
| **CEILING INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | CLNG | ACCS | | | Access panels |
| A | CLNG | CTLJ | | | Ceiling control joints |
| A | CLNG | ENCL | | | Column enclosures/fire protection |
| A | CLNG | GRID | | | Ceiling grid |
| A | CLNG | LEVL | | | Level Changes |
| A | CLNG | OPNG | | | Openings, ceiling/roof penetrations (see also A-FLOR-OVHD in Model File Type: Floor Plan) |
| A | CLNG | PATT | | | Ceiling patterns |

| | | | | | |
|---|---|---|---|---|---|
| A | CLNG | REFL | | | Reflective Ceiling |
| A | CLNG | SUSP | | | Suspended elements, ceiling mounted specialties (e.g., clocks, fans, etc.) |
| A | CLNG | TEES | | | Main tees |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | DETL | GRPH | | | Graphics, gridlines, non-text items |
| A | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| A | DETL | METR | | | Metric-specific dimensions and notes |
| DOORS | | | | | |
| A | DOOR | FULL | | | Full height (to ceiling) door: swing and leaf |
| A | DOOR | IDEN | | | Door number and symbol, hardware group, etc. |
| A | DOOR | PRHT | | | Partial height door: swing and leaf |
| A | DOOR | SERT | | | Security Door |
| A | DOOR | SYMB | | | Miscellaneous door symbols (e.g., overhead, bifold, pocket, etc.) |
| **ELEVATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | ELEV | CSWK | | | Wall-mounted casework |
| A | ELEV | FIXT | | | Miscellaneous fixtures |
| A | ELEV | FNSH | | | Finishes, woodwork, trim |
| A | ELEV | IDEN | | | Component identification numbers |
| A | ELEV | OTLN | | | Building outlines |
| A | ELEV | PATT | | | Textures and hatch patterns |
| A | ELEV | PFIX | | | Plumbing fixtures |
| A | ELEV | SIGN | | | Signage |
| **EQUIPMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | EQPM | ACCS | | | Equipment access |
| A | EQPM | BELW | | | Equipment below Floor |
| A | EQPM | CLRN | | | Equipment clearance |
| A | EQPM | FIXD | | | Fixed equipment |
| A | EQPM | IDEN | | | Equipment identification numbers |
| A | EQPM | JETB | | | Aircraft Jet bridge |
| A | EQPM | MOVE | | | Moveable equipment |
| A | EQPM | NICN | | | Not in contract equipment |
| A | EQPM | OVHD | | | Overhead, ceiling mounted, or suspended equipment |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | FLOR | CSWK | | | Casework (manufactured cabinets) |
| A | FLOR | ESCL | | | Escalators |
| A | FLOR | EVTR | | | Elevator cars and equipment |
| A | FLOR | EXPJ | | | Expansion and Seismic Joints |
| A | FLOR | FIXT | | | Floor mounted/Free standing miscellaneous fixtures |
| A | FLOR | FURN | | | Furniture Layers |

| | | | | | |
|---|---|---|---|---|---|
| A | FLOR | HRAL | | | Stair and balcony handrails, guard rails |
| A | FLOR | IDEN | | | Room name, space identification text |
| A | FLOR | LADD | | | Ladders |
| A | FLOR | LEVL | | | Level changes, shafts, ramps, pits, breaks in construction, and depressions |
| A | FLOR | MOVS | | | Moving sidewalks |
| A | FLOR | NUMB | | | Room/space identification number and symbol |
| A | FLOR | OTLN | | | Floor outline/perimeter/building footprint |
| A | FLOR | OTLN | RPRM | | Room perimeter shape (Interior walls) |
| A | FLOR | OVHD | | | Overhead items (skylights, overhangs etc.) |
| A | FLOR | PATT | | | Paving, tile, carpet patterns |
| A | FLOR | RAIS | | | Access (raised) flooring |
| A | FLOR | SIGN | | | Signage |
| A | FLOR | SPCE | | | Interior space not delineated by walls |
| A | FLOR | SPCL | | | Architectural specialties (e.g., toilet room accessories, display cases) |
| A | FLOR | STRS | | | Stair risers/treads |
| A | FLOR | TPTN | | | Toilet partitions |
| A | FLOR | WDWK | | | Architectural woodwork (field built cabinets and counters) |
| **WINDOWS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | GLAZ | FULL | | | Full height glazed walls and partitions (see A-WALL-CWMG for curtain walls) |
| A | GLAZ | IDEN | | | Window number and symbol |
| A | GLAZ | PRHT | | | Windows and partial height glazed partitions |
| A | GLAZ | SILL | | | Window sills |
| **LIGHTING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | LITE | CLNG | | | Specialty ceiling lights not shown on Electrical Lighting Plan |
| **PROPERTY INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | PROP | LEAS | | | Lease line (interior) |
| **ROOFING INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | ROOF | CRKT | | | Crickets flow arrows flow info |
| A | ROOF | EXPJ | | | Expansion joints |
| A | ROOF | GUTR | | | Roof internal gutters |
| A | ROOF | HRAL | | | Stair handrails, nosings, guard rails |
| A | ROOF | LEVL | | | Level changes |
| A | ROOF | OPNX | | | Roof Open Below ('X' line symbol) |
| A | ROOF | OTLN | | | Roof perimeter/edge, roof geometry |
| A | ROOF | PATT | | | Roof surface patterns, hatching |
| A | ROOF | RFDR | | | Roof drains |
| A | ROOF | SPCL | | | Roof specialties, accessories, access hatches, dormers |
| A | ROOF | STRS | | | Stair risers/treads, ladders |

| | | | | | |
|---|---|---|---|---|---|
| A | ROOF | WALK | | | Roof walkways |
| A | ROOF | WALL | | | Parapet walls and wall caps |
| **SECTIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | SECT | IDEN | | | Component identification numbers |
| A | SECT | MBND | | | Material beyond section cut |
| A | SECT | MCUT | | | Material cut by section |
| A | SECT | PATT | | | Textures and hatch patterns |
| **WALLS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| A | WALL | CAVI | | | Cavity wall lines |
| A | WALL | CNTR | | | Wall centerlines |
| A | WALL | CWMG | | | Curtain wall mullions and glass |
| A | WALL | FIRE | | | Fire wall designators (patterning) |
| A | WALL | FULL | EXTR | | Exterior full height walls |
| A | WALL | FULL | INTR | | Interior full height walls |
| A | WALL | HEAD | | | Door and window headers (appear on Reflected Ceiling Plan) |
| A | WALL | IDEN | | | Wall identification/type text or tags |
| A | WALL | JAMB | | | Door and window jambs (do not appear on Reflected Ceiling Plan) |
| A | WALL | MOVE | | | Moveable walls/partitions |
| A | WALL | PATT | | | Wall insulation, hatching, and fill |
| A | WALL | PRHT | | | Partial height walls (do not appear on Reflected Ceiling Plan) |
| A | WALL | SPCL | | | Wall-hung/attached specialties (e.g., fixtures, grab bars (incl. handicap), telephone booths) |

### H-1.5.2 (B) Borings Layers

| **GENERAL INFORMATION** | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| B | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| B | ANNO | KEYN | | | Reference keynotes with associated leaders |
| B | ANNO | NOTE | | | General notes and general remarks |
| B | ANNO | NPLT | | | Non-plotting graphic information |
| B | ANNO | PATT | | | Miscellaneous patterning and hatching |
| B | ANNO | REFR | | | Reference files (AutoCAD users only, see Chapter 4) |
| B | ANNO | SYMB | | | Miscellaneous symbols |
| B | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **GEOPHYSICAL BORINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| B | BORE | ELEV | | | Boring elevations |
| B | BORE | FDTA | | | Field data |
| B | BORE | HOLE | | | Bore/perc hole number |
| B | BORE | IDEN | | | Component identification numbers |
| B | BORE | LDTA | | | Laboratory data |

| | | | | | |
|---|---|---|---|---|---|
| B | BORE | PATT | | | Soil/rock patterns |

### H-1.5.3 (C) Civil Layers

| AIRFIELD | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | AFLD | AHOA | | | Airfield: Air Operations Area |
| C | AFLD | AREA | O | | Airfield: Air Operations Area |
| C | AFLD | ARWY | | | Airfield: Airway |
| C | AFLD | DSRF | BRLN | | Airfield: Building Restriction Line |
| C | AFLD | DSRF | KEYH | | Airfield: Key holes |
| C | AFLD | DSRF | NMOV | | Airfield: Aircraft Non-Movement Area |
| C | AFLD | DSRF | OBFA | | Airfield: Object Free Area |
| C | AFLD | DSRF | OBFA | | Object Free Area |
| C | AFLD | DSRF | OFZ_ | | Object Free Zone |
| C | AFLD | DSRF | OFZN | | Airfield: Object Free Zone |
| C | AFLD | DSRF | POFA | | Airfield: Precision Object Free Area |
| C | AFLD | FAAR | | | Airfield: FAA Region |
| C | AFLD | FREQ | | | Airfield: Frequency Area |
| C | AFLD | GLYC | ANNO | | Airfield: Glycol bubble callout |
| C | AFLD | GLYC | MHOL | | Airfield: Glycol manholes |
| C | AFLD | GLYC | PIPE | | Airfield: Glycol pipes |
| C | AFLD | LNDM | | | Airfield: Landmark segment |
| C | AFLD | NAID | COMM | | Airfield: Communications airfield navigational aides |
| C | AFLD | NAID | CRIT | | Airfield: Airfield Navigational Aid - Critical Area |
| C | AFLD | NAID | GPS_ | | Airfield: GPS airfield navigational aides |
| C | AFLD | NAID | ILS_ | | Airfield: Airfield Instrument Landing System |
| C | AFLD | NAID | MCWV | | Airfield: Microwave airfield navigational aides |
| C | AFLD | NAID | OTHR | | Airfield: Other airfield navigational aides |
| C | AFLD | NAID | RADI | | Airfield: Radio airfield navigational aides |
| C | AFLD | NAID | RADR | | Airfield: Radar airfield navigational aides |
| C | AFLD | NAID | RMTE | | Airfield: Remote airfield navigational aides |
| C | AFLD | NAID | SITE | | Airfield: Airfield Navigational Aid - Site |
| C | AFLD | NAID | SYST | | Airfield: NAVAID system |
| C | AFLD | NAID | WTHR | | Airfield: Weather airfield navigational aides |
| C | AFLD | OBST | LINE | | Airfield: Airspace obstructions - Line |
| C | AFLD | OBST | NODE | | Airfield: Airspace obstructions - Point |
| C | AFLD | OBST | POLY | | Airfield: Airspace obstructions - Polygon |
| C | AFLD | OTHR | | | Airfield: Other airspace surfaces |
| C | AFLD | PART | APRC | | Airfield: FAR Part 77 Approach Surface |
| C | AFLD | PART | CONL | | Airfield: FAR Part 77 Conical Surface |
| C | AFLD | PART | HORZ | | Airfield: FAR Part 77 Horizontal Surface |
| C | AFLD | PART | PRIM | | Airfield: FAR Part 77 Primary Surface |
| C | AFLD | PART | TRNS | | Airfield: FAR Part 77 Transitional Surface |
| C | AFLD | PROP | | | Airfield: Airport property |

| | | | | | |
|---|---|---|---|---|---|
| C | AFLD | PVMT | | | Airfield: Pavement section |
| C | AFLD | SECR | RSTR | | Airfield: Military restricted access boundary |
| C | AFLD | SECR | SECA | | Airfield: Airfield security area |
| C | AFLD | SECR | SIDA | | Airfield: Security Identification Display Area |
| C | AFLD | SECR | STER | | Airfield: Airfield sterile area |
| C | AFLD | SECT | AREA | | Airfield Movement Security Area |
| C | AFLD | TERP | | | Airfield: TERPS surfaces |
| C | AFLD | TRAF | IDEN | | Airfield Traffic Area: Annotation |
| C | AFLD | TRAF | TYPA | | Airfield Traffic Area: Type A traffic area |
| C | AFLD | TRAF | TYPB | | Airfield Traffic Area: Type B traffic area |
| C | AFLD | TRAF | TYPC | | Airfield Traffic Area: Type C traffic area |
| C | AFLD | TRAK | LINE | | Airfield: Flight Track Line |
| C | AFLD | TRAK | PNTS | | Airfield: Flight Track Point |
| **AIRSPACE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | AIRS | ISOC | | | Airfield: Approach surface isoclines |
| C | AIRS | LNDM | | | Airfield: Landmark segment |
| C | AIRS | OBST | | | Airfield: Airfield obstruction |
| C | AIRS | OBST | LINE | | Airfield: Airspace obstructions - Line |
| C | AIRS | OBST | NODE | | Airfield: Airspace obstructions - Point |
| C | AIRS | OBST | POLY | | Airfield: Airspace obstructions - Polygon |
| C | AIRS | OTHR | | | Airfield: Other airspace surfaces |
| C | AIRS | PART | APRC | | Airfield: FAR Part 77 Approach Surface |
| C | AIRS | PART | CONL | | Airfield: FAR Part 77 Conical Surface |
| C | AIRS | PART | HORZ | | Airfield: FAR Part 77 Horizontal Surface |
| C | AIRS | PART | PRIM | | Airfield: FAR Part 77 Primary Surface |
| C | AIRS | PART | TRNS | | Airfield: FAR Part 77 Transitional Surface |
| C | AIRS | TERP | | | Airfield: TERPS surfaces |
| **ALIGNMENTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | ALGN | ANNO | AREA | | Alignments: New Annotation Areas |
| C | ALGN | ASSM | | | Alignments: Civil 3D Assembly |
| C | ALGN | ASSM | BLIN | | Alignments: Civil 3D Assembly Baseline |
| C | ALGN | ASSM | OFFS | | Alignments: Civil 3D Assembly Offsets |
| C | ALGN | ASSM | TEXT | | Alignments: Civil 3D Assembly Annotation |
| C | ALGN | BRNG | | | Alignments: Bearings |
| C | ALGN | CORR | | | Alignments: Civil 3D Corridor |
| C | ALGN | CORR | OTLN | | Alignments: Civil 3D Corridor Boundary |
| C | ALGN | DATA | | | Alignments: Coordinates and Curve Data |
| C | ALGN | LINE | | | Alignments: Lines |
| C | ALGN | PROF | | | Alignments: Design profile |
| C | ALGN | PROF | LINE | EXTN | Alignments: Profile Extension Line |
| C | ALGN | PROF | TEXT | | Alignments: Profile Text |
| C | ALGN | SECT | IDEN | | Alignments: Section Sampling Station |
| C | ALGN | STAT | | | Alignments: Stationing and tick marks |

| | | | | | |
|---|---|---|---|---|---|
| C | ALGN | SYMB | | | Alignments: Alignment symbols |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | ANNO | ANOD | | | General Annotation: Anode |
| C | ANNO | ANOD | TEXT | | General Annotation: Anode Text |
| C | ANNO | DIMS | | | General Annotation: Witness/extension lines, dimension terminators, dimension text |
| C | ANNO | KEYN | | | General Annotation: Reference keynotes with associated leaders |
| C | ANNO | NOTE | | | General Annotation: General notes and remarks |
| C | ANNO | NPLT | | | General Annotation: Non-plotting graphic information |
| C | ANNO | PATT | | | General Annotation: Miscellaneous patterning and hatching |
| C | ANNO | REFR | | | General Annotation: Reference files (AutoCAD users only, see Chapter 4) |
| C | ANNO | SYMB | | | General Annotation: Miscellaneous symbols |
| C | ANNO | TABL | | | General Annotation: Tables |
| C | ANNO | TABL | IDEN | | General Annotation: Table Identification |
| C | ANNO | TABL | PATT | | General Annotation: Table Hatching |
| C | ANNO | TABL | TEXT | | General Annotation: Table Annotation & Data |
| C | ANNO | TEXT | | | General Annotation: Miscellaneous text and callouts with associated leaders |
| **APRONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | APRN | ACPK | | | Aprons: Aircraft gate/stand parking area |
| C | APRN | CNTR | | | Aprons: Centerlines |
| C | APRN | CNTR | IDEN | | Aprons: Centerline annotation |
| C | APRN | DEIC | | | Aprons: Aircraft Deicing Area |
| C | APRN | GRND | | | Aprons: Grounding points |
| C | APRN | HOLD | | | Aprons: Holding position markings |
| C | APRN | IDEN | | | Aprons: Annotation |
| C | APRN | JNTS | | | Aprons: Apron joints |
| C | APRN | MOOR | | | Aprons: Mooring points |
| C | APRN | MRKG | | | Aprons: Apron markings |
| C | APRN | NMOV | | | Aprons: Aircraft non-movement area |
| C | APRN | OTLN | | | Aprons: Airfield apron |
| C | APRN | SERT | | | Aprons: Security zone markings |
| C | APRN | SHLD | MRKG | | Aprons: Shoulder markings |
| C | APRN | SIGN | | | Aprons: Airfield signs on the apron |
| C | AREA | CURB | | | Area: New Curb Areas |
| C | AREA | SIGN | | | Area: New Signage Area |
| **BUILDINGS AND PRIMARY STRUCTURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | BLDG | IDEN | | | Buildings: Building and other structure annotation |
| C | BLDG | OTLN | | | Buildings: Buildings and other structures |
| C | BLDG | OVHD | | | Buildings: Building overhang |
| C | BLDG | PATT | | | Buildings: Building hatching and patterns |

| BORROW AREAS | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | BORW | IDEN | | | Borrow Areas: Borrow/Spoil area annotation |
| C | BORW | LINE | | | Borrow Areas: Borrow/Spoil area |
| **CHANNELS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | CHAN | CNTR | | | Channels: Centerline and survey report lines |
| C | CHAN | CNTR | IDEN | | Channels: Centerline and survey report lines - annotation |
| C | CHAN | DACL | | | Channels: De-authorized channel limits, anchorages, etc. |
| C | CHAN | DACL | IDEN | | Channels: De-authorized channel limits, anchorages, etc. - annotation |
| C | CHAN | IDEN | | | Channels: Limits, anchorages, turning basins, disposal areas, etc. - annotation |
| C | CHAN | LIMT | | | Channels: Limits, anchorages, turning basins, disposal areas, etc. |
| C | CHAN | NAID | | | Channels: Navigation aids and text |
| C | CHAN | TURN | | | Channels: Turning points |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | DETL | ANNO | IDEN | | Details: Identification Annotation |
| C | DETL | ANNO | TEXT | | Details: Annotation |
| C | DETL | CONC | | | Details: Concrete Elements |
| C | DETL | COVR | | | Details: Covers and Fittings |
| C | DETL | ERTH | | | Details: Earth |
| C | DETL | FENC | | | Details: Fencing |
| C | DETL | FENC | SERT | | Details: Security Fencing |
| C | DETL | FILL | | | Details: Fill and Hatching |
| C | DETL | FSTN | | | Details: Fasteners |
| C | DETL | GENF | | | Details: General features (miscellaneous items) |
| C | DETL | GRPH | | | Details: Graphics, gridlines, non-text items |
| C | DETL | INPD | | | Details: Inch-pound-specific dimensions and notes |
| C | DETL | METR | | | Details :Metric-specific dimensions and notes |
| C | DETL | PIPE | | | Details: Piping |
| C | DETL | PVMT | | | Details: Pavements |
| C | DETL | SPCL | | | Details: Special features |
| C | DETL | STRC | | | Details: Structural metal |
| C | DETL | TANK | | | Details: Tanks |
| C | DETL | VALV | | | Details: Valves and fittings |
| **DOMESTIC WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | DOMW | DEVC | ANOD | | Domestic Water: Anode |
| C | DOMW | DEVC | FIRE | | Domestic Water: Fire connection pint other than hydrants |
| C | DOMW | DEVC | INTK | | Domestic Water: Intake point |
| C | DOMW | DEVC | PIGL | | Domestic Water: Pig launch point |
| C | DOMW | DEVC | PIGL | | Water: Water Pig Launch Point |
| C | DOMW | DEVC | PUMP | | Domestic Water: Pump |

| | | | | | |
|---|---|---|---|---|---|
| C | DOMW | DEVC | RECT | | Domestic Water: Rectifier |
| C | DOMW | DEVC | REGL | | Domestic Water: Regulator, reducer |
| C | DOMW | DEVC | SMPL | | Domestic Water: Sample location |
| C | DOMW | DEVC | TEST | | Domestic Water: Anode test station |
| C | DOMW | DEVC | TRET | | Domestic Water: Treatment unit |
| C | DOMW | DEVC | | | Domestic Water: Connectors, faucets, reducers, regulators, vents, intake points, tanks, taps, backflow presenters, and valves |
| C | DOMW | FIRE | | | Domestic Water: Fire lines |
| C | DOMW | FTTG | | | Domestic Water: Caps, cleanouts, crosses, and tees |
| C | DOMW | HYDR | | | Domestic Water: Hydrants |
| C | DOMW | IDEN | | | Domestic Water: Identifier tags, symbol modifier, and text |
| C | DOMW | JBOX | | | Domestic Water: A below grade box or small vault (usually concrete, brick, or cast iron) with above grade access where pipes intersect. Manhole also houses associated fittings, valves, meters, etc. |
| C | DOMW | JBOX | | | Water: Water Junction box |
| C | DOMW | METR | | | Domestic Water: Meters |
| C | DOMW | NHYD | | | Domestic Water: Non-potable hydrants/flushing hydrants |
| C | DOMW | NPW~ | | | Domestic Water: Non-potable water piping |
| C | DOMW | PIPE | A | | Domestic Water: Abandoned piping |
| C | DOMW | PIPE | A | | Water: Abandoned Water Line |
| C | DOMW | PIPE | | | Domestic Water: Main domestic water piping |
| C | DOMW | PITS | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| C | DOMW | PLNT | | | Domestic Water: A water treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment |
| C | DOMW | PUMP | | | Domestic Water: Booster pump stations |
| C | DOMW | REDC | | | Domestic Water: Pressure reducing stations |
| C | DOMW | REDC | | | Water: Water Pressure Reducing Station |
| C | DOMW | RSVR | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| C | DOMW | RSVR | | | Domestic Water: Reservoirs |
| C | DOMW | SERV | | | Domestic Water: Domestic water service piping |
| C | DOMW | SIGN | | | Domestic Water: Surface markers/signs |
| C | DOMW | SIGN | | | Surface markers/signs |
| C | DOMW | SITE | | | Domestic Water: A water utility company or organization's certificated area of jurisdiction or responsibility as approved by a federal, state, or local utility regulatory authority |
| C | DOMW | SRCE | | | Domestic Water: The point from which water is supplied for processing and distribution |
| C | DOMW | SRCE | | | Water: Water Source Site |
| C | DOMW | STNS | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| C | DOMW | TANK | | | Domestic Water: Water storage tanks |
| C | DOMW | VALV | | | Domestic Water: Valve pits/vaults |
| C | DOMW | VENT | | | Domestic Water: Vent pits |
| C | DOMW | WELL | | | Domestic Water: Water well houses |
| | | | | | |
| **DREDGING** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Status | Description |
|---|---|---|---|---|---|
| C | DRED | IDEN | | | Dredging: Dredging annotation |
| C | DRED | LIMT | | | Dredging: Dredge limit lines |
| C | DRED | OHWM | | | Dredging: Ordinary high water marks |
| **DITCHES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | DTCH | BOTM | | | Ditches: Bottom of ditch |
| C | DTCH | CNTR | | | Ditches: Centerline of ditch |
| C | DTCH | EWAT | | | Ditches: Edge of water |
| C | DTCH | IDEN | | | Ditches: Ditch annotation |
| C | DTCH | TOP~ | | | Ditches: Top of ditch |
| **ELEVATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | ELEV | FIXT | | | Elevations: Miscellaneous fixtures |
| C | ELEV | IDEN | | | Elevations: Component identification numbers |
| C | ELEV | OTLN | | | Elevations: Building outlines |
| C | ELEV | PATT | | | Elevations: Textures and hatch patterns |
| C | ELEV | SIGN | | | Elevations: Signage |
| **EROSION AND SEDIMENTATION CONTROL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | EROS | CIPR | | | Erosion and Sedimentation Control: Culvert inlet protection |
| C | EROS | CNTE | | | Erosion and Sedimentation Control: Construction entrance |
| C | EROS | DDIV | IDEN | | Erosion and Sedimentation Control: Drainage divide identification |
| C | EROS | DDIV | | | Erosion and Sedimentation Control: Drainage divides |
| C | EROS | DVDK | | | Erosion and Sedimentation Control: Diversion dike |
| C | EROS | IDEN | | | Erosion and Sedimentation Control: Annotation |
| C | EROS | INPR | | | Erosion and Sedimentation Control: Inlet protection |
| C | EROS | LIMI | | | Erosion and Sedimentation Control: Limit of Division |
| C | EROS | SILT | FENC | | Erosion and Sedimentation Control: Silt fence |
| C | EROS | SILT | TRAP | | Erosion and Sedimentation Control: Silt trap |
| C | EROS | SSLT | FENC | | Erosion and Sedimentation Control: Super silt fence |
| C | EROS | | | | Erosion and Sedimentation Control: General |
| **LIQUID FUEL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | FUEL | DEFL | | | Liquid Fuel: Defueling piping |
| C | FUEL | DEVC | AIRE | | Liquid Fuel: Air eliminator |
| C | FUEL | DEVC | ANOD | | Liquid Fuel: Anode |
| C | FUEL | DEVC | FILT | | Liquid Fuel: Filter strainer point |
| C | FUEL | DEVC | OILW | | Liquid Fuel: Oil water separator |
| C | FUEL | DEVC | PUMP | | Liquid Fuel: Pump |
| C | FUEL | DEVC | RECT | | Liquid Fuel: Rectifier |
| C | FUEL | DEVC | REDC | | Liquid Fuel: Reducer |
| C | FUEL | DEVC | SRCE | | Liquid Fuel: Source point |
| C | FUEL | DEVC | TEST | | Liquid Fuel: Anode test station |
| C | FUEL | DEVC | VALV | | Liquid Fuel: Valve |

| | | | | | |
|---|---|---|---|---|---|
| C | FUEL | DEVC | | | Liquid Fuel: Air eliminators, filter strainers, hydrant fill points, line vents, markers, |
| C | FUEL | FARM | | | Liquid Fuel: Fuel farm site |
| C | FUEL | FLOW | | | Liquid Fuel: Flow direction arrows |
| C | FUEL | FTTG | | | Liquid Fuel: Caps, crosses, and tees |
| C | FUEL | HYDR | | | Liquid Fuel: Hydrant control pits |
| C | FUEL | IDEN | | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| C | FUEL | JBOX | | | Liquid Fuel: Junction boxes, manholes, handholes, test boxes |
| C | FUEL | METR | | | Liquid Fuel: Meters |
| C | FUEL | PIPE | A | | Liquid Fuel: Abandoned piping |
| C | FUEL | PIPE | SEGM | | Liquid Fuel: Pipeline segment line |
| C | FUEL | PIPE | | | Liquid Fuel: Main fuel piping |
| C | FUEL | PIPE | | | Liquid Fuel: Pipe line |
| C | FUEL | PITS | IDEN | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| C | FUEL | PUMP | | | Liquid Fuel: Booster pump stations |
| C | FUEL | REFN | | | Liquid Fuel: Refinery site |
| C | FUEL | SERV | | | Liquid Fuel: Service piping |
| C | FUEL | STNS | IDEN | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| C | FUEL | TANK | | | Liquid Fuel: Fuel tanks |
| C | FUEL | TRCH | | | Liquid Fuel: Fuel line trench |
| C | FUEL | VALV | | | Liquid Fuel: Valve pits |
| C | FUEL | VENT | | | Liquid Fuel: Vent pits |
| **GLYCOL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | GLYC | COUT | | | Glycol: Deicing Line Clean Out |
| C | GLYC | CULV | CEND | | Glycol: Deicing Culvert End |
| C | GLYC | CULV | CNTR | | Glycol: Deicing Culvert Centerline |
| C | GLYC | DBAS | | | Glycol: Deicing Drainage Basin |
| C | GLYC | DDIV | | | Glycol: Deicing Drainage Divide |
| C | GLYC | DISC | | | Glycol: Deicing Discharge Point |
| C | GLYC | FLOW | | | Glycol: Deicing Flow Control Point |
| C | GLYC | FTTG | | | Glycol: Deicing Fitting |
| C | GLYC | INLT | | | Glycol: Deicing Inlet |
| C | GLYC | JBOX | | | Glycol: Deicing Junction |
| C | GLYC | LIFT | | | Glycol: Deicing Lift Station |
| C | GLYC | LINE | RETN | | Glycol: Deicing Return Line |
| C | GLYC | LINE | SPLY | | Glycol: Deicing Supply Line |
| C | GLYC | LINE | | | Glycol: Deicing Line |
| C | GLYC | MARK | | | Glycol: Deicing Marker |
| C | GLYC | MHOL | | | Glycol: Deicing Manhole |
| C | GLYC | PUMP | | | Glycol: Deicing Pump |
| C | GLYC | RESV | | | Glycol: Deicing Reservoir |
| C | GLYC | STAT | | | Glycol: Deicing Pump Station |
| C | GLYC | TANK | | | Glycol: Deicing Tank |
| C | GLYC | VALT | | | Glycol: Deicing Vault |

| | | | | | |
|---|---|---|---|---|---|
| C | GLYC | VALV | | | Glycol: Deicing Valve |
| **GRADE LINEWORK** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | GRAD | CUTS | | | Grade Linework: Cut Material |
| C | GRAD | E | | | Grade Linework: Existing grade, ground line |
| C | GRAD | FILL | | | Grade Linework: Fill Material |
| C | GRAD | FNSH | | | Grade Linework: Finished grade |
| C | GRAD | MASS | FREE | | Grade Linework: Free Haul Area |
| C | GRAD | MASS | IDEN | | Grade Linework: Mass Haul Identification |
| C | GRAD | MASS | LINE | | Grade Linework: Mass Haul Linework |
| C | GRAD | MASS | MAJR | | Grade Linework: Mass Haul Major Grids |
| C | GRAD | MASS | MINR | | Grade Linework: Mass Haul Minor Grids |
| C | GRAD | MASS | OTLN | | Grade Linework: Mass Haul Outline |
| C | GRAD | MASS | OVER | | Grade Linework: Overhaul Area |
| C | GRAD | MASS | TEXT | | Grade Linework: Mass Haul Annotation |
| C | GRAD | TEXT | | | Grade Linework: Annotation |
| C | GRAD | | | | Grade Linework: Grading |
| **GRID LINES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | GRID | FRAM | | | Grid Lines: Frame (bounding frame of an area referenced by a grid) |
| C | GRID | MAJR | | | Grid Lines: Major grid lines |
| C | GRID | MINR | | | Grid Lines: Minor grid lines |
| C | GRID | TEXT | | | Grid Lines: Border text, annotation |
| **HELIPORTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | HELI | BLST | | | Heliports: Helipad blast pad and stopway markings |
| C | HELI | CNTR | MRKG | | Heliports: Centerline markings |
| C | HELI | CNTR | | | Heliports: Centerline |
| C | HELI | DIST | | | Heliports: Fixed distance markings |
| C | HELI | DSPL | | | Heliports: Displaced threshold markings |
| C | HELI | DSRF | | | Heliports: Helipad design surface |
| C | HELI | FATO | | | Heliports: Helipad FATO - Final Approach and Takeoff |
| C | HELI | IDEN | | | Heliports: Heliport numbers and letters |
| C | HELI | SHLD | | | Heliports: Shoulder |
| C | HELI | SIDE | | | Heliports: Side stripes |
| C | HELI | TDZM | | | Heliports: Touchdown zone markers |
| C | HELI | THRS | | | Heliports: Threshold markers |
| C | HELI | TLOF | | | Heliports: Helipad take off and landing area |
| **INDUSTRIAL WASTE WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | IW~~ | DEVC | ANOD | | Industrial Waste Water: Anode |
| C | IW~~ | DEVC | DISC | | Industrial Waste Water: Discharge point |
| C | IW~~ | DEVC | FTTG | | Industrial Waste Water: Waste fitting |
| C | IW~~ | DEVC | GRIT | | Industrial Waste Water: Grit chamber |

| | | | | | |
|---|---|---|---|---|---|
| C | IW~~ | DEVC | INLT | | Industrial Waste Water: Inlet |
| C | IW~~ | DEVC | NEUT | | Industrial Waste Water: Neutralizer |
| C | IW~~ | DEVC | OILW | | Industrial Waste Water: Oil water separator |
| C | IW~~ | DEVC | PUMP | | Industrial Waste Water: Pump |
| C | IW~~ | DEVC | RECT | | Industrial Waste Water: Rectifier |
| C | IW~~ | DEVC | TEST | | Industrial Waste Water: Anode test station |
| C | IW~~ | DEVC | | | Industrial Waste Water: Grit chambers, meters, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves |
| C | IW~~ | FLOW | | | Industrial Waste Water: Flow direction arrows |
| C | IW~~ | FTTG | | | Industrial Waste Water: Caps and cleanouts |
| C | IW~~ | HEAD | LINE | | Industrial Waste Water: Headwall line |
| C | IW~~ | HEAD | NODE | | Industrial Waste Water: Headwall point |
| C | IW~~ | IDEN | | | Industrial Waste Water: Identifier tags, symbol modifier, and text |
| C | IW~~ | JBOX | | | Industrial Waste Water: Junction boxes and manholes |
| C | IW~~ | LAGN | | | Industrial Waste Water: Lagoons |
| C | IW~~ | LIFT | | | Industrial Waste Water: Lift stations |
| C | IW~~ | METR | | | Industrial Waste Water: Meters |
| C | IW~~ | PIPE | A | | Industrial Waste Water: Abandoned piping |
| C | IW~~ | PIPE | | | Industrial Waste Water: Main industrial waste water piping |
| C | IW~~ | PLNT | | | Industrial Waste Water: Treatment plants |
| C | IW~~ | RSVR | IDEN | | Industrial Waste Water: Identifier tags, symbol modifier, and text |
| C | IW~~ | SERV | | | Industrial Waste Water: Industrial waste water service piping |
| C | IW~~ | SIGN | | | Industrial Waste Water: Surface markers/signs |
| C | IW~~ | STNS | IDEN | | Industrial Waste Water: Identifier tags, symbol modifier, and text |
| **JOINTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | JNTS | CNTJ | LONG | | Joints: Construction joints - longitudinal |
| C | JNTS | CNTJ | TRAV | | Joints: Construction joints - transverse |
| C | JNTS | CNTT | LONG | | Joints: Contraction joints - longitudinal |
| C | JNTS | CNTT | TRAV | | Joints: Contraction joints - transverse |
| C | JNTS | EDGE | | | Joints: Thickened edges |
| C | JNTS | EXPJ | | | Joints: Expansion joints |
| C | JNTS | IDEN | | | Joints: Joint annotation |
| **MARKING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | MRKG | AREA | | | Marking: New Marking Area |
| **MAINTENANCE OF TRAFFIC** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | MTRF | PHS1 | | | Maintance of Traffic: Phase 1 |
| C | MTRF | PHS2 | | | Maintance of Traffic: Phase 2 |
| C | MTRF | PHS3 | | | Maintance of Traffic: Phase 3 |
| C | MTRF | PHS4 | | | Maintance of Traffic: Phase 4 |
| C | MTRF | PHS5 | | | Maintance of Traffic: Phase 5 |
| **NATURAL GAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |

| | | | | | |
|---|---|---|---|---|---|
| C | NGAS | DEVC | ANOD | | Natural Gas: Anode |
| C | NGAS | DEVC | FILL | | Natural Gas: Fill point |
| C | NGAS | DEVC | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| C | NGAS | DEVC | LITE | | Natural Gas: Light |
| C | NGAS | DEVC | PUMP | | Natural Gas: Pump |
| C | NGAS | DEVC | RECT | | Natural Gas: Rectifier |
| C | NGAS | DEVC | SRCE | | Natural Gas: Source point |
| C | NGAS | DEVC | TEST | | Natural Gas: Anode test station |
| C | NGAS | DEVC | | | Natural Gas: Hydrant fill points, lights, vents, markers, rectifiers, reducers, regulators, |
| C | NGAS | FLOW | | | Natural Gas: Flow direction arrows |
| C | NGAS | FTTG | | | Natural Gas: Caps, crosses, and tees |
| C | NGAS | IDEN | | | Natural Gas: Identifier tags, symbol modifier, and text |
| C | NGAS | METR | | | Natural Gas: Meters |
| C | NGAS | PIPE | A | | Natural Gas: Abandoned piping |
| C | NGAS | PIPE | | | Natural Gas: Main natural gas piping |
| C | NGAS | PITS | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| C | NGAS | PUMP | | | Natural Gas: Compressor stations |
| C | NGAS | REDC | | | Natural Gas: Reducing stations |
| C | NGAS | SERV | | | Natural Gas: Service piping |
| C | NGAS | SIGN | | | Natural Gas: Surface markers/signs |
| C | NGAS | STNS | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| C | NGAS | TANK | | | Gas: Gas Tank |
| C | NGAS | VALV | | | Natural Gas: Valve pits/boxes |
| C | NGAS | VALV | | | Valve pits/boxes |
| C | NGAS | VENT | | | Natural Gas: Vent pits |
| **OVERRUN AREAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | OVRN | CNTR | IDEN | | Overrun Areas: Centerline annotation |
| C | OVRN | CNTR | | | Overrun Areas: Centerlines |
| C | OVRN | IDEN | | | Overrun Areas: Airfield overrun area - annotation |
| C | OVRN | JNTS | | | Overrun Areas: Airfield overrun joints |
| C | OVRN | OTLN | | | Overrun Areas: Airfield overrun area - outlines |
| C | OVRN | SHLD | | | Overrun Areas: Shoulder markings |
| **PADS (arm / disarm / calibration, etc.)** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | PADS | CNTR | IDEN | | Pads: Centerline annotation |
| C | PADS | CNTR | | | Pads: Centerlines |
| C | PADS | IDEN | | | Pads: Annotation |
| C | PADS | OTLN | | | Pads: Outlines |
| C | PADS | SHLD | | | Pads: Shoulders with annotation |
| **PARKING LOTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | PRKG | CARS | | | Parking Lots: Graphic illustration of cars |
| C | PRKG | CNTR | IDEN | | Parking Lots: Centerline annotation |

| | | | | | |
|---|---|---|---|---|---|
| C | PRKG | CNTR | | | Parking Lots: Centerlines |
| C | PRKG | CURB | | | Parking Lots: Curbs and gutters |
| C | PRKG | DRAN | | | Parking Lots: Parking lot drainage slope indications |
| C | PRKG | EQPM | | | Parking Lots: Parking Equipment (I.e. booths, gates, etc.) |
| C | PRKG | FIXT | | | Parking Lots: Fixtures (e.g., wheel stops, parking meters) |
| C | PRKG | IDEN | | | Parking Lots: Minor road, and curb annotation |
| C | PRKG | ISLD | | | Parking Lots: Parking islands |
| C | PRKG | MRKG | | | Parking Lots: Striping, handicapped symbols, pavement markings |
| C | PRKG | OTLN | | | Parking Lots: Lot outline |
| C | PRKG | SBMP | | | Parking Lots: Speed bumps in parking areas |
| C | PRKG | SIGN | | | Parking Lots: Lot signage |
| **PROFILES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | PROF | CUTS | IDEN | | Profiles: Existing grade and grading cuts - annotation |
| C | PROF | DATA | | | Profiles: Alignment coordinates and curve data |
| C | PROF | E | | | Profiles: Existing Grade |
| C | PROF | FILL | | | Profiles: New work, grading fills |
| C | PROF | FNSH | | | Profiles: Finished Grade |
| C | PROF | GRID | GEOM | | Profiles: Geometry Point Grid Lines |
| C | PROF | GRID | MAJR | | Profiles: Major Grid Lines |
| C | PROF | GRID | MINR | | Profiles: Minor Grid Lines |
| C | PROF | IDEN | | | Profiles: Identification Labels |
| C | PROF | INLT | | | Profiles: Curb and surface inlets, catch basins |
| C | PROF | LINE | EXTN | E | Profiles: Existing Grade Extension Lines |
| C | PROF | MHOL | | | Profiles: Manholes |
| C | PROF | OTLN | | | Profiles: Grid Outline |
| C | PROF | PIPE | | | Profiles: Piping |
| C | PROF | PROJ | | | Profiles: Projected Objects |
| C | PROF | ROAD | | | Profiles: Roads |
| C | PROF | SSWR | | | Profiles: Sanitary Sewer |
| C | PROF | STAT | | | Profiles: Stationing and tick marks |
| C | PROF | STRM | | | Profiles: Storm Sewer |
| C | PROF | TEXT | E | | Profiles: Existing Grade Text |
| C | PROF | TEXT | | | Profiles: Text Annotation |
| **PROPERTY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | PROP | BRNG | | | Property: Bearings and distance labels |
| C | PROP | CONS | | | Property: Construction limits/controls, staging area |
| C | PROP | ESMT | | | Property: Easements |
| C | PROP | IDEN | | | Property: Identification Annotation |
| C | PROP | LEAS | | | Property: Lease line (exterior / ground lease) |
| C | PROP | LINE | | | Property: Line |
| C | PROP | PROP | | | Cadastral: Airport Boundary |
| C | PROP | RWAY | | | Property: Right of ways |
| C | PROP | TEXT | | | Property: General Annotation |

| PAVEMENTS | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | PVMT | AREA | E | | Pavements: Existing Pavement Area |
| C | PVMT | AREA | | | Pavements: New Pavement Area |
| C | PVMT | ASPH | | | Pavements: Asphalt Pattern |
| C | PVMT | CONC | | | Pavements: Concrete Pattern |
| C | PVMT | GROV | | | Pavements: Pavement Grooving |
| C | PVMT | GRVL | | | Pavements: Gravel Pattern |
| C | PVMT | IDEN | | | Pavements: Road, parking lot, railroad, airfield pavement identification annotation |
| C | PVMT | MRKG | TEXT | | Pavements: Road, parking lot, railroad, airfield pavement text annotation |
| C | PVMT | MRKG | WHIT | | Pavements: Roadway markings (white) |
| C | PVMT | MRKG | YELO | | Pavements: Roadway markings (yellow) |
| C | PVMT | MRKG | | | Pavements: Pavement markings |
| C | PVMT | PATT | | | Pavements: Joint patterns, text and dimensions |
| C | PVMT | REPR | | | Pavements: Pavement Repair |
| C | PVMT | ROAD | | | Pavements: Roads, parking lots, railroads, airfield pavements |
| C | PVMT | SBMP | | | Pavements: Speed bumps on roadways |
| C | PVMT | SIGN | | | Pavements: Other signs |
| C | PVMT | TEXT | | | Pavements: Annotation |
| **RAILROADS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | RAIL | BRDG | CNTR | | Railroads: Bridge Centerline |
| C | RAIL | BRDG | | | Railroads: Bridge area |
| C | RAIL | CNTR | IDEN | | Railroads: Centerline annotation |
| C | RAIL | CNTR | | | Railroads: Centerlines |
| C | RAIL | EQPM | | | Railroads: Equipment (e.g., gates, signals) |
| C | RAIL | IDEN | | | Railroads: Annotation |
| C | RAIL | TRAK | | | Railroads: Track |
| C | RAIL | YARD | | | Railroads: Yard |
| **ROADS, STREETS, HIGHWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | ROAD | ASPH | | | Roadways: Asphalt surface outline |
| C | ROAD | AUTO | | | Roadways: AutoTURN |
| C | ROAD | CHAN | | | Roadways: Channelizing Devices |
| C | ROAD | CNTR | IDEN | | Roadways: Centerline annotation |
| C | ROAD | CNTR | | | Roadways: Centerlines |
| C | ROAD | CONC | | | Roadways: Concrete surface outline |
| C | ROAD | CORR | PATT | | Roadways: Civil 3D Corridor Hatching |
| C | ROAD | CORR | | | Roadways: Civil 3D Corridors |
| C | ROAD | CURB | | | Roadways: Curbs |
| C | ROAD | DATA | | | Roadways: Alignment coordinates and curve data |
| C | ROAD | DRIV | CNTR | | Roadways: Driveway centerline |
| C | ROAD | DRIV | | | Roadways: Driveway edge of pavement |

| | | | | | |
|---|---|---|---|---|---|
| C | ROAD | GRAL | | | Roadways: Guardrails |
| C | ROAD | GRVL | | | Roadways: Gravel surface outline |
| C | ROAD | IDEN | | | Roadways: Identification annotation |
| C | ROAD | INTS | | | Roadways: Intersections |
| C | ROAD | LINE | EXTN | | Roadways: Alignment extension lines |
| C | ROAD | MRKG | | | Roadways: Pavement markings |
| C | ROAD | OTLN | | | Roads |
| C | ROAD | SHLD | | | Roadways: Roadway shoulder |
| C | ROAD | SIGN | | | Roadways: Roadway signs |
| C | ROAD | STAT | | | Roadways: Stationing and tick marks |
| C | ROAD | TABL | | | Roadways: Tables |
| C | ROAD | TEXT | | | Roadways: Annotation |
| C | ROAD | UPVD | | | Roadways: Unpaved surface outline |
| **RUNWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | RUNW | ARST | | | Runways: Runway arresting area |
| C | RUNW | ARST | | | Runways: Runway Arresting Gear Location |
| C | RUNW | ARST | | | Runway Arresting Gear Location |
| C | RUNW | BLST | | | Runways: Runway blast pad |
| C | RUNW | CLRW | | | Runways: Runway clearway |
| C | RUNW | CNTR | MRKG | | Runways: Centerline markings |
| C | RUNW | CNTR | | | Runways: Runway Centerline |
| C | RUNW | DIST | | | Runways: Fixed distance markings |
| C | RUNW | DSPL | | | Runways: Displaced threshold |
| C | RUNW | DSRF | RPZN | | Airfield: Runway Protection Zone |
| C | RUNW | DSRF | RPZN | | Runway Protection Zone |
| C | RUNW | DSRF | SFTY | | Airfield: Runway Safety Area |
| C | RUNW | DSRF | SFTY | | Runway Safety Area |
| C | RUNW | EDGE | | | Runways: Airfield runway edges |
| C | RUNW | ENDP | MRKG | | Runways: Runway label marking point |
| C | RUNW | ENDP | | | Runways: Runway endpoint |
| C | RUNW | IDEN | | | Runways: Runway numbers and letters |
| C | RUNW | INTS | | | Runways: Runway intersection |
| C | RUNW | LAHS | | | Runways: Runway land and hold short area |
| C | RUNW | LINE | EXTN | | Runways: Runway alignment extension line |
| C | RUNW | OBFA | | | Runways: Object Free Area |
| C | RUNW | SEGM | | | Runways: Runway segment |
| C | RUNW | SFTY | | | Runways: Runway Safety Area |
| C | RUNW | SHLD | | | Runways: Runway Shoulder |
| C | RUNW | SHLD | | | Runways: Shoulder markings |
| C | RUNW | SIDE | | | Runways: Side stripes |
| C | RUNW | SIGN | | | Runways: Airfield signs on the runway such as distance remaining signs |
| C | RUNW | STWY | | | Runways: Runway stopway markings |
| C | RUNW | TDZM | | | Runways: Touchdown zone markers |

| | | | | | |
|---|---|---|---|---|---|
| C | RUNW | THRS | | | Runways: Threshold markers |
| **SEAPLANES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | SEAP | BUOY | | | Seaplanes: Navigation buoy |
| C | SEAP | DOCK | | | Seaplanes: Dock |
| C | SEAP | LNDA | | | Seaplanes: Landing area |
| C | SEAP | RAMP | CNTR | | Seaplanes: Ramp centerline |
| C | SEAP | RAMP | | | Seaplanes: Ramp site |
| **SECTIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | SECT | GRID | GRAD | | Sections: Geometry Gridlines |
| C | SECT | GRID | MAJR | | Sections: Major Gridlines |
| C | SECT | GRID | MINR | | Sections: Minor Gridlines |
| C | SECT | IDEN | | | Sections: Component identification numbers |
| C | SECT | MBND | | | Sections: Material beyond section cut |
| C | SECT | MCUT | | | Sections: Material cut by section |
| C | SECT | OTLN | | | Sections: Grid Outline |
| C | SECT | PATT | | | Sections: Textures and hatch patterns |
| C | SECT | PROJ | | | Sections: Projected Objects |
| C | SECT | ROAD | | | Sections: Roadways |
| C | SECT | SSWR | | | Sections: Sanitary Sewer |
| C | SECT | STAT | | | Sections: Stationing and Tick Marks |
| C | SECT | STRM | | | Sections: Storm Sewer |
| C | SECT | TABL | IDEN | | Sections: Table Identification and Titles |
| C | SECT | TABL | PATT | | Sections: Table Hatching |
| C | SECT | TABL | TEXT | | Sections: Table Text and Data |
| C | SECT | TABL | | | Sections: Tables |
| C | SECT | TEXT | | | Sections: Annotation |
| C | SECT | VIEW | | | Sections: Civil 3D Section Views |
| **SITE FEATURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | SITE | BARR | | | Site Features: Beam barricade |
| C | SITE | EROS | IDEN | | Site Features: Riprap, revetment/stone protection, breakwater, dike, jetty, and drain annotation |
| C | SITE | EROS | | | Site Features: Riprap, revetments/stone protection, breakwaters, dikes, jetties, and drains |
| C | SITE | FENC | IDEN | | Site Features: Fence, handrail, ramp, sign, and trail annotation |
| C | SITE | FENC | POST | | Site Features: Fence Posts |
| C | SITE | FENC | | | Site Features: Fences and handrails |
| C | SITE | GATE | | | Site Features: Gates along fences or other barriers intended to restrict access |
| C | SITE | IDEN | | | Site Features: Identification annotation |
| C | SITE | IMPR | | | Site Features: Site improvements (channel or levee features) |
| C | SITE | LIMI | | | Site Features: Project Limits of Disturbance |
| C | SITE | SERT | CMRA | | Site Features: Security camera locations outside of buildings |

| | | | | | |
|---|---|---|---|---|---|
| C | SITE | SIGN | | | Site Features: Signage |
| C | SITE | STRC | | | Site Features: Structures (bridges, sheds, foundation pads, footings, etc.) |
| C | SITE | STRS | | | Site Features: Stairs and ramps |
| C | SITE | SYMB | | | Site Features: Symbols |
| C | SITE | WALK | | | Site Features: Walks, trails and bicycle paths |
| **SANITARY SEWER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | SSWR | CNTR | | | Sanitary Sewer: Centerlines |
| C | SSWR | DEVC | ANOD | | Sanitary Sewer: Anode |
| C | SSWR | DEVC | DISC | | Sanitary Sewer: Discharge point |
| C | SSWR | DEVC | DNWS | | Sanitary Sewer: Downspout point |
| C | SSWR | DEVC | GRIT | | Sanitary Sewer: Grit chamber |
| C | SSWR | DEVC | GRSE | | Sanitary Sewer: Grease trap |
| C | SSWR | DEVC | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | DEVC | INLT | | Sanitary Sewer: Inlet Device |
| C | SSWR | DEVC | METR | | Sanitary Sewer: Meters |
| C | SSWR | DEVC | NEUT | | Sanitary Sewer: Neutralizer |
| C | SSWR | DEVC | OILW | | Sanitary Sewer: Oil water separator |
| C | SSWR | DEVC | PUMP | | Sanitary Sewer: Pump |
| C | SSWR | DEVC | RECT | | Sanitary Sewer: Rectifier |
| C | SSWR | DEVC | TEST | | Sanitary Sewer: Anode test station |
| C | SSWR | DEVC | TRET | | Sanitary Sewer: Treatment unit |
| C | SSWR | DEVC | VALV | | Sanitary Sewer: Valve |
| C | SSWR | DEVC | | | Sanitary Sewer: Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves |
| C | SSWR | FILT | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | FILT | | | Sanitary Sewer: Filtration beds |
| C | SSWR | FLOW | | | Sanitary Sewer: Flow direction arrows |
| C | SSWR | FTTG | | | Sanitary Sewer: Caps and cleanouts |
| C | SSWR | IDEN | | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | JBOX | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | JBOX | PATT | | Sanitary Sewer: Junction boxes and manhole hatching |
| C | SSWR | JBOX | | | Sanitary Sewer: Junction boxes and manholes |
| C | SSWR | LAGN | | | Sanitary Sewer: Lagoons |
| C | SSWR | LEAC | LAGN | | Sanitary Sewer: Leach Field Lagoon |
| C | SSWR | LEAC | SBED | | Sanitary Sewer: Sludge bed |
| C | SSWR | LEAC | | | Sanitary Sewer: Leach field |
| C | SSWR | MHOL | | | Sanitary Sewer: Manholes |
| C | SSWR | NITF | | | Sanitary Sewer: Nitrification drain fields |
| C | SSWR | PIPE | A | | Sanitary Sewer: Abandoned piping |
| C | SSWR | PIPE | PATT | | Sanitary Sewer: New sanitary sewer piping hatching |
| C | SSWR | PIPE | | | Sanitary Sewer: Piping |
| C | SSWR | PLNT | | | Sanitary Sewer: Treatment plants |
| C | SSWR | PUMP | | | Sanitary Sewer: Booster pump stations |

| | | | | | |
|---|---|---|---|---|---|
| C | SSWR | RSVR | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | SERV | | | Sanitary Sewer: Service piping |
| C | SSWR | SIGN | | | Sanitary Sewer: Surface markers/signs |
| C | SSWR | SITE | | | Sanitary Sewer: A wastewater utility company or organization's certificated area of jurisdiction of responsibility as approved by a federal, state, or local utility regulatory authority |
| C | SSWR | STNS | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| C | SSWR | TANK | DISP | | Sanitary Sewer: Disposal tanks |
| C | SSWR | TANK | | | Sanitary Sewer: Septic tanks |
| C | SSWR | TEXT | | | Sanitary Sewer: Annotation |
| C | SSWR | TRET | | | Sanitary Sewer: A wastewater treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment |
| **STRUCTURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | STRC | IDEN | | | Structures: Bridges, piers, breakwaters, docks, floats, etc. - annotation |
| C | STRC | OTLN | | | Structures: Bridges, piers, breakwaters, docks, floats, etc. - outlines |
| C | STRC | TOWR | | | Structures: Tower |
| **STORM SEWERS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | STRM | AFFF | | | Storm Sewer: AFFF lagoon/detention pond |
| C | STRM | CHUT | | | Storm Sewer: Chutes and concrete erosion control structures |
| C | STRM | CNTR | | | Storm Sewer: Centerlines |
| C | STRM | CULV | CNTR | | Storm Sewer: Culvert centerline |
| C | STRM | CULV | LINE | | Storm Sewer: Culvert line |
| C | STRM | CULV | | | Storm Sewer: Culverts |
| C | STRM | DEVC | | | Storm Sewer: Downspouts, flumes, oil/water separators, and flap gates |
| C | STRM | DRAN | DIVL | | Storm Sewer: Drainage divide line |
| C | STRM | DRAN | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| C | STRM | DRAN | LINE | | Storm Sewer: Open drainage line |
| C | STRM | EROS | SILT | | Storm Sewer: Silt Fence |
| C | STRM | EROS | SSLT | | Storm Sewer: Super Silt Fence |
| C | STRM | EROS | TANK | | Storm Sewer: Portable Sediment Tank |
| C | STRM | EROS | | | Storm Sewer: Erosion control (riprap) |
| C | STRM | FLHA | | | Storm Sewer: Flood area |
| C | STRM | FLOW | | | Storm Sewer: Flow direction arrows |
| C | STRM | FMON | | | Storm Sewer: Flow monitoring station |
| C | STRM | FTTG | | | Storm Sewer: Caps and cleanouts |
| C | STRM | HWAL | | | Storm Sewer: Headwalls and endwalls |
| C | STRM | IDEN | | | Storm Sewer: Identifier tags, symbol modifier, and text |
| C | STRM | INLT | | | Storm Sewer: New Inlets (curb, surface, and catch basins) |
| C | STRM | INLT | | | Storm Sewer: Inlets (curb, surface, and catch basins) |
| C | STRM | JBOX | | | Storm Sewer: Junction |

| | | | | | |
|---|---|---|---|---|---|
| C | STRM | LAGN | BASN | | Storm Sewer: Drainage basin |
| C | STRM | LAGN | OPEN | | Storm Sewer: Open drainage area |
| C | STRM | LAGN | RESV | NODE | Storm Sewer: Reservoir point |
| C | STRM | LAGN | STIL | | Storm Sewer: Stilling basin |
| C | STRM | LAGN | | | Storm Sewer: Lagoons, ponds, watersheds, and basins |
| C | STRM | MHOL | | | Storm Sewer: Manholes |
| C | STRM | PATT | | | Storm Sewer: Hatching |
| C | STRM | PIPE | A | | Storm Sewer: Abandoned piping |
| C | STRM | PIPE | PATT | | Storm Sewer: Storm Piping Hatching |
| C | STRM | PIPE | TEXT | | Storm Sewer: Annotation |
| C | STRM | PIPE | | | Storm Sewer: Piping |
| C | STRM | PUMP | | | Storm Sewer: Pump stations |
| C | STRM | ROOF | | | Storm Sewer: Roof drain line |
| C | STRM | RSVR | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| C | STRM | SERV | | | Storm Sewer: Service piping |
| C | STRM | SIGN | | | Storm Sewer: Surface markers/signs |
| C | STRM | STAT | PUMP | | Storm Sewer: Pump station |
| C | STRM | STNS | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| C | STRM | STRC | PATT | | Storm Sewer: Structures Hatching |
| C | STRM | STRC | | | Storm Sewer: Storm drainage, headwalls, inlets, manholes, culverts, and drainage structures |
| C | STRM | SUBS | | | Storm Sewer: Subsurface drain piping |
| C | STRM | TABL | | | Storm Sewer: Tables |
| C | STRM | TEXT | | | Storm Sewer: Annotation |
| **SURVEY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | SURV | DATA | | | Survey: Survey data (benchmarks and horizontal control points or monuments) |
| C | SURV | IDEN | | | Survey: Baseline, and control line annotation |
| C | SURV | LINE | | | Survey: Baseline, and control lines |
| **TAXIWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | TAXI | ACCS | | | Taxiways: Contractor Access Route |
| C | TAXI | CNTR | IDEN | | Taxiways: Centerline annotation |
| C | TAXI | CNTR | MRKG | | Taxiways: Centerline markings |
| C | TAXI | CNTR | | | Taxiways: Centerline |
| C | TAXI | EDGE | | | Taxiways: Edge markings |
| C | TAXI | HOLD | | | Taxiways: Holding lines |
| C | TAXI | IDEN | | | Taxiways: Annotation |
| C | TAXI | INTS | | | Taxiways: Intersection |
| C | TAXI | JNTS | | | Taxiways: Joints |
| C | TAXI | OFA | | | Taxiways: Object Free Area |
| C | TAXI | OTLN | | | Taxiways: Outlines |
| C | TAXI | SFTY | | | Taxiways: Safety Area |
| C | TAXI | SHLD | | | Taxiways: Shoulder transverse stripes |

| | | | | | |
|---|---|---|---|---|---|
| C | TAXI | SIGN | | | Taxiways: Airfield signs on the taxiway such as taxiway designator, hold short and directional signs |
| **TOPOGRAPHY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | TOPO | AUCO | | | Topography: Noise Complaint |
| C | TOPO | AUST | | | Topography: Noise Monitoring Station |
| C | TOPO | AUZN | | | Topography: Noise Contour/Zone |
| C | TOPO | BORE | | | Topography: Boring locations |
| C | TOPO | BRKL | | | Topography: Breaklines |
| C | TOPO | FDPL | | | Topography: Flood Zone |
| C | TOPO | GRID | COOR | | Topography: Coordinate grid ticks and text |
| C | TOPO | MAJR | IDEN | | Topography: Major contours - annotation |
| C | TOPO | MAJR | | | Topography: Major contours |
| C | TOPO | MINR | IDEN | | Topography: Minor contours - annotation |
| C | TOPO | MINR | ONEF | | Topography: Minor contours - One Foot Intervals |
| C | TOPO | MINR | TWOF | | Topography: Minor contours - Two Foot Intervals |
| C | TOPO | MINR | | | Topography: Minor contours |
| C | TOPO | NSCO | | | Topography: Noise Complaint |
| C | TOPO | NSST | | | Topography: Noise Monitoring Station |
| C | TOPO | NSZN | | | Topography: Noise Contour/Zone |
| C | TOPO | RTWL | | | Topography: Retaining wall |
| C | TOPO | RUNW | NODE | | Topography: Runway centerline elevation point |
| C | TOPO | SHOR | | | Topography: Shorelines, land features, and references |
| C | TOPO | SLOP | CUTS | | Topography: Cut slopes |
| C | TOPO | SLOP | FILL | | Topography: Fill slopes |
| C | TOPO | SLOP | IDEN | | Topography: Cut/fill slope, top/toe slope annotation |
| C | TOPO | SLOP | TOPT | | Topography: Top/toe slopes |
| C | TOPO | SLOP | | | Topography: Cut/fill slopes |
| C | TOPO | SOUN | | | Topography: Soundings and overbanks |
| C | TOPO | SPOT | IDEN | | Topography: Spot elevations - annotation |
| C | TOPO | SPOT | | | Topography: Spot elevations |
| C | TOPO | TEXT | | | Topography: Annotation |
| C | TOPO | TINN | BNDY | | Topography: DTM Boundaries |
| C | TOPO | TINN | NODE | | Topography: DTM points |
| C | TOPO | TINN | | | Topography: DTM triangles |
| C | TOPO | USER | | | Topography: User Specified Contour |
| C | TOPO | WATR | | | Topography: Water area |
| C | TOPO | WDRP | | | Topography: Water Drop |
| C | TOPO | | | | Topography: DTM |
| **UTILITIES GENERAL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | UTIL | AREA | | | Utilities: Utility area |
| C | UTIL | CNDT | | | Utilities: Conduit centerline |
| C | UTIL | DIST | | | Utilities: Energy distribution control facility |
| C | UTIL | SOLR | | | Utilities: Solar panel |

| | | | | | |
|---|---|---|---|---|---|
| C | UTIL | TANK | | | Utilities: Tank |
| C | UTIL | TUNL | | | Utilities: Tunnel centerline |
| C | UTIL | UDOR | | | Utilities: Utility utilidor line |
| C | UTIL | UNID | LINE | | Utilities: Undefined utility line |
| C | UTIL | UNID | | | Utilities: Undefined feature |
| **WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| C | WATR | PIPE | | | Utilities: Water lines, hydrants, tanks |
| C | WATR | TEXT | | | Utilities: Water Annotation |
| C | WATR | VALV | | | Utilities: Water valves and fittings |

### H-1.5.4 (E) Electrical Layers

| | | | | | |
|---|---|---|---|---|---|
| **AIRFIELD** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | AFLD | CIRC | CTRL | | Control and monitoring circuits |
| E | AFLD | CIRC | MULT | | Multiple circuits |
| E | AFLD | CIRC | SERS | | Series circuits |
| E | AFLD | VALT | | | Airfield lighting vaults |
| **ALARM SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | ALRM | EQPM | | | Alarm system equipment |
| E | ALRM | IDEN | | | Identifier tags, symbol modifier, and text |
| E | ALRM | SYMB | | | Miscellaneous alarm system symbols |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| E | ANNO | KEYN | | | Reference keynotes with associated leaders |
| E | ANNO | NOTE | | | General notes and general remarks |
| E | ANNO | NPLT | | | Non-plotting graphic information |
| E | ANNO | PATT | | | Miscellaneous patterning and hatching |
| E | ANNO | REFR | | | Reference files |
| E | ANNO | SYMB | | | Miscellaneous symbols |
| E | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **BEACONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | BCNS | IDEN | | | Identifier tags, symbol modifier, and text |
| E | BCNS | MISC | | | Miscellaneous navaids - windcones and beacons |
| E | BCNS | STRB | | | Strobe beacons |
| **BELL SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | BELL | EQPM | | | Bell system equipment |
| E | BELL | IDEN | | | Identifier tags, symbol modifier, and text |
| E | BELL | SYMB | | | Bell system symbols |
| **CABLE SYSTEMS** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Status | Description |
|---|---|---|---|---|---|
| E | CABL | COAX | | | Coax cable |
| E | CABL | FIBR | | | Fiber optics cable |
| E | CABL | IDEN | | | Cable identifiers |
| E | CABL | MULT | | | Multi-conductor cable |
| E | CABL | TRAY | | | Cable trays and wireways |
| **CATHODIC PROTECTION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | CATH | ANOD | | | Sacrificial anode system |
| E | CATH | CURR | | | Impress current system |
| E | CATH | IDEN | | | Identifier tags, symbol modifier, and text |
| E | CATH | TEST | | | Test stations |
| **CLOSED-CIRCUIT TELEVISION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | CATV | IDEN | | | Identifier tags, symbol modifier, and text |
| E | CATV | SYMB | | | Cable television system symbols |
| E | CCTV | IDEN | | | Identifier tags, symbol modifier, and text |
| E | CCTV | SYMB | | | Closed-circuit television system symbols |
| **CIRCUITS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | CIRC | CTRL | | | Control and monitoring circuits |
| E | CIRC | IDEN | | | Identifier tags, symbol modifier, and text |
| E | CIRC | MULT | | | Multiple circuits |
| E | CIRC | SERS | | | Series circuits |
| **CLOCK SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | CLOK | IDEN | | | Identifier tags, symbol modifier, and text |
| E | CLOK | SYMB | | | Clock system symbols |
| **COMMUNICATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | COMM | ACCS | | | Access point |
| E | COMM | AIRP | | | Air pipe line |
| E | COMM | COVR | | | Access coverage area |
| E | COMM | DUCT | | | Duct line |
| E | COMM | EQPM | | | Other communications distribution equipment |
| E | COMM | EQPM | AIR~ | | Air pressure device |
| E | COMM | EQPM | AMPL | | Amplifier |
| E | COMM | EQPM | ANTL | | Antenna line |
| E | COMM | EQPM | ANTS | | Antenna site |
| E | COMM | EQPM | ATTN | | Attenuator |
| E | COMM | EQPM | BOTH | | Telephone booth site |
| E | COMM | EQPM | CLAD | | Cable ladder |
| E | COMM | EQPM | CRCK | | Cable rack line |
| E | COMM | EQPM | DSPL | | Dbsplice site |
| E | COMM | EQPM | GPLN | | Ground plane |

| | | | | | |
|---|---|---|---|---|---|
| E | COMM | EQPM | GPNT | | Ground point |
| E | COMM | EQPM | GWAV | | Ground wave |
| E | COMM | EQPM | IMPD | | Impedance matching point |
| E | COMM | EQPM | PHON | | Telephone |
| E | COMM | EQPM | PULB | | Pullbox site |
| E | COMM | EQPM | RELY | | Relay station |
| E | COMM | EQPM | RISR | | Riser |
| E | COMM | EQPM | RPTR | | Repeater |
| E | COMM | EQPM | SATE | | Satellite |
| E | COMM | EQPM | SENS | | Sensor |
| E | COMM | EQPM | SPKR | | Speaker |
| E | COMM | EQPM | SPLC | | Splice |
| E | COMM | EQPM | SPLT | | Splitter |
| E | COMM | EQPM | TMTR | | Terminator |
| E | COMM | EQPM | TRML | | Terminal |
| E | COMM | EQPM | TWIS | | Twisted pair line |
| E | COMM | HAND | | | Handhole |
| E | COMM | INET | SITE | | Internet center site |
| E | COMM | JBOX | | | Communication junction or pull boxes, man/handholes, pedestals, splices |
| E | COMM | LCAP | | | Load capacitor |
| E | COMM | LCOL | | | Load coil |
| E | COMM | LINE | CBRG | | Cable bridge line |
| E | COMM | LINE | LOOP | | Service loop |
| E | COMM | LINE | SEGL | | Segmented cable line |
| E | COMM | LINE | SEGS | | Segmented cable site |
| E | COMM | LOSL | | | Line of sight line |
| E | COMM | MCNV | | | Media converter |
| E | COMM | MHOL | | | Manhole site |
| E | COMM | MHOP | | | Multihop polygon area |
| E | COMM | NETS | | | Network systems site |
| E | COMM | OVHD | | | Overhead communications/telephone lines |
| E | COMM | OVHD | IDEN | | Identifier tags, symbol modifier and text |
| E | COMM | PATH | SITE | | Path node site |
| E | COMM | PATH | SLIN | | Path segment line |
| E | COMM | PEDS | | | Pedestal site |
| E | COMM | RADI | | | Radio |
| E | COMM | RADI | RCVR | | Radio receiver site |
| E | COMM | RADI | TSMR | | Radio transmitter site |
| E | COMM | RADR | | | Radar site |
| E | COMM | SIGN | | | Marker |
| E | COMM | UGND | | | Underground communications/telephone lines |
| E | COMM | UGND | IDEN | | Identifier tags, symbol modifier and text |
| E | COMM | VALT | | | Communications vault site |
| E | COMM | VIDS | | | Video site |

| | | | | | |
|---|---|---|---|---|---|
| E | COMM | VOIC | | | Voice switch site |
| E | COMM | VSIT | | | Vertical site |
| E | COMM | WAVG | | | Waveguide line |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | DETL | GRPH | | | Graphics, gridlines, non-text items |
| E | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| E | DETL | METR | | | Metric-specific dimensions and notes |
| **DIAGRAM INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | DIAG | GRPH | | | Graphics, gridlines, non-text items |
| E | DIAG | IDEN | | | Identifier tags, symbol modifier and text |
| E | DIAG | INPD | | | Inch-pound-specific dimensions and notes |
| E | DIAG | METR | | | Metric-specific dimensions and notes |
| **CENTRAL DICTRATION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | DICT | IDEN | | | Identifier tags, symbol modifier, and text |
| E | DICT | INFO | | | Clearances and working space information (NEC code, etc.) |
| E | DICT | SYMB | | | Central dictation system symbols |
| **UNDERGROUND DUCTBANKS (to be used when multiple systems are in one ductbank system)** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | DUCT | MULT | | | Ductbank |
| E | DUCT | MULT | IDEN | | Identifier tags, symbol modifier and text |
| **ELECTRIC** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | ELEC | DEVC | | | Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers |
| E | ELEC | JBOX | | | Junction boxes, pull boxes, manholes, handholes, pedestals, splices |
| E | ELEC | SUBS | | | Other substation equipment |
| E | ELEC | SWCH | | | Fuse cutouts, pole mounted switches, circuit breakers, gang operated disconnects, reclosers, cubicle switches |
| E | ELEC | VALT | | | Vaults |
| **ENERGY MONITORING CONTROL SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | EMCS | EMER | | | Emergency systems equipment |
| E | EMCS | EQPM | | | Energy monitoring control system equipment |
| E | EMCS | EQPM | DUCT | | Ductbank line |
| E | EMCS | EQPM | JBOX | | Junction |
| E | EMCS | EQPM | SIGN | | Marker |
| E | EMCS | IDEN | | | Identifier tags, symbol modifier, and text |
| E | EMCS | SYMB | | | Energy monitoring control system symbols |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | FLOR | IDEN | | | Room name, space identification text (copied from Architectural - |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Floor Plan model file) |
| E | FLOR | NUMB | | | Room/space identification number and symbol (copied from Architectural - Floor Plan model file) |
| **GROUND SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | GRND | CIRC | | | Circuits |
| E | GRND | DIAG | | | Ground system diagram |
| E | GRND | EQUI | | | Equipotential ground system |
| E | GRND | REFR | | | Reference ground system |
| **INTERCOM SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | INTC | IDEN | | | Identifier tags, symbol modifier, and text |
| E | INTC | SYMB | | | Intercom/PA system symbols |
| **LIGHTING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | LITE | APPR | | | Approach lights |
| E | LITE | APRN | | | Apron Lighting |
| E | LITE | CIRC | | | Lighting circuits (including crosslines and homeruns) |
| E | LITE | CIRC | NUMB | | Lighting circuit numbers (e.g., panel/circuit number, wire/conduit size) |
| E | LITE | CLNG | | | Ceiling mounted (surface/pendant) fixtures |
| E | LITE | CONS | | | Constant Current Regulators |
| E | LITE | DIST | | | Distance and arresting gear markers and lights |
| E | LITE | EMER | | | Emergency fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG) |
| E | LITE | EXIT | | | Exit fixtures (outline of light (if ceiling mounted) should go on E-LITE-CLNG) |
| E | LITE | EXTR | | | Exterior lights |
| E | LITE | EXTR | IDEN | | Identifier tags, symbol modifier, and text |
| E | LITE | FLOR | | | Floor mounted fixtures (e.g., stage) |
| E | LITE | IDEN | | | Light fixture identifier tags |
| E | LITE | JBOX | | | Junction boxes |
| E | LITE | LANE | | | Hoverlane, taxilane, and helipad lights |
| E | LITE | OBST | | | Obstruction lights |
| E | LITE | PANL | | | Main distribution panels, switchboards, lighting panels |
| E | LITE | ROOF | | | Roof lighting |
| E | LITE | RUNW | CNTR | | Runway Centerline lights |
| E | LITE | RUNW | DTGS | | Runway Distance to go lights |
| E | LITE | RUNW | DTGS | | Runway Distance to go lights |
| E | LITE | RUNW | EDGE | | Runway edge lights |
| E | LITE | RUNW | EDGE | | Runway edge lights |
| E | LITE | RUNW | GARD | | Runway guard lights |
| E | LITE | RUNW | GARD | | Runway guard lights |
| E | LITE | RUNW | TDZN | | Runway Touchdown Zone lights |
| E | LITE | RUNW | TDZN | | Runway Touchdown Zone lights |

| | | | | | |
|---|---|---|---|---|---|
| E | LITE | SIGN | | | Taxiway guidance signs |
| E | LITE | SIGN | | | Taxiway guidance signs |
| E | LITE | SPCL | | | Special fixtures |
| E | LITE | SWCH | | | Lighting contactors, photoelectric controls, low-voltage lighting controls, etc. |
| E | LITE | TAXI | CNTR | | Taxiway centerline lights |
| E | LITE | TAXI | CNTR | | Taxiway centerline lights |
| E | LITE | TAXI | EDGE | | Taxiway edge lights |
| E | LITE | TAXI | EDGE | | Taxiway edge lights |
| E | LITE | THRS | | | Threshold lights |
| E | LITE | THRS | | | Threshold lights |
| E | LITE | WALL | | | Wall mounted fixtures |
| **LIGHTING PROTECTION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | LTNG | COND | | | Lightning protection conductors |
| E | LTNG | TRML | | | Lightning protection terminals |
| **NURSE CALL / PAGING SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | NURS | IDEN | | | Identifier tags, symbol modifier, and text |
| E | NURS | SYMB | | | Nurse call/paging system symbols |
| **POLES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | POLE | GUYP | | | Guying equipment |
| E | POLE | GUYP | IDEN | | Guying equipment identifier tags, symbol modifiers, and text |
| E | POLE | IDEN | | | Utility pole identifier tags, symbol modifier, and text |
| E | POLE | UTIL | | | Utility poles |
| **POWER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | POWR | AUXL | | | Generators and auxiliary equipment |
| E | POWR | BUSW | | | Busways and wireways |
| E | POWR | CABL | | | Cable trays |
| E | POWR | CAPC | | | Capacitor |
| E | POWR | CIRC | | | Power circuits (including crosslines and homeruns) |
| E | POWR | CIRC | NUMB | | Power circuit numbers (e.g., panel/circuit number, wire/conduit size) |
| E | POWR | CLNG | | | Ceiling outlets (receptacles and switches) |
| E | POWR | FEED | | | Feeders |
| E | POWR | GENR | | | Generators and auxiliary equipment |
| E | POWR | HBLT | | | Head bolt outlet |
| E | POWR | JBOX | | | Junction boxes |
| E | POWR | METR | | | Meter |
| E | POWR | MOTR | | | Motors and utilization equipment |
| E | POWR | PANL | | | Panelboards, switchboards, MCC, unit substations |
| E | POWR | PEDS | | | Pedestal |
| E | POWR | POLE | CNDT | | Utility pole conduit |

| | | | | | |
|---|---|---|---|---|---|
| E | POWR | POLE | GUYP | | Utility pole guy point |
| E | POWR | REGL | | | Regulator |
| E | POWR | RISR | | | Riser |
| E | POWR | SIGN | | | Marker |
| E | POWR | SITE | | | Utility electric utility site |
| E | POWR | SPLC | | | Splice |
| E | POWR | SUBS | | | Other substation equipment |
| E | POWR | SWCH | | | Fuse cutouts, motor starters, contactors, pole mounted switches, circuit breakers, gang operated disconnects, reclosers, cubicle switches |
| E | POWR | URAC | | | Underfloor raceways |
| E | POWR | WALL | | | Wall/floor outlets (receptacles and switches) |
| E | POWR | XFMR | PADM | | Pad mounted transformers |
| E | POWR | XFMR | POLE | | Pole mounted transformers |
| **PRIMARY ELECTRICAL CABLES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | PRIM | OVHD | | | Overhead electrical utility lines |
| E | PRIM | OVHD | IDEN | | Identifier tags, symbol modifier, and text |
| E | PRIM | UGND | | | Underground electrical utility lines |
| E | PRIM | UGND | IDEN | | Identifier tags, symbol modifier, and text |
| **SECONDARY ELECTRICAL CABLES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | SECD | OVHD | | | Overhead electrical utility lines |
| E | SECD | OVHD | IDEN | | Identifier tags, symbol modifier, and text |
| E | SECD | UGND | | | Underground electrical utility lines |
| E | SECD | UGND | IDEN | | Identifier tags, symbol modifier, and text |
| **SECURITY SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | SERT | ACCS | | | Access control system symbols |
| E | SERT | BURD | | | Buried sensors |
| E | SERT | CLNG | | | Ceiling mounted sensors |
| E | SERT | FLOR | | | Floor mounted sensors |
| E | SERT | IDEN | | | Identifier tags, symbol modifier, and text |
| E | SERT | UGND | | | Buried sensors |
| E | SERT | WALL | | | Wall mounted sensors |
| **SOUND / PA SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | SOUN | IDEN | | | Identifier tags, symbol modifier, and text |
| E | SOUN | SYMB | | | Sound system symbols |
| **SPECIAL SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | SPCL | IDEN | | | Special systems (UMCS, EMCS, CATV, etc.) identifier tags, symbol modifier, and text |
| E | SPCL | JBOX | | | Junction boxes |
| E | SPCL | PANL | | | Panelboards, backing boards, patch panel racks |

| | | | | | |
|---|---|---|---|---|---|
| E | SPCL | SRFS | | | Surface Sensor System |
| E | SPCL | SYST | | | Special systems (UMCS, EMCS, CATV, etc.) |
| E | SPCL | TRAF | | | Traffic signal system |
| E | SPCL | TRAF | IDEN | | Traffic signal identifier tags, symbol modifier, and text |
| **TV ANTENNA SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| E | TVAN | IDEN | | | Identifier tags, symbol modifier, and text |
| E | TVAN | SYMB | | | TV antenna system symbols |

### H-1.5.5 (F) Fire Protection Layers

| | | | | | |
|---|---|---|---|---|---|
| **AQUEOUS FILM FORMING FOAM SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | AFFF | EQPM | | | Equipment |
| F | AFFF | PIPE | | | Piping |
| **ALARM SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | ALRM | DTCT | | | Smoke/heat/other detectors |
| F | ALRM | INDC | | | Indicating appliances |
| F | ALRM | MANL | | | Manual fire alarm pull stations |
| F | ALRM | PHON | | | Fire service or emergency telephone stations |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| F | ANNO | KEYN | | | Reference keynotes with associated leaders |
| F | ANNO | NOTE | | | General notes and general remarks |
| F | ANNO | NPLT | | | Non-plotting graphic information |
| F | ANNO | PATT | | | Miscellaneous patterning and hatching |
| F | ANNO | REFR | | | Reference files (AutoCAD users only, see Chapter 4) |
| F | ANNO | SYMB | | | Miscellaneous symbols |
| F | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **CO2 SPRINKLER SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | CO2S | EQPM | | | Equipment |
| F | CO2S | PIPE | | | CO2 piping or CO2 discharge nozzle piping |
| **CONTROL PANELS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | CTRL | PANL | | | Control panels |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | DETL | GRPH | | | Graphics, gridlines, non-text items |
| F | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| F | DETL | METR | | | Metric-specific dimensions and notes |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |

| | | | | | |
|---|---|---|---|---|---|
| F | FLOR | IDEN | | | Room name, space identification text (copied from Architectural - Floor Plan model file) |
| F | FLOR | NUMB | | | Room/space identification number and symbol (copied from Architectural - Floor Plan model file) |
| **HALON SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | HALN | EQPM | | | Halon equipment |
| F | HALN | PIPE | | | Halon piping |
| **INERT GAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | IGAS | EQPM | | | Inert gas equipment |
| F | IGAS | PIPE | | | Inert gas piping |
| **LIGHTING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | LITE | EMER | | | Emergency fixtures |
| F | LITE | EXIT | | | Exit fixtures |
| **EGRESS REQUIREMENTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | LSFT | EGRE | | | Egress requirements designator |
| F | LSFT | OCCP | | | Occupant load for egress capacity |
| F | LSFT | TRVL | | | Maximum travel distances |
| **FIRE PROTECTION / SUPPRESSION / ALARM / DETECTION EQUIPMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | PROT | CABN | | | Fire hose cabinets |
| F | PROT | EXTN | | | Fire extinguishers and fire extinguisher cabinets |
| F | PROT | HOSE | | | Fire hoses |
| **FIRE RATINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | RATE | DOOR | | | Door fire ratings |
| F | RATE | WALL | | | Wall fire ratings |
| **SMOKE / PRESSURIZATION CONTROL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | SMOK | DAMP | | | Dampers |
| **SPRINKLER SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | SPRN | CLHD | | | Sprinkler - ceiling heads |
| F | SPRN | COMB | | | Combination system |
| F | SPRN | OTHD | | | Sprinkler - other heads |
| F | SPRN | OTHR | | | Sprinkler - other |
| F | SPRN | PEND | | | Sprinkler - pendant |
| F | SPRN | PIPE | | | Sprinkler piping |
| F | SPRN | STAN | | | Standpipe system |
| **WATER SUPPLY AND DISTRIBUTION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| F | WATR | CONN | | | Fire department connections |

| | | | | | |
|---|---|---|---|---|---|
| F | WATR | HYDR | | | Hydrants |
| F | WATR | PIPE | | | Piping |
| F | WATR | PUMP | | | Fire pumps |

### H-1.5.6 (G) General Layers

| GENERAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| G | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| G | ANNO | IDEN | | | Identification Tags: Floor Id. #s; Room #s; Door #s; hardware group; Window #s; Equipment Id. #s; Furniture #s; Tenant Identification; Area calculations; Occupant or employee names; Elevation Id. #s; Component Id. #s |
| G | ANNO | KEYN | | | Reference keynotes with associated leaders |
| G | ANNO | KEYP | ANNO | | Key plan text, scale, north arrow |
| G | ANNO | KEYP | BKGN | | Key plan background pattern |
| G | ANNO | KEYP | OTLN | | Key plan sheet outlines |
| G | ANNO | KEYP | PATT | | Key plan current sheet pattern |
| G | ANNO | KEYP | TOPO | | Key plan topo |
| G | ANNO | LEGN | | | Legends |
| G | ANNO | MATC | | | Match Lines |
| G | ANNO | MATC | IDEN | | Match Line Identification |
| G | ANNO | MATC | PATT | | Match Line Hatching |
| G | ANNO | NOTE | | | Notes |
| G | ANNO | NPLT | | | Non-plotting graphic information |
| G | ANNO | PATT | | | Miscellaneous patterning and hatching |
| G | ANNO | REDL | | | Redline Annotations |
| G | ANNO | REFR | | | Reference files (AutoCAD users only, see Chapter 4) |
| G | ANNO | REVS | | | Revisions |
| G | ANNO | SCHD | | | Schedules |
| G | ANNO | SYMB | | | Miscellaneous symbols |
| G | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| G | ANNO | TITL | | | Drawing Component Titles, Detail Titles, Section Titles, Elevations |
| G | ANNO | TTLB | | | Border and title block linework |
| G | ANNO | VPRT | | | Viewport |
| **GRIDS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| G | GRID | EXTR | | | Column grid outside building |
| G | GRID | IDEN | | | Column grid tags |
| **PLAN / OUTLINE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| G | PLAN | OTLN | | | Floor outline/perimeter/building footprint |
| **SITE INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |

| | | | | | |
|---|---|---|---|---|---|
| G | SITE | OTLN | | | Site plan - key map |

### H-1.5.7 (H) Hazardous Materials Layers

| GENERAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | ANNO | DIMS | | | Hazardous Annotation: Witness/extension lines, dimension terminators, dimension text |
| H | ANNO | KEYN | | | Hazardous Annotation: Reference keynotes with associated leaders |
| H | ANNO | NPLT | | | Hazardous Annotation: Non-plotting graphic information |
| H | ANNO | PATT | | | Hazardous Annotation: Miscellaneous patterning |
| H | ANNO | SYMB | | | Hazardous Annotation: Reference bubbles, matchlines and breaklines |
| H | ANNO | TEXT | | | Hazardous Annotation: Detail title text, text and associated leaders, notes |
| **BUILDINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | BLDG | IDEN | | | Buildings: Annotation |
| H | BLDG | OTLN | | | Buildings: Command posts, information centers |
| **DECONTAMINATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | DECN | EQPM | | | Decontamination: Equipment |
| H | DECN | IDEN | | | Decontamination: Annotation |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | DETL | GRPH | | | Details: Graphics, gridlines, non-text items |
| H | DETL | INPD | | | Details: Inch-pound-specific dimensions and notes |
| H | DETL | METR | | | Details: Metric-specific dimensions and notes |
| **DISPOSAL AREAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | DISP | HAZW | | | Disposal Areas: Hazardous waste |
| H | DISP | IDEN | | | Disposal Areas: Annotation |
| H | DISP | MUNT | | | Disposal Areas: Munitions |
| H | DISP | TANK | | | Disposal Areas: Spill containment tanks |
| **FIXTURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | FIXT | EYEW | | | Fixtures: Emergency eyewashes |
| H | FIXT | SHOW | | | Fixtures: Emergency showers |
| **MONITORING SYSTEMS** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Status | Layer Description |
|---|---|---|---|---|---|
| H | MNST | AIRQ | | | Monitoring Systems: Air quality |
| H | MNST | GNDW | | | Monitoring Systems: Ground water |
| H | MNST | IDEN | | | Monitoring Systems: Annotation |
| H | MNST | LAND | | | Monitoring Systems: Landfill gas |
| H | MNST | SOIL | | | Monitoring Systems: Soil gas |
| H | MNST | SWTR | | | Monitoring Systems: Surface water |
| **POLLUTION AREAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | POLL | CNCR | | | Pollution Areas: Polluted area of concern |
| H | POLL | IDEN | | | Pollution Areas: Annotation |
| H | POLL | ORIG | | | Pollution Areas: Point of pollution origin |
| H | POLL | POTN | | | Pollution Areas: Potential spill, emission, or release source |
| **SAMPLE POINTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | SAMP | AIRS | | | Sample Points: Air samples |
| H | SAMP | BIOL | | | Sample Points: Biological samples |
| H | SAMP | GNDW | | | Sample Points: Ground water samples |
| H | SAMP | IDEN | | | Sample Points: Annotation |
| H | SAMP | MAGN | | | Sample Points: Magnetometer location points |
| H | SAMP | SEDI | | | Sample Points: Sediment samples |
| H | SAMP | SOIL | | | Sample Points: Soil samples |
| H | SAMP | SOLI | | | Sample Points: Solid material samples |
| H | SAMP | SWTR | | | Sample Points: Surface water samples |
| H | SAMP | WAST | | | Sample Points: Waste samples |
| **SECTIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | SECT | IDEN | | | Sections: Component identification numbers |
| H | SECT | MBND | | | Sections: Material beyond section cut |
| H | SECT | MCUT | | | Sections: Material cut by section |
| H | SECT | PATT | | | Sections: Textures and hatch patterns |
| **STORAGE FACILITIES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Layer Description** |
| H | STOR | HAZM | | | Storage Facilities: Hazardous materials |
| H | STOR | HAZW | | | Storage Facilities: Hazardous waste |
| H | STOR | IDEN | | | Storage Facilities: Annotation |

### H-1.5.8 (I) Interiors Layers

| GENERAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |

| | | | | | |
|---|---|---|---|---|---|
| I | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| I | ANNO | KEYN | | | Reference keynotes with associated leaders |
| I | ANNO | NOTE | | | General notes and general remarks |
| I | ANNO | NPLT | | | Non-plotting graphic information |
| I | ANNO | PATT | | | Miscellaneous patterning |
| I | ANNO | SYMB | | | Reference bubbles, matchlines and breaklines |
| I | ANNO | TEXT | | | Detail title text, text and associated leaders, notes |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | DETL | GRPH | | | Graphics, gridlines, non-text items |
| I | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| I | DETL | METR | | | Metric-specific dimensions and notes |
| **ELEVATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | ELEV | CASE | | | Wall mounted casework |
| I | ELEV | FIXT | | | Miscellaneous fixtures |
| I | ELEV | FNSH | | | Finishes, woodwork and trim |
| I | ELEV | IDEN | | | Component identification numbers |
| I | ELEV | PATT | | | Textures and hatch patterns |
| I | ELEV | PFIX | | | Plumbing fixtures in elevation |
| I | ELEV | SIGN | | | Signage |
| **EQUIPMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | EQPM | ACCS | | | Equipment access |
| I | EQPM | CHLD | | | Child development (play toys, teaching rugs, play forms) |
| I | EQPM | COPY | | | Copiers, fax machines, office equipment |
| I | EQPM | FIXD | | | Fixed equipment |
| I | EQPM | IDEN | | | Equipment identification numbers |
| I | EQPM | MEDI | | | Medical (exam beds, dental chairs, etc.) |
| I | EQPM | MOVE | | | Moveable equipment |
| I | EQPM | NICN | | | Not in contract equipment |
| I | EQPM | OVHD | | | Overhead, ceiling mounted, and suspended equipment |
| I | EQPM | STOR | | | Storage equipment |
| **FLOORING ITEMS AND MATERIALS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | FLOR | SIGN | | | Signage |
| **FURNISHINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | FURN | ACCS | | | Accessories (vestibule matts, partitions, draperies, clocks, trashcans, lecturns, lamps, etc.) |
| I | FURN | ADPC | | | Automated Data Processing Components |
| I | FURN | ARTW | | | Artwork |
| I | FURN | CASE | | | Case goods (desks, credenzas, beds, dressers, nightstands, wardrobes, etc.) |
| I | FURN | FLOR | | | Flooring (carpet, rugs, etc.) |

| | | | | | |
|---|---|---|---|---|---|
| I | FURN | FREE | | | Free-standing furnishings (desks, beds, tables, dressers, credenzas, case goods) |
| I | FURN | GRID | | | Planning grid/modular outline |
| I | FURN | IDEN | | | Furniture code identification |
| I | FURN | MISC | | | Miscellaneous furniture |
| I | FURN | PLNT | | | Plants |
| I | FURN | SEAT | | | Chairs, sofas, etc. |
| I | FURN | STOR | | | File cabinets, high density storage, shelving, storage cabinets |
| **SECURITY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | SECT | CMRA | | | Security camera locations Inside of buildings |
| **SYSTEM FURNITURE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| I | SYST | BIDS | | | Baggage information display system equipment used in an airport terminal |
| I | SYST | CUTE | | | Common use terminal equipment in an airport terminal |
| I | SYST | FIDS | | | Flight information display system equipment used in an airport terminal |
| I | SYST | FURN | | | Furniture |
| I | SYST | IDEN | | | Code identification |
| I | SYST | LITE | | | Lighting components |
| I | SYST | PATT | | | Patterns |
| I | SYST | PNLS | | | Panels |
| I | SYST | POWR | | | Power, communication components |
| I | SYST | STOR | | | Storage components |
| I | SYST | WALL | | | Systems furniture partition walls |
| I | SYST | WKSF | | | Work surface components |

### H-1.5.9 (L) Landscaping Layers

| **GENERAL INFORMATION** | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| L | ANNO | DIMS | | | Landscape Annotation: Witness/extension lines, dimension terminators, dimension text |
| L | ANNO | KEYN | | | Landscape Annotation: Reference keynotes with associated leaders |
| L | ANNO | NOTE | | | Landscape Annotation: General notes and general remarks |
| L | ANNO | NPLT | | | Landscape Annotation: Non-plotting graphic information |
| L | ANNO | PATT | | | Landscape Annotation: Miscellaneous patterning |
| L | ANNO | SYMB | | | Landscape Annotation: Reference bubbles, matchlines and breaklines |
| L | ANNO | TEXT | | | Landscape Annotation: Detail title text, text and associated leaders, notes |
| **DETAIL INFORMATION** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Minor3 | Layer Description |
|---|---|---|---|---|---|
| L | DETL | CABS | | | Details: Cabinets, enclosures |
| L | DETL | CONC | | | Details: Concrete |
| L | DETL | ERTH | | | Details: Earth |
| L | DETL | FENC | | | Details: Fencing |
| L | DETL | FILL | | | Details: Fill/cover material |
| L | DETL | FURN | | | Details: Furniture, furnishings |
| L | DETL | GATE | | | Details: Gate |
| L | DETL | GENF | | | Details: General features (miscellaneous items) |
| L | DETL | GRAS | | | Details: Grass, sod |
| L | DETL | GRPH | | | Details: Graphics, gridlines, non-text items |
| L | DETL | INPD | | | Details: Inch-pound-specific dimensions and notes |
| L | DETL | METR | | | Details: Metric-specific dimensions and notes |
| L | DETL | STRC | | | Details: Structural metal, supports |
| L | DETL | TANK | | | Details: Tank Site |
| L | DETL | VALV | | | Details: Valves, fittings |
| L | DETL | VEGE | | | Details: Planting details |
| L | DETL | WIRE | | | Details: Wiring |
| **IRRIGATION SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| L | IRRG | COVR | | | Irrigation: Irrigation coverage, spray distribution patterns |
| L | IRRG | EQPM | | | Irrigation: Equipment (e.g., controllers, valves, RPBPs, etc.) |
| L | IRRG | HEAD | | | Irrigation: Irrigation heads, bubblers, and drip irrigation emitters |
| L | IRRG | IDEN | | | Irrigation: Annotation |
| L | IRRG | PIPE | | | Irrigation: Piping |
| L | IRRG | SPKL | | | Irrigation: Sprinklers |
| **PLANT AND LANDSCAPING MATERIAL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| L | PLNT | BEDS | | | Planting: Planting beds |
| L | PLNT | BUSH | | | Planting: Bushes and shrubs (e.g., evergreen, deciduous) |
| L | PLNT | BUSH | LINE | | Planting: Bush and shrub line |
| L | PLNT | CTNR | | | Planting: Containers or planters |
| L | PLNT | GRND | | | Planting: Groundcover and vines |
| L | PLNT | IDEN | | | Planting: Annotation |
| L | PLNT | MLCH | | | Planting: Mulches - organic and inorganic |
| L | PLNT | PLNT | | | Planting: Planting plants (e.g., ornamental annuals and perennials) |
| L | PLNT | PLTS | | | Planting: Planting plants (e.g., ornamental annuals and perennials) |
| L | PLNT | SHAD | | | Planting: Shadow areas |
| L | PLNT | SPRG | | | Planting: Sprigs |
| L | PLNT | TREE | | | Planting: Trees (e.g., evergreen, deciduous, etc.) |
| L | PLNT | TREE | LINE | | Planting: Tree line |
| L | PLNT | TURF | | | Planting: Lawn areas (turfing limits) |
| **SITE IMPROVEMENTS** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Minor3 | Layer Description |
|---|---|---|---|---|---|
| L | SITE | BRDG | | | Site: Bridges |
| L | SITE | DECK | | | Site: Decks |
| L | SITE | FENC | | | Site: Fencing |
| L | SITE | FURN | | | Site: Furnishings |
| L | SITE | GATE | | | Site: Gate |
| L | SITE | IDEN | | | Site: Annotation |
| L | SITE | PLAY | | | Site: Play structures |
| L | SITE | POOL | | | Site: Pools and spas |
| L | SITE | ROCK | | | Site: Boulders and cobble |
| L | SITE | RTWL | | | Site: Retaining walls |
| L | SITE | SPRT | | | Site: Sports fields |
| L | SITE | SWLK | | | Site: Walks and steps |
| L | SITE | TUNL | | | Site: Tunnels |
| L | SITE | WALK | | | Site: Walks and steps |

### H-1.5.10 (M) Mechanical Layers

| INDUSTRIAL WASTE PIPING | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | ACID | EQPM | | | Acid, alkaline, and oil waste equipment |
| M | ACID | PIPE | | | Acid, alkaline, and oil waste piping |
| M | ACID | VENT | | | Acid, alkaline, and oil waste vent piping |
| **ANTI-FREEZE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | AFRZ | PIPE | | | Anti-freeze piping |
| M | AFRZ | WAST | | | Waste anti-freeze piping |
| **ALIGNMENTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | ALGN | DATA | | | Alignment coordinates and curve data |
| M | ALGN | LINE | | | Alignments |
| M | ALGN | STAT | | | Alignment stationing and tick marks |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| M | ANNO | KEYN | | | Reference keynotes with associated leaders |
| M | ANNO | NOTE | | | General notes and general remarks |
| M | ANNO | NPLT | | | Non-plotting graphic information |
| M | ANNO | PATT | | | Miscellaneous patterning and hatching |
| M | ANNO | REFR | | | Reference files |
| M | ANNO | SYMB | | | Miscellaneous symbols |

| | | | | | |
|---|---|---|---|---|---|
| M | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **BRINE SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | BRIN | EQPM | | | Brine system equipment |
| M | BRIN | PIPE | | | Brine system piping |
| **CHEMICAL TREATMENT SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | CHEM | EQPM | | | Equipment |
| M | CHEM | PIPE | | | Piping (includes fittings, valves) |
| **COMPRESSED AIR** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | CMPA | EQPM | AIRD | | Air drain separator point |
| M | CMPA | EQPM | VALV | | Valve |
| M | CMPA | EQPM | VLVP | | Valve point |
| M | CMPA | FTTG | | | Fitting |
| M | CMPA | TANK | | | Tank |
| **CONDENSER WATER SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | CNDS | PIPE | | | Condensate piping (includes fittings, valves) |
| M | CNDW | EQPM | | | Condenser water equipment |
| M | CNDW | PIPE | | | Condenser water piping |
| M | CONT | THER | | | Thermostats, controls, instrumentation, and sensors |
| M | CONT | WIRE | | | Low voltage wiring |
| **CHILLED WATER SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | CWTR | EQPM | | | Equipment |
| M | CWTR | PIPE | | | Piping (includes fittings, valves) |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | DETL | ACCS | | | Accessories |
| M | DETL | BOIL | | | Boilers |
| M | DETL | CABS | | | Cabinets |
| M | DETL | COIL | | | Coils and fin tubes |
| M | DETL | DUCT | | | Ducts |
| M | DETL | EQPM | | | Equipment and fixtures |
| M | DETL | FANS | | | Fans |
| M | DETL | GENF | | | General features (miscellaneous items) |
| M | DETL | GRIL | | | Grilles and louvers |
| M | DETL | GRPH | | | Graphics, gridlines, non-text items |
| M | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| M | DETL | INSL | | | Insulation and coverings |

| | | | | | |
|---|---|---|---|---|---|
| M | DETL | METR | | | Metric-specific dimensions and notes |
| M | DETL | MOTR | | | Motors |
| M | DETL | PIPE | | | Piping |
| M | DETL | PUMP | | | Pumps and compressors |
| M | DETL | STRC | | | Structural support features |
| M | DETL | TANK | | | Tanks |
| M | DETL | TRAP | | | Traps and drains |
| M | DETL | VALV | | | Valves and fittings |
| M | DETL | VENT | | | Vents |
| M | DETL | WIRE | | | Electrical wiring |
| **DIAGRAM INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | DIAG | GRPH | | | Graphics, gridlines, non-text items |
| M | DIAG | INPD | | | Inch-pound-specific dimensions and notes |
| M | DIAG | METR | | | Metric-specific dimensions and notes |
| **OTHER DISCIPLINE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | DISC | INFO | | | Clearances and working space information |
| **DUAL TEMPERATURE SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | DUAL | EQPM | | | Equipment |
| M | DUAL | PIPE | | | Piping (includes fittings, valves) |
| **DUST AND FUME COLLECTION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | DUST | DUCT | | | Dust and fume ductwork |
| M | DUST | EQPM | | | Dust and fume collection equipment |
| **ELEVATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | ELEV | FIXT | | | Miscellaneous fixtures |
| M | ELEV | IDEN | | | Component identification numbers |
| M | ELEV | OTLN | | | Building outlines |
| M | ELEV | PATT | | | Textures and hatch patterns |
| M | ELEV | PFIX | | | Plumbing fixtures |
| **EXHAUST AIR SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | EXHS | CDFF | | | Exhaust air ceiling registers and grilles |
| M | EXHS | DUCT | | | Exhaust ductwork |
| M | EXHS | EQPM | | | Equipment |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |

| | | | | | |
|---|---|---|---|---|---|
| M | FLOR | IDEN | | | Room name, space identification text (copied from Architectural - Floor Plan model file) |
| M | FLOR | NUMB | | | Room/space identification number and symbol (copied from Architectural - Floor Plan model file) |
| **GLYCOL SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | GLYC | CULV | LINE | | Culvert line |
| M | GLYC | CULV | SITE | | Culvert site |
| M | GLYC | DRAN | BASN | | Deicing drainage basin |
| M | GLYC | DRAN | DDIV | | Deicing drainage divide |
| M | GLYC | EQPM | COUT | | Clean out |
| M | GLYC | EQPM | DISC | | Discharge point |
| M | GLYC | EQPM | FLOW | | Flow control point |
| M | GLYC | EQPM | INLT | | inlet |
| M | GLYC | EQPM | LIFT | | Lift station |
| M | GLYC | EQPM | PUMP | | pump |
| M | GLYC | EQPM | VALV | | Valve |
| M | GLYC | FTTG | | | Fitting |
| M | GLYC | JBOX | | | Junction |
| M | GLYC | RCOV | | | Recovery point |
| M | GLYC | RESV | | | Reservoir point |
| M | GLYC | SIGN | | | Marker |
| M | GLYC | STAT | PUMP | | Pump station |
| M | GLYC | TANK | | | Tank |
| M | GLYC | VALT | | | Vault |
| **GEOTHERMAL HEAT PUMP SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | GTHP | EQPM | | | Equipment |
| M | GTHP | PIPE | | | Piping (includes fittings, valves) |
| **HIGH-TEMPERATURE / CHILLED WATER SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | HTCW | CHLP | | | Chilled water plant |
| M | HTCW | CHLS | | | Chilled water service piping |
| M | HTCW | DEVC | | | Rigid anchors, anchor guides, rectifiers, reducers, markers, meters, pumps, regulators, tanks, and valves |
| M | HTCW | FLOW | | | Flow direction arrows |
| M | HTCW | FTTG | | | Caps and flanges |
| M | HTCW | HTPL | | | Main high temperature piping |
| M | HTCW | HTPP | | | High temperature water plant |
| M | HTCW | HTPS | | | High temperature service piping |
| M | HTCW | IDEN | | | Identifier tags, symbol modifier, and text |
| M | HTCW | JBOX | | | Junction boxes, manholes, handholes, test boxes |
| M | HTCW | LTPL | | | Main low temperature piping |

| | | | | | |
|---|---|---|---|---|---|
| M | HTCW | LTPS | | | Low temperature service piping |
| M | HTCW | PIPE | | | Main chilled water piping |
| M | HTCW | PIPE | | | Main steam piping |
| M | HTCW | PIPE | A | | Abandoned piping |
| M | HTCW | PITS | | | Valve pits/vaults, steam pits |
| M | HTCW | PLNT | IDEN | | Identifier tags, symbol modifier, and text |
| M | HTCW | PUMP | | | Pump stations |
| M | HTCW | RETN | | | Return for all HTCW lines |
| M | HTCW | SERV | | | Steam service piping |
| M | HTCW | STNS | IDEN | | Identifier tags, symbol modifier, and text |
| **HVAC SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | HVAC | ACCS | | | Equipment access doors |
| M | HVAC | CDFF | | | Ceiling diffusers, registers, and grilles |
| M | HVAC | DMPR | | | Fire and smoke dampers |
| M | HVAC | EQPM | | | Air system equipment |
| M | HVAC | EQPM | ANCH | | Anchor point |
| M | HVAC | EQPM | ANOD | | Anode |
| M | HVAC | EQPM | PUMP | | Pump |
| M | HVAC | EQPM | RECT | | Rectifier |
| M | HVAC | EQPM | REGL | | Regulator |
| M | HVAC | EQPM | TEST | | Anode test station |
| M | HVAC | EQPM | VALV | | Valve |
| M | HVAC | FDFF | | | Floor diffusers, registers, and grilles |
| M | HVAC | FTTG | | | Fitting |
| M | HVAC | IDEN | | | Duct sizes |
| M | HVAC | JBOX | | | Junction |
| M | HVAC | METR | | | Meters |
| M | HVAC | RETN | | | Return ductwork |
| M | HVAC | ROOF | | | Roof mounted HVAC equipment |
| M | HVAC | SIGN | | | Marker |
| M | HVAC | SPLY | | | Supply ductwork |
| M | HVAC | TAGS | | | Diffuser/register/grille tags and air flow arrows |
| M | HVAC | WDFF | | | Wall diffusers, registers, and grilles |
| **HOT WATER HEATING SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | HWTR | EQPM | | | Equipment |
| M | HWTR | PIPE | | | Piping (includes fittings, valves) |
| **HYDRAULIC SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | HYDR | EQPM | | | Hydraulic system equipment |
| M | HYDR | PIPE | | | Hydraulic system piping |
| **INSULATING (TRANSFORMER) OIL SYSTEM** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Minor3 | Layer Description |
|---|---|---|---|---|---|
| M | INSL | EQPM | | | Insulating oil equipment |
| M | INSL | PIPE | | | Insulating oil piping |
| **LUBRICATION OIL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | LO~~ | EQPM | | | Lubrication oil equipment |
| M | LO~~ | PIPE | | | Lubrication oil piping |
| **MACHINE DESIGN** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | MACH | BASE | | | Machinery bases |
| M | MACH | COMP | | | Miscellaneous machinery parts and components |
| M | MACH | CRAN | | | Bridge cranes, jib cranes, and monorails |
| M | MACH | CRAN | | | Bridge cranes, jib cranes, and monorails |
| M | MACH | E | | | Existing machinery |
| M | MACH | FSTN | | | Fasteners, nuts, and bolts |
| M | MACH | HOIS | | | Hoists and hooks |
| M | MACH | LIFT | | | Miscellaneous lifting equipment |
| M | MACH | LROT | | | Large rotating machinery (turbine and pump outlines) |
| M | MACH | MOTR | | | Machinery motors |
| **PENETRATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | PENE | FLOR | | | Floor penetrations |
| M | PENE | ROOF | | | Roof penetrations |
| **PROCESS PIPING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | PROC | EQPM | | | Equipment |
| M | PROC | PIPE | | | Process piping |
| **ENERGY RECOVERY SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | RCOV | EQPM | | | Equipment |
| M | RCOV | PIPE | | | Piping (includes fittings, valves) |
| **REFRIGERATION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | REFG | EQPM | | | Equipment |
| M | REFG | PIPE | | | Piping (includes fittings, valves) |
| **RAW WATER PIPING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | RWTR | EQPM | | | Raw water equipment |
| M | RWTR | PIPE | | | Raw water piping |

| SECTIONS | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | SECT | IDEN | | | Component identification numbers |
| M | SECT | MBND | | | Material beyond section cut |
| M | SECT | MCUT | | | Material cut by section |
| M | SECT | PATT | | | Textures and hatch patterns |
| **STEAM SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| M | STEM | EQPM | | | Equipment |
| M | STEM | PIPE | | | Steam piping |

### H-1.5.11 (P) Plumbing Layers

| GENERAL INFORMATION | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| P | ANNO | KEYN | | | Reference keynotes with associated leaders |
| P | ANNO | NOTE | | | General notes and general remarks |
| P | ANNO | NPLT | | | Non-plotting graphic information |
| P | ANNO | PATT | | | Miscellaneous patterning and hatching |
| P | ANNO | REFR | | | Reference files |
| P | ANNO | SYMB | | | Miscellaneous symbols |
| P | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **COMPRESSED AIR** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | CMPA | EQPM | | | Equipment |
| P | CMPA | PIPE | | | Piping |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | DETL | GRPH | | | Graphics, gridlines, non-text items |
| P | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| P | DETL | METR | | | Metric-specific dimensions and notes |
| **DIAGRAM INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | DIAG | GRPH | | | Graphics, gridlines, non-text items |
| P | DIAG | INPD | | | Inch-pound-specific dimensions and notes |
| P | DIAG | METR | | | Metric-specific dimensions and notes |
| **OTHER DISCIPLINE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |

| | | | | | |
|---|---|---|---|---|---|
| P | DISC | INFO | | | Information and notes for other disciplines |
| **DOMESTIC WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | DOMW | ACCS | | | Equipment access doors |
| P | DOMW | CPIP | | | Domestic cold water piping |
| P | DOMW | EQPM | | | Hot and cold water equipment |
| P | DOMW | FPIP | | | Domestic filtered water piping |
| P | DOMW | HPIP | | | Domestic hot water piping |
| P | DOMW | RISR | | | Domestic hot and cold water risers |
| P | DOMW | RPIP | | | Domestic hot water recirculation piping |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | FLOR | IDEN | | | Room name, space identification text (copied from Architectural - Floor Plan model file) |
| P | FLOR | NUMB | | | Room/space identification number and symbol (copied from Architectural - Floor Plan model file) |
| **LIQUID FUEL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | FUEL | EQPM | | | Equipment |
| P | FUEL | FGAS | | | Fuel gas piping |
| P | FUEL | FOIL | | | Fuel oil piping |
| P | FUEL | NGAS | | | Natural gas piping |
| **LIQUID GAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | LGAS | EQPM | | | Equipment |
| P | LGAS | PIPE | | | Piping |
| **MEDICAL / DENTAL GAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | MDGS | EQPM | | | Medical/Dental Gas Equipment |
| P | MDGS | PIPE | | | Medical/Dental Gas Piping |
| **PENETRATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | PENE | FLOR | | | Floor penetrations |
| P | PENE | ROOF | | | Roof penetrations |
| **SANITARY DRAINAGE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | SSWR | CNDS | | | Sanitary Condensate piping |
| P | SSWR | EQPM | | | Sanitary Equipment (e.g., sand/oil/water separators) |
| P | SSWR | FIXT | | | Sanitary Plumbing fixtures |
| P | SSWR | FLDR | | | Sanitary Floor drains, sinks, and cleanouts |

| | | | | | |
|---|---|---|---|---|---|
| P | SSWR | PIPE | | | Sanitary Piping |
| P | SSWR | RISR | | | Sanitary risers |
| P | SSWR | VENT | | | Sanitary Vent piping |
| **STORM DRAINAGE SYSTEM** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| P | STRM | PIPE | | | Storm drain piping |
| P | STRM | RFDR | | | Roof drains |
| P | STRM | RISR | | | Storm drain risers |

### H-1.5.12 (S) Structural Layers

| **GENERAL INFORMATION** | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text, welding symbols |
| S | ANNO | KEYN | | | Reference keynotes with associated leaders |
| S | ANNO | NOTE | | | General notes and general remarks |
| S | ANNO | NPLT | | | Non-plotting graphic information |
| S | ANNO | PATT | | | Miscellaneous patterning and hatching |
| S | ANNO | REFR | | | Reference files (AutoCAD users only, see Chapter 4) |
| S | ANNO | SYMB | | | Reference bubbles, matchlines and breaklines |
| S | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **BEAMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | BEAM | CNTR | | | Beam centerlines |
| S | BEAM | PRIM | | | Primary beams, girders |
| S | BEAM | SECD | | | Secondary beams, girders |
| **BRACING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | BRAC | LATL | | | Lateral bracing |
| S | BRAC | SHEA | | | Shear walls |
| S | BRAC | VERT | | | Vertical bracing |
| **COLUMNS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | COLS | CNTR | | | Column centerlines/working lines |
| S | COLS | MSC1 | | | Miscellaneous columns (Type 1) |
| S | COLS | MSC2 | | | Miscellaneous columns (Type 2) |
| S | COLS | MSC3 | | | Miscellaneous columns (Type 3) |
| S | COLS | MSC4 | | | Miscellaneous columns (Type 4) |
| S | COLS | PRIM | | | Primary columns |
| S | COLS | SCND | | | Secondary columns |
| **DECKING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | DECK | FLOR | | | Floor deck |

| | | | | | |
|---|---|---|---|---|---|
| S | DECK | OPEN | | | Openings and penetrations |
| S | DECK | RBAR | | | Deck/slab reinforcing |
| S | DECK | ROOF | | | Roof deck |
| **DETAIL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | DETL | GRPH | | | Graphics, gridlines, non-text items |
| S | DETL | INPD | | | Inch-pound-specific dimensions and notes |
| S | DETL | METR | | | Metric-specific dimensions and notes |
| **FEATURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | FEAT | CMUW | | | CMU outline (no patterning) |
| S | FEAT | CNTR | | | Feature centerlines |
| S | FEAT | CONC | | | Concrete outline (no patterning) |
| S | FEAT | GENL | | | General features (miscellaneous items) |
| S | FEAT | WOOD | | | Wood outline (no patterning) |
| **FOUNDATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | FNDN | CNTR | | | Beam centerlines |
| S | FNDN | FTNG | | | Footings |
| S | FNDN | GRBM | | | Grade beams |
| S | FNDN | PEDS | | | Column pedestals |
| S | FNDN | PILE | | | Piles (steel sheet, concrete, wood), piers, caisson piers, drilled piers |
| S | FNDN | RBAR | | | Foundation reinforcing |
| **GRATING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | GRAT | ELEV | | | Elevated grating (catwalks) |
| S | GRAT | FLOR | | | Floor grating |
| S | GRAT | SUBS | | | Subsurface grating |
| **GRADE LINES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | GRDL | EXGL | | | Existing ground |
| S | GRDL | FNGR | | | Finished grade |
| S | GRDL | WATR | | | Water surface |
| **GRIDS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | GRID | HORZ | | | Primary grid lines (horizontal) |
| S | GRID | IDEN | | | Column I.D. tags |
| S | GRID | MSC_ | | | Miscellaneous grid lines (Type 1) |
| S | GRID | MSC2 | | | Miscellaneous grid lines (Type 2) |
| S | GRID | MSC3 | | | Miscellaneous grid lines (Type 3) |
| S | GRID | MSC4 | | | Miscellaneous grid lines (Type 4) |
| S | GRID | VERT | | | Primary grid lines (vertical) |
| S | GRID | WATR | | | Water surface |
| **JOINTS** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Status | Description |
|---|---|---|---|---|---|
| S | JOIN | CNST | | | Construction joints |
| S | JOIN | CTRL | | | Control/expansion joints |
| **JOISTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | JOIS | BRDG | | | Bridging |
| S | JOIS | PRIM | | | Primary joists |
| S | JOIS | SECD | | | Secondary joists |
| **METAL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | METL | MISC | | | Miscellaneous metal |
| **OPENINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | OPEN | MISC | | | Openings and penetrations |
| **PADS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | PADS | EQPM | | | Equipment pads |
| **PIPING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | PIPE | GATE | | | Gates (flap gates, sluice gates, other) |
| S | PIPE | MISC | | | Miscellaneous piping/culverts |
| S | PIPE | TRSH | | | Trash racks |
| **REINFORCEMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | REIN | RBAR | | | Rebar, welded wire mesh |
| **SAFETY FEATURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | SAFE | FENC | | | Fencing |
| S | SAFE | HRAL | | | Handrails |
| **SECTIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | SECT | CMUW | | | CMU outline (no patterning) |
| S | SECT | CNTR | | | Centerlines |
| S | SECT | CONC | | | Concrete outline (no patterning) |
| S | SECT | FNGR | | | Finished grade |
| S | SECT | GENF | | | General features (miscellaneous items) |
| S | SECT | JOIN | | | Joint materials (e.g., felt), vapor barrier, other |
| S | SECT | MISC | | | Miscellaneous fasteners, anchor bolts, supports |
| S | SECT | PRIM | | | Primary beams/girders outlines |
| S | SECT | RBAR | | | Rebar, welded wire mesh |
| S | SECT | SHPS | | | Miscellaneous shapes, plates |
| S | SECT | STLS | | | Wide flange shapes, plates, open web joists, decking |
| S | SECT | WOOD | | | Wood outline (no patterning) |
| **SLABS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |

| | | | | | |
|---|---|---|---|---|---|
| S | SLAB | EDGE | | | Edge of slab |
| S | SLAB | OPEN | | | Openings and penetrations |
| S | SLAB | RBAR | | | Slab reinforcing |
| **SUPPORTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | SPPT | MISC | | | Miscellaneous fasteners, anchor bolts, supports |
| S | SPPT | SHPS | | | Miscellaneous shapes, plates |
| **STAIRWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | STRS | FRAM | | | Stair/elevator framing |
| S | STRS | LADD | | | Ladders, ladder handrails, safety guard, grab bars |
| S | STRS | RBAR | | | Stair reinforcing |
| **TRUSSES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | TRUS | PRIM | | | Primary trusses |
| S | TRUS | SECD | | | Secondary trusses |
| **WALLS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| S | WALL | CONC | | | Concrete walls |
| S | WALL | HBAR | | | Horizontal/secondary reinforcement |
| S | WALL | LOAD | | | Load bearing CMU walls |
| S | WALL | NONL | | | Non-load bearing CMU walls |
| S | WALL | OPEN | | | Openings and penetrations |
| S | WALL | OTLN | | | Wall outline |
| S | WALL | PCST | | | Precast walls |
| S | WALL | RBAR | | | Wall reinforcing |
| S | WALL | STUD | | | Stud walls |
| S | WALL | VBAR | | | Vertical/primary reinforcement |

### H-1.5.13 (T) Telecommunications Layers

| | | | | | |
|---|---|---|---|---|---|
| **ALARM SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | ALRM | EQPM | SERT | | Security Alarm Equipment |
| T | ALRM | IDEN | | | Identifier tags, symbol modifier, and text |
| T | ALRM | SYST | | | Miscellaneous alarm system symbols |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | ANNO | DIMS | | | Witness/extension lines, dimension terminators, dimension text |
| T | ANNO | KEYN | | | Reference keynotes with associated leaders |
| T | ANNO | NOTE | | | General notes and general remarks |
| T | ANNO | NPLT | | | Non-plotting graphic information |
| T | ANNO | PATT | | | Miscellaneous patterning and hatching |
| T | ANNO | REFR | | | Reference files (AutoCAD users only, see Chapter 4) |

| | | | | | |
|---|---|---|---|---|---|
| T | ANNO | SYMB | | | Miscellaneous symbols |
| T | ANNO | TEXT | | | Miscellaneous text and callouts with associated leaders |
| **CABLE SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | CABL | ANTN | | ` | Comm Antenna |
| T | CABL | COAX | | | Coax cable |
| T | CABL | FIBR | | | Fiber optics cable |
| T | CABL | IDEN | | | Cable identifiers |
| T | CABL | MULT | | | Multi-conductor cable |
| T | CABL | TRAY | | | Cable trays and wireways |
| **CLOCK SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | CLOK | IDEN | | | Identifier tags, symbol modifier, and text |
| T | CLOK | SYST | | | Clock system symbols |
| **COMMUNICATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | COMM | ANTN | | | Telecommunications antennae |
| T | COMM | APSY | | | Audio paging system |
| T | COMM | ATMS | | | Advanced traffic management system |
| T | COMM | AVID | | | Automatic vehicle identification system |
| T | COMM | BIDS | | | Baggage information display system |
| T | COMM | FIDS | | | Flight information display system |
| T | COMM | GIDS | | | Gate information display system |
| T | COMM | JBOX | | | Junction boxes |
| T | COMM | PMRC | | | Parking management and revenue control |
| T | COMM | VPSY | | | Visual paging system |
| **DIAGRAM INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | DIAG | GRPH | | | Graphics, gridlines, non-text items |
| T | DIAG | IDEN | | | Identifier tags, symbol modifier and text |
| T | DIAG | INPD | | | Inch-pound-specific dimensions and notes |
| T | DIAG | METR | | | Metric-specific dimensions and notes |
| **OTHER DISCIPLINE INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | DISC | INFO | | | Information and notes for other disciplines |
| **EQUIPMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | EQPM | COMB | | | Distribution equipment for both copper and fiber optics |
| T | EQPM | COPP | | | Distribution equipment for copper |
| T | EQPM | FIBR | | | Distribution equipment for fiber optic |
| T | EQPM | OTHR | | | Other telecommunications equipment |
| T | EQPM | RELA | | | Relays, resistors, capacitors, and inducers |
| **FLOOR INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | FLOR | IDEN | | | Room name, space identification text (copied from |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Architectural - Floor Plan model file) |
| T | FLOR | NUMB | | | Room/space identification number and symbol (copied from Architectural - Floor Plan model file) |
| **JACKS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | JACK | COMB | | | Combination telephone and data/LAN jacks |
| T | JACK | DATA | | | Data/LAN jacks |
| T | JACK | IDEN | | | Identifier tags, symbol modifier, and text |
| T | JACK | PHON | | | Telephone jacks |
| **NURSE CALL SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | NURS | IDEN | | | Identifier tags, symbol modifier, and text |
| T | NURS | SYST | | | Nurse call system symbols |
| **SOUND SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Status** | **Description** |
| T | SOUN | IDEN | | | Identifier tags, symbol modifier, and text |
| T | SOUN | SYST | | | Sound system symbols |

### H-1.5.14 (V) Survey Layers

| **AERIAL SURVEY** | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | AERI | BNDY | | | Aerial Survey: Aerial photography boundaries |
| V | AERI | INDX | | | Aerial Survey: Aerial photo index |
| V | AERI | PATH | | | Aerial Survey: Aerial flight lines/paths |
| **AIRFIELDS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | AFLD | BCNS | IDEN | | Airfield: Identifier tags, symbol modifiers, and text |
| V | AFLD | BCNS | MISC | | Airfield: Miscellaneous navaids-windcones and beacons |
| V | AFLD | BCNS | STRB | | Airfield: Strobe beacons |
| V | AFLD | CIRC | CTRL | | Airfield: Control and monitoring circuits |
| V | AFLD | CIRC | IDEN | | Airfield: Circuit identifier tags, symbol modifier, and text |
| V | AFLD | CIRC | MULT | | Airfield: Multiple circuits |
| V | AFLD | CIRC | SERS | | Airfield: Series circuits |
| V | AFLD | DEVC | | | Airfield: Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers |
| V | AFLD | DUCT | | | Airfield: Ductbanks |
| V | AFLD | IDEN | | | Airfield: Airfield annotation |
| V | AFLD | JBOX | | | Airfield: Junction boxes, pull boxes, manholes, handholes, pedestals, splices |
| V | AFLD | LITE | APPR | | Airfield: Approach lights |
| V | AFLD | LITE | DIST | | Airfield: Distance and arresting gear markers |
| V | AFLD | LITE | LANE | | Airfield: Hoverlane, taxilane and helipad lights |

| | | | | | |
|---|---|---|---|---|---|
| V | AFLD | LITE | OBST | | Airfield: Obstruction lights |
| V | AFLD | LITE | RUNW | | Airfield: Runway lights |
| V | AFLD | LITE | SIGN | | Airfield: Taxiway guidance signs |
| V | AFLD | LITE | TAXI | | Airfield: Taxiway lights |
| V | AFLD | LITE | THRS | | Airfield: Threshold lights |
| V | AFLD | VALT | | | Airfield: Airfield lighting vaults |
| **ALIGNMENTS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | ALGN | DATA | | | Alignments: Alignment coordinates and curve data |
| V | ALGN | LINE | | | Alignments: Alignments |
| V | ALGN | MRKG | | | Alignments: Markings |
| V | ALGN | PROF | | | Profiles: Existing Grade |
| V | ALGN | STAT | | | Alignments: Stationing and tick marks |
| **GENERAL INFORMATION** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | ANNO | ANOD | | | Survey Annotation: Survey Annotation: Anode |
| V | ANNO | ANOD | TEXT | | Survey Annotation: Anode Text |
| V | ANNO | DIMS | | | Survey Annotation: Witness/extension lines, dimension terminators, dimension text |
| V | ANNO | KEYN | | | Survey Annotation: Reference keynotes with associated leaders |
| V | ANNO | NOTE | | | Survey Annotation: General notes and general remarks |
| V | ANNO | NPLT | | | Survey Annotation: Non-plotting graphic information |
| V | ANNO | PATT | | | Survey Annotation: Miscellaneous patterning and hatching |
| V | ANNO | REFR | | | Survey Annotation: Reference files (AutoCAD users only, see Chapter 4) |
| V | ANNO | SYMB | | | Survey Annotation: Miscellaneous symbols |
| V | ANNO | TEXT | | | Survey Annotation: Miscellaneous text and callouts with associated leaders |
| **BUILDINGS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | BLDG | IDEN | | | Buildings: Identification Annotation |
| V | BLDG | OTLN | | | Buildings: Buildings and other structures outline |
| V | BLDG | OVHD | | | Buildings: Overhangs |
| **CATHODIC PROTECTION SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | CATH | ANOD | | | Cathodic Protection System: Sacrificial anode system |
| V | CATH | CURR | | | Cathodic Protection System: Impress current system |
| V | CATH | IDEN | | | Cathodic Protection System: Identifier tags, symbol modifier, and text |
| V | CATH | TEST | | | Cathodic Protection System: Test stations |
| **CHANNELS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |

| | | | | | |
|---|---|---|---|---|---|
| V | CHAN | CNTR | | | Channels: Centerlines and survey report lines |
| V | CHAN | CNTR | IDEN | | Channels: Centerline Annotation |
| V | CHAN | DACL | | | Channels: De-authorized channel limits, anchorages, etc. |
| V | CHAN | DACL | IDEN | | Channels: De-authorized channel limit annotation |
| V | CHAN | IDEN | | | Channels: Identification Annotation |
| V | CHAN | LIMT | | | Channels: Channel limits, anchorages, turning basins, disposal areas, etc. |
| V | CHAN | NAID | | | Channels: Navigation aids and text |
| **CIRCUITS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | CIRC | CTRL | | | Circuits: Control and monitoring circuits |
| V | CIRC | IDEN | | | Circuits: Identifier tags, symbol modifier, and text |
| V | CIRC | MULT | | | Circuits: Multiple circuits |
| V | CIRC | SERS | | | Circuits: Series circuits |
| **COMMUNICATIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | COMM | EQPM | | | Communications: Other communications distribution equipment |
| V | COMM | JBOX | | | Communications: Junction boxes, pull boxes, manholes, handholes, pedestals, splices |
| V | COMM | OVHD | | | Communications: Overhead communications/telephone lines |
| V | COMM | OVHD | IDEN | | Communications: Identifier tags, symbol modifier and text |
| V | COMM | UGND | | | Communications: Underground communications/telephone lines |
| V | COMM | UGND | IDEN | | Communications: Identifier tags, symbol modifier and text |
| V | COMM | VALT | | | Communications: Vault |
| **CONTROL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | CTRL | ANOD | | | Control: Anode |
| V | CTRL | ANOD | KNOW | | Control: Known Anode |
| V | CTRL | ANOD | UNKN | | Control: Unknown Anode |
| V | CTRL | BMRK | | | Control: Benchmarks |
| V | CTRL | GRID | | | Control: Grid |
| V | CTRL | HORZ | | | Control: Horizontal control points |
| V | CTRL | IDEN | | | Control: Control point annotatior |
| V | CTRL | LINE | DIRC | | Control: Traverse Lines |
| V | CTRL | LINE | NETW | | Control: Traverse Network |
| V | CTRL | LINE | SHOT | | Control: Traverse Sideshot |
| V | CTRL | TEXT | | | Control: Annotation |
| V | CTRL | TRAV | | | Control: Traverse points |
| V | CTRL | TRAV | ERRO | | Control: Error Ellipses |
| V | CTRL | VERT | | | Control: Vertical control points |
| **DOMESTIC WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |

| | | | | | |
|---|---|---|---|---|---|
| V | DOMW | ANOD | | | Domestic Water: Anode |
| V | DOMW | DEVC | | | Domestic Water: Connectors, faucets, reducers, regulators, vents, intake points, tanks, taps, backflow preventers, and valves |
| V | DOMW | FIRE | | | Domestic Water: Fire lines |
| V | DOMW | FTTG | | | Domestic Water: Caps, cleanouts, crosses, and tees |
| V | DOMW | HYDR | | | Domestic Water: Hydrants |
| V | DOMW | IDEN | | | Domestic Water: Identifier tags, symbol modifier, and text |
| V | DOMW | METR | | | Domestic Water: Meters |
| V | DOMW | NHYD | | | Domestic Water: Non-potable hydrants/flushing hydrants |
| V | DOMW | NPW~ | | | Domestic Water: Non-potable water piping |
| V | DOMW | PIPE | | | Domestic Water: Main domestic water piping |
| V | DOMW | PIPE | A | | Domestic Water: Abandoned piping |
| V | DOMW | PITS | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| V | DOMW | PUMP | | | Domestic Water: Booster pump stations |
| V | DOMW | REDC | | | Domestic Water: Pressure reducing stations |
| V | DOMW | RSVR | | | Domestic Water: Reservoirs |
| V | DOMW | RSVR | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| V | DOMW | SERV | | | Domestic Water: Service piping |
| V | DOMW | SIGN | | | Domestic Water: Surface markers/signs |
| V | DOMW | STNS | IDEN | | Domestic Water: Identifier tags, symbol modifier, and text |
| V | DOMW | TANK | | | Domestic Water: Water storage tanks |
| V | DOMW | VALV | | | Domestic Water: Valve pits/vaults |
| V | DOMW | VENT | | | Domestic Water: Vent pits |
| V | DOMW | WELL | | | Domestic Water: Water well houses |
| **DITCHES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | DTCH | BOTM | | | Ditches: Bottom of ditch |
| V | DTCH | CNTR | | | Ditches: Centerline of ditch |
| V | DTCH | EWAT | | | Ditches: Edge of water |
| V | DTCH | IDEN | | | Ditches: Ditch annotatior |
| V | DTCH | TOP~ | | | Ditches: Top of ditch |
| **DUCTBANKS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | DUCT | MULT | | | Ductbanks: Ductbank |
| V | DUCT | MULT | IDEN | | Ductbanks: Identifier tags, symbol modifier and text |
| **ELECTRICAL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | ELEC | | | | Utilities: Power lines, lights, telephone poles, communication lines |
| V | ELEC | DEVC | | | Electrical: Capacitors, voltage regulators, motors, buses, generators, meters, grounds, and markers |
| V | ELEC | IDEN | | | Utilities: Power/communication annotation |
| V | ELEC | JBOX | | | Electrical: Junction boxes, pull boxes, manholes, handholes, |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | pedestals, splices |
| V | ELEC | SUBS | | | Electrical: Other substation equipment |
| V | ELEC | SWCH | | | Electrical: Fuse cutouts, pole mounted switches, circuit breakers, gang operated disconnects, reclosers, cubicle switches |
| V | ELEC | VALT | | | Electrical: Vaults |
| **LIQUID FUEL** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | FUEL | DEFL | | | Liquid Fuel: Defueling piping |
| V | FUEL | DEVC | | | Liquid Fuel: Air eliminators, filter strainers, hydrant fill points, line vents, markers, oil/water separators, reducers, regulators, and valves |
| V | FUEL | FLOW | | | Liquid Fuel: Flow direction arrows |
| V | FUEL | FTTG | | | Liquid Fuel: Caps, crosses, and tees |
| V | FUEL | HYDR | | | Liquid Fuel: Hydrant control pits |
| V | FUEL | IDEN | | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| V | FUEL | JBOX | | | Liquid Fuel: Junction boxes, manholes, handholes, test boxes |
| V | FUEL | METR | | | Liquid Fuel: Meters |
| V | FUEL | PIPE | | | Liquid Fuel: Main fuel piping |
| V | FUEL | PIPE | A | | Liquid Fuel: Abandoned piping |
| V | FUEL | PITS | IDEN | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| V | FUEL | PUMP | | | Liquid Fuel: Booster pump stations |
| V | FUEL | SERV | | | Liquid Fuel: Service piping |
| V | FUEL | STNS | IDEN | | Liquid Fuel: Identifier tags, symbol modifier, and text |
| V | FUEL | TANK | | | Liquid Fuel: Fuel tanks |
| V | FUEL | TRCH | | | Liquid Fuel: Fuel line trench |
| V | FUEL | VALV | | | Liquid Fuel: Valve pits |
| V | FUEL | VENT | | | Liquid Fuel: Vent pits |
| **GRADE LINEWORK** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | GRAD | E | | | Grade Linework: Existing grade, ground line |
| V | GRAD | FNSH | | | Grade Linework: Finished grade |
| V | GRAD | FRAM | | | Grade Linework: Frame |
| V | GRAD | GRID | MAJR | | Grade Linework: Major grid lines |
| V | GRAD | GRID | MINR | | Grade Linework: Minor grid lines |
| V | GRAD | TEXT | | | Grade Linework: Border text, annotation |
| **GRID LINEWORK** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | GRID | FRAM | | | Grade Linework: Frame |
| V | GRID | MAJR | | | Grade Linework: Major grid lines |
| V | GRID | MINR | | | Grade Linework: Minor grid lines |
| V | GTHP | EQPM | | | Geothermal: Equipment |
| V | GTHP | PIPE | | | Geothermal: Piping (includes fittings, valves) |
| **HIGH-TEMPERATURE / CHILLED WATER** | | | | | |

| Discipline | Major | Minor1 | Minor2 | Minor3 | Layer Description |
|---|---|---|---|---|---|
| V | HTCW | CHLP | | | HTCW: Chilled water plant |
| V | HTCW | DEVC | | | HTCW: Rigid anchors, anchor guides, rectifiers, reducers, markers, meters, pumps, regulators, tanks, and valves |
| V | HTCW | FLOW | | | HTCW: Flow direction arrows |
| V | HTCW | FTTG | | | HTCW: Caps and flanges |
| V | HTCW | HTPL | | | HTCW: Main high temperature piping |
| V | HTCW | HTPP | | | HTCW: High temperature water plant |
| V | HTCW | HTPS | | | HTCW: High temperature service piping |
| V | HTCW | IDEN | | | HTCW: Identifier tags, symbol modifier, and text |
| V | HTCW | JBOX | | | HTCW: Junction boxes, manholes, handholes, test boxes |
| V | HTCW | LTPL | | | HTCW: Main low temperature piping |
| V | HTCW | LTPS | | | HTCW: Low temperature service piping |
| V | HTCW | PIPE | | | HTCW: Main chilled water piping |
| V | HTCW | PIPE | A | | HTCW: Abandoned piping |
| V | HTCW | PITS | | | HTCW: Valve pits/vaults, steam pits |
| V | HTCW | PLNT | IDEN | | HTCW: Identifier tags, symbol modifier, and text |
| V | HTCW | PUMP | | | HTCW: Pump stations |
| V | HTCW | RETN | | | HTCW: Return for all HTCW lines |
| V | HTCW | SERV | | | HTCW: Chilled water service piping |
| V | HTCW | STEM | PIPE | | HTCW: Main steam piping |
| V | HTCW | STEM | SERV | | HTCW: Steam service piping |
| V | HTCW | STNS | IDEN | | HTCW: Identifier tags, symbol modifier, and text |
| **INDUSTRIAL WASTE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | IW~~ | DEVC | | | Industrical Waste: Grit chambers, meters, flumes, neutralizers, oil/water separators, ejectors, tanks, and valves |
| V | IW~~ | FLOW | | | Industrical Waste: Flow direction arrows |
| V | IW~~ | FTTG | | | Industrical Waste: Caps and cleanouts |
| V | IW~~ | IDEN | | | Industrical Waste: Identifier tags, symbol modifier, and text |
| V | IW~~ | JBOX | | | Industrical Waste: Junction boxes and manholes |
| V | IW~~ | LAGN | | | Industrical Waste: Lagoons |
| V | IW~~ | LIFT | | | Industrical Waste: Lift stations |
| V | IW~~ | PIPE | | | Industrical Waste: Main industrial waste water piping |
| V | IW~~ | PIPE | A | | Industrical Waste: Abandoned piping |
| V | IW~~ | PLNT | | | Industrical Waste: Treatment plants |
| V | IW~~ | RSVR | IDEN | | Industrical Waste: Identifier tags, symbol modifier, and text |
| V | IW~~ | SERV | | | Industrical Waste: Industrial waste water service piping |
| V | IW~~ | SIGN | | | Industrical Waste: Surface markers/signs |
| V | IW~~ | STNS | IDEN | | Industrical Waste: Identifier tags, symbol modifier, and text |
| **LIGHTING** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | LITE | APPR | | | Lights: Approach lights |

| | | | | | |
|---|---|---|---|---|---|
| V | LITE | DIST | | | Lights: Distance and arresting gear markers |
| V | LITE | FIXT | | | Lights: Exterior Lights |
| V | LITE | FIXT | IDEN | | Lights: Identifier tags, symbol modifier, and text |
| V | LITE | LANE | | | Lights: Hoverlane, taxilane, and helipad lights |
| V | LITE | OBST | | | Lights: Obstruction lights |
| V | LITE | RUNW | | | Lights: Runway lights |
| V | LITE | RUNW | CNTR | | Lights: Runway Centerline lights |
| V | LITE | RUNW | TDZN | | Lights: Runway Touchdown Zone lights |
| V | LITE | SIGN | | | Lights: Taxiway guidance signs |
| V | LITE | TAXI | | | Lights: Taxiway lights |
| V | LITE | THRS | | | Lights: Threshold lights |
| **NATURAL GAS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | NGAS | | | | Utilities: Gas lines, features, and valves |
| V | NGAS | ANOD | | | Natural Gas: Anode |
| V | NGAS | DEVC | | | Natural Gas: Hydrant fill points, lights, vents, markers, rectifiers, reducers, regulators, sources, tanks, drip pots, taps, and valves |
| V | NGAS | DEVC | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| V | NGAS | FLOW | | | Natural Gas: Flow direction arrows |
| V | NGAS | FTTG | | | Natural Gas: Caps, crosses, and tees |
| V | NGAS | IDEN | | | Natural Gas: Identifier tags, symbol modifier, and text |
| V | NGAS | METR | | | Natural Gas: Meters |
| V | NGAS | PIPE | | | Natural Gas: Main natural gas piping |
| V | NGAS | PIPE | A | | Natural Gas: Abandoned piping |
| V | NGAS | PITS | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| V | NGAS | PUMP | | | Natural Gas: Compressor stations |
| V | NGAS | REDC | | | Natural Gas: Reducing stations |
| V | NGAS | SERV | | | Natural Gas: Service piping |
| V | NGAS | SIGN | | | Natural Gas: Surface markers/signs |
| V | NGAS | STNS | IDEN | | Natural Gas: Identifier tags, symbol modifier, and text |
| V | NGAS | VALV | | | Natural Gas: Valve pits/boxes |
| V | NGAS | VENT | | | Natural Gas: Vent pits |
| **POLES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | POLE | ANOD | | | Poles: Anode |
| V | POLE | GUYP | | | Poles: Guying equipment |
| V | POLE | GUYP | IDEN | | Poles: Guying equipment identifier tags, symbol modifiers, and text |
| V | POLE | IDEN | | | Poles: Utility pole identifier tags, symbol modifier, and text |
| V | POLE | UTIL | | | Poles: Utility poles |
| **POWER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | POWR | XFMR | PADM | | Power: Pad mounted transformers |

| | | | | | |
|---|---|---|---|---|---|
| V | POWR | XFMR | POLM | | Power: Pole mounted transformers |
| **PRIMARY ELECTRICAL CABLES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | PRIM | OVHD | | | Primary Electrical Cables: Overhead electrical utility lines |
| V | PRIM | OVHD | IDEN | | Primary Electrical Cables: Identifier tags, symbol modifier, and text |
| V | PRIM | UGND | | | Primary Electrical Cables: Underground electrical utility lines |
| V | PRIM | UGND | IDEN | | Primary Electrical Cables: Identifier tags, symbol modifier, and text |
| **PROFILES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | PROF | CUTS | IDEN | | Profiles: Existing grade and grading cuts - annotation |
| V | PROF | FILL | | | Profiles: New work, grading fills |
| V | PROF | INLT | | | Profiles: Curb and surface inlets, catch basins |
| V | PROF | MHOL | | | Profiles: Manholes |
| V | PROF | PIPE | | | Profiles: Piping |
| V | PROF | ROAD | | | Profiles: Roads |
| **PROPERTY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | PROP | AFLD | LINE | | Cadastral: Airport Parcel |
| V | PROP | ANOD | | | Property: Anode |
| V | PROP | BRNG | | | Property: Bearings and distance labels |
| V | PROP | CNTY | | | Property: County Boundary |
| V | PROP | ESMT | | | Property: Government easements/property lines |
| V | PROP | IDEN | | | Property: Identification Annotation |
| V | PROP | LEAS | | | Property: Lease line (surveyed) |
| V | PROP | LINE | | | Property: Property lines (Existing recorded plats) |
| V | PROP | LUSE | | | Property: Land Use Area |
| V | PROP | MUNI | | | Property: Municipal Boundary |
| V | PROP | QTRS | | | Property: Quarter lines |
| V | PROP | RWAY | | | Property: Right of ways |
| V | PROP | SECT | | | Property: Section lines |
| V | PROP | STAT | | | Property: State Boundary |
| V | PROP | SXTS | | | Property: Sixteenth lines (40 lines) |
| V | PROP | TEXT | | | Property: Annotation |
| V | PROP | ZONE | | | Property: Zoning Areas |
| **PAVEMENT** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | PVMT | IDEN | | | Pavement: Road, parking lot, railroad, airfield pavement annotation |
| V | PVMT | MRKG | | | Pavement: Pavement markings |
| V | PVMT | PATT | | | Pavement: Joint patterns, text and dimensions |

| | | | | | |
|---|---|---|---|---|---|
| V | PVMT | ROAD | | | Pavement: Roads, parking lots, railroads, airfield pavements |
| **ROADS, STREETS, HIGHWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | ROAD | ASPH | | | Roadways: Road outlines-asphalt surface |
| V | ROAD | CNTR | | | Roadways: Road centerlines |
| V | ROAD | CONC | | | Roadways: Road outlines-concrete surface |
| V | ROAD | CURB | | | Roadways: Curbs and gutters |
| V | ROAD | GRAL | | | Roadways: Guard rails |
| V | ROAD | GRVL | | | Roadways: Road outlines-gravel surface |
| V | ROAD | IDEN | | | Roadways: Road, street, highway annotation |
| V | ROAD | MRKG | | | Roadways: Pavement markings |
| V | ROAD | OTLN | | | Roadways: Road outlines |
| V | ROAD | PATT | | | Roadways: Joint patterns, text and dimensions |
| V | ROAD | SHLD | | | Roadways: Roadway shoulders |
| V | ROAD | SIGN | | | Roadways: Signs |
| V | ROAD | UPVD | | | Roadways: Road outlines-unpaved surface |
| **RUNWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | RUNW | BLST | MRKG | | Runways: Blast pad markings |
| V | RUNW | CNTR | | | Runways: Centerlines |
| V | RUNW | CNTR | MRKG | | Runways: Centerline markings |
| V | RUNW | DIST | MRKG | | Runways: Fixed distance markings |
| V | RUNW | DSPL | MRKG | | Runways: Displaced threshold markings |
| V | RUNW | EDGE | MRKG | | Runways: Edge markings |
| V | RUNW | IDEN | MRKG | | Runways: Runway identifier markings |
| V | RUNW | SHLD | MRKG | | Runways: Shoulder markings |
| V | RUNW | TDZM | MRKG | | Runways: Touchdown zone markers |
| V | RUNW | THRS | MRKG | | Runways: Threshold markers |
| **SECONDARY ELECTRICAL CABLE** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SECD | OVHD | | | Secondary Electrical Cables: Overhead electrical utility lines |
| V | SECD | OVHD | IDEN | | Secondary Electrical Cables: Identifier tags, symbol modifier, and text |
| V | SECD | UGND | | | Secondary Electrical Cables: Underground electrical utility lines |
| V | SECD | UGND | IDEN | | Secondary Electrical Cables: Identifier tags, symbol modifier, and text |
| **SECTIONS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SECT | IDEN | | | Sections: Component identification numbers |
| V | SECT | MBND | | | Sections: Material beyond section cut |
| V | SECT | MCUT | | | Sections: Material cut by section |
| V | SECT | PATT | | | Sections: Textures and hatch patterns |

| SITE FEATURES | | | | | |
|---|---|---|---|---|---|
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SITE | EROS | | | Site: Riprap, revetments/stone protection, breakwaters, dikes, jetties, and drains |
| V | SITE | EWAT | | | Site: Water features |
| V | SITE | FENC | | | Site: Fences and handrails |
| V | SITE | FENC | IDEN | | Site: Fence, handrail, ramp, and trail annotation |
| V | SITE | IDEN | | | Site: Existing site feature/structure annotation |
| V | SITE | OTLN | | | Site: Existing site features (play structures, bike racks, benches, recreational equipment) |
| V | SITE | SIGN | | | Site: Signage |
| V | SITE | STRC | | | Site: Structures (bridges, sheds, foundation pads, footings, etc.) |
| V | SITE | STRS | | | Site: Stairs and ramps |
| V | SITE | VEGE | | | Site: Existing treelines and vegetation |
| V | SITE | VEGE | ANOD | | Site: Treelines and Vegetation Anode |
| V | SITE | WALK | | | Site: Walks, trails, and bicycle paths |
| V | SITE | WATR | | | Site: Water features |
| **SPECIAL SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SPCL | IDEN | | | Special Systems: (UMCS, EMCS, CATV, etc.) identifier tags, symbol modifier, and text |
| V | SPCL | SYST | | | Special Systems: (UMCS, EMCS, CATV, etc.) |
| V | SPCL | TRAF | | | Special Systems: Traffic signal system |
| V | SPCL | TRAF | IDEN | | Special Systems: Traffic signal identifier tags, symbol modifier, and text |
| **SANITARY SEWER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SSWR | | | | Utilities: Sanitary lines and manholes |
| V | SSWR | ANOD | | | Sanitary Sewer: Anode |
| V | SSWR | DEVC | | | Sanitary Sewer: Grease traps, grit chambers, flumes, neutralizers, oil/water separators, ejectors, and valves |
| V | SSWR | DEVC | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | FILT | | | Sanitary Sewer: Filtration beds |
| V | SSWR | FILT | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | FLOW | | | Sanitary Sewer: Flow direction arrows |
| V | SSWR | FTTG | | | Sanitary Sewer: Caps and cleanouts |
| V | SSWR | IDEN | | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | JBOX | | | Sanitary Sewer: Junction boxes |
| V | SSWR | JBOX | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | LAGN | | | Sanitary Sewer: Lagoons |
| V | SSWR | LEAC | | | Sanitary Sewer: Leach field |
| V | SSWR | MHOL | | | Sanitary Sewer: Manholes |
| V | SSWR | MHOL | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |

| | | | | | |
|---|---|---|---|---|---|
| V | SSWR | NITF | | | Sanitary Sewer: Nitrification drain fields |
| V | SSWR | PIPE | | | Sanitary Sewer: Main Piping |
| V | SSWR | PIPE | A | | Sanitary Sewer: Abandoned piping |
| V | SSWR | PLNT | | | Sanitary Sewer: Treatment plants |
| V | SSWR | PUMP | | | Sanitary Sewer: Booster pump stations |
| V | SSWR | RSVR | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | SERV | | | Sanitary Sewer: Service piping |
| V | SSWR | SIGN | | | Sanitary Sewer: Surface markers/signs |
| V | SSWR | STNS | IDEN | | Sanitary Sewer: Identifier tags, symbol modifier, and text |
| V | SSWR | TANK | | | Sanitary Sewer: Septic tanks |
| **STEAM SYSTEMS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | STEM | | | | Utilities: Steam lines |
| **STRUCTURES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | STRC | IDEN | | | Structures: Bridges, piers, breakwaters, docks, floats, etc. - annotation |
| V | STRC | OTLN | | | Structures: Bridges, piers, breakwaters, docks, floats, etc. - outlines |
| V | STRC | TOWR | | | Structures: Tower |
| **STORM SEWER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | STRM | | | | Utilities: Storm sewer lines, culverts, manholes, and headwalls |
| V | STRM | AFFF | | | Storm Sewer: AFFF lagoon/detention pond |
| V | STRM | ANOD | | | Storm Sewer: Anode |
| V | STRM | CHUT | | | Storm Sewer: Chutes and concrete erosion control structures |
| V | STRM | CULV | | | Storm Sewer: Culverts |
| V | STRM | DEVC | | | Storm Sewer: Downspouts, flumes, oil/water separators, and flap gates |
| V | STRM | DRAN | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| V | STRM | EROS | | | Storm Sewer: Erosion control (riprap) |
| V | STRM | FLOW | | | Storm Sewer: Flow direction arrows |
| V | STRM | FMON | | | Storm Sewer: Flow monitoring station |
| V | STRM | FTTG | | | Storm Sewer: Caps and cleanouts |
| V | STRM | HWAL | | | Storm Sewer: Headwalls and endwalls |
| V | STRM | IDEN | | | Storm Sewer: Identifier tags, symbol modifier, and text |
| V | STRM | INLT | | | Storm Sewer: Inlets (curb, surface, and catch basins) |
| V | STRM | LAGN | | | Storm Sewer: Lagoons, ponds, watersheds, and basins |
| V | STRM | MHOL | | | Storm Sewer: Manholes |
| V | STRM | PIPE | | | Storm Sewer: Main Piping |
| V | STRM | PIPE | A | | Storm Sewer: Abandoned piping |
| V | STRM | PUMP | | | Storm Sewer: Pump stations |
| V | STRM | ROOF | | | Storm Sewer: Roof drain line |

| | | | | | |
|---|---|---|---|---|---|
| V | STRM | RSVR | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| V | STRM | SERV | | | Storm Sewer: Service piping |
| V | STRM | SIGN | | | Storm Sewer: Surface markers/signs |
| V | STRM | STNS | IDEN | | Storm Sewer: Identifier tags, symbol modifier, and text |
| V | STRM | SUBS | | | Storm Sewer: Subsurface drain piping |
| V | STRM | TEXT | | | Storm Sewer: Annotation |
| **SURVEY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | SURV | DATA | | | Survey: Data (benchmarks and horizontal control points or monuments) |
| V | SURV | IDEN | | | Survey: Survey, baseline, and control line annotation |
| V | SURV | LINE | | | Survey: Survey, baseline, and control line |
| V | SURV | SYMB | | | Survey: Survey line symbol |
| **TAXIWAYS** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | TAXI | CNTR | | | Taxiways: Centerlines |
| V | TAXI | CNTR | IDEN | | Taxiways: Centerline annotation |
| V | TAXI | CNTR | MRKG | | Taxiways: Centerline markings |
| V | TAXI | EDGE | | | Taxiways: Edge markings |
| V | TAXI | HOLD | | | Taxiways: Hold lines |
| V | TAXI | IDEN | | | Taxiways: Identification Annotation |
| V | TAXI | OTLN | | | Taxiways: Outlines |
| V | TAXI | SHLD | | | Taxiways: Shoulder |
| **TOPOGRAPHY** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | TOPO | BORE | | | Topography: Boring locations |
| V | TOPO | BRKL | | | Topography: Breaklines |
| V | TOPO | COOR | | | Topography: Coordinate grid ticks and text |
| V | TOPO | DTCH | | | Topography: Ditches and swales |
| V | TOPO | MAJR | | | Topography: Major contours |
| V | TOPO | MAJR | IDEN | | Topography: Major contour annotation |
| V | TOPO | MINR | | | Topography: Minor contours |
| V | TOPO | MINR | IDEN | | Topography: Minor contour annotation |
| V | TOPO | SHOR | | | Topography: Shorelines, land features, and references |
| V | TOPO | SLOP | TOPT | | Topography: Top/toe slopes |
| V | TOPO | SOUN | | | Topography: Soundings |
| V | TOPO | SPEC | | | Topography: Species Site |
| V | TOPO | SPOT | | | Topography: Spot elevations |
| V | TOPO | TEXT | | | Topography: Annotation |
| V | TOPO | TINN | | | Topography: DTM triangles |
| V | TOPO | TINN | BNDY | | Topography: DTM Boundaries |
| V | TOPO | TINN | NODE | | Topography: DTM points |
| V | TOPO | TINN | SCAN | | Topography: DTM Laser Scans |

| | | | | | |
|---|---|---|---|---|---|
| V | TOPO | WETL | | | Topography: Wetland |
| **GENERAL UTILITIES** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | UTIL | UNID | IDEN | | Utilities: Annotation |
| V | UTIL | UNID | LINE | | Utilities: Lines |
| **WATER** | | | | | |
| **Discipline** | **Major** | **Minor1** | **Minor2** | **Minor3** | **Layer Description** |
| V | WATR | | | | Utilities: Water lines, hydrants, tanks |
| V | WATR | IDEN | | | Utilities: Water annotation |

# Appendix H-2 - Space Allocation Codes

## H-2.1 Airline Name and Codes

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | 6M | 40-MILE AIR | |
| | VY | A.C.E. | |
| | | A.S. NORVING | |
| | | AARON AIRLINES PTY | |
| | SM | ABERDEEN AIRWAYS | 731 |
| | GB | ABX AIR (CARGO) | 832 |
| | VX | ACES | 137 |
| | XQ | ACTION AIRLINES | 410 |
| | ZY | ADALBANAIR | 121 |
| | IN | ADIRONDACK AIRLINES | |
| | JP | ADRIA AIRWAYS | 165 |
| REA | RE | AER ARANN | 684 |
| EIN | EI | AER LINGUS | 053 |
| | | AEREOS SERVICIOS DE TRANSPORTE | 278 |
| | DU | AERIAL TRANSIT COMPANY(CARGO) | 892 |
| | JR | AERO CALIFORNIA | 078 |
| | DF | AERO COACH AVIATION INT | 868 |
| | 2G | AERO DYNAMICS (CARGO) | |
| | | AERO EJECUTIVOS | 681 |
| | YP | AERO LLOYD | 633 |
| | | AERO SERVICIOS | 243 |
| | | AERO TRANSPORTES PANAMENOS | 155 |
| | QA | AEROCARIBE | 723 |
| | | AEROCHAGO AIRLINES | 198 |
| | 3Q | AEROCHASQUI | 298 |
| | | AEROCOZUMEL | 686 |
| AFL | SU | AEROFLOT | 555 |
| | FP | AEROLEASING S.A. | |
| ARG | AR | AEROLINEAS ARGENTINAS | 044 |
| | YU | AEROLINEAS DOMINICANAS | |
| | VG | AEROLINEAS EL SALVADOR (CARGO) | 680 |
| | | AEROLINEAS URUGUAYAS | 966 |
| | BQ | AEROMAR (CARGO) | 926 |
| | AM | AEROMEXICO | 139 |
| | | AEROMONTERREY | 722 |
| | XX | AERONAVES DEL PERU (CARGO) | 624 |
| | RL | AERONICA | 127 |
| | PO | AEROPELICAN AIR SERVICES | |
| | WL | AEROPERLAS | |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | PL | AEROPERU | 210 |
| | 6P | AEROPUMA, S.A. (CARGO) | |
| | AW | AEROQUETZAL | 291 |
| | XU | AEROVIAS (CARGO) | 316 |
| | | AEROVIAS COLOMBIANAS (CARGO) | 158 |
| | | AFFRETAIR (PRIVATE) (CARGO) | 292 |
| | | AFRICAN INTERNATIONAL AIRWAYS | 648 |
| | ZI | AIGLE AZUR | |
| AMM | DP | AIR 2000 | |
| | RK | AIR AFRIQUE | 092 |
| DAH | AH | AIR ALGERIE | 124 |
| | 3J | AIR ALLIANCE | 188 |
| | 4L | AIR ALMA | 248 |
| | | AIR ALPHA | |
| | | AIR AQUITAINE | |
| | FQ | AIR ARUBA | 276 |
| | 9A | AIR ATLANTIC LTD. | |
| AAG | ES | AIR ATLANTIQUE | |
| | OU | AIR ATONABEE/CITY EXPRESS | 253 |
| | AX | AIR AURORA (CARGO) | 386 |
| | ZX | AIR B.C. | 742 |
| | AJ | AIR BELGIUM | |
| | KF | AIR BOTNIA | |
| | BP | AIR BOTSWANA | 636 |
| | | AIR BRASIL | 853 |
| | | AIR BRIDGE CARRIERS (CARGO) | 912 |
| | VH | AIR BURKINA | 226 |
| | PB | AIR BURUNDI | 919 |
| | TY | AIR CALEDONIE | 190 |
| | SB | AIR CALEDONIE INTERNATIONAL | 063 |
| ACA | AC | AIR CANADA | 014 |
| | XC | AIR CARIBBEAN | 918 |
| | SF | AIR CHARTER | |
| | | AIR CHARTER (CHARTER) | |
| | | AIR CHARTER SYSTEMS | 272 |
| CCA | CA | AIR CHINA | 999 |
| | CE | AIR CITY S.A. | |
| CNB | | AIR COLUMBUS | |
| | OR | AIR COMORES | 687 |
| | YN | AIR CREEBEC | 219 |
| | DJ | AIR DJIBOUTI | 611 |
| | EN | AIR DOLOMITI | |
| | RQ | AIR ENGIADINA | 834 |
| | | AIR ENTERPRISE INTERNATIONAL | |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| AEA | AE | AIR EUROPA | 803 |
| | UX | AIR EUROPA (AIR ESPANA S.A.) | |
| | BS | AIR EXCHANGE (CARGO) | 595 |
| | VJ | AIR EXEL | 900 |
| | DN | AIR EXEL (BELGIQUE) | |
| | NE | AIR EXEL (UK) LTD. | |
| | GS | AIR FOYLE | |
| AFR | AF | AIR FRANCE | 057 |
| FUA | | AIR FUTURA | |
| | GN | AIR GABON | 185 |
| | IV | AIR GAMBIA | |
| | OG | AIR GUADELOUPE | 937 |
| | GI | AIR GUINEE | 093 |
| | ID | AIR GUYANE | 694 |
| | | AIR HAITI (CARGO) | 623 |
| | GG | AIR HOLLAND B.V | |
| AHK | | AIR HONG KONG (CARGO) | 152 |
| | OX | AIR HUDIK | |
| AIC | AI | AIR INDIA | 098 |
| | 9J | AIR INTEGRA | |
| | IT | AIR INTER | 279 |
| | 3H | AIR INUIT | |
| | VU | AIR IVOIRE | 084 |
| | JM | AIR JAMAICA | |
| | YH | AIR JET | |
| | UV | AIR KANGAROO ISLAND | |
| | QP | AIR KENYA AVIATION | |
| | | AIR KOREA CO. LTD. | |
| AIS | UE | AIR L.A. | 396 |
| ALK | UL | AIR LANKA | 603 |
| | VD | AIR LIBERTE | 718 |
| | FU | AIR LITTORAL | 659 |
| | MD | AIR MADAGASCAR | 258 |
| | QM | AIR MALAWI | 167 |
| KMC | | AIR MALTA | |
| AMC | KM | AIR MALTA | 643 |
| | 7N | AIR MANITOBA | 268 |
| | NN | AIR MARTINIQUE | 606 |
| | MR | AIR MAURITANIE | 174 |
| MAU | MK | AIR MAURITIUS | 239 |
| | | AIR MERCURY INT (CARGO) | |
| | ZV | AIR MIDWEST | 471 |
| | | AIR MOLOKAI | 437 |
| | OM | AIR MONGOL | 289 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | QE | AIR MOOREA | 067 |
| | SW | AIR NAMIBIA | 186 |
| | | AIR NATIONAL | 417 |
| | ON | AIR NAURU | 123 |
| | LW | AIR NEVADA | 568 |
| | NZ | AIR NEW ZEALAND | 086 |
| | DB | AIR NIAGARA (CARGO) | 296 |
| | EL | AIR NIPPON | |
| | PX | AIR NIUGINI | 656 |
| | 4N | AIR NORTH | 287 |
| | HS | AIR NORTH INTERNATIONAL LTD | 935 |
| | QK | AIR NOVA | 983 |
| | GX | AIR ONTARIO | 368 |
| | QN | AIR OUTRE MER | 676 |
| | FJ | AIR PACIFIC | 260 |
| | GZ | AIR RAROTONGA | 755 |
| | UZ | AIR RESORTS AIRLINES | |
| | UU | AIR REUNION | 760 |
| | ZJ | AIR ROUTING | |
| | RY | AIR RWANDA | 178 |
| | 5W | AIR SAN JUAN CHARTAIR | 529 |
| | 7W | AIR SASK AVIATION | |
| | QR | AIR SATELLITE | |
| | 9V | AIR SCHEFFERVILLE | |
| | UJ | AIR SEDONA | |
| | DS | AIR SENEGAL | 223 |
| SEY | HM | AIR SEYCHELLES | 061 |
| | 4D | AIR SINAI | 903 |
| | WV | AIR SOUTH | 399 |
| | NY | AIR ST. VINCENT | |
| | OJ | AIR ST.BARTHELEMY | 981 |
| | PJ | AIR ST.PIERRE | 638 |
| | | AIR STORD | |
| | YI | AIR SUNSHINE | 806 |
| | GK | AIR SWAZI (CARGO) | 097 |
| | VT | AIR TAHITI | 135 |
| ATC | TC | AIR TANZANIA CORPORATION | 197 |
| | HT | AIR TCHAD | 095 |
| | CS | AIR TORONTO | 777 |
| | | AIR TRANSAT (CHARTER) | |
| | TF | AIR TRANSPORT PYRENEES | 655 |
| | | AIR TRANSPORT SCHIPHOL | |
| | VK | AIR TUNGARU CORP | 715 |
| | QW | AIR TURKS & CAICOS | 254 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| UKL | UK | AIR UK | 130 |
| LEI | | AIR UK LEISURE | |
| | NF | AIR VANUATU | 218 |
| | 6V | AIR VEGAS | |
| | VM | AIR VENDEE | 982 |
| | | AIR VIA BULGARIAN AIRWAYS | 699 |
| | 8K | AIR VITKOVICE | |
| | ZW | AIR WISCONSIN | 303 |
| AZR | QC | AIR ZAIRE | 207 |
| | UM | AIR ZIMBABWE CORPORATION | 168 |
| | ZF | AIRBORNE OF SWEDEN | |
| | 4C | AIRES | |
| | XL | AIR-GLACIERS | |
| | FL | AIRLEC | |
| | | AIR-LIFT INTERNATIONAL (CARGO) | |
| | CW | AIRLINE OF THE MARSHALL ISLAND | 778 |
| | IP | AIRLINES OF TASMANIA | |
| | | AIRPAC AIRLINES (CARGO) | 856 |
| | 5S | AIRSPEED AVIATION | |
| AIH | | AIRTOURS INTERNATIONAL | |
| | 3N | AIRVANTAGE (CARGO) | |
| | HO | AIRWAYS INTERNATIONAL | 372 |
| AWD | | AIRWORLD | |
| | 6L | AKLAK AIR | 709 |
| | | ALAS DE TRANSPORTES INT (CARGO) | 791 |
| | AS | ALASKA AIRLINES | 027 |
| | 6D | ALASKA ISLAND AIR | |
| | 2L | ALBERNI AIRWAYS | |
| | | ALIADRIATICA | |
| | AZ | ALITALIA | 055 |
| | TO | ALKAN AIR | 751 |
| ANA | NH | ALL NIPPON AIRWAYS | 205 |
| | | ALL SEASONS AIR PACIFIC | 525 |
| | | ALLEGHENY COMMUTER AIRLINES | 358 |
| | 3A | ALLIANCE AIRLINES | 317 |
| | QQ | ALLIED AIRLINES INC | 446 |
| | LM | ALM | 119 |
| | AQ | ALOHA AIRLINES | 327 |
| | WP | ALOHA ISLANDAIR | 347 |
| LPN | | ALPENAIR (CHARTER) | |
| | 7V | ALPHA AIR | 895 |
| | 5A | ALPINE AVIATION | 511 |
| | AL | ALSAIR S.A | |
| | DY | ALYEMDA-DEMOCRATIC YEMEN AIR | 607 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| AMY | | AMBASSADOR | |
| AWA | HP | AMERICA WEST AIRLINES | 401 |
| AAL | AA | AMERICAN AIRLINES | 001 |
| AMT | TZ | AMERICAN TRANS AIR INC | 366 |
| | | AMERIJET INTERNATIONAL (CARGO) | 810 |
| | | AMTRAK | 554 |
| | OB | ANDALUCIA INTERNATIONAL AIRWAY | |
| | ED | ANDES AIRLINE (CARGO) | 215 |
| | | ANGLO AIRLINES | |
| | VF | ANGLO ROMANIAN AIRLINE | |
| | | ANSETT AIR FREIGHT | 964 |
| AAA | AN | ANSETT AUSTRALIA AIRLINES | 090 |
| | WX | ANSETT EXPRESS | 187 |
| | ZQ | ANSETT NEW ZEALAND | 941 |
| | MV | ANSETT W.A. | 181 |
| | | ANSETT WORLDWIDE AVIATION | 757 |
| | 7P | APA INTERNATIONAL AIR | 917 |
| | VZ | AQUATIC AIRWAYS | |
| | 5F | ARCTIC CIRCLE AIR | |
| FGA | FG | ARIANA AFGHAN AIRLINES | 255 |
| | XA | ARINC | 545 |
| | OQ | ARIZONA PACIFIC AIRWAYS | 503 |
| | IZ | ARKIA ISRAEL AIRLINES | 238 |
| | JW | ARROW AIR (CARGO) | 404 |
| | UH | ARUBAIR N.V. | |
| | OZ | ASIANA AIRLINES | 988 |
| | AP | ASPEN AIRWAYS | |
| | | ASTRO AIR INTERNATIONAL | 769 |
| | 9T | ATHABASKA AIRWAYS | 909 |
| | BM | ATI-AERO TRANSPORTI ITALIANI | |
| | | ATLANTIC AIR TRANSPORT | |
| | | ATLANTIC AIRLINES | 336 |
| | RC | ATLANTIC AIRWAYS, FAROE ISLES | 767 |
| | | ATLANTIC ISLAND AIR | |
| | EV | ATLANTIC SOUTHEAST AIRLINES | 862 |
| | PT | ATLAS AIR SERVICE | |
| | BH | AUGUSTA AIRWAYS | |
| AUR | GR | AURIGNY AIR SERVICES | 924 |
| | NO | AUS-AIR | |
| | AU | AUSTRAL | 143 |
| | IM | AUSTRALIA-ASIA AIRLINES | |
| | TN | AUSTRALIAN AIRLINES | 102 |
| | SO | AUSTRIAN AIR SERVICES | |
| AVA | OS | AUSTRIAN AIRLINES | 257 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | | AUSTRIAN AIRTRANSPORT | 663 |
| | CG | AVAIKI AIR | |
| | VE | AVENSA | 128 |
| | JZ | AVIA AB | 752 |
| | 5T | AVIACION DEL NOROESTE | 661 |
| | AO | AVIACO | 110 |
| | | AVIAEXPRESS AIRLINES | 732 |
| | 5V | AVIAIR AVIATION | |
| | AV | AVIANCA COLOMBIA | 134 |
| | RD | AVIANOVA | |
| | GU | AVIATECA | 240 |
| | | AVIOGENEX | |
| | 2B | B. AIRWAYS (CARGO) | 817 |
| | | B0-S-AIRE AIRLINES | 871 |
| BHS | UP | BAHAMASAIR | 111 |
| | 8B | BAKER AVIATION | |
| | | BALAIR | 290 |
| LAZ | LZ | BALKAN BULGARIAN AIRLINES | 196 |
| | BT | BALTIA AIR LINES | |
| | TI | BALTIC INTERNATIONAL AIRLINES | |
| | PG | BANGKOK AIRWAYS CO | 829 |
| | | BANKAIR (CARGO) | |
| | QO | BAR HARBOR AIRLINES | 473 |
| | 6Q | BARROW AIR | |
| | 6B | BAXTER AVIATION | |
| BYU | DD | BAYU INDONESIA AIR | |
| | JV | BEARSKIN LAKE AIR SERVICE | 632 |
| | | BELIZE AIR INT (CARGO) | 986 |
| | LL | BELL AIR | |
| | 5B | BELLAIR | |
| | CH | BEMIDJI AIRLINES | 872 |
| | 8E | BERING AIR | |
| | WZ | BERLIN EUROPEAN U.K. | 758 |
| | GQ | BIG SKY AIRLINES | 387 |
| BBC | BG | BIMAN BANGLADESH AIRLINES | 997 |
| | NT | BINTER CANARIES | |
| | | BIRGENAIR CHARTER GROUP | |
| | VB | BIRMINGHAM EUROPEAN AIRWAYS | 702 |
| | | BLACKHAWK (CARGO) | 536 |
| | BV | BOPAIR | 928 |
| | 3B | BORINQUEN AIR (CARGO) | 433 |
| | BO | BOURAQ INDONESIA AIRLINES | 666 |
| | BU | BRAATHENS S.A.F.E | 154 |
| | | BRANIFF INTERNATIONAL A/L | 577 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | JJ | BRASIL CENTRAL LINHA AEREA REG | |
| DZH | DB | BRIT AIR | 750 |
| BAL | BY | BRITANNIA AIRWAYS | 754 |
| BAF | | BRITISH AIR FERRIES LTD | |
| BAW | BA | BRITISH AIRWAYS | 125 |
| | RX | BRITISH INDEPENDENT AIRWAYS | |
| BIH | UR | BRITISH INT HELICOPTERS | |
| BMA | BD | BRITISH MIDLAND AIRWAYS | 236 |
| BWL | VF | BRITISH WORLD AIRLINES | 762 |
| | | BRITT AIRWAYS | 565 |
| | BC | BRYMON AVIATION | 657 |
| | FR | BURLINGTON AIR EXPRESS | 934 |
| | II | BUSINESS AIR | |
| | | BUSINESS AIR TRAVEL | 664 |
| | HQ | BUSINESS EXPRESS | 357 |
| | DR | BUSINESS FLIGHT OF SCANDINAVIA | 244 |
| | CT | C.A.V.E | |
| | | CAICOS CARIBBEAN AIR. (CARGO) | |
| CKT | KT | CALEDONIAN AIRWAYS | |
| | MO | CALM AIR INT | 622 |
| | 3C | CAMAI AIR | 451 |
| | UY | CAMEROON AIRLINES | 604 |
| CMM | | CANADA 3000 | |
| CDN | | CANADIAN AIRLINES INT | 018 |
| | 4A | CANADIAN EAGLE AIRLINES | |
| | KG | CANAFRICA TRANSPORTES AEREOS | |
| | | CANAIR (CARGO) | |
| | 9K | CAPE AIR | 306 |
| | 6C | CAPE SMYTHE AIR SERVICE | 879 |
| | | CARGO AIRLINES | 700 |
| | CV | CARGOLUX AIRLINES (CARGO) | 172 |
| | OW | CARGOSUR (CARGO) | |
| | | CARIBBEAN AIR CARGO (CARGO) | 749 |
| | | CARIBBEAN AIRWAYS | |
| | KW | CARNIVAL AIR LINES | 521 |
| | CX | CATHAY PACIFIC AIRWAYS | 160 |
| | KX | CAYMAN AIRWAYS | 378 |
| | | CAYUGA AIR (CARGO) | 402 |
| | | CC AIR (US AIR COMMUTER) | 354 |
| CNA | | CENTENIAL AIRLINES | |
| | GW | CENTRAL AMERICAN AIRLINES | 712 |
| | 9M | CENTRAL MOUNTAIN AIR | 634 |
| | BK | CHALK'S/PARADISE ISLAND AIRWAY | 522 |
| | | CHALLENGE AIR CARGO (CARGO) | 307 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | | CHANNEL EXPRESS(AIR SER)(CARGO | |
| | NK | CHARTER ONE | 487 |
| | | CHAUTAUQUA AIRLINES | 363 |
| | | CHICAGO AIR TAXI | 439 |
| | | CHILCOTIN-CARIBO AVIATION | 116 |
| CAL | CI | CHINA AIRLINES | 297 |
| | MU | CHINA EASTERN AIRLINES | 781 |
| | | CHINA GENERAL AVIATION | |
| | CJ | CHINA NORTHERN AIRLINES | 782 |
| | WH | CHINA NORTHWEST AIRLINES | 783 |
| | CZ | CHINA SOUTHERN AIRLINES | 784 |
| | SZ | CHINA SOUTHWEST AIRLINES | 785 |
| | JS | CHOSONMINHANG KOREAN AIRWAYS | 120 |
| | SX | CHRISTMAN AIR SYSTEM | 509 |
| | QI | CIMBER AIR A/S | 647 |
| | | CIRCLE AIR FREIGHT | |
| | CC | CISKEI INTERNATIONAL | 222 |
| | BX | COAST AIR | 970 |
| | DQ | COASTAL AIR TRANSPORT | 457 |
| | | COASTAL AIRWAYS | 819 |
| | LQ | COHLMIA AVIATION (CARGO) | |
| | 7C | COLUMBIA PACIFIC AIRLINES | |
| | OH | COMAIR | 886 |
| | MN | COMMERCIAL AIRWAYS | 161 |
| | XK | COMPAGNIE CORSE MEDITERRANEE | 146 |
| CFP | CF | COMPANIA DE AVIACION FAUCETT | 163 |
| MXA | MX | COMPANIA MEXICANA | 132 |
| | YM | COMPASS AIRLINES | 612 |
| | | CONNECTAIR CHARTERS | |
| | 4S | CONNER AIR LINES | 575 |
| | 5C | CONQUEST AIRLINES | 355 |
| | DD | CONTI-FLUG | |
| COA | CO | CONTINENTAL AIRLINES | 005 |
| | KC | COOK ISLANDS INTERNATIONAL | |
| | KO | COOK STRAIT SKYFERRY | |
| | CM | COPA-COMPANIA PANAMENA DE AVCN | 230 |
| | | CORDOBA AIR CARGO | 660 |
| | | CORPORATE AIR (CARGO) | |
| | | CROATIA AIRLINES | |
| | LX | CROSSAIR | 724 |
| | | CROWN AIRWAYS | 501 |
| | SC | CRUZEIRO DO SUL | 049 |
| CSA | OK | CSA CZECHOSLOVAK AIRLINES | 064 |
| | CU | CUBANA | 136 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| CYP | CY | CYPRUS AIRWAYS | 048 |
| | YK | CYPRUS TURKISH AIRLINES | 056 |
| | | DAIRO AIR SERVICES (CARGO) | 761 |
| | DX | DANAIR A/S | 609 |
| | DA | DAN-AIR SERVICES | 062 |
| | 2D | DAWN AIR | 551 |
| | 9D | DELTA AIR CHARTER | 689 |
| DAL | DL | DELTA AIR LINES | 006 |
| | DI | DELTA AIR REGIONAL FLUGVERKEHR | 944 |
| DLH | LH | DEUTSCHE LUFTHANSA AG. | 220 |
| | ER | DHL AIRWAYS | 423 |
| | UO | DIRECT AIR | 418 |
| | DH | DISCOVERY AIRWAYS | 438 |
| | DW | DLT DEUTSCHE LUFTVERK. | 683 |
| | YU | DOMINAIR | 725 |
| | DO | DOMINICANA | 113 |
| | DZ | DOUGLAS AIRWAYS | 275 |
| | KA | DRAGONAIR | 043 |
| | KB | DRUK AIR | 787 |
| | 8D | DULLES EXPRESS | 506 |
| | QG | DYNAMIC AIR | |
| | EX | EAGLE AVIATION | |
| | XZ | EASTAIR (ICELAND) | |
| | UN | EASTERN AUSTRALIA AIRLINES | |
| | EW | EAST-WEST AIRLINES | 088 |
| | EU | ECUATORIANA | 341 |
| | 3D | EDGARTOWN AIR | |
| | MS | EGYPTAIR | 077 |
| | LY | EL AL ISRAEL AIRLINES | 114 |
| | EB | EMERY WORLDWIDE (CARGO) | |
| | EK | EMIRATES | 176 |
| | EM | EMPIRE AIRLINES | 464 |
| | BE | ENTERPRISE AIRLINES | 409 |
| | | ENVIROSALES CORPORATION | 959 |
| | 3P | EQUATOR AIRLINES | |
| | GJ | EQUATORIAL INT AIR OF SAO TOME 980 | |
| | 7H | ERA AVIATION | 808 |
| ETH | ET | ETHIOPIAN AIRLINES | 071 |
| | RN | EURALAIR INTERNATIONAL | 836 |
| | YQ | EURO AIR HELICOPTER SERVICE AB | |
| | EE | EURO BERLIN | 770 |
| ECA | | EUROCYPRAIR | |
| EUC | | EURO-CYPRIA (CHARTER) | |
| EEZ | | EUROFLY | |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | | EUROFLY (CHARTER) | |
| | EY | EUROPE AERO SERVICE | 546 |
| | | EUROPEAN EXPEDITE | 256 |
| | | EUROWORLD | 844 |
| | BR | EVA AIR | |
| | OT | EVERGREEN HELICOPTERS ALASKA | |
| EXC | EQ | EXCALIBUR AIRWAYS | |
| | AD | EXEC EXPRESS | 504 |
| | NA | EXECUTIVE AIR CHARTER | |
| | FX | EXPRESS AIR | 569 |
| | 9E | EXPRESS AIRLINES | 430 |
| | | EXPRESS ONE INTERNATIONAL INC | |
| | IH | FALCON CARGO AB. | 759 |
| | EF | FAR EASTERN AIR TRANSPORT | 265 |
| | UD | FAST AIR CARRIER (CARGO) | 726 |
| FDX | FM | FEDERAL EXPRESS CORP. (CARGO) | 023 |
| | PC | FIJI AIR | 677 |
| FIN | AY | FINNAIR | 105 |
| | FA | FINNAVIATION | |
| | 7F | FIRST AIR | 245 |
| | 9R | FLAGSHIP EXPRESS SERV (CARGO) | 359 |
| | FK | FLAMENCO AIRWAYS | 580 |
| | IX | FLANDRE AIR | 972 |
| | VV | FLEXAIR | |
| | EC | FLIGHT LINE | 452 |
| | YC | FLIGHT WEST AIRLINES | 060 |
| | GM | FLITESTAR | 805 |
| | | FLORIDA EXPRESS | 456 |
| | OP | FLYING BOAT | 370 |
| | FT | FLYING TIGER LINE (CARGO) | |
| | GE | FOSHING AIRLINES | |
| | | FOUR STAR AIR CARGO (CARGO) | 861 |
| | ZU | FREEDOM AIR | 221 |
| | 3F | FRESH AIR CORP. (CARGO) | 815 |
| | WR | FRIENDLY ISLANDS AIRWAYS | 971 |
| | SI | FRIESENFLUG | SI |
| | 4F | FRONTIER AIR | 233 |
| | 2F | FRONTIER FLYING SERVICE | 517 |
| | GO | GAMBIA AIR SHUTTLE | 216 |
| | CK | GAMBIA AIRWAYS | 866 |
| GIA | GA | GARUDA INDONESIAN AIRWAYS | 126 |
| | | GAS AIR CARGO | 271 |
| | | GATEWAY PACE AVIATION | 807 |
| GBL | GT | GB AIRWAYS | 171 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | GP | GEMINI (CARGO) | 625 |
| GHA | GH | GHANA AIRWAYS CORPORATION | 237 |
| | 9C | GILL AVIATION | 786 |
| | DC | GOLDEN AIR COMMUTER | |
| | | GOLDEN STAR AIR CARGO | |
| | LK | GOLDFIELDS AIR SERVICES | |
| | 8G | GP EXPRESS AIRLINES INC. | 825 |
| | QD | GRAND AIRWAYS | 475 |
| | YE | GRAND CANYON AIRLINES | 374 |
| | | GREAT BARRIER AIRLINES | |
| | | GREAT CHINA AIRLINES | |
| | ZK | GREAT LAKES AVIATION | 846 |
| GRN | WK | GREEN AIR (CHARTER) | |
| | GL | GREENLANDAIR (GRONLANDSFLY) | 631 |
| GFA | GF | GULF AIR | 072 |
| | XF | GULF FLITE CENTER | 383 |
| | 3M | GULFSTREAM INTERNATIONAL A/L | 449 |
| | GY | GUYANA AIRWAYS CORPORATION | 206 |
| | 7A | HAINES AIRWAYS | |
| | | HAITI AIR FREIGHT INTERNAT. | 671 |
| | | HAITI NATIONAL AIRLINES | 284 |
| | TV | HAITI TRANS AIR | 362 |
| | WD | HAITIAN AVIATION LINE | 851 |
| HAS | HX | HAMBURG AIRLINES | 099 |
| | VN | HANG KHONG VIETNAM | 738 |
| | 4H | HANNA'S AIR SALTSPRING | |
| | 8H | HARBOR AIR SERVICE | 458 |
| | HG | HARBOR AIRLINES | 495 |
| | HA | HAWAIIAN AIRLINES | 173 |
| | ZL | HAZELTON AIRLINES | |
| | | HEAVYLIFT CARGO AIRL. (CARG0) | |
| | YO | HELI AIR MONACO | 747 |
| | OI | HELI TRANSPORT | 764 |
| | MY | HELIFRANCE | |
| | IU | HELIFRANS AIR SERVICE | 860 |
| | CN | HELIJET | |
| | JB | HELIJET AIRWAYS | 613 |
| | | HENSON AVIATION | 531 |
| | 2E | HERMANS/MARKAIR EXPRESS | 325 |
| | | HEX'AIR | 848 |
| | ZS | HISPANIOLA AIRWAYS (CARGO) | 263 |
| | HJ | HOLMSTROEM AIR AB | |
| | | HONDURAS INTERCARGO AIRLINE | 669 |
| | QX | HORIZON AIRLINES | 481 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| ABR | AK | HUNTING CARGO AIRLINES | |
| | | HUTCHAIR | 863 |
| | HZ | HUTCHINSON AIR (CARGO) | |
| | | I.L.P.O/ARUBA CARGO (CARGO) | 564 |
| IBE | IB | IBERIA | 075 |
| ICE | FI | ICELANDAIR FLUGLEIDIR | 108 |
| | LS | ILIAMNA AIR TAXI | |
| | IC | INDIAN AIRLINES | 058 |
| | ND | INTAIR | 330 |
| IEA | | INTER EUROPEAN AIRWAYS | |
| | | INTERAMERICANA DE AVIACION | 601 |
| | RS | INTERCONTINENTAL DE AVIACION | |
| | IF | INTERFLUG | 107 |
| | | INTER-ISLAND AIR | 882 |
| | | INTERNACIONAL DE AVIACION | 420 |
| | IQ | INTEROT AIR SERVICES | 614 |
| | | IPEC AVIATION (CARGO) | 717 |
| IRA | IR | IRAN AIR | 096 |
| | IA | IRAQI AIRWAYS | 073 |
| | 4M | ISLAND AIR | |
| | AK | ISLAND AIR, SA | |
| | IS | ISLAND AIRLINES | |
| | 2S | ISLAND EXPRESS | |
| | 2N | ISLANDER AIR/AIR NEWARK | |
| | WC | ISLENA AIRLINES | 282 |
| | FW | ISLES OF SCILLY SKYBUS | |
| | IL | ISTANBUL AIRLINES | |
| ITJ | | ITALJET (CHARTER) | |
| | LN | JAMAHIRIYA LIBYAN ARAB AIRLINE | 148 |
| | | JAMAICA AIR FREIGHTERS | 605 |
| | | JANAIR (CARGO) | 462 |
| | JN | JAPAN AIR COMMUTER | |
| JAL | JL | JAPAN AIR LINES | 131 |
| | JD | JAPAN AIR SYSTEM | 234 |
| | EG | JAPAN ASIA AIRWAYS | 688 |
| | JT | JARO INTERNATIONAL | |
| JAT | JU | JAT YUGOSLAV AIRLINES | 115 |
| JEA | JY | JERSEY EUROPEAN AIRWAYS | 267 |
| | JX | JES AIR | 691 |
| | | JET AIRWAYS | |
| | 9W | JET AIRWAYS (INDIA) LTD | |
| | | JET ALSACE | 716 |
| | | JET EXECUTIVE INTERNATIONAL | 310 |
| | JI | JET EXPRESS | 878 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | 8J | JETALL | 662 |
| | DK | KAMPUCHEA AIRLINES | |
| | KR | KARAIR | 261 |
| | 6K | KEEWATIN AIR | 157 |
| | KD | KENDELL AIRLINES | 678 |
| | 5K | KENMORE AIR | |
| | 4K | KENN BOREK AIR | 652 |
| | KQ | KENYA AIRWAYS | 706 |
| | 6S | KETCHIKAN AIR SERVICE | 469 |
| | HE | KEYSTONE AIR SERVICE | 921 |
| | | KING ISLAND AIRLINES | |
| | 2K | KITTY HAWK AIRWAYS (CARGO) | 352 |
| | KL | KLM CITYHOPPER (KLM COMMUTER) | |
| KLM | KL | KLM ROYAL DUTCH AIRLINES | 074 |
| KAL | KE | KOREAN AIR | 180 |
| | 2Y | KOYUKON AIR | |
| KAC | KU | KUWAIT AIRWAYS | 229 |
| | KH | KYRNAIR | |
| | JF | L.A.B. FLYING SERVICE | 510 |
| | 7J | L.A.P.S.A | 213 |
| LAB | | LAB AIRLINES | |
| | WJ | LABRADOR AIRWAYS | 927 |
| | LR | LACSA | 133 |
| | LD | LADE (LINEAS AER DEL ESTADO) | 177 |
| | UC | LADECO | 145 |
| | | LAKE UNION AIR | 461 |
| | 7L | LAKE UNION AIR SERVICE | 461 |
| | TM | LAM-LINHAS AEREAS MOCAMBIQUE | 068 |
| | LA | LAN-CHILE | 045 |
| | QV | LAO AVIATION | 627 |
| | PZ | LAP(LINEAS AEREAS PARAGUAYAS) | 705 |
| | MJ | LAPA | 069 |
| | TH | LAR TRANSREGIONAL | 259 |
| | 7K | LARRY'S FLYING SERVICE | |
| | TQ | LAS VEGAS AIRWAYS | 540 |
| | NG | LAUDA AIR | 231 |
| | LV | LAV LINEA AERO VENEZOLANA | 046 |
| | QL | LESOTHO AIRWAYS | 721 |
| | 4X | L'EXPRESS AIRLINES | 534 |
| | LI | LIAT | 140 |
| | QB | LIGNES AERIENNES INTER-QUEBEC | 968 |
| | GC | LINA CONGO | 246 |
| | RT | LINCOLN AIRLINES | |
| | LC | LINEAS AER DEL CARIBE (CARGO) | 029 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | LF | LINJEFLYG | 247 |
| | JK | LINK AIRWAYS | |
| | LE | LINK AIRWAYS (SOUTH AFRICA) | 600 |
| | | LINK AMERICA (CARGO) | 474 |
| LAL | TE | LITHUANIAN AIRLINES | |
| LLB | LB | LLOYD AEREO BOLIVIANO | 051 |
| LOG | LC | LOGANAIR | 122 |
| | | LOKEN AVIATION INC | |
| | YL | LONG ISLAND AIRLINES LTD | 443 |
| LOT | LO | LOT POLISH AIRLINES | 080 |
| | L2 | LOVE AIR | |
| | LT | LTU INTERNATIONAL AIRWAYS | 266 |
| LTE | | LUFTANSA TRANS ESPANA | |
| | LG | LUXAIR LUXEMBOURG AIRLINES | 149 |
| | CD | M.K. AIRLINES | |
| | 3R | MACAIR | 812 |
| | MT | MACKNIGHT AIRLINES | |
| DMA | DM | MAERSK AIR (DANISH AIRLINES) | 349 |
| | 2J | MAJESTIC AIRLINES (CARGO) | |
| | | MAKUNG AIRLINES | |
| MAS | MH | MALAYSIA AIRLINES | 232 |
| MAH | MA | MALEV HUNGARIAN AIRLINES | 182 |
| | FH | MALI AIRWAYS | |
| | HB | MALI-TINBOUCTOU AIR SERVICE | 679 |
| | 6E | MALMO AVIATION | 984 |
| MXE | JE | MANX AIRLINES INC. | 916 |
| | BF | MARKAIR | 478 |
| | MP | MARTINAIR HOLLAND NV | |
| | MW | MAYA AIRWAYS | |
| | IG | MERIDIANA | 191 |
| | MZ | MERPATI NUSANTARA AIRLINES | 621 |
| | YV | MESA AIRLINES | 533 |
| | XJ | MESABA AIRLINES | 582 |
| | | METAVIA AIRLINES | 873 |
| | | METHOW AVIATION | 519 |
| | HY | METRO AIRLINES | 380 |
| | | METRO AIRLINES NORTHEAST | 450 |
| | | METRO EXPRESS | 887 |
| | FY | METROFLIGHT AIRLINES | |
| | MG | MGM GRAND AIR | 558 |
| | | MICHIGAN PENINSULA AIRWAYS | 574 |
| MEA | ME | MIDDLE EAST AIRLINES | 076 |
| | ML | MIDWAY AIRLINES | 557 |
| | WV | MIDWEST AVIATION | 896 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | YX | MIDWEST EXPRESS AIRLINES | 453 |
| | | MILLON AIR (CARGO) | 034 |
| | IW | MINERVE | 646 |
| | | MISR. OVERSEAS AIRWAYS (CARGO) | 931 |
| | FS | MISSIONARY AVIATION FELLOWSHIP | |
| | ZO | MOHAWK AIRLINES | 390 |
| MON | ZB | MONARCH AIRLINES | 974 |
| | | MONTAIR FLIGHT SERVICE | 319 |
| MNT | | MONTSERRAT AIRWAYS | |
| | NM | MOUNT COOK LINE OF NEW ZEALAND | 445 |
| | ZR | MUK AIR | 796 |
| | UB | MYANMA AIRWAYS CORPORATION | 209 |
| | JO | N.V LUCHTVAARTMAATSCHAPPIJ TWN | |
| | NJ | NAMAKWALAND LUGDIENS | |
| | DV | NANTUCKET AIRLINES | |
| | | NASA SOYUZ AVIATION (CARGO) | |
| | 8N | NASHVILLE EAGLE | |
| | HC | NASKE AIR | |
| NXA | NX | NATIONAIR CANADA | 151 |
| | YJ | NATIONAL AIRLINES | |
| | 9L | NATIONAL CAPITAL AIRWAYS | 426 |
| | XV | NATURE ISLAND EXPRESS | |
| | EJ | NEW ENGLAND AIRLINES | 367 |
| | HD | NEW YORK HELICOPTER CORP | 814 |
| | WA | NEWAIR | 797 |
| | | NEWFOUNDLAND/LABRADOR AIR TRAN | 645 |
| | NS | NFD LUFTVERKEHRS | 104 |
| NGA | WT | NIGERIA AIRWAYS | 087 |
| | KZ | NIPPON CARGO AIRLINES | 933 |
| | FN | NIUE AIRLINES | |
| | HN | NLM DUTCH AIRLINES | 195 |
| | HK | NOBLE AIR | |
| | | NORCANAIR | |
| | JH | NORDESTA LINHAS AER REG | |
| | EO | NORDIC & SWEDEN AIRWAYS | 650 |
| | UI | NORLANDAIR (ICELAND) | |
| | NR | NORONTAIR | 066 |
| | NC | NORSKAIR | 665 |
| | | NORTH CROSS AIRWAYS | |
| | 5N | NORTHCOAST EXECUTIVE AIRLINES | 497 |
| | 2V | NORTHEAST EXPRESS REGIONAL | 463 |
| | | NORTHERN AIR CARGO (CARGO) | 345 |
| | RU | NORTHERN COMMUTER AIRLINES | |
| NWA | NW | NORTHWEST AIRLINES | 012 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | NV | NORTHWEST TERRITORIAL AIRWAYS | 668 |
| | 3E | NORTHWESTERN AIR LEASE | |
| | HW | NORTH-WRIGHT AIR | |
| | JA | NORWAY AIRLINES | |
| | 6N | NUNASI-NORTHLAND AIRLINES | |
| | LP | NYGE-AERO | |
| AAN | | OASIS INTERNATIONAL AIRLINES | |
| | 5H | ODIN AIR | |
| | 4B | OLSON AIR SERVICE | |
| | OL | OLT OSTFRIESISCHE LUFTRANSPORT | 704 |
| OAL | OA | OLYMPIC AIRWAYS | 050 |
| | WY | OMAN AVIATION SERVICES | 910 |
| | 9X | ONTARIO EXPRESS | 940 |
| | VQ | OXLEY AIRLINES | |
| | RI | P.T MANDALA AIRLINES | |
| | | PACIFIC AIRLINES | |
| | PQ | PACIFIC COAST AIRLINES | 561 |
| | 8P | PACIFIC COASTAL AIRLINES | 905 |
| | 2W | PACIFIC MIDLAND AIRLINES | 763 |
| PIA | PK | PAKISTAN INT AIRLINE | 214 |
| PAF | | PANAF AIRWAYS (CHARTER) | |
| | | PANAMA AIRWAYS | 421 |
| | PV | PANORAMA AIR | 311 |
| | HI | PAPILLON AIRWAYS | 563 |
| PGT | | PEGASUS AIRLINES | |
| | 9P | PELANGI AIR | |
| | PD | PEM AIR | 329 |
| | KS | PENINSULA AIRWAYS | 339 |
| | | PENNSYLVANIA AIRLINES | 395 |
| | 4P | PEOPLES AIR | 906 |
| | UW | PERIMETER AIRLINES | 711 |
| PAL | PR | PHILIPPINE AIRLINES | 079 |
| | NP | PICCOLO AIRLINES | |
| | PU | PLUNA URUGUAYIAN AIRLINES | 286 |
| | WO | POLARWING | |
| | PH | POLYNESIAN AIRLINES | 162 |
| | NI | PORTUGALIA | 685 |
| | 2P | PRAIRIE FLYING SERVICE | 094 |
| | RP | PRECISION AIRLINES | 544 |
| | | PREMIERE AIRLINES | 350 |
| | | PRIME AIR | 514 |
| | FB | PROMAIR AUSTRALIA | |
| | YS | PROTEUS | |
| | AG | PROVINCIAL AIRWAYS | 967 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | PE | PROVINICIAL AIR SERVICES | |
| | 5P | PTARMIGAN AIRWAYS | 697 |
| QFA | QF | QANTAS AIRWAYS | 081 |
| | | QUEBEC AVIATION | 911 |
| | QJ | QUEENSLAND PACIFIC AIRLINES | |
| | QH | QWESTAIR | |
| | | RACE CARGO AIRLINES | 765 |
| | 4R | RAVEN AIR | |
| | 7R | REDWING AIRWAYS | 594 |
| | RV | REEVE ALEUTIAN AIRWAYS | 338 |
| | 7S | REGION AIR | |
| | | RENTA-JET FLUGDIENST | |
| | | RFG-REGIONALFLUG | 637 |
| | WE | RHEINTALFLUG SEEWALD | 915 |
| | 6R | RICHARDS AVIATION (CARGO) | 552 |
| | SL | RIO-SUL SERVICOS AEREOS REGION | 293 |
| | IK | ROADAIR FEEDER SERVICE | |
| | JC | ROCKY MOUNTAIN AIRWAYS | 428 |
| | ZD | ROSS AVIATION | |
| | WI | ROTTNEST AIRBUS | |
| | 5R | ROVER AIRWAYS (CARGO) | 376 |
| | RR | ROYAL AIR FORCE | |
| | AT | ROYAL AIR MAROC | 147 |
| | BI | ROYAL BRUNEI AIRLINES | 672 |
| RJA | RJ | ROYAL JORDANIAN AIRLINE | 512 |
| RNA | RA | ROYAL NEPAL AIRLINES | 285 |
| | ZC | ROYAL SWAZI NATIONAL AIRWAYS | 141 |
| | | RWL-LUFTFAHRT GMBH & CO | 801 |
| | XY | RYAN AIR (ALASKA) | 251 |
| RYR | FR | RYANAIR | 224 |
| | | S.A.R. AVIONS TAXIS | |
| | ZG | SABAIR AIRLINES | |
| SAB | SN | SABENA WORLD AIRLINES | 082 |
| | | SABER AVIATION (CARGO) | 854 |
| | 9S | SABOURIN LAKE AIRWAYS | |
| | EH | SAETA | 156 |
| | KP | SAFAIR | 103 |
| | SH | SAHSA | 274 |
| | 8S | SALAIR (CARGO) | 477 |
| | YD | SALAIR AB | 947 |
| | TS | SAMOA AVIATION | |
| | WB | SAN | 739 |
| | BB | SANSA | 907 |
| | UF | SARO AIRLINES | |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | SP | SATA AIA ACORES | 737 |
| | ZT | SATENA | |
| SVA | SV | SAUDI ARABIAN | 065 |
| SAS | SK | SCANDINAVIAN AIRLINES | 117 |
| | SY | SCANJET | |
| | YR | SCENIC AIRLINES | 398 |
| | ZM | SCIBE AIRLIFT | 939 |
| | WW | SCOTTISH EUROPEAN AIRWAYS | 626 |
| | | SEAGREEN AIR TRANSPORT | 308 |
| | RW | SEAIR PACIFIC | |
| | XT | SECTOR AIRLINES (CARGO) | 987 |
| | | SERVICE AERIEN FRANCAIS | |
| | 8L | SERVICIO AEREO LEO LOPEZ | |
| | 2Z | SERVICIOS AEREOS LITORAL | 642 |
| | | SERVICIOS DE CARGA AEREA | 641 |
| | VC | SERVIVENSA | 985 |
| | SS | SHABAIR | |
| | NL | SHAHEEN AIR INTERNATIONAL | 740 |
| | 3S | SHUSWAP FLIGHT CENTRE | |
| | | SIERRA PACIFIC AIRLINES | |
| | | SIGI AIR CARGO COMPANY | 714 |
| | MI | SILKAIR | |
| | MQ | SIMMONS AIRLINES | |
| | 7B | SIMPSON AIR | 166 |
| | SQ | SINGAPORE AIRLINES | 618 |
| | 5U | SKAGWAY AIR SERVICE | |
| | OO | SKY WEST AIRLINES | 302 |
| | 9F | SKYCRAFT AIR TRANSPORT | 973 |
| | 8M | SKYMASTER | 581 |
| | YT | SKYWEST AIRLINES | 674 |
| | HU | SLOV-AIR | |
| | MM | SOCIEDAD AERONAUTICA MEDELLIN | 334 |
| | IE | SOLOMON ISLANDS AIRLINES | 193 |
| | HH | SOMALI AIRLINES | 089 |
| SAA | SA | SOUTH AFRICAN AIRWAYS | 083 |
| | XE | SOUTH CENTRAL AIR | 301 |
| | SG | SOUTHEAST AIRLINES LIMITED | |
| | | SOUTHERN AIR | |
| | SJ | SOUTHERN AIR TRANPORT (CARGO) | 351 |
| | NU | SOUTHWEST AIRLINES (JAPAN) | 353 |
| | WN | SOUTHWEST AIRLINES (U.S.A.) | 526 |
| SPP | | SPAN AIR | |
| | YW | STATESWEST AIRLINES | 454 |
| | NB | STERLING AIRWAYS | 194 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| SAY | CB | SUCKLING AIRWAYS | 969 |
| | SD | SUDAN AIRWAYS | 200 |
| | | SULTAN AIR (CHARTER) | |
| | | SUMO AIRLINES (CARGO) | 541 |
| | VL | SUN PACIFIC AIRLINES | |
| | EZ | SUN-AIR OF SCANDINAVIA | |
| SMB | | SUNBEAM AIRLINE (CHARTER) | |
| | PI | SUNFLOWER AIRLINES | 252 |
| | OC | SUNSHINE AVIATION | 938 |
| | OF | SUNSTATE AIRLINES | 620 |
| | PY | SURINAM AIRWAYS | 192 |
| | JG | SWEDAIR | 616 |
| SWR | SR | SWISSAIR TRANSPORT COMPANY | 085 |
| | FD | SYDNEY AIRLINES | |
| | RB | SYRIAN ARAB AIRLINES | 070 |
| | EQ | T.A.M.E. | 269 |
| | DT | TAAG ANGOLA AIRLINES | 118 |
| | TA | TACA INTERNATIONAL AIRLINES | 202 |
| | CQ | TAHITI CONQUEST AIRLINES | |
| | | TAIWAN AIRLINES COMPANY | 710 |
| | GV | TALAIR | 447 |
| | KK | TAM | |
| | QT | TAMPA AIRLINES (CARGO) | 729 |
| | TX | TAN AIRLINES | 208 |
| | 4E | TANANA AIR SERVICE | |
| TAP | TP | TAP AIR PORTUGAL | 047 |
| | 9Q | TAQUAN AIR SERVICE | |
| | RO | TAROM ROMANIAN AIR TRANSPORT | 281 |
| | TJ | TAS AIRWAYS S.P.A | 667 |
| | 3K | TATONDUK AIR SERVICE | |
| | QS | TATRA AIR | 904 |
| | | TEDDY AIR | |
| | CL | TEMPLEHOF AIRWAYS U.S.A. | 175 |
| | KN | TEMSCO HELICOPTERS | 876 |
| | TG | THAI AIRWAYS INTERNATIONAL | 217 |
| | LU | THERON AIRWAYS | |
| TRS | | TIA | |
| | | TIKAL JETS (CARGO) | 489 |
| | | TIME AIR SWEDEN | |
| | | TNT SAVA S.A. | 849 |
| | AB | TORRES AIR | |
| TUR | | TOUR EUROPE (CHARTER) | |
| TOW | NC | TOWER AIR | 305 |
| | | TPI INTER. AIRWAYS (CARGO) | 587 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | | TRANS AIR | 499 |
| | | TRANS ARABIAN AIR TRANS(CARGO) | |
| | YB | TRANS CONTINENTAL A/L (CARGO) | 837 |
| | 7T | TRANS COTE | |
| TEI | | TRANS EUROPEAN AIR (CHARTER) | |
| | | TRANS EUROPEAN AIRWAYS (CHART) | |
| | JQ | TRANS JAMAICAN AIRLINES | 100 |
| | TL | TRANS MEDITERRAREAN AIR(CARGO) | 270 |
| | 4Q | TRANS NORTH AVIATION | |
| | 9N | TRANS STATES AIRLINES | 414 |
| TWA | TW | TRANS WORLD AIRLINES | 015 |
| | | TRANS-AIR-LINK (CARGO) | 348 |
| TRA | HV | TRANSAVIA AIRLINES | 979 |
| | TD | TRANSAVIO | |
| | TR | TRANSBRASIL S/A LINHAS AEREAS | 653 |
| | | TRANSCARGO (CARGO) | 978 |
| | KV | TRANSKEI AIRWAYS | 264 |
| | IO | TRANSPORT AERIEN TRANS EXPORT | 153 |
| | IJ | TRANSPORT AERIEN TRANSREGIONAL | 936 |
| | | TRANSPORT AIR CENTRE | 203 |
| | VR | TRANSPORTES AEREOS CABO VERDE | 696 |
| | GD | TRANSPORTES AEREOS EJECUTIVOS | 838 |
| | VW | TRANSPORTES AEROMAR | 942 |
| | YZ | TRANSPORTES DE GUINE BISSAU | 241 |
| | 8T | TRAVELAIR | |
| | BW | TRINIDAD & TOBAGO BWIA INT | 106 |
| | PM | TROPIC AIR | |
| | BN | TROPICAL SEA AIRLINES | 922 |
| | TB | TRUMP SHUTTLE | 857 |
| | UG | TUNINTER | |
| | TU | TUNIS AIR | 199 |
| | TT | TUNISAVIA | 720 |
| | | TURK HAVA TASIMACILIGI | 929 |
| | TK | TURKISH AIRLINES | 235 |
| | KT | TURTLE AIRWAYS | |
| | 6T | TYEE AIRWAYS | |
| | VO | TYROLEAN AIRWAYS | 734 |
| UGA | QU | UGANDA AIRLINES CORPORATION | 673 |
| | PS | UKRAINE INTERNATIONAL AIRLINES | |
| UAL | UA | UNITED AIRLINES | 016 |
| | 5X | UNITED PARCEL SERVICE (CARGO) | 406 |
| | 9U | UNIVERSAL AIRLINES (CARGO) | 598 |
| | | US EXPRESS (CARGO) | |
| | US | USAIR | 037 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | UT | UTA | 142 |
| | | VALLEY AIR SERVICES INC | 482 |
| | J7 | Valuejet | |
| | 5J | VALUJET | |
| BRG | RG | VARIG BRAZILIAN AIRLINES | 042 |
| | VP | VASP | 343 |
| | PF | VAYUDOOT | 925 |
| VIA | VA | VENEZUELAN INTL AIRWAYS | 164 |
| | VI | VIEQUES AIR LINK | 381 |
| | ZP | VIRGIN AIR | 315 |
| VIR | VS | VIRGIN ATLANTIC AIRWAYS | 932 |
| | FV | VIVA AIR | 728 |
| | 4V | VOYAGEUR AIRWAYS | 908 |
| | 3V | WAGLISLA AIR | |
| | XW | WALKERS CAY AIRLINE | 360 |
| | | WALLISAIR | |
| | 4W | WARBELOW'S AIR VENTURES | |
| | KY | WATERWINGS AIRWAYS (TE ANAU) | 914 |
| | KJ | WEST AIR EXECUTIVE | |
| | 3L | WEST ISLE AIR | |
| | OE | WESTAIR COMMUTER AIRLINES | 460 |
| | WS | WESTATES AIRLINES | 573 |
| | MB | WESTERN AIRLINES | |
| | FO | WESTERN NEW SOUTH WALES AIR | |
| | | WESTPAC AIRLINES (CARGO) | |
| | WF | WIDEROE'S FLYVESELSKAP | 701 |
| | 8F | WILBURS FLIGHT OPERATIONS | 442 |
| | 6W | WILDERNESS AIRLINE (1975) | |
| | WM | WINDWARD ISLANDS AIRWAYS | 295 |
| | WQ | WINGS AIRWAYS | 842 |
| | SE | WINGS OF ALASKA | 397 |
| | RM | WINGS WEST AIRLINES | |
| | | WORLD AIRWAYS (CHARTER) | |
| | WG | WORLDWAYS CANADA LTD | |
| | 8R | WRA | 393 |
| | | WRANGLER AVIATION (CARGO) | 490 |
| | 8V | WRIGHT AIR SERVICE | |
| | MF | XIAMEN AIRLINES | |
| | XO | XINJIANG AIRLINES | |
| | ST | YANDA AIRLINES | |
| IYE | IY | YEMEN AIRWAYS | 635 |
| | 9Y | YUTANA AIRLINES | |
| | 4Y | YUTE AIR ALASKA | 476 |
| ZAC | QZ | ZAMBIA AIRWAYS | 169 |

| 3 Digit Code | 2 Digit Code | Name | Ticketing Code |
|---|---|---|---|
| | | ZANTOP INT AIRLINES (CARGO) | 391 |
| | ZA | ZAS AIRLINES OF EGYPT | 708 |
| | OD | ZULIANA DE AVIACION (CARGO) | 822 |

## H-2.2 Occupant Codes for Airline Tenants

The $ symbol is used as a placeholder in order to conform to the aforementioned layering convention.

| Airline | Y - designation |
|---|---|
| Air Ghana | $GH |
| Air Jamaica | $JM |
| Aer Lingus | $EI |
| Air Mobility Command | $MC |
| Air Ontario/Air Canada | $AC |
| American Airlines | $AA |
| America West | $HP |
| British Airways | $BA |
| Continental Airlines | $CO |
| Delta Airlines | $DL |
| Frontier Airlines | $F9 |
| Icelandair | $FI |
| Northwest Airlines | $NW |
| Pro Air | $P9 |
| Ryan Int'l Airlines | $XY |
| Trans World Airlines | $TW |
| United Airlines | $UA |
| US Airways | $US |
| MetroJet | USM |
| Southwest Airlines | L$WN |

## H-2.3 Occupant Codes for Other Tenants

Baltimore/Washington International Airport lessees and their corresponding layer codes.

| Y - designation | Company |
|---|---|
| AEX | A-1 Express |
| AGR | United States Department of Agriculture |
| ALA | Alamo Rent-a-Car |
| ARC | Arinc |
| AVS | Avis Car Rental |
| BUD | Budget Car Rental |
| CEX | Currency Exchange |
| CHM | Chimes |
| CMD | Celebrate Maryland |

| Y - designation | Company |
|---|---|
| CUS | U.S. Customs |
| DEA | Drug Enforcement Agency |
| DOL | Dollar Car Rental |
| DUT | Duty Free |
| MAA | Federal Aviation Administration |
| GLO | Globe Airport Security |
| HNT | Huntleigh |
| HST | Host International, Inc. |
| HTZ | Herb Car Rental |
| INS | Immigration and Naturalization Service |
| ITS | International Total Services, Inc. |
| LHD | Lockheed |
| MAA | Maryland Aviation Administration |
| MAA | Millar Elevator (MAA) |
| MAS | Service Master |
| MTA | Maryland Transportation Authority Police |
| NAT | National Car Rental |
| PHS | Public Health Service |
| SIG | Signature Flight Support, Inc. |
| SKY | Sky Sites |
| SMT | SmarteCarte |
| SUS | Super Shuttle |
| TRX | Travelex |
| TRA | Travelers Aid Society |
| USM | U.S. Mail |
| USO | USO |
| VAC | Vacant |
| WAC | Wackenhut Security Services |

## H-2.4 Usage Codes for Layering Convention

| Z-Designation | Description | Hatch Pattern | Scale/Angle |
|---|---|---|---|
| DR | Directory | -none- | - |
| FB | Food and Beverages (retail) | CROSS | 96/0° |
| FD | Flight Information Directory | - none - | - |
| HR | Holdroom | DASH | 00/45° |
| LS | Lighted Sign | - none - | - |
| MS | Merchandising Space (retail) | STARS | 50/0° |
| ON | Office, No Public access | ANS136 | 100/0° |
| OP | Office, Public Access | ANS133 | 100/90° |
| PM | Public Meeting/Lounge | ACRD.IS014W100 | 3/315° |
| PS | Public Stairs | ANS134 | 50/90° |

| Z-Designation | Description | Hatch Pattern | Scale/Angle |
|---|---|---|---|
| PL | Public Elevator | - none - | - |
| PE | Public Escalator | SACNCR | 200/90° |
| PC | Public Corridor | - none - | - |
| PC | Restricted Corridor | ANGLE | 60/45° |
| PT | PublicTelephones | - none - | - |
| RR | Restroom | AN S132 | 50/90° |
| SF | Special, Finished | - matches usage - | |
| SU | Special, Unfinished | ANS138 | 120/0° |
| SC | Security Checkpoint | ANS137 | 150/0° |
| SS | Special, Storage | ANS138 | 120/0° |
| TC | Ticket Counter | ANS131 | 100/0° |
| UM | Utility, Mechanical | SQUARE | 100/0° |
| UE | Utility, Electrical | ZIGZAG | 100/0° |
| UT | Utility, Telecommunications | TRIANG | 100/90° |
| VP | Visual Paging | - none - | |

# Appendix H-3 - Glossary

## H-3.1 CADD Terminology

The following are definitions of CADD-related terminology used in this document:

| | |
|---|---|
| 2D | Two Dimensional – an entity having length and width, but no height |
| 3D | Three Dimensional – an entity having length, width, and height |
| Acad | Shortened version of the word AutoCAD *(see: AutoCAD)* |
| A/E/C (AEC) | Architectural, Engineering and Construction |
| AIA | American Institute of Architects - a professional organization for architects in the United States, offering education, government advocacy, community redevelopment, and public outreach to support the architecture profession. |
| ANSI | American National Standards Institute - a private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States. |
| AutoCAD | A full-featured CADD software program, produced by Autodesk Inc., which is capable of producing both 2D and 3D CADD designs. Its native file format is DWG, though it directly reads and writes DXF files. *(see: CADD, DWG)* |
| Block | An AutoCAD object formed by grouping other objects together to form a named, repeatable symbol within a particular file. |
| CADD | Computer Aided Design & Drafting. Computer software used by engineers and drafters to create and modify drawings in 2D and 3D. *(see: AutoCAD, MicroStation)* |
| CD / CD-R | Compact Disk / Recordable Compact Disk – an optical data storage medium used to store and transfer digital data between computer systems, with a maximum capacity of 700 megabytes (MB). *(see: DVD-R)* |
| DGN (.dgn) file | MicroStation's native CADD file format *(see CAD, MicroStation)* |
| Drawing Sheet Format | The sheet boundary lines, and title block geometry used to record administrative information about a CADD file. |
| Drawing Sheet Sizes | Standard size pieces of paper used for MAA projects. MAA uses standard sheet sizes defined by the American National Standards Institute (ANSI). ANSI sheet sizes are denoted by alphabetic designations such as ANSI-A, ANSI-B, ANSI-C, ANSI-D, and so on. MAA does not currently utilize either the International Organization for Standardization (ISO) standard sheet sizes or the commonly found Architectural (ARCH) sheet sizes. |

| | |
|---|---|
| DVD / DVD-R | Digital Versatile Disk / Recordable Digital Versatile Disk – an optical data storage medium used to store and transfer digital data between computer systems, with a maximum storage capacity of 4.7 gigabytes (GB). *(see: CD-R)* |
| DWG (.dwg) file | AutoCAD's native CADD file format *(see CAD, AutoCAD)* |
| DXF (.dxf) file | Drawing Interchange Format/Drawing Exchange Format – a CAD data file format developed by Autodesk to enable data interoperability between multiple CAD software programs. AutoCAD reads and writes DXF files directly. |
| External Reference (file) | *See: Reference File* |
| Georeference | To place CAD or Raster objects at the coordinates within a CAD file which correspond to their geographic coordinates in the real world. When georeferenced, data will also be properly scaled, so that a 9'x18' parking space will measure 9'x18' within the CAD file. |
| GIS | Geographical Information System - a system for creating, storing, analyzing and managing spatial data and associated attributes |
| Layer | Property of an object within a CADD file. Layers function as organizational tools, allowing drawing objects to be categorized and grouped. Layers can be turned on or off within the CADD file, functioning much like acetate overlays. Layers can be assigned properties such as color and line weight, which then apply to all objects on the layer (individual objects' properties can be configured to override the Layers property). |
| Linetype | A symbol comprised of patterns of dashes, spaces, text, and/or symbols, applied to any linear object |
| MicroStation | A full-featured CADD software program, produced by Bentley Systems Inc., which is capable of producing both 2D and 3D CADD designs. Its native file format is DGN, though it directly reads and writes DWG and DXF files. *(see: CADD, AutoCAD, DWG)* |
| Model File | Coordinately-correct CADD files which form the basis of a drawing set. Model Files are drawn at full size (1-to-1) and can contain 2D or 3D information. Model Files are typically used as Reference Files, attached to Print Files as underlays to assemble a completed, printable drawing. *(see: Reference File, Print File)* |
| Model Space | The main drawing area within an AutoCAD file. All drawing or 'modeling' done within an AutoCAD file is done within Model Space, with 2D and 3D objects drawn at full-size or 1-to-1. An AutoCAD file can contain only one Model Space, represented by a tab at the bottom edge of the screen, but can contain multiple Paper Spaces *(see: Paper Space)* |

| | |
|---|---|
| Nested Reference | Reference Files attached to other Reference files. If A is attached to B as a reference, and B is attached to C, A will be also appear in C because it is nested with A. In AutoCAD, it is necessary to use the Attach rather than the Overlay option in the Xref command, in order to insure that Reference Files will nest. Using the Overlay option will prevent Reference Files from nesting. |
| Paper Space | An area within an AutoCAD file used to create a finished drawing, analogous to a sheet of electronic paper. Items in a files Model Space area may be seen in the Paper Space area through the use of polygonal viewports. An AutoCAD sile can contain multiple Paper Spaces, represented by tabs at the bottom edge of the screen, but only one Model Space. *(see: Model Space, Viewport)* |
| Plot Stamp | A line or group of text in a printable CADD file, which typically includes the file name and path; date and time of the plot; and the name of the user who generated the plot. In AutoCAD, Text Fields are often used to create plot stamps which automatically update their contents. |
| Polygon | A complex object in a CADD file, composed of one or more straight or curved linear segments, forming a closed shape. In AutoCAD files, polygons can be one of several different AutoCAD-specific objects, such as circles, ellipses, or closed polyline objects. |
| Polyline | A complex object in a CADD file, composed of one or more straight or curved linear segments, forming a 2D path. In AutoCAD, there are two types of Polyline objects, the 2-dimensional LWPolyline object, and the 3-dimensional Polyline object. |
| Print File | Sometimes called Sheet Files. Print Files are CADD files configured to be a finished, printable sheet or drawing. Each Print File represents one plotted drawing. Within the Print File, elements such as References, text, title blocks and other elements are combined to create a finished, print-ready product. Print Files are generally drawn at the size of the printed output, i.e. an ANSI-D sheet is drawn 34”x24”, and the contents of the sheet are scaled appropriately using Viewports. *(see: Viewports)* |
| Project Copy | A project copy drawing is part of the project copy process, which manages concurrent design updates to a single released drawing. |
| Raster | A digital image file consisting of rectangular picture elements (pixels) which form an image, similar to a tile mosaic. Raster files typically contain image information such as scanned documents, photographs, and aerial imagery. Examples of raster file formats are SID, TIFF, JPG, BMP, and GIF. |

| | |
|---|---|
| Reference File | Also called Xref or External Reference - A CADD file which is connected to another "child" CADD file, appearing as an overlay or underlay within the child file. Background mapping, borders, legends, and key plans are commonly used as Reference Files. A Reference File can be attached to multiple child files, eliminating the need to duplicate the contents of the reference. When a Reference File is altered, the alterations appear instantly in all child files to which it is attached. Date blocks in borders, for example, can be changed once, in the Reference File, and the change will appear in all plan sheets to which the border is attached. |
| Revised Drawing | A drawing that has been revised or modified after submission. |
| Sheet FIle | *(see: Print File)* |
| SID (.sid) File | A raster file in MrSid format. The MrSid format was developed and patented by LizardTech for encoding of georeferenced raster graphics, such as orthophotos. *(see: Raster, Georeference)* |
| SSI | Sensitive Security Information, as defined by the Code of Federal Regulations (49 CFR 1520). |
| TIFF (.tif) file | Tagged Image File Format, a raster graphics format. Often used to contain aerial orthophotos. *(see: Raster)* |
| Vector | Computer graphics comprised of mathematical representation of points, lines and other geometric entities. |
| Viewport | A polygonal viewing region in an AutoCAD file, in Paper Space. Viewports function as windows from Paper Space into Model Space, allowing objects in Model Space to appear in Paper Space, generally for the purpose of composing a completed Print File. *(see: Paper Space, Model Space, Print File)* |
| Workflow | Routing process for information or documentation to the users responsible for working on them. |
| Xref | AutoCAD-specific term for External Reference *(see: Reference File)* |

## H-3.2 Airport Acronyms

-A-

| | |
|---|---|
| A/C –Aircraft | ARINC -Aeronautical Radio, Inc. |
| A/H -Altitude/Height | A/G -Air to Ground |
| AAF -Army Air Field | AAC -Mike Monroney Aeronautical Center |
| AAP -Advanced Automation Program | AAI -Arrival Aircraft Interval |
| ABDIS -Automated Data Interchange System Service B | AAR -Airport Acceptance Rate |
| ACAS -Aircraft Collision Avoidance System | ACAIS -Air Carrier Activity Information System |

| | |
|---|---|
| ACCT -Accounting Records | ACC -Area Control Center |
| ACDO -Air Carrier District Office | ACD -Automatic Call Distributor |
| ACFO -Aircraft Certification Field Office | ACF -Area Control Facility |
| ACID -Aircraft Identification | ACFT -Aircraft |
| ACLT -Actual Landing Time Calculated | ACLS -Automatic Carrier Landing System |
| ADA -Air Defense Area | ACO -Aircraft Certification Office |
| ADAS -AWOS Data Acquisition System | ADAP -Airport Development Aid Program |
| ADDA -Administrative Data | ADCCP -Advanced Data Communications Control Procedure |
| ADI -Automatic De-Ice and Inhibitor | ADF -Automatic Direction Finding |
| ADIZ -Air Defense Identification Zone | ADIN -AUTODIN Service |
| ADLY -Arrival Delay | ADL -Aeronautical Data-Link |
| ADP -Automated Data Processing | ADO -Airline Dispatch Office |
| ADSIM -Airfield Delay Simulation Model | ADS -Automatic Dependent Surveillance |
| ADTN -Administrative Data Transmission Network | ADSY -Administrative Equipment Systems |
| ADVO -Administrative Voice | ADTN2000 -Administrative Data Transmission Network 2000 |
| AEIS – Airport Engineering Information System-System replaced by AIRPortal | AEG -Aircraft Evaluation Group |
| AERA -Automated En-Route Air Traffic Control | AEX -Automated Execution |
| AF -Airway Facilities | AFB -Air Force Base |
| AFIS -Automated Flight Inspection System | AFP -Area Flight Plan |
| AFRES -Air Force Reserve Station | AFS -Airways Facilities Sector |
| AFSFO -AFS Field Office | AFSFU -AFS Field Unit |
| AFSOU -AFS Field Office Unit (Standard is AFSFOU) | AFSS -Automated Flight Service Station |
| AFTN -Automated Fixed Telecommunications Network | AGL -Above Ground Level |
| AID -Airport Information Desk | AIG -Airbus Industries Group |
| AIM -Airman's Information Manual | AIP -Airport Improvement Plan |
| AIRMET -Airmen's Meteorological Information | AIRNET -Airport Network Simulation Model |
| AIS -Aeronautical Information Service | AIT -Automated Information Transfer |
| ALP -Airport Layout Plan | ALS -Approach Lighting System |
| ALSF1 -ALS with Sequenced Flashers I | ALSF2 -ALS with Sequenced Flashers II |
| ALSIP -Approach Lighting System Improvement Plan | ALTRV -Altitude Reservation |
| AMASS -Airport Movement Area Safety System | AMCC -ACF/ARTCC Maintenance Control Center |
| AMOS -Automated Meteorological Observation Station | AMP -ARINC Message Processor (OR) Airport Master Plan |
| AMVER -Automated Mutual Assistance Vessel Rescue System | ANC -Alternate Network Connectivity |
| ANG -Air National Guard | ANGB -Air National Guard Base |
| ANMS -Automated Network Monitoring System | ANSI -American National Standards Group |
| AP -Acquisition Plan | APP -Approach |
| APS -Airport Planning Standard | AQAFO -Aeronautical Quality Assurance Field Office |

| | |
|---|---|
| ARAC -Army Radar Approach Control (AAF) | ARAC -Aviation Rulemaking Advisory Committee |
| ARCTR -FAA Aeronautical Center or Academy | ARF -Airport Reservation Function |
| ARLNO -Airline Office ARO -Airport Reservation Office | AWS -Air Weather Station |
| ARO -Airport Reservation Office | ARP -Airport Reference Point |
| ARSA -Airport Service Radar Area | ARSR -Air Route Surveillance Radar |
| ARTCC -Air Route Traffic Control Centre | ARTS -Automated Radar Terminal System |
| ASAS -Aviation Safety Analysis System | ASC -AUTODIN Switching Center |
| ASCP -Aviation System Capacity Plan | ASD -Aircraft Situation Display |
| ASDA -Accelerate - Stop Distance Available | ASLAR -Aircraft Surge Launch And Recovery |
| ASM -Available Seat Mile | ASP -Arrival Sequencing Program |
| ASOS -Automatic Surface Observation System | ASQP -Airline Service Quality Performance |
| ASR -Airport Surveillance Radar | ASTA -Airport Surface Traffic Automation |
| ASV -Airline Schedule Vendor | AT -Air Traffic |
| ATA -Air Transport Association of America | ATAS -Airspace and Traffic Advisory Service |
| ATCAA -Air Traffic Control Assigned Airspace | AT&T -American Telephone and Telegraph |
| AT&T ASDC -AT&T Agency Service Delivery Center | AT&T CSA -AT&T Customer Support Associate |
| ATC -Air Traffic Control | ATCBI -Air Traffic Control Beacon Indicator |
| ATCCC -Air Traffic Control Command Center | ATCO -Air Taxi Commercial Operator |
| ATCRB -Air Traffic Control Radar Beacon | ATCRBS -Air Traffic Control Radar Beacon System |
| ATCSCC -Air Traffic Control Systems Command Center | ATCT -Airport Traffic Control Tower |
| ATIS -Automated Terminal Information Service | ATISR -ATIS Recorder |
| ATM -Air Traffic Management | ATM -Asynchronous Transfer Mode |
| ATMS -Advanced Traffic Management System | ATN -Aeronautical Telecommunications Network |
| ATODN -AUTODIN Terminal (FUS) | ATOVN -AUOTVON (Facility) |
| ATOMS -Air Traffic Operations Management System | ATS -Air Traffic Service |
| ATSCCP -ATS Contingency Command Post | ATTIS -AT&T Information Systems |
| AUTODIN -DoD Automatic Digital Network | AUTOVON -DoD Automatic Voice Network |
| AVON -AUTOVON Service | AVN -Aviation Standards National Field Office, Oklahoma City |
| AWIS -Airport Weather Information | AWOS -Automated Weather Observation System |
| AWP -Aviation Weather Processor | AWPG -Aviation Weather Products Generator |

## -B-

| | |
|---|---|
| BANS-BRITE Alphanumeric System | BART -Billing Analysis Reporting Tool (GSA software tool) |
| BASIC -Basic Contract Observing Station | BASOP -Military Base Operations |
| BCA -Benefit/Cost Analysis | BCR -Benefit/Cost Ratio |
| BDAT -Digitized Beacon Data | BMP -Best Management Practices |
| BOC -Bell Operating Company | bps -bits per second |
| BRI -Basic Rate Interface | BRITE -Bright Radar Indicator Terminal Equipment |
| BRL -Building Restriction Line | BUEC -Back-up Emergency Communications |

| | |
|---|---|
| BUECE -Back-up Emergency Communications Equipment | |

-C-

| | |
|---|---|
| CAA -Civil Aviation Authority | CAB -Civil Aeronautics Board |
| CARF -Central Altitude Reservation Facility | CASFO -Civil Aviation Security Office |
| CAT –Category | CAT -Clear - Air Turbulence |
| CAU -Crypto Ancillary Unit | CBI -Computer Based Instruction |
| CCC -Communications Command Center | CCCC -Staff Communications |
| CCCH -Central Computer Complex Host | CC&O -Customer Cost and Obligation |
| CCSD -Command Communications Service Designator | CCS7-NI -Communication Channel Signal-7 - Network Interconnect |
| CCU -Central Control Unit | CD -Common Digitizer |
| CDR -Cost Detail Report | CDT -Controlled Departure Time |
| CDTI -Cockpit Display of Traffic Information | CENTX -Central Telephone Exchange |
| CEQ -Council on Environmental Quality | CERAP -Central Radar Approach |
| CFC -Central Flow Control | CFCF -Central Flow Control Facility |
| CFCS -Central Flow Control Service | CFWP -Central Flow Weather Processor |
| CFWU -Central Flow Weather Unit | CGAS -Coast Guard Air Station |
| CLC -Course Line Computer | CLIN -Contract Line Item |
| CLT -Calculated Landing Time | CM -Commercial Service Airport |
| CNMPS -Canadian Minimum Navigation Performance Specification Airspace | CNS -Consolidated NOTAM System |
| CNSP -Consolidated NOTAM System Processor | CO -Central Office |
| COE -U.S. Army Corps of Engineers | COMCO -Command Communications Outlet |
| CONUS -Continental United States | CORP -Private Corporation other than ARINC or MITRE |
| CPE -Customer Premise Equipment | CPMIS -Consolidated Personnel Management Information System |
| CRA -Conflict Resolution Advisory | CRDA -Converging Runway Display Aid |
| CRT -Cathode Ray Tube | CSA -Communications Service Authorization |
| CSIS -Centralized Storm Information System | CSO -Customer Service Office |
| CSR -Communications Service Request | CSS -Central Site System |
| CTA -Controlled Time of Arrival | CTA -Control Area |
| CTA/FIR -Control Area/Flight Information Region | CTAF -Common Traffic Advisory Frequency |
| CTAS -Center - Tracon Automation System | CTMA -Center Traffic Management Advisor |
| CUPS -Consolidated Uniform Payroll System | CVFR -Controlled Visual Flight Rules |
| CVTS -Compressed Video Transmission Service | CW -Continuous Wave |
| CWSU -Central Weather Service Unit | CWY -Clearway |
| | |

-D-

| | |
|---|---|
| DA-Direct Access | DA -Decision Altitude/Decision Height |

| | |
|---|---|
| DA -Descent Advisor | DABBS -DITCO Automated Bulletin Board System |
| DAIR -Direct Altitude and Identity Readout | DAR -Designated Agency Representative |
| DARC -Direct Access Radar Channel | dBA -Decibels A-weighted |
| DBCRC -Defense Base Closure and Realignment Commission | DBMS -Data Base Management System |
| DBRITE -Digital Bright Radar Indicator Tower Equipment | DCA -Defense Communications Agency |
| DCAA -Dual Call, Automatic Answer Device | DCCU -Data Communications Control Unit |
| DCE -Data Communications Equipment | DDA -Dedicated Digital Access |
| DDD -Direct Distance Dialing | DDM -Difference in Depth of Modulation |
| DDS -Digital Data Service | DEA -Drug Enforcement Agency |
| DEDS -Data Entry and Display System | DEIS -Draft Environmental Impact Statement |
| DEP –Departure | DEWIZ -Distance Early Warning Identification Zone |
| DF -Direction Finder | DFAX -Digital Facsimile |
| DFI -Direction Finding Indicator | DGPS -Differential Global Positioning Satellite (System) |
| DH -Decision Height | DID -Direct Inward Dial |
| DIP -Drop and Insert Point | DIRF -Direction Finding |
| DITCO -Defense Information Technology Contracting Office Agency | DME -Distance Measuring Equipment |
| DME/P -Precision Distance Measuring Equipment | DMN -Data Multiplexing Network |
| DNL -Day-Night Equivalent Sound Level (Also called Ldn) | DOD -Direct Outward Dial |
| DoD -Department of Defense | DOI -Department of Interior |
| DOS -Department of State | DOT -Department of Transportation |
| DOTS -Dynamic Ocean Tracking System | DOTCC -Department of Transportation Computer Center |
| DSCS -Digital Satellite Compression Service | DSUA -Dynamic Special Use Airspace |
| DTS -Dedicated Transmission Service | DUAT -Direct User Access Terminal |
| DVFR -Defense Visual Flight Rules | DVFR -Day Visual Flight Rules |
| DVOR -Doppler Very High Frequency Omni-Directional Range | DYSIM -Dynamic Simulator |

## -E-

| | |
|---|---|
| E-MSAW -En-Route Automated Minimum Safe Altitude Warning | EARTS -En Route Automated Radar Tracking System |
| ECOM -En Route Communications | ECVFP -Expanded Charted Visual Flight Procedures |
| EDCT -Expedite Departure Path | EFAS -En Route Flight Advisory Service |
| EFC -Expect Further Clearance | EFIS -Electronic Flight Information Systems |
| EIAF -Expanded Inward Access Features | EIS - Environmental Impact Statement |
| ELT -Emergency Locator Transmitter | ELWRT -Electrowriter |
| EMPS -En Route Maintenance Processor System | ENAV -En Route Navigational Aids |

| | |
|---|---|
| EPA -Environmental Protection Agency | EPS -Engineered Performance Standards |
| EOF -Emergency Operating Facility | EPSS -Enhanced Packet Switched Service |
| ERAD -En Route Broadband Radar | ESEC -En Route Broadband Secondary Radar |
| ESP -En Route Spacing Program | ESYS -En Route Equipment Systems |
| ESF -Extended Superframe Format | ETA -Estimated Time of Arrival |
| ETE -Estimated Time En Route | ETG -Enhanced Target Generator |
| ETMS -Enhanced Traffic Management System | ETN -Electronic Telecommunications Network |
| EVAS -Enhanced Vortex Advisory System | EVCS -Emergency Voice Communications System |

## -F-

| | |
|---|---|
| FAA-Federal Aviation Administration | F&E -Facility and Equipment |
| FAAAC -FAA Aeronautical Center | FAACIS -FAA Communications Information System |
| FAATC -FAA Technical Center | FAC -Facility |
| FAF -Final Approach Fix | FAP -Final Approach Point |
| FAPM -FTS2000 Associate Program Manager | FAR -Federal Aviation Regulation |
| FAATSAT -FAA Telecommunications Satellite | FAST -Final Approach Spacing Tool |
| FAX -Facsimile Equipment | FBO -Fixed Base Operator |
| FBS -Fall Back Switch | FCC -Federal Communications Commission |
| FCLT -Freeze Calculated Landing Time | FCOM -FSS Radio Voice Communications |
| FCPU -Facility Central Processing Unit | FDAT -Flight Data Entry and Printout (FDEP) and Flight Data Service |
| FDE -Flight Data Entry | FDEP -Flight Data Entry and Printout |
| FDIO -Flight Data Input/Output | FDIOC -Flight Data Input/Output Center |
| FDIOR -Flight Data Input/Output Remote | FDM -Frequency Division Multiplexing |
| FDP -Flight Data Processing | FED -Federal |
| FEIS -Final Environmental Impact Statement | FEP -Front End Processor |
| FFAC -From Facility | FIFO -Flight Inspection Field Office |
| FIG -Flight Inspection Group | FINO -Flight Inspection National Field Office |
| FIPS -Federal Information Publication Standard | FIR -Flight Information Region |
| FIRE -Fire Station | FIRMR -Federal Information Resource Management Regulation |
| FL -Flight Level | FLOWSIM -Traffic Flow Planning Simulation |
| FMA -Final Monitor Aid | FMF -Facility Master File |
| FMIS -FTS2000 Management Information System | FMS -Flight management System |
| FNMS -FTS2000 Network Management System | FOIA -Freedom Of Information Act |
| FP -Flight Plan | FRC -Request Full Route Clearance |
| FSAS -Flight Service Automation System | FSDO -Flight Standards District Office |
| FSDPS -Flight Service Data Processing System | FSEP -Facility/Service/Equipment Profile |
| FSP -Flight Strip Printer | FSPD -Freeze Speed Parameter |
| FSS -Flight Service Station | FSSA -Flight Service Station Automated Service |
| FSTS -Federal Secure Telephone Service | FSYS -Flight Service Station Equipment Systems |
| FTS -Federal Telecommunications System | FTS2000 -Federal Telecommunications System 2000 |

| | |
|---|---|
| FUS -Functional Units or Systems | FWCS -Flight Watch Control Station |

-G-

| | |
|---|---|
| GA-General Aviation | GAA -General Aviation Activity |
| GAAA -General Aviation Activity and Avionics | GADO -General Aviation District Office |
| GCA -Ground Control Approach | GNAS -General National Airspace System |
| GNSS -Global Navigation Satellite System | GOES -Geostationary Operational Environmental Satellite |
| GOESF -GOES Feed Point | GOEST -GOES Terminal Equipment |
| GPS -Global Positioning Satellite | GPWS -Ground Proximity Warning System |
| GRADE -Graphical Airspace Design Environment | GS -Glide Slope Indicator |
| GSA -General Services Administration | |

-H-

| | |
|---|---|
| H-Non-Directional Radio Homing Beacon (NDB) | HAA -Height Above Airport |
| HAL -Height Above Landing | HARS -High Altitude Route System |
| HAT -Height Above Touchdown | HAZMAT -Hazardous Materials |
| HCAP -High Capacity Carriers | HLDC -High Level Data Link Control |
| HDME -NDB with Distance Measuring Equipment | HDQ -FAA Headquarters |
| HELI –Heliport | HF -High Frequency |
| HH -NDB, 2kw or More | HI-EFAS -High Altitude EFAS |
| HOV -High Occupancy Vehicle | HSI -Horizontal Situation Indicators |
| HUD -Housing and Urban Development | HWAS -Hazardous In-Flight Weather Advisory |
| Hz –HERTZ | |

-I-

| | |
|---|---|
| IA-Indirect Access | IAF -Initial Approach Fix |
| I/AFSS -International AFSS | IAP -Instrument Approach Procedures |
| IAPA -Instrument Approach Procedures Automation | IBM -International Business Machines |
| IBP -International Boundary Point | IBR -Intermediate Bit Rate |
| ICAO -International Civil Aviation Organization | ICSS -International Communications Switching Systems |
| IDAT -Interfacility Data | IF -Intermediate Fix |
| IFCP -Interfacility Communications Processor | IFDS -Interfacility Data System |
| IFEA -In-Flight Emergency Assistance | IFO -International Field Office |
| IFR -Instrument Flight Rules | IFSS -International Flight Service Station |
| ILS -Instrument Landing System | IM -Inner Marker |
| IMC -Instrument Meteorological Conditions | INM -Integrated Noise Model |
| INS -Inertial Navigation System | IRMP -Information Resources Management Plan |
| ISDN -Integrated Services Digital Network | ISMLS -Interim Standard Microwave Landing |

| | |
|---|---|
| | System |
| ITI -Interactive Terminal Interface | IVRS -Interim Voice Response System |
| IW -Inside Wiring | |

-J-

| | |
|---|---|
| | |

-K-

| | |
|---|---|
| Kbps-Kilobits Per Second | KHz -Kilohertz |
| KVDT -Keyboard Video Display Terminal | |

-L-

| | |
|---|---|
| LAA-Local Airport Advisory | LAAS -Low Altitude Alert System |
| LABS -Leased A B Service | LABSC -LABS GS-200 Computer |
| LABSR -LABS Remote Equipment | LABSW -LABS Switch System |
| LAHSO -Land and Hold Short Operation | LAN -Local Area Network |
| LATA -Local Access and Transport Area | LAWRS -Limited Aviation Weather Reporting System |
| LCF -Local Control Facility | LCN -Local Communications Network |
| LDA -Localizer Directional Aid | LDA -Landing Directional Aid |
| LDIN -Lead-in Lights | LEC -Local Exchange Carrier |
| LF -Low Frequency | LINCS -Leased Interfacility NAS Communications System |
| LIS -Logistics and Inventory System | LLWAS -Low Level Wind Shear Alert System |
| LM/MS -Low/Medium Frequency | LMM -Locator Middle Marker |
| LMS -LORAN Monitor Site | LOC -Localizer |
| LOCID -Location Identifier | LOI -Letter of Intent |
| LOM -Compass Locator at Outer Marker | LORAN -Long Range Aid to Navigation |
| LRCO -Limited Remote Communications Outlet | LRNAV -Long Range Navigation |
| LRR -Long Range Radar | |

-M-

| | |
|---|---|
| FAA-Maximum Authorized Altitude | MALS -Medium Intensity Approach Lighting System |
| MALSF -MALS with Sequenced Flashers | MALSR -MALS with Runway Alignment Indicator Lights |
| MAP -Modified Access Pricing | MAP -Military Airport Program |
| MAP -Missed Approach Point | MAP -Maintenance Automation Program |
| Mbps -Megabits Per Second | MCA -Minimum Crossing Altitude |

| | |
|---|---|
| MCAS -Marine Corps Air Station | MCC -Maintenance Control Center |
| MCL -Middle Compass Locator | MCS -Maintenance and Control System |
| MDA -Minimum Descent Altitude | MDT -Maintenance Data Terminal |
| MEA -Minimum En Route Altitude | METI -Meteorological Information |
| MF -Middle Frequency | MFJ -Modified Final Judgement |
| MFT -Meter Fix Crossing Time/Slot Time | MHA -Minimum Holding Altitude |
| MHz –Megahertz | MIA -Minimum IFR Altitudes |
| MIDO -Manufacturing Inspection District Office | MIS -Meteorological Impact Statement |
| MISC –Miscellaneous | MISO -Manufacturing Inspection Satellite Office |
| MIT -Miles In Trail | MITRE -Mitre Corporation |
| MLS -Microwave Landing System | MM -Middle Marker |
| MMC -Maintenance Monitoring Console | MMS -Maintenance Monitoring System |
| MNPS -Minimum Navigation Performance Specification | MNPSA -Minimum Navigation Performance Specifications Airspace |
| MOA -Memorandum of Agreement | MOA -Military Operations Area |
| MOCA -Minimum Obstruction Clearance Altitude | MODE C -Altitude-Encoded Beacon Reply |
| MODE C -Altitude Reporting Mode of Secondary Radar | MODE S -Mode Select Beacon System |
| MOU -Memorandum of Understanding | MPO -Metropolitan Planning Organization |
| MPS -Maintenance Processor Subsystem (OR) Master Plan Supplement | MRA -Minimum Reception Altitude |
| MRC -Monthly Recurring Charge | MSA -Minimum Safe Altitude |
| MSAW -Minimum Safe Altitude Warning | MSL -Mean Sea Level |
| MSN -Message Switching Network | MTCS -Modular Terminal Communications System |
| MTI -Moving Target Indicator | MUX -Multiplexer |
| MVA -Minimum Vectoring Altitude | MVFR -Marginal Visual Flight Rules |

## -N-

| | |
|---|---|
| NAAQS-National Ambient Air Quality Standards | NADA -NADIN Concentrator |
| NADIN -National Airspace Data Interchange Network | NADSW -NADIN Switches |
| NAILS -National Airspace Integrated Logistics Support | NAMS -NADIN IA |
| NAPRS -National Airspace Performance Reporting System | NAS -National Airspace System or Naval Air Station |
| NASDC -National Aviation Safety Data | NASP -National Airspace System Plan |
| NASPAC -National Airspace System Performance Analysis Capability | NATCO -National Communications Switching Center |
| NAVAID -Navigation Aid | NAVMN -Navigation Monitor and Control |
| NAWAU -National Aviation Weather Advisory Unit | NAWPF -National Aviation Weather Processing Facility |
| NCAR -National Center for Atmospheric Research; Boulder, CO | NCF -National Control Facility |

| | |
|---|---|
| NCIU -NEXRAD Communications Interface Unit | NCS -National Communications System |
| NDB -Non-Directional Radio Homing Beacon | NDNB -NADIN II |
| NEPA -National Environmental Policy Act | NEXRAD -Next Generation Weather Radar |
| NFAX -National Facsimile Service | NFDC -National Flight Data Center |
| NFIS -NAS Facilities Information System | NI -Network Interface |
| NICS -National Interfacility Communications System | NPIAS -National Plan of Integrated Airport Systems |
| NM -Nautical Mile | NMAC -Near Mid Air Collision |
| NMC -National Meteorological Center | NMCE -Network Monitoring and Control Equipment |
| NMCS -Network Monitoring and Control System | NOAA -National Oceanic and Atmospheric Administration |
| NOC -Notice Of Completion | NOTAM -Notice to Airmen |
| NPDES -National Pollutant Discharge Elimination System | NPIAS -National Plan of Integrated Airport Systems |
| NRC -Non-Recurring Charge | NRCS -National Radio Communications Systems |
| NSAP -National Service Assurance Plan | NSSFC -National Severe Storms Forecast Center |
| NSSL -National Severe Storms Laboratory; Norman, OK | NTAP -Notices To Airmen Publication |
| NTP -National Transportation Policy | NTSB -National Transportation Safety Board |
| NTZ -No Transgression Zone | NWS -National Weather Service |
| NWSR -NWS Weather Excluding NXRD | NSWRH -NWS Regional Headquarters |
| NXRD -Advanced Weather Radar System | |

-O-

| | |
|---|---|
| OAG-Official Airline Guide | OALT -Operational Acceptable Level of Traffic |
| OAW -Off-airway Weather Station | ODAL -Omni directional Approach Lighting System |
| ODAPS -Oceanic Display and Processing Station | OFA -Object Free Area |
| OFDPS -Offshore Flight Data Processing System | OFT -Outer Fix Time |
| OFZ -Obstacle Free Zone | OM -Outer Marker |
| OMB -Office of Management and Budget | ONER -Oceanic Navigational Error Report |
| OPLT -Operational Acceptable Level of Traffic | OPSW -Operational Switch |
| OPX -Off Premises Exchange | ORD -Operational Readiness Demonstration |
| OTR -Oceanic Transition Route | OTS -Organized Track System |

-P-

| | |
|---|---|
| PABX-Private Automated Branch Exchange | PAD -Packet Assembler/Disassembler |
| PAM -Peripheral Adapter Module | PAPI -Precision Approach Path Indicator |
| PAR -Precision Approach Radar | PAR -Preferential Arrival Route |
| PATWAS -Pilots Automatic Telephone Weather Answering Service | PBCT -Proposed Boundary Crossing Time |
| PBRF -Pilot Briefing | PBX -Private Branch Exchange |

| | |
|---|---|
| PCA -Positive Control Airspace | PCM -Pulse Code Modulation |
| PDAR -Preferential Arrival And Departure Route | PDC -Pre-Departure Clearance |
| PDC -Program Designator Code | PDR -Preferential Departure Route |
| PDN -Public Data Network | PFC -Passenger Facility Charge |
| PHONE –Telephone | PIC -Principal Interexchange Carrier |
| PIDP -Programmable Indicator Data Processor | PIREP -Pilot Weather Report |
| PMS -Program Management System | POLIC -Police Station |
| POP -Point Of Presence | POT -Point Of Termination |
| PPIMS -Personal Property Information Management System | PR -Primary Commercial Service Airport |
| PRI -Primary Rate Interface | PRM -Precision Runway Monitor |
| PSDN -Public Switched Data Network | PSN -Packet Switched Network |
| PSS -Packet Switched Service | PSTN -Public Switched Telephone Network |
| PUB –Publication | PUP -Principal User Processor |
| PVC -Permanent Virtual Circuit | PVD -Plan View Display |

## -Q-

| | |
|---|---|
| RAIL-Runway Alignment Indicator Lights | RAPCO -Radar Approach Control (USAF) |

## -R-

| | |
|---|---|
| RAIL-Runway Alignment Indicator Lights | RAPCO -Radar Approach Control (USAF) |
| RAPCON -Radar Approach Control | RATCC -Radar Air Traffic Control Center |
| RATCF -Radar Air Traffic Control Facility (USN) | RBC -Rotating Beam Ceilometer |
| RBDPE -Radar Beacon Data Processing Equipment | RBSS -Radar Bomb Scoring Squadron |
| RCAG -Remote Communications Air/Ground | RCC -Rescue Coordination Center |
| RCF -Remote Communication Facility | RCCC -Regional Communications Control Centers |
| RCIU -Remote Control Interface Unit | RCL -Radio Communications Link |
| RCLR -RCL Repeater | RCLT -RCL Terminal |
| RCO -Remote Communications Outlet | RCU -Remote Control Unit |
| RDAT -Digitized Radar Data | RDP -Radar Data Processing |
| RDSIM -Runway Delay Simulation Model | REIL -Runway End Identification Lights |
| RF -Radio Frequency | RL -General Aviation Reliever Airport |
| RMCC -Remote Monitor Control Center | RMCF -Remote Monitor Control Facility |
| RML -Radio Microwave Link | RMLR -RML Repeater |
| RMLT -RML Terminal | RMM -Remote Maintenance Monitoring |
| RMMS -Remote Maintenance Monitoring System | RMS -Remote Monitoring Subsystem |
| RMSC -Remote Monitoring Subsystem Concentrator | RNAV -Area Navigation |
| RNP -Required Navigation Performance | ROD -Record of Decision |
| ROSA -Report of Service Activity | ROT -Runway Occupancy Time |
| RP -Restoration Priority | RPC -Restoration Priority Code |
| RPG -Radar Processing Group | RPZ -Runway Protection Zone |

| | |
|---|---|
| RRH -Remote Reading Hygrothermometer | RRHS -Remote Reading Hydrometer |
| RRWDS -Remote Radar Weather Display | RRWSS -RWDS Sensor Site |
| RSS -Remote Speaking System | RT -Remote Transmitter |
| RT & BTL -Radar Tracking And Beacon Tracking Level | RTAD -Remote Tower Alphanumeric Display |
| RTCA -Radio Technical Commission for Aeronautics | RTR -Remote Transmitter/Receiver |
| RTRD -Remote Tower Radar Display | RVR -Runway Visual Range |
| RW –Runway | RWDS -Same as RRWDS |
| RWP -Realtime Weather Processor | |

## -S-

| | |
|---|---|
| S/S - Sector Suite | SAC -Strategic Air Command |
| SAFI -Semi Automatic Flight Inspection | SALS -Short Approach Lighting System |
| SATCOM -Satellite Communications | SAWRS -Supplementary Aviation Weather Reporting System |
| SCC -System Command Center | SCVTS -Switched Compressed Video Telecommunications Service |
| SDF -Simplified Direction Finding | SDF -Software Defined Network |
| SDIS -Switched Digital Integrated Service | SDP -Service Delivery Point |
| SDS -Switched Data Service | SEL -Single Event Level |
| SELF -Simplified Short Approach Lighting System With Sequenced Flashing Lights | SFAR-38 -Special Federal Aviation Regulation 38 |
| SHPO -State Historic Preservation Officer | SIC -Service Initiation Charge |
| SID -Station Identifier | SID -Standard Instrument Departure |
| SIGMET -Significant Meteorological Information | SIMMOD -Airport and Airspace Simulation Model |
| SIP -State Implementation Plan | SM -Statute Miles |
| SMGC -Surface Movement Guidance and Control | SMPS -Sector Maintenance Processor Subsystem |
| SMS -Simulation Modeling System | SNR -Signal-to-Noise Ratio, also: S/N |
| SOC -Service Oversight Center | SOIR -Simultaneous Operations On Intersecting Runways |
| SOIWR -Simultaneous Operations on Intersecting Wet Runways | SRAP -Sensor Receiver and Processor |
| SSALF -SSALS with Sequenced Flashers | SSALR -Simplified Short Approach Lighting System |
| SSB -Single Side Band | STAR -Standard Terminal Arrival Route |
| STD –Standard | STMUX -Statistical Data Multiplexer |
| STOL -Short Takeoff and Landing | SURPIC -Surface Picture |
| SVCA -Service A | SVCB -Service B |
| SVCC -Service C | SVCO -Service O |
| SVFO -Interphone Service F (A) | SVFB -Interphone Service F (B) |
| SVFC -Interphone Service F (C) | SVFD -Interphone Service F (D) |
| SVFR -Special Visual Flight Rules | |

## -T-

| | |
|---|---|
| T1MUX-T1 Multiplexer | TAAS -Terminal Advance Automation System |
| TACAN -Tactical Aircraft Control and Navigation | TACR -TACAN at VOR, TACAN only |
| TAF -Terminal Area Forecast | TARS -Terminal Automated Radar Service |
| TAS -True Air Speed | TATCA -Terminal Air Traffic Control Automation |
| TAVT -Terminal Airspace Visualization Tool | TCA -Traffic Control Airport or Tower Control Airport |
| TCA -Terminal Control Area | TCACCIS -Transportation Coordinator Automated Command and Control Information System |
| TCAS -Traffic Alert And Collision Avoidance System | TCC -DOT Transportation Computer Center |
| TCCC -Tower Control Computer Complex | TCE -Tone Control Equipment |
| TCLT -Tentative Calculated Landing Time | TCO -Telecommunications Certification Officer |
| TCOM -Terminal Communications | TCS -Tower Communications System |
| TDLS -Tower Data-Link Services | TDMUX -Time Division Data Multiplexer |
| TDWR -Terminal Doppler Weather Radar | TELCO -Telephone Company |
| TELMS -Telecommunications Management System | TERPS -Terminal Instrument Procedures |
| TFAC -To Facility | TH -Threshold |
| TIMS -Telecommunications Information Management System | TIPS -Terminal Information Processing System |
| TL –Taxilane | TMA -Traffic Management Advisor |
| TMC -Traffic Management Coordinator | TMC/MC -Traffic Management Coordinator/Military Coordinator |
| TMCC -Terminal Information Processing System | TMCC -Traffic Management Computer Complex |
| TMF -Traffic Management Facility | TML -Television Microwave Link |
| TMLI -Television Microwave Link Indicator | TMLR -Television Microwave Link Repeater |
| TMLT -Television Microwave Link Terminal | TM&O -Telecommunications Management and Operations |
| TMP -Traffic Management Processor | TMS -Traffic Management System |
| TMSPS -Traffic Management Specialists | TMU -Traffic Management Unit |
| TODA -Takeoff Distance Available | TOF -Time Of Flight |
| TOFMS -Time of Flight Mass Spectrometer | TOPS -Telecommunications Ordering and Pricing System (GSA software tool) |
| TORA -Take-off Run Available | TNAV -Terminal Navigational Aids |
| TR -Telecommunications Request | TRACAB -Terminal Radar Approach Control in Tower Cab |
| TRACON -Terminal Radar Approach Control Facility | TRAD -Terminal Radar Service |
| TRNG –Training | TSA -Taxiway Safety Area |
| TSEC -Terminal Secondary Radar Service | TSP -Telecommunications Service Priority |
| TSR -Telecommunications Service Request | TSYS -Terminal Equipment Systems |
| TTMA -TRACON Traffic Management Advisor | TTY -Teletype |
| TVOR -Terminal VHF Omnidirectional Range | TW -Taxiway |
| TWEB -Transcribed WeatherBroadcastTWR-Tower | TY -Type (FAACIS) |

| | |
|---|---|
| (non-controlled) | |

-U-

| | |
|---|---|
| UAS -Uniform Accounting System | UHF -Ultra High Frequency |
| URA -Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 | USAF -United States Air Force |
| USOC -Uniform Service Order Code | |

-V-

| | |
|---|---|
| VASI-Visual Approach Slope Indicator | VDME -VOR with Distance Measuring Equipment |
| VF -Voice Frequency | VFR -Visual Flight Rules |
| VHF -Very High Frequency | VLF -Very Low Frequency |
| VMC -Visual Meteorological Conditions | VNAV -Visual Navigational Aids |
| VNTSC -Volpe National Transportation System Center | VON -Virtual On-net |
| VOR -VHF Omnidirectional Range | VOR/DME -VHF Omnidirectional Range/Distance Measuring Equipment |
| VORTAC -VOR collocated with TACAN | VOT -VOR Test Facility |
| VRS -Voice Recording System | VSCS -Voice Switching and Control System |
| VTA -Vertex Time of Arrival | VTAC -VOR collocated with TACAN |
| VTOL -Vertical Takeoff and Landing | VTS -Voice Telecommunications System |

-W-

| | |
|---|---|
| WAAS-Wide Area Augmentation System | WAN -Wide Area Network |
| WC -Work Center | WCP -Weather Communications Processor |
| WECO -Western Electric Company | WESCOM -Western Electric Satellite Communications |
| WMSC -Weather Message Switching Center | WMSCR -Weather Message Switching Center Replacement |
| WSCMO -Weather Service Contract Meteorological Observatory | WSFO -Weather Service Forecast Office |
| WSMO -Weather Service Meteorological Observatory | WSO -Weather Service Office |
| WTHR -"Weather" | WX -Weather |

-X-

| | |
|---|---|
| | |

-Y-

| | |
|---|---|

-Z-

| | |
|---|---|

# Appendix H-4 - Crosswalk Relationships

## H-4.1 CADD to GIS Crosswalk

This appendix lists CADD layers defined in MAA's CADD Standards Manual, their Data Category, their associated GIS feature class, and their Geometry type.

The CADD layers are ordered by category (i.e. Airfield, Airspace, Environmental, etc.) and then by CADD layer name. The first character of the CADD layer name, which indicates the discipline, has been replaced with an asterisk ('*') meaning that any discipline code applies.

CADD layers that are not relevant for GIS are excluded from this appendix.

## H-4.2 Base Map Data

The following categories contain base map data which can be used to create a comprehensive surface map of the airport or specific sites therein.

### H-4.2.1 Airfield Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AFLD-AHOA | Airfield | AirOperationsArea | Polygon |
| *-AFLD-DSRF-BLDR | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-KEYH | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-NMOV | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-OFA_ | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-OFZ_ | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-POFA | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-RPZ_ | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-DSRF-RSA_ | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-AFLD-FREQ | Airfield | FrequencyArea | Polygon |
| *-AFLD-LITE-APPR | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-DIST | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-LANE | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-OBST | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-RUNW | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-SIGN | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-TAXI | Airfield | AirfieldLight | Point |
| *-AFLD-LITE-THRS | Airfield | AirfieldLight | Point |
| *-AFLD-SECR-RSTR | Airfield | RestrictedAccessBoundary | Line |
| *-APRN-ACPK-BRDG | Airfield | PassengerLoadingBridge | Polygon |
| *-APRN-ANOM | Airfield | AircraftNonMovementArea | Line |
| *-APRN-CNTR | Airfield | MarkingLine | Line |
| *-APRN-DEIC | Airfield | DeicingArea | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-APRN-GRND | Airfield | Apron | Polygon |
| *-APRN-HOLD | Airfield | MarkingLine | Line |
| *-APRN-MRKG | Airfield | MarkingLine | Line |
| *-APRN-OTLN | Airfield | Apron | Polygon |
| *-APRN-SECU | Airfield | MarkingLine | Line |
| *-APRN-SHLD | Airfield | MarkingLine | Line |
| *-APRN-SHLD-MRKG | Airfield | MarkingLine | Line |
| *-APRN-SIGN | Airfield | AirportSign | Point |
| *-ELEV-SIGN | Airfield | AirportSign | Point |
| *-EQPM-JETB | Airfield | PassengerLoadingBridge | Polygon |
| *-FLOR-SIGN | Airfield | AirportSign | Point |
| *-HELI-BLST | Airfield | MarkingLine | Line |
| *-HELI-CNTR-MARK | Airfield | MarkingLine | Line |
| *-HELI-DIST | Airfield | MarkingLine | Line |
| *-HELI-DSRF | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-HELI-IDEN | Airfield | MarkingArea | Polygon |
| *-HELI-SHLD | Airfield | Shoulder | Polygon |
| *-HELI-SIDE | Airfield | MarkingLine | Line |
| *-HELI-TDZM | Airfield | MarkingArea | Polygon |
| *-HELI-TLOF | Airfield | TouchdownLiftOff | Polygon |
| *-LITE-DIST | Airfield | AirportSign | Point |
| *-LITE-SIGN | Airfield | AirportSign | Point |
| *-OVRN-CNTR | Airfield | MarkingLine | Line |
| *-OVRN-IDEN | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-OVRN-OTLN | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-OVRN-SHLD-MRKG | Airfield | MarkingLine | Line |
| *-PADS-CNTR | Airfield | MarkingLine | Line |
| *-PADS-OTLN | Airfield | MarkingLine | Line |
| *-PADS-SHLD | Airfield | Shoulder | Polygon |
| *-PRKG-SIGN | Airfield | AirportSign | Point |
| *-PVMT-MRKG | Airfield | MarkingLine | Line |
| *-PVMT-MRKG-WHIT | Airfield | MarkingLine | Line |
| *-PVMT-MRKG-YELO | Airfield | MarkingLine | Line |
| *-ROAD-SIGN | Airfield | AirportSign | Point |
| *-RUNW-ARST | Airfield | RunwayArrestingArea | Polygon |
| *-RUNW-BLST | Airfield | RunwayBlastPad | Polygon |
| *-RUNW-CLRW | Airfield | RunwayHelipadDesignSurface | Polygon |
| *-RUNW-CNTR | Airfield | RunwayCenterline | Line |
| *-RUNW-CNTR-MARK | Airfield | MarkingLine | Line |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-RUNW-CNTR-MRKG | Airfield | MarkingArea | Polygon |
| *-RUNW-DISP | Airfield | MarkingArea | Polygon |
| *-RUNW-DIST | Airfield | MarkingArea | Polygon |
| *-RUNW-EDGE | Airfield | Runway | Polygon |
| *-RUNW-ENDP | Airfield | RunwayEnd | Point |
| *-RUNW-ENDP-MARK | Airfield | RunwayLabel | Point |
| *-RUNW-IDEN | Airfield | MarkingArea | Polygon |
| *-RUNW-LAHS | Airfield | RunwayLAHSO | Line |
| *-RUNW-SAFT | Airfield | RunwaySafetyAreaBoundary | Polygon |
| *-RUNW-SEGM | Airfield | RunwayElement | Polygon |
| *-RUNW-SHLD | Airfield | MarkingLine | Line |
| *-RUNW-SIDE | Airfield | MarkingArea | Polygon |
| *-RUNW-SIGN | Airfield | AirportSign | Point |
| *-RUNW-STWY | Airfield | Stopway | Polygon |
| *-RUNW-TDZM | Airfield | MarkingArea | Polygon |
| *-RUNW-THRS | Airfield | MarkingArea | Polygon |
| *-SIGN-EXTN | Airfield | AirportSign | Point |
| *-SIGN-FRMG | Airfield | AirportSign | Point |
| *-SIGN-GAGE | Airfield | AirportSign | Point |
| *-SIGN-PANL | Airfield | AirportSign | Point |
| *-SIGN-SPRT | Airfield | AirportSign | Point |
| *-SPCL-TRAF | Airfield | AirportSign | Point |
| *-TAXI-CNTR-MARK | Airfield | MarkingLine | Line |
| *-TAXI-CNTR-MRKG | Airfield | MarkingLine | Line |
| *-TAXI-EDGE | Airfield | MarkingLine | Line |
| *-TAXI-HOLD | Airfield | TaxiwayHoldingPosition | Line |
| *-TAXI-INTS | Airfield | TaxiwayIntersection | Polygon |
| *-TAXI-OTLN | Airfield | TaxiwayElement | Polygon |
| *-TAXI-SHLD | Airfield | MarkingLine | Line |
| *-TAXI-SIGN | Airfield | AirportSign | Point |

### H-4.2.2 Airspace Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AIRS-LNDM | Airspace | LandmarkSegment | Line |
| *-AIRS-OBSC | Airspace | Obstacle | Point |
| *-AIRS-OBST-LINE | Airspace | ObstructionArea | Polygon |
| *-AIRS-OBST-POLY | Airspace | ObstructionArea | Polygon |
| *-AIRS-OBST-PPNT | Airspace | Obstacle | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AIRS-OTHR | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-PART-APRC | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-PART-CONL | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-PART-HORZ | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-PART-PRIM | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-PART-TRNS | Airspace | ObstructionIdSurface | Polygon |
| *-AIRS-TERP | Airspace | ObstructionIdSurface | Polygon |
| *-OBST-AIRS | Airspace | Obstacle | Point |

### H-4.2.3 Cadastral Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AFLD-FAAR | Cadastral | FaaRegionArea | Polygon |
| *-AFLD-PROP | Cadastral | AirportBoundary | Polygon |
| *-PROP-CNTY | Cadastral | County | Polygon |
| *-PROP-ESMT | Cadastral | EasementsAndRightsofWay | Polygon |
| *-PROP-LEAS | Cadastral | LeaseZone | Polygon |
| *-PROP-LINE | Cadastral | Parcel | Polygon |
| *-PROP-LUSE | Cadastral | LandUse | Polygon |
| *-PROP-LUSE-FUTR | Cadastral | LandUse | Polygon |
| *-PROP-MUNI | Cadastral | Municipality | Polygon |
| *-PROP-QTRS | Cadastral | Parcel | Polygon |
| *-PROP-RWAY | Cadastral | EasementsAndRightsofWay | Polygon |
| *-PROP-RWAY-ACQU | Cadastral | EasementsAndRightsofWay | Polygon |
| *-PROP-SECT | Cadastral | Parcel | Polygon |
| *-PROP-STAT | Cadastral | State | Polygon |
| *-PROP-SXTS | Cadastral | Parcel | Polygon |
| *-PROP-ZONG | Cadastral | Zoning | Polygon |

### H-4.2.4 Environmental Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-BORE-CONE | Environmental | SampleCollectionPoint | Point |
| *-BORE-GENL-LOCN | Environmental | SampleCollectionPoint | Point |
| *-BORE-GPRO-LOCN | Environmental | SampleCollectionPoint | Point |
| *-BORE-HOLE | Environmental | SampleCollectionPoint | Point |
| *-BORE-LINE | Environmental | SampleCollectionPoint | Point |
| *-BORE-PUSH | Environmental | SampleCollectionPoint | Point |
| *-BORE-STRK | Environmental | SampleCollectionPoint | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-BORE-UNDS-LOCN | Environmental | SampleCollectionPoint | Point |
| *-BORE-VCOR-LOCN | Environmental | SampleCollectionPoint | Point |
| *-BORW-IDEN | Environmental | FaunaHazardArea | Polygon |
| *-BORW-LINE | Environmental | FaunaHazardArea | Polygon |
| *-CHAN-BANK-TOP~ | Environmental | Shoreline | Polygon |
| *-CHAN-DACL | Environmental | Shoreline | Polygon |
| *-CHAN-DACL-IDEN | Environmental | Shoreline | Polygon |
| *-CHAN-LIMT | Environmental | Shoreline | Polygon |
| *-CHAN-LIMT-IDEN | Environmental | Shoreline | Polygon |
| *-DRED-OHWM | Environmental | Shoreline | Polygon |
| *-ECCO-BURR | Environmental | FaunaHazardArea | Polygon |
| *-ECCO-DENS | Environmental | FaunaHazardArea | Polygon |
| *-ECCO-GATR | Environmental | FaunaHazardArea | Polygon |
| *-ECCO-HUMK | Environmental | FaunaHazardArea | Polygon |
| *-ECCO-NEST | Environmental | FaunaHazardArea | Polygon |
| *-ECCO-PRCH | Environmental | FaunaHazardArea | Polygon |
| *-FLHA-025Y | Environmental | FloodZone | Polygon |
| *-FLHA-050Y | Environmental | FloodZone | Polygon |
| *-FLHA-100Y | Environmental | FloodZone | Polygon |
| *-FLHA-200Y | Environmental | FloodZone | Polygon |
| *-FLHA-500Y | Environmental | FloodZone | Polygon |
| *-FLHA-IDEN | Environmental | FloodZone | Polygon |
| *-MNST-AIRQ | Environmental | SampleCollectionPoint | Point |
| *-MNST-GWTR | Environmental | Shoreline | Polygon |
| *-MNST-SWTR | Environmental | Shoreline | Polygon |
| *-PLNT-BEDS | Environmental | ForestStandArea | Polygon |
| *-PLNT-BUSH | Environmental | ForestStandArea | Polygon |
| *-PLNT-BUSH-LINE | Environmental | ForestStandArea | Polygon |
| *-PLNT-CTNR | Environmental | FloraSpeciesSite | Point |
| *-PLNT-GRND | Environmental | ForestStandArea | Polygon |
| *-PLNT-MLCH | Environmental | ForestStandArea | Polygon |
| *-PLNT-PLTS | Environmental | FloraSpeciesSite | Point |
| *-PLNT-SPRG | Environmental | ForestStandArea | Polygon |
| *-PLNT-TREE | Environmental | FloraSpeciesSite | Point |
| *-PLNT-TREE-LINE | Environmental | ForestStandArea | Polygon |
| *-PLNT-TURF | Environmental | ForestStandArea | Polygon |
| *-POLL-CONC | Environmental | EnvironmentalContaminationArea | Polygon |
| *-POLL-POTN | Environmental | EnvironmentalContaminationArea | Polygon |
| *-RIVR-BANK-TOP~ | Environmental | Shoreline | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-RIVR-EDGE | Environmental | Shoreline | Polygon |
| *-SAMP-AIRS | Environmental | SampleCollectionPoint | Point |
| *-SAMP-AUGR | Environmental | SampleCollectionPoint | Point |
| *-SAMP-BIOL | Environmental | SampleCollectionPoint | Point |
| *-SAMP-CORE | Environmental | SampleCollectionPoint | Point |
| *-SAMP-DRVE | Environmental | SampleCollectionPoint | Point |
| *-SAMP-GRAB | Environmental | SampleCollectionPoint | Point |
| *-SAMP-GWTR | Environmental | SampleCollectionPoint | Point |
| *-SAMP-IDEN | Environmental | SampleCollectionPoint | Point |
| *-SAMP-MAGN | Environmental | SampleCollectionPoint | Point |
| *-SAMP-PERC | Environmental | SampleCollectionPoint | Point |
| *-SAMP-PITS | Environmental | SampleCollectionPoint | Point |
| *-SAMP-SEDI | Environmental | SampleCollectionPoint | Point |
| *-SAMP-SOIL | Environmental | SampleCollectionPoint | Point |
| *-SAMP-SOLI | Environmental | SampleCollectionPoint | Point |
| *-SAMP-SWTR | Environmental | SampleCollectionPoint | Point |
| *-SAMP-VERT | Environmental | SampleCollectionPoint | Point |
| *-SAMP-WASH | Environmental | SampleCollectionPoint | Point |
| *-SAMP-WAST | Environmental | SampleCollectionPoint | Point |
| *-SITE-EWAT | Environmental | Shoreline | Polygon |
| *-SITE-VEGE | Environmental | ForestStandArea | Polygon |
| *-SITE-VEGE-AREA | Environmental | ForestStandArea | Polygon |
| *-SITE-VEGE-HZRD | Environmental | FaunaHazardArea | Polygon |
| *-SITE-VEGE-PONT | Environmental | FloraSpeciesSite | Point |
| *-SITE-WATR | Environmental | Shoreline | Polygon |
| *-STOR-HAZM | Environmental | HazMatStorageSite | Point |
| *-TOPO-AUCO | Environmental | NoiseIncident | Point |
| *-TOPO-AUST | Environmental | NoiseMonitoringPoint | Point |
| *-TOPO-AUZN | Environmental | NoiseContour | Polygon |
| *-TOPO-BORE | Environmental | SampleCollectionPoint | Point |
| *-TOPO-FLZN | Environmental | FloodZone | Polygon |
| *-TOPO-SHOR | Environmental | Shoreline | Polygon |
| *-TOPO-SPEC | Environmental | FaunaHazardArea | Polygon |
| *-TOPO-WATR | Environmental | Shoreline | Polygon |
| *-TOPO-WETL | Environmental | Wetland | Polygon |
| *-WELL-ASR~ | Environmental | SampleCollectionPoint | Point |
| *-WELL-MONT | Environmental | SampleCollectionPoint | Point |
| *-WELL-PIZO | Environmental | SampleCollectionPoint | Point |
| *-WETL-BOGS | Environmental | Wetland | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-WETL-FENS | Environmental | Wetland | Polygon |
| *-WETL-MRSH | Environmental | Wetland | Polygon |
| *-WETL-MRSH-SALT | Environmental | Wetland | Polygon |
| *-WETL-MRSH-TIDL | Environmental | Wetland | Polygon |
| *-WETL-PCSN | Environmental | Wetland | Polygon |
| *-WETL-PHOL | Environmental | Wetland | Polygon |
| *-WETL-RPRN | Environmental | Wetland | Polygon |
| *-WETL-SLGH | Environmental | Wetland | Polygon |
| *-WETL-SWMP | Environmental | Wetland | Polygon |

### H-4.2.5 Geodetic Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AERI-BNDY | Geodetic | ImageArea | Polygon |
| *-AERI-PHOT | Geodetic | ImageArea | Polygon |
| *-AERI-PNPT | Geodetic | ImageArea | Polygon |
| *-CTRL-BMRK | Geodetic | AirportControlPoint | Point |
| *-CTRL-GRID | Geodetic | CoordinateGridCell | Polygon |
| *-CTRL-HCPT | Geodetic | AirportControlPoint | Point |
| *-CTRL-HVPT | Geodetic | AirportControlPoint | Point |
| *-CTRL-TRAV | Geodetic | AirportControlPoint | Point |
| *-CTRL-VCPT | Geodetic | AirportControlPoint | Point |
| *-DETL-GRPH | Geodetic | CoordinateGridCell | Polygon |
| *-GRAD-AFTR | Geodetic | ElevationContour | Line |
| *-GRAD-EXST | Geodetic | ElevationContour | Line |
| *-GRAD-EXST-BASE | Geodetic | ElevationContour | Line |
| *-GRAD-EXST-SYR1 | Geodetic | ElevationContour | Line |
| *-GRAD-EXST-SYR2 | Geodetic | ElevationContour | Line |
| *-GRAD-EXST-SYR3 | Geodetic | ElevationContour | Line |
| *-GRAD-EXST-SYR4 | Geodetic | ElevationContour | Line |
| *-GRAD-FNSH | Geodetic | ElevationContour | Line |
| *-GRAD-PRED | Geodetic | ElevationContour | Line |
| *-GRAD-SCLN | Geodetic | ElevationContour | Line |
| *-GRID-COOR | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-COOR-IDEN | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-EXTR | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-FRAM | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-HORZ | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-IDEN | Geodetic | CoordinateGridCell | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-GRID-INTR | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-MAJR | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-MINR | Geodetic | CoordinateGridCell | Polygon |
| *-GRID-VERT | Geodetic | CoordinateGridCell | Polygon |
| *-IMAG-BDRY-QUAD | Geodetic | ImageArea | Polygon |
| *-PROJ-LALO-COOR | Geodetic | CoordinateGridCell | Polygon |
| *-PROJ-STAT-COOR | Geodetic | CoordinateGridCell | Polygon |
| *-SURV-DATA | Geodetic | AirportControlPoint | Point |
| *-TOPO-BKLN | Geodetic | ElevationContour | Line |
| *-TOPO-COOR | Geodetic | CoordinateGridCell | Polygon |
| *-TOPO-COOR-LALO | Geodetic | CoordinateGridCell | Polygon |
| *-TOPO-COOR-STAT | Geodetic | CoordinateGridCell | Polygon |
| *-TOPO-DTMP | Geodetic | ElevationContour | Line |
| *-TOPO-DTMT | Geodetic | ElevationContour | Line |
| *-TOPO-MAJR | Geodetic | ElevationContour | Line |
| *-TOPO-MAJR-IDEN | Geodetic | ElevationContour | Line |
| *-TOPO-MINR | Geodetic | ElevationContour | Line |
| *-TOPO-MINR-IDEN | Geodetic | ElevationContour | Line |
| *-TOPO-MINR-ONEF | Geodetic | ElevationContour | Line |
| *-TOPO-MINR-TWOF | Geodetic | ElevationContour | Line |
| *-TOPO-RNYE | Geodetic | AirportControlPoint | Point |
| *-TOPO-SLOP-FILL | Geodetic | ElevationContour | Line |
| *-TOPO-SLOP-IDEN | Geodetic | ElevationContour | Line |
| *-TOPO-SLOP-TOPT | Geodetic | ElevationContour | Line |
| *-TOPO-SOUN | Geodetic | ElevationContour | Line |
| *-TOPO-SPOT | Geodetic | AirportControlPoint | Point |
| *-TOPO-SPOT-BLDG | Geodetic | AirportControlPoint | Point |
| *-WATR-SURF | Geodetic | ElevationContour | Line |

### H-4.2.6 Interior Space Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-ACCS-EVTR | Interior | Elevator | Polygon |
| *-ACCS-STRS | Interior | Stair | Polygon |
| *-ACCS-STRS-FRMG | Interior | Stair | Polygon |
| *-ALRM-EQPM-SECU | Interior | Door | Line |
| *-BAGS-CARR | Interior | BaggageCarousel | Polygon |
| *-BAGS-CVRI | Interior | BaggageConveyor | Polygon |
| *-BAGS-CVRO | Interior | BaggageConveyor | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-COLS-CNTR | Interior | BuildingColumn | Polygon |
| *-COLS-ENCL | Interior | BuildingColumn | Polygon |
| *-COLS-POST | Interior | BuildingColumn | Polygon |
| *-COLS-PRIM | Interior | BuildingColumn | Polygon |
| *-COLS-RBAR | Interior | BuildingColumn | Polygon |
| *-COLS-SECD | Interior | BuildingColumn | Polygon |
| *-DOOR-FULL | Interior | Door | Line |
| *-DOOR-PRHT | Interior | Door | Line |
| *-DOOR-SECR | Interior | Door | Line |
| *-FLOR-ECSL | Interior | Escalator | Polygon |
| *-FLOR-EVTR | Interior | Elevator | Polygon |
| *-FLOR-HRAL | Interior | Stair | Polygon |
| *-FLOR-LEVL | Interior | Floor | Polygon |
| *-FLOR-MWLK | Interior | MovingSidewalk | Polygon |
| *-FLOR-OTLN | Interior | Floor | Polygon |
| *-FLOR-OTLN-RPRM | Interior | Room | Polygon |
| *-FLOR-SPCE | Interior | Space | Polygon |
| *-FLOR-STRS | Interior | Stair | Polygon |
| *-FNDN-ANCH | Interior | Wall | Line |
| *-FNDN-CNTR | Interior | Wall | Line |
| *-FNDN-FTNG | Interior | BuildingColumn | Polygon |
| *-FNDN-GRBM | Interior | Wall | Line |
| *-FNDN-PEDS | Interior | BuildingColumn | Polygon |
| *-FNDN-PILE | Interior | BuildingColumn | Polygon |
| *-FURN-ACCS | Interior | Furnishing | Point |
| *-FURN-ADPC | Interior | Furnishing | Point |
| *-FURN-ARTW | Interior | Furnishing | Point |
| *-FURN-FLOR | Interior | Furnishing | Point |
| *-FURN-FREE | Interior | Furnishing | Point |
| *-FURN-GRID | Interior | Furnishing | Point |
| *-FURN-IDEN | Interior | Furnishing | Point |
| *-FURN-PLNT | Interior | Furnishing | Point |
| *-FURN-SEAT | Interior | Furnishing | Point |
| *-FURN-STOR | Interior | Furnishing | Point |
| *-GLAZ-FULL | Interior | Window | Line |
| *-GLAZ-PRHT | Interior | Window | Line |
| *-GLAZ-SILL | Interior | Window | Line |
| *-HVAC-ACCS | Interior | Door | Line |
| *-OTLN-FLOR | Interior | Floor | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-OTLN-OPNG | Interior | Door | Line |
| *-OTLN-ROOF | Interior | Floor | Polygon |
| *-PENE-WALL | Interior | Wall | Line |
| *-SITE-STRS | Interior | Stair | Polygon |
| *-WALL-ABUT | Interior | Wall | Line |
| *-WALL-CAVI | Interior | Wall | Line |
| *-WALL-CELL | Interior | Wall | Line |
| *-WALL-CNTR | Interior | Wall | Line |
| *-WALL-COFF | Interior | Wall | Line |
| *-WALL-CURT | Interior | Wall | Line |
| *-WALL-CWMG | Interior | Wall | Line |
| *-WALL-FULL | Interior | Wall | Line |
| *-WALL-FULL-EXTR | Interior | Wall | Line |
| *-WALL-FULL-INTR | Interior | Wall | Line |
| *-WALL-GARD | Interior | Wall | Line |
| *-WALL-HEAD | Interior | Wall | Line |
| *-WALL-JAMB | Interior | Wall | Line |
| *-WALL-LOAD | Interior | Wall | Line |
| *-WALL-MONO | Interior | Wall | Line |
| *-WALL-MOVE | Interior | Wall | Line |
| *-WALL-MSE~ | Interior | Wall | Line |
| *-WALL-NONL | Interior | Wall | Line |
| *-WALL-OPEN-LVRS | Interior | Wall | Line |
| *-WALL-PCST | Interior | Wall | Line |
| *-WALL-PRHT | Interior | Wall | Line |
| *-WALL-RBAR | Interior | Wall | Line |
| *-WALL-RTWL | Interior | Wall | Line |
| *-WALL-SHEA | Interior | Wall | Line |
| *-WALL-SPCL | Interior | Wall | Line |
| *-WALL-STUD | Interior | Wall | Line |

### H-4.2.7 Navigational Aids Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AFLD-AIDS-COMM | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-CRIT | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-GPS_ | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-ILS_ | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-MCWV | Navigational Aids | NavaidEquipment | Point |

| | | | |
|---|---|---|---|
| *-AFLD-AIDS-OTHR | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-RADI | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-RADR | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-RMTE | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-SITE | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-SYST | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-AIDS-WTHR | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-BCNS-IDEN | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-BCNS-MISC | Navigational Aids | NavaidEquipment | Point |
| *-AFLD-BCNS-STRB | Navigational Aids | NavaidEquipment | Point |

### H-4.2.8 SeaPlane Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-SEAP-BUOY | SeaPlane | NavigationBuoy | Point |
| *-SEAP-RAMP | SeaPlane | SeaplaneRampSite | Polygon |
| *-SEAP-RAMP-CNTR | SeaPlane | SeaplaneRampCenterline | Line |
| *-SIGN-BUOY | SeaPlane | NavigationBuoy | Point |

### H-4.2.9 Security Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-AFLD-SECR-SECA | Security | SecurityArea | Polygon |
| *-AFLD-SECR-SIDA | Security | SecurityIdDisplayArea | Polygon |
| *-AFLD-SECR-STER | Security | SterileArea | Polygon |
| *-CCTV-EQPM | Security | SurveillanceCamera | Point |

### H-4.2.10 Structures Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-BLDG-DECK | Structures | Building | Polygon |
| *-BLDG-DOCK | Structures | Building | Polygon |
| *-BLDG-OTLN | Structures | Building | Polygon |
| *-BLDG-OVHD | Structures | Building | Polygon |
| *-BLDG-PRCH | Structures | Building | Polygon |
| *-DECK-FLOR | Structures | Building | Polygon |
| *-DECK-ROOF | Structures | Building | Polygon |
| *-DETL-FENC-SECU | Structures | Fence | Line |
| *-DETL-GATE | Structures | Gate | Line |
| *-ELEV-OTLN | Structures | Building | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-EXST-BLDG | Structures | Building | Polygon |
| *-GATE-AXIS | Structures | Gate | Line |
| *-GATE-MISC | Structures | Gate | Line |
| *-OTLN-BLDG | Structures | Building | Polygon |
| *-OTLN-STRC | Structures | Building | Polygon |
| *-PLAN-OTLN | Structures | Building | Polygon |
| *-PROP-CONS | Structures | ConstructionArea | Polygon |
| *-SAFE-FENC | Structures | Fence | Line |
| *-SITE-FENC | Structures | Fence | Line |
| *-SITE-GATE | Structures | Gate | Line |
| *-SITE-OTLN | Structures | ConstructionArea | Polygon |
| *-STRC-TOWR | Structures | Tower | Point |

### H-4.2.11 Surface Transportation Data

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-ACCS-TUNL | Surface Transportation | Tunnel | Polygon |
| *-BRDG-BEAR | Surface Transportation | Bridge | Polygon |
| *-BRDG-CNTR | Surface Transportation | Bridge | Polygon |
| *-BRDG-CURB | Surface Transportation | Sidewalk | Polygon |
| *-BRDG-DECK | Surface Transportation | Bridge | Polygon |
| *-BRDG-OTLN | Surface Transportation | Bridge | Polygon |
| *-FNDN-TUNL | Surface Transportation | Tunnel | Polygon |
| *-GATE-WALK | Surface Transportation | Sidewalk | Polygon |
| *-MATL-CRAN | Surface Transportation | Bridge | Polygon |
| *-PRKG-OTLN | Surface Transportation | ParkingLot | Polygon |
| *-RAIL-BRDG | Surface Transportation | Bridge | Polygon |
| *-RAIL-BRDG-CNTR | Surface Transportation | RailroadCenterline | Line |
| *-RAIL-CNTR | Surface Transportation | RailroadCenterline | Line |
| *-RAIL-TRAK | Surface Transportation | RailroadCenterline | Line |
| *-RAIL-YARD | Surface Transportation | RailroadYard | Polygon |
| *-ROAD-ASPH | Surface Transportation | RoadSegment | Polygon |
| *-ROAD-CNTR | Surface Transportation | RoadCenterline | Line |
| *-ROAD-CONC | Surface Transportation | RoadSegment | Polygon |
| *-ROAD-CURB | Surface Transportation | RoadSegment | Polygon |
| *-ROAD-DRIV | Surface Transportation | DrivewayArea | Polygon |
| *-ROAD-DRIV-CNTR | Surface Transportation | DrivewayCenterline | Line |
| *-ROAD-GRVL | Surface Transportation | RoadSegment | Polygon |
| *-ROAD-OTLN | Surface Transportation | RoadSegment | Polygon |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-ROAD-POIN | Surface Transportation | RoadPoint | Point |
| *-ROAD-SHLD | Surface Transportation | RoadSegment | Polygon |
| *-ROAD-UPVD | Surface Transportation | RoadSegment | Polygon |
| *-SITE-BRDG | Surface Transportation | Bridge | Polygon |
| *-SITE-STRC | Surface Transportation | Bridge | Polygon |
| *-SITE-TUNL | Surface Transportation | Tunnel | Polygon |
| *-SITE-WALK | Surface Transportation | Sidewalk | Polygon |

## H-4.3 Utility Data

The following categories contain data on various on-site utility systems.

### H-4.3.1 Utilities - Air

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-CMPA-AIRD | Utilities Air | CompressedAirDrainSeparator | Point |
| *-CMPA-FTTG | Utilities Air | CompressedAirFitting | Point |
| *-CMPA-PIPE | Utilities Air | CompressedAirPipeLine | Line |
| *-CMPA-VLVE | Utilities Air | CompressedAirValve | Point |
| *-CMPA-VLVP | Utilities Air | CompressedAirValvePit | Point |

### H-4.3.2 Utilities - Communication

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-COMM-ACCS | Utilities Communications | CommAccessPoint | Point |
| *-COMM-AIRP | Utilities Communications | CommAirLine | Line |
| *-COMM-AMPL | Utilities Communications | CommAmplifier | Point |
| *-COMM-ANTL | Utilities Communications | CommAntennaLine | Line |
| *-COMM-ANTS | Utilities Communications | CommAntenna | Point |
| *-COMM-APDP | Utilities Communications | CommAirPressureDevice | Point |
| *-COMM-ATTN | Utilities Communications | CommAttenuator | Point |
| *-COMM-BOTH | Utilities Communications | CommTelephoneBooth | Point |
| *-COMM-CABL-CBRL | Utilities Communications | CommCableBridgeLine | Line |
| *-COMM-CABL-CLAD | Utilities Communications | CommCableLadder | Point |
| *-COMM-CABL-COAX | Utilities Communications | CommCoaxialLine | Line |
| *-COMM-CABL-CRCK | Utilities Communications | CommCableRackLine | Line |
| *-COMM-CABL-TRAY | Utilities Communications | CommCableTrayLine | Line |
| *-COMM-CABL-TRGH | Utilities Communications | CommCableTroughLine | Line |
| *-COMM-COVR | Utilities Communications | CommAccessCoverageArea | Polygon |
| *-COMM-DSPL | Utilities Communications | CommDbsplice | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-COMM-DUCT | Utilities Communications | CommDuctbank | Line |
| *-COMM-DVPT | Utilities Communications | CommDevice | Point |
| *-COMM-EQPT | Utilities Communications | CommEquipment | Point |
| *-COMM-FIBR | Utilities Communications | CommFiberopticLine | Line |
| *-COMM-GPNT | Utilities Communications | CommGroundPoint | Point |
| *-COMM-GPPA | Utilities Communications | CommGroundplaneArea | Polygon |
| *-COMM-GWAV | Utilities Communications | CommGroundwaveArea | Polygon |
| *-COMM-IMPD | Utilities Communications | CommImpedanceMatchingPoint | Point |
| *-COMM-INET | Utilities Communications | CommInternetCenter | Point |
| *-COMM-HHOL | Utilities Communications | CommJunction | Point |
| *-COMM-LCAP | Utilities Communications | CommLoadCapacitor | Point |
| *-COMM-LCOL | Utilities Communications | CommLoadCoilPoint | Point |
| *-COMM-LOOP | Utilities Communications | CommServiceLoopPoint | Point |
| *-COMM-LOSL | Utilities Communications | CommLineOfSightLine | Line |
| *-COMM-MCNV | Utilities Communications | CommMediaConverter | Point |
| *-COMM-MHOL | Utilities Communications | CommJunction | Point |
| *-COMM-MHOP | Utilities Communications | CommMultihopArea | Polygon |
| *-COMM-NETS | Utilities Communications | CommNetworkSystemsSite | Point |
| *-COMM-OTCL | Utilities Communications | CommOtherCable | Line |
| *-COMM-PATH | Utilities Communications | CommPathNode | Point |
| *-COMM-PEDS | Utilities Communications | CommPedestal | Point |
| *-COMM-PULB | Utilities Communications | CommPullbox | Point |
| *-COMM-RADP | Utilities Communications | CommRadio | Point |
| *-COMM-RADR | Utilities Communications | CommRadarSite | Point |
| *-COMM-RDRS | Utilities Communications | CommRadioReceiver | Point |
| *-COMM-RDTS | Utilities Communications | CommRadioTransmitter | Point |
| *-COMM-RELY | Utilities Communications | CommRelayStation | Point |
| *-COMM-RISR | Utilities Communications | CommRiser | Point |
| *-COMM-RPTR | Utilities Communications | CommRepeater | Point |
| *-COMM-SATP | Utilities Communications | CommSatellitePoint | Point |
| *-COMM-SEGL | Utilities Communications | CommSegmentedCable | Line |
| *-COMM-SEGS | Utilities Communications | CommSegmentedCable | Line |
| *-COMM-SENS | Utilities Communications | CommSensor | Point |
| *-COMM-SIGN | Utilities Communications | CommElectronicMarker | Point |
| *-COMM-SLIN | Utilities Communications | CommPathSegmentLine | Line |
| *-COMM-SPKR | Utilities Communications | CommSpeaker | Point |
| *-COMM-SPLC | Utilities Communications | CommSplice | Point |
| *-COMM-SPLT | Utilities Communications | CommSplitter | Point |
| *-COMM-SWBX | Utilities Communications | CommJunction | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-COMM-TELE | Utilities Communications | CommTelephone | Point |
| *-COMM-TERM | Utilities Communications | CommTerminator | Point |
| *-COMM-TRML | Utilities Communications | CommTerminal | Point |
| *-COMM-TWIS | Utilities Communications | CommTwistedPairLine | Line |
| *-COMM-UNKN | Utilities Communications | CommJunction | Point |
| *-COMM-VALT | Utilities Communications | CommVaultSite | Point |
| *-COMM-VIDS | Utilities Communications | CommVideoSite | Point |
| *-COMM-VOIC | Utilities Communications | CommVoiceSwitch | Point |
| *-COMM-VSIT | Utilities Communications | CommVerticalSite | Point |
| *-COMM-WAVG | Utilities Communications | CommWaveguideLine | Line |

### H-4.3.3 Utilities - Deicing

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-GLYC-CLVL | Utilities Deicing | DeicingCulvertCenterline | Line |
| *-GLYC-CLVS | Utilities Deicing | DeicingCulvertEnd | Point |
| *-GLYC-COUT | Utilities Deicing | DeicingLineCleanOut | Point |
| *-GLYC-DBAS | Utilities Deicing | DeicingDrainageBasin | Polygon |
| *-GLYC-DDIV | Utilities Deicing | DeicingDrainageDivide | Line |
| *-GLYC-DSCH | Utilities Deicing | DeicingDischargePoint | Point |
| *-GLYC-FLOW | Utilities Deicing | DeicingFlowControlPoint | Point |
| *-GLYC-PLUG | Utilities Deicing | DeicingFitting | Point |
| *-GLYC-INLT | Utilities Deicing | DeicingInlet | Point |
| *-GLYC-HHOL | Utilities Deicing | DeicingJunction | Point |
| *-GLYC-LIFT | Utilities Deicing | DeicingLiftStation | Point |
| *-GLYC-LINE | Utilities Deicing | DeicingLine | Line |
| *-GLYC-MHOL | Utilities Deicing | DeicingJunction | Point |
| *-GLYC-SIGN | Utilities Deicing | DeicingMarker | Point |
| *-GLYC-PUMP | Utilities Deicing | DeicingPump | Point |
| *-GLYC-RESV | Utilities Deicing | DeicingReservoir | Point |
| *-GLYC-REVR | Utilities Deicing | DeicingGlycolRecoveryPit | Point |
| *-GLYC-STAT | Utilities Deicing | DeicingPumpStation | Point |
| *-GLYC-TANK | Utilities Deicing | DeicingTank | Point |
| *-GLYC-UNKN | Utilities Deicing | DeicingJunction | Point |
| *-GLYC-VALT | Utilities Deicing | DeicingVault | Point |
| *-GLYC-VLVE | Utilities Deicing | DeicingValve | Point |

### H-4.3.4 Utilities - Electrical

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-ELEC-BLIN | Utilities Electrical | ElectricalBusLine | Line |
| *-ELEC-CAPP | Utilities Electrical | ElectricalCapacitor | Point |
| *-ELEC-CLIN | Utilities Electrical | ElectricalCable | Line |
| *-ELEC-DUCT | Utilities Electrical | ElectricalDuctbank | Line |
| *-ELEC-GENP | Utilities Electrical | ElectricalGenerator | Point |
| *-ELEC-GRPT | Utilities Electrical | ElectricalGround | Point |
| *-ELEC-HBLT | Utilities Electrical | ElectricalHeadBoltOutlet | Point |
| *-ELEC-HHOL | Utilities Electrical | ElectricalJunction | Point |
| *-ELEC-LITE | Utilities Electrical | ElectricalLight | Point |
| *-ELEC-METR | Utilities Electrical | ElectricalMeter | Point |
| *-ELEC-MHOL | Utilities Electrical | ElectricalJunction | Point |
| *-ELEC-MKPT | Utilities Electrical | ElectricalMarker | Point |
| *-ELEC-MTPT | Utilities Electrical | ElectricalMotor | Point |
| *-ELEC-PEDS | Utilities Electrical | ElectricalPedestal | Point |
| *-ELEC-REGP | Utilities Electrical | ElectricalRegulator | Point |
| *-ELEC-RISR | Utilities Electrical | ElectricalRiser | Point |
| *-ELEC-SITE | Utilities Electrical | ElectricalUtilitySite | Point |
| *-ELEC-SPLC | Utilities Electrical | ElectricalSplice | Point |
| *-ELEC-SWBX | Utilities Electrical | ElectricalJunction | Point |
| *-ELEC-SUBS | Utilities Electrical | ElectricalSubstation | Polygon |
| *-ELEC-SWCH | Utilities Electrical | ElectricalSwitch | Point |
| *-ELEC-TRBP | Utilities Electrical | ElectricalTransformerBank | Point |
| *-ELEC-UNKN | Utilities Electrical | ElectricalJunction | Point |
| *-ELEC-VALT | Utilities Electrical | ElectricalTransformerVault | Point |
| *-POLE-GUYL | Utilities Electrical | ElectricalPoleGuyLine | Line |
| *-POLE-GUYP | Utilities Electrical | ElectricalPoleGuyConnectionPoint | Point |
| *-POLE-TOWS | Utilities Electrical | ElectricalPoleTower | Point |

### H-4.3.5 Utilities - Energy Monitoring and Control System

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-EMCS-CABL | Utilities EMCS | EnergyCtrlMonCable | Line |
| *-EMCS-DUCT | Utilities EMCS | EnergyCtrlMonDuctbank | Line |
| *-EMCS-ECMD | Utilities EMCS | EnergyCtrlMonDevice | Point |
| *-EMCS-HHOL | Utilities EMCS | EnergyCtrlMonJunction | Point |
| *-EMCS-MHOL | Utilities EMCS | EnergyCtrlMonJunction | Point |
| *-EMCS-SIGN | Utilities EMCS | EnergyCtrlMonMarker | Point |
| *-EMCS-SWBX | Utilities EMCS | EnergyCtrlMonJunction | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-EMCS-CABL | Utilities EMCS | EnergyCtrlMonCable | Line |
| *-EMCS-UNKN | Utilities EMCS | EnergyCtrlMonJunction | Point |

### H-4.3.6 Utilities - Fuel

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-FUEL-AEPT | Utilities Fuel | FuelAirEliminator | Point |
| *-FUEL-ANOD | Utilities Fuel | FuelAnode | Point |
| *-FUEL-ANOT | Utilities Fuel | FuelAnodeTestStation | Point |
| *-FUEL-COUT | Utilities Fuel | FuelFitting | Point |
| *-FUEL-FILT | Utilities Fuel | FuelFilterStrainer | Point |
| *-FUEL-PLUG | Utilities Fuel | FuelFitting | Point |
| *-FUEL-HYDR | Utilities Fuel | FuelHydrant | Point |
| *-FUEL-HHOL | Utilities Fuel | FuelJunction | Point |
| *-FUEL-MAIN | Utilities Fuel | FuelLine | Line |
| *-FUEL-MHOL | Utilities Fuel | FuelJunction | Point |
| *-FUEL-METR | Utilities Fuel | FuelMeter | Point |
| *-FUEL-SIGN | Utilities Fuel | FuelMarker | Point |
| *-FUEL-OILW | Utilities Fuel | FuelOilWaterSeparator | Point |
| *-FUEL-PBSP | Utilities Fuel | FuelPumpBoosterStation | Point |
| *-FUEL-PIPL | Utilities Fuel | FuelTransPipeline | Line |
| *-FUEL-PIPS | Utilities Fuel | FuelTransPipelineSegmentLine | Line |
| *-FUEL-PUMP | Utilities Fuel | FuelPump | Point |
| *-FUEL-RECT | Utilities Fuel | FuelRectifier | Point |
| *-FUEL-REDC | Utilities Fuel | FuelRegulatorReducer | Point |
| *-FUEL-REFN | Utilities Fuel | FuelTransRefinery | Point |
| *-FUEL-SRCE | Utilities Fuel | FuelSource | Point |
| *-FUEL-SWBX | Utilities Fuel | FuelJunction | Point |
| *-FUEL-TANK | Utilities Fuel | FuelTank | Point |
| *-FUEL-UNKN | Utilities Fuel | FuelJunction | Point |
| *-FUEL-VLVE | Utilities Fuel | FuelValve | Point |

### H-4.3.7 Utilities – Natural Gas

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-NGAS-ANOD | Utilities Gas | GasAnode | Point |
| *-NGAS-ANOT | Utilities Gas | GasAnodeTestStation | Point |
| *-NGAS-COUT | Utilities Gas | GasFitting | Point |
| *-NGAS-FILL | Utilities Gas | GasFillPoint | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-NGAS-ANOD | Utilities Gas | GasAnode | Point |
| *-NGAS-PLUG | Utilities Gas | GasFitting | Point |
| *-NGAS-GASL | Utilities Gas | GasLine | Line |
| *-NGAS-HHOL | Utilities Gas | GasJunction | Point |
| *-NGAS-LITE | Utilities Gas | GasLight | Point |
| *-NGAS-MARK | Utilities Gas | GasMarker | Point |
| *-NGAS-METR | Utilities Gas | GasMeter | Point |
| *-NGAS-MHOL | Utilities Gas | GasJunction | Point |
| *-NGAS-PMPS | Utilities Gas | GasPumpStation | Point |
| *-NGAS-PUMP | Utilities Gas | GasPump | Point |
| *-NGAS-RECT | Utilities Gas | GasRectifier | Point |
| *-NGAS-REDC | Utilities Gas | GasReducer | Point |
| *-NGAS-SWBX | Utilities Gas | GasJunction | Point |
| *-NGAS-SRCE | Utilities Gas | GasSource | Point |
| *-NGAS-TANK | Utilities Gas | GasTank | Point |
| *-NGAS-UNKN | Utilities Gas | GasJunction | Point |
| *-NGAS-VLVE | Utilities Gas | GasValve | Point |

### H-4.3.8 Utilities – Heating and Cooling System

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-HVAC-ANCH | Utilities HCS | HeatCoolAnchorPoint | Point |
| *-HVAC-ANOD | Utilities HCS | HeatCoolAnode | Point |
| *-HVAC-ANOT | Utilities HCS | HeatCoolAnodeTestStation | Point |
| *-HVAC-COUT | Utilities HCS | HeatCoolFitting | Point |
| *-HVAC-PLUG | Utilities HCS | HeatCoolFitting | Point |
| *-HVAC-HCPA | Utilities HCS | HeatCoolPlantArea | Polygon |
| *-HVAC-HHOL | Utilities HCS | HeatCoolJunction | Point |
| *-HVAC-LINE | Utilities HCS | HeatCoolLine | Line |
| *-HVAC-METR | Utilities HCS | HeatCoolMeter | Point |
| *-HVAC-PUMP | Utilities HCS | HeatCoolPump | Point |
| *-HVAC-RECT | Utilities HCS | HeatCoolRectifier | Point |
| *-HVAC-REGL | Utilities HCS | HeatCoolRegulator | Point |
| *-HVAC-SIGN | Utilities HCS | HeatCoolMarker | Point |
| *-HVAC-VALT | Utilities HCS | HeatCoolVault | Polygon |
| *-HVAC-VLVE | Utilities HCS | HeatCoolValve | Point |

### H-4.3.9 Utilities – Industrial Waste

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-INDW-ANOD | Utilities Industrial Waste | IndustrialWasteAnode | Point |
| *-INDW-ANOT | Utilities Industrial Waste | IndustrialWasteAnodeTestSta | Point |
| *-INDW-DISC | Utilities Industrial Waste | IndustrialWasteDischargePoint | Point |
| *-INDW-EJEC | Utilities Industrial Waste | IndustrialWastePumpstnEjector | Point |
| *-INDW-FTTG | Utilities Industrial Waste | IndustrialWasteFitting | Point |
| *-INDW-GRIT | Utilities Industrial Waste | IndustrialWasteGritChamber | Point |
| *-INDW-HWLN | Utilities Industrial Waste | IndustrialWasteHeadwallLine | Line |
| *-INDW-HWPT | Utilities Industrial Waste | IndustrialWasteHeadwallPoint | Point |
| *-INDW-INLT | Utilities Industrial Waste | IndustrialWasteInlet | Point |
| *-INDW-JBOX | Utilities Industrial Waste | IndustrialWasteJunction | Point |
| *-INDW-LAGN | Utilities Industrial Waste | IndustrialWasteLagoon | Polygon |
| *-INDW-MAIN | Utilities Industrial Waste | IndustrialWasteLine | Line |
| *-INDW-METR | Utilities Industrial Waste | IndustrialWasteMeter | Point |
| *-INDW-NEUT | Utilities Industrial Waste | IndustrialWasteNeutralizer | Point |
| *-INDW-OILW | Utilities Industrial Waste | IndustrialWasteOilWatSep | Point |
| *-INDW-PLNT | Utilities Industrial Waste | IndustrialWasteTreatmentPlant | Polygon |
| *-INDW-PUMP | Utilities Industrial Waste | IndustrialWastePump | Point |
| *-INDW-RECT | Utilities Industrial Waste | IndustrialWasteRectPoint | Point |
| *-INDW-SERV | Utilities Industrial Waste | IndustrialWasteLine | Line |
| *-INDW-SIGN | Utilities Industrial Waste | IndustrialWasteMarker | Point |
| *-INDW-STOR | Utilities Industrial Waste | IndustrialWasteStorageArea | Polygon |
| *-INDW-TANK | Utilities Industrial Waste | IndustrialWasteTank | Point |
| *-INDW-VLVE | Utilities Industrial Waste | IndustrialWasteValve | Point |

### H-4.3.10 Utilities – Storm Drainage

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-STRM-BASN | Utilities Storm | StormDrainageBasin | Polygon |
| *-STRM-COUT | Utilities Storm | StormFitting | Point |
| *-STRM-CPTR | Utilities Storm | StormCeptor | Point |
| *-STRM-DISC | Utilities Storm | StormDischargePoint | Point |
| *-STRM-DIVL | Utilities Storm | StormDrainageDivideLine | Line |
| *-STRM-DWNS | Utilities Storm | StormDownspout | Point |
| *-STRM-FLCD | Utilities Storm | StormFlowControlDevice | Point |
| *-STRM-FLTR | Utilities Storm | StormFilter | Point |
| *-STRM-PLUG | Utilities Storm | StormFitting | Point |
| *-STRM-GATE | Utilities Storm | StormGate | Point |
| *-STRM-HDWL | Utilities Storm | StormHeadwallLine | Line |
| *-STRM-HDWP | Utilities Storm | StormHeadwallPoint | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-STRM-INLT | Utilities Storm | StormInlet | Point |
| *-STRM-HHOL | Utilities Storm | StormJunction | Point |
| *-STRM-LINE | Utilities Storm | StormLine | Line |
| *-STRM-SIGN | Utilities Storm | StormMarker | Point |
| *-STRM-MHOL | Utilities Storm | StormJunction | Point |
| *-STRM-OILW | Utilities Storm | StormOilWaterSeparator | Point |
| *-STRM-OPEN | Utilities Storm | StormOpenDrainageArea | Polygon |
| *-STRM-OWDV | Utilities Storm | StormOWSDiversionVault | Polygon |
| *-STRM-PSTA | Utilities Storm | StormPumpStation | Point |
| *-STRM-PUMP | Utilities Storm | StormPump | Point |
| *-STRM-RPNT | Utilities Storm | StormReservoir | Point |
| *-STRM-STIL | Utilities Storm | StormStillingBasin | Point |
| *-STRM-SWBX | Utilities Storm | StormJunction | Point |
| *-STRM-TRDL | Utilities Storm | StormTrenchDrainLine | Line |
| *-STRM-UNKN | Utilities Storm | StormJunction | Point |
| *-STRM-VLVE | Utilities Storm | StormValve | Point |

### H-4.3.11 Utilities - Wastewater

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-SSWR-ANOD | Utilities Wastewater | WastewaterAnode | Point |
| *-SSWR-ANOT | Utilities Wastewater | WastewaterAnodeTestStation | Point |
| *-SSWR-COUT | Utilities Wastewater | WastewaterFitting | Point |
| *-SSWR-DFLD | Utilities Wastewater | WastewaterDrainField | Polygon |
| *-SSWR-DSCH | Utilities Wastewater | WastewaterDischargePoint | Point |
| *-SSWR-DWNS | Utilities Wastewater | WastewaterDownspout | Point |
| *-SSWR-EJEC | Utilities Wastewater | WastewaterPumpEjectorStation | Point |
| *-SSWR-FLTR | Utilities Wastewater | WastewaterFiltrationBed | Polygon |
| *-SSWR-PLUG | Utilities Wastewater | WastewaterFitting | Point |
| *-SSWR-GRIT | Utilities Wastewater | WastewaterGritChamber | Point |
| *-SSWR-GRSE | Utilities Wastewater | WastewaterGreaseTrap | Point |
| *-SSWR-INLT | Utilities Wastewater | WastewaterInlet | Point |
| *-SSWR-HHOL | Utilities Wastewater | WastewaterJunction | Point |
| *-SSWR-LAGN | Utilities Wastewater | WastewaterLagoon | Polygon |
| *-SSWR-METR | Utilities Wastewater | WastewaterMeter | Point |
| *-SSWR-MHOL | Utilities Wastewater | WastewaterJunction | Point |
| *-SSWR-NEUT | Utilities Wastewater | WastewaterNeutralizer | Point |
| *-SSWR-OILW | Utilities Wastewater | WastewaterOilWaterSeparator | Point |
| *-SSWR-PIPE | Utilities Wastewater | WastewaterLine | Line |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-SSWR-PLNT | Utilities Wastewater | WastewaterTreatmentPlant | Polygon |
| *-SSWR-PUMP | Utilities Wastewater | WastewaterPump | Point |
| *-SSWR-RECT | Utilities Wastewater | WastewaterRectifier | Point |
| *-SSWR-SBED | Utilities Wastewater | WastewaterSludgeBed | Polygon |
| *-SSWR-SERV | Utilities Wastewater | WastewaterLine | Line |
| *-SSWR-SIGN | Utilities Wastewater | WastewaterMarker | Point |
| *-SSWR-SWBX | Utilities Wastewater | WastewaterJunction | Point |
| *-SSWR-TANK | Utilities Wastewater | WastewaterDisposalTank | Point |
| *-SSWR-TRET | Utilities Wastewater | WastewaterTreatmentUnit | Point |
| *-SSWR-UNKN | Utilities Wastewater | WastewaterJunction | Point |
| *-SSWR-VLVE | Utilities Wastewater | WastewaterValve | Point |

### H-4.3.12 Utilities - Water

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-DOMW-ANOD | Utilities Water | WaterAnode | Point |
| *-DOMW-ANOT | Utilities Water | WaterAnodeTestStation | Point |
| *-DOMW-DWSP | Utilities Water | WaterDrinkingWaterSamplePoint | Point |
| *-DOMW-COUT | Utilities Water | WaterFitting | Point |
| *-DOMW-FCPT | Utilities Water | WaterFireConnectionPoint | Point |
| *-DOMW-PLUG | Utilities Water | WaterFitting | Point |
| *-DOMW-HYDR | Utilities Water | WaterHydrant | Point |
| *-DOMW-INTL | Utilities Water | WaterIntakeLine | Line |
| *-DOMW-INTP | Utilities Water | WaterIntake | Point |
| *-DOMW-HHOL | Utilities Water | WaterJunction | Point |
| *-DOMW-MAIN | Utilities Water | WaterLine | Line |
| *-DOMW-METR | Utilities Water | WaterMeter | Point |
| *-DOMW-MHOL | Utilities Water | WaterJunction | Point |
| *-DOMW-PIGP | Utilities Water | WaterPigLaunchPoint | Point |
| *-DOMW-PLNT | Utilities Water | WaterTreatmentPlant | Polygon |
| *-DOMW-PSTA | Utilities Water | WaterPumpStation | Polygon |
| *-DOMW-PUMP | Utilities Water | WaterPump | Point |
| *-DOMW-RECT | Utilities Water | WaterRectifier | Point |
| *-DOMW-REDC | Utilities Water | WaterPressureReducingStation | Point |
| *-DOMW-RSVR | Utilities Water | WaterReservoirArea | Polygon |
| *-DOMW-SERV | Utilities Water | WaterLine | Line |
| *-DOMW-SIGN | Utilities Water | WaterMarker | Point |
| *-DOMW-SRCE | Utilities Water | WaterSourceSite | Point |
| *-DOMW-SWBX | Utilities Water | WaterJunction | Point |

| CADD Layer Name | Category | Feature Class | Geometry |
|---|---|---|---|
| *-DOMW-TANK | Utilities Water | WaterTank | Point |
| *-DOMW-TRET | Utilities Water | WaterTreatmentUnit | Polygon |
| *-DOMW-UNKN | Utilities Water | WaterJunction | Point |
| *-DOMW-VENT | Utilities Water | WaterVent | Point |
| *-DOMW-VLVE | Utilities Water | WaterValve | Point |

## Appendix I - GIS Data Standard

# 1 Introduction

## 1.1 Purpose

This GIS Data Standard provides guidance for developing geospatially-referenced data to be submitted to, maintained by, or provided by the Maryland Aviation Administration (MAA). This includes geospatial vector data, related attributes, and metadata (i.e. information about the data). This standard is required so providers and receivers of MAA data have an understanding of the requirements for the GIS data they submit and use.

## 1.2 Scope

This document defines 125 of the 393 features covered by MAA's GIS Data Standard. The remaining 268 feature classes are covered in Appendix I-3 Utilities Supplement.

## 1.3 Organization of this Document

This document is a reference document that defines the requirements of GIS data submitted to, maintained for, or provided by MAA. The sections that make up the body of this document define the geometry, attributes, and metadata requirements at a general level that applies to all GIS data submitted to MAA. Specific definitions and requirements for each feature class and attribute are provided in Appendix I-1 GIS Feature Types. In this appendix, the geometry type, required accuracy, sensitivity levels, attribute definitions and any applicable attribute domain lists are defined. A list of acceptable domain values for each attribute domain list is also provided in Appendix I-1 GIS Feature Types.

This document also provides a basis to convert GIS to a CADD format and vice versa. Since GIS layering and CADD layering are traditionally different, a crosswalk is necessary to identify one or more CADD layers that correlate to each GIS layer. This crosswalk is provided in Appendix I-2 Cross Reference of CADD and GIS.

Other topics covered in this document include a definition of the Maryland State Plane coordinate system to be used for all MAA GIS and CADD data in Chapter 5 Coordinate System. Finally, Chapter 6 Electronic Deliverables describes the GIS data delivery formats acceptable to MAA.

## 1.4 Intended Audience

This standard is intended for Geographic Information Systems (GIS) data developers, database designers, and other providers and recipients of geospatial data that depict Baltimore-Washington International (BWI) and Martin State (MTN) airports and their surrounds, as well as other facilities owned and operated by MAA. This standard assumes basic familiarity with GIS concepts and terminology. A glossary of acronyms and key terms is provided below.

## 1.5 Application of this Standard

All GIS data prepared for or used, maintained, and distributed by MAA should conform to this standard. This includes Esri shapefiles and file geodatabases prepared by MAA staff, consultants, or contractors. The extent and specifications for GIS data to be delivered will be further specified in contracts with consultants and contractors.

Some of the data submitted to MAA will also be submitted to the FAA in compliance with the FAA's Airports GIS Program requirements. This data must conform with the requirements defined by the latest versions of FAA AC 150/5300-16A, FAA AC 150/5300-17C, and FAA AC 150/5300-18B. The structure of the data required by these ACs is reflected in this document, although the FAA requirements take precedence for data that is to be submitted to the FAA.

To be in conformance with this standard, all geographic features such as runways, buildings, wetlands, obstruction and identification surfaces should be grouped into features classes (i.e. map layers) as defined in Appendix I-1 GIS Feature Types or in Appendix I-3 Utilities Supplement. Features should be of the proper geometry type (i.e. point, line or polygon) as further defined in Chapter 2.1 Allowable Geometry Types, should meet or exceed the accuracy limits specified (unless otherwise stipulated in writing) and adhere to the topological constraints described in Chapter 2.2 Topology Rules. Attributes should be populated to the extent possible (or as otherwise stipulated in writing) and carry the names and be of the types specified in Appendix I-1 GIS Feature Types. Attributes that are bound to domains must contain values listed in Appendix I-1 GIS Feature Types. All data must be in the Maryland State Plane coordinate system as defined in Chapter 5 Coordinate System. This data is to be submitted along with the metadata specified in Chapter 4 Metadata in one of the formats specified in Chapter.

## 1.6 Related Material

The following documents are related to this GIS Data Standard and must be followed to be compliant with this standard.

The primary normative references (i.e. references that must be complied with) are those related to the FAA's Airports GIS Program. MAA is required to submit GIS data in a format that complies with the FAA requirements on any project funded through federal grant monies and/or changes what the FAA defines as safety critical information. As a matter of policy, MAA follows the FAA's Airports GIS Requirements on all projects that develop GIS data regardless of whether data is to be submitted to the FAA or not. It is relevant to note that the feature class, attribute, and domain definitions in FAA AC 150/5300-18B have been incorporated into MAA's GIS Standard. If, however, there are any differences or clarifications necessary, the FAA advisory circulars shall prevail over this document.

- FAA AC 150/5300-16A "General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey", Sept. 15, 2007
- FAA AC 150/5300-17C "Standards for Using Remote Sensing Technologies in Airport Surveys", Sept. 30, 2011
- FAA AC 150/5300-18B "General Guidance and Specifications for Aeronautical Surveys: Airport Survey Data Collection and Geographic Information System Standards", May 21, 2009

- MAA GIS Data Standard – Appendix I-3 Utilities Supplement, Version 2.0, November 2012
- MAA Naming, Identification & Addressing Standard, Version 1.3, April 2009
- MAA Data Security Standard, Version 1.1, July 2007
- MAA Design Standards, 2011

## 1.7 Change Control

Following is a chronological list of changes made to this document since it was first released. A version number and the date of release are indicated for each revision.

| Version Number | Date of Release | Changes Addressed |
|---|---|---|
| 1.0 | 12/22/2005 | Original release |
| 1.1 | 7/9/2007 | Chapter 1.7 added for change control.<br><br>Chapter formatting adjusted to be consistent with other AIRPortal standards.<br><br>Utility and communications features moved to a supplement to this document. |
| 1.2 | 9/20/2007 | Chapter 1.3 - CADD technicians removed from primary audience<br><br>Chapter 1.4 - Rewritten to be more specific to the intended audience<br><br>Chapter 6 - Clarification that a File Geodatabase is required as opposed to a Personal Geodatabase or SDE Geodatabase |
| 1.3 | 6/3/2008 | Updated to incorporate utility feature and attribute definitions required for utility data collection and maintenance being carried out by MAA's Office of Maintenance & Utilities |
| 2.0 | 7/1/2013 | Major revision to address the needs of MAA's Runway Safety Area Program and to re-align MAA's standards with those of the FAA Airports GIS Program. |
| 3.0 | 2/10/2015 | Minor revision to address update to Survey Control Manual |

Readers are encouraged to suggest additional changes to this document. Accepted changes will be reflected in a subsequent version of this document.

# 2 Features & Attributes

The focus of this standard is on the definition of 353 geographic features required to depict an airport and its surrounding environment. These include features unique to airports, such as runways and taxiways, as well as more generic features, such as roads and buildings. Each of these 353 types of geographic features is referred to as a feature type. A specific instance of a feature type is referred to as a Feature. For example, Runways is a feature type, but Runway 10/28 at BWI is a specific Feature.

## 2.1 Allowable Geometry Types

There are three basic types of geometry (i.e., points, lines, and polygons). For simplicity in data development and transfer, this standard associates a single geometry type (i.e. point, line or polygon) with each feature type.

1. **Point:** a single location represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 1.

*Figure 1. Example of Point Features*

2. **Line**: straight line connections between two or more discrete locations represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 2. Note that line segments (i.e., a straight line connecting two points) and polylines (i.e., one or more connected line segments) are both included in this definition but that arcs (i.e., a curve joining two points) are not.

*Figure 2. Example of Line Features*

3. **Polygon:** A closed connection between three or more discrete locations represented by X and Y (and in some cases Z) coordinates on a reference coordinate system, as shown below in Figure 3. Polygons with interior portions excluded (i.e. doughnut holes) are acceptable, but multipart polygons (i.e. separate polygonal shapes represented by a common database record) are not.

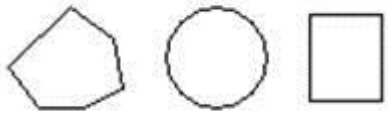


*Figure 3. Example of Polygon Features*

4. **Complex Geometry Types**: Arcs, circles, and ellipses are not included in this standard. This is intended to facilitate data exchange between software that processes these complex data types differently. However, these shapes may be represented by polylines or polygons as appropriate. For example, if arcs are used in a CADD drawing, they must first be broken into a line with vertices placed at intervals that are sufficient to maintain the accuracy requirements described in Appendix I-1 GIS Feature Types.

## 2.2 Topology Rules

The placement of geometric features in juxtaposition to one another (i.e., next to, connected to, or on top of) is referred to as a topology. Topology rules establish requirements for the placement of features in relation to one another and in relation to features in other feature types. Unless stated otherwise, this standard requires the following topological rules:

1. **Line Feature Types**: Lines should contain one or more line segments with vertices placed at required intervals so the line feature does not stray from the actual feature by more than half the accuracy limit defined in Appendix I-1 GIS Feature Types for the feature type, as shown below in Figure 4.

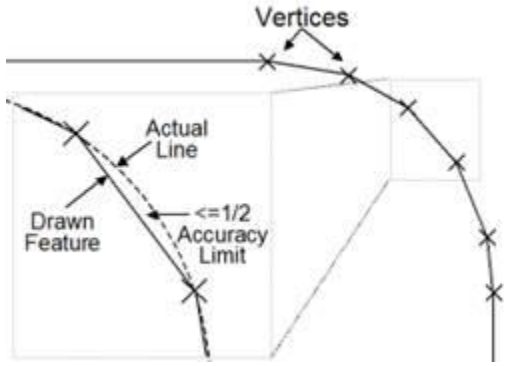



*Figure 4. Placement of Vertices Along a Curve*

Lines should begin and end at vertices collocated (i.e., exactly at the same coordinate) with features (often point feature types) designed to join two or more linear features, as shown in Figure 5. An example is electrical conduit lines that are joined only at junction boxes and other similar point features. For lines not naturally joined by physical features (e.g., marking lines), beginning and ending nodes should be placed where an attribute or other property change occurs.

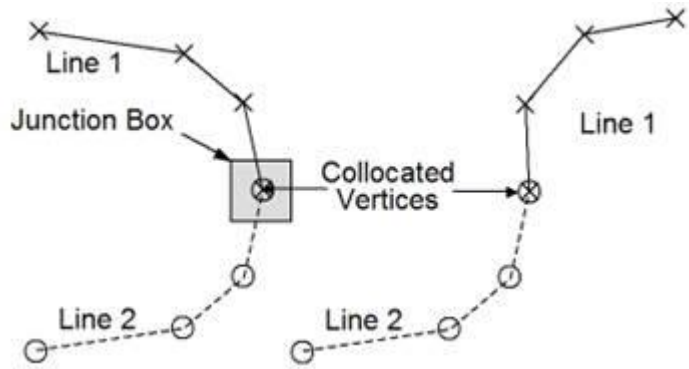



*Figure 5. Collocation of Line End Points*

2. **Polygon Feature Types:** Polygons must always be closed, meaning all vertices must be shared by two adjacent line segments forming the edges of the polygon, as shown in Figure 6.

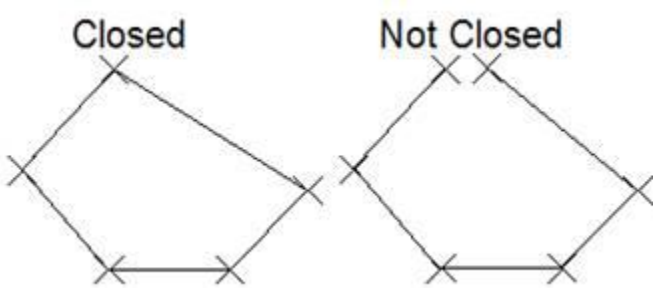



*Figure 6. Examples of Closed and Unclosed Polygons*

Unless otherwise stated, polygons must not overlap other polygons of the same feature type, as shown in Figure 7. This includes polygons placed on top of other polygons, as well as small overlapping splices because one or more vertices of adjacent sides are not matched. Polygons placed within (e.g., a 'doughnut hole') a larger polygon (e.g., the 'doughnut') which do not overlap are acceptable, because they describe a physically different space from the surrounding polygon.

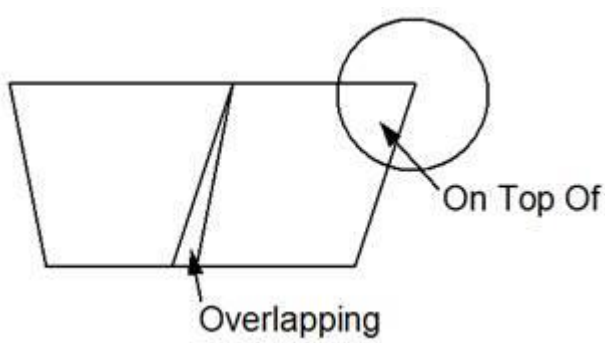


*Figure 7. Overlapping Polygons*

Polygons must share vertices with adjacent polygons where the real-world features they represent are adjacent, as shown below in Figure 8. This rule applies to polygons in the same feature type as well as polygons of different but related feature types.

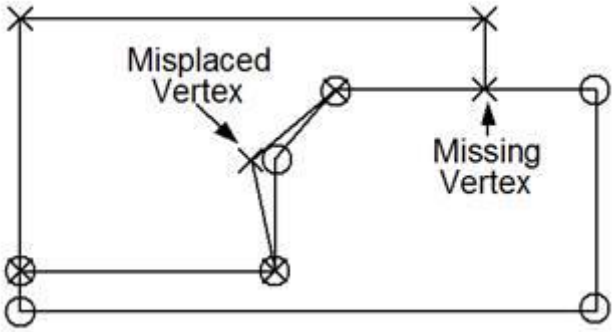



*Figure 8. Placement of Vertices of Adjacent Polygons*

## 2.3 Relationship of GIS & CADD Layers

Because many more CADD layers can be used to represent the same features represented on far fewer GIS layers, there is a natural many-to-one matching of CADD to GIS layers. The specific relationship of CADD layers that correspond to GIS layers is shown in Appendix I-2 Cross Reference of CADD and GIS.

# 3 Attributes & Domains

Attributes add descriptors to the geometry of a feature. Attributes can contain information such as the name, type, or condition of a feature. For example, the attributes of a runway include its designator (e.g., 15R/33L), material type (e.g., concrete), and length (e.g., 6,500 feet). Figure 9 below shows a typical list of attributes associated with a Feature type.

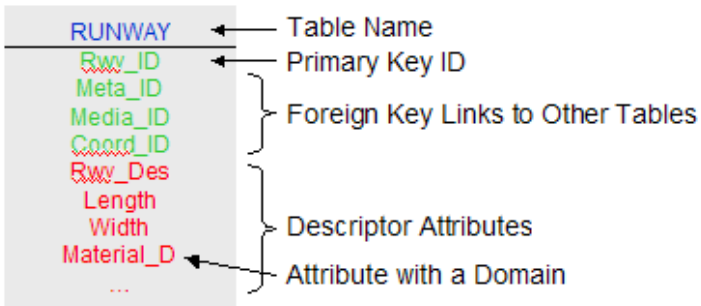



*Figure 9. Sample Attribute Table for a Feature Type*

## 3.1 Common Attributes

Several attributes are common to all feature classes in this standard. Some of these are used for naming and identification purposes. Others provide a reference to the project that installed or first recorded the location of the feature. Other attributes provide additional information about the data. Following is a list of these common attributes (with the exception of common metadata attributes that are described in the next section:

- **guid** - A globally unique identifier (GUID) applied to each feature in the database for reference by GIS and other information systems. When GIS data are submitted to MAA and uploaded into the GIS Data Repository, each record will also be assigned a GUID, which means that no other records have the same identifier. Application modules will use this GUID to track features as they are modified. If users who download data encounter such GUIDs, they are required to retain the GUIDs and submit them, unaltered, with subsequent revisions, to the features they downloaded.
    - The format of the GUIDs to be used is described in Figure 11 below. A numeric ID is used that contains the FAA region, airport location ID, feature type, date, and a timestamp. Since FAA region, airport location, and feature type are text values, corresponding numeric values have been assigned in the domain tables found in Appendix I-1 GIS Feature Types.

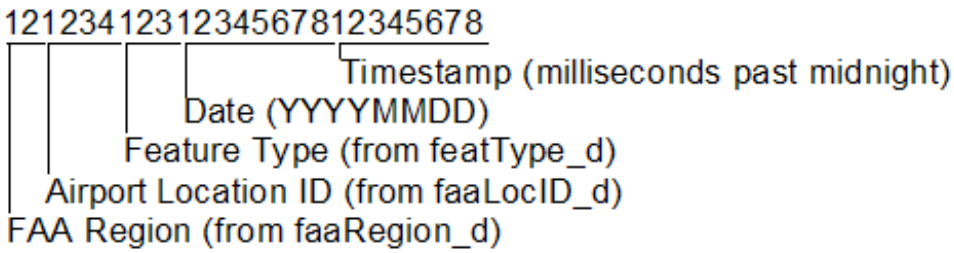


*Figure 10. Format for Globally Unique Primary Keys*

- **maaId** - A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value). Refer to MAA's Naming, Identification and Addressing Standard for additional requirements that may apply to the assignment of identifiers.
- **maaAlias** - An alternative or former name by which the feature is referred.
- **status** - A temporal description of the operational status of the feature.
- **alternative** - Discriminator used to tie features of a plan or proposal together into a version.
- **projectType** - The type of project or work activity that installed or first recorded the location of this feature. At MAA, projects can be carried out under Contracts, Tasks, Subtasks, Building Permits, and Installation Permits.
- **projectId** - A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. These project IDs should conform to the following conventions.
  - Currently MAA contracts are assigned numbers formatted as ORG-TY-YY-NNN, where ORG is a three digit identifier for the originating organization. In most but not all cases, this is "MAA". TY is a two character indicator of the contract type. Key examples include "AE" for design contracts and "CO" for construction contracts. YY is a two digit representation of the year (e.g. 96 for 1996 and 02 for 2002). NNN is a unique sequential number that starts at 001 for the first contract of that type issues for a given fiscal year and is incremented by 1.
  - AE Contracts can have zero, one or more tasks, tasks can have zero, one or more Subtasks. CO contracts can have zero, one or more tasks but do not have subtasks.
  - Tasks under design contracts (referred to as design tasks) are assigned four digit task numbers that are unique to the design contract (e.g. 2412). Subtasks under design contracts carry the four digit task number and then a two digit sequential number after a decimal point (e.g. 2412.12). These task numbers were assigned sequentially starting at 1 in the early 1990s. Blocks of numbers are assigned to certain contracts, but not all may end up being used, so there is a possibility that task numbers have been skipped.
  - Tasks under construction contracts (referred to as construction tasks) are assigned a sequential number that starts with 1 for each contract and is therefore not unique. These are not widely used outside of construction at MAA.
- **userFlag** – This attribute can be used for any purpose desired by the end user Often, this attribute is used to store relevant identifiers, notes or metadata that is accommodated elsewhere. The FAA's Airports GIS also accommodates this attribute, so values entered into this attribute will be retained upon upload of required feature classes to the FAA.

## 3.2 Domain Values

The values assigned to an attribute are sometimes limited. The range of acceptable values is referred to as the domain for that attribute. Domains that limit attribute values to a range of numeric or date values are referred to as range domains. List domains limit values to a selection of choices. If users can add values to a list of acceptable values and still be compliant with the standard, the list is referred to as a code list. A list that users cannot add to is referred to as an enumeration. In this standard, all of the list domains are enumerations. To distinguish attributes that are limited to a domain, the name of each attribute ends with "_D". For each such attribute, there is an associated table in Appendix I-1 GIS Feature Types listing the acceptable values and their definitions.

## 3.3 Foreign Key Identifiers

Attributes containing primary key values of related records in other feature type tables are called foreign key identifiers. Foreign key identifiers provide a link between different types of features with logical relationships. For example, the data for a taxiway leading to a runway might contain a foreign key to the runway table that is populated with the primary key value for that runway.

# 4 Metadata

Metadata is information about the data, such as the data source, accuracy, and the dates during which the data are valid. As described below, metadata can be created at several different levels. Per this standard, metadata is required at the collection level when data are submitted. However, the standard accommodates metadata elements at the feature type and feature level. More detailed metadata increases the usefulness and longevity of the data provided. Accordingly, data providers are encouraged to submit metadata at the most detailed level possible.

## 4.1 Collection Level Metadata

Collection level metadata is used to describe a collection of data submitted at one time. A collection may comprise of one or more drawings that contain several layers such as those that make up an ALP, several individual shapefiles that each represent a layer, a single layer stored in a shapefile, or any other combination of allowable data sets.

## 4.2 Feature Type Metadata

Feature type metadata, also known as layer level metadata, is used to describe geometry and attributes for a single layer or feature type. This is the case with metadata that is compliant with the FGDC Content Standard for Digital Geospatial Metadata (CSDGM). This level of metadata applies if different layers within a collection have different metadata.

## 4.3 Feature Level Metadata

Feature level metadata is handled by storing metadata in attributes associated with specific features. All feature classes in the standard carry the following metadata elements (as attributes) for this purpose.

- **metaId** - An identifier used to refer to a metadata record that provides additional information about the data in this record. This is a foreign key link to a database table that can be used to store additional metadata relevant to this feature.
- **sourceStatement** - A statement providing additional details about the source of the data.
- **editorName** - The name of the individual who last edited this data.
- **lastUpdate** - The date upon which any data associated with this record was last updated.

## 4.4 ISO 19915

This standard uses metadata elements defined by the ISO Geographic Information – Metadata Standard (ISO 19115). Of the 409 elements defined in ISO 19115, only 25 are used by this standard, because many of the elements defined in ISO are classified as optional or conditional and do not apply to this standard. Furthermore, some of the mandatory elements in the ISO standard are redundant with the specifications of this standard and are therefore not necessary for data exchange. Table 11 lists each metadata element used in this standard along with the level of applicability and provides a description of the metadata elements required per this standard. These elements have been extracted from ISO 19115.

| Metadata Elements Required by MAA |
|---|
| **Overview** |

| Metadata Element | Definition | Collection | Set | Feature |
|---|---|---|---|---|
| **abstract** | Description of the contents of the data collection being submitted | ✓ | ✓ | ✓ |
| **status** | Status of the the data being submitted. Acceptable values are (completed, historical, archive, obsolete, onGoing, planned, required, under development) | ✓ | ✓ | ✓ |
| **geometricObjectCount** | Number of feature instances being transmitted | ✓ | ✓ | |
| **Scope** | | | | |
| **Metadata Element** | **Definition** | **Collection** | **Set** | **Feature** |
| **dataset** | List of feature classes to which the metadata pertains (separated by commas) | ✓ | | |
| **features** | List of feature names to which the metadata pertains (separated by commas) | ✓ | ✓ | |
| **attributes** | List of attribute names to which the metadata pertains (separated by commas) | | | ✓ |
| **Usage** | | | | |
| **Metadata Element** | **Definition** | **Collection** | **Set** | **Feature** |
| **specificUsage** | Description of how the data should be used | ✓ | ✓ | ✓ |
| **BegUsageDateTime** | The first dateltime for which the data described by the scope is valid | ✓ | ✓ | ✓ |
| **EndUSageDateTime** | The last dateltime for which the data described by the scope is valid | ✓ | ✓ | ✓ |
| **Source** | | | | |
| **Metadata Element** | **Definition** | **Collection** | **Set** | **Feature** |
| **statement** | Description of the source of the data | ✓ | | |
| **individualName** | Name of the person submitting the data | ✓ | | |
| **organizationName** | Organization of the person submitting the data | ✓ | | |
| **positionName** | Title of the person submitting the data | ✓ | | |
| **deliveryPoint** | Street address of the person submitting the data | ✓ | | |
| **city** | City of the location | ✓ | | |
| **administrativeArea** | State | ✓ | | |
| **postalCode** | Zip Code | ✓ | | |
| **electronicMailAddress** | E-mail address | ✓ | | |
| **voicePhoneLine** | Telephone number by which individuals can speak to the responsible organization or individual | ✓ | | |

| Metadata Elements Required by MAA | | | | |
|---|---|---|---|---|
| **Coordinate System** | | | | |
| **Metadata Element** | **Definition** | **Collection** | **Set** | **Feature** |
| **projection** | Name of the projection used (SPCS, LL) | ✓ | ✓ | |
| **horizontalDatum** | Horizontal datum of submitted data | ✓ | ✓ | |
| **verticalDatum** | Vertical datum of submitted data | ✓ | ✓ | |
| **code** | Four digit code for the state place coordinate system used. A list of codes can be found in NOAA manual NOS NGS 5. | ✓ | ✓ | |
| **Data Quality** | | | | |
| **Metadata Element** | **Definition** | **Collection** | **Set** | **Feature** |
| **horizontalAccuracy** | Horizontal accuracy of the dataset | ✓ | ✓ | ✓ |
| **verticalAccuracy** | Vertical accuracy of the dataset | ✓ | ✓ | ✓ |
| **evaluationMethodName** | Name of the evaluation method used | ✓ | ✓ | ✓ |
| **evaluationMethodDescription** | Description of the evaluation method used | ✓ | ✓ | ✓ |
| **pass** | Indicatation of whether data described by the scope passed or failed in evaluation | ✓ | ✓ | ✓ |
| **groundSampleDistance** | The distance of the ground sample | ✓ | ✓ | ✓ |

*Table 11. Metadata Elements Required by MAA*

## 4.5 Temporal Relevance

One of the most critical metadata elements to the aviation industry is time. The frequency with which airport infrastructure changes requires spatial data to possess an indication of the time period for which the data are valid. For example, the existence of a runway may be valid from the time it was authorized for use until further notice. This standard defines the beginning and ending date and time for which each feature instance is valid. All features must have a beginning date (i.e., data are valid until further notice), an ending date (i.e., the data expire at a specified time), or both (i.e., the data are valid only during the period specified). These values are held in the begUsageDateTime and endUsageDateTime metadata elements defined in Figure 12.

## 4.6 Accuracy

Accuracy is one metadata element that is particularly important to airport GIS applications. Accuracy is broadly defined as *the quality of nearness to the true value*. For the exchange of data as specified in this standard, it is important to be more specific. This standard, therefore, provides limits for the

absolute horizontal positional accuracy of each feature type. These limits are described as a maximum number of feet between a feature's actual position and the position indicated in the data provided. The actual position is defined as the feature's true location on the specified geoid. Since the earth's surface has many variations, it is approximated by a geoid. The difference between a feature's true and recorded positions is required at a 95% confidence level. This means that statistically, 95% or more of the features provided fall within the required accuracy limit.

For some feature classes, particularly for FAA required feature classes, vertical accuracy limits are also provided. These accuracies are expressed as the maximum number of feet a feature's recorded elevation can differ from its actual elevation. Again, the actual elevation is measured from the geoid elevation at that location. Elevations are also to be provided at a 95% confidence level.

Accuracy requirements are driven by the way the data are to be used. The location of an airport on a map used for aircraft navigation must be much more accurate than its location on a national map of airports provided for general information purposes.

The accuracy guidelines provided in this standard have been derived from several sources, including FAA AC 150/5300-18B, RTCA User Requirements for Aerodrome Mapping Information, FGDC Geospatial Positioning Accuracy Standards-Part 4 (sources are indicated in order of precedence). Further information on accuracy definitions and methods to assess the accuracy of existing data can be found in the FGDC Geospatial Positioning Accuracy Standards-Part 3: National Standard for Spatial Data Accuracy (FGDC-STD-007.3-1998).

## 4.7 Security Sensitivity Levels

Sensitivity level is another important metadata element. Because spatial data can be used for nefarious purposes, the data must be protected from unauthorized users. The Code of Federal Regulations (49 CFR Part 1520) defines Sensitive Security Information (SSI) and methods for protecting the information. Protecting sensitive spatial data is therefore not just good practice, it is the law. However, overly protecting data limits the information's usefulness, in many cases needlessly. The challenge is to restrict data to users having an *operational need to know* and whose credentials the data provider has qualified. Relative to spatial data, this challenge is particularly complex because of the wide variety of data users and ways in which they need to use the data. An efficient way to restrict access to spatial data is to apply specific restrictions at the feature type level. This standard applies one of the following sensitivity levels to each feature type. The sensitivity levels are based on the MAA Spatial Data Security Standard and conform to the classifications listed in the MD_ClassificationCode list in ISO 19115.

- **Unclassified** data are available for general disclosure.
- **Restricted** data are not available for general disclosure.
- **Confidential** data are available for users that can be trusted with the information.
- **Secret** data are to be kept or intended to be kept private, unknown, or hidden from all but a select group of people.

- **Top Secret** data are of the highest secrecy. At MAA, this classification is reserved for SSI. MAA defines SSI as data that depicts the location of Controlled Access Security System (CASS), Closed Circuit Television (CCTV), Flex Response System, and Computer Aided Dispatch (CAD) system and their components. Individuals who require or are provided with this type of information must abide by the requirements of the MAA Design Standards Chapter 3.1.2 Electronic documents containing Sensitive Security Information (SSI).

Since sensitivity levels are established for each feature type by this standard (See Appendix I-1 GIS Feature Types), it is not necessary to include this information (i.e., a classification code in ISO terminology) in the metadata.

# 5 Coordinate System

Horizontal spatial data shall be submitted to, maintained by, and provided by MAA in the Maryland Coordinate System of 1987, also referred to as Maryland State Plane. Following are the parameters of the Maryland Coordinate System of 1987:

**Map Projection:** Lambert conic conformal projection of the geodetic reference system of 1980
**Horizontal Datum:** NAD83 (2001)
**Latitude of Origin*:** 37°40 North latitude
**Central Meridian:** 77°00' West longitude
**Standard Parallel 1:** 38°18' North latitude
**Standard Parallel 2:** 39°27' North latitude
**False Easting*:** 400,000 meters
**False Northing*:** 0 meters
**Latitude**:** 37°34' 38.14264" N
**Longitude**:** 81°31' 45.07877" W

** at the 77th meridian*
*** at artificial origin (0,0)*

Vertical spatial data shall be submitted to, maintained by, and provided by MAA based on the National Geodetic Vertical Datum of 1988 (NGVD88).

All units for both horizontal and vertical data will be the U.S. Survey Foot (1200/3937 meters).

Please note that the database coordinate system is not the same as that used by the Survey Control Manual.

# 6 Electronic Deliverables

## 6.1 General

MAA requires GIS data and associated metadata to be submitted with the "Conformed" and "As-Built" submittals for all construction projects at BWI Marshall and MTN airports unless otherwise specified by the MAA Project Manager.

## 6.2 Delivery of Data to MAA

GIS data should be submitted to MAA in an Esri File Geodatabase or shapefile (.shp) format. Geodatabase feature classes and shapefiles must be named for the feature type they represent (e.g., RunwayElement). They must also contain relevant attributes for the feature type they represent. Attributes that are covered in this standard must be named as they are in Appendix I-1 GIS Feature Types. Attributes defined in this standard that are not used need not be included. Attributes that a data submitter uses but which are not defined in this standard may be included.

Shapefiles or collections of shapefiles should be submitted on CD-R, CD-R/W, or DVD with the session closed to ensure maximum cross platform readability. Electronic delivery via a secure FTP site, on-line document repository, or other system must be approved by the MAA Project Manager. All electronic deliverables must be virus free.

**CD/DVD Labels:** Each CD/DVD shall include a CD/DVD label with the following information (sample files for the standard CD/DVD label are provided with this Design Standard distribution):

**Construction Contract Title:** *Insert Complete Contract Title*
**Construction Contract No.:** *MAA-CO-XX-XXX (Insert Complete Contract Number)*
**Construction Task No.:** *Insert if Applicable*
**Construction Contract Task Title:** *Insert Complete Task Title (If Applicable)*
**Design Task Number:** *Insert A/E Task Number*
**Airport Logo:** *Insert BWI Marshall or MTN AIRPORT as Applicable*
**Consultant Logo:** *Insert Consultant Logo*
**SSI Notice:** *Insert SSI Warning Notice on all disks containing SSI*
**Submission Status:** *Insert "Advertisement", "Addendum Number XX", "Conformed Documents", etc. as applicable*
**Date:** *Insert MONTH, DAY, YEAR*
**CD/DVD Number:** *X* of *XX (Insert Data)*

The root directory of the delivered CD/DVD should contain a text file named ReadMe.txt that repeats the information contained on the label as well as the following:

- Contact information for the individual responsible for submitting the document(s);
- Brief explanation of CD directory structure if subdirectories are used;
- Any other comments necessary to convey the contents of the CD.

Data provided via FTP, e-mail, or uploaded to MAA or designated consultant repositories maintained on MAA's behalf should contain the same structure and information as data submitted on CDs/DVDs with the exception of the cover and label, as explained above.

If data delivered on DVD or CD contains SSI (i.e. information about or depicting Controlled Access Security System, Closed Circuit Television, Flex Response System, Computer Aided Dispatch Systems), the following should be added to the CD/DVD cover and label.

This statement should also be included in the ReadMe.txt file described above, which should be renamed MustRead(Contains SSI).txt.

***Sensitive Security Information***

*Warning: This media contains Sensitive Security Information that is controlled under 49 CFR 1520. No part of this record may be disclosed to persons without a need to know, as defined in CFR 1520, except with the written permission of the TSA Administrator, Washington, D.C.. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C. 552.*

## 6.3 Delivery to be Submitted to the FAA

Esri shapefiles that comply with FAA AC 150/5300-18B must be provided when data is to be submitted to the FAA Airports GIS System. This requirement will be defined in the project scope if relevant. The shapefiles to be submitted to the FAA should be provided in a compressed ZIP file that is ready for upload to the FAA Airports GIS web site. If consultants who submit data are authorized FAA Airports GIS users, they should perform a test upload of this zip file to the FAA Airports GIS and ensure that any critical errors identified are resolved and all non-critical errors are either resolved or that a valid explanation for each type of error is provided (e.g. "out of scope"). Where required by the FAA, the consultant shall prepare a project final report and supporting data as defined in FAA AC 150/5300-18B and supporting documentation published by the FAA and NGS. The designated Airport Sponsor at MAA will perform the final upload of the data to the FAA Airports GIS site. The process for performing this upload, which is very similar to the process of performing a test upload is described below:

1. Log onto at https://airports-gis.faa.gov/
2. Click "My Survey Projects" or, if performing a test upload, "Test Survey File".
3. Select the desired project or, if performing a test upload, enter the airport code.
4. If uploading data for final submittal to the FAA, click the "Survey" tab.
5. Specify that the feature schema is FAA AC 150/5300-18B compliant.
6. Point to the ZIP file stored on a local or network drive.
7. Specify that the file format is ESRI SHP.
8. Specify the coordinate system is MD83F.
9. Check the box indicating that the data meets FAA AC 150/5300-18B accuracy requirements or indicate alternative horizontal and vertical accuracies that were achieved at the 95% confidence level.
10. If uploading the data for final submittal, add a relevant description that would help the FAA or NGS understand what data is being provided.
11. Click submit.
12. After the data is uploaded, which can take several minutes, translation, and automated validation will commence. After validation is compete, an error report will be provided. If no critical errors are found then the data can be submitted (except in the case of a test upload where data is not retained by the FAA). If a final report is required, it must be uploaded as well before the data can be submitted. Simply uploading the data does not constitute submitting it

to the FAA. The Airport Sponsor must first click the Submit button before the FAA and/or NGS will take further action.

13. If errors are found, they should be addressed and this process should be repeated.

After data is submitted, safety critical data will be verified by the FAA and/or NGS. If issues are found, the data submittal will be rejected and a detailed Quality Review Report (QRR) will be provided indicating the issues that must be resolved. Once resolved, the data should be resubmitted as described above. Once accepted, the data will be available for use in eALP and other FAA Airports GIS modules by authorized FAA personnel, as well as, airport staff and consultants that the Airport Sponsor has authorized.

# 7 Glossary of Acronyms and Terms

The following acronyms have been used in this standard:

| | |
|---|---|
| **AC** | Advisory Circular |
| **ADCAT** | Airport Data Collection and Analysis Tool |
| **A/E/C** | Architecture Engineering and Construction |
| **AIA** | American Institute of Architects |
| **AIS** | Aeronautical Information Services |
| **AIXM** | Aeronautical Information Exchange Model |
| **ALP** | Airport Layout Plan |
| **ANSI** | American National Standards Institute |
| **AOC** | Airport Obstruction Chart |
| **ASTM** | American Society for Testing and Materials |
| **CADD** | Computer Automated Drafting & Design |
| **CSDGM** | Content Standard for Digital Geospatial Metadata |
| **DGN** | Microstation Design File |
| **DOD** | U.S. Department of Defense |
| **DOT** | U.S. Department of Transportation |
| **DWG** | Autodesk Drawing File |
| **FAA** | Federal Aviation Administration |
| **FGDC** | Federal Geographic Data Committee |
| **GIS** | Geographic Information System |
| **GML** | Geographic Markup Language |
| **ICAO** | International Civil Aviation Organization |
| **ISO** | International Organization for Standards |
| **NAD** | North American Datum |
| **NGA** | National Geospatial Intelligence Agency |
| **NGS** | National Geodetic Survey |
| **NGVD** | National Geodetic Vertical Datum |
| **RTCA** | Radio Technical Commission for Aeronautics |
| **SDSFIE** | Spatial Data Standards for Facilities, Infrastructure and Environment |
| **SSI** | Sensitive Security Information |
| **USGS** | U.S. Geological Survey |

The key terms and phrases used in this standard are defined below:

- **Attributes** or **attribute data** are alphabetical and/or numeric information that describes particular characteristics of a geospatial feature, such as its type, dimensions, usage, occupant, etc.
- A **collection** is any combination of data that are submitted by a provider at a given time.
- **Geospatial data** or **geospatially-referenced data** are data that depict natural or manmade elements that occupy a specific location on the face of the earth. Examples include a runway,

building, river, or underground pipe. Geospatial features or a particular type (i.e., all runways) are often referred to as a feature type, data set, or layer of spatial data.

- A **feature** is a manmade or natural object such as a building, runway, navigational aid, or river that appears in the real world. A **feature type** refers to a collection of all features of a given type, such as all runways or all buildings. feature types are analogous to layers in many GIS applications and are also referred to as Entity Types and Feature Classes in other standards.
- **Metadata** is information about the data, such as source, accuracy, dates for which the data are valid, and security classification. Metadata is essential in helping users determine the extent to which they can rely on a given data item to make decisions.
- An **orthophoto** is an aerial image that has been taken from above (either from an aircraft or a satellite) and has been spatially corrected so that features shown on the photo are displayed in their actual geographic position within a specified range of tolerance.
- **Photogrammetric** refers to the process of creating vector data, such as building outlines and elevation contours, from stereo imagery, or pairs of images taken of the same location but at different angles.
- **Positional accuracy** refers to the difference between a geospatial feature's displayed position and its actual position. Absolute positional accuracy is the difference between a geospatial feature's displayed position and its actual position on the face of the earth. Relative positional accuracy is the difference between a geospatial feature's displayed position and that of other geospatial features in the same data set.
- **Spatial data** are data that depict a real world feature such as a road, building, or runway on a map. The most basic types of spatial data are points, lines, and polygons, but spatial data can also include orthophotos and other more complex forms of locational information

# Appendix I-1 - GIS Feature Types

This appendix lists each of the 88 GIS feature types defined by this document. MAA's GIS Data Standard also includes 271 utility feature types, which are defined in the MAA GIS Data Standard – Utilities Supplement.

The feature types defined in this document are grouped into categories (i.e., Airfield, Airspace, Environmental, etc.) for ease of use. For each feature type, the class name, geometry type, sensitivity level, and a definition are provided. Suggested accuracies are also provided. Accuracies are indicated at a reasonable level that will meet a broad range of end user requirements. Individual project scopes, technical limitations and other factors may require data to be of a higher or lower level of accuracy. Attributes are also provided along with their type and definition. The following figure provides a key to the information provided within this Appendix.

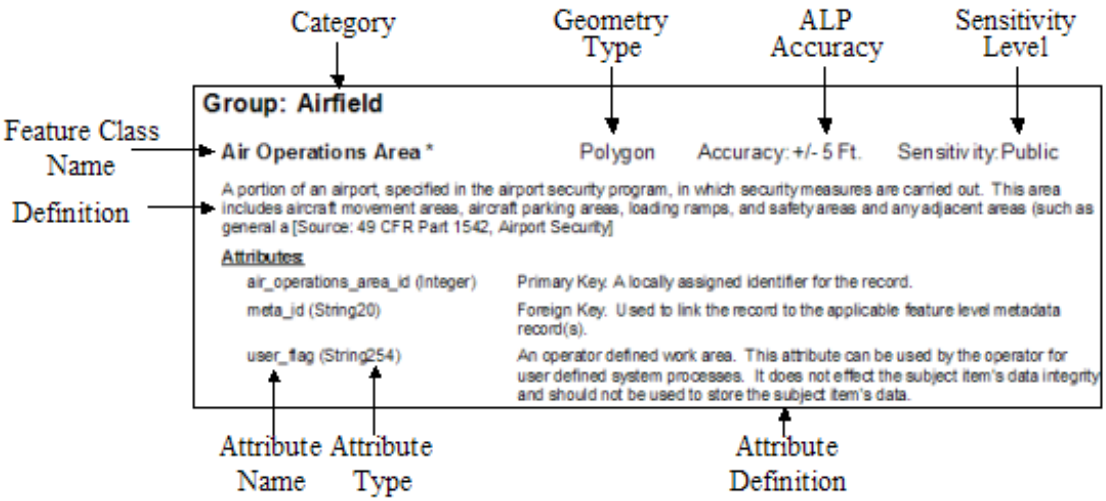



*Figure 1. Appendix 1 Legend*

## Data Set: Airfield

### Airfield : Aircraft Gate Stand

(Database Feature Class Name = AircraftGateStand; FAA=AircraftGateStand)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

Geographic position of painted stand positions on the stand guidance line usually marked by a yellow crossbar according to aircraft type (e.g., for B-747, A-340).

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| gateStandType (CodeGateStandType) | The type of aircraft gate/stand. |

| | |
|---|---|
| wingspan (Integer) | The quantity representing the maximum wingspan which can be accommodated at the aircraft gate stand. |
| length (Integer) | The overall length of the aircraft gate stand. |
| width (Integer) | The overall width of the aircraft gate stand. |
| pavementClassificationNumber (String10) | A number which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.[AC 150/5335-5A]. |
| jetwayAvailability (CodeBoolean) | Indicates if a jetway or passenger loading bridge is available for use at the designated location. |
| towingAvailability (CodeBoolean) | Indicates if towing is available at the designated location. |
| dockingAvailability (CodeBoolean) | Indicates if docking light system is available at the designated location. |
| groundPowerAvailability (CodeBoolean) | Indicates the availability of ground power at the designated location. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Aircraft Non Movement Area

(Database Feature Class Name = AircraftNonMovementArea; FAA=AircraftNonMovementArea)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

Taxiways and apron (ramp) areas not under the control of air traffic.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Airfield Light

(Database Feature Class Name = AirfieldLight; FAA=AirfieldLight)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

Any lighting located within or near an airport boundary that provides guidance for airborne and ground maneuvering of aircraft. [AIM, AC 150/5340-24].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Use this attribute to identify the use of the light such as Runway Edge Light, Taxiway Edge Light, Taxiway Centerline Light, etc. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| lightingType (CodeLightingConfigurationType) | A description of the lighting system. Lighting system classifications are Approach; Airport; Runway; Taxiway; and Obstruction |
| color (CodeColor) | The color of the airfield light. |
| luminescence (Integer) | The luminescence of the airfield light specified in candellas (cd). |
| pilotControlFrequency (Real) | The radio frequency used by pilots to control various airport lighting systems |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Air Operations Area

(Database Feature Class Name = AirOperationsArea; FAA=AirOperationsArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Unclassified

Air Operations Area is where security measures are enforced as specified in the airport security program. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas and any adjacent areas (such as general aviation [49 CFR Part 1542, Airport Security*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Airport Sign

(Database Feature Class Name = AirportSign; FAA=AirportSign)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

Signs at an airport other than surface painted signs. [AC 150/5340-18].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the improvement feature. |
| signType (CodeSignTypeCode) | The type of sign. |
| height (Real) | The overall height of the feature. |
| message (String254) | The text message that appears on the sign. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Apron

(Database Feature Class Name = Apron; FAA=Apron)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A defined area on an airport or heliport, paved or unpaved, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. [FAA].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| apronType (CodeApronType) | A classification of the typical use for the apron |
| numberOfTiedowns (Integer) | The approximate number of tiedowns in the surface. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| pavementClassificationNumber (String10) | A number that expresses the relative load-carrying capacity of a pavement in terms of a standard single wheel load[AC 150/5335-5A]. |
| fuel (CodeFuel) | Code indicating the types of fuel available at the apron or deliverable to the apron. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Arresting Gear

(Database Feature Class Name = ArrestingGear; FAA=ArrestingGear)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

Location of the arresting gear cable across the runway. [RTCA DO-272].

### Names and Identifiers:

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| airportFacilityType (CodeOperationsType) | Type of airfield. |
| owner (Enumeration60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Deicing Area

(Database Feature Class Name = DeicingArea; FAA=DeicingArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Unclassified

An aircraft deicing facility is a facility where: (1) frost, ice, or snow is removed (deicing) from the aircraft in order to provide clean surfaces and/or (2) clean surfaces of the aircraft receive protection (anti-icing) against the formation of frost or [AC 150/5300-13*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A brief description of the area and any special characteristics. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Frequency Area

(Database Feature Class Name = FrequencyArea; FAA=FrequencyArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Unclassified

Area specifying the designated part of the surface movement area where a specific frequency is required by ATC or ground control. If there is only one frequency area for the airport, the polygon must cover the total air operations area. [RTCA DO-272].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| station (String30) | Service or Station assigned to primary frequency (e.g., ATC Tower, Ground Control)[RTCA DO-272]. |
| frequency (Real) | Primary frequency used on frequency area (in MHZ).[RTCA DO-272]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Marking Area

(Database Feature Class Name = MarkingArea; FAA=MarkingArea)

Geometry Type: Polygon Accuracy: +/-2Ft. Sensitivity: Unclassified

Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. An element of marking whose geometry is a polygon. [AC 150/5340-1 and RTCA DO-272].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the feature. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| color (CodeColor) | The color of the marking |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Marking Line

(Database Feature Class Name = MarkingLine; FAA=MarkingLine)

Geometry Type: Line Accuracy: +/-2Ft. Sensitivity: Restricted

Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. An element of marking whose geometry is a line. [AC 150/5340-1, RTCA/DO-272].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the feature. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| color (CodeColor) | The color of the marking |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Movement Area

(Database Feature Class Name = MovementArea; FAA=MovementArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

Runways, taxiways, and other areas of an airport used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and aircraft parking areas. [14 CFR Part 139].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| name (String50) | Name of the feature |
| description (String255) | Description of the feature |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Passenger Loading Bridge

(Database Feature Class Name = PassengerLoadingBridge; FAA=PassengerLoadingBridge)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A bridge for loading/unloading access to airplanes for passengers and crew.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name, code or identifier used to identify the loading bridge. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| loadingBridgeType (CodeLoadingBridgeType) | Code indicating the type of loading bridge. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Restricted Access Boundary

(Database Feature Class Name = RestrictedAccessBoundary; FAA=RestrictedAccessBoundary)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Confidential

A restricted area boundary identifies areas strictly reserved for use by authorized personnel only. [NGS*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A common name for the restricted area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the restricted area. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway

(Database Feature Class Name = Runway; FAA=Runway)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A rectangular area on a airport prepared for the landing and takeoff run of aircraft. [AC 150/5300-13*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayDesignator (String7) | Designator of the runway based on the magnetic bearing and position in relation to parallel runways (e.g. 33R/15L)[AC 150/5340-1]. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| width (Real) | A perpendicular line to the surface centerline, extending to the edge of the runway pavement on both sides of the runway, through a runway end-point. If the runway width is less than 100 feet, the width is rounded up to the nearest 5 feet. If the runway w[NGS]. |
| length (Real) | The straight line distance between runway end points. This line does not account for surface undulations between points. Official runway lengths are normally computed from runway end coordinates and elevations. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| pavementClassificationNumber (String10) | A number that expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load[AC 150/5335-5A]. |

| | |
|---|---|
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Arresting Area

(Database Feature Class Name = RunwayArrestingArea; FAA=RunwayArrestingArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

Any FAA-approved high energy absorbing material of a specific strength that will reliably and predictably bring an aircraft to a stop without imposing loads that exceed the aircraft's design limits, cause major structural damage, or impose excessive force [AC 150/5220-22*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A common name for the arresting area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the arresting area. |
| length (Real) | The overall length of the feature. |
| width (Real) | The overall width of the feature. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| Setback (Integer) | The distance the EMAS begins beyond the end of the runway. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Blast Pad

(Database Feature Class Name = RunwayBlastPad; FAA=RunwayBlastPad)

Geometry Type: Polygon Accuracy: +/-2Ft. Sensitivity: Restricted

A specially prepared surface placed adjacent to the ends of runways to eliminate the erosive effect of the high wind forces produced by airplanes at the beginning of their takeoff rolls. [AC 150/5300-13].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| length (Integer) | The length of clearway as measured. Compare the measure value to the value reported in the government flight information publications. |
| pavementClassificationNumber (String10) | A number that expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load[AC 150/5335-5A]. |
| runwayEndDesignator (String3) | Specify runwayEnd designator to identify which runway end the Blast Pad is on. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Centerline

(Database Feature Class Name = RunwayCenterline; FAA=RunwayCenterline)

Geometry Type: Line Accuracy: +/-1Ft. Sensitivity: Restricted

Continuous line along the painted centerline of a runway connecting the middle-points of the two outermost thresholds. Centerline is composed of many centerline points (see RunwayControlPoint). It is used to calculate grade and line-of-sight criteria. [AC 150/5300-13].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| runwayDesignator (String7) | Designator of the runway based on the magnetic bearing and position in relation to parallel runways (e.g. 33R/15L)[AC 150/5340-1]. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |

**Metadata:**

| | |
|---|---|
| isDerived (CodeBoolean) | Indicates whether the centerline is derived or photo determined. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Element

(Database Feature Class Name = RunwayElement; FAA=RunwayElement)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A section of the runway surface. The runway surface can be defined by a set of non-overlapping RunwaySegment polygons for pavement management purposes. RunwayElements may overlap Runway and RunwayIntersection features. Use RunwayElement to model the physi [AC 150/5335-5, AC 150/5320-12, AC 150/5320-17, AC 150/5320-6].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| runwayDesignator (String7) | Specify runway designator. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |

| | |
|---|---|
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| pavementClassificationNumber (String10) | A number which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.[AC 150/5335-5A]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway End

(Database Feature Class Name = RunwayEnd; FAA=RunwayEnd)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Restricted

The end of the runway surface suitable for landing or takeoff runs of aircraft. Runway Ends describe the approach and departure procedure characteristics of a runway threshold. The Runway End is the same as the runway threshold when the threshold is not [NGS*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayEndDesignator (String3) | The designator for the runway end (i.e. 32L) |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| ellipsoidHeight (Real) | The height above the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question. Also called the geodetic height.[NGS]. |
| approachCategory (CodeApproachCategory) | A grouping of aircraft based on 1.3 times their stall speed in the landing configuration at the certificated maximum flap setting and maximum landing weight at standard atmospheric conditions[AC 150/5300-13]. |
| approachGuidance (CodeApproachGuidance) | The type of approach guidance in use for the runway end. |
| accelerateStopDistanceAvail (Real) | The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.[AC 150/5300-13]. |
| magneticBearing (Real) | Magnetic runway bearing corresponding to threshold location valid at the day of data generation[RTCA DO-272]. |
| trueBearing (Real) | True bearing corresponding to the landing direction[ICAO Annex 14]. |
| designGroup (CodeDesignGroup) | A grouping of airplanes based on wingspan and or tailheight, whichever is greatest.[AC 150/5300-13]. |

| | |
|---|---|
| displacedDistance (Integer) | The distance from the runway end to the landing threshold. When the thresholdType is normal, displacedDist = 0. |
| landingDistanceAvailable (Real) | The runway length declared available and suitable for a landing airplane.[AC 150/5300-13]. |
| runwaySlope (Real) | Runway slope corresponding to landing direction.[RTCA DO-272]. |
| takeOffDistanceAvailable (Real) | The takeoff run available plus the length of any remaining runway clearway beyond the far end of the takeoff run available.[AC 150/5300-13]. |
| takeOffRunwayAvailable (Real) | The runway length declared available and suitable for the ground run of an airplane taking off[AC 150/5300-13]. |
| touchdownZoneSlope (Real) | The longitudinal slope of the first 3000 feet of the runway beginning at the threshold.[FAA Specification 405]. |
| touchdownZoneElevation (Real) | The highest elevation in the Touchdown Zone. The Touchdown Zone is the first 3,000 feet of the runway beginning at the threshold.[FAA Specification 405]. |
| thresholdType (CodeThresholdType) | An description of the landing threshold: either normal or displaced |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Helipad Design Surface

(Database Feature Class Name = RunwayHelipadDesignSurface; FAA=RunwayHelipadDesignSurface)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

A three-dimensional surface that is used in runway or heliport/helipad design. [AC 150/5300-13].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature.[SDSFIE Feature Table]. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| designSurfaceType (CodeDesignSurfaceType) | A description of the design surface |
| zoneUse (String50) | A description of the use of the zone. |
| determination (String255) | A formal declaration of the runway/helipad/heliport safety area condition with respect to standards and any requirement improvements[FAA Order 5200.8 and AC 150/5390-2]. |

| | |
|---|---|
| determinationDate (String8) | The date the safety area determination was approved[FAA Order 5200.8 and AC 150/5390-2B]. |
| zoneInnerWidth (Real) | The width of the narrow end of a trapezoidal shaped DesignSurface feature. This is normally the end that is closest to the landing surface[AC 150/5300-13 and 150/5390-2B]. |
| zoneOuterWidth (Real) | The width of the wide end of a trapezoidal shaped DesignSurface feature. This is normally the end that is furthest from the landing surface. |
| zoneLength (Real) | The length of a trapezoidal shaped DesignSurface feature. |
| slope (Real) | The low to high gradient within the airspace. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Intersection

(Database Feature Class Name = RunwayIntersection; FAA=RunwayIntersection)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Confidential

The area in which two or more runways intersect.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayDesignator1 (String7) | Designator of the 1st intersecting runway based on the magnetic bearing and position in relation to parallel runways (e.g. 33R/15L). |
| runwayDesignator2 (String7) | Designator of the 2nd intersecting runway based on the magnetic bearing and position in relation to parallel runways (e.g. 33R/15L). |
| runwayDesignator3 (String7) | Designator of the 3rd intersecting runway based on the magnetic bearing and position in relation to parallel runways (e.g. 33R/15L). |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| pavementClassificationNumber (String10) | A number which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.[AC 150/5335-5A]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Label

(Database Feature Class Name = RunwayLabel; FAA=RunwayLabel)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Secret

The bottom center position of the runway designation marking. [NGS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayEndDesignator (String3) | The designator of the associated runway |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Land and Hold Short Line

(Database Feature Class Name = RunwayLAHSO; FAA=RunwayLAHSO)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

Markings installed on a runway where an aircraft is to stop when the runway is normally used as a taxiway or used for Land and Hold Short Operations (LAHSO) as identified in a letter of agreement with the Air Traffic Control Tower (ATCT). A runway should [Order 7110.118*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| protectedRunwayDesignator (String7) | Unique runway identifier for the airport of the runway, if any, being protected by the LAHSO (when the LAHSO precedes a runway intersection). Example 17L/35R. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| color (CodeColor) | The color of the marking |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Runway Safety Area Boundary

(Database Feature Class Name = RunwaySafetyAreaBoundary; FAA=RunwaySafetyAreaBoundary)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

The boundary of the Runway Safety Area (RSA). [AC 150/53XX-XX (Vol. C)].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| runwayEndDesignator (String3) | Specific runway end designator.[FAA AC150/5300-18b]. |
| determinationDate (String8) | Date the RSA determination was approved[FAA Order 5200.8]. |
| determination (String255) | A formal declaration of the runway safety area condition with respect to standards and any requirement improvements[FAA Order 5200.8]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Shoulder

(Database Feature Class Name = Shoulder; FAA=Shoulder)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhance drainage; and blast protection. [AC 150/5300-13].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature.[AC 150/5300-18b]. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature.[AC 150/5300-18b]. |
| shoulderType (CodeShoulderType) | Code for whether this is a runway shoulder or taxiway shoulder[SDSFIE Attribute Table]. |
| length (Real) | The overall length of the airfield surface.[SDSFIE Attribute Table]. |
| width (Real) | The overall width of the airfield surface.[SDSFIE Feature Table]. |
| restricted (CodeBoolean) | An indicator as to whether access to the feature is restricted. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| sequence (String5) | Sequential number of the element. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Stopway

(Database Feature Class Name = Stopway; FAA=Stopway)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff without causing structural damage to the airplane. It is designated by the airp

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| length (Real) | The length of the designated stopway from the end of the runway |
| width (Real) | The overall width of the feature |
| runwayEndDesignator (String3) | Specify runwayEnd designator to identify which runway end the Stopway is on. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Taxiway Element

(Database Feature Class Name = TaxiwayElement; FAA=TaxiwayElement)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

Defined paths on an airport established for the taxiing of aircraft (excluding apron taxilanes) and intended to provide a link between one part of the airport and another. [AC 150-5300-13].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| taxiwayId (String50) | Taxiway element name. The name should be identical to the corresponding taxiway name. Multiple taxiway elements can have the same name. If two or more taxiways intersect the taxiway element intersection will be named after the predominant taxiway. If two[FAA Airports GIS]. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature.[FGDC]. |
| taxiwayType (CodeTaxiwayType) | The type of taxiway. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| pavementClassificationNumber (String10) | A number which expresses the relative load carrying capacity of a pavement in terms of a standard single wheel load.[AC 150/5335-5A]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| directionality (CodeDirectionality) | Code used to define the directionality of traffic on the element. |
| sequence (String5) | Sequential number of the taxiway element. |
| surfaceType (CodeSurfaceType) | Type of different materials used to construct the surface.[NGS]. |
| designGroup (CodeDesignGroup) | Identifies the design group used in the design of the taxiway[AC 150/5300-13]. |
| length (Real) | Provides the length of the taxiwayElement polygon as measured along the centerline.[SDSFIE Feature Table]. |
| width (Real) | Width of the taxiway.[SDSFIE Feature Table]. |
| maximumSpeed (Integer) | Identifies the maximum speed for the taxiwayElement. |
| wingspan (Real) | Identifies the maximum aircraft wingspan which can traverse the taxiwayElement.[SDSFIE Feature Table]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Taxiway Holding Position

(Database Feature Class Name = TaxiwayHoldingPosition; FAA=TaxiwayHoldingPosition)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

A designated position at which taxiing aircraft and vehicles shall stop and hold position, unless otherwise authorized by the aerodrome control tower. [RTCA DO-272].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayDesignator (String7) | The designator for the approaching runway. |
| taxiwayDesignator (String4) | The designator for the taxiway. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the feature. |
| lowVisibilityCategory (CodeLowVisibilityCategory) | Code describing the Low visibility operation category of the TaxiwayHoldingPosition. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Taxiway Intersection

(Database Feature Class Name = TaxiwayIntersection; FAA=TaxiwayIntersection)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A junction of two or more taxiways (Source: ICAO Annex 14, Volume 1, Aerodromes, Chapter 1, page 5). [ICAO Annex 14 (Aerodromes), Chapter 1, page 5].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String40) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airfield : Touchdown Lift Off

(Database Feature Class Name = TouchdownLiftOff; FAA=TouchDownLiftOff)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Unclassified

A load-bearing, generally paved area, normally centered in the Final Approach and Takeoff Area (FATO), on which a helicopter lands or takes off. The Touchdown and Lift-off Area (TLOF) is frequently called a helipad or helideck.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A brief description of the area and any special characteristics. |
| length (Real) | The overall length of the TLOF. |
| width (Real) | The overall width of the TLOF. |
| surfaceType (CodeSurfaceType) | A classification of airfield pavement surfaces for Airport Obstruction Charts[NGS]. |
| surfaceMaterial (CodeSurfaceMaterial) | A code indicating the composition of the related surface[NFDC]. |
| surfaceCondition (CodeSurfaceCondition) | A description of the serviceability of the pavement[NFDC]. |
| designHelicopter (String20) | A generic helicopter that reflects the maximum weight, maximum contact load/minimum contact area, overall length, rotor diameter, etc. of all helicopters expected to operate at the heliport.[AC 150/5390-2]. |
| gradient (Real) | The gradient of the TLOF surface designed to provide positive drainage. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Airspace

## Airspace : Landmark Segment

(Database Feature Class Name = LandmarkSegment; FAA=LandmarkSegment)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Unclassified

Features providing geographic orientation near the airport vicinity. The features may or may not have obstruction value. Collect geographic features of landmark value aiding in geographic orientation as individual polyline objects. [NGS*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String40) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| landmarkType (CodeLandmarkType) | Type of landmark feature |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airspace : Obstacle

(Database Feature Class Name = Obstacle; FAA=Obstacle)

Geometry Type: Point Accuracy: +/-20Ft. Sensitivity: Restricted

All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft, penetrating an Obstruction Identification Surface (OIS), or selected as representative object. Use [NGS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| obstructionNumber (String30) | Provide the Aeronautical Study Number assigned by the FAA in the appropriate format (if known). |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| obstacleType (CodeObstacleType) | The type of object. |
| obstacleSource (CodeObstacleSource) | Identify how or where the object was identified. |
| aboveGroundLevel (Real) | The vertical distance from the ground to the highest point of the object. |
| distanceFromDisplacedThreshold (Real) | Distance measured along runway centerline or centerline extended from a Displaced Threshold to point abeam the object. A negative distance indicates that the object is on the touchdown side of the runway approach end. This data is not provided for objects |
| distanceFromRunwayCenterline (Real) | Shortest distance from the runway centerline or centerline extended to the object. L (LEFT) or R (RIGHT) is relative to an observer facing forward in a landing aircraft. This data is not provided for objects penetrating the horizontal, conical and runway |
| distanceFromRunwayEnd (Real) | Distance measured along runway centerline or centerline extended from the physical end to point abeam the object. A negative distance indicates that the object is on the touchdown side of the runway approach end. This data is not provided for objects pene |
| groupCode (String75) | A text code indicating that the object consists of a group of objects of the same type. For example, a group of trees, a group of buildings, a group of antennas, etc[AIXM]. |
| heightAboveAirport (Integer) | Height above airport the official airport elevation point[NGS]. |
| heightAboveRunway (Real) | Height above runway physical end for objects located underneath the approach surface. |
| heightAboveTouchdownZone (Real) | Height above touchdown zone elevation for objects located underneath the approach surface. |
| lightCode (CodeBoolean) | A code indicating that the obstacle is lighted[AIXM]. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| penValSpecified (Integer) | The elevation difference between the height of the object and the specified surface. Used to identify the amount of penetration of the main OIS. |
| penValSupplemental (Integer) | The elevation difference between the height of the object and the supplemental surface. Used to identify the amount of penetration to a secondary OIS. |
| ellipsoidHeight (Real) | The height above the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question. |
| disposition (String16) | What was done to obstruction[Airport]. |
| oisSurfaceCondition (CodeOisSurfaceCondition) | The Obstruction Identification Surface that Obstructing Area represents |
| frangible (CodeBoolean) | A Boolean indicating whether the object is frangible. |
| faaCoordinationCode (CodeBoolean) | A Boolean indicating whether the obstruction has received FAA coordination or review. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airspace : Obstruction Area

(Database Feature Class Name = ObstructionArea; FAA=ObstructionArea)

Geometry Type: Polygon Accuracy: +/-20Ft. Sensitivity: Restricted

Polygon features penetrating the plane of the obstruction identification surface (OIS) or selected as representative objects. Determine the type of obstructing area by the predominant feature within the grouped area. Penetrating groups of trees, ground, b

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| obstructionNumber (String30) | Provide the Aeronautical Study Number assigned by the FAA in the appropriate format (if known). |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| obstacleType (CodeObstacleType) | The type of object. |
| obstacleSource (CodeObstacleSource) | Identify how or where the object was identified. |
| aboveGroundLevel (Real) | The vertical distance from the ground to the highest point of the object. |
| distanceFromDisplacedThreshold (Real) | Distance measured along runway centerline or centerline extended from a Displaced Threshold to point abeam the object. A negative distance indicates that the object is on the touchdown side of the runway approach end. This data is not provided for objects |
| distanceFromRunwayCenterline (Real) | Shortest distance from the runway centerline or centerline extended to the object. L (LEFT) or R (RIGHT) is relative to an observer facing forward in a landing aircraft. This data is not provided for objects penetrating the horizontal, conical and runway |
| distanceFromRunwayEnd (Real) | Distance measured along runway centerline or centerline extended from the physical end to point abeam the object. A negative distance indicates that the object is on the touchdown side of the runway approach end. This data is not provided for objects pene |
| groupCode (String75) | A text code indicating that the object consists of a group of objects of the same type. For example, a group of trees, a group of buildings, a group of antennas, etc[AIXM]. |
| heightAboveAirport (Integer) | Height above airport the official airport elevation point[NGS]. |
| heightAboveRunway (Real) | Height above runway physical end for objects located underneath the approach surface. |
| heightAboveTouchdownZone (Real) | Height above touchdown zone elevation for objects located underneath the approach surface[NGS]. |
| lightCode (CodeBoolean) | A code indicating that the obstacle is lighted[AIXM]. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| penValSpecified (Integer) | The elevation difference between the height of the object and the specified surface. Used to identify the amount of penetration of the main OIS. |

| | |
|---|---|
| penValSupplemental (Integer) | The elevation difference between the height of the object and the supplemental surface. Used when to identify the amount of penetration to a secondary OIS. |
| obstructionAreaType (CodeObstructionAreaType) | Type of obstructing area. |
| disposition (String255) | The disposition of the airspace obstruction. |
| oisSurfaceCondition (CodeOisSurfaceCondition) | The Obstruction Identification Surface that Obstructing Area represents |
| length (Real) | The overall length of the obstruction. |
| width (Real) | The overall width of the obstruction. |
| frangible (CodeBoolean) | A Boolean indicating whether the object is frangible. |
| faaCoordinationCode (CodeBoolean) | A Boolean indicating whether the obstruction has received FAA coordination or review. |
| ellipsoidHeight (Real) | The height above the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airspace : Obstruction Identification Surface

(Database Feature Class Name = ObstructionIdSurface; FAA=ObstructionIdSurface)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

A derived imaginary Obstruction Identification Surface defined by the FAA. [NGS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A commonly used name for the zone. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| runwayDesignator (String7) | Specify runway designator for the Vertically Guided Runway Primary Surface (VGRPS), for the Vertically Guided Primary Connection Surface (VGPCS), and for the Vertically Guided Approach Transitional Surface (VGATS). |
| runwayEndDesignator (String3) | Specify runwayEnd designator for the Vertically Guided Approach Surface (VGAS) and for the Vertically Guided Protection Surface (VGPS).[FAA AC150/5300-18b]. |
| oisSurfaceType (CodeOisSurfaceType) | Surface Type refers to the general type of surface used to analyze features. Surfaces of the same type usually are similar in nature with respect to certain aspects of the surface definition or may merely be representative of different programs within the |
| oisZoneType (CodeOisZoneType) | Specifies zones within Obstruction Identification Surfaces (OIS) |

| | |
|---|---|
| oisSurfaceCondition (CodeOisSurfaceCondition) | The Obstruction Identification Surface that Obstructing Area represents |
| safetyRegulation (String20) | An identifier for the safety regulations in effect within the zone. |
| zoneUse (String50) | A description of the use of the zone. |
| approachGuidance (CodeApproachGuidance) | Defines the type of approach guidances the OIS is meant to protect. |
| slope (Real) | The low to high gradient within the airspace expressed as a ratio x:1, where X is the slope value. For example 40:1 for departures. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Airspace : Runway Protection Area

(Database Feature Class Name = RunwayProtectArea; FAA=RunwayProtectArea)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Confidential

An area beyond the takeoff runway under control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations, and the size and upward slope of the

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| length (Real) | The length of clearway as reported by the FAA Airport/Facility Directory and the Aeronautical Information Publication (AIP) for international airports |
| type (CodeRunwayProtectionAreaType) | Code indicating the type of runway protection area being classified. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Cadastral

## Cadastral : Airport Boundary

(Database Feature Class Name = AirportBoundary; FAA=AirportBoundary)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A polygon, or a set of polygons, that encompasses all property owned or controlled by the airport for aviation purposes. [AC 150/5300-13, Appendix 7, Order 5190.6A, Section 5].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| faaSiteNumber (String8) | This is a number that contains a one-letter suffix. The number is assigned to the airport in ascending order, depending on the state and the associated city. If you do not know or have access to the appropriate site number contact your airports district/r[FAA AC 150/5200-35]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| faaLocationId (String4) | The location identifier assigned to the feature by FAA |
| iataCode (String4) | The location identifier assigned to the feature by International Air Transport Association (IATA) |
| icaoCode (String4) | The location identifier assigned to the airport by the ICAO |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| airportFacilityType (CodeAirportFacilityType) | The type of airfield. |
| operationsType (CodeOperationsType) | The type of operations permitted on the airfield |
| owner (Enumeration60) | The type of owner of the airfield |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Airport Parcel

(Database Feature Class Name = AirportParcel; FAA=AirportParcel)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

A tract of land within the airport boundary acquired from surplus property, Federal funds, local funds, etc. Include easement interests in areas outside the fee property line as an airport parcel. [FAA Order 5190.6, Chapter 5].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| grantProjectNumber (String30) | The grant number if Federal funds were used to acquire the parcel |
| parcelNumber (String12) | Any locally used number to identify the parcel. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature |
| authority (String75) | The owner of the airport parcel |
| acquisitionType (CodeAcquisitionType) | The type of acquisition used to acquire the parcel |
| costToAcquire (Real) | The amount paid to the owner in U.S. dollars for the parcel |
| dateAcquired (String8) | The date the parcel was acquired. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| howAcquired (CodeHowAcquired) | The manner in which the parcel was acquired |
| marketValue (Real) | The assessed market value of the parcel in U.S. dollars when it was acquired |
| yearAssessed (Integer) | The year in which the market value assessment was made |
| yearBuilt (Integer) | The year in which the most recent structure(s) were built on the parcel |
| useOfParcel (String16) | The current primary use of the airport parcel. |
| acquisitionPurpose (String50) | Acquisition purpose |
| area (Real) | The size of the area, zone, or polygon in square units. |
| assessedValue (Real) | The most recent assessed value of the airport parcel. |
| deedReference (String30) | Reference to where the deed to the airport parcel is recorded in such information as Plat Book and Page. |
| legalDescription (String240) | The complete legal description of the property as it appears in the deed. |
| passengerChargeNumber (String30) | Passenger Facility Charge Number |
| previousOwner (String75) | Previous owner of the airport parcel |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : County

(Database Feature Class Name = County; FAA=County)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

Boundary line of the land and water under the right, power, or authority of the county government. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| politicalName (String30) | The common name associated with the property area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | The description of the area. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Easements And Rights of Way

(Database Feature Class Name = EasementsAndRightsofWay; FAA=EasementsAndRightsofWay)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Confidential

A parcel of land for which formal or informal deed easement rights exist. [SDSFIE (modified)].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| status (CodeStatus) | The status of the parcel. (Active, inactive, terminated) |
| description (String255) | A brief description of the feature. |
| purpose (String30) | Project purpose for which the easement was acquired. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : FAA Region

(Database Feature Class Name = FaaRegionArea; FAA=FAARegionArea)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Unclassified

This feature depicts the FAA regions. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the FAA region. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the FAA region. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Land Use

(Database Feature Class Name = LandUse; FAA=LandUse)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Confidential

A description of the human use of land and water. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the land use area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the land use area. |
| useType (CodeLandUseType) | The way in which the land is being used. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Lease Area

(Database Feature Class Name = LeaseZone; FAA=LeaseZone)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Unclassified

A parcel of land or area within a building that is leased by an individual, agency, or organization for their use. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |

| | |
|---|---|
| tenantName (String75) | The current name of the tenant occupying the leased parcel. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| cadPage (String10) | Reference to the hard copy page which this data has traditionally be plotted on. |

**Attributes:**

| | |
|---|---|
| lmsId (String10) | A foreign key link to the airports lease management system. |
| description (String255) | A brief description of the feature. |
| class (CodeSpaceClass) | The class of space utilization. |
| type (CodeSpaceType) | The type of space utilization. |
| permitUse (String20) | Permitted use of the leased parcel. |
| leasedArea (Real) | Area accounted for in the lease for a parcel. |
| actualArea (Real) | Actual measured area of the leased parcel. |
| expectedLeaseExpirationDate (String8) | The date the lease is expected to expire. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| legalDescription (String240) | The complete legal description of the property as it appears in the deed. |
| status (CodeStatus) | The status of the parcel. (Active, inactive, terminated) |
| subtenantName (String75) | The current name of the subtenant occupying the leased parcel or interior space. |
| tenantId (Integer) | A unique numeric ID assigned to the tenant occupying this space. |
| classId (Integer) | A unique numeric ID assigned to the space class. |
| typeId (Integer) | A unique numeric ID assigned to the space type. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Lease Area

(Database Feature Class Name = LeaseZone; FAA=LeaseZone)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Unclassified

A parcel of land or area within a building that is leased by an individual, agency, or organization for their use. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |

| | |
|---|---|
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| tenantName (String75) | The current name of the tenant occupying the leased parcel. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| cadPage (String10) | Reference to the hard copy page which this data has traditionally be plotted on. |

**Attributes:**

| | |
|---|---|
| lmsId (String10) | A foreign key link to the airports lease management system. |
| description (String255) | A brief description of the feature. |
| class (CodeSpaceClass) | The class of space utilization. |
| type (CodeSpaceType) | The type of space utilization. |
| permitUse (String20) | Permitted use of the leased parcel. |
| leasedArea (Real) | Area accounted for in the lease for a parcel. |
| actualArea (Real) | Actual measured area of the leased parcel. |
| expectedLeaseExpirationDate (String8) | The date the lease is expected to expire. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| legalDescription (String240) | The complete legal description of the property as it appears in the deed. |
| status (CodeStatus) | The status of the parcel. (Active, inactive, terminated) |
| subtenantName (String75) | The current name of the subtenant occupying the leased parcel or interior space. |
| tenantId (Integer) | A unique numeric ID assigned to the tenant occupying this space. |
| classId (Integer) | A unique numeric ID assigned to the space class. |
| typeId (Integer) | A unique numeric ID assigned to the space type. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Municipality

(Database Feature Class Name = Municipality; FAA=Municipality)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

Boundary line of the land and water under the right, power, or authority of the municipal government. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |

| | |
|---|---|
| name (String50) | The common name associated with the property area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | The description of the area. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : Parcel

(Database Feature Class Name = Parcel; FAA=Parcel)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

A single cadastral unit, which is the spatial extent of the past, present, and future rights and interests in real property and the geographic framework to support the description of the spatial extent. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| parcelNumber (String12) | Any locally used number to identify the parcel. |
| grantProjectNumber (String30) | The grant number if Federal funds were used to acquire the parcel |

**Attributes:**

| | |
|---|---|
| area (Real) | The size of the area, zone, or polygon in square units. |
| useOfParcel (String16) | The current primary use of the parcel. |
| name (String50) | The common name associated with the property area. |
| description (String255) | The description of the area. |
| legalDescription (String240) | The complete legal description of the property as it appears in the deed. |
| dateAcquired (String8) | The date the parcel was acquired by the current owner. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| assessedValue (Real) | The most recent assessed value of the parcel. |
| deedReference (String30) | Reference to where the deed to the parcel is recorded in such information as Plat Book and Page. |
| authority (String75) | The owner of the parcel |
| previousOwner (String75) | Previous owner of the parcel |
| acquisitionType (CodeAcquisitionType) | The type of acquisition used to acquire the parcel |

| | |
|---|---|
| acquisitionPurpose (String50) | Acquisition purpose |
| costToAcquire (Real) | The amount paid to the owner in U.S. dollars for the parcel |
| howAcquired (CodeHowAcquired) | The manner in which the parcel was acquired |
| marketValue (Real) | The assessed market value of the parcel in U.S. dollars when it was acquired |
| yearAssessed (Integer) | The year in which the market value assessment was made |
| yearBuilt (Integer) | The year in which the most recent structure(s) were built on the parcel |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Cadastral : State

(Database Feature Class Name = State; FAA=State)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

Boundary line of the land and water under the right, power, or authority of the state government. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The common name associated with the property area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | The description of the area. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

### Cadastral : Zoning

(Database Feature Class Name = Zoning; FAA=Zoning)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Restricted

A parcel of land zoned specifically for real estate and land management purposes; more specifically for commercial, residential, or industrial use. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A brief description of the feature. |
| status (CodeStatus) | The status of the parcel. (Active, inactive, terminated) |
| landOwnerRestriction (String60) | Codes determining the land owner restriction for the parcel.[SDSFIE Feature Table]. |
| zoningClassification (CodeZoningClass) | The zoning classification of the parcel. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Data Set: Environmental

### Environmental : Environmental Contamination Area

(Database Feature Class Name = EnvironmentalContaminationArea; FAA=EnvironmentalContaminationArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A facility or other locational entity, (as designated by the Environmental Protection Agency) that is regulated or monitored because of environmental concerns. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of a specific facility. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the source of the pollution. |
| environmentalHazardCategory (String16) | Indicates the broad category or type of the most prevalent or serious environmental hazard present at the site. |
| pollutantReleaseType (String16) | A descriptor for the type of pollutant release experienced. |
| severity (String16) | A descriptor for the severity of the pollution. |
| remediationUrgency (String16) | A code indicating the urgency for accomplishing a site remediation project. |
| toxicStatusOfPollutant (String16) | A descriptor for the toxic status of the pollution. |
| status (CodeStatus) | The code indicating whether the facility status is Active or Inactive. |
| dateFound (String8) | The date the pollution was discovered. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915) |
| cause (String16) | A code indicating the cause of the pollution. |
| pollutantSource (String16) | The actual or suspected source of the pollutant. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Fauna Hazard Area

(Database Feature Class Name = FaunaHazardArea; FAA=FaunaHazardArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

An area where there are hazards due to wildlife activities. This includes bird aircraft strike hazard (BASH) areas, and deer strike areas. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 240 characters. |

| | |
|---|---|
| hazardType (CodeHazardType) | A descriptor of the type of the hazard. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Flood Plain

(Database Feature Class Name = FloodZone; FAA=FloodZone)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Unclassified

Areas subject to 100-year, 500-year and minimal flooding. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| zoneType (CodeZoneType) | The zoning classification of the area |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Flora Species Site

(Database Feature Class Name = FloraSpeciesSite; FAA=FloraSpeciesSite)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Unclassified

The specific location where an individual flora species or an aggregate of flora species has been identified. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Any brief description of the feature. |
| plantType (String16) | A descriptor of the type of flora. |
| plantHeight (Real) | The average height of the flora species. |
| endangeredSpeciesActSite (CodeBoolean) | Defines if the habitat has been designated as a critical habitat under (C) the Endangered species Act or has not been so designated (N). |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Flora Habitat Area

(Database Feature Class Name = ForestStandArea; FAA=ForestStandArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A forest flora community with similar characteristics. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the flora species. |

habitatCategory (String16) Discriminator - The designation or type of the special wildlife habitat.

**Metadata:**

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

dataSource (CodeDataSource) The source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) An identifier used to refer to a metadata record that provide additional information about the data in this record.

## Environmental : Hazardous Material Storage Site

(Database Feature Class Name = HazMatStorageSite; FAA=HazardousMaterialStorageSite)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Unclassified

A defined or bounded geographical area designated and used for the storage of contained hazardous materials. [SDSFIE].

**Names and Identifiers:**

id (String40) A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value)

name (String50) Name of the feature.

alias (String60) An alternative or former name by which the feature is referred.

**Attributes:**

description (String255) A description or other unique information concerning the subject item, limited to 240 characters.

storeHazardousMaterialCategory (CodeHazardCategory) The general type or category of contained hazardous material stored.

**Metadata:**

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

dataSource (CodeDataSource) The source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Noise Contour

(Database Feature Class Name = NoiseContour; FAA=NoiseContour)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Confidential

An area that describes the noise attributed to operations. For aircraft operations, the Day/Night average sound level (Ldn) descriptor is typically used to categorize noise levels. [14 CFR Part 150].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description for the noise zone. |
| contourValue (Real) | The decibel level of the contour line |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Noise Incident

(Database Feature Class Name = NoiseIncident; FAA=NoiseIncident)

Geometry Type: Point Accuracy: +/-50Ft. Sensitivity: Restricted

A formal complaint by an individual or group regarding excessive noise resulting from airport operations.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A general description of the complete incident, including any reference material. |
| reporter (String50) | The name of the individual or organization reporting the incident. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Noise Monitoring Point

(Database Feature Class Name = NoiseMonitoringPoint; FAA=NoiseMonitoringPoint)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Restricted

The location of noise sensing equipment or where a noise sample is taken. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Sample Collection Point

(Database Feature Class Name = SampleCollectionPoint; FAA=SampleCollectionPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Confidential

The physical location at which one or more environmental hazards field samples are collected. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| companyName (String60) | The name of the company that took the sample. |

**Attributes:**

| | |
|---|---|
| description (String255) | Descriptor providing any additional information to describe the sampling location in text format (e.g., monitoring well located 10 feet northeast of building 624 within spill area). IRPIMS.[SDSFIE Feature Table]. |
| collectionPointLocation (CodeSamplePointLocation) | Code describing the type of location which is undergoing sampling (e.g., bh= borehole, wl=well). |
| coordX (Real) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Real) | The coordinate in the north-south plane, expressed in decimal degrees. |
| elevation (Real) | Elevation of the point relative to the selected vertical datum. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| dateSampleTaken (Date) | The date on which the sample was taken. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Shoreline

(Database Feature Class Name = Shoreline; FAA=Shoreline)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

The boundary where land meets the edge of a large body of fresh or salt water.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A commonly used name for the shoreline. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A local description for the shoreline. |
| shorelineType (CodeShorelineType) | Discriminator - A value indicating the type or kind of shoreline. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Environmental : Wetland

(Database Feature Class Name = Wetland; FAA=Wetland)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

Transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. The soils are predominantly saturated with water and the plants and animals that live there are spe

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Any commonly used name for the wetland. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the wetland. |
| featureType (String16) | A descriptor of how the wetland is depicted graphically. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Geodetic

## Geodetic : Airport Control Point

(Database Feature Class Name = AirportControlPoint; FAA=AirportControlPoint)

Geometry Type: Point Accuracy: +/-Ft. Sensitivity: Restricted

A control station established in the vicinity of, and usually on, an airport and tied to the National Spatial Reference System (NSRS). [NGS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| permanentId (String6) | Permanent point identifier assigned by NGS to PACS and SACS[NGS]. |
| name (String50) | Any commonly used name for the control point. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| stampedDesignation (String50) | The designation stamped onto the monument. |

**Attributes:**

| | |
|---|---|
| pointType (CodePointType) | Contains the allowable values of a point type used by the ControlPoint feature. The point types may be supplementally provided as subtypes of ControlPoints for ease of use and clarification. |
| runwayDesignator (String7) | Not applicable to this point type |
| runwayEndDesignator (String3) | Not applicable to this point type |
| monumentType (CodeMonumentType) | The type of monument as defined by the Corps of Engineers EM 110-1-1002. |
| description (String255) | The monument description. |
| ellipsoidHeight (Real) | The height above the reference ellipsoid, measured along the ellipsoidal outer normal through the point in question. Also called the geodetic height.[NGS]. |
| yearOfSurvey (Integer) | The year of the most recent runway end survey used to compute the ARP |
| dateRecovered (String8) | The date the monument was last field recovered. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| recoveredCondition (CodeRecoveredCondition) | The condition and type of the marker (witness post) used to identify the location of the monument. |
| fieldBook (String254) | The field book. |
| globalPositionSystemSuitable (CodeBoolean) | A Boolean indicating GPS suitability. |

**Metadata:**

| | |
|---|---|
| coordinateZone (CodeCoordinateZone) | The State Plane Coordinate System Code for where the airport is primarily located. |
| epoch (String10) | Survey epoch used to establish the control point. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Geodetic : Reference Grid Line

(Database Feature Class Name = CoordinateGridArea; FAA=CoordinateGridArea)

Geometry Type: Line Accuracy: +/-Ft. Sensitivity: Restricted

A regular pattern of horizontal and vertical lines used to represent regular coordinate intervals along the x and y axis. This grid line can be used to generate an arbitrary grid system which is common on locator maps.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name, code or identifier used to refer to an individual grid cell. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| gridType (CodeGridType) | Code indicating the type of grid. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Geodetic : Reference Grid Cell

(Database Feature Class Name = CoordinateGridCell)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Restricted

A regular pattern of horizontal and vertical lines used to represent regular coordinate intervals along the x and y axis. This grid line can be used to generate an arbitrary grid system which is common on locator maps. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |

| | |
|---|---|
| alias (String60) | An alternative or former name by which the feature is referred. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Geodetic : Elevation Contour

(Database Feature Class Name = ElevationContour; FAA=ElevationContour)

Geometry Type: Line Accuracy: +/-Ft. Sensitivity: Restricted

Connecting points on the surface of the earth of equal vertical elevation representing some fixed elevation interval. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| length (Real) | The overall length of the feature. |
| contourValue (Real) | The elevation of the contour line.[SDSFIE Feature Table]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Geodetic : Image Area

(Database Feature Class Name = ImageArea; FAA=ImageArea)

Geometry Type: Polygon Accuracy: +/-Ft. Sensitivity: Confidential

The image foot print or coverage area. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| frameID (String20) | Image identification number of the covered area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 255 characters. |
| photoDate (String8) | Date the aerial photography was flown. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915) |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Geodetic : Image Location

(Database Feature Class Name = ImageLocation)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Confidential

The location where an image was taken.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| caption (String255) | A textual title or short description used to define the primary subject of the image. |
| description (String255) | Textual details that provide further information about the primaery subject of the image. |
| heading (Real) | The heading (with 0 as true north) in which the camera was pointed when the image was taken |

| | |
|---|---|
| inclination (Real) | The degrees off he horizon (with 90 pointing straight up) at which the camera was pointed when the image was taken. |
| latitude (Real) | The latitude of the location of the camera when the image was taken. |
| longitude (Real) | The longitude of the location of the camera when the image was taken. |
| dateTaken (Date) | The date on which the image was taken. |
| timeTaken (Integer) | The time at which the image was taken. |
| fileDirectory (String255) | The local file directory in which the image file is located. |
| fileName (String40) | The name of the image file. |
| fileType (CodeImageType) | The type of image file format |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Interior

## Interior : Baggage Carousel

(Database Feature Class Name = BaggageCarousel)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Baggage system carousels

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| carouselId (String60) | Common name associated with the feature.[Airport]. |
| tenantName (CodeAirline) | The name of the current tenant using the baggage carousel. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| direction (CodeDirection) | The direction of flow of baggage on the conveyor. |
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Baggage Conveyor

(Database Feature Class Name = BaggageConveyor)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Baggage system conveyors

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| conveyorId (String60) | Common name associated with the feature.[Airport]. |
| tenantName (CodeAirline) | The name of the current tenant using the baggage conveyor. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| direction (CodeDirection) | The direction of flow of baggage on the conveyor. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Column

(Database Feature Class Name = BuildingColumn)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Structural columns of a building

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| columnId (String10) | A unique identifier assigned to the Column. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| columnShape (CodeShape) | The shape of the horizontal cross section of the column. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| material (CodeMaterialType) | The type of material the column is made of. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Building Zone

(Database Feature Class Name = BuildingZone)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A subsection of a building used for reference purposes.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Any brief description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Ceiling Tile

(Database Feature Class Name = CeilingTile)

Geometry Type: Line Accuracy: +/-1Ft. Sensitivity: Confidential

The edge of tiles used to form a ceiling over an interior space.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | The name of the pumping station.[HSIP]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| type (String40) | Type of feature[AC 150/5300-18b]. |
| description (String255) | Textual description of the feature.[FGDC]. |
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Chase

(Database Feature Class Name = Chase)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Area of a building used for passing utilities from one floor to another.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| chaseId (String10) | A unique identifier assigned to the Chase. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Column Grid

(Database Feature Class Name = ColumnGrid)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Confidential

An area inside of a building between three or more building columns that is used for identification and referencing purposes.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Column Line

(Database Feature Class Name = ColumnLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Confidential

A line conncting two or more columns within a building that is used for reference purposes.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |

| | |
|---|---|
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Display Case

(Database Feature Class Name = DisplayCase)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Restricted

Leasable items that are not represented in the InteriorExteriorSpace feature class. These items typically overlap with polygons in the InteriorExteriorSpace feature class, and represent other leasable assets as represented in the Authority's property/leas

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Door

(Database Feature Class Name = Door)

Geometry Type: Line Accuracy: +/-0.5Ft. Sensitivity: Restricted

Line where door is located within a wall

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String40) | The name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| roomId (String20) | An identifier assigned to the room to which this door leads |
| spaceId (String20) | An identifier that is uniquely assigned to this feature for identification purposes. |

**Attributes:**

| | |
|---|---|
| doorType (CodeDoorType) | The type of door. |
| fireRated (CodeBoolean) | Boolean to indicate whether door is a fire door or not[SDSFIE Attribute Table]. |
| fireTime (Integer) | Time in hours for which a fire door is rated[SDSFIE Attribute Table]. |
| isSecure (CodeBoolean) | Boolean for whether door provides access to a secure area[SDSFIE Attribute Table]. |
| accessedArea (CodeAccess) | The area which is accessed to / from the door. |
| accessRestriction (CodeRestrictionType) | Type of equipment installed to restrict access[SDSFIE Attribute Table]. |
| isAlarmed (CodeBoolean) | Boolean for whether door is connected to an alarm that will sound if it is openned without authorization. |
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Elevator

(Database Feature Class Name = Elevator)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Area of a floor where an elevator shaft is located

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| elevatorId (String25) | A unique identifier assigned to the Elevator. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| elevType (String20) | Code for the type of elevator[SDSFIE Attribute Table]. |
| accessRestriction (CodeRestrictionType) | Type of equipment installed to restrict access.[SDSFIE Attribute Table]. |
| fromLevel (CodeFloorLevel) | The lowest level of the building served by the elevator. |
| toLevel (CodeFloorLevel) | The highest level of the building served by the elevator. |
| fromLevelRestricted (CodeFloorLevel) | The lowest level of the building served by the elevator, where access is restricted. |
| toLevelRestricted (CodeFloorLevel) | The highest level of the building served by the elevator, where access is restricted. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| floors (Integer) | The number of floors served by the elevator.[SDSFIE Attribute Table]. |
| secure (CodeBoolean) | Boolean for whether elevator provides access to a secure area[SDSFIE Attribute Table]. |
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Escalator

(Database Feature Class Name = Escalator)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Area of a floor occupied by escalators

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| escalatorId (String25) | A unique identifier assigned to the Escalator. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| manufacturerName (String60) | The coomon name used to refer to the manufacturer. |
| modelNumber (String20) | The model number assigned by the manufacturer. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Floor

(Database Feature Class Name = Floor)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Floor outline of a building

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| floorName (String50) | Name of the building floor.[SDSFIE Feature Table]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| usableArea (Real) | Usable or net area of the building floor. The sum of usable areas on the building floor (i.e., business and common) which can vary over the life of a building as corridors expand and contract as floors are remodeled.[SDSFIE Feature Table]. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Flooring Material

(Database Feature Class Name = FlooringMaterial)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

Are of floor with a common material type.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| type (String60) | Common name associated with the feature.[Airport]. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Furnishing

(Database Feature Class Name = Furnishing)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

The location of various interior furnishings

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| type (String60) | Common name associated with the feature.[Airport]. |
| modelNumber (String20) | The model number assigned by the manufacturer. |
| manufacturerName (String60) | The coomon name used to refer to the manufacturer. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Interior Sign

(Database Feature Class Name = InteriorSign)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

Signs located inside of a building.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| interiorSignId (String10) | A unique identifier assigned to the InteriorSign. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| spaceId (String20) | An identifier that is uniquely assigned to this feature for identification purposes. |

**Attributes:**

| | |
|---|---|
| messageA (String255) | The primary text message which appears on the sign. |
| messageB (String255) | A secondary text message which appears on the sign. |
| modelNumber (String20) | The model number assigned by the manufacturer. |
| manufacturerName (String60) | The coomon name used to refer to the manufacturer. |
| dateInstalled (Date) | The date on which the feature was originally installed. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Ladder

(Database Feature Class Name = Ladder)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

The location of a ladder for accessing another floor or roof of a building.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| ladderId (String10) | A unique identifier assigned to the Ladder. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| spaceID (String20) | An identifier that is uniquely assigned to this feature for identification purposes. |

| | |
|---|---|
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Maintenance Responsibility Area

(Database Feature Class Name = MaintenanceResponsibilityArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An area on interior space assigned to a single enity to maintain.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| responsibleParty (String60) | A code representing the party who is responsible for performing maintenance in the designated area. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Moving Sidewalk

(Database Feature Class Name = MovingSidewalk)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Area of a floor occupied by a moving sidewalk

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| sidewalkId (String60) | Common name associated with the feature.[Airport]. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| modelNumber (String20) | The model number assigned by the manufacturer. |
| manufacturerName (String60) | The coomon name used to refer to the manufacturer. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Passenger Gate

(Database Feature Class Name = PassengerGate)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Unclassified

The location of a passenger boarding gate.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| isCommonUse (CodeBoolean) | An indicator as to whether the passenger gate is common used or assigned to a signle airline. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Room

(Database Feature Class Name = Room)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Room outline within a building

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| roomName (String60) | Name of the building room.[SDSFIE Feature Table]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |

| | |
|---|---|
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| SaulaCode (String16) | The Successor Airport-Airline Use and Lease Agreement (SAULA) code assigned to spaces, rooms and lease areas at H-JAIA. |
| area (Real) | The size of the area, zone, or polygon in square units.[SDSFIE Feature Table]. |
| height (Real) | Height dimension of the building room, measured from floor to ceiling.[SDSFIE Feature Table]. |
| length (Real) | Length dimension of a building room, measured from inside of wall to inside of wall.[SDSFIE Feature Table]. |
| width (Real) | Width dimension of a building room, measured from inside of wall to inside of wall.[SDSFIE Feature Table]. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Space

(Database Feature Class Name = Space)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

A space not elsewhere classified within a building

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| spaceId (String50) | Name of the building space.[SDSFIE Feature Table]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| saulaCode (String16) | The Successor Airport-Airline Use and Lease Agreement (SAULA) code assigned to spaces, rooms and lease areas at H-JAIA. |
| area (Real) | The size of the area, zone, or polygon in square units.[SDSFIE Feature Table]. |

| | |
|---|---|
| height (Real) | Height of building space, or distance from floor to ceiling.[SDSFIE Feature Table]. |
| length (Real) | Length dimension of building space, from inside of wall or partition to inside of wall or partition.[SDSFIE Feature Table]. |
| width (Real) | Width dimension of building space, from inside wall or partition to inside of wall or partition.[SDSFIE Feature Table]. |
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |
| FkEcaiId (String7) | Foreign Key identifier used to link to Electrical Closet Asset Inventory |

## Interior : Stair

(Database Feature Class Name = Stair)

Geometry Type: Polygon Accuracy: +/-0.5Ft. Sensitivity: Restricted

Area of a floor where stairs are located

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| escRoute (CodeBoolean) | Boolean indicator for whether stairs are a part of an approved escape route[SDSFIE Attribute Table]. |
| fromLevel (CodeFloorLevel) | The level of a building on which the feature starts. |
| toLevel (CodeFloorLevel) | The level of a building on which the feature ends. |
| elevRefLow (Integer) | A reference to the lowest floor elevation served by this feature. |
| elevRefHigh (Integer) | A reference to the highest floor elevation served by this feature. |
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Interior : Wall

(Database Feature Class Name = Wall)

Geometry Type: Line Accuracy: +/-0.5Ft. Sensitivity: Restricted

Wall within a floor

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| isStructural (CodeBoolean) | Indicator for whether the wall is a structural wall or not[SDSFIE Attribute Table]. |
| structuralMaterial (CodeMaterialType) | The material used for the structural or inner composition of the wall. |
| surfaceMaterial (CodeWallMaterial) | The material used for the surface or outer face of the wall. |
| thickness (Real) | Thickness in inches of the wall[SDSFIE Attribute Table]. |
| isFire (CodeBoolean) | An indicator as to whether the feature is design to restrain fire[SDSFIE Attribute Table]. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

### Interior : Window

(Database Feature Class Name = Window)

Geometry Type: Line Accuracy: +/-0.5Ft. Sensitivity: Restricted

Line where window is located on an exterior wall

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |
| floorLevel (CodeFloorLevel) | The level of a building on which the feature exists. |
| buildingNumber (String30) | An alphanumeric code indicating the number of the building. |
| buildingName (String60) | The name of the building associated with this feature. |

**Attributes:**

| | |
|---|---|
| glassType (String20) | Code for the type of glass installed in the window[SDSFIE Attribute Table]. |
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| levelIdentifier (Integer) | A numeric identifier assigned to the building level. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Data Set: Navigational_Aids

### Navigational_Aids : Navigational Aid Critical Area

(Database Feature Class Name = NavaidCriticalArea; FAA=NavaidCriticalArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A zone encompassing a specific ground area in the vicinity of a radiating antenna array which must be protected from parking and unlimited movement of surface and air traffic. The drawings included in this table are representative, be sure to refer to the [FAA Order 6750.16C].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| dimensionX (Integer) | The linear dimension of the critical area in the X axis. |
| dimensionY (Integer) | The linear dimension of the critical area in the Y axis. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Navigational_Aids : Navigational Aid Equipment

(Database Feature Class Name = NavaidEquipment; FAA=NavaidEquipment)

Geometry Type: Point Accuracy: +/-Ft. Sensitivity: Unclassified

Any ground-based visual or electronic device that provides point to point guidance information or position to aircraft in flight. [FAA Specification 405].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature |
| faaFacilityId (String4) | Enter the identifier. When reporting on a glide slope, enter the identifier of the associated localizer. Do not enter the prefix I for ILS or M used with the MLS systems. Where more than one ASR is in operation at the same location or at an associated loc[FAA Order 8250-42]. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| runwayEndId (String3) | Identify the primary instrument runway served by the facility. When more than one runway is served by a precision approach aid (such as a PAR), provide a separate feature for each runway. This attribute is only required for ILS, MLS, TLS, and PAR. |

**Attributes:**

description (String255) A description or other unique information concerning the subject item, limited to 255 characters.

navaidEquipmentType (CodeNavaidEquipmentType) Specifies the type of NAVAID

navigationalAidSystemType (CodeNavaidSystemType) Identifies the navigational aid equipment as part of an overall system. For example the localizer and glideslope together make up the Instrument landing system (ILS) or the MLS Azimuth and MLS Elevation make up a Microwave Landing System.

useCode (CodeUseCode) The code that represents the airspace structure in which the aeronautical navigational aid is utilized.

antennaToThresholdDistance (Real) The distance in feet that the antenna is from the runway threshold. Provide the distance to the nearest tenth of a foot.

centerlineDistance (Real) Distance from the centerline perpendicular point to the physical runway end. This should be the same distance as the antenna to threshold distance unless the runway end the navigational aid serves has a displaced threshold. Provide this distance to the ne

stopEndDistance (Real) Provide the distance the from the antenna along the centerline to the stop end of the runway.

offsetDistance (Real) The distance in feet that the feature is offset from the runway centerline. Provide this distance to the nearest tenth of a foot.

offsetDirection (CodeOffsetDirection) Enter the direction (right, left, or on centerline) the navigational aid is offset from the runway. Determine the appropriate direction from the approach threshold down the runway.

lightingType (CodeLightingConfigurationType) The type of Visual navigational aid system (use only when CodeNavaidEquipmentType is set to visual)

owner (Enumeration60) A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

referencePointEllipsoidHeight (Real) Provide the height above the ellipsoid (HAE) for the referencePoint.

referencePointThreshold (Real) Distance from the runway reference point to the threshold. Provide this distance to the nearest tenth of a foot.[FAA AAS-100].

thresholdCrossingHeight (Real) The designated crossing height of the flight path angle above the Landing Threshold Point (or Fictitious Threshold Point).

highAngle (Real) Maximum approach light vertical angle[FAA AAS-100].

ellipsoidElevation (Real) The Base Elevation for most NAVAIDs. For ILS DME, the elevation is the center of the antenna cover. For MLSAZ, MLSEL, and End Fire Type Glide Slope Antennas, the elevation is the phase center of the reference point.

**Metadata:**

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

dataSource (CodeDataSource) The source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) An identifier used to refer to a metadata record that provide additional information about the data in this record.

### Navigational_Aids : Navigational Aid Site

(Database Feature Class Name = NavaidSite; FAA=NavaidSite)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Unclassified

The parcel, lease, or right-of-way boundary for a navaid facility that is located off airport property.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature |
| faaFacilityId (String4) | The location identifier assigned to the feature by FAA |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A brief description of the facility and any special characteristics. |
| facilityType (String16) | The type of facility or feature related to airfield operations. |
| propertyCustodian (String50) | The regional property management office responsible for ownership of the site |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Data Set: SeaPlane

### SeaPlane : AnchorageArea

(Database Feature Class Name = AnchorageArea; FAA=AnchorageArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

An area designated specifically for the parking of seaplanes.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| name (String50) | Name of the feature. |
| description (String255) | Description of the feature. |
| mooringLocations (Integer) | Specify the number of mooring locations provided in the AnchorageArea. |
| length (Integer) | Specify the overall length available for the AnchorageArea |
| width (Integer) | Specify the overall length available for the floating dock |

| | |
|---|---|
| depth (Integer) | Specify the depth of the turning basin with respect to mean lowest low tide to the nearest 0.5 foot. |
| bottomConditions (String240) | Specify the type of bottom conditions in the AnchorageArea. |
| restriction (String240) | Any restrictions or cautions associated with the AnchorageArea |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Dock

(Database Feature Class Name = DockArea; FAA=DockArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A defined area on a seaplane base either fixed or floating, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| Pier (CodeBoolean) | Specify if a pier is available in the dockArea |
| PierLength (Integer) | Specify the overall length available for the pier |
| PierWidth (Integer) | Specify the overall length available for the pier |
| PierMaterial (CodeVerticalStructureMaterial) | Specify the materials used in the construction of the pier. |
| HoistingCapability (Integer) | Specify the hoisting capability in pounds |
| MarineRailwayPlatformLength (Integer) | Specify the length of the marine railway platform |
| MarineRailwayPlatformWidth (Integer) | Specify the width of the marine railway platform |
| MarineRailwayPlatformCapacity (Integer) | Specify the capacity of the marine railway platform in pounds |
| Gangway (CodeBoolean) | Specify if a gangway is available |
| GangwayLength (Integer) | Specify the overall length available for the gangway |
| GangwayWidth (Integer) | Specify the overall length available for the gangway |
| GangwayMaterial (CodeVerticalStructureMaterial) | Specify the material used to construct the gangway |
| FloatingDock (CodeBoolean) | Specify if a floating dock is available |

FloatingDockLength (Integer) Specify the overall length available for the floating dock

FloatingDockWidth (Integer) Specify the overall length available for the floating dock

FloatingDockMaterial (CodeVerticalStructureMaterial) Specify the material used in constructing the dockArea

FloatingBarge (CodeBoolean) Specify if a floating barge is available

FloatingBargeLength (Integer) Specify the overall length available for the floating barge

FloatingBargeWidth (Integer) Specify the overall length available for the floating barge

FloatingBargeMaterial (CodeVerticalStructureMaterial) Specify the material used in constructing the floatingBarge

**Metadata:**

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

dataSource (CodeDataSource) The source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) An identifier used to refer to a metadata record that provide additional information about the data in this record.

## SeaPlane : Navigation Buoy

(Database Feature Class Name = NavigationBuoy; FAA=NavigationBuoy)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Unclassified

A floating marker which is moored to the bottom at a specific known location, which is used as an aid to navigation or for other special purpose. [SDSFIE].

**Names and Identifiers:**

id (String40) A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value)

name (String50) Any commonly used name associated with the buoy.

alias (String60) An alternative or former name by which the feature is referred.

**Attributes:**

description (String255) A description or other unique information concerning the buoy limited to 255 characters. Use this to describe navigational requirements or warnings.

designator (String20) The official number of the buoy.

Type (CodeBuoyType) Discriminator - The type of the buoy or marker.

lightingType (CodeLightingConfigurationType) Type of lighting available at the location (if any)

color (CodeColor) Code used to indicate the navigational color of the buoy.

owner (Enumeration60) A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

**Metadata:**

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Seaplane Ramp Centerline

(Database Feature Class Name = SeaplaneRampCenterline; FAA=SeaplaneRampCenterline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Restricted

The centerline of ramps specifically designed to transit seaplanesto or from land or water. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| Length (Integer) | Specify the length of the seaplane ramp centerline from the water to the shoreline |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Seaplane Ramp Site

(Database Feature Class Name = SeaplaneRampSite; FAA=SeaplaneRampSite)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

Ramps specifically designed to transit seaplanes from land to or from land to water. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| Width (Integer) | Identify the width of the seaplane ramp site |
| Slope (Integer) | The slope of the ramp specified as an integer value. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Taxi Channel

(Database Feature Class Name = TaxiChannel; FAA=TaxiChannel)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A water channel used for the movement of aircraft between shore facilities and the water lane. [AC 150/5395-1].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| Name (String50) | Any commonly used name associated with the taxi channel. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| Description (String255) | Description of the feature. |
| Restriction (String240) | Any restrictions or cautions associated with the taxi channel |
| Length (Integer) | Specify the overall length of the taxi channel |
| Width (Integer) | Specify the overall width of the taxi channel |
| Depth (Integer) | Specify the depth of the taxi channel with respect to mean lowest low tide |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Turning Basin

(Database Feature Class Name = TurningBasin; FAA=TurningBasin)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A water area used for the maneuvering of aircraft where the use of water surface is restricted. Turning basins should be located adjacent to shoreline facilities and at each end of the water operating area. [AC 150/5395-1].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| Name (String50) | A commonly used name for the turning basin |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| Restriction (String240) | Any restrictions or cautions associated with the turning basin |
| Length (Integer) | Specify the overall length of the turning basin to the nearest 5 feet. |
| Width (Integer) | Specify the overall width of the turning basin to the nearest 5 feet |
| Depth (Integer) | Specify the depth of the turning basin with respect to mean lowest low tide to the nearest 0.5 foot. |
| Diameter (Integer) | The diameter of the turning basin available for use by aircraft to the nearest 5 feet. |
| CompassLocation (CodeCompassLocation) | Code indicating the cardinal compass location of the turning basin from centroid of the WaterLaneEnd |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Water Lane End

(Database Feature Class Name = WaterLaneEnd; FAA=WaterLaneEnd)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Restricted

The end of the water land (typically located at the furthest end of a turning basin) suitable for landing or takeoff runs of aircraft. WaterLandEnds define the water lane and describe the approach/departure procedure characteristics of a water land.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| Name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| Description (String255) | Description of the feature. |
| MagneticBearing (Integer) | Compute and specify the magnetic bearing of the primary water lane to the nearest degree based on the location of the reciprocal WaterLaneEnd points. This is similar to the runway magnetic bearing for a land based airport. |
| CompassLocation (CodeCompassLocation) | Code indicating the cardinal compass location of the turning basin from centroid of the WaterLaneEnd. This feature is similar to the land based airport RunwayEnd. |
| Restriction (String240) | Any restrictions or cautions associated with the sea plane landing area. |
| AirMarker (CodeBoolean) | Code specifying if a standard air maker is used to indicate if a standard air marker is in use at the location. |
| Type (CodeBoolean) | Identifies the WaterLaneEnd as the primary or alternate. Primary = Y, alternate=N |
| Color (CodeColor) | The color of the air marker at the location (if any) |
| LightingType (CodeLightingConfigurationType) | Type of lighting available at the location (if any) |
| ApproachGuidance (CodeApproachGuidance) | Identifies the type of approach guidance in use or planned for the water operating area. |
| Length (Integer) | Specify the overall length of the primary water lane |
| Width (Integer) | Specify the overall width of the primary water lane |
| Depth (Integer) | Specify the depth of the primary water lane with respect to mean lowest low tide |
| Centroid (Integer) | The geographic location of the primary water centroid, used to determine the primary and alternate water lanes within the water operating area. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## SeaPlane : Water Operations Area

(Database Feature Class Name = WaterOperatingArea; FAA=WaterOperatingArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

An area designated and marked for the takeoff and landing of aircraft. This is equivalent to the Airport Operating Area of a land based airport.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| Name (String50) | Name of the feature water body (river/lake). |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| Description (String255) | Description of the feature. |
| SurfaceMaterial (CodeSurfaceMaterial) | Code used to indicate the type of water the water operating area is on or planned to use. |
| Length (Integer) | Specify the overall length of the WaterOperatingArea to the nearest 5 feet |
| Width (Integer) | Specify the overall width of the waterOperatingArea to the nearest 5 feet |
| CurrentFlowRate (Integer) | Measure and specify the rate of the current flow in the WaterOperatingArea in miles per hour |
| CompassLocation (CodeCompassLocation) | Specify the magnetic bearing of the current flow direction |
| TidalRange (Integer) | Specify (in feet) the height difference in height from mean low mean high tide |
| CoordinatedUseType (CodeCoordinatedUseType) | Specify the primary coordinated use of the waterway. If no single activity comprises the majority of the coordinated use then specify multiple. |
| CoordinatedUseActivityLevel (Integer) | Provide the amount of activity based on percentage of daily use of the primary coordinated use type. If coordinated use type is multiple provide the largest activity level of the single most expected activity. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Security

## Security : Security Area

(Database Feature Class Name = SecurityArea; FAA=SecurityArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Secret

An area of the airport in which security measures required by 49CFR1542.201 must be carried out. [49CFR1542].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Security : Security Identification Display Area

(Database Feature Class Name = SecurityIdDisplayArea; FAA=SecurityIdDisplayArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Secret

Portions of an airport, specified in the airport security program, in which security measures required by regulation must be carried out. This area includes the security area and may include other areas of the airport. [DHS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Security : Security Perimeter Line

(Database Feature Class Name = SecurityPerimeterLine; FAA=SecurityPerimeterLine)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

Any type of perimeter, such as barbed wire, high fences, motion detectors and armed guards at gates, that ensure no unauthorized visitors can gain entry. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 255 characters.[SDSFIE Attribute Table]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Security : Sterile Area

(Database Feature Class Name = SterileArea; FAA=SterileArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Secret

Portions of an airport defined in the airport security program that provide passengers access to boarding aircraft and to which the access is generally controlled by TSA, an aircraft operator, or a foreign air carrier. [DHS].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Security : Surveillance Camera

(Database Feature Class Name = SurveillanceCamera)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Top Secret

The location of a video camera used for surveillance purposes. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Structures

## Structures : Building

(Database Feature Class Name = Building; FAA=Building)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A three-dimensional structure (i.e. hangars, terminals, etc.) modeled with a bounding polygon.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| buildingNumber (String16) | The code indicating the number of the building. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 255 characters. |
| structureType (CodeStructureType) | The type of structure. |
| numberOfCurrentOccupants (Integer) | Number of persons currently occupying the structure |
| areaInside (Real) | Total inside area of structure |
| structureHeight (Real) | Maximum height of structure; i.e. AGL height |
| areaFloor (Real) | Total inside floor area |
| lightingType (CodeLightingConfigurationType) | A description of the lighting system. |
| markingFeatureType (CodeMarkingFeatureType) | The color of the marking(s) |
| color (CodeColor) | The type of the marking(s) |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Structures : Project Area

(Database Feature Class Name = ConstructionArea; FAA=ConstructionArea)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

A defined area that is under construction, not intended for active use until authorized by the concerned authority. The area defines a boundary for personnel, material, and equipment engaged in the construction activity. [FAA].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| projectName (String60) | The name of the construction project |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 255 characters. |
| projectStatus (CodeProjectStatus) | The status of the construction project |
| coordinationContact (String75) | Airport, emergency, airline, tenant, and contractor personnel who are responsible for coordinating on-airport construction work |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Structures : Fence

(Database Feature Class Name = Fence; FAA=Fence)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

Any fencing (chain-link, razor wire, PVC, etc.). [FAA].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 255 characters. |
| height (Real) | The overall distance from the surface of the ground to the top of the fence. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Structures : Gate

(Database Feature Class Name = Gate; FAA=Gate)

Geometry Type: Line Accuracy: +/-3Ft. Sensitivity: Restricted

A gate is an opening in a fence or other type of barrier between areas. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name, code or identifier used to identify the gate. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item, limited to 240 characters. |
| type (String50) | The gate material and method of construction. |
| length (Real) | The overall distance from one end of the gate to the other. |
| height (Real) | The overall distance from the surface of the top of the gate. |
| attended (CodeBoolean) | A Boolean indicating whether the gate is tended by a guard or other individual. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Structures : Roof

(Database Feature Class Name = Roof; FAA=Roof)

Geometry Type: Polygon Accuracy: +/-3Ft. Sensitivity: Restricted

Structure on top of buildings, garages and other similar structures.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| buildingNumber (String16) | The code indicating the number of the building |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Structures : Tower

(Database Feature Class Name = Tower; FAA=Tower)

Geometry Type: Point Accuracy: +/-3Ft. Sensitivity: Restricted

A structure created, by man, to facilitate an activity at an elevated level above the ground.

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| verticalStructureMaterial (CodeVerticalStructureMaterial) | Classifies the predominant material of the vertical object |
| lightCode (CodeBoolean) | A code indicating that the tower is lighted[AIXM]. |
| lightingType (CodeLightingConfigurationType) | A description of the lighting system. Lighting system classifications are Approach; Airport; Runway; Taxiway; and Obstruction |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking(s) |
| color (CodeColor) | The color of the marking(s) |
| structureHeight (Real) | Maximum height of structure; i.e. AGL height |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Surface_Transportation

## Surface_Transportation : Bridge

(Database Feature Class Name = Bridge; FAA=Bridge)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A structure used by vehicles that allows passage over or under an obstacle such as a river, chasm, mountain, road or railroad. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| surfaceMaterial (CodeSurfaceMaterial) | The material used as a surface for the bridge. |
| bridgeType (CodeBridgeType) | The type of bridge. |
| verticalStructureMaterial (CodeVerticalStructureMaterial) | Classifies the predominant material of the vertical object |
| directionality (CodeDirectionality) | Code indicating the traffic flow of the bridge being classified. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Driveway

(Database Feature Class Name = DrivewayArea; FAA=DrivewayArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

An access to a residence or other vehicle parking lot or storage area. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| surfaceMaterial (CodeSurfaceMaterial) | The material used as a surface for the driveway. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Driveway Centerline

(Database Feature Class Name = DrivewayCenterline; FAA=DrivewayCenterline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Restricted

The center of the driveway as measured from the edge of the paved surface. The segments of a driveway centerline will coincide with the road segments in order to provide network connectivity. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Parking Lot

(Database Feature Class Name = ParkingLot; FAA=ParkingLot)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

An area of an airport used for parking of automobiles, buses, etc. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Any commonly used name for the parking area. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description of the parking lot. |
| parkingLotUse (String16) | The primary use of the parking area. |
| totalNumberSpaces (Integer) | The total parking spaces available in the area including handicapped or reserved spaces. |
| numberHandicapSpaces (Integer) | The total number of spaces marked as being handicapped parking. |
| owner (Enumeration60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| surfaceType (CodeSurfaceType) | Type of different materials used to construct the surface. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Railroad Centerline

(Database Feature Class Name = RailroadCenterline; FAA=RailroadCenterline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Confidential

Represents the centerline of each pair of rails. [ANSI: Data Content Standards For Transportation Networks: Roads].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Any commonly used name for the railroad. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Any narrative remarks concerning the railroad. |
| numberOfTracks (Integer) | The number of tracks present |
| owner (Enumeration60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| isBridge (CodeBoolean) | Indicates given railroad segment is bridge (Y- a is bridge, N- is not a bridge). |
| isTunnel (CodeBoolean) | Indicates given railroad segment is tunnel (Y- is a tunnel, N- is not a tunnel). |
| directionality (CodeDirectionality) | Code indicating the traffic flow of the railroad segment being classified. |
| segmentType (CodeSegmentType) | Code indication the sequence or position of the segment being classified by the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Railroad Yard

(Database Feature Class Name = RailroadYard; FAA=RailroadYard)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

Represents a railroad yard. [ANSI: Data Content Standards For Transportation Networks: Roads].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A name that represent the railroad yard. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Any brief description of the feature. |
| owner (Enumeration60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Road Centerline

(Database Feature Class Name = RoadCenterline; FAA=RoadCenterline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Confidential

The center of the roadway as measured from the edge of the paved surface. The segments of a road centerline will coincide with the road segments in order to have similar characteristics. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Any commonly used name for the road centerline. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| color (CodeColor) | The color of the centerline marking. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Road Point

(Database Feature Class Name = RoadPoint; FAA=RoadPoint)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Confidential

A point along the roadway which has some special significance either for starting or ending a road segment or for representing a significant position along the roadway system such as the start or center of a bridge or the center of an intersection. [ANSI: Data Content Standards For Transportation Networks: Roads*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Road Segment

(Database Feature Class Name = RoadSegment; FAA=RoadSegment)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

Represents a linear section of the physical road system designed for, or the result of, human or vehicular movement; must be continuous (no gaps) and cannot branch; no mandates are provided on how to segment the road system except that data providers adop [ANSI: Data Content Standards For Transportation Networks: Roads*].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | A common name or street name used to refer to the stretch of road. |
| alias (String60) | An alternative or former name by which the feature is referred. |
| alternateName (String30) | The alternate name or second name for the road. |
| route1Name (String30) | The route number or other identifier that is affiliated with the first route type |
| route2Name (String30) | The route number or other identifier that is affiliated with the second route type |
| route3Name (String30) | The number or other identifier that is affiliated with the third route type |

**Attributes:**

| | |
|---|---|
| description (String255) | A general description of the road. |
| route1Type (CodeRouteType) | The first route type for the road (Interstate, US, State, etc.) |
| route2Type (CodeRouteType) | The second route type for the road (Interstate, US, State, etc.) |
| route3Type (CodeRouteType) | The third route type for the road (Interstate, US, State, etc.) |
| numberOfLanes (Integer) | The total number of lanes of traffic, counting both directions, not including turning lanes.[SDSFIE Feature Table]. |
| length (Real) | The length of the road segment measured at the centerline.[SDSFIE Feature Table]. |
| width (Real) | The average width of the road segment.[SDSFIE Feature Table]. |
| isBridge (CodeBoolean) | Indicates given road segment is bridge (Y- a is bridge, N- is not a bridge).[SDSFIE Feature Table]. |
| isTunnel (CodeBoolean) | Indicates given road segment is tunnel (Y- is a tunnel, Nis not a tunnel).[SDSFIE Feature Table]. |
| directionality (CodeDirectionality) | Code indicating the traffic flow on the road segment. |
| segmentType (CodeSegmentType) | Code indicating the type of segment being classified. |
| surfaceType (CodeSurfaceType) | Type of material used to construct the surface. |
| surfaceMaterial (CodeSurfaceMaterial) | Material used to construct the surface of the road. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Sidewalk Segment

(Database Feature Class Name = Sidewalk; FAA=Sidewalk)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

A paved or concrete pad used as a pedestrian walkway. Usually is composed of one or more SideWalkSegments. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | A brief description of any special characteristics of the sidewalk. |
| walkUse (String26) | A short description of the primary use of the sidewalk. |
| AmericanDisabilitiesAct (CodeBoolean) | Boolean indicating whether or not the walkway is in compliance with the American Disabilities Act. |
| length (Real) | The overall length of the sidewalk section. |
| width (Real) | The mean width of the sidewalk section. |
| surfaceMaterial (CodeSurfaceMaterial) | Primary material used in the sidewalk and/or trail. |
| segmentType (CodeSegmentType) | Code indicating the type of segment being classified. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Surface_Transportation : Tunnel

(Database Feature Class Name = Tunnel; FAA=Tunnel)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Restricted

The area of a transportation passage, open at both ends, used to provide access through or under a natural obstacle. [SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| id (String40) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | Name of the feature. |
| alias (String60) | An alternative or former name by which the feature is referred. |

**Attributes:**

| | |
|---|---|
| description (String255) | Description of the feature. |
| type (String16) | The code that represents the type of tunnel |
| verticalClearance (Real) | Indicates the actual vertical clearance to the top of the tunnel imposed by any restrictions. |
| averageHeight (Real) | The average height of the tunnel. |
| averageWidth (Real) | The average width of the tunnel. |
| length (Real) | The length of the tunnel. |
| directionality (CodeDirectionality) | Code indicating the direction of traffic flow in the tunnel. |
| segmentType (CodeSegmentType) | Code indicating the type of segment being classified. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| dataSource (CodeDataSource) | The source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Domain Values

Below are acceptable domain values for each of the attributes bound by list domains. Each list of acceptable values is an enumeration, which means that one of the values must be selected in order to be compliant with the standard. For each value, a definition along with any applicable source information is provided.

## CodeAccess

Used by Attributes: Door - Accessed Area

| Value | Definition (Notes) [Source] |
|---|---|
| Public to Public | Public to Public |
| Public to Restricted | Public to Restricted |
| Public to SIDA | Public to SIDA |
| Public to Sterile | Public to Sterile |
| Ramp Call | Ramp Call |
| Restricted to Restricted | Restricted to Restricted |
| Restricted to SIDA | Restricted to SIDA |
| SIDA to Public | SIDA to Public |
| SIDA to Restricted | SIDA to Restricted |
| Sterile to Restricted | Sterile to Restricted |
| Sterile to SIDA | Sterile to SIDA |
| Sterile to Sterile | Sterile to Sterile |

## CodeAcquisitionType

Used by Attributes: Airport Parcel - Acquisition Type;Parcel - Acquisition Type

| Value | Definition (Notes) [Source] |
|---|---|
| EASEMENT | Rights given to use land in a specific manner |
| FEE_SIMPLE | Purchased real property; absolute ownership |
| LEASED | Restricted use of land for a specific period of time |

## CodeAirline

Used by Attributes: Baggage Carousel - Tenant Name;Baggage Conveyor - Tenant Name

| Value | Definition (Notes) [Source] |
|---|---|
| Air Canada | Air Canada |
| Air Canada Jazz | Air Canada Jazz |
| Air France | Air France |
| AirTran Airways | AirTran Airways |
| American Airlines | American Airlines |
| American Connection - American Eagle | American Connection - American Eagle |
| American Connection - Chautauqua Airlines | American Connection - Chautauqua Airlines |
| American Connection - Trans States Airlines | American Connection - Trans States Airlines |
| British Airways | British Airways |
| Continental Airlines | Continental Airlines |
| Delta Air Lines | Delta Air Lines |
| Delta Connection - Atlantic Southeast Airlines | Delta Connection - Atlantic Southeast Airlines |
| Delta Connection - Comair | Delta Connection - Comair |
| Delta Connection - Freedom Airlines | Delta Connection - Freedom Airlines |
| Delta Connection - Pinnacle Airlines | Delta Connection - Pinnacle Airlines |
| Delta Connection - Shuttle America | Delta Connection - Shuttle America |
| Delta Connection - SkyWest Airlines | Delta Connection - SkyWest Airlines |
| Delta Connection / Atlantic Southeast Airlines | Delta Connection / Atlantic Southeast Airlines |
| Delta Connection / Freedom Airlines | Delta Connection / Freedom Airlines |
| Delta Connection / Pinnacle Airlines | Delta Connection / Pinnacle Airlines |
| Delta Connection / SkyWest Airlines | Delta Connection / SkyWest Airlines |

| | |
|---|---|
| Frontier Airlines | Frontier Airlines |
| KLM Royal Dutch Airlines | KLM Royal Dutch Airlines |
| Korean Air | Korean Air |
| Lufthansa German Airlines | Lufthansa German Airlines |
| Midwest Airlines | Midwest Airlines |
| Multiple | Multiple |
| Northwest Airlines | Northwest Airlines |
| Omni Air International | Omni Air International |
| Other | Other |
| Ryan International | Ryan International |
| Spirit Airlines | Spirit Airlines |
| United Airlines | United Airlines |
| United Express - Mesa | United Express - Mesa |
| United Express - Shuttle America | United Express - Shuttle America |
| Unknown | Unknown |
| US Airways | US Airways |
| US Airways Express - Air Wisconsin | US Airways Express - Air Wisconsin |
| US Airways Express - Mesa | US Airways Express - Mesa |
| US Airways Express - PSA | US Airways Express - PSA |
| US Airways Express - Republic | US Airways Express - Republic |
| World Airways | World Airways |

## CodeAirportFacilityType

Used by Attributes: Airport Boundary - Airport Facility Type

| Value | Definition (Notes) [Source] |
|---|---|
| AD | Airport only |
| AH | Airport with helicopter landing area |
| H | Helicopter (the stall speed method of calculating aircraft category does not apply) |
| HP | Heliport only |
| LS | Landing Site |

## CodeApproachCategory

Used by Attributes: Runway End - Approach Category

| Value | Definition (Notes) [Source] |
|---|---|
| A | Speed less than 91 knots |
| B | Speed 91 knots or more but less than 121 knots |
| C | Speed 121 knots or more but less than 141 knots |
| D | Speed 141 knots or more but less than 166 knots |
| E | Speed 166 knots or more |

## CodeApproachGuidance

Used by Attributes: Obstruction Identification Surface - Approach Guidance;Runway End - Approach Guidance;Water Lane End - Approach Guidance

| Value | Definition (Notes) [Source] |
|---|---|
| NON_VERTICAL | Runway is used for or planned use is for Non-Vertically Guided operations |
| PRECISION_CAT_I | Runway is used or or planned use is for Precision Category 1 operations |
| PRECISION_CAT_II | Runway is used for or planned use is for Precision Category II operations |
| PRECISION_CAT_IIIA | Runway is used for or planned use is for Precision Category IIIa operations. |

| | |
|---|---|
| PRECISION_CAT_IIIB | Runway is used for or planned use is for Precision Category IIIb operations |
| PRECISION_CAT_IIIC | Runway is used for or planned use is for Precision Category IIIc operations |
| VERTICAL | Runway is used for or planned use is for Vertically Guided (other than precision) operations |
| VISUAL | Runway is used for or planned use is for visual operations only |

## CodeApronType

Used by Attributes: Apron - Apron Type

| Value | Definition (Notes) [Source] |
|---|---|
| CARGO | Cargo loading area used for the loading/unloading of cargo |
| DE_ICING | Area used for deicing of aircraft |
| FUEL | Area used for aircraft fueling |
| HARDSTAND | Area used for parking a single aircraft. More temporary than parking |
| LOADING | Passenger loading area used for the loading/unloading of passengers |
| MAINT | Area used for maintenance of aircraft |
| MILITARY | Apron used by military |
| NORMAL | Apron |
| OTHER | Other |
| PARKING | Area used to park aircraft |
| RAMP | Access pavement between maintenance hangars opening to the apron and the apron edge |
| STAIRS | Stairs |
| TAXILANE | Area where plane is still under terminal control (airline dispatched) as opposed to tower control. |
| TEMPORARY | Temporary |
| TURNAROUND | Area used for aircraft to turn around |

## CodeBoolean

Used by Attributes: Water Lane End - Air Marker;Door - Alarmed;Sidewalk Segment - American with Disabilities Act;Gate - Attended;Passenger Gate - Common Use;Aircraft Gate Stand - Docking Availability;Flora Species Site - Endangered Species Act Site;Stair - Esc Route;Obstacle - FAA Coordination Code;Obstruction Area - FAA Coordination Code;Wall - Fire;Door - Fire Rated;Dock - Floating Barge;Dock - Floating Dock;Obstacle - Frangible;Obstruction Area - Frangible;Dock - Gangway;Airport Control Point - GPS Suitable;Aircraft Gate Stand - Ground Power Availability;Railroad Centerline - Is Bridge;Road Segment - Is Bridge;Runway Centerline - Is Derived;Railroad Centerline - Is Tunnel;Road Segment - Is Tunnel;Aircraft Gate Stand - Jetway Availability;Obstacle - Light Code;Obstruction Area - Light Code;Tank Site - Light Code;Tower - Light Code;Dock - Pier;Shoulder - Restricted;Door - Secure;Elevator - Secure;Wall - Structural;Aircraft Gate Stand - Towing Availability;Water Lane End - Type

| Value | Definition (Notes) [Source] |
|---|---|
| N | No |
| Y | Yes |

## CodeBridgeType

Used by Attributes: Bridge - Bridge Type

| Value | Definition (Notes) [Source] |
|---|---|
| ROAD | Road or highway bridge |
| RR | Railroad or Monorail Bridge |
| RWY | Runway Bridge |
| TWY | Taxiway Bridge |

## CodeBuoyType

Used by Attributes: Navigation Buoy - Type

| Value | Definition (Notes) [Source] |
|---|---|
| Bn | Beacon |
| C | Can Buoy |
| F | Fixed |
| J | Junction (S or T Dayboard) |
| K | Rectangular (Range Dayboard) |
| Lb | Lighted buoy |
| M | Octagonal Dayboard |
| N | Nun Buoy |
| O | Other marking |
| S | Square Dayboard |
| T | Triangle Dayboard |

## CodeColor

Used by Attributes: Airfield Light - Color;Building - Color;Land and Hold Short Line - Color;Marking Area - Color;Marking Line - Color;Navigation Buoy - Color;Road Centerline - Color;Tank Site - Color;Tower - Color;Water Lane End - Color

| Value | Definition (Notes) [Source] |
|---|---|
| AMBER | Amber [U.S. CADD] |
| BLACK | Black [U.S. CADD] |
| BLUE | Blue [U.S. CADD] |
| BROWN | Brown [U.S. CADD] |
| GREEN | Green [U.S. CADD] |
| GREEN-GREEN | Bidirectional (Source AC 150/5345-46C) |
| GREEN-RED | Bidirectional (Source AC 150/5345-46C) |
| GREEN-YELLOW | Bidirectional (Source AC 150/5345-46C) |
| GREY | Grey [U.S. CADD] |
| LIGHTGREY | LightGrey [U.S. CADD] |
| MAGENTA | Magenta [U.S. CADD] |
| ORANGE | Orange [U.S. CADD] |
| OTHER | Other [U.S. CADD] |
| PINK | Pink [U.S. CADD] |
| PURPLE | Purple [AIXM] |
| RED | Red [U.S. CADD] |
| RED-GREEN | Bidirectional (Source AC 150/5345-46C) |
| RED-RED | Bidirectional (Source AC 150/5345-46C) |
| TBD | To be determined |
| VIOLET | Violet [U.S. CADD] |
| WHITE | White [U.S. CADD] |
| WHITE-RED | Bidirectional (Source AC 150/5345-46C) |
| WHITE-WHITE | Bidirectional (Source AC 150/5345-46C) |
| WHITE-YELLOW | Bidirectional (Source AC 150/5345-46C) |
| YELLOW | Yellow [U.S. CADD] |
| YELLOW-GREEN | Bidirectional (Source AC 150/5345-46C) |
| YELLOW-RED | Bidirectional (Source AC 150/5345-46C) |
| YELLOW-YELLOW | Bidirectional (Source AC 150/5345-46C) |

## CodeCompassLocation

Used by Attributes: Turning Basin - Compass Location;Water Lane End - Compass Location;Water Operations Area - Compass Location

| Value | Definition (Notes) [Source] |
|---|---|
| E | East (076 to 105 degrees magnetic) |
| ESE | East Southeast (106 to 135 degrees magnetic) |
| N | North (346 to 015 degrees magnetic) |
| NE | Northeast (046 to 075 degrees magnetic) |
| NNE | North Northeast (016 to 045 degrees magnetic) |
| NW | Northwest (316 to 345 degrees magnetic) |
| S | South (166 to 195 degrees magnetic) |
| SE | Southeast (136 to 165 degrees magnetic) |
| SSW | South Southwest (196 to 225 degrees magnetic) |
| SW | Southwest (226 to 255 degrees magnetic) |
| W | West (256 to 285 degrees magnetic) |
| WNW | West NorthWest (286 to 315 degrees magnetic) |

## CodeCoordinatedUseType

Used by Attributes: Water Operations Area - Coordinated Use Type

| Value | Definition (Notes) [Source] |
|---|---|
| A | Aeronautical |
| M | Multiple |
| R | Recreational boating/fishing |
| S | Commercial Shipping/Fishing |

## CodeCoordinateZone

Used by Attributes: Airport Control Point - Coordinate Zone

| Value | Definition (Notes) [Source] |
|---|---|
| AK-1 | NAD27 Alaska State Planes- Zone 1- US Foot (EPSG #26731) |
| AK-10 | NAD27 Alaska State Planes- Zone 10- US Foot (EPSG #26740) |
| AK-2 | NAD27 Alaska State Planes- Zone 2- US Foot (EPSG #26732) |
| AK-3 | NAD27 Alaska State Planes- Zone 3- US Foot (EPSG #26733) |
| AK-4 | NAD27 Alaska State Planes- Zone 4- US Foot (EPSG #26734) |
| AK-5 | NAD27 Alaska State Planes- Zone 5- US Foot (EPSG #26735) |
| AK-6 | NAD27 Alaska State Planes- Zone 6- US Foot (EPSG #26736) |
| AK-7 | NAD27 Alaska State Planes- Zone 7- US Foot (EPSG #26737) |
| AK-8 | NAD27 Alaska State Planes- Zone 8- US Foot (EPSG #26738) |
| AK83-1 | NAD83 Alaska State Planes- Zone 1- Meter (EPSG #26931) |
| AK83-10 | NAD83 Alaska State Planes- Zone 10- Meter (EPSG #26940) |
| AK83-10F | NAD83 Alaska State Planes- Zone 10- US Foot |
| AK83-1F | NAD83 Alaska State Planes- Zone 1- US Foot |
| AK83-2 | NAD83 Alaska State Planes- Zone 2- Meter (EPSG #26932) |
| AK83-2F | NAD83 Alaska State Planes- Zone 2- US Foot |
| AK83-3 | NAD83 Alaska State Planes- Zone 3- Meter (EPSG #26933) |
| AK83-3F | NAD83 Alaska State Planes- Zone 3- US Foot |
| AK83-4 | NAD83 Alaska State Planes- Zone 4- Meter (EPSG #26934) |
| AK83-4F | NAD83 Alaska State Planes- Zone 4- US Foot |
| AK83-5 | NAD83 Alaska State Planes- Zone 5- Meter (EPSG #26935) |
| AK83-5F | NAD83 Alaska State Planes- Zone 5- US Foot |
| AK83-6 | NAD83 Alaska State Planes- Zone 6- Meter (EPSG #26936) |
| AK83-6F | NAD83 Alaska State Planes- Zone 6- US Foot |

| | |
|---|---|
| AK83-7 | NAD83 Alaska State Planes- Zone 7- Meter (EPSG #26937) |
| AK83-7F | NAD83 Alaska State Planes- Zone 7- US Foot |
| AK83-8 | NAD83 Alaska State Planes- Zone 8- Meter (EPSG #26938) |
| AK83-8F | NAD83 Alaska State Planes- Zone 8- US Foot |
| AK83-9 | NAD83 Alaska State Planes- Zone 9- Meter (EPSG #26939) |
| AK83-9F | NAD83 Alaska State Planes- Zone 9- US Foot |
| AK-9 | NAD27 Alaska State Planes- Zone 9- US Foot (EPSG #26739) |
| AL83-E | NAD83 Alabama State Planes- Eastern Zone- Meter (EPSG #26929) |
| AL83-EF | NAD83 Alabama State Planes- Eastern Zone- US Foot |
| AL83-W | NAD83 Alabama State Planes- Western Zone- Meter (EPSG #26930) |
| AL83-WF | NAD83 Alabama State Planes- Western Zone- US Foot |
| AL-E | NAD27 Alabama State Planes- Eastern Zone- US Foot (EPSG #26729) |
| ALHP-E | HPGN Alabama State Planes- Eastern Zone- Meter (EPSG #2759) |
| ALHP-EF | HPGN Alabama State Planes- Eastern Zone- US Foot |
| ALHP-W | HPGN Alabama State Planes- Western Zone- Meter (EPSG #2760) |
| ALHP-WF | HPGN Alabama State Planes- Western Zone- US Foot |
| AL-W | NAD27 Alabama State Planes- Western Zone- US Foot (EPSG #26730) |
| AR83-N | NAD83 Arkansas State Planes- Northern Zone- Meter (EPSG #26951) |
| AR83-NF | NAD83 Arkansas State Planes- Northern Zone- US Foot |
| AR83-S | NAD83 Arkansas State Planes- Southern Zone- Meter (EPSG #26952) |
| AR83-SF | NAD83 Arkansas State Planes- Southern Zone- US Foot |
| ARHP-N | HARN (HPGN) Arkansas State Planes- Northern Zone- Meter (EPSG #2764) |
| ARHP-NF | HARN (HPGN) Arkansas State Planes- Northern Zone- US Foot |
| ARHP-S | HARN (HPGN) Arkansas State Planes- Southern Zone- Meter (EPSG #2765) |
| ARHP-SF | HARN (HPGN) Arkansas State Planes- Southern Zone- US Foot |
| AR-N | NAD27 Arkansas State Planes- Northern Zone- US Foot (EPSG #26751) |
| AR-S | NAD27 Arkansas State Planes- Southern Zone- US Foot (EPSG #26752) |
| AZ83-C | NAD83 Arizona State Planes- Central Zone- Meter (EPSG #26949) |
| AZ83-CCM | NAD83 Arizona State Planes- Central Zone- Centimeter |
| AZ83-CF | NAD83 Arizona State Planes- Central Zone- US Foot |
| AZ83-CIF | NAD83 Arizona State Planes- Central Zone- Intnl Foot (EPSG #2223) |
| AZ83-E | NAD83 Arizona State Planes- East Zone- Meter (EPSG #26948) |
| AZ83-EF | NAD83 Arizona State Planes- East Zone- US Foot |
| AZ83-EIF | NAD83 Arizona State Planes- East Zone- Intnl Foot (EPSG #2222) |
| AZ83-W | NAD83 Arizona State Planes- West Zone- Meter (EPSG #26950) |
| AZ83-WF | NAD83 Arizona State Planes- West Zone- US Foot |
| AZ83-WIF | NAD83 Arizona State Planes- West Zone- Intnl Foot (EPSG #2224) |
| AZ-C | NAD27 Arizona State Planes- Central Zone- US Foot (EPSG #26749) |
| AZ-E | NAD27 Arizona State Planes- East Zone- US Foot (EPSG #26748) |
| AZHP-C | HPGN Arizona State Planes- Central Zone- Meter (EPSG #2762) |
| AZHP-CF | HPGN Arizona State Planes- Central Zone- US Foot |
| AZHP-CIF | HPGN Arizona State Planes- Central Zone- Intnl Foot (EPSG #2868) |
| AZHP-E | HPGN Arizona State Planes- East Zone- Meter (EPSG #2761) |
| AZHP-EF | HPGN Arizona State Planes- East Zone- US Foot |
| AZHP-EIF | HPGN Arizona State Planes- East Zone- Intnl Foot (EPSG #2867) |
| AZHP-W | HPGN Arizona State Planes- West Zone- Meter (EPSG #2763) |
| AZHP-WF | HPGN Arizona State Planes- West Zone- US Foot |
| AZHP-WIF | HPGN Arizona State Planes- West Zone- Intnl Foot (EPSG #2869) |
| AZ-W | NAD27 Arizona State Planes- West Zone- US Foot (EPSG #26750) |
| CA83-I | NAD83 California State Planes- Zone I- Meter (EPSG #26941) |
| CA83-IF | NAD83 California State Planes- Zone I- US Foot (EPSG #2225) |
| CA83-II | NAD83 California State Planes- Zone II- Meter (EPSG #26942) |
| CA83-IIF | NAD83 California State Planes- Zone II- US Foot (EPSG #2226) |

| | |
|---|---|
| CA83-III | NAD83 California State Planes- Zone III- Meter (EPSG #26943) |
| CA83IIIF | NAD83 California State Planes- Zone III- US Foot (EPSG #2227) |
| CA83-IV | NAD83 California State Planes- Zone IV- Meter (EPSG #26944) |
| CA83-IVF | NAD83 California State Planes- Zone IV- US Foot (EPSG #2228) |
| CA83-V | NAD83 California State Planes- Zone V- Meter (EPSG #26945) |
| CA83-VF | NAD83 California State Planes- Zone V- US Foot (EPSG #2229) |
| CA83-VI | NAD83 California State Planes- Zone VI- Meter (EPSG #26946) |
| CA83-VIF | NAD83 California State Planes- Zone VI- US Foot (EPSG #2230) |
| CAHP-I | HPGN California State Planes- Zone I- Meter (EPSG #2766) |
| CAHP-IF | HPGN California State Planes- Zone I- US Foot (EPSG #2870) |
| CAHP-II | HPGN California State Planes- Zone II- Meter (EPSG #2767) |
| CAHP-IIF | HPGN California State Planes- Zone II- US Foot (EPSG #2871) |
| CAHP-III | HPGN California State Planes- Zone III- Meter (EPSG #2768) |
| CAHPIIIF | HPGN California State Planes- Zone III- US Foot (EPSG #2872) |
| CAHP-IV | HPGN California State Planes- Zone IV- Meter (EPSG #2769) |
| CAHP-IVF | HPGN California State Planes- Zone IV- US Foot (EPSG #2873) |
| CAHP-V | HPGN California State Planes- Zone V- Meter (EPSG #2770) |
| CAHP-VF | HPGN California State Planes- Zone V- US Foot (EPSG #2874) |
| CAHP-VI | HPGN California State Planes- Zone VI- Meter (EPSG #2771) |
| CAHP-VIF | HPGN California State Planes- Zone VI- US Foot (EPSG #2875) |
| CA-I | NAD27 California State Planes- Zone I- US Foot (EPSG #26741) |
| CA-II | NAD27 California State Planes- Zone II- US Foot (EPSG #26742) |
| CA-III | NAD27 California State Planes- Zone III- US Foot (EPSG #26743) |
| CA-IV | NAD27 California State Planes- Zone IV- US Foot (EPSG #26744) |
| CA-V | NAD27 California State Planes- Zone V- US Foot (EPSG #26745) |
| CA-VI | NAD27 California State Planes- Zone VI- US Foot (EPSG #26746) |
| CA-VII | NAD27 California State Planes- Zone VII- US Foot (EPSG #26747) |
| CO83-C | NAD83 Colorado State Planes- Central Zone- Meter (EPSG #26954) |
| CO83-CF | NAD83 Colorado State Planes- Central Zone- US Foot (EPSG #2232) |
| CO83-N | NAD83 Colorado State Planes- Northern Zone- Meter (EPSG #26953) |
| CO83-NF | NAD83 Colorado State Planes- Northern Zone- US Foot (EPSG #2231) |
| CO83-S | NAD83 Colorado State Planes- Southern Zone- Meter (EPSG #26955) |
| CO83-SF | NAD83 Colorado State Planes- Southern Zone- US Foot (EPSG #2233) |
| CO-C | NAD27 Colorado State Planes- Central Zone- US Foot (EPSG #26754) |
| COHP-C | HPGN Colorado State Planes- Central Zone- Meter (EPSG #2773) |
| COHP-CF | HPGN Colorado State Planes- Central Zone- US Foot (EPSG #2877) |
| COHP-N | HPGN Colorado State Planes- Northern Zone- Meter (EPSG #2772) |
| COHP-NF | HPGN Colorado State Planes- Northern Zone- US Foot (EPSG #2876) |
| COHP-S | HPGN Colorado State Planes- Southern Zone- Meter (EPSG #2774) |
| COHP-SF | HPGN Colorado State Planes- Southern Zone- US Foot (EPSG #2878) |
| CO-N | NAD27 Colorado State Planes- Northern Zone- US Foot (EPSG #26753) |
| CO-S | NAD27 Colorado State Planes- Southern Zone- US Foot (EPSG #26755) |
| CT | NAD27 Connecticut State Plane Zone- US Foot (EPSG #26756) |
| CT83 | NAD83 Connecticut State Plane Zone- Meter (EPSG #26956) |
| CT83F | NAD83 Connecticut State Plane Zone- US Foot (EPSG #2234) |
| CTHP | HPGN/HARN Connecticut State Plane Zone- Meter (EPSG #2775) |
| CTHPF | HPGN/HARN Connecticut State Plane Zone- US Foot (EPSG #2879) |
| DE | NAD27 Delaware State Planes- US Foot (EPSG #26757) |
| DE83 | NAD83 Delaware State Planes- Meter (EPSG #26957) |
| DE83F | NAD83 Delaware State Planes- US Foot (EPSG #2235) |
| DEHP | HPGN Delaware State Planes- Meter (EPSG #2776) |
| DEHPF | HPGN Delaware State Planes- US Foot (EPSG #2880) |
| FL83-E | NAD83 Florida State Planes- Eastern Zone- Meter (EPSG #26958) |

| | |
|---|---|
| FL83-EF | NAD83 Florida State Planes- Eastern Zone- US Foot (EPSG #2236) |
| FL83-N | NAD83 Florida State Planes- Northern Zone- Meter (EPSG #26960) |
| FL83-NF | NAD83 Florida State Planes- Northern Zone- US Foot (EPSG #2238) |
| FL83-W | NAD83 Florida State Planes- Western Zone- Meter (EPSG #26959) |
| FL83-WF | NAD83 Florida State Planes- Western Zone- US Foot (EPSG #2237) |
| FL-E | NAD27 Florida State Planes- Eastern Zone- US Foot (EPSG #26758) |
| FLHP-E | HPGN Florida State Planes- Eastern Zone- Meter (EPSG #2777) |
| FLHP-EF | HPGN Florida State Planes- Eastern Zone- US Foot (EPSG #2881) |
| FLHP-N | HPGN Florida State Planes- Northern Zone- Meter (EPSG #2779) |
| FLHP-NF | HPGN Florida State Planes- Northern Zone- US Foot (EPSG #2883) |
| FLHP-W | HPGN Florida State Planes- Western Zone- Meter (EPSG #2778) |
| FLHP-WF | HPGN Florida State Planes- Western Zone- US Foot (EPSG #2882) |
| FL-N | NAD27 Florida State Planes- Northern Zone- US Foot (EPSG #26760) |
| FL-W | NAD27 Florida State Planes- Western Zone- US Foot (EPSG #26759) |
| GA83-E | NAD83 Georgia State Planes- Eastern Zone- Meter (EPSG #26966) |
| GA83-EF | NAD83 Georgia State Planes- Eastern Zone- US Foot (EPSG #2239) |
| GA83-W | NAD83 Georgia State Planes- Western Zone- Meter (EPSG #26967) |
| GA83-WF | NAD83 Georgia State Planes- Western Zone- US Foot (EPSG #2240) |
| GA-E | NAD27 Georgia State Planes- Eastern Zone- US Foot (EPSG #26766) |
| GAHP-E | HARN (HPGN) Georgia State Planes- Eastern Zone- Meter (EPSG #2780) |
| GAHP-EF | HARN (HPGN) Georgia State Planes- Eastern Zone- US Foot (EPSG #2884) |
| GAHP-W | HARN (HPGN) Georgia State Planes- Western Zone- Meter (EPSG #2781) |
| GAHP-WF | HARN (HPGN) Georgia State Planes- Western Zone- US Foot (EPSG #2885) |
| GA-W | NAD27 Georgia State Planes- Western Zone- US Foot (EPSG #26767) |
| HI-1 | NAD27 Hawaii State Planes- Zone 1- US Foot |
| HI-2 | NAD27 Hawaii State Planes- Zone 2- US Foot |
| HI-3 | NAD27 Hawaii State Planes- Zone 3- US Foot |
| HI-4 | NAD27 Hawaii State Planes- Zone 4- US Foot |
| HI-5 | NAD27 Hawaii State Planes- Zone 5- US Foot |
| HI83-1 | NAD83 Hawaii State Planes- Zone 1- Meter (EPSG #26961) |
| HI83-1F | NAD83 Hawaii State Planes- Zone 1- US Foot |
| HI83-2 | NAD83 Hawaii State Planes- Zone 2- Meter (EPSG #26962) |
| HI83-2F | NAD83 Hawaii State Planes- Zone 2- US Foot |
| HI83-3 | NAD83 Hawaii State Planes- Zone 3- Meter (EPSG #26963) |
| HI83-3F | NAD83 Hawaii State Planes- Zone 3- US Foot |
| HI83-4 | NAD83 Hawaii State Planes- Zone 4- Meter (EPSG #26964) |
| HI83-4F | NAD83 Hawaii State Planes- Zone 4- US Foot |
| HI83-5 | NAD83 Hawaii State Planes- Zone 5- Meter (EPSG #26965) |
| HI83-5F | NAD83 Hawaii State Planes- Zone 5- US Foot |
| HIHP-1 | NAD83(HARN) / Hawaii zone 1 (EPSG #2782) |
| HIHP-2 | NAD83(HARN) / Hawaii zone 2 (EPSG #2783) |
| HIHP-3 | NAD83(HARN) / Hawaii zone 3 (EPSG #2784) |
| HIHP-4 | NAD83(HARN) / Hawaii zone 4 (EPSG #2785) |
| HIHP-5 | NAD83(HARN) / Hawaii zone 5 (EPSG #2786) |
| IA83-N | NAD83 Iowa State Planes- Northern Zone- Meter (EPSG #26975) |
| IA83-NF | NAD83 Iowa State Planes- Northern Zone- US Foot |
| IA83-S | NAD83 Iowa State Planes- Southern Zone- Meter (EPSG #26976) |
| IA83-SF | NAD83 Iowa State Planes- Southern Zone- US Foot |
| IAHP-N | HARN (HPGN) Iowa State Planes- Northern Zone- Meter (EPSG #2794) |
| IAHP-NF | HARN (HPGN) Iowa State Planes- Northern Zone- US Foot |
| IAHP-S | HARN (HPGN) Iowa State Planes- Southern Zone- Meter (EPSG #2795) |
| IAHP-SF | HARN (HPGN) Iowa State Planes- Southern Zone- US Foot |
| IA-N | NAD27 Iowa State Planes- Northern Zone- US Foot (EPSG #26775) |

| | |
|---|---|
| IA-S | NAD27 Iowa State Planes- Southern Zone- US Foot (EPSG #26776) |
| ID83-C | NAD83 Idaho State Planes- Central Zone- Meter (EPSG #26969) |
| ID83-CF | NAD83 Idaho State Planes- Central Zone- US Foot (EPSG #2242) |
| ID83-E | NAD83 Idaho State Planes- Eastern Zone- Meter (EPSG #26968) |
| ID83-EF | NAD83 Idaho State Planes- Eastern Zone- US Foot (EPSG #2241) |
| ID83-W | NAD83 Idaho State Planes- Western Zone- Meter (EPSG #26970) |
| ID83-WF | NAD83 Idaho State Planes- Western Zone- US Foot (EPSG #2243) |
| ID-C | NAD27 Idaho State Planes- Central Zone- US Foot (EPSG #26769) |
| ID-E | NAD27 Idaho State Planes- Eastern Zone- US Foot (EPSG #26768) |
| IDHP-C | HARN (HPGN) Idaho State Planes- Central Zone- Meter (EPSG #2788) |
| IDHP-CF | HARN (HPGN) Idaho State Planes- Central Zone- US Foot (EPSG #2887) |
| IDHP-E | HARN (HPGN) Idaho State Planes- Eastern Zone- Meter (EPSG #2787) |
| IDHP-EF | HARN (HPGN) Idaho State Planes- Eastern Zone- US Foot (EPSG #2886) |
| IDHP-W | HARN (HPGN) Idaho State Planes- Western Zone- Meter (EPSG #2789) |
| IDHP-WF | HARN (HPGN) Idaho State Planes- Western Zone- US Foot (EPSG #2888) |
| ID-W | NAD27 Idaho State Planes- Western Zone- US Foot (EPSG #26770) |
| IL83-E | NAD83 Illinois State Planes- Eastern Zone- Meter (EPSG #26971) |
| IL83-EF | NAD83 Illinois State Planes- Eastern Zone- US Foot |
| IL83-W | NAD83 Illinois State Planes- Western Zone- Meter (EPSG #26972) |
| IL83-WF | NAD83 Illinois State Planes- Western Zone- US Foot |
| IL-E | NAD27 Illinois State Planes- Eastern Zone- US Foot (EPSG #26771) |
| ILHP-E | HARN (HPGN) Illinois State Planes- Eastern Zone- Meter (EPSG #2790) |
| ILHP-EF | HARN (HPGN) Illinois State Planes- Eastern Zone- US Foot |
| ILHP-W | HARN (HPGN) Illinois State Planes- Western Zone- Meter (EPSG #2791) |
| ILHP-WF | HARN (HPGN) Illinois State Planes- Western Zone- US Foot |
| ILLIMAP | NAD27 Illinois Survey Mapping System- US Foot |
| IL-W | NAD27 Illinois State Planes- Western Zone- US Foot (EPSG #26772) |
| IN83-E | NAD83 Indiana State Planes- Eastern Zone- Meter (EPSG #26973) |
| IN83-EF | NAD83 Indiana State Planes- Eastern Zone- US Foot (EPSG #2244) |
| IN83-W | NAD83 Indiana State Planes- Western Zone- Meter (EPSG #26974) |
| IN83-WF | NAD83 Indiana State Planes- Western Zone- US Foot (EPSG #2245) |
| IN-E | NAD27 Indiana State Planes- Eastern Zone- US Foot (EPSG #26773) |
| INHP-E | HARN (HPGN) Indiana State Planes- Eastern Zone- Meter (EPSG #2792) |
| INHP-EF | HARN (HPGN) Indiana State Planes- Eastern Zone- US Foot (EPSG #2889) |
| INHP-W | HARN (HPGN) Indiana State Planes- Western Zone- Meter (EPSG #2793) |
| INHP-WF | HARN (HPGN) Indiana State Planes- Western Zone- US Foot (EPSG #2890) |
| IN-W | NAD27 Indiana State Planes- Western Zone- US Foot (EPSG #26774) |
| KS83-N | NAD83 Kansas State Planes- Northern Zone- Meter (EPSG #26977) |
| KS83-NF | NAD83 Kansas State Planes- Northern Zone- US Foot |
| KS83-S | NAD83 Kansas State Planes- Southern Zone- Meter (EPSG #26978) |
| KS83-SF | NAD83 Kansas State Planes- Southern Zone- US Foot |
| KSHP-N | HARN (HPGN) Kansas State Planes- Northern Zone- Meter (EPSG #2796) |
| KSHP-NF | HARN (HPGN) Kansas State Planes- Northern Zone- US Foot |
| KSHP-S | HARN (HPGN) Kansas State Planes- Southern Zone- Meter (EPSG #2797) |
| KSHP-SF | HARN (HPGN) Kansas State Planes- Southern Zone- US Foot |
| KS-N | NAD27 Kansas State Planes- Northern Zone- US Foot (EPSG #26777) |
| KS-S | NAD27 Kansas State Planes- Southern Zone- US Foot (EPSG #26778) |
| KY83-N | NAD83 Kentucky State Planes- Northern Zone- Meter (EPSG #26979) |
| KY83-NF | NAD83 Kentucky State Planes- Northern Zone- US Foot (EPSG #2246) |
| KY83-S | NAD83 Kentucky State Planes- Southern Zone- Meter (EPSG #26980) |
| KY83-SF | NAD83 Kentucky State Planes- Southern Zone- US Foot (EPSG #2247) |
| KYHP-N | HPGN Kentucky State Planes- Northern Zone- Meter (EPSG #2798) |
| KYHP-NF | HPGN Kentucky State Planes- Northern Zone- US Foot (EPSG #2891) |

| | |
|---|---|
| KYHP-S | HPGN Kentucky State Planes- Southern Zone- Meter (EPSG #2799) |
| KYHP-SF | HPGN Kentucky State Planes- Southern Zone- US Foot (EPSG #2892) |
| KY-N | NAD27 Kentucky State Planes- Northern Zone- US Foot (EPSG #26779) |
| KY-S | NAD27 Kentucky State Planes- Southern Zone- US Foot (EPSG #26780) |
| LA83-N | NAD83 Louisiana State Planes- Northern Zone- Meter (EPSG #26981) |
| LA83-NF | NAD83 Louisiana State Planes- Northern Zone- US Foot |
| LA83-O | NAD83 Louisiana State Planes- Offshore- Meter (EPSG #32199) |
| LA83-OF | NAD83 Louisiana State Planes- Offshore- US Foot |
| LA83-S | NAD83 Louisiana State Planes- Southern Zone- Meter (EPSG #26982) |
| LA83-SF | NAD83 Louisiana State Planes- Southern Zone- US Foot |
| LAHP-N | HPGN Louisiana State Planes- Northern Zone- Meter (EPSG #2800) |
| LAHP-NF | HPGN Louisiana State Planes- Northern Zone- US Foot |
| LAHP-O | HPGN Louisiana State Planes- Offshore- Meter |
| LAHP-OF | HPGN Louisiana State Planes- Offshore- US Foot |
| LAHP-S | HPGN Louisiana State Planes- Southern Zone- Meter (EPSG #2801) |
| LAHP-SF | HPGN Louisiana State Planes- Southern Zone- US Foot |
| LA-N | NAD27 Louisiana State Planes- Northern Zone- US Foot (EPSG #26781) |
| LA-O | NAD27 Louisiana State Planes- Offshore- US Foot (EPSG #32099) |
| LA-S | NAD27 Louisiana State Planes- Southern Zone- US Foot (EPSG #26782) |
| LL-83 | NAD83 Latitude/Longitude- Degrees |
| LL84 | WGS84 Lat/Long- Degrees- -180 through +180 (EPSG #4326) |
| MA | NAD27 Massachusetts State Planes- Mainland Zone- US Foot (EPSG #26786) |
| MA27-IS | NAD27 Massachusetts State Planes- Island Zone- US Foot (EPSG #26787) |
| MA83 | NAD83 Massachusetts State Planes- Mainland Zone- Meter (EPSG #26986) |
| MA83F | NAD83 Massachusetts State Planes- Mainland Zone- US Foot (EPSG #2249) |
| MA83-IS | NAD83 Massachusetts State Planes- Island Zone- Meter (EPSG #26987) |
| MA83-ISF | NAD83 Massachusetts State Planes- Island Zone- US Foot (EPSG #2250) |
| MAHP | HPGN/HARN Massachusetts State Planes- Mainland Zone- Meter (EPSG #2805) |
| MAHPF | HPGN/HARN Massachusetts State Planes- Mainland Zone- US Foot (EPSG #2894) |
| MAHP-IS | HPGN/HARN Massachusetts State Planes- Island Zone- Meter (EPSG #2806) |
| MAHP-ISF | HPGN/HARN Massachusetts State Planes- Island Zone- US Foot (EPSG #2895) |
| MD | NAD27 Maryland State Plane Zone- US Foot (EPSG #26785) |
| MD83 | NAD83 Maryland State Plane Zone- Meter (EPSG #26985) |
| MD83F | NAD83 Maryland State Plane Zone- US Foot (EPSG #2248) |
| MDHP | HPGN Maryland State Plane Zone- Meter (EPSG #2804) |
| MDHPF | HPGN Maryland State Plane Zone- US Foot (EPSG #2893) |
| ME83-E | NAD83 Maine State Planes- Eastern Zone- Meter (EPSG #26983) |
| ME83-EF | NAD83 Maine State Planes- Eastern Zone- US Foot |
| ME83-W | NAD83 Maine State Planes- Western Zone- Meter (EPSG #26984) |
| ME83-WF | NAD83 Maine State Planes- Western Zone- US Foot |
| ME-E | NAD27 Maine State Planes- Eastern Zone- US Foot (EPSG #26783) |
| MEHP-E | HPGN Maine State Planes- Eastern Zone- Meter (EPSG #2802) |
| MEHP-EF | HPGN Maine State Planes- Eastern Zone- US Foot |
| MEHP-W | HPGN Maine State Planes- Western Zone- Meter (EPSG #2803) |
| MEHP-WF | HPGN Maine State Planes- Western Zone- US Foot |
| ME-W | NAD27 Maine State Planes- Western Zone- US Foot (EPSG #26784) |
| MI27-C | NAD27 Michigan State Planes- Central Zone- US Foot (EPSG #26812) |
| MI27-N | NAD27 Michigan State Planes- Northern Zone- US Foot (EPSG #26811) |
| MI27-S | NAD27 Michigan State Planes- Southern Zone- US Foot (EPSG #26813) |
| MI83-C | NAD83 Michigan State Planes- Central Zone- Meter (EPSG #26989) |
| MI83-CF | NAD83 Michigan State Planes- Central Zone- US Foot |
| MI83-CIF | NAD83 Michigan State Planes- Central Zone- Intnl Foot (EPSG #2252) |
| MI83-N | NAD83 Michigan State Planes- Northern Zone- Meter (EPSG #26988) |

| | |
|---|---|
| MI83-NF | NAD83 Michigan State Planes- Northern Zone- US Foot |
| MI83-NIF | NAD83 Michigan State Planes- Northern Zone- Intnl Foot (EPSG #2251) |
| MI83-S | NAD83 Michigan State Planes- Southern Zone- Meter (EPSG #26990) |
| MI83-SF | NAD83 Michigan State Planes- Southern Zone- US Foot |
| MI83-SIF | NAD83 Michigan State Planes- Southern Zone- Intnl Foot (EPSG #2253) |
| MIHP-C | HARN (HPGN) Michigan State Planes- Central Zone- Meter (EPSG #2808) |
| MIHP-CF | HARN (HPGN) Michigan State Planes- Central Zone- US Foot |
| MIHP-CIF | HARN (HPGN) Michigan State Planes- Central Zone- Intnl Foot (EPSG #2897) |
| MIHP-N | HARN (HPGN) Michigan State Planes- Northern Zone- Meter (EPSG #2807) |
| MIHP-NF | HARN (HPGN) Michigan State Planes- Northern Zone- US Foot |
| MIHP-NIF | HARN (HPGN) Michigan State Planes- Northern Zone- Intnl Foot (EPSG #2896) |
| MIHP-S | HARN (HPGN) Michigan State Planes- Southern Zone- Meter (EPSG #2809) |
| MIHP-SF | HARN (HPGN) Michigan State Planes- Southern Zone- US Foot |
| MIHP-SIF | HARN (HPGN) Michigan State Planes- Southern Zone- Intnl Foot (EPSG #2898) |
| MN83-C | NAD83 Minnesota State Planes- Central Zone- Meter (EPSG #26992) |
| MN83-CF | NAD83 Minnesota State Planes- Central Zone- US Foot |
| MN83-N | NAD83 Minnesota State Planes- Northern Zone- Meter (EPSG #26991) |
| MN83-NF | NAD83 Minnesota State Planes- Northern Zone- US Foot |
| MN83-S | NAD83 Minnesota State Planes- South Zone- Meter (EPSG #26993) |
| MN83-SF | NAD83 Minnesota State Planes- South Zone- US Foot |
| MN-C | NAD27 Minnesota State Planes- Central Zone- US Foot (EPSG #26792) |
| MNHP-C | HARN (HPGN) Minnesota State Planes- Central Zone- Meter (EPSG #2811) |
| MNHP-CF | HARN (HPGN) Minnesota State Planes- Central Zone- US Foot |
| MNHP-N | HARN (HPGN) Minnesota State Planes- Northern Zone- Meter (EPSG #2810) |
| MNHP-NF | HARN (HPGN) Minnesota State Planes- Northern Zone- US Foot |
| MNHP-S | HARN (HPGN) Minnesota State Planes- South Zone- Meter (EPSG #2812) |
| MNHP-SF | HARN (HPGN) Minnesota State Planes- South Zone- US Foot |
| MN-N | NAD27 Minnesota State Planes- Northern Zone- US Foot (EPSG #26791) |
| MN-S | NAD27 Minnesota State Planes- South- US Foot (EPSG #26793) |
| MO83-C | NAD83 Missouri State Planes- Central Zone- Meter (EPSG #26997) |
| MO83-CF | NAD83 Missouri State Planes- Central Zone- US Foot |
| MO83-E | NAD83 Missouri State Planes- Eastern Zone- Meter (EPSG #26996) |
| MO83-EF | NAD83 Missouri State Planes- Eastern Zone- US Foot |
| MO83-W | NAD83 Missouri State Planes- Western Zone- Meter (EPSG #26998) |
| MO83-WF | NAD83 Missouri State Planes- Western Zone- US Foot |
| MO-C | NAD27 Missouri State Planes- Central Zone- US Foot (EPSG #26797) |
| MO-E | NAD27 Missouri State Planes- Eastern Zone- US Foot (EPSG #26796) |
| MOHP-C | HARN (HPGN) Missouri State Planes- Central Zone- Meter (EPSG #2816) |
| MOHP-CF | HARN (HPGN) Missouri State Planes- Central Zone- US Foot |
| MOHP-E | HARN (HPGN) Missouri State Planes- Eastern Zone- Meter (EPSG #2815) |
| MOHP-EF | HARN (HPGN) Missouri State Planes- Eastern Zone- US Foot |
| MOHP-W | HARN (HPGN) Missouri State Planes- Western Zone- Meter (EPSG #2817) |
| MOHP-WF | HARN (HPGN) Missouri State Planes- Western Zone- US Foot |
| MO-W | NAD27 Missouri State Planes- Western Zone- US Foot (EPSG #26798) |
| MS83-E | NAD83 Mississippi State Planes- Eastern Zone- Meter (EPSG #26994) |
| MS83-EF | NAD83 Mississippi State Planes- Eastern Zone- US Foot (EPSG #2254) |
| MS83-TM | NAD83 Mississippi Transverse Mercator Projection (meters) |
| MS83-W | NAD83 Mississippi State Planes- Western Zone- Meter (EPSG #26995) |
| MS83-WF | NAD83 Mississippi State Planes- Western Zone- US Foot (EPSG #2255) |
| MS-E | NAD27 Mississippi State Planes- Eastern Zone- US Foot (EPSG #26794) |
| MSHP-E | HPGN Mississippi State Planes- Eastern Zone- Meter (EPSG #2813) |
| MSHP-EF | HPGN Mississippi State Planes- Eastern Zone- US Foot (EPSG #2899) |
| MSHP-W | HPGN Mississippi State Planes- Western Zone- Meter (EPSG #2814) |

| | |
|---|---|
| MSHP-WF | HPGN Mississippi State Planes- Western Zone- US Foot (EPSG #2900) |
| MS-W | NAD27 Mississippi State Planes- Western Zone- US Foot (EPSG #26795) |
| MT83 | NAD83 Montana State Plane Zone- Meter (EPSG #32100) |
| MT83F | NAD83 Montana State Plane Zone- US Foot |
| MT83IF | NAD83 Montana State Planes- Intnl Foot (EPSG #2256) |
| MT-C | NAD27 Montana State Planes- Central Zone- US Foot (EPSG #32002) |
| MTHP | HPGN Montana State Plane Zone- Meter (EPSG #2818) |
| MTHPF | HPGN Montana State Plane Zone- US Foot |
| MTHPIF | HPGN Montana State Planes- Intnl Foot (EPSG #2901) |
| MT-N | NAD27 Montana State Planes- Northern Zone- US Foot (EPSG #32001) |
| MT-S | NAD27 Montana State Planes- Southern Zone- US Foot (EPSG #32003) |
| NB83 | NAD83 Nebraska State Planes- Meter (EPSG #32104) |
| NB83F | NAD83 Nebraska State Planes- US Foot |
| NBHP | HPGN/HARN Nebraska State Planes- Meter (EPSG #2819) |
| NBHPF | HPGN/HARN Nebraska State Planes- US Foot |
| NB-N | NAD27 Nebraska State Planes- Northern Zone- US Foot (EPSG #32005) |
| NB-S | NAD27 Nebraska State Planes- Southern Zone- US Foot (EPSG #32006) |
| NC | NAD27 North Carolina State Planes- US Foot (EPSG #32019) |
| NC83 | NAD83 North Carolina State Planes- Meter (EPSG #32119) |
| NC83F | NAD83 North Carolina State Planes- US Foot (EPSG #2264) |
| NCHP | HARN (HPGN) North Carolina State Planes- Meter |
| NCHPF | HARN (HPGN) North Carolina State Planes- US Foot |
| ND83-N | NAD83 North Dakota State Planes- Northern Zone- Meter (EPSG #32120) |
| ND83-NF | NAD83 North Dakota State Planes- Northern Zone- US Foot |
| ND83-S | NAD83 North Dakota State Planes- Southern Zone- Meter (EPSG #32121) |
| ND83-SF | NAD83 North Dakota State Planes- Southern Zone- US Foot |
| NDHP-N | HARN (HPGN) North Dakota State Planes- Northern Zone- Meter (EPSG #2832) |
| NDHP-NF | HARN (HPGN) North Dakota State Planes- Northern Zone- US Foot |
| NDHP-S | HARN (HPGN) North Dakota State Planes- Southern Zone- Meter (EPSG #2833) |
| NDHP-SF | HARN (HPGN) North Dakota State Planes- Southern Zone- US Foot |
| ND-N | NAD27 North Dakota State Planes- Northern Zone- US Foot (EPSG #32020) |
| ND-S | NAD27 North Dakota State Planes- Southern Zone- US Foot (EPSG #32021) |
| NE83 | NAD83 Nebraska State Planes- Meter |
| NE83F | NAD83 Nebraska State Planes- US Foot |
| NE-N | NAD27 Nebraska State Planes- Northern Zone- US Foot |
| NE-S | NAD27 Nebraska State Planes- Southern Zone- US Foot |
| NH | NAD27 New Hampshire State Planes- US Foot (EPSG #32010) |
| NH83 | NAD83 New Hampshire State Planes- Meter (EPSG #32110) |
| NH83F | NAD83 New Hampshire State Planes- US Foot |
| NHHP | HPGN/HARN New Hampshire State Planes- Meter (EPSG #2823) |
| NHHPF | HPGN/HARN New Hampshire State Planes- US Foot |
| NJ | NAD27 New Jersey State Planes- US Foot (EPSG #32011) |
| NJ83 | NAD83 New Jersey State Planes- Meter (EPSG #32111) |
| NJ83F | NAD83 New Jersey State Planes- US Foot |
| NJHP | HARN (HPGN) New Jersey State Planes- Meter (EPSG #2824) |
| NJHPF | HARN (HPGN) New Jersey State Planes- US Foot |
| NM83-C | NAD83 New Mexico State Planes- Central Zone- Meter (EPSG #32113) |
| NM83-CF | NAD83 New Mexico State Planes- Central Zone- US Foot (EPSG #2258) |
| NM83-E | NAD83 New Mexico State Planes- Eastern Zone- Meter (EPSG #32112) |
| NM83-EF | NAD83 New Mexico State Planes- Eastern Zone- US Foot (EPSG #2257) |
| NM83-W | NAD83 New Mexico State Planes- Western Zone- Meter (EPSG #32114) |
| NM83-WF | NAD83 New Mexico State Planes- Western Zone- US Foot (EPSG #2259) |
| NM-C | NAD27 New Mexico State Planes- Central Zone- US Foot (EPSG #32013) |

| | |
|---|---|
| NM-E | NAD27 New Mexico State Planes- Eastern Zone- US Foot (EPSG #32012) |
| NMHP-C | HPGN New Mexico State Planes- Central Zone- Meter (EPSG #2826) |
| NMHP-CF | HPGN New Mexico State Planes- Central Zone- US Foot (EPSG #2903) |
| NMHP-E | HPGN New Mexico State Planes- Eastern Zone- Meter (EPSG #2825) |
| NMHP-EF | HPGN New Mexico State Planes- Eastern Zone- US Foot (EPSG #2902) |
| NMHP-W | HPGN New Mexico State Planes- Western Zone- Meter (EPSG #2827) |
| NMHP-WF | HPGN New Mexico State Planes- Western Zone- US Foot (EPSG #2904) |
| NM-W | NAD27 New Mexico State Planes- Western Zone- US Foot (EPSG #32014) |
| NV83-C | NAD83 Nevada State Planes- Central Zone- Meter (EPSG #32108) |
| NV83-CF | NAD83 Nevada State Planes- Central Zone- US Foot |
| NV83-E | NAD83 Nevada State Planes- Eastern Zone- Meter (EPSG #32107) |
| NV83-EF | NAD83 Nevada State Planes- Eastern Zone- US Foot |
| NV83-W | NAD83 Nevada State Planes- Western Zone- Meter (EPSG #32109) |
| NV83-WF | NAD83 Nevada State Planes- Western Zone- US Foot |
| NV-C | NAD27 Nevada State Planes- Central Zone- US Foot (EPSG #32008) |
| NV-E | NAD27 Nevada State Planes- Eastern Zone- US Foot (EPSG #32007) |
| NVHP-C | HARN (HPGN) Nevada State Planes- Central Zone- Meter (EPSG #2821) |
| NVHP-CF | HARN (HPGN) Nevada State Planes- Central Zone- US Foot |
| NVHP-E | HARN (HPGN) Nevada State Planes- Eastern Zone- Meter (EPSG #2820) |
| NVHP-EF | HARN (HPGN) Nevada State Planes- Eastern Zone- US Foot |
| NVHP-W | HARN (HPGN) Nevada State Planes- Western Zone- Meter (EPSG #2822) |
| NVHP-WF | HARN (HPGN) Nevada State Planes- Western Zone- US Foot |
| NV-W | NAD27 Nevada State Planes- Western Zone- US Foot (EPSG #32009) |
| NY83-C | NAD83 New York State Planes- Central Zone- Meter (EPSG #32116) |
| NY83-CF | NAD83 New York State Planes- Central Zone- US Foot (EPSG #2261) |
| NY83-E | NAD83 New York State Planes- Eastern Zone- Meter (EPSG #32115) |
| NY83-EF | NAD83 New York State Planes- Eastern Zone- US Foot (EPSG #2260) |
| NY83-LI | NAD83 New York State Planes- Long Island- Meter (EPSG #32118) |
| NY83-LIF | NAD83 New York State Planes- Long Island- US Foot (EPSG #2263) |
| NY83-W | NAD83 New York State Planes- Western Zone- Meter (EPSG #32117) |
| NY83-WF | NAD83 New York State Planes- Western Zone- US Foot (EPSG #2262) |
| NY-C | NAD27 New York State Planes- Central Zone- US Foot (EPSG #32016) |
| NY-E | NAD27 New York State Planes- Eastern Zone- US Foot (EPSG #32015) |
| NYHP-C | HARN (HPGN) New York State Planes- Central Zone- Meter (EPSG #2829) |
| NYHP-CF | HARN (HPGN) New York State Planes- Central Zone- US Foot (EPSG #2906) |
| NYHP-E | HARN (HPGN) New York State Planes- Eastern Zone- Meter (EPSG #2828) |
| NYHP-EF | HARN (HPGN) New York State Planes- Eastern Zone- US Foot (EPSG #2905) |
| NYHP-LI | HARN (HPGN) New York State Planes- Long Island- Meter (EPSG #2831) |
| NYHP-LIF | HARN (HPGN) New York State Planes- Long Island- US Foot (EPSG #2908) |
| NYHP-W | HARN (HPGN) New York State Planes- Western Zone- Meter (EPSG #2830) |
| NYHP-WF | HARN (HPGN) New York State Planes- Western Zone- US Foot (EPSG #2907) |
| NY-LI | NAD27 New York State Planes- Long Island- US Foot (EPSG #32018) |
| NY-W | NAD27 New York State Planes- Western Zone- US Foot (EPSG #32017) |
| OH83-N | NAD83 Ohio State Planes- Northern Zone- Meter (EPSG #32122) |
| OH83-NF | NAD83 Ohio State Planes- Northern Zone- US Foot |
| OH83-S | NAD83 Ohio State Planes- Southern Zone- Meter (EPSG #32123) |
| OH83-SF | NAD83 Ohio State Planes- Southern Zone- US Foot |
| OHHP-N | HARN (HPGN) Ohio State Planes- Northern Zone- Meter (EPSG #2834) |
| OHHP-NF | HARN (HPGN) Ohio State Planes- Northern Zone- US Foot |
| OHHP-S | HARN (HPGN) Ohio State Planes- Southern Zone- Meter (EPSG #2835) |
| OHHP-SF | HARN (HPGN) Ohio State Planes- Southern Zone- US Foot |
| OH-N | NAD27 Ohio State Planes- Northern Zone- US Foot (EPSG #32022) |
| OH-S | NAD27 Ohio State Planes- Southern Zone- US Foot (EPSG #32023) |

| | |
|---|---|
| OK83-N | NAD83 Oklahoma State Planes- Northern Zone- Meter (EPSG #32124) |
| OK83-NF | NAD83 Oklahoma State Planes- Northern Zone- US Foot (EPSG #2267) |
| OK83-S | NAD83 Oklahoma State Planes- Southern Zone- Meter (EPSG #32125) |
| OK83-SF | NAD83 Oklahoma State Planes- Southern Zone- US Foot (EPSG #2268) |
| OKHP-N | HPGN Oklahoma State Planes- Northern Zone- Meter (EPSG #2836) |
| OKHP-NF | HPGN Oklahoma State Planes- Northern Zone- US Foot (EPSG #2911) |
| OKHP-S | HPGN Oklahoma State Planes- Southern Zone- Meter (EPSG #2837) |
| OKHP-SF | HPGN Oklahoma State Planes- Southern Zone- US Foot (EPSG #2912) |
| OK-N | NAD27 Oklahoma State Planes- Northern Zone- US Foot (EPSG #32024) |
| OK-S | NAD27 Oklahoma State Planes- Southern Zone- US Foot (EPSG #32025) |
| OR83-N | NAD83 Oregon State Planes- Northern Zone- Meter (EPSG #32126) |
| OR83-NF | NAD83 Oregon State Planes- Northern Zone- US Foot |
| OR83-NIF | NAD83 Oregon State Planes- Northern Zone- Intnl Foot (EPSG #2269) |
| OR83-S | NAD83 Oregon State Planes- Southern Zone- Meter (EPSG #32127) |
| OR83-SF | NAD83 Oregon State Planes- Southern Zone- US Foot |
| OR83-SIF | NAD83 Oregon State Planes- Southern Zone- Intnl Foot (EPSG #2270) |
| OR83-SSCGIS | NAD83 Oregon GIS- International Foot (EPSG #2992) |
| ORHP-N | HPGN Oregon State Planes- Northern Zone- Meter (EPSG #2838) |
| ORHP-NF | HPGN Oregon State Planes- Northern Zone- US Foot |
| ORHP-NIF | HPGN Oregon State Planes- Northern Zone- Intnl Foot (EPSG #2913) |
| ORHP-S | HPGN Oregon State Planes- Southern Zone- Meter (EPSG #2839) |
| ORHP-SF | HPGN Oregon State Planes- Southern Zone- US Foot |
| ORHP-SIF | HPGN Oregon State Planes- Southern Zone- Intnl Foot (EPSG #2914) |
| OR-N | NAD27 Oregon State Planes- Northern Zone- US Foot (EPSG #32026) |
| OR-S | NAD27 Oregon State Planes- Southern Zone- US Foot (EPSG #32027) |
| PA83-N | NAD83 Pennsylvania State Planes- Northern Zone- Meter (EPSG #32128) |
| PA83-NF | NAD83 Pennsylvania State Planes- Northern Zone- US Foot (EPSG #2271) |
| PA83-S | NAD83 Pennsylvania State Planes- Southern Zone- Meter (EPSG #32129) |
| PA83-SF | NAD83 Pennsylvania State Planes- Southern Zone- US Foot (EPSG #2272) |
| PAHP-N | HARN (HPGN) Pennsylvania State Planes- Northern Zone- Meter |
| PAHP-NF | HARN (HPGN) Pennsylvania State Planes- Northern Zone- US Foot |
| PAHP-S | HARN (HPGN) Pennsylvania State Planes- Southern Zone- Meter |
| PAHP-SF | HARN (HPGN) Pennsylvania State Planes- Southern Zone- US Foot |
| PA-N | NAD27 Pennsylvania State Planes- Northern Zone- US Foot (EPSG #32028) |
| PA-S | NAD27 Pennsylvania State Planes- Southern Zone- US Foot (EPSG #32029) |
| PR-1 | NAD27 Puerto Rico and Virgin Islands- Zone 1- US Foot |
| PR-2 | NAD27 Puerto Rico- St Croix Virgin Island- Zone 2- US Foot |
| PR83 | NAD83 Puerto Rico and Virgin Islands- Meter (EPSG #32161) |
| PR83F | NAD83 Puerto Rico and Virgin Islands- US Foot |
| PRHP | HPGN Puerto Rico and Virgin Islands- Meter (EPSG #2866) |
| PRHPF | HPGN Puerto Rico and Virgin Islands- US Foot |
| RI | NAD27 Rhode Island State Planes- US Foot (EPSG #32030) |
| RI83 | NAD83 Rhode Island State Planes- Meter (EPSG #32130) |
| RI83F | NAD83 Rhode Island State Planes- US Foot |
| RIHP | HPGN/HARN Rhode Island State Planes- Meter (EPSG #2840) |
| RIHPF | HPGN/HARN Rhode Island State Planes- US Foot |
| SC83 | NAD83 South Carolina State Planes- Meter (EPSG #32133) |
| SC83F | NAD83 South Carolina State Planes- US Foot |
| SC83IF | NAD83 South Carolina State Planes- Intnl Foot (EPSG #2273) |
| SCHP | HARN (HPGN) South Carolina State Planes- Meter |
| SCHPF | HARN (HPGN) South Carolina State Planes- US Foot |
| SCHPIF | HARN (HPGN) South Carolina State Planes- Intnl Foot |
| SC-N | NAD27 South Carolina State Planes- Northern Zone- US Foot (EPSG #32031) |

| | |
|---|---|
| SC-S | NAD27 South Carolina State Planes- Southern Zone- US Foot (EPSG #32033) |
| SD83-N | NAD83 South Dakota State Planes- Northern Zone- Meter (EPSG #32134) |
| SD83-NF | NAD83 South Dakota State Planes- Northern Zone- US Foot |
| SD83-S | NAD83 South Dakota State Planes- Southern Zone- Meter (EPSG #32135) |
| SD83-SF | NAD83 South Dakota State Planes- Southern Zone- US Foot |
| SDHP-N | HARN (HPGN) South Dakota State Planes- Northern Zone- Meter (EPSG #2841) |
| SDHP-NF | HARN (HPGN) South Dakota State Planes- Northern Zone- US Foot |
| SDHP-S | HARN (HPGN) South Dakota State Planes- Southern Zone- Meter (EPSG #2842) |
| SDHP-SF | HARN (HPGN) South Dakota State Planes- Southern Zone- US Foot |
| SD-N | NAD27 South Dakota State Planes- Northern Zone- US Foot (EPSG #32034) |
| SD-S | NAD27 South Dakota State Planes- Southern Zone- US Foot (EPSG #32035) |
| TN | NAD27 Tennessee State Plane Zone- US Foot (EPSG #2204) |
| TN83 | NAD83 Tennessee State Plane Zone- Meter (EPSG #32136) |
| TN83F | NAD83 Tennessee State Plane Zone- US Foot (EPSG #2274) |
| TNHP | HPGN Tennessee State Plane Zone- Meter (EPSG #2843) |
| TNHPF | HPGN Tennessee State Plane Zone- US Foot (EPSG #2915) |
| TX83-C | NAD83 Texas State Planes- Central Zone- Meter (EPSG #32139) |
| TX83-CF | NAD83 Texas State Planes- Central Zone- US Foot (EPSG #2277) |
| TX83-N | NAD83 Texas State Planes- Northern Zone- Meter (EPSG #32137) |
| TX83-NC | NAD83 Texas State Planes- North Central Zone- Meter (EPSG #32138) |
| TX83-NCF | NAD83 Texas State Planes- North Central Zone- US Foot (EPSG #2276) |
| TX83-NF | NAD83 Texas State Planes- Northern Zone- US Foot (EPSG #2275) |
| TX83-S | NAD83 Texas State Planes- Southern Zone- Meter (EPSG #32141) |
| TX83-SC | NAD83 Texas State Planes- South Central Zone- Meter (EPSG #32140) |
| TX83-SCF | NAD83 Texas State Planes- South Central Zone- US Foot (EPSG #2278) |
| TX83-SF | NAD83 Texas State Planes- Southern Zone- US Foot (EPSG #2279) |
| TX-C | NAD27 Texas State Planes- Central Zone- US Foot (EPSG #32039) |
| TXHP-C | HPGN/HARN Texas State Planes- Central Zone- Meter (EPSG #2846) |
| TXHP-CF | HPGN/HARN Texas State Planes- Central Zone- US Foot (EPSG #2918) |
| TXHP-N | HPGN/HARN Texas State Planes- Northern Zone- Meter (EPSG #2844) |
| TXHP-NC | HPGN/HARN Texas State Planes- North Central Zone- Meter (EPSG #2845) |
| TXHP-NCF | HPGN/HARN Texas State Planes- North Central Zone- US Foot (EPSG #2917) |
| TXHP-NF | HPGN/HARN Texas State Planes- Northern Zone- US Foot (EPSG #2916) |
| TXHP-S | HPGN/HARN Texas State Planes- Southern Zone- Meter (EPSG #2848) |
| TXHP-SC | HPGN/HARN Texas State Planes- South Central Zone- Meter (EPSG #2847) |
| TXHP-SCF | HPGN/HARN Texas State Planes- South Central Zone- US Foot (EPSG #2919) |
| TXHP-SF | HPGN/HARN Texas State Planes- Southern Zone- US Foot (EPSG #2920) |
| TX-N | NAD27 Texas State Planes- Northern Zone- US Foot (EPSG #32037) |
| TX-NC | NAD27 Texas State Planes- North Central Zone- US Foot (EPSG #32038) |
| TX-S | NAD27 Texas State Planes- Southern Zone- US Foot (EPSG #32041) |
| TX-SC | NAD27 Texas State Planes- South Central Zone- US Foot (EPSG #32040) |
| UT83-C | NAD83 Utah State Planes- Central Zone- Meter (EPSG #32143) |
| UT83-CF | NAD83 Utah State Planes- Central Zone- US Foot |
| UT83-CIF | NAD83 Utah State Planes- Central Zone- Intnl Foot (EPSG #2281) |
| UT83-N | NAD83 Utah State Planes- Northern Zone- Meter (EPSG #32142) |
| UT83-NF | NAD83 Utah State Planes- Northern Zone- US Foot |
| UT83-NIF | NAD83 Utah State Planes- Northern Zone- Intnl Foot (EPSG #2280) |
| UT83-S | NAD83 Utah State Planes- Southern Zone- Meter (EPSG #32144) |
| UT83-SF | NAD83 Utah State Planes- Southern Zone- US Foot |
| UT83-SIF | NAD83 Utah State Planes- Southern Zone- Intnl Foot (EPSG #2282) |
| UT-C | NAD27 Utah State Planes- Central Zone- US Foot (EPSG #32043) |
| UTHP-C | HARN (HPGN) Utah State Planes- Central Zone- Meter (EPSG #2850) |
| UTHP-CF | HARN (HPGN) Utah State Planes- Central Zone- US Foot |

| | |
|---|---|
| UTHP-CIF | HARN (HPGN) Utah State Planes- Central Zone- Intnl Foot (EPSG #2922) |
| UTHP-N | HARN (HPGN) Utah State Planes- Northern Zone- Meter (EPSG #2849) |
| UTHP-NF | HARN (HPGN) Utah State Planes- Northern Zone- US Foot |
| UTHP-NIF | HARN (HPGN) Utah State Planes- Northern Zone- Intnl Foot (EPSG #2921) |
| UTHP-S | HARN (HPGN) Utah State Planes- Southern Zone- Meter (EPSG #2851) |
| UTHP-SF | HARN (HPGN) Utah State Planes- Southern Zone- US Foot |
| UTHP-SIF | HARN (HPGN) Utah State Planes- Southern Zone- Intnl Foot (EPSG #2923) |
| UTM27-1 | NAD27 UTM- Zone 1 North- Meter |
| UTM27-10 | NAD27 UTM- Zone 10 North- Meter (EPSG #26710) |
| UTM27-10F | NAD27 UTM- Zone 10 North- US Foot |
| UTM27-10IF | NAD27 UTM- Zone 10 North- Intnl Foot |
| UTM27-11 | NAD27 UTM- Zone 11 North- Meter (EPSG #26711) |
| UTM27-11F | NAD27 UTM- Zone 11 North- US Foot |
| UTM27-11IF | NAD27 UTM- Zone 11 North- Intnl Foot |
| UTM27-12 | NAD27 UTM- Zone 12 North- Meter (EPSG #26712) |
| UTM27-12F | NAD27 UTM- Zone 12 North- US Foot |
| UTM27-12IF | NAD27 UTM- Zone 12 North- Intnl Foot |
| UTM27-13 | NAD27 UTM- Zone 13 North- Meter (EPSG #26713) |
| UTM27-13F | NAD27 UTM- Zone 13 North- US Foot |
| UTM27-13IF | NAD27 UTM- Zone 13 North- Intnl Foot |
| UTM27-14 | NAD27 UTM- Zone 14 North- Meter (EPSG #26714) |
| UTM27-14F | NAD27 UTM- Zone 14 North- US Foot |
| UTM27-14IF | NAD27 UTM- Zone 14 North- Intnl Foot |
| UTM27-15 | NAD27 UTM- Zone 15 North- Meter (EPSG #26715) |
| UTM27-15F | NAD27 UTM- Zone 15 North- US Foot |
| UTM27-15IF | NAD27 UTM- Zone 15 North- Intnl Foot |
| UTM27-16 | NAD27 UTM- Zone 16 North- Meter (EPSG #26716) |
| UTM27-16F | NAD27 UTM- Zone 16 North- US Foot |
| UTM27-16IF | NAD27 UTM- Zone 16 North- Intnl Foot |
| UTM27-17 | NAD27 UTM- Zone 17 North- Meter (EPSG #26717) |
| UTM27-17F | NAD27 UTM- Zone 17 North- US Foot |
| UTM27-17IF | NAD27 UTM- Zone 17 North- Intnl Foot |
| UTM27-18 | NAD27 UTM- Zone 18 North- Meter (EPSG #26718) |
| UTM27-18F | NAD27 UTM- Zone 18 North- US Foot |
| UTM27-18IF | NAD27 UTM- Zone 18 North- Intnl Foot |
| UTM27-19 | NAD27 UTM- Zone 19 North- Meter (EPSG #26719) |
| UTM27-19F | NAD27 UTM- Zone 19 North- US Foot |
| UTM27-19IF | NAD27 UTM- Zone 19 North- Intnl Foot |
| UTM27-1N | NAD27 / UTM zone 1N (EPSG #26701) |
| UTM27-2 | NAD27 UTM- Zone 2 North- Meter |
| UTM27-20 | NAD27 UTM- Zone 20 North- Meter (EPSG #26720) |
| UTM27-20F | NAD27 UTM- Zone 20 North- US Foot |
| UTM27-20IF | NAD27 UTM- Zone 20 North- Intnl Foot |
| UTM27-21 | NAD27 UTM- Zone 21 North- Meter (EPSG #26721) |
| UTM27-21F | NAD27 UTM- Zone 21 North- US Foot |
| UTM27-21IF | NAD27 UTM- Zone 21 North- Intnl Foot |
| UTM27-22 | NAD27 UTM- Zone 22 North- Meter (EPSG #26722) |
| UTM27-22F | NAD27 UTM- Zone 22 North- US Foot |
| UTM27-22IF | NAD27 UTM- Zone 22 North- Intnl Foot |
| UTM27-23 | NAD27 UTM- Zone 23 North- Meter |
| UTM27-23F | NAD27 UTM- Zone 23 North- US Foot |
| UTM27-23IF | NAD27 UTM- Zone 23 North- Intnl Foot |
| UTM27-2N | NAD27 / UTM zone 2N (EPSG #26702) |

| | |
|---|---|
| UTM27-3 | NAD27 UTM- Zone 3 North- Meter (EPSG #26703) |
| UTM27-3F | NAD27 UTM- Zone 3 North- US Survey Foot |
| UTM27-3IF | NAD27 UTM- Zone 3 North- Intnl Foot |
| UTM27-4 | NAD27 UTM- Zone 4 North- Meter (EPSG #26704) |
| UTM27-4F | NAD27 UTM- Zone 4 North- US Survey Foot |
| UTM27-4IF | NAD27 UTM- Zone 4 North- Intnl Foot |
| UTM27-5 | NAD27 UTM- Zone 5 North- Meter (EPSG #26705) |
| UTM27-58 | NAD27 UTM- Zone 58 North- Meter |
| UTM27-59 | NAD27 UTM- Zone 59 North- Meter |
| UTM27-5F | NAD27 UTM- Zone 5 North- US Foot |
| UTM27-5IF | NAD27 UTM- Zone 5 North- Intnl Foot |
| UTM27-6 | NAD27 UTM- Zone 6 North- Meter (EPSG #26706) |
| UTM27-60 | NAD27 UTM- Zone 60 North- Meter |
| UTM27-6F | NAD27 UTM- Zone 6 North- US Foot |
| UTM27-6IF | NAD27 UTM- Zone 6 North- Intnl Foot |
| UTM27-7 | NAD27 UTM- Zone 7 North- Meter (EPSG #26707) |
| UTM27-7F | NAD27 UTM- Zone 7 North- US Foot |
| UTM27-7IF | NAD27 UTM- Zone 7 North- Intnl Foot |
| UTM27-8 | NAD27 UTM- Zone 8 North- Meter (EPSG #26708) |
| UTM27-8F | NAD27 UTM- Zone 8 North- US Foot |
| UTM27-8IF | NAD27 UTM- Zone 8 North- Intnl Foot |
| UTM27-9 | NAD27 UTM- Zone 9 North- Meter (EPSG #26709) |
| UTM27-9F | NAD27 UTM- Zone 9 North- US Foot |
| UTM27-9IF | NAD27 UTM- Zone 9 North- Intnl Foot |
| UTM83-1 | NAD83 UTM- Zone 1 North- Meter (EPSG #26901) |
| UTM83-10 | NAD83 UTM- Zone 10 North- Meter (EPSG #26910) |
| UTM83-10F | NAD83 UTM- Zone 10 North- US Foot |
| UTM83-10IF | NAD83 UTM- Zone 10 North- Intnl Foot |
| UTM83-11 | NAD83 UTM- Zone 11 North- Meter (EPSG #26911) |
| UTM83-11F | NAD83 UTM- Zone 11 North- US Foot |
| UTM83-11IF | NAD83 UTM- Zone 11 North- Intnl Foot |
| UTM83-12 | NAD83 UTM- Zone 12 North- Meter (EPSG #26912) |
| UTM83-12F | NAD83 UTM- Zone 12 North- US Foot |
| UTM83-12IF | NAD83 UTM- Zone 12 North- Intnl Foot |
| UTM83-13 | NAD83 UTM- Zone 13 North- Meter (EPSG #26913) |
| UTM83-13F | NAD83 UTM- Zone 13 North- US Foot |
| UTM83-13IF | NAD83 UTM- Zone 13 North- Intnl Foot |
| UTM83-14 | NAD83 UTM- Zone 14 North- Meter (EPSG #26914) |
| UTM83-14F | NAD83 UTM- Zone 14 North- US Foot |
| UTM83-14IF | NAD83 UTM- Zone 14 North- Intnl Foot |
| UTM83-15 | NAD83 UTM- Zone 15 North- Meter (EPSG #26915) |
| UTM83-15F | NAD83 UTM- Zone 15 North- US Foot |
| UTM83-15IF | NAD83 UTM- Zone 15 North- Intnl Foot |
| UTM83-16 | NAD83 UTM- Zone 16 North- Meter (EPSG #26916) |
| UTM83-16F | NAD83 UTM- Zone 16 North- US Foot |
| UTM83-16IF | NAD83 UTM- Zone 16 North- Intnl Foot |
| UTM83-17 | NAD83 UTM- Zone 17 North- Meter (EPSG #26917) |
| UTM83-17F | NAD83 UTM- Zone 17 North- US Foot |
| UTM83-17IF | NAD83 UTM- Zone 17 North- Intnl Foot |
| UTM83-18 | NAD83 UTM- Zone 18 North- Meter (EPSG #26918) |
| UTM83-18F | NAD83 UTM- Zone 18 North- US Foot |
| UTM83-18IF | NAD83 UTM- Zone 18 North- Intnl Foot |
| UTM83-19 | NAD83 UTM- Zone 19 North- Meter (EPSG #26919) |

| | |
|---|---|
| UTM83-19F | NAD83 UTM- Zone 19 North- US Foot |
| UTM83-19IF | NAD83 UTM- Zone 19 North- Intnl Foot |
| UTM83-2 | NAD83 UTM- Zone 2 North- Meter (EPSG #26902) |
| UTM83-20 | NAD83 UTM- Zone 20 North- Meter (EPSG #26920) |
| UTM83-20F | NAD83 UTM- Zone 20 North- US Foot |
| UTM83-20IF | NAD83 UTM- Zone 20 North- Intnl Foot |
| UTM83-21 | NAD83 UTM- Zone 21 North- Meter (EPSG #26921) |
| UTM83-21F | NAD83 UTM- Zone 21 North- US Foot |
| UTM83-21IF | NAD83 UTM- Zone 21 North- Intnl Foot |
| UTM83-22 | NAD83 UTM- Zone 22 North- Meter (EPSG #26922) |
| UTM83-22F | NAD83 UTM- Zone 22 North- US Foot |
| UTM83-22IF | NAD83 UTM- Zone 22 North- Intnl Foot |
| UTM83-23 | NAD83 Universal Transverse Mercator- Zone 23 North- Meter |
| UTM83-3 | NAD83 UTM- Zone 3 North- Meter (EPSG #26903) |
| UTM83-3F | NAD83 UTM- Zone 3 North- US Survey Foot |
| UTM83-4 | NAD83 UTM- Zone 4 North- Meter (EPSG #26904) |
| UTM83-4F | NAD83 UTM- Zone 4 North- US Survey Foot |
| UTM83-5 | NAD83 UTM- Zone 5 North- Meter (EPSG #26905) |
| UTM83-58 | NAD83 UTM- Zone 58 North- Meter |
| UTM83-59 | NAD83 UTM- Zone 59 North- Meter |
| UTM83-5F | NAD83 UTM- Zone 5 North- US Survey Foot |
| UTM83-5IF | NAD83 UTM- Zone 5 North- Intnl Foot |
| UTM83-6 | NAD83 UTM- Zone 6 North- Meter (EPSG #26906) |
| UTM83-60 | NAD83 UTM- Zone 60 North- Meter |
| UTM83-6F | NAD83 UTM- Zone 6 North- US Foot |
| UTM83-6IF | NAD83 UTM- Zone 6 North- Intnl Foot |
| UTM83-7 | NAD83 UTM- Zone 7 North- Meter (EPSG #26907) |
| UTM83-7F | NAD83 UTM- Zone 7 North- US Foot |
| UTM83-7IF | NAD83 UTM- Zone 7 North- Intnl Foot |
| UTM83-8 | NAD83 UTM- Zone 8 North- Meter (EPSG #26908) |
| UTM83-8F | NAD83 UTM- Zone 8 North- US Foot |
| UTM83-8IF | NAD83 UTM- Zone 8 North- Intnl Foot |
| UTM83-9 | NAD83 UTM- Zone 9 North- Meter (EPSG #26909) |
| UTM83-9F | NAD83 UTM- Zone 9 North- US Foot |
| UTM83-9IF | NAD83 UTM- Zone 9 North- Intnl Foot |
| UTM84-10N | WGS 1984 UTM- Zone 10 North- Meter (EPSG #32610) |
| UTM84-10S | WGS 1984 UTM- Zone 10 South- Meter (EPSG #32710) |
| UTM84-11N | WGS 1984 UTM- Zone 11 North- Meter (EPSG #32611) |
| UTM84-11S | WGS 1984 UTM- Zone 11 South- Meter (EPSG #32711) |
| UTM84-12N | WGS 1984 UTM- Zone 12 North- Meter (EPSG #32612) |
| UTM84-12S | WGS 1984 UTM- Zone 12 South- Meter (EPSG #32712) |
| UTM84-13N | WGS 1984 UTM- Zone 13 North- Meter (EPSG #32613) |
| UTM84-13S | WGS 1984 UTM- Zone 13 South- Meter (EPSG #32713) |
| UTM84-14N | WGS 1984 UTM- Zone 14 North- Meter (EPSG #32614) |
| UTM84-14S | WGS 1984 UTM- Zone 14 South- Meter (EPSG #32714) |
| UTM84-15N | WGS 1984 UTM- Zone 15 North- Meter (EPSG #32615) |
| UTM84-15S | WGS 1984 UTM- Zone 15 South- Meter (EPSG #32715) |
| UTM84-16N | WGS 1984 UTM- Zone 16 North- Meter (EPSG #32616) |
| UTM84-16S | WGS 1984 UTM- Zone 16 South- Meter (EPSG #32716) |
| UTM84-17N | WGS 1984 UTM- Zone 17 North- Meter (EPSG #32617) |
| UTM84-17S | WGS 1984 UTM- Zone 17 South- Meter (EPSG #32717) |
| UTM84-18N | WGS 1984 UTM- Zone 18 North- Meter (EPSG #32618) |
| UTM84-18S | WGS 1984 UTM- Zone 18 South- Meter (EPSG #32718) |

| | |
|---|---|
| UTM84-19N | WGS 1984 UTM- Zone 19 North- Meter (EPSG #32619) |
| UTM84-19S | WGS 1984 UTM- Zone 19 South- Meter (EPSG #32719) |
| UTM84-1N | WGS 1984 UTM- Zone 1 North- Meter (EPSG #32601) |
| UTM84-1S | WGS 1984 UTM- Zone 1 South- Meter (EPSG #32701) |
| UTM84-20N | WGS 1984 UTM- Zone 20 North- Meter (EPSG #32620) |
| UTM84-20S | WGS 1984 UTM- Zone 20 South- Meter (EPSG #32720) |
| UTM84-21N | WGS 1984 UTM- Zone 21 North- Meter (EPSG #32621) |
| UTM84-21S | WGS 1984 UTM- Zone 21 South- Meter (EPSG #32721) |
| UTM84-22N | WGS 1984 UTM- Zone 22 North- Meter (EPSG #32622) |
| UTM84-22S | WGS 1984 UTM- Zone 22 South- Meter (EPSG #32722) |
| UTM84-23N | WGS 1984 UTM- Zone 23 North- Meter (EPSG #32623) |
| UTM84-23S | WGS 1984 UTM- Zone 23 South- Meter (EPSG #32723) |
| UTM84-24N | WGS 1984 UTM- Zone 24 North- Meter (EPSG #32624) |
| UTM84-24S | WGS 1984 UTM- Zone 24 South- Meter (EPSG #32724) |
| UTM84-25N | WGS 1984 UTM- Zone 25 North- Meter (EPSG #32625) |
| UTM84-25S | WGS 1984 UTM- Zone 25 South- Meter (EPSG #32725) |
| UTM84-26N | WGS 1984 UTM- Zone 26 North- Meter (EPSG #32626) |
| UTM84-26S | WGS 1984 UTM- Zone 26 South- Meter (EPSG #32726) |
| UTM84-27N | WGS 1984 UTM- Zone 27 North- Meter (EPSG #32627) |
| UTM84-27S | WGS 1984 UTM- Zone 27 South- Meter (EPSG #32727) |
| UTM84-28N | WGS 1984 UTM- Zone 28 North- Meter (EPSG #32628) |
| UTM84-28S | WGS 1984 UTM- Zone 28 South- Meter (EPSG #32728) |
| UTM84-29N | WGS 1984 UTM- Zone 29 North- Meter (EPSG #32629) |
| UTM84-29S | WGS 1984 UTM- Zone 29 South- Meter (EPSG #32729) |
| UTM84-2N | WGS 1984 UTM- Zone 2 North- Meter (EPSG #32602) |
| UTM84-2S | WGS 1984 UTM- Zone 2 South- Meter (EPSG #32702) |
| UTM84-30N | WGS 1984 UTM- Zone 30 North- Meter (EPSG #32630) |
| UTM84-30S | WGS 1984 UTM- Zone 30 South- Meter (EPSG #32730) |
| UTM84-31N | WGS 1984 UTM- Zone 31 North- Meter (EPSG #32631) |
| UTM84-31S | WGS 1984 UTM- Zone 31 South- Meter (EPSG #32731) |
| UTM84-32N | WGS 1984 UTM- Zone 32 North- Meter (EPSG #32632) |
| UTM84-32S | WGS 1984 UTM- Zone 32 South- Meter (EPSG #32732) |
| UTM84-33N | WGS 1984 UTM- Zone 33 North- Meter (EPSG #32633) |
| UTM84-33S | WGS 1984 UTM- Zone 33 South- Meter (EPSG #32733) |
| UTM84-34N | WGS 1984 UTM- Zone 34 North- Meter (EPSG #32634) |
| UTM84-34S | WGS 1984 UTM- Zone 34 South- Meter (EPSG #32734) |
| UTM84-35N | WGS 1984 UTM- Zone 35 North- Meter (EPSG #32635) |
| UTM84-35S | WGS 1984 UTM- Zone 35 South- Meter (EPSG #32735) |
| UTM84-36N | WGS 1984 UTM- Zone 36 North- Meter (EPSG #32636) |
| UTM84-36S | WGS 1984 UTM- Zone 36 South- Meter (EPSG #32736) |
| UTM84-37N | WGS 1984 UTM- Zone 37 North- Meter (EPSG #32637) |
| UTM84-37S | WGS 1984 UTM- Zone 37 South- Meter (EPSG #32737) |
| UTM84-38N | WGS 1984 UTM- Zone 38 North- Meter (EPSG #32638) |
| UTM84-38S | WGS 1984 UTM- Zone 38 South- Meter (EPSG #32738) |
| UTM84-39N | WGS 1984 UTM- Zone 39 North- Meter (EPSG #32639) |
| UTM84-39S | WGS 1984 UTM- Zone 39 South- Meter (EPSG #32739) |
| UTM84-3N | WGS 1984 UTM- Zone 3 North- Meter (EPSG #32603) |
| UTM84-3S | WGS 1984 UTM- Zone 3 South- Meter (EPSG #32703) |
| UTM84-40N | WGS 1984 UTM- Zone 40 North- Meter (EPSG #32640) |
| UTM84-40S | WGS 1984 UTM- Zone 40 South- Meter (EPSG #32740) |
| UTM84-41N | WGS 1984 UTM- Zone 41 North- Meter (EPSG #32641) |
| UTM84-41S | WGS 1984 UTM- Zone 41 South- Meter (EPSG #32741) |
| UTM84-42N | WGS 1984 UTM- Zone 42 North- Meter (EPSG #32642) |

| | |
|---|---|
| UTM84-42S | WGS 1984 UTM- Zone 42 South- Meter (EPSG #32742) |
| UTM84-43N | WGS 1984 UTM- Zone 43 North- Meter (EPSG #32643) |
| UTM84-43S | WGS 1984 UTM- Zone 43 South- Meter (EPSG #32743) |
| UTM84-44N | WGS 1984 UTM- Zone 44 North- Meter (EPSG #32644) |
| UTM84-44S | WGS 1984 UTM- Zone 44 South- Meter (EPSG #32744) |
| UTM84-45N | WGS 1984 UTM- Zone 45 North- Meter (EPSG #32645) |
| UTM84-45S | WGS 1984 UTM- Zone 45 South- Meter (EPSG #32745) |
| UTM84-46N | WGS 1984 UTM- Zone 46 North- Meter (EPSG #32646) |
| UTM84-46S | WGS 1984 UTM- Zone 46 South- Meter (EPSG #32746) |
| UTM84-47N | WGS 1984 UTM- Zone 47 North- Meter (EPSG #32647) |
| UTM84-47S | WGS 1984 UTM- Zone 47 South- Meter (EPSG #32747) |
| UTM84-48N | WGS 1984 UTM- Zone 48 North- Meter (EPSG #32648) |
| UTM84-48S | WGS 1984 UTM- Zone 48 South- Meter (EPSG #32748) |
| UTM84-49N | WGS 1984 UTM- Zone 49 North- Meter (EPSG #32649) |
| UTM84-49S | WGS 1984 UTM- Zone 49 South- Meter (EPSG #32749) |
| UTM84-4N | WGS 1984 UTM- Zone 4 North- Meter (EPSG #32604) |
| UTM84-4S | WGS 1984 UTM- Zone 4 South- Meter (EPSG #32704) |
| UTM84-50N | WGS 1984 UTM- Zone 50 North- Meter (EPSG #32650) |
| UTM84-50S | WGS 1984 UTM- Zone 50 South- Meter (EPSG #32750) |
| UTM84-51N | WGS 1984 UTM- Zone 51 North- Meter (EPSG #32651) |
| UTM84-51S | WGS 1984 UTM- Zone 51 South- Meter (EPSG #32751) |
| UTM84-52N | WGS 1984 UTM- Zone 52 North- Meter (EPSG #32652) |
| UTM84-52S | WGS 1984 UTM- Zone 52 South- Meter (EPSG #32752) |
| UTM84-53N | WGS 1984 UTM- Zone 53 North- Meter (EPSG #32653) |
| UTM84-53S | WGS 1984 UTM- Zone 53 South- Meter (EPSG #32753) |
| UTM84-54N | WGS 1984 UTM- Zone 54 North- Meter (EPSG #32654) |
| UTM84-54S | WGS 1984 UTM- Zone 54 South- Meter (EPSG #32754) |
| UTM84-55N | WGS 1984 UTM- Zone 55 North- Meter (EPSG #32655) |
| UTM84-55S | WGS 1984 UTM- Zone 55 South- Meter (EPSG #32755) |
| UTM84-56N | WGS 1984 UTM- Zone 56 North- Meter (EPSG #32656) |
| UTM84-56S | WGS 1984 UTM- Zone 56 South- Meter (EPSG #32756) |
| UTM84-57N | WGS 1984 UTM- Zone 57 North- Meter (EPSG #32657) |
| UTM84-57S | WGS 1984 UTM- Zone 57 South- Meter (EPSG #32757) |
| UTM84-58N | WGS 1984 UTM- Zone 58 North- Meter (EPSG #32658) |
| UTM84-58S | WGS 1984 UTM- Zone 58 South- Meter (EPSG #32758) |
| UTM84-59N | WGS 1984 UTM- Zone 59 North- Meter (EPSG #32659) |
| UTM84-59S | WGS 1984 UTM- Zone 59 South- Meter (EPSG #32759) |
| UTM84-5N | WGS 1984 UTM- Zone 5 North- Meter (EPSG #32605) |
| UTM84-5S | WGS 1984 UTM- Zone 5 South- Meter (EPSG #32705) |
| UTM84-60N | WGS 1984 UTM- Zone 60 North- Meter (EPSG #32660) |
| UTM84-60S | WGS 1984 UTM- Zone 60 South- Meter (EPSG #32760) |
| UTM84-6N | WGS 1984 UTM- Zone 6 North- Meter (EPSG #32606) |
| UTM84-6S | WGS 1984 UTM- Zone 6 South- Meter (EPSG #32706) |
| UTM84-7N | WGS 1984 UTM- Zone 7 North- Meter (EPSG #32607) |
| UTM84-7S | WGS 1984 UTM- Zone 7 South- Meter (EPSG #32707) |
| UTM84-8N | WGS 1984 UTM- Zone 8 North- Meter (EPSG #32608) |
| UTM84-8S | WGS 1984 UTM- Zone 8 South- Meter (EPSG #32708) |
| UTM84-9N | WGS 1984 UTM- Zone 9 North- Meter (EPSG #32609) |
| UTM84-9S | WGS 1984 UTM- Zone 9 South- Meter (EPSG #32709) |
| UTM89-30N | WGS 1984 UTM- Zone 30 North- Meter |
| UTMHP-10 | HPGN UTM- Zone 10 North- Meter |
| UTMHP-10F | HPGN UTM- Zone 10 North- US Foot |
| UTMHP-10IF | HPGN UTM- Zone 10 North- Intnl Foot |

| | |
|---|---|
| UTMHP-11 | HPGN UTM- Zone 11 North- Meter |
| UTMHP-11F | HPGN UTM- Zone 11 North- US Foot |
| UTMHP-11IF | HPGN UTM- Zone 11 North- Intnl Foot |
| UTMHP-12 | HPGN UTM- Zone 12 North- Meter |
| UTMHP-12F | HPGN UTM- Zone 12 North- US Foot |
| UTMHP-12IF | HPGN UTM- Zone 12 North- Intnl Foot |
| UTMHP-13 | HPGN UTM- Zone 13 North- Meter |
| UTMHP-13F | HPGN UTM- Zone 13 North- US Foot |
| UTMHP-13IF | HPGN UTM- Zone 13 North- Intnl Foot |
| UTMHP-14 | HPGN UTM- Zone 14 North- Meter |
| UTMHP-14F | HPGN UTM- Zone 14 North- US Foot |
| UTMHP-14IF | HPGN UTM- Zone 14 North- Intnl Foot |
| UTMHP-15 | HPGN UTM- Zone 15 North- Meter |
| UTMHP-15F | HPGN UTM- Zone 15 North- US Foot |
| UTMHP-15IF | HPGN UTM- Zone 15 North- Intnl Foot |
| UTMHP-16 | HPGN UTM- Zone 16 North- Meter |
| UTMHP-16F | HPGN UTM- Zone 16 North- US Foot |
| UTMHP-16IF | HPGN UTM- Zone 16 North- Intnl Foot |
| UTMHP-17 | HPGN UTM- Zone 17 North- Meter |
| UTMHP-17F | HPGN UTM- Zone 17 North- US Foot |
| UTMHP-17IF | HPGN UTM- Zone 17 North- Intnl Foot |
| UTMHP-18 | HPGN UTM- Zone 18 North- Meter |
| UTMHP-18F | HPGN UTM- Zone 18 North- US Foot |
| UTMHP-18IF | HPGN UTM- Zone 18 North- Intnl Foot |
| UT-N | NAD27 Utah State Planes- Northern Zone- US Foot (EPSG #32042) |
| UT-S | NAD27 Utah State Planes- Southern Zone- US Foot (EPSG #32044) |
| VA83-N | NAD83 Virginia State Planes- Northern Zone- Meter (EPSG #32146) |
| VA83-NF | NAD83 Virginia State Planes- Northern Zone- US Foot (EPSG #2283) |
| VA83-S | NAD83 Virginia State Planes- Southern Zone- Meter (EPSG #32147) |
| VA83-SF | NAD83 Virginia State Planes- Southern Zone- US Foot (EPSG #2284) |
| VAHP-N | HPGN/HARN Virginia State Planes- Northern Zone- Meter (EPSG #2853) |
| VAHP-NF | HPGN/HARN Virginia State Planes- Northern Zone- US Foot (EPSG #2924) |
| VAHP-S | HPGN/HARN Virginia State Planes- Southern Zone- Meter (EPSG #2854) |
| VAHP-SF | HPGN/HARN Virginia State Planes- Southern Zone- US Foot (EPSG #2925) |
| VA-N | NAD27 Virginia State Planes- Northern Zone- US Foot (EPSG #32046) |
| VA-S | NAD27 Virginia State Planes- Southern Zone- US Foot (EPSG #32047) |
| VT | NAD27 Vermont State Planes- US Foot (EPSG #32045) |
| VT83 | NAD83 Vermont State Planes- Meter (EPSG #32145) |
| VT83F | NAD83 Vermont State Planes- US Foot |
| VTHP | HPGN/HARN Vermont State Planes- Meter (EPSG #2852) |
| VTHPF | HPGN/HARN Vermont State Planes- US Foot |
| WA83-N | NAD83 Washington State Planes- Northern Zone- Meter (EPSG #32148) |
| WA83-NF | NAD83 Washington State Planes- Northern Zone- US Foot (EPSG #2285) |
| WA83-S | NAD83 Washington State Planes- Southern Zone- Meter (EPSG #32149) |
| WA83-SF | NAD83 Washington State Planes- Southern Zone- US Foot (EPSG #2286) |
| WAHP-N | HPGN Washington State Planes- Northern Zone- Meter (EPSG #2855) |
| WAHP-NF | HPGN Washington State Planes- Northern Zone- US Foot (EPSG #2926) |
| WAHP-S | HPGN Washington State Planes- Southern Zone- Meter (EPSG #2856) |
| WAHP-SF | HPGN Washington State Planes- Southern Zone- US Foot (EPSG #2927) |
| WA-N | NAD27 Washington State Planes- Northern Zone- US Foot (EPSG #32048) |
| WA-S | NAD27 Washington State Planes- Southern Zone- US Foot (EPSG #32049) |
| WI83-C | NAD83 Wisconsin State Planes- Central Zone- Meter (EPSG #32153) |
| WI83-CF | NAD83 Wisconsin State Planes- Central Zone- US Foot (EPSG #2288) |

| | |
|---|---|
| WI83-N | NAD83 Wisconsin State Planes- Northern Zone- Meter (EPSG #32152) |
| WI83-NF | NAD83 Wisconsin State Planes- Northern Zone- US Foot (EPSG #2287) |
| WI83-S | NAD83 Wisconsin State Planes- Southern Zone- Meter (EPSG #32154) |
| WI83-SF | NAD83 Wisconsin State Planes- Southern Zone- US Foot (EPSG #2289) |
| WI-C | NAD27 Wisconsin State Planes- Central Zone- US Foot (EPSG #32053) |
| WIHP-C | HPGN Wisconsin State Planes- Central Zone- Meter (EPSG #2860) |
| WIHP-CF | HPGN Wisconsin State Planes- Central Zone- US Foot (EPSG #2929) |
| WIHP-N | HPGN Wisconsin State Planes- Northern Zone- Meter (EPSG #2859) |
| WIHP-NF | HPGN Wisconsin State Planes- Northern Zone- US Foot (EPSG #2928) |
| WIHP-S | HPGN Wisconsin State Planes- Southern Zone- Meter (EPSG #2861) |
| WIHP-SF | HPGN Wisconsin State Planes- Southern Zone- US Foot (EPSG #2930) |
| WI-N | NAD27 Wisconsin State Planes- Northern Zone- US Foot (EPSG #32052) |
| WI-S | NAD27 Wisconsin State Planes- Southern Zone- US Foot (EPSG #32054) |
| WV83-N | NAD83 West Virginia State Planes- Northern Zone- Meter (EPSG #32150) |
| WV83-NF | NAD83 West Virginia State Planes- Northern Zone- US Foot |
| WV83-S | NAD83 West Virginia State Planes- Southern Zone- Meter (EPSG #32151) |
| WV83-SF | NAD83 West Virginia State Planes- Southern Zone- US Foot |
| WVHP-N | HARN (HPGN) West Virginia State Planes- Northern Zone- Meter (EPSG #2857) |
| WVHP-NF | HARN (HPGN) West Virginia State Planes- Northern Zone- US Foot |
| WVHP-S | HARN (HPGN) West Virginia State Planes- Southern Zone- Meter (EPSG #2858) |
| WVHP-SF | HARN (HPGN) West Virginia State Planes- Southern Zone- US Foot |
| WV-N | NAD27 West Virginia State Planes- Northern Zone- US Foot (EPSG #32050) |
| WV-S | NAD27 West Virginia State Planes- Southern Zone- US Foot (EPSG #32051) |
| WY83-E | NAD83 Wyoming State Planes- Eastern- Meter (EPSG #32155) |
| WY83-EC | NAD83 Wyoming State Planes- East Central Zone- Meter (EPSG #32156) |
| WY83-ECF | NAD83 Wyoming State Planes- East Central Zone- US Foot |
| WY83-EF | NAD83 Wyoming State Planes- Eastern- US Foot |
| WY83-W | NAD83 Wyoming State Planes- Western- Meter (EPSG #32158) |
| WY83-WC | NAD83 Wyoming State Planes- West Central Zone- Meter (EPSG #32157) |
| WY83-WCF | NAD83 Wyoming State Planes- West Central Zone- US Foot |
| WY83-WF | NAD83 Wyoming State Planes- Western- US Foot |
| WY-E | NAD27 Wyoming State Planes- Eastern Zone- US Foot (EPSG #32055) |
| WY-EC | NAD27 Wyoming State Planes- East Central Zone- US Foot (EPSG #32056) |
| WYHP-E | HPGN/HARN Wyoming State Planes- Eastern- Meter (EPSG #2862) |
| WYHP-EC | HPGN/HARN Wyoming State Planes- East Central Zone- Meter (EPSG #2863) |
| WYHP-ECF | HPGN/HARN Wyoming State Planes- East Central Zone- US Foot |
| WYHP-EF | HPGN/HARN Wyoming State Planes- Eastern- US Foot |
| WYHP-W | HPGN/HARN Wyoming State Planes- Western- Meter (EPSG #2865) |
| WYHP-WC | HPGN/HARN Wyoming State Planes- West Central Zone- Meter (EPSG #2864) |
| WYHP-WCF | HPGN/HARN Wyoming State Planes- West Central Zone- US Foot |
| WYHP-WF | HPGN/HARN Wyoming State Planes- Western- US Foot |
| WY-W | NAD27 Wyoming State Planes- Western Zone- US Foot (EPSG #32058) |
| WY-WC | NAD27 Wyoming State Planes- West Central Zone- US Foot (EPSG #32057) |

## CodeDataSource

Used by Attributes: Air Operations Area - DataSource;Aircraft Gate Stand - DataSource;Aircraft Non Movement Area - DataSource;Airfield Light - DataSource;Airport Boundary - DataSource;Airport Control Point - DataSource;Airport Parcel - DataSource;Airport Sign - DataSource;AnchorageArea - DataSource;Apron - DataSource;Arresting Gear - DataSource;Blast Pad - DataSource;Bridge - DataSource;Building - DataSource;County - DataSource;Deicing Area - DataSource;Dock - DataSource;Driveway - DataSource;Driveway Centerline - DataSource;Easements And Rights of Way - DataSource;Elevation Contour - DataSource;Environmental Contamination Area - DataSource;FAA Region - DataSource;Fauna Hazard Area - DataSource;Fence - DataSource;Flood Plain - DataSource;Flora Habitat Area - DataSource;Flora Species Site - DataSource;Frequency Area - DataSource;Gate - DataSource;Hazardous Material Storage Site - DataSource;Image Area -

DataSource;Land and Hold Short Line - DataSource;Land Use - DataSource;Landmark Segment - DataSource;Lease Area - DataSource;Lease Area - DataSource;Lease Area - DataSource;Lease Area - DataSource;Marking Area - DataSource;Marking Line - DataSource;Movement Area - DataSource;Municipality - DataSource;Navigation Buoy - DataSource;Navigational Aid Critical Area - DataSource;Navigational Aid Equipment - DataSource;Navigational Aid Site - DataSource;Noise Contour - DataSource;Noise Incident - DataSource;Noise Monitoring Point - DataSource;Obstacle - DataSource;Obstruction Area - DataSource;Obstruction Identification Surface - DataSource;Parcel - DataSource;Parking Lot - DataSource;Passenger Loading Bridge - DataSource;Project Area - DataSource;Railroad Centerline - DataSource;Railroad Yard - DataSource;Reference Grid Line - DataSource;Restricted Access Boundary - DataSource;Road Centerline - DataSource;Road Point - DataSource;Road Segment - DataSource;Roof - DataSource;Runway - DataSource;Runway Arresting Area - DataSource;Runway Centerline - DataSource;Runway Element - DataSource;Runway End - DataSource;Runway Helipad Design Surface - DataSource;Runway Intersection - DataSource;Runway Label - DataSource;Runway Protection Area - DataSource;Runway Safety Area Boundary - DataSource;Sample Collection Point - DataSource;Seaplane Ramp Centerline - DataSource;Seaplane Ramp Site - DataSource;Security Area - DataSource;Security Identification Display Area - DataSource;Security Perimeter Line - DataSource;Shoreline - DataSource;Shoulder - DataSource;Sidewalk Segment - DataSource;State - DataSource;Sterile Area - DataSource;Stopway - DataSource;Tank Site - DataSource;Taxi Channel - DataSource;Taxiway Element - DataSource;Taxiway Holding Position - DataSource;Taxiway Intersection - DataSource;Touchdown Lift Off - DataSource;Tower - DataSource;Tunnel - DataSource;Turning Basin - DataSource;Utility Line - DataSource;Utility Point - DataSource;Utility Polygon - DataSource;Water Lane End - DataSource;Water Operations Area - DataSource;Wetland - DataSource;Zoning - DataSource

| Value | Definition (Notes) [Source] |
|---|---|
| AERIAL | 2005/2007 Aerial Photography |
| CAD | Georeferenced CAD File/Scan |
| CAD_ASBUILT | CAD As-Built |
| CAD_DIGITAL | CAD Digital |
| CAD_PAPER | CAD Paper |
| CNTRLIMG | Controlled Image |
| COGO | COGO |
| CONSTRSURVEY | Construction Survey |
| CONVSURVEY | Conventional Survey |
| DIG_RTK | Dig Survey - RTK |
| DIGITAL_OTHER | Digital File (Other) |
| FIELD | Field Observatin |
| FIELDMEASURE | Field Measurement |
| GIS_DIGITAL | GIS Digital |
| GIS_PAPER | GIS Paper |
| GPS_COM | Commercial GPS |
| GPS_MAP | Mapping GPS |
| GPS_RTK | Trimble R8/5800 Receiver and TSC2 Data Collector |
| LEGACY | Existed in Legacy Database |
| LEGAL | Legal Description |
| NA | NA |
| NO_ACCESS | Cannot Access Feature |
| ORTHOGT6 | Ortho (Greater than 6 Inch GSD) |
| ORTHOLT6 | Ortho (Less than 6 Inch GSD) |
| OTHER | Other |
| PARSONS | Parsons Data |
| PLAT | Plat |
| RECOLLECTION | Personal Recollection |
| ROD_LEVEL | Laser Rangefinder and Survey Rod & Level |
| TOWSON | Towson Data |
| UNCNTRLIMG | Uncontrolled Image |
| UNKNOWN | Unknown |
| WRITTEN | Written Description |

## CodeDesignGroup

Used by Attributes: Runway End - Design Group;Taxiway Element - Design Group

| Value | Definition (Notes) [Source] |
|---|---|
| I | Less than 20 foot tail height; and less than 49 foot wingspan |
| II | 20 or more and less than 30 foot tail height; and 49 or more and less than 79 foot wingspan |
| III | 30 or more and less than 45 foot tail height; and 79 or more and less than 118 foot wingspan |

| | |
|---|---|
| IV | 45 or more and less than 60 foot tail height; and 118 or more and less than 171 foot wingspan |
| V | 60 or more and less than 66 foot tail height; and 171 or more and less than 214 foot wingspan |
| VI | 66 or more and less than 80 foot tail height; and 214 or more and less than 262 foot wingspan |

## CodeDesignSurfaceType

Used by Attributes: Runway Helipad Design Surface - Design Surface Type

| Value | Definition (Notes) [Source] |
|---|---|
| BRL | Building restriction line (not a standard) |
| FATO | Final Approach and Takeoff Clearance Surface |
| HAS | Heliport Safety Area |
| HPZ | Heliport Protection Zone |
| IAOFZ | Inner Approach Obstacle Free Zone |
| ITOFZ | Inner Transitional Obstacle Free Zone |
| OFZ | Obstacle Free Zone |
| POFZ | Precision obstacle free zone (See AC 150/5300-13) |
| PRSIFR | Parallel Runway Separation Simultaneous IFR Operations |
| PRSVFR | Parallel Runway Separation Simultaneous VFR Operations |
| ROFA | Runway Object Free Area |
| RPZ | Runway protection zone (See AC 150/5300-13) |
| RSA | Runway safety area |
| RWYPTX | Runway to Parallel Taxiway and Taxiline Separation |
| TOFA | Taxiway and taxilane object free area (See AC 150/5300-13) |
| TSA | Threshold sighting area |
| TSS | Threshold Siting Surface (See AC 150/5300-13) |
| TXSA | Taxiway safety area (See AC 150/5300-13) |

## CodeDirection

Used by Attributes: Baggage Carousel - Direction;Baggage Conveyor - Direction

| Value | Definition (Notes) [Source] |
|---|---|
| INBOUND | Baggage flow is from non-secure areas to secure areas of the airport. |
| OUTBOUND | Baggage flow is from secure areas to non-secure areas of the airport. |
| UNKNOWN | Baggage flow direction is unknown |

## CodeDirectionality

Used by Attributes: Bridge - Directionality;Railroad Centerline - Directionality;Road Segment - Directionality;Taxiway Element - Directionality;Tunnel - Directionality;Utility Line - Directionality

| Value | Definition (Notes) [Source] |
|---|---|
| BI | Bidirectional |
| ES | One way from end-to-startpoint |
| SE | One way from start-to-endpoint |

## CodeDoorType

Used by Attributes: Door - Type

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| Access | Access |
| Alarm Point | Alarm Point |
| Chop | Chop |
| Comm/Electrical | Comm/Electrical |
| Elevator | Elevator |
| Emergency Exit | Emergency Exit |
| Interior | Interior |
| Jetway | Jetway |
| Roll Up | Roll Up |
| Turnstile | Turnstile |
| Baggage Handling System | Baggage Handling System |
| Roof Access | Roof Access |

## CodeFloorLevel

Used by Attributes: Baggage Carousel - Floor Level;Baggage Conveyor - Floor Level;Building Zone - Floor Level;Column - Floor Level;Column Grid - Floor Level;Column Line - Floor Level;Door - Floor Level;Floor - Floor Level;Flooring Material - Floor Level;Furnishing - Floor Level;Interior Sign - Floor Level;Lease Area - Floor Level;Lease Area - Floor Level;Maintenance Responsibility Area - Floor Level;Moving Sidewalk - Floor Level;Passenger Gate - Floor Level;Room - Floor Level;Space - Floor Level;Wall - Floor Level;Window - Floor Level;Baggage Carousel - From Level;Baggage Conveyor - From Level;Chase - From Level;Elevator - From Level;Escalator - From Level;Ladder - From Level;Moving Sidewalk - From Level;Stair - From Level;Baggage Carousel - To Level;Baggage Conveyor - To Level;Chase - To Level;Elevator - To Level;Escalator - To Level;Ladder - To Level;Moving Sidewalk - To Level;Stair - To Level

| Value | Definition (Notes) [Source] |
|---|---|
| Level 1 | Apron |
| Level 2 | Boarding |
| Level 3 | Level 3 |
| Level 4 | Level 4 |
| Level 5 | Level 5 |
| Level 6 | Level 6 |
| Level 7 | Level 7 |
| Level 8 | Level 8 |
| Level 9 | Level 9 |
| Level G | Automated Ground Transportation |
| Level U | Utility Chase |
| Level Z | Mezzanine - Baggage Sort |

## CodeFuel

Used by Attributes: Apron - Fuel

| Value | Definition (Notes) [Source] |
|---|---|
| 100 | 100/130 octane gasoline, leaded, MIL-L-5572F (GREEN) |
| 100LL | 100/130 MIL Spec, low lead, aviation gasoline (BLUE) |
| 115 | 115/145 octane gasoline, leaded, MIL-L-5572F (PURPLE) |
| 7 | JP-7, Jet Propellant type 7 (Glass Tank Fuel) |
| 80 | 80/87 octane gasoline, leaded, MIL-L-5572F (RED) |
| A | Jet A, without icing inhibitor |
| A+ | Jet A+, Kerosene fuel, Type A, Jet A or JP-1 With icing inhibitor. |
| A1 | Jet A1, without icing inhibitor |
| A1+ | Jet A1+, Jet A1 with icing inhibitor. |
| B | Jet B, Wide cut turbine fuel, Without icing inhibitor. |
| B+ | Jet B+, wide cut turbine fuel with icing inhibitor. |
| C | 91/96 octane gasoline, leaded, No MIL Spec. |

| | |
|---|---|
| F | 80 octane gasoline, unleaded, No MIL Spec. |
| G | Aviation Gasoline (AVGAS), octane unknown |
| H | 108/135 octane gasoline, leaded, No MIL Spec |
| J | Jet fuel available but type is unknown |
| J4 | JP-4, Wide cut turbine fuel MIL Spec T-5624 |
| J5 | JP-5, Kerosene MIL Spec T-5624 |
| J8 | JP-8, Semi Kerosene MIL Spec T-83133, without icing inhibitor |
| K | 73 octane gasoline, unleaded, No MIL Spec |
| X | Storage tanks available and fuel type unknown or the tanks were used at one time for aviation products but may now store other products |
| LqNaturalGas | Liguified Natural Gas |

## CodeGateStandType

Used by Attributes: Aircraft Gate Stand - Gate Stand Type

| Value | Definition (Notes) [Source] |
|---|---|
| ANG-NI | Angled nose-in parking position |
| ANG-NO | Angled nose-out parking position |
| HS | Hard stand |
| ISO | Isolated parking position. |
| JB | Jet bridge |
| NI | Nose-in parking position. |
| OTHER | Other |
| PR | Portable ramp |
| RMT | Remote parking position. |
| SR | Stairs |
| TM | Temporary |
| UNK | unknown |

## CodeGridType

Used by Attributes: Reference Grid Line - Grid Type

| Value | Definition (Notes) [Source] |
|---|---|
| ed50 | European Datum 1950 |
| gaussKruger | Gauss Kruger |
| GEOREF | World Geographic Reference System |
| ING | Irish National Grid Reference Survey |
| LCC | Lambert Conformal Conic |
| LL | Latitude, longitude |
| MIL | Military |
| OTHER | Other |
| RT90 | Swedish Coordinate System |
| SPCS | State Plane Coordinate System |
| UPS | Universal Polar Stereographic |
| USNG | United States National Grid for Spatial Addressing |
| UTM | Universal Transverse Mercator |

## CodeHazardCategory

Used by Attributes: Hazardous Material Storage Site - Stored Hazmat Category

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| 1 | Explosives are any substance or article, including a device, which is designed to function by explosion or which, by chemical reaction within itself is able to function in a similar manner even if not designed to function by explosion (unless the article |
| 1.1 | Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously |
| 1.2 | Explosives that have a projection hazard but not a mass explosion hazard |
| 1.3 | Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or, both but not a mass explosion hazard. |
| 1.4 | Explosives that present a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of |
| 1.5 | Blasting agents consist of very insensitive explosives. This division comprises substances which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under norm |
| 1.6 | Consists of extremely insensitive articles which do not have a mass explosive hazard. This division comprises articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation o |
| 2 | HazMat Class 2 includes all gases which are compressed and stored for transportation. Class 2 has three divisions: Flammable (also called combustible), Non-Flammable/Non-Poisonous, and Poisonous. |
| 2.1 | Flammable Gas - 454 kg (1001 lb) of any material which is a gas at 20 degrees C (68 degrees F) or less and 101.3 kPa (14.7 psi) of pressure (a material which has a boiling point of 20 degrees C (68 degrees F) or less at 101.3 kPa (14.7 psi)) which-1. Is i |
| 2.2 | Non-Flammable, Non-Poisonus Gas - This division includes compressed gas, liquefied gas, pressurized cryogenic gas, compressed gas in solution, asphyxiant gas and oxidizing gas. A non-flammable, nonpoisonous compressed gas (Division 2.2) means any material |
| 2.3 | Poison Gas - Gas poisonous by inhalation means a material which is a gas at 20 degrees C or less and a pressure of 101.3 kPa (a material which has a boiling point of 20 degrees C or less at 101.3kPa (14.7 psi)) and which:1. Is known to be so toxic to huma |
| 3 | HazMat Class 3 are flammable liquids. They are liquids with flash point of not more than 60.5 degrees C (141 degrees F), or any material in a liquid phase with a flash point at or above 37.8 degrees C (100 degrees F). |
| 4 | HazMat Class 4 are Flammable solids. Flammable Solids are any materials in the solid phase of matter that can readily undergo combustion in the presence of a source of ignition under standard circumstances, i.e. without:Artificially changing variables suc |
| 4.1 | Flammable Solid |
| 4.2 | Spontaneously Combustible |
| 4.3 | Dangerous When Wet - Dangerous when wet material is material that, by contact with water, is liable to become spontaneously flammable or to give off flammable or toxic gas at a rate greater than 1 liter per kilogram of the material, per hour, when tested |
| 5 | HazMat Class 5 Oxidizing Agents and Organic Peroxides - An oxidizer is a chemical that readily yields oxygen in reactions, thereby causing or enhancing combustion |
| 5.1 | Oxidizers - An oxidizer is a material that may, generally by yielding oxygen, cause or enhance the combustion of other materials |
| 5.2 | Organic Peroxides - An organic peroxide is any organic compound containing oxygen (O) in the bivalent -O-O- structure and which may be considered a derivative of hydrogen peroxide, where one or more of the hydrogen atoms have been replaced by organic radi |
| 6 | HazMat Class 6 is Toxic and Infectious Substances. Poisonous material is a material, other than a gas, known to be so toxic to humans that it presents a health hazard during transportation |
| 6.1 | Poisonous material is a material, other than a gas, which is known to be so toxic to humans as to afford a hazard to health during transportation, or which, in the absence of adequate data on human toxicity: |
| 6.2 | Biohazards |
| 7 | HazMat Class 7 is Radioactive substances. Radioactive substances are materials that emit radiation. |
| 8 | Hazmat Class 8 is Corrosive Substances. A corrosive material is a liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period of time. A liquid that has a severe corrosion rate on steel or aluminum |

| | |
|---|---|
| 9 | HazMat Class 9 is Miscellaneous Substances. The miscellaneous hazardous materials category encompasses all hazardous materials that do not fit one of the definitions listed in Class 1 through Class 8. |

## CodeHazardType

Used by Attributes: Fauna Hazard Area - Hazard Type

| Value | Definition (Notes) [Source] |
|---|---|
| BASH | Bird Aircraft Strike Hazard |
| DEER STRIKE | Deer Strike |
| TBD | Hazard yet to be determined |
| TORTOISE PITFALL | Tortoise Pitfall |
| UNKNOWN | Unknown |

## CodeHowAcquired

Used by Attributes: Airport Parcel - How Acquired;Parcel - How Acquired

| Value | Definition (Notes) [Source] |
|---|---|
| AIP_APPROACH_PROTECTION | Land acquired using AIP funds for approach protection |
| AIP_DEVELOPMENT | Land acquired using AIP funds for airport development |
| AIP_NOISE | Land acquired using AIP funds for noise |
| DONATION | Land acquired by donation |
| PFC_APPROACH_PROTECTION | Land acquired using PFC funds for approach protection |
| PFC_DEVELOPMENT | Land acquired using PFC funds for airport development |
| PFC_NOISE | Land acquired using PFC funds for noise |
| SURPLUS_PROPERTY | Land acquired as surplus property |

## CodeImageType

Used by Attributes: Image Location - File Type

| Value | Definition (Notes) [Source] |
|---|---|
| BMP | Bitmap |
| JPG | Jpeg |
| OTH | Other |
| TIF | Tiff |
| UNK | Unknown |

## CodeLandmarkType

Used by Attributes: Landmark Segment - Landmark Type

| Value | Definition (Notes) [Source] |
|---|---|
| AERIAL CABLEWAY | Aerial Cableway |
| AGRICULTURE AREA | Agriculture Area |
| AIRPORT | Airport |
| ATHLETIC FIELD | Athletic Field |
| BOAT RAMP | Boat Ramp |
| BREAKWATER | Breakwater |
| CANAL | Canal |
| CEMETERY | Cemetery |
| CREEK | Creek |

| | |
|---|---|
| DAM | Dam |
| FENCE | Fence |
| GOLF COURSE | Golf Course |
| LEVEE | Levee |
| MILITARY AREA | Military Area |
| MOUNTAIN PASS | Mountain Pass |
| OTHER | Other |
| PIER | Pier |
| POWERPLANT | Powerplant |
| QUARRY | Quarry |
| QUAY | Quay |
| RACECOURSE OR TRACK | Racecourse Or Track |
| RAILROAD | Railroad |
| RIVER | River |
| ROAD | Road |
| SHORELINE | Shoreline |
| STADIUM | Stadium |
| STREAM | Stream |
| TANK TRAP | Tank Trap |
| TRENCH | Trench |
| URBAN AREA | Urban Area |
| UTILITY LINE | Utility Line |
| WALL | Wall |
| WHARF | Wharf |

## CodeLandUseType

Used by Attributes: Land Use - Use Type

| Value | Definition (Notes) [Source] |
|---|---|
| 1000 | Residential activities (Source: APA LBCS) |
| 1100 | Household activities (Source: APA LBCS) |
| 1200 | Transient living (Source: APA LBCS) |
| 1300 | Institutional living (Source: APA LBCS) |
| 2000 | Shopping, business, or trade activities (Source: APA LBCS) |
| 2100 | Shopping (Source: APA LBCS) |
| 2110 | Goods-oriented shopping (Source: APA LBCS) |
| 2120 | Service-oriented shopping (Source: APA LBCS) |
| 2200 | Restaurant-type activity (Source: APA LBCS) |
| 2210 | Restaurant-type activity with drive-through (Source: APA LBCS) |
| 2300 | Office activities (Source: APA LBCS) |
| 2310 | Office activities with high turnover of people (Source: APA LBCS) |
| 2320 | Office activities with high turnover of automobiles (Source: APA LBCS) |
| 3000 | Industrial, manufacturing, and waste-related activities (Source: APA LBCS) |
| 3100 | Plant, factory, or heavy goods storage or handling activities (Source: APA LBCS) |
| 3110 | Primarily plant or factory-type activities (Source: APA LBCS) |
| 3120 | Primarily goods storage or handling activities (Source: APA LBCS) |
| 3200 | Solid waste management activities (Source: APA LBCS) |
| 3210 | Solid waste collection and storage (Source: APA LBCS) |
| 3220 | Landfilling or dumping (Source: APA LBCS) |
| 3230 | Waste processing or recycling (Source: APA LBCS) |
| 3300 | Construction activities (grading, digging, etc.) (Source: APA LBCS) |
| 4000 | Social, institutional, or infrastructure-related activities (Source: APA LBCS) |

| | |
|---|---|
| 4100 | School or library activities (Source: APA LBCS) |
| 4110 | Classroom-type activities (Source: APA LBCS) |
| 4120 | Training or instructional activities outside classrooms (Source: APA LBCS) |
| 4130 | Other instructional activities including those that occur in libraries (Source: APA LBCS) |
| 4200 | Emergency response or public-safety-related activities (Source: APA LBCS) |
| 4210 | Fire and rescue-related activities (Source: APA LBCS) |
| 4220 | Police, security, and protection-related activities (Source: APA LBCS) |
| 4230 | Emergency or disaster-response-related activities (Source: APA LBCS) |
| 4300 | Activities associated with utilities (water, sewer, power, etc.) (Source: APA LBCS) |
| 4310 | Water-supply-related activities (Source: APA LBCS) |
| 4311 | Water storing, pumping, or piping (Source: APA LBCS) |
| 4312 | Water purification and filtration activities (Source: APA LBCS) |
| 4313 | Irrigation water storage and distribution activities (Source: APA LBCS) |
| 4314 | Flood control, dams, and other large irrigation activities (Source: APA LBCS) |
| 4320 | Sewer-related control, monitor, or distribution activities (Source: APA LBCS) |
| 4321 | Sewage storing, pumping, or piping (Source: APA LBCS) |
| 4322 | Sewer treatment and processing (Source: APA LBCS) |
| 4330 | Power generation, control, monitor, or distribution activities (Source: APA LBCS) |
| 4331 | Power transmission lines or control activities (Source: APA LBCS) |
| 4332 | Power generation, storage, or processing activities (Source: APA LBCS) |
| 4340 | Telecommunications-related control, monitor, or distribution activities (Source: APA LBCS) |
| 4350 | Natural gas or fuels-related control, monitor, or distribution Activities (Source: APA LBCS) |
| 4400 | Mass storage, inactive (Source: APA LBCS) |
| 4410 | Water storage (Source: APA LBCS) |
| 4420 | Storage of natural gas, fuels, etc. (Source: APA LBCS) |
| 4430 | Storage of chemical, nuclear, or other materials (Source: APA LBCS) |
| 4500 | Health care, medical, or treatment activities (Source: APA LBCS) |
| 4600 | Interment, cremation, or grave digging activities (Source: APA LBCS) |
| 4700 | Military base activities (Source: APA LBCS) |
| 4710 | Ordnance storage (Source: APA LBCS) |
| 4720 | Range and test activities (Source: APA LBCS) |
| 5000 | Travel or movement activities (Source: APA LBCS) |
| 5100 | Pedestrian movement (Source: APA LBCS) |
| 5200 | Vehicular movement (Source: APA LBCS) |
| 5210 | Vehicular parking, storage, etc. (Source: APA LBCS) |
| 5220 | Drive-in, drive through, stop-n-go, etc. (Source: APA LBCS) |
| 5400 | Trains or other rail movement (Source: APA LBCS) |
| 5410 | Rail maintenance, storage, or related activities (Source: APA LBCS) |
| 5500 | Sailing, boating, and other port, marine and water-based Activities (Source: APA LBCS) |
| 5510 | Boat mooring, docking, or servicing (Source: APA LBCS) |
| 5520 | Port, ship-building, and related activities (Source: APA LBCS) |
| 5600 | Aircraft takeoff, landing, taxiing, and parking (Source: APA LBCS) |
| 5700 | Spacecraft launching and related activities (Source: APA LBCS) |
| 6000 | Mass assembly of people (Source: APA LBCS) |
| 6100 | Passenger assembly (Source: APA LBCS) |
| 6200 | Spectator sports assembly (Source: APA LBCS) |
| 6300 | Movies, concerts, or entertainment shows (Source: APA LBCS) |
| 6400 | Gatherings at fairs and exhibitions (Source: APA LBCS) |
| 6500 | Mass training, drills, etc. (Source: APA LBCS) |
| 6600 | Social, cultural, or religious assembly (Source: APA LBCS) |
| 6700 | Gatherings at galleries, museums, aquariums, zoological parks, etc. (Source: APA LBCS) |
| 6800 | Historical or cultural celebrations, parades, reenactments, etc. (Source: APA LBCS) |
| 7000 | Leisure activities (Source: APA LBCS) |

| | |
|---|---|
| 7100 | Active leisure sports and related activities (Source: APA LBCS) |
| 7110 | Running, jogging, bicycling, aerobics, exercising, etc. (Source: APA |
| 7120 | Equestrian sporting activities (Source: APA LBCS) |
| 7130 | Hockey, ice skating, etc. (Source: APA LBCS) |
| 7140 | Skiing, snowboarding, etc. (Source: APA LBCS) |
| 7150 | Automobile and motorbike racing (Source: APA LBCS) |
| 7160 | Golf (Source: APA LBCS) |
| 7180 | Tennis (Source: APA LBCS) |
| 7190 | Track and field, team sports (baseball, basketball, etc.), or other sports (Source: APA LBCS) |
| 7200 | Passive leisure activity (Source: APA LBCS) |
| 7210 | Camping (Source: APA LBCS) |
| 7220 | Gambling (Source: APA LBCS) |
| 7230 | Hunting (Source: APA LBCS) |
| 7240 | Promenading and other activities in parks (Source: APA LBCS) |
| 7250 | Shooting (Source: APA LBCS) |
| 7260 | Trapping (Source: APA LBCS) |
| 7300 | Flying or air-related sports (Source: APA LBCS) |
| 7400 | Water sports and related leisure activities (Source: APA LBCS) |
| 7410 | Boating, sailing, etc. (Source: APA LBCS) |
| 7420 | Canoeing, kayaking, etc. (Source: APA LBCS) |
| 7430 | Swimming, diving, etc. (Source: APA LBCS) |
| 7440 | Fishing, angling, etc. (Source: APA LBCS) |
| 7450 | Scuba diving, snorkeling, etc. (Source: APA LBCS) |
| 7460 | Water-skiing (Source: APA LBCS) |
| 8000 | Natural resources-related activities (Source: APA LBCS) |
| 8100 | Farming, tilling, plowing, harvesting, or related activities (Source: APA ) |
| 8200 | Livestock related activities (Source: APA LBCS) |
| 8300 | Pasturing, grazing, etc. (Source: APA LBCS) |
| 8400 | Logging (Source: APA LBCS) |

## CodeLightingConfigurationType

Used by Attributes: Airfield Light - Lighting Type;Building - Lighting Type;Navigation Buoy - Lighting Type;Navigational Aid Equipment - Lighting Type;Tank Site - Lighting Type;Tower - Lighting Type;Water Lane End - Lighting Type

| Value | Definition (Notes) [Source] |
|---|---|
| ALSF-1 | High Intensity Approach Lighting System - Configuration 1 |
| ALSF-2 | High Intensity Approach Lighting System - Configuration 2 |
| APAP | Alignment of Element Systems |
| APBN | Airport Rotating Beacon |
| CLRBAR | Taxiway Clearance Bar Lights |
| CODEBEACON | Code Beacon |
| COURSE | Course Lights |
| F | Fixed |
| FL | Flashing (Sea Plane Navigation Buoy use only) |
| FL (2) | Group Flashing (Sea Plane Navigation Buoy use only) |
| FL (2+1) | Composite Group-Flashing (Sea Plane Navigation Buoy use only) |
| HLL | Hover Lane Light |
| HLLL | Hover Lane Limit Light |
| HPIL | Helipad Perimeter Inset Light |
| HPPEL | Helipad Perimeter Light (Elevated) |
| HPPLSF | Helipad Perimeter Light (Semiflush) |
| ISO | Isophase (Sea Plane Navigation Buoy use only) |

| | |
|---|---|
| L-804 | Unidirectional elevated runway guard lights |
| L-850A | Bi directional or unidirectional runway in pavement light used for runway centerline, Land and Hold Short Operations (LAHSO). |
| L-850B | Unidirectional runway in pavement light used for runway touchdown zone and medium intensity approach light system applications. |
| L-850C | Bi directional runway in pavement light used for runway edge lights and displaced threshold applications. |
| L-850D | Bi directional or unidirectional runway in pavement lights used for runway threshold or runway end light applications. |
| L-850E | Unidirectional runway in pavement light used for runway threshold light and Medium Intensity Approach Light System applications |
| L-850F | Unidirectional runway in pavement lights white flashing lights used for LAHSO |
| L-852A | Bi directional or unidirectional taxiway centerline in pavement lights used for the straight sections of taxiways where operations are permitted when the Runway Visual Range (RVR) is greater than or equal to 1200 feet. |
| L-852B | Bi directional or unidirectional taxiway centerline in pavement lights for curved sections of taxiways where operations are permitted when the Runway Visual Range (RVR) is greater than or equal to 1200 feet. |
| L-852C | bi directional or unidirectional taxiway centerline in pavement lights for straight portions of taxiways where operations are permitted when the Runway Visual Range (RVR) is less than 1200 feet. |
| L-852D | Bi directional or unidirectional taxiway centerline in pavement lights used for curved portions of taxiways where operations are permitted when the Runway Visual Range is less than 1200 feet. |
| L-852E | Omni directional taxiway intersection in pavement lights where operations are permitted when the Runway Visual Range is greater than or equal to 1200 feet. |
| L-852E/F | Runway Guard Light in-pavement |
| L-852F | Omni directional taxiway intersection in pavement lights where operations are permitted when the Runway Visual Range is less than 1200 feet. |
| L-852G | Unidirectional Runway Guard in pavement lights |
| L-852G/S | Combination Runway Guard/Stop bar light in-pavement |
| L-852J | Bi directional taxiway centerline in pavement lights for the curved portions of taxiways where operations are permitted when the Runway Visual Range is greater than or equal to 1200 feet. |
| L-852K | Bi directional taxiway centerline in pavement lights for the curved portions of taxiway where operation are permitted when the Runway Visual Ranger is less than 1200 feet. |
| L-852S | Unidirectional in pavement Stop Bar lights |
| L-852T | Omni directional in pavement taxiway edge and Apron edge lights |
| L-853 | Reflective Marker |
| L-854 | Radio Controller (Pilot Controlled Lights) |
| L-860 | Omni directional elevated runway edge lights for Visual Flight Rules (VFR) operations. |
| L-860E | Bi directional or unidirectional elevated runway threshold or runway end lights for Visual Flight Rules operations. |
| L-861 | Omni directional or bi directional elevated runway edge or displaced threshold lights for non-precision Instrument Flight Rules (IFR) operations. |
| L-861E | Bi directional or unidirectional elevated runway threshold or runway end lights for non-precision Instrument Flight Rule operations. |
| L-861SE | Bi directional and unidirectional elevated runway threshold, runway end, and displaced threshold lights for non-precision Instrument Flight Rule operations |
| L-861T | Omni directional elevated taxiway and apron edge lights. |
| L-862 | Bi directional elevated runway edge, threshold, and displaced threshold lights for precision Instrument Flight Rule operations. |
| L-862E | Bi directional or unidirectional elevated runway threshold, runway end, and displaced threshold lights for precision Instrument Flight Rule operations. |
| L-862S | Unidirectional elevated stop bar lights |
| L-880/L881 | Precision Approach Path Indicator |
| LDIN | Lead In Lighting System |

| | |
|---|---|
| MALS | Medium Intensity Approach Lighting System |
| MALSF | Medium Intensity Approach Lighting System with Sequenced Flashing Lights |
| MALSR | Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (RAIL) |
| MO (A) | Morse Code (Sea Plane Navigation Buoy use only) |
| NONE | No lights |
| OBSCAT | Catenary Lighting |
| OBSDUAL | A combination of OBSRED and OBSWHT |
| OBSRED | Aviation red Obstruction Lights |
| OBSWHITE | Flashing White Obstruction Lights |
| OC | Occulting (Sea Plane Navigation Buoy use only) |
| ODALS | Omnidirectional Approach Lighting System |
| OTHER | Other |
| PAPI2 | Precision Approach Path Indicator with 2 lights |
| PAPI4 | Precision Approach Path Indicator with 4 lights |
| PORTABLE | Portable Lights |
| PVASI | Pulsating visual Approach Slope Indicator |
| Q | Quick (Flashing) (Sea Plane Navigation Buoy use only) |
| RAIL | Runway Alignment Indicator Lights |
| REIL | Runway End Identifier Lights |
| RWSL | Runway Status Lights |
| SALS | Short Approach lighting System |
| SMGCS | Surface Movement Guidance Control System |
| SSALF | Short Simplified Approach Light System with Sequenced Flashing Lights |
| SSALR | Simplified Short Approach Lighting System with Runway Alignment Indicator |
| TRCV | TriColor VASI |
| T-VASI | Visual Approach Slope Indicator |
| TWYON_OFFLGT | Taxiway Lead on/off lights |
| VASI-12 | Visual Approach Slope Indicator with 2 bars and 12 boxes |
| VASI-16 | Visual Approach Slope Indicator with 3 bars and 16 boxes |
| VASI-2 | Visual Approach Slope Indicator with 2 bars |
| VASI-2-2 | Visual Approach Slope Indicator with 2 bars and 2 boxes |
| VASI-3 | Visual Approach Slope Indicator with 3 bars |

## CodeLoadingBridgeType

Used by Attributes: Passenger Loading Bridge - Loading Bridge Type

| Value | Definition (Notes) [Source] |
|---|---|
| ARM | Moveable Arm |
| OTHER | Other |
| PORTABLE_RAMP | Portable Ramp |
| PORTABLE_STAIRS | Portable Stairs |

## CodeLowVisibilityCategory

Used by Attributes: Taxiway Holding Position - Low Visibility Category

| Value | Definition (Notes) [Source] |
|---|---|
| 0 | No low visibility operation supported |
| 1 | Supports ILS CAT I low visibility operations |
| 2 | Supports ILS CAT II III low visibility operations |

## CodeMarkingFeatureType

Used by Attributes: Building - Marking Feature Type;Land and Hold Short Line - Marking Feature Type;Marking Area - Marking Feature Type;Marking Line - Marking Feature Type;Obstacle - Marking Feature Type;Obstruction Area - Marking Feature Type;Tank Site - Marking Feature Type;Tower - Marking Feature Type

| Value | Definition (Notes) [Source] |
|---|---|
| AIMING_POINT | Runway Aiming Point (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| ALTBAND | Iternating bands of aviation orange and white [Source AC 70/7640-1] |
| APRON_SIGN | Surface painted apron position/entrance sign (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| ARROW | Arrows identify the displaced threshold area to provide centerline guidance for takeoffs and rollouts (Geometry Type: Line) [Source: AC 150/5340-1] |
| ARROW_HEAD | Arrow heads are used in conjunction with a threshold bar to further highlight the beginning of a runway (Geometry Type: Line) [Source: AC 150/5340-1] |
| CHECKERBOARD | Checkerboard obstruction marking pattern [Source AC 70/7640-1] |
| CHEVRON | A marking used to designate blast pads and other areas that are not suitable for aircraft (Geometry Type: Line) [Source: AC 150/5340-1] |
| DEMARCATION | Demarcation Bar (Geometry Type: Line) [Source: AC 150/5340-1] |
| DIR_SIGN | Surface painted taxiway direction signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| GATE_LINE | All painted taxilines covering a parking stand area are regarded as stand guidance lines and will be individual objects in the database. There may be several stand guidance taxilines leading to an aircraft stand to accommodate different aircraft types. |
| GATE_SIGN | Surface painted gate position signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| HOLD_SIGN | Surface painted holding position signs (Geometry Type: AC 150/5340-1] |
| ILS_HOLD | Holding position markings for Instrument Landing Systems (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| INTERSECTION_HOLD | Holding position marking for taxiway/taxiway intersections (Geometry Type: Line) [Source: AC 150/5340-1] |
| LAHSO | Marking associated with a Land And Hold Short Operations (LAHSO) |
| LOCATION_SIGN | Surface painted taxiway location signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| NON_MOVE_AREA | Non-movement area marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| NONE | No marking(s) |
| OTHER | Other markings not listed |
| OTHER_LINE | Other markings suitable for representation as a line |
| OTHER_POLYGON | Other markings suitable for representation as a polygon |
| PERM_CLOSED | Markings for permanently closed runways and taxiways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| POS_SIGN | Geographic position markings (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_CL | Runway Centerline (Geometry Type: Line) [Source: AC150/5340-1] |
| RWY_HOLD | Runway holding position markings on Runways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_ID | Runway Designation Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_SHD | Runway shoulder markings (Geometry Type: Line) [Source: AC 150/5340-1] |
| RWY_THRSH | Runway Threshold Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| SIDE_STRP | Runway Side Stripe Marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| SOLID | Solid pattern obstruction marking [Source AC 70/7640-1] |
| TDZ_MARK | Runway Touchdown Zone Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TEMP_CLOSED | Markings for temporarily closed runways and taxiways (Geometry Type: Line) [Source: AC 150/5340-1] |
| THRSH_BAR | Runway Threshold Bar (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TIEDOWN | Aircraft tiedown |
| TWY_CL | Taxiway Centerline (Geometry Type: Line) [Source: AC 150/5340-1] |
| TWY_EDGE | Taxiway edge marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| TWY_HOLD | Runway hold position markings on taxiways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TWY_SHD | Taxiway shoulder marking (Geometry Type: Line) [Source: AC 150/5340-1] |

| | |
|---|---|
| VEHICLE | Vehicle roadway markings (Geometry Type: Line) [Source: AC 150/5340-1] |

## CodeMaterialType

Used by Attributes: Column - Material;Wall - Structural Material

| Value | Definition (Notes) [Source] |
|---|---|
| Block | Block |
| Other | Other |
| Poured Concrete | Poured Concrete |
| Unknown | Unknown |
| Wood | Wood |
| Steel | Steel |
| Aluminum | Aluminum |

## CodeMonumentType

Used by Attributes: Airport Control Point - Monument Type

| Value | Definition (Notes) [Source] |
|---|---|
| 1ST_ORDER_CLASS_I | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| 1ST_ORDER_CLASS_II | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| 2ND_ORDER_CLASS_I | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| 2ND_ORDER_CLASS_II | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| 3RD_ORDER_NO_TABLET | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| 3RD_ORDER_WITH_TABLET | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [NGS] |
| A_Order | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [FGCS] |
| B_Order | Meets the standards and specifications for geodetic control network accuracy according to the Federal Geodetic Control Subcommittee [FGCS] |
| BM | Benchmark is a location whose elevation and horizontal position has been surveyed as accurately as possible. Benchmarks are designed for use as reference points, and are usually marked by small brass plates |
| FOUND_CLOSING_CORNER | A found corner is a corner whose original or restored monument or mark is recovered, or whose position is definitely established by one or more witness corners or monuments |
| FOUND_SECTION_CORNER | A found corner is a corner whose original or restored monument or mark is recovered, or whose position is definitely established by one or more witness corners or monuments |
| MEANDER_CORNER | A corner established where a township line, section line, or other survey intersects the bank of a navigable stream or other meanderable body of water [USGS, 1996, Part 5: Public Land Survey System] |
| SPOT | A point with a measured vertical position of less than third order accuracy, measured relative to a reference datum [USGS, 2001, Part 7: Hypsography] |
| UNMONUMENTED | Indicates that no permanent marker has been placed |
| WEAK_CORNER | Corners established by the USDA Forest Service that have been found but their location has not been tied to their true ground position [USGS, 2003] |
| WITNESS_CORNER | A monumented station on a line of the survey that is used to perpetuate an important location more or less remote from and without special relation to any regular corner [USGS, 1996, Part 5: Public Land Survey System] |

## CodeNavaidEquipmentType

Used by Attributes: Navigational Aid Equipment - Navaid Equipment Type

| Value | Definition (Notes) [Source] |
|---|---|
| ARSR | Air Route Surveillance Radar |
| ASR | Airport Surveillance Radar |
| DF | Direction Finding Equipment |
| DME | Distance Measuring Equipment |
| FM | Fan Marker |
| FMH | Fan Marker located with a radio beacon |
| GS CE | Glide Slope Capture Effect |
| GS EF | Glide Slope End Fire |
| GS NR | Glide Slope Null Reference |
| GS SB | Glide Slope Side Band |
| LOC | Localizer |
| MLSAZ | Microwave Landing System Azimuth Antenna |
| MLSDME | Microwave Landing System DME |
| MLSEL | Microwave Landing System Elevation Antenna |
| MSBLS-AZ | Microwave Scan Beam Landing System Azimuth |
| MSBLS-DME | Microwave Scan Beam Landing System Distance Measuring Equipment |
| MSBLS-EL | Microwave Scan Beam Landing System Elevation |
| MTI | Moving Target Indicator Reflector |
| NDB/C | Nondirectional Radio Beacon -- Compass Locator |
| NDB/H | Nondirectional Radio Beacon -- High Frequency |
| NDB/M | Nondirectional Radio Beacons/Medium HF |
| NDB/U | Nondirectional Radio Beacons/Ultra HF |
| PAR | Precision Approach Radar |
| SDF | Simplified Direction Finding Equipment |
| SECRA | Secondary Radar Antenna |
| TACAN | Tactical Air Navigation |
| TDR | Touchdown Reflector |
| TLS-APGS | Transponder Landing System Approach Glideslope |
| TLS-LOC | Transponder Landing System - Localizer |
| VISUAL | Used to identify the navaid as a visual system |
| VOR | VHF Omnidirectional Range |
| VORTAC | VOR and collocated TACAN |
| VOT | VOR Test Facility |

## CodeNavaidSystemType

Used by Attributes: Navigational Aid Equipment - Navaid System Type

| Value | Definition (Notes) [Source] |
|---|---|
| DF | Direction Finder |
| ILS | Instrument Landing System |
| MLS | Microwave Landing System |
| MSBLS | Microwave Scan Beam Landing System |
| NDB/C | Nondirectional Radio Beacon -- Compas Locator |
| NDB/H | Nondirectional Radio Beacon -- High Frequency |
| NDB/M | Nondirectional Radio Beacons/Medium HF |
| NDB/U | Nondirectional Radio Beacons/Ultra HF |
| PAR | Precision Approach Radar |
| TLS | Transponder Landing System |

## CodeObstacleSource

Used by Attributes: Obstacle - Obstacle Source;Obstruction Area - Obstacle Source

| Value | Definition (Notes) [Source] |
|---|---|
| AD | Airport Design and Planning |
| AF | FAA Tech Ops Field Survey |
| AO | Airports Field Office |
| DD | Digital Terrain Elevation Data |
| DI | U.S. Department of Interior Maps |
| DM | USGS Digital Elevation Model |
| EO | Estimated by Airport Owner |
| F77 | Part 77 Analysis |
| FI | Flight Inspection |
| NV | Non-Vertically Guided Airport Airspace Analysis |
| OF | Digital Obstacle File (FAA) |
| OR | Other Source not named |
| RS | Remote Sensed |
| SE | Spot Elevations |
| SR | Shuttle Radar Terrain Model |
| ST | State Coded |
| SV | Field Survey |
| TE | TERPS Analysis |
| VG | Vertically Guided Airport Airspace Analysis |
| WW | Worldwide DoD |

## CodeObstacleType

Used by Attributes: Obstacle - Obstacle Type;Obstruction Area - Obstacle Type

| Value | Definition (Notes) [Source] |
|---|---|
| AERIAL CABLEWAY | Aerial Cableway |
| AERIAL CABLEWAY PYLON | Aerial Cableway Pylon |
| AGRICULTURE EQUIPMENT | Generic for any agricultural equipment |
| AIRCRAFT | Generic for a parked or moving aircraft |
| AMUSEMENT PARK STRUCTURE | Amusement Park Structure |
| ANTENNA | Antenna |
| AQUEDUCT | Aqueduct |
| ARCH | Arch |
| ATHLETIC FIELD | Generic for any type of athletic field or stadium |
| BILLBOARD | Billboard |
| BLAST FURNACE | Blast Furnace |
| BLEACHERS | Bleachers |
| BRIDGE SUPERSTRUCTURE | Generic for larger bridges such as cable stayed bridges etc. |
| BRIDGE TOWER | Bridge Tower |
| BRIDGE/OVERPASS/VIADUCT | Generic for any type of bridge |
| BUILDING | Generic for any type of building |
| BUSH | Generic for bushes and other low growing vegetation |
| CABLE CAR/RAILWAY | Cable Car/Railway |
| CATALYTIC CRACKER | An oil refinery unit in which the cracking of petroleum takes place in the presence of a catalyst |
| CATENARY | The curve formed by a perfectly flexible, uniformly dense, and inextensible cable suspended from its endpoints. |

| | |
|---|---|
| CHIMMNEY/SMOKESTACK | Chimmney/Smokestack |
| CHURCH | Generic for houses of worship |
| COMMUNICATION BUILDING | Communication Building |
| COMMUNICATION TOWER | Communication Tower |
| CONTROL TOWER | Control Tower |
| CONVEYOR | Conveyor |
| COOLING TOWER | A large tower or similar structure typically attached to a power plant through which water is circulated to lower its temperature by partial evaporation |
| CRANE | Crane |
| DAM | Dam |
| DEBRIS/RUINS | Debris/Ruins |
| DIRT PILE | Dirt Pile |
| DOME | Dome |
| DREDGE/POWERSHOVEL /DRAG | Dredge/Powershovel /Drag |
| ELEVATOR | Elevator |
| FLAGPOLE | Flagpole |
| FLARE PIPE | Flare Pipe |
| FORTIFICATION OR FORT | Fortification Or Fort |
| GRAIN BIN/SILO | Grain Bin/Silo |
| GRAIN ELEVATOR | Grain Elevator |
| HOPPER | Hopper |
| HORIZONTAL POINT | Point of known horizontal position |
| INTERSTATE | Interstate highways with 17 foot vehicle allowance added to the features elevation |
| LAUNCHPAD | Launchpad |
| LIGHT RAILWAY | Generic for people mover systems serving airports |
| LIGHT SUPPORT STRUCTURE | Light Support Structure |
| LIGHT VESSEL/LIGHTSHIP | Light Vessel/Lightship |
| LIGHTHOUSE | Lighthouse |
| MONUMENT | Generic for historical or cultural monuments |
| NATURAL HIGH POINT | Generic for high terrain features |
| NAVAID | Used when defined as an obstacle |
| NUCLEAR REACTOR | Nuclear Reactor |
| OFF-SHORE PLATFORM | Off-Shore Platform |
| PARKING LOT | Parking Lot |
| PLANT | Generic for manufacturing facilities |
| POLE | Generic for utility or light poles providing local service |
| POWER PLANT | Power Plant |
| POWER TRANSMISSION LINE | Larger Tower high power Utility lines |
| POWER TRANSMISSION PYLON | Larger tower high power utility structures |
| PRIMARY ROAD | Non-Interstate roads with 15 foot vehicle allowance added to the features elevation |
| PROCESING/TREATMENT PLANT | Procesing/Treatment Plant |
| RAILROAD | Railroad track with 23 foot vehicle allowance added to the features elevation. |
| REFINERY | Refinery |
| RIG/SUPERSTRUCTURE | Rig/Superstructure |
| ROAD SIGN | Interstate highway overhead signs |
| SCRUB | Scrub |
| SECONDARY ROAD | Local city, county state roads with 10 foot vehicle allowance added to the features elevation |
| SHIP | Ship underway |
| SHIP STORAGE | Ship manufacturing or storage facilities |
| SIGN | Generic for any type of sign other than interstate or street signs |
| SKI JUMP | Ski Jump |
| SKI LIFT | Ski Lift |
| SKI PYLON | Ski Pylon |

| | |
|---|---|
| SKYSCRAPER | Skyscraper |
| SPIRE | Spire |
| STACK | Stack |
| STADIUM | Stadium |
| STEEPLE | Steeple |
| STORAGE DEPOT | Storage Depot |
| STREET SIGN | Signs used to control traffic or provide direction information other than interstate signs |
| SUBSTATION/TRANSFORMER | Substation/Transformer |
| TANK | Generic for other types of tanks |
| TELEPHONE LINE | Telephone Line |
| TELEPHONE PYLON/POLE | Telephone Pylon/Pole |
| TETHERED BALLOON | Tethered Balloon |
| TOWER (NON-COMMUNICATON TOWERS) | Tower (Non-Communicaton Towers) |
| TRAFFIC LIGHT/SIGNAL | Traffic Light/Signal |
| TRAMWAY | Tramway |
| TREE | Generic for a single or small group of trees |
| TREE OUTLINE | Dense area of trees |
| UTILITY LINE | Generic for local utility service |
| VEGETATION | Vegetation |
| VEHICLE | Generic for any type of vehicle |
| VERTICAL POINT | Point of known elevation |
| VERTICAL STRUCTURE | Generic for items not classified otherwise in this list |
| WALL | Wall |
| WATER TOWER | Generic for water towers |
| WIND MOTOR | Wind Motor |
| WINDMILL | Single windmill |
| WINDMILL FARMS | Multiple Windmills located close together |

## CodeObstructionAreaType

Used by Attributes: Obstruction Area - Obstruction Area Type

| Value | Definition (Notes) [Source] |
|---|---|
| AG_EQUIP | Agricultural equipment |
| BUILDING | Building |
| GROUND | Ground |
| MOBILE_CRANE | Mobile_Crane |
| OTHER | Other |
| TREE | Tree |
| URBAN | Urban |
| VESSEL | Vessel |

## CodeOffsetDirection

Used by Attributes: Navigational Aid Equipment - Offset Direction

| Value | Definition (Notes) [Source] |
|---|---|
| CL | On centerline |
| L | Offset to the left |
| R | Offset to the right |

## CodeOisSurfaceCondition

Used by Attributes: Obstacle - Ois Surface Condition;Obstruction Area - OIS Surface Condition;Obstruction Identification Surface - OIS Surface Condition

| Value | Definition (Notes) [Source] |
|---|---|
| PRIMARY | Identifies an obstructing area solely within a single surface. |
| SUPPLEMENTARY | Used to identify when an obstructing area covers more than a single OIS. |

## CodeOisSurfaceType

Used by Attributes: Obstruction Identification Surface - OIS Surface Type

| Value | Definition (Notes) [Source] |
|---|---|
| AAAA | Approach Surfaces |
| AAAC | Conical Surface |
| AAAH | Horizontal Surface |
| AAAP | Primary Surfaces |
| AAAT | Transitional Surfaces |
| AAAV | Vertical Guidance Protection Surface |
| APRC77 | 14 CFR Part 77 Approach Surfaces |
| CONL77 | 14 CFR Part 77 Conical Surface |
| DEPT | Departure Analysis |
| HORZ 77 | 14 CFR Part 77 Horizontal Surface |
| OEIA | One Engine Inoperative Analysis |
| PRIM77 | 14 CFR Part 77 Primary Surface |
| TERP | TERPS Surfaces |
| TRNS77 | 14 CFR Part 77 Transitional Surfaces |

## CodeOisZoneType

Used by Attributes: Obstruction Identification Surface - Ois Zone Type

| Value | Definition (Notes) [Source] |
|---|---|
| APPROACH | Approach |
| CONICAL | Conical |
| HORIZONTAL | Horizontal |
| PRIMARY | Primary |
| TRANSITION | Transition |

## CodeOperationsType

Used by Attributes: Arresting Gear - Airport Facility Type;Airport Boundary - Operations Type

| Value | Definition (Notes) [Source] |
|---|---|
| CIVIL | Civil operations only |
| JOINT | Joint military and civil operations |
| MIL | Military operations only |

## CodePointType

Used by Attributes: Airport Control Point - Point Type

| Value | Definition (Notes) [Source] |
|---|---|
| AIRPORT_ELEVATION | Indicates the point of highest elevation on the landing surface of the airport. |
| ARP | Point identified is computed as the Airport reference point for the airport |

| | |
|---|---|
| ASOS | Location of the Automated Surface Observing System |
| AWOS | Location of the Aviation Weather Observing System |
| CENTERLINE_POINT | A point collected along the runway centerline whose location is variable based on collection method etc. Typically this point is used for runway profile points. |
| DISPLACED_THRESHOLD | Point provides the location of the displaced threshold for a runway |
| HELIPAD_REFERENCE_POINT | The point defined as the HelipadReferencePoint |
| IMAGERY | Imagery Control Point |
| OTHER | Other |
| PACS | Point referenced is the airport's Primary Airport Control Station |
| RUNWAY_CONTROL_POINT | Point provides the location and elevation of a specific point on the runway such as the point abeam an offset navaid or the intersection point of two runways defined in this standard as required information. |
| SACS | Point referenced is the airport's Secondary Airport Control Station |
| SAWS | Location of the Stand Alone Weather System |
| SEGMENTED_CIRCLE | Location of the airport segmented circle |
| SPOT_ELEVATION | Spot Elevation Point |
| STOPWAY_END | Point provides the end point for the stopway |
| TDZE | Touchdown Zone Elevation (TDZE) - Indicates the highest point along the runway centerline within the first 3000 feet from the threshold. |
| TEMPORARY_SURVEY_MARK | Temporary Survey Mark |
| VERTICAL_OBJECT | Point reference is a VerticalPointObject not classified by another feature but of possible significance |
| WIND_CONE | Location of the wind cone |

## CodeProjectStatus

Used by Attributes: Project Area - Project Status

| Value | Definition (Notes) [Source] |
|---|---|
| IN_PROGRESS | In progress |
| PLAN_ON_FILE | Indicates a project that is part of a long term (11 + years) plan |
| PLANNED | Indicates a project that is a part of a short term (0 - 5 year) plan |
| PROPOSED | Indicates a project that is part of a midterm (6 - 10 year) plan |

## CodeProjectType

Used by Attributes: Air Operations Area - ProjectType;Aircraft Gate Stand - ProjectType;Aircraft Non Movement Area - ProjectType;Airfield Light - ProjectType;Airport Boundary - ProjectType;Airport Control Point - ProjectType;Airport Parcel - ProjectType;Airport Sign - ProjectType;AnchorageArea - ProjectType;Apron - ProjectType;Arresting Gear - ProjectType;Blast Pad - ProjectType;Bridge - ProjectType;Building - ProjectType;County - ProjectType;Deicing Area - ProjectType;Dock - ProjectType;Driveway - ProjectType;Driveway Centerline - ProjectType;Easements And Rights of Way - ProjectType;Elevation Contour - ProjectType;Environmental Contamination Area - ProjectType;FAA Region - ProjectType;Fauna Hazard Area - ProjectType;Fence - ProjectType;Flood Plain - ProjectType;Flora Habitat Area - ProjectType;Flora Species Site - ProjectType;Frequency Area - ProjectType;Gate - ProjectType;Hazardous Material Storage Site - ProjectType;Image Area - ProjectType;Land and Hold Short Line - ProjectType;Land Use - ProjectType;Landmark Segment - ProjectType;Lease Area - ProjectType;Lease Area - ProjectType;Lease Area - ProjectType;Lease Area - ProjectType;Marking Area - ProjectType;Marking Line - ProjectType;Movement Area - ProjectType;Municipality - ProjectType;Navigation Buoy - ProjectType;Navigational Aid Critical Area - ProjectType;Navigational Aid Equipment - ProjectType;Navigational Aid Site - ProjectType;Noise Contour - ProjectType;Noise Incident - ProjectType;Noise Monitoring Point - ProjectType;Obstacle - ProjectType;Obstruction Area - ProjectType;Obstruction Identification Surface - ProjectType;Parcel - ProjectType;Parking Lot - ProjectType;Passenger Loading Bridge - ProjectType;Project Area - ProjectType;Railroad Centerline - ProjectType;Railroad Yard - ProjectType;Reference Grid Line - ProjectType;Restricted Access Boundary - ProjectType;Road Centerline - ProjectType;Road Point - ProjectType;Road Segment - ProjectType;Roof - ProjectType;Runway - ProjectType;Runway Arresting Area - ProjectType;Runway Centerline - ProjectType;Runway Element - ProjectType;Runway End - ProjectType;Runway Helipad Design Surface - ProjectType;Runway Intersection - ProjectType;Runway Label - ProjectType;Runway Protection Area - ProjectType;Runway Safety Area Boundary - ProjectType;Sample Collection Point - ProjectType;Seaplane Ramp Centerline - ProjectType;Seaplane Ramp Site -

ProjectType;Security Area - ProjectType;Security Identification Display Area - ProjectType;Security Perimeter Line - ProjectType;Shoreline - ProjectType;Shoulder - ProjectType;Sidewalk Segment - ProjectType;State - ProjectType;Sterile Area - ProjectType;Stopway - ProjectType;Tank Site - ProjectType;Taxi Channel - ProjectType;Taxiway Element - ProjectType;Taxiway Holding Position - ProjectType;Taxiway Intersection - ProjectType;Touchdown Lift Off - ProjectType;Tower - ProjectType;Tunnel - ProjectType;Turning Basin - ProjectType;Utility Line - ProjectType;Utility Point - ProjectType;Utility Polygon - ProjectType;Water Lane End - ProjectType;Water Operations Area - ProjectType;Wetland - ProjectType;Zoning - ProjectType

| Value | Definition (Notes) [Source] |
|---|---|

## CodeRecoveredCondition

Used by Attributes: Airport Control Point - Recovered Condition

| Value | Definition (Notes) [Source] |
|---|---|
| Disturbed but not missing | Surface mark destroyed (do not classify a mark as destroyed unless the actual disk is found and returned to the setting agency). |
| Good | Mark recovered in good condition |
| Other | Other |
| Poor | Mark recovered in poor condition and should be considered for replacement |
| Set now (for a first time description) | To identify a condition not available in the list. |
| Surface mark destroyed | Underground mark destroyed (do not classify a mark as destroyed unless the actual disk is found and returned to the setting agency). |
| Underground mark destroyed | Newly established mark |

## CodeRestrictionType

Used by Attributes: Door - Access Restriction Type;Elevator - Access Restriction Type

| Value | Definition (Notes) [Source] |
|---|---|
| Biometric | Biometric |
| BMS | BMS |
| Card | Card Reader |
| CardKey | Card and Key |
| Cyper | Cyper Lock |
| Key | Key |
| None | None |
| Other | Other |
| Unknown | Unknown |

## CodeRouteType

Used by Attributes: Road Segment - Route 1 Type;Road Segment - Route 2 Type;Road Segment - Route 3 Type

| Value | Definition (Notes) [Source] |
|---|---|
| ALLEY | Hard-surface or loose-surface narrow street or passageway primarily found between or behind buildings |
| CITY | City or subdivision streets |
| COUNTY | Hard-surface roads not included in a higher class and improved, loose-surface roads passable in all kinds of weather. These roads are adjuncts to the primary and secondary highway systems. These roads are under the jurisdiction and maintained by county au |
| FIFTHCLASS | Fifth Class Unimproved roads passable only with 4-wheel-drive vehicles [USGS, 2001, Part 3: Transportation] |
| FIRSTCLASS | First Class |
| FOURTHCLASS | Unimproved roads which are generally passable only in fair weather and used mostly for local traffic. Also included are driveways, regardless of construction [USGS, 2001, Part 3: Transportation] |

| | |
|---|---|
| INTERSTATE | Hard-surface highways including Interstate and U.S. numbered highways (including alternates), primary State routes, and all controlled access highways [USGS, 2001, Part 3: Transportation] |
| JEEPTRAIL | Unimproved roads passable only with 4-wheel-drive vehicles |
| LOCAL | Local jurisdiction roads |
| NATIONAL | First Class - Hard-surface highways including Interstate and U.S. numbered highways (including alternates), primary State routes, and all controlled access highways [USGS, 2001, Part 3: Transportation]. E.g. U.S. 66 |
| OTHER | Other class of road |
| SECONDCLASS | Second Class Hard-surface highways including secondary State routes, primary county routes, and other highways that connect principal cities and towns, and link these places with primary highway system [USGS, 2001, Part 3: Transportation] |
| STATE | Hard-surface State routes under the control and jurisdiction of State authorities |
| THIRDCLASS | Hard-surface roads not included in a higher class and improved, loose-surface roads passable in all kinds of weather. These roads are adjuncts to the primary and secondary highway systems. Also included are important private roads such as main logging or |
| TRAIL | Unimproved roads passable only with 4-wheel-drive vehicles, snowmobiles, motocross bikes, and so forth |

## CodeRunwayProtectionAreaType

Used by Attributes: Runway Protection Area - Type

| Value | Definition (Notes) [Source] |
|---|---|
| CWY | Clearway |
| ILS | ILS protection area. Protects ILS signal distortion by forbidding large objects in the area. |
| LIGHT | Light Plane Surface |
| OTHER | Other |
| SNOW | Area protected from snow accumulation |
| STOPWAY | A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off. |
| VGSI | Visual Glide Slope Indicator (VGSI) protection area. Protects VGSI signal coverage by forbidding objects in the area. |

## CodeSamplePointLocation

Used by Attributes: Sample Collection Point - Collection Point Location

| Value | Definition (Notes) [Source] |
|---|---|
| AS | Air sample |
| BH | Borehole |
| BIO | Biological sample |
| GWS | Ground water sample |
| OTHER | Other |
| SEDS | Sediment sample |
| SOIL | Soil sample |
| SOLM | Solid material sample |
| SURF | Surface water sample |
| WAS | Waste water sample |
| WL | Well |
| PC | Pavement core |

## CodeSegmentType

Used by Attributes: Railroad Centerline - Segment Type;Road Segment - Segment Type;Sidewalk Segment - Segment Type;Tunnel - Segment Type

| Value | Definition (Notes) [Source] |
|---|---|
| BEGIN | Beginning section of the segment |
| CONNECTING | Intermediate segments connecting beginning and ending, beginning and intersection, or intersection and end. |
| END | Ending section of the segment |
| INTERSECTION | Defined intersection of multiple segments |

## CodeShape

Used by Attributes: Column - Column Shape

| Value | Definition (Notes) [Source] |
|---|---|
| Circular | Circular |
| Ellipse | Ellipse |
| Other | Other |
| Rectangular | Rectangular |
| Square | Square |
| Unknown | Unknown |
| Wide Flange | Wide Flange |

## CodeShorelineType

Used by Attributes: Shoreline - Shoreline Type

| Value | Definition (Notes) [Source] |
|---|---|
| APPARENT | Apparent edge of vegetation. Representation of the vegetative border is considered approximate because this line cannot be accurately identified on the ground, due to intricate growth patterns and change over time |
| INDEFINITE | Conditions prevent the feature from being confidently positioned. Horizontal data are confidently positioned within 0.02 Inches, at map scale, of the true ground position. Vertical data are confidently positioned within one-half contour interval of true g |
| MEAN_HIGH_LEVEL | The average limit of dry land during periods of highest water level (for example, high tide |
| MEAN_LOW_LEVEL | The average limit of dry land during periods of lowest water level (for example, low tide |
| MEAN_SEA_LEVEL | The arithmetic mean of hourly heights observed over some specified time |

## CodeShoulderType

Used by Attributes: Shoulder - Shoulder Type

| Value | Definition (Notes) [Source] |
|---|---|
| O | Other airfield pavement with a shoulder |
| R | Runway |
| T | Taxiway |

## CodeSignTypeCode

Used by Attributes: Airport Sign - Sign Type

| Value | Definition (Notes) [Source] |
|---|---|
| CARGO | Inbound Destination Sign - areas set aside for cargo handling |
| FBO | Inbound Destination Sign - fixed base operator |
| FUEL | Inbound Destination Sign - areas where aircraft are fueled or serviced |
| HOLD_INSTRUMENT_LANDING_SYSTEM | Holding Position Sign for ILS Critical Areas |
| HOLD_RUNWAY_APPROACH | Holding Position Sign for Runway Approach Areas |

| | |
|---|---|
| HOLD_RUNWAY_INTERSECTION | Holding Position Sign for Runway/Runway Intersections |
| INFO | Signs installed on the airside of an airport, other than taxiway guidance signs or runway distance remaining signs. |
| MIL | Inbound Destination Sign - areas set aside for military aircraft |
| NO_ENTRY | No Entry Sign |
| OUTBOUND_DESTINATION | Outbound Destination Sign |
| PAX | Inbound Destination Sign - areas set aside for passenger handling |
| ROAD_STOP | Stop sign in areas where vehicle roadways intersect runways or taxiways |
| ROAD_YIELD | Yield sign in areas where vehicle roadways intersect runways or taxiways |
| RSA_RUNWAY_APPROACH | Runway Safety Area/OFZ and Runway Approach Boundary Sign |
| RUNWAY_DISTANCE_REMAINING | Sign that designates the remaining runway distance to pilots during takeoff and landing operations |
| RUNWAY_EXIT | Runway Exit Sign |
| RUNWAY_LOCATION | Runway Location Sign |
| TAXIWAY_DIRECTION | Taxiway Direction Sign |
| TAXIWAY_END | Taxiway Ending Marker |
| TAXIWAY_LOCATION | Taxiway Location Sign |
| TERMINAL | Inbound Destination Sign - gate positions at which aircraft are loaded and unloaded |

## CodeSpaceClass

Used by Attributes: Lease Area - Class;Lease Area - Class

| Value | Definition (Notes) [Source] |
|---|---|
| Airlines Common Use | Airlines Common Use |
| Airlines Leased | Airlines Leased |
| BAA Maryland | BAA Maryland |
| CUTE Joint Use | CUTE Joint Use |
| Federal SP Leased | Federal SP Leased |
| Federal SP Unleased | Federal SP Unleased |
| MAA Occupied | MAA Occupied |
| MAA Vacant | MAA Vacant |
| Misc. Tennants | Misc. Tennants |
| Other | Other |
| Public Circulation | Public Circulation |
| Restrooms | Restrooms |
| Unknown | Unknown |
| Utilities | Utilities |

## CodeSpaceType

Used by Attributes: Lease Area - Type;Lease Area - Type

| Value | Definition (Notes) [Source] |
|---|---|
| Airline VIP Lounge | Airline VIP Lounge |
| BAA Food and Beverage | BAA Food and Beverage |
| BAA Retail | BAA Retail |
| Baggage Claim | Baggage Claim |
| Baggage Makeup | Baggage Makeup |
| Circulation | Circulation |
| Communication | Communication |
| Dead Space | Dead Space |
| EDS EDT | EDS EDT |
| Electrical | Electrical |

| | |
|---|---|
| FIS | FIS |
| Holdroom | Holdroom |
| Kiosk | Kiosk |
| Lounge or Meeting Rooms | Lounge or Meeting Rooms |
| Mechanical | Mechanical |
| Office Public | Office Public |
| Office Restricted | Office Restricted |
| Other | Other |
| Public Elevator | Public Elevator |
| Public Escalator | Public Escalator |
| Public Stairs | Public Stairs |
| Restricted | Restricted |
| Security Checkpoint | Security Checkpoint |
| Ticket Counter | Ticket Counter |
| Unfinished | Unfinished |
| Unknown | Unknown |

## CodeStatus

Used by Attributes: Air Operations Area - Status;Aircraft Gate Stand - Status;Aircraft Non Movement Area - Status;Airfield Light - Status;Airport Boundary - Status;Airport Control Point - Status;Airport Parcel - Status;Airport Sign - Status;AnchorageArea - Status;Apron - Status;Arresting Gear - Status;Blast Pad - Status;Bridge - Status;Building - Status;County - Status;Deicing Area - Status;Dock - Status;Driveway - Status;Driveway Centerline - Status;Easements And Rights of Way - Status;Elevation Contour - Status;Environmental Contamination Area - Status;FAA Region - Status;Fauna Hazard Area - Status;Fence - Status;Flood Plain - Status;Flora Habitat Area - Status;Flora Species Site - Status;Frequency Area - Status;Gate - Status;Hazardous Material Storage Site - Status;Image Area - Status;Land and Hold Short Line - Status;Land Use - Status;Landmark Segment - Status;Lease Area - Status;Lease Area - Status;Lease Area - Status;Lease Area - Status;Marking Area - Status;Marking Line - Status;Movement Area - Status;Municipality - Status;Navigation Buoy - Status;Navigational Aid Critical Area - Status;Navigational Aid Equipment - Status;Navigational Aid Site - Status;Noise Contour - Status;Noise Incident - Status;Noise Monitoring Point - Status;Obstacle - Status;Obstruction Area - Status;Obstruction Identification Surface - Status;Parcel - Status;Parking Lot - Status;Passenger Loading Bridge - Status;Project Area - Status;Railroad Centerline - Status;Railroad Yard - Status;Reference Grid Line - Status;Restricted Access Boundary - Status;Road Centerline - Status;Road Point - Status;Road Segment - Status;Roof - Status;Runway - Status;Runway Arresting Area - Status;Runway Centerline - Status;Runway Element - Status;Runway End - Status;Runway Helipad Design Surface - Status;Runway Intersection - Status;Runway Label - Status;Runway Protection Area - Status;Runway Safety Area Boundary - Status;Sample Collection Point - Status;Seaplane Ramp Centerline - Status;Seaplane Ramp Site - Status;Security Area - Status;Security Identification Display Area - Status;Security Perimeter Line - Status;Shoreline - Status;Shoulder - Status;Sidewalk Segment - Status;State - Status;Sterile Area - Status;Stopway - Status;Tank Site - Status;Taxi Channel - Status;Taxiway Element - Status;Taxiway Holding Position - Status;Taxiway Intersection - Status;Touchdown Lift Off - Status;Tower - Status;Tunnel - Status;Turning Basin - Status;Utility Line - Status;Utility Point - Status;Utility Polygon - Status;Water Lane End - Status;Water Operations Area - Status;Wetland - Status;Zoning - Status

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | Abandoned |
| ACTIVE | Active surface |
| AIRSPACED | A favorable airspace determination has been issued |
| AS_BUILT | As-Built |
| BROKEN | Broken or rough surface |
| CLOSED | Closed surface |
| CONDEMNED | Condemned |
| DEMOLISHED | Demolished |
| ENV_CLEARED | All required environmental actions and documentation described in FAAO 5050.4 National Environmental Policy Act (NEPA) have been satisfied |
| FAILED_AID | Failure or irregular operation of visual aides |
| INACTIVE | Inactive |
| LIMITED | Limited operations] |

| | |
|---|---|
| LONG_TERM | Indicates the feature is part of a long term (11 + years) plan |
| MEDIUM_TERM | Indicates the feature is part of a midterm (6 - 10 year) plan |
| NON_OPERATIONAL | Non-operational |
| OCCUPIED | Occupied |
| OPERATIONAL | Operational (fully) |
| OTHER | Other |
| PARKED | Parked or disabled aircraft |
| PERMANENT | Permanent |
| PORTABLE | Portable |
| RELEASED | Used to track land released by the airport |
| S_POWER | Secondary power supply in operation |
| SEMI_PERMANENT | Semi_Permanent |
| SHORT_TERM | Indicates the feature is part of a short term (0 - 5 year) plan |
| TBD | To be determined |
| TEMPORARY | Temporary |
| TERMINATED | Terminated no longer used |
| UNDER_CONSTRUCTION | Planned or under construction |
| UNKNOWN | Unknown |
| UNOCCUPIED | Unoccupied |
| WORK_IN_PROGRESS | Construction or work in progress |

## CodeStructureType

Used by Attributes: Building - Structure Type

| Value | Definition (Notes) [Source] |
|---|---|
| APARTMENT | Apartment building |
| APM_STATION | Automated People Mover station |
| APM_TRACK | Automated People Mover tracks |
| ARENA | Sports Arena or facility |
| ARFF_STATION | Aircraft Rescue and Firefighting station |
| ATC_FACILITY | Combined or Single (other than the airport control tower) Air Traffic Control Facility |
| ATC_TOWER | Air Traffic Control Tower |
| BANK | Bank |
| BARN | barn |
| CAPITOL | Capitol |
| CHURCH | church/temple |
| CITY_HALL | City Hall |
| COMMUNITY_CENTER | Community Center |
| CONCERT_HALL | Concert Hall |
| CONDO | condominium |
| COURT_HOUSE | Court House |
| DRY_STORAGE_DOCK | Dry Storage Dock |
| DUPLEX | house, duplex |
| DWELLING | dwelling |
| EARTHWORKS | Earthworks |
| FBO | Fixed Base operator |
| GARAGE | A structure used for the maintenance, storage, and display of motor vehicles |
| GRAIN_ELEVATOR | Grain Elevator |
| HANGAR | A structure used for the maintenance, storage, and display of aircraft |
| HIGHRISE | A multi-story structure with at least 12 floors or 35 meters (115 feet) in height |
| HOSPITAL | Hospital |
| HOUSE | house, single family |

| | |
|---|---|
| JAIL_OR_PRISON | Jail or Prison |
| MEDICAL_CENTER | Medical Center |
| MEMORIAL | Memorial |
| MOBILE_HOME | Mobile home or trailer |
| MUSEUM | Museum. |
| OFFICE | office building |
| OFFSHORE_PLATFORM | Offshore Platform |
| OTHER | Other |
| PARKING_GARAGE | Parking garage or facility |
| POLICE | Police Station |
| POST_OFFICE | Post Office |
| POWER_PLANT | A facility used in the production and distribution of electrical power |
| PUBLIC_TRANSPORTATION | Public transportation facility (buses, taxi, etc.) |
| RADIO_FACILITY | Radio Facility |
| RAILROAD_STATION | Railroad Station |
| RAIN_SHED | Rain Shed |
| RENTAL_FACILITY | Rental Car facility |
| SCHOOL | Any building or structure whose primary purpose is education |
| SECURITY | Security Office |
| SKYSCRAPER | Office or housing where the building clearly stands out above its surrounding built environment and significantly changes the overall skyline of that particular city |
| SNOW_SHED | A structure used for the storage, maintenance of Snow removal equipment |
| STORAGE_FACILITY | A structure used for any type of storage |
| TBD | to be determined |
| TERMINAL | Airport Terminal building |
| THEATER | Theater (any type) |
| TOWER | Tower |
| TOWN_HALL | Town Hall |
| TOWNHOUSE | townhouse |
| WATER_TANK | Water Tank |

## CodeSurfaceCondition

Used by Attributes: Aircraft Gate Stand - Surface Condition;Apron - Surface Condition;Blast Pad - Surface Condition;Runway - Surface Condition;Runway Arresting Area - Surface Condition;Runway Element - Surface Condition;Shoulder - Surface Condition;Stopway - Surface Condition;Taxiway Element - Surface Condition;Touchdown Lift Off - Surface Condition

| Value | Definition (Notes) [Source] |
|---|---|
| FAIR | Fair condition |
| GOOD | Good condition |
| OTHER | Other |
| POOR | Poor condition |
| UNSAFE | Surface is deemed unsafe for operations |

## CodeSurfaceMaterial

Used by Attributes: Apron - Surface Material;Blast Pad - Surface Material;Bridge - Surface Material;Driveway - Surface Material;Road Segment - Surface Material;Runway - Surface Material;Runway Arresting Area - Surface Material;Runway Element - Surface Material;Shoulder - Surface Material;Sidewalk Segment - Surface Material;Stopway - Surface Material;Taxiway Element - Surface Material;Touchdown Lift Off - Surface Material;Water Operations Area - Surface Material

| Value | Definition (Notes) [Source] |
|---|---|
| AG | Asphalt grooved |
| Ags | Asphalt and turf |

| | |
|---|---|
| ANG | Asphalt ungrooved |
| BE | Bare earth |
| CA | Concrete and asphalt |
| CG | Concrete grooved |
| CGS | Concrete and turf |
| CNG | Concrete ungrooved |
| DS | Desert/Sand |
| DT | Dirt |
| EMAS | Engineered Material Arresting System |
| FW | Fresh Water |
| GR | Gravel |
| GS | Turf |
| SI | Snow/Ice |
| SW | Salt Water |
| W | Water |

## CodeSurfaceType

Used by Attributes: Aircraft Gate Stand - Surface Type;Apron - Surface Type;Blast Pad - Surface Type;Parking Lot - Surface Type;Road Segment - Surface Type;Runway - Surface Type;Runway Element - Surface Type;Shoulder - Surface Type;Stopway - Surface Type;Taxiway Element - Surface Type;Touchdown Lift Off - Surface Type

| Value | Definition (Notes) [Source] |
|---|---|
| P | Specially prepared hard surface Paved |
| S | Specially prepared hard surface Unpaved |
| U | Not a specially prepared hard surface |

## CodeTaxiwayType

Used by Attributes: Taxiway Element - Taxiway Type

| Value | Definition (Notes) [Source] |
|---|---|
| AIR_TAXIWAY | Air taxiway |
| AIR_TLANE | Air taxilane |
| APRON | Apron taxiway |
| BYPASS | Bypass holding bay |
| CROSS_OVER | Crossover taxiway |
| EAT | End Around Taxiway |
| ENTER_EXIT_TAXIWAY | Entrance and Exit taxiway |
| EXIT | Exit/turnoff taxiway |
| FASTEXIT | Rapid exit/turnoff taxiway |
| GATE_TLANE | Gate/stand taxilane |
| GND | Ground taxiway |
| HOLDING | Holding bay |
| INLINE | Inline taxiway |
| OTHER | Those not listed here |
| PARALLEL | Parallel taxiway |
| STUB | Stub taxiway |
| TLANE | Taxilane |
| TURN_AROUND | Turn around taxiway |

## CodeThresholdType

Used by Attributes: Runway End - Threshold Type

| Value | Definition (Notes) [Source] |
|---|---|
| Displaced | An indication that the landing threshold is located at a point other than the runway end |
| Normal | An indication that the landing threshold corresponds to the end of the runway |

## CodeUseCode

Used by Attributes: Navigational Aid Equipment - Use Code

| Value | Definition (Notes) [Source] |
|---|---|
| C | Compass Locator |
| H | High Altitude for VOR/VORTAC/TACAN; All Altitudes for NDB at 50-90 watts |
| HH | All Altitudes for NDB; 2000 watts or more |
| L | Low Altitude |
| MH | All Altitudes for NDB; Under 50 watts |
| T | Terminal |

## CodeUtilityType

Used by Attributes: Utility Line - Utility Type;Utility Point - Utility Type;Utility Polygon - Utility Type

| Value | Definition (Notes) [Source] |
|---|---|
| COMMUNICATION_SYSTEM | Telephone, telegraph, cable, video and voice transmission lines |
| COMPRESSED_AIR_SYSTEM | The components of a compressed air system. |
| CONTROL_MONITORING_SYSTEM | The components of an electronic monitoring and control system (EMCS) including cables, devices, etc. |
| ELECTRICAL_EXT_LIGHT | The components of an electrical exterior lighting system including cables, switches, devices, transformers, etc. Does not include airfield, NAVAID or approach lighting. |
| ELECTRICAL_SYSTEM | The components of an electrical distribution system including cables, switches, devices, motors, transformers, etc. |
| FUEL_SYSTEM | The components of a fuel distribution system consisting of pipes, fittings, fixtures, pumps, tanks, etc. |
| GENERAL_UTILITY | The components of utility system which are universal in use and purpose and do not belong to a specific utility. |
| HEAT_COOL_SYSTEM | The components of a heating and cooling distribution system consisting of pipes, fittings, fixtures, etc. |
| INDUSTRIAL_SYSTEM | The components of an industrial waste collection system including pipes, fittings, fixtures, tanks, lagoons, etc. |
| NATURAL_GAS_SYSTEM | The components of a natural gas distribution system consisting of pipes, fittings, fixtures, etc. |
| NUCLEAR_REACTOR | The components of a nuclear system such as nuclear fuel, Nuclear research, nuclear waste, and nuclear weapons. |
| POWER_SYSTEM | Power transmission lines |
| SALTWATER_SYSTEM | The components of a salt water collection system. |
| STORM_SYSTEM | The components of a storm drainage collection system including pipes, fittings, fixtures, etc. |
| TRANSMISSION_LINE | Objects related to the long distance transmission of gas, oil, or hazardous liquid. |
| WASTEWATER_SYSTEM | The components of a wastewater collection system including pipes, fittings, fixtures, treatment plants, collection locations, etc. |
| WATER_SYSTEM | The components of a water system including pipes, fittings, fixtures, treatment plants, etc. |

## CodeVerticalStructureMaterial

Used by Attributes: Dock - Floating Barge Material;Dock - Floating Dock Material;Dock - Gangway Material;Dock - Pier Material;Bridge - Vertical Structure Material;Tank Site - Vertical Structure Material;Tower - Vertical Structure Material

| Value | Definition (Notes) [Source] |
|---|---|
| COMPOSITION | Composition |

| | |
|---|---|
| CONCRETE | Concrete |
| METAL | Metal |
| ROCK | Rock |
| STONE_BRICK | Stone/brick |
| WOOD | Wood |

## CodeWallMaterial

Used by Attributes: Wall - Surface Material

| Value | Definition (Notes) [Source] |
|---|---|
| CMU | Concrete Masonry Unit |
| Composite | Composite |
| Glass Curtain | Glass Curtain |
| Metal Stud | Metal Stud |
| Other | Other |
| Unknown | Unknown |
| Aluminum | Aluminum |
| Block | Block |
| Brick | Brick |
| Concrete | Concrete |
| Partition | Partition |
| Railing | Railing |
| Steel | Steel |
| Wallboard | Wallboard |
| Wood | Wood |
| Other | Other |

## CodeZoneType

Used by Attributes: Flood Plain - Zone Type

| Value | Definition (Notes) [Source] |
|---|---|
| 10_YEAR | Areas subject to 10 year flooding. |
| 100_YEAR | Areas subject to 100 year flooding. |
| 15_YEAR | Areas subject to 15 year flooding. |
| 25_YEAR | Areas subject to 25 year flooding. |
| 5_YEAR | Areas subject to 5 year flooding. |
| 50_YEAR | Areas subject to 50 year flooding. |
| 500_YEAR | Areas subject to 500 year flooding. |
| GENERAL | Areas prone to flooding in general. |
| OTHER | Other |
| PROJECTED | Areas expected to be subject to flooding in the future. |

## CodeZoningClass

Used by Attributes: Zoning - Zoning Classification

| Value | Definition (Notes) [Source] |
|---|---|
| COMMERCIAL | Areas which are zoned for merchandising, shopping, or other commercial development. (Source SDSFIE) |
| INDUSTRIAL | Areas which are zoned for factory, manufacturing, or other industrial development. (Source SDSFIE) |
| OTHER | Other Zoning |

| | |
|---|---|
| QUASI_PUBLIC | Areas which are zoned public although under private ownership or control. (Source SDSFIE) |
| RESIDENTIAL | Areas which are zoned for housing or residential development. (Source SDSFIE) |

# Appendix I-2 - Cross Reference of CADD and GIS

This appendix lists each of the CADD layers defined in MAA's CADD Standards Manual, Version 4.0 that are associated with GIS layers defined in this document, as well as the Utilities Supplement. The layers are ordered by category (i.e. Airfield, Airspace, Environmental, etc.) and then by Feature Type (i.e. Air Operations Area, Aircraft Deicing Area, etc.) as the GIS layers were in Appendix 1. Each feature type has one or more CADD layers associated with it. For each CADD layer, the layer name is provided. The first character of the CADD layer names, which indicates the discipline, has been replaced with an asterisk ('*') meaning that multiple discipline codes may apply. Applicable discipline codes for each CADD layers are listed in Appendix 1 of the CADD Standards Manual, but are omitted here. It is important to note that many CADD layers included in the CADD Standards Manual are not relevant for GIS and are therefore excluded from this appendix.

## I-2.1 Discipline Indicators

| Designator | Discipline | Designator | Discipline |
|---|---|---|---|
| A | Architectural | I | Interiors |
| B | Geotechnical | L | Landscaping |
| C | Civil | M | Mechanical |
| E | Electrical | P | Plumbing |
| F | Fire Protection | S | Structural |
| G | General | T | Telecommunications |
| H | Hazardous Materials | V | Surveying/Mapping |

*Table I-2.1, Discipline Designators that Can be Used As Permitted in the CADD Standards Manual to Replace the '*' in the GIS to CADD Layer Crosswalk*

## I-2.2 GIS to CADD Layer Crosswalk

### I-2.2.1 Airfield

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Airfield | AircraftNonMovementArea | Line | *-APRN-ANOM |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-APPR |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-DIST |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-LANE |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-OBST |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-RUNW |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-SIGN |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-TAXI |
| Airfield | AirfieldLight | Point | *-AFLD-LITE-THRS |
| Airfield | AirOperationsArea | Polygon | *-AFLD-AHOA |
| Airfield | AirportSign | Point | *-APRN-SIGN |
| Airfield | AirportSign | Point | *-ELEV-SIGN |

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Airfield | AirportSign | Point | *-FLOR-SIGN |
| Airfield | AirportSign | Point | *-LITE-DIST |
| Airfield | AirportSign | Point | *-LITE-SIGN |
| Airfield | AirportSign | Point | *-PRKG-SIGN |
| Airfield | AirportSign | Point | *-ROAD-SIGN |
| Airfield | AirportSign | Point | *-RUNW-SIGN |
| Airfield | AirportSign | Point | *-SIGN-EXTN |
| Airfield | AirportSign | Point | *-SIGN-FRMG |
| Airfield | AirportSign | Point | *-SIGN-GAGE |
| Airfield | AirportSign | Point | *-SIGN-PANL |
| Airfield | AirportSign | Point | *-SIGN-SPRT |
| Airfield | AirportSign | Point | *-SPCL-TRAF |
| Airfield | AirportSign | Point | *-TAXI-SIGN |
| Airfield | Apron | Polygon | *-APRN-GRND |
| Airfield | Apron | Polygon | *-APRN-OTLN |
| Airfield | DeicingArea | Polygon | *-APRN-DEIC |
| Airfield | FrequencyArea | Polygon | *-AFLD-FREQ |
| Airfield | MarkingArea | Polygon | *-HELI-IDEN |
| Airfield | MarkingArea | Polygon | *-HELI-TDZM |
| Airfield | MarkingArea | Polygon | *-RUNW-CNTR-MRKG |
| Airfield | MarkingArea | Polygon | *-RUNW-DISP |
| Airfield | MarkingArea | Polygon | *-RUNW-DIST |
| Airfield | MarkingArea | Polygon | *-RUNW-IDEN |
| Airfield | MarkingArea | Polygon | *-RUNW-SIDE |
| Airfield | MarkingArea | Polygon | *-RUNW-TDZM |
| Airfield | MarkingArea | Polygon | *-RUNW-THRS |
| Airfield | MarkingLine | Line | *-APRN-CNTR |
| Airfield | MarkingLine | Line | *-APRN-HOLD |
| Airfield | MarkingLine | Line | *-APRN-MRKG |
| Airfield | MarkingLine | Line | *-APRN-SECU |
| Airfield | MarkingLine | Line | *-APRN-SHLD |
| Airfield | MarkingLine | Line | *-APRN-SHLD-MRKG |
| Airfield | MarkingLine | Line | *-HELI-BLST |
| Airfield | MarkingLine | Line | *-HELI-CNTR-MARK |
| Airfield | MarkingLine | Line | *-HELI-DIST |
| Airfield | MarkingLine | Line | *-HELI-SIDE |
| Airfield | MarkingLine | Line | *-OVRN-CNTR |
| Airfield | MarkingLine | Line | *-OVRN-SHLD-MRKG |
| Airfield | MarkingLine | Line | *-PADS-CNTR |

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Airfield | MarkingLine | Line | *-PADS-OTLN |
| Airfield | MarkingLine | Line | *-PVMT-MRKG |
| Airfield | MarkingLine | Line | *-PVMT-MRKG-WHIT |
| Airfield | MarkingLine | Line | *-PVMT-MRKG-YELO |
| Airfield | MarkingLine | Line | *-RUNW-CNTR-MARK |
| Airfield | MarkingLine | Line | *-RUNW-SHLD |
| Airfield | MarkingLine | Line | *-TAXI-CNTR-MARK |
| Airfield | MarkingLine | Line | *-TAXI-CNTR-MRKG |
| Airfield | MarkingLine | Line | *-TAXI-EDGE |
| Airfield | MarkingLine | Line | *-TAXI-SHLD |
| Airfield | PassengerLoadingBridge | Polygon | *-APRN-ACPK-BRDG |
| Airfield | PassengerLoadingBridge | Polygon | *-EQPM-JETB |
| Airfield | RestrictedAccessBoundary | Line | *-AFLD-SECR-RSTR |
| Airfield | Runway | Polygon | *-RUNW-EDGE |
| Airfield | RunwayArrestingArea | Polygon | *-RUNW-ARST |
| Airfield | RunwayBlastPad | Polygon | *-RUNW-BLST |
| Airfield | RunwayCenterline | Line | *-RUNW-CNTR |
| Airfield | RunwayElement | Polygon | *-RUNW-SEGM |
| Airfield | RunwayEnd | Point | *-RUNW-ENDP |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-BLDR |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-KEYH |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-NMOV |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-OFA_ |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-OFZ_ |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-POFA |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-RPZ_ |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-AFLD-DSRF-RSA_ |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-HELI-DSRF |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-OVRN-IDEN |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-OVRN-OTLN |
| Airfield | RunwayHelipadDesignSurface | Polygon | *-RUNW-CLRW |
| Airfield | RunwayLabel | Point | *-RUNW-ENDP-MARK |
| Airfield | RunwayLAHSO | Line | *-RUNW-LAHS |
| Airfield | RunwaySafetyAreaBoundary | Polygon | *-RUNW-SAFT |
| Airfield | Shoulder | Polygon | *-HELI-SHLD |
| Airfield | Shoulder | Polygon | *-PADS-SHLD |
| Airfield | Stopway | Polygon | *-RUNW-STWY |
| Airfield | TaxiwayElement | Polygon | *-TAXI-OTLN |
| Airfield | TaxiwayHoldingPosition | Line | *-TAXI-HOLD |

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Airfield | TaxiwayIntersection | Polygon | *-TAXI-INTS |
| Airfield | TouchdownLiftOff | Polygon | *-HELI-TLOF |

### I-2.2.2 Airspace

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Airspace | LandmarkSegment | Line | *-AIRS-LNDM |
| Airspace | Obstacle | Point | *-AIRS-OBSC |
| Airspace | Obstacle | Point | *-AIRS-OBST-PPNT |
| Airspace | Obstacle | Point | *-OBST-AIRS |
| Airspace | ObstructionArea | Polygon | *-AIRS-OBST-LINE |
| Airspace | ObstructionArea | Polygon | *-AIRS-OBST-POLY |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-OTHR |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-PART-APRC |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-PART-CONL |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-PART-HORZ |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-PART-PRIM |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-PART-TRNS |
| Airspace | ObstructionIdSurface | Polygon | *-AIRS-TERP |

### I-2.2.3 Cadastral

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Cadastral | AirportBoundary | Polygon | *-AFLD-PROP |
| Cadastral | County | Polygon | *-PROP-CNTY |
| Cadastral | EasementsAndRightsofWay | Polygon | *-PROP-ESMT |
| Cadastral | EasementsAndRightsofWay | Polygon | *-PROP-RWAY |
| Cadastral | EasementsAndRightsofWay | Polygon | *-PROP-RWAY-ACQU |
| Cadastral | FaaRegionArea | Polygon | *-AFLD-FAAR |
| Cadastral | LandUse | Polygon | *-PROP-LUSE |
| Cadastral | LandUse | Polygon | *-PROP-LUSE-FUTR |
| Cadastral | LeaseZone | Polygon | *-PROP-LEAS |
| Cadastral | Municipality | Polygon | *-PROP-MUNI |
| Cadastral | Parcel | Polygon | *-PROP-LINE |
| Cadastral | Parcel | Polygon | *-PROP-QTRS |
| Cadastral | Parcel | Polygon | *-PROP-SECT |
| Cadastral | Parcel | Polygon | *-PROP-SXTS |
| Cadastral | State | Polygon | *-PROP-STAT |
| Cadastral | Zoning | Polygon | *-PROP-ZONG |

### I-2.2.4 Environmental

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Environmental | EnvironmentalContaminationArea | Polygon | *-POLL-CONC |
| Environmental | EnvironmentalContaminationArea | Polygon | *-POLL-POTN |
| Environmental | FaunaHazardArea | Polygon | *-BORW-IDEN |
| Environmental | FaunaHazardArea | Polygon | *-BORW-LINE |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-BURR |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-DENS |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-GATR |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-HUMK |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-NEST |
| Environmental | FaunaHazardArea | Polygon | *-ECCO-PRCH |
| Environmental | FaunaHazardArea | Polygon | *-SITE-VEGE-HZRD |
| Environmental | FaunaHazardArea | Polygon | *-TOPO-SPEC |
| Environmental | FloodZone | Polygon | *-FLHA-025Y |
| Environmental | FloodZone | Polygon | *-FLHA-050Y |
| Environmental | FloodZone | Polygon | *-FLHA-100Y |
| Environmental | FloodZone | Polygon | *-FLHA-200Y |
| Environmental | FloodZone | Polygon | *-FLHA-500Y |
| Environmental | FloodZone | Polygon | *-FLHA-IDEN |
| Environmental | FloodZone | Polygon | *-TOPO-FLZN |
| Environmental | FloraSpeciesSite | Point | *-PLNT-CTNR |
| Environmental | FloraSpeciesSite | Point | *-PLNT-PLTS |
| Environmental | FloraSpeciesSite | Point | *-PLNT-TREE |
| Environmental | FloraSpeciesSite | Point | *-SITE-VEGE-PONT |
| Environmental | ForestStandArea | Polygon | *-PLNT-BEDS |
| Environmental | ForestStandArea | Polygon | *-PLNT-BUSH |
| Environmental | ForestStandArea | Polygon | *-PLNT-BUSH-LINE |
| Environmental | ForestStandArea | Polygon | *-PLNT-GRND |
| Environmental | ForestStandArea | Polygon | *-PLNT-MLCH |
| Environmental | ForestStandArea | Polygon | *-PLNT-SPRG |
| Environmental | ForestStandArea | Polygon | *-PLNT-TREE-LINE |
| Environmental | ForestStandArea | Polygon | *-PLNT-TURF |
| Environmental | ForestStandArea | Polygon | *-SITE-VEGE |
| Environmental | ForestStandArea | Polygon | *-SITE-VEGE-AREA |
| Environmental | HazMatStorageSite | Point | *-STOR-HAZM |
| Environmental | HazMatStorageSite | Point | *-STOR-HAZW |
| Environmental | NoiseContour | Polygon | *-TOPO-AUZN |
| Environmental | NoiseIncident | Point | *-TOPO-AUCO |

| | | | |
|---|---|---|---|
| Environmental | NoiseMonitoringPoint | Point | *-TOPO-AUST |
| Environmental | SampleCollectionPoint | Point | *-BORE-CONE |
| Environmental | SampleCollectionPoint | Point | *-BORE-GENL-LOCN |
| Environmental | SampleCollectionPoint | Point | *-BORE-GPRO-LOCN |
| Environmental | SampleCollectionPoint | Point | *-BORE-HOLE |
| Environmental | SampleCollectionPoint | Point | *-BORE-LINE |
| Environmental | SampleCollectionPoint | Point | *-BORE-PUSH |
| Environmental | SampleCollectionPoint | Point | *-BORE-STRK |
| Environmental | SampleCollectionPoint | Point | *-BORE-UNDS-LOCN |
| Environmental | SampleCollectionPoint | Point | *-BORE-VCOR-LOCN |
| Environmental | SampleCollectionPoint | Point | *-MNST-AIRQ |
| Environmental | SampleCollectionPoint | Point | *-SAMP-AIRS |
| Environmental | SampleCollectionPoint | Point | *-SAMP-AUGR |
| Environmental | SampleCollectionPoint | Point | *-SAMP-BIOL |
| Environmental | SampleCollectionPoint | Point | *-SAMP-CORE |
| Environmental | SampleCollectionPoint | Point | *-SAMP-DRVE |
| Environmental | SampleCollectionPoint | Point | *-SAMP-GRAB |
| Environmental | SampleCollectionPoint | Point | *-SAMP-GWTR |
| Environmental | SampleCollectionPoint | Point | *-SAMP-IDEN |
| Environmental | SampleCollectionPoint | Point | *-SAMP-MAGN |
| Environmental | SampleCollectionPoint | Point | *-SAMP-PERC |
| Environmental | SampleCollectionPoint | Point | *-SAMP-PITS |
| Environmental | SampleCollectionPoint | Point | *-SAMP-SEDI |
| Environmental | SampleCollectionPoint | Point | *-SAMP-SOIL |
| Environmental | SampleCollectionPoint | Point | *-SAMP-SOLI |
| Environmental | SampleCollectionPoint | Point | *-SAMP-SWTR |
| Environmental | SampleCollectionPoint | Point | *-SAMP-VERT |
| Environmental | SampleCollectionPoint | Point | *-SAMP-WASH |
| Environmental | SampleCollectionPoint | Point | *-SAMP-WAST |
| Environmental | SampleCollectionPoint | Point | *-TOPO-BORE |
| Environmental | SampleCollectionPoint | Point | *-WELL-ASR~ |
| Environmental | SampleCollectionPoint | Point | *-WELL-MONT |
| Environmental | SampleCollectionPoint | Point | *-WELL-PIZO |
| Environmental | Shoreline | Polygon | *-CHAN-BANK-TOP~ |
| Environmental | Shoreline | Polygon | *-CHAN-DACL |
| Environmental | Shoreline | Polygon | *-CHAN-DACL-IDEN |
| Environmental | Shoreline | Polygon | *-CHAN-LIMT |
| Environmental | Shoreline | Polygon | *-CHAN-LIMT-IDEN |
| Environmental | Shoreline | Polygon | *-DRED-OHWM |
| Environmental | Shoreline | Polygon | *-MNST-GWTR |
| Environmental | Shoreline | Polygon | *-MNST-SWTR |

| | | | |
|---|---|---|---|
| Environmental | Shoreline | Polygon | *-RIVR-BANK-TOP~ |
| Environmental | Shoreline | Polygon | *-RIVR-EDGE |
| Environmental | Shoreline | Polygon | *-SITE-EWAT |
| Environmental | Shoreline | Polygon | *-SITE-WATR |
| Environmental | Shoreline | Polygon | *-TOPO-SHOR |
| Environmental | Shoreline | Polygon | *-TOPO-WATR |
| Environmental | Wetland | Polygon | *-TOPO-WETL |
| Environmental | Wetland | Polygon | *-WETL-BOGS |
| Environmental | Wetland | Polygon | *-WETL-FENS |
| Environmental | Wetland | Polygon | *-WETL-MRSH |
| Environmental | Wetland | Polygon | *-WETL-MRSH-SALT |
| Environmental | Wetland | Polygon | *-WETL-MRSH-TIDL |
| Environmental | Wetland | Polygon | *-WETL-PCSN |
| Environmental | Wetland | Polygon | *-WETL-PHOL |
| Environmental | Wetland | Polygon | *-WETL-RPRN |
| Environmental | Wetland | Polygon | *-WETL-SLGH |
| Environmental | Wetland | Polygon | *-WETL-SWMP |

### I-2.2.5 Geodetic

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Geodetic | AirportControlPoint | Point | *-CTRL-BMRK |
| Geodetic | AirportControlPoint | Point | *-CTRL-HCPT |
| Geodetic | AirportControlPoint | Point | *-CTRL-HVPT |
| Geodetic | AirportControlPoint | Point | *-CTRL-TRAV |
| Geodetic | AirportControlPoint | Point | *-CTRL-VCPT |
| Geodetic | AirportControlPoint | Point | *-SURV-DATA |
| Geodetic | AirportControlPoint | Point | *-TOPO-RNYE |
| Geodetic | AirportControlPoint | Point | *-TOPO-SPOT |
| Geodetic | AirportControlPoint | Point | *-TOPO-SPOT-BLDG |
| Geodetic | CoordinateGridCell | Polygon | *-CTRL-GRID |
| Geodetic | CoordinateGridCell | Polygon | *-DETL-GRPH |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-COOR |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-COOR-IDEN |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-EXTR |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-FRAM |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-HORZ |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-IDEN |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-INTR |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-MAJR |

| | | | |
|---|---|---|---|
| Geodetic | CoordinateGridCell | Polygon | *-GRID-MINR |
| Geodetic | CoordinateGridCell | Polygon | *-GRID-VERT |
| Geodetic | CoordinateGridCell | Polygon | *-PROJ-LALO-COOR |
| Geodetic | CoordinateGridCell | Polygon | *-PROJ-STAT-COOR |
| Geodetic | CoordinateGridCell | Polygon | *-TOPO-COOR |
| Geodetic | CoordinateGridCell | Polygon | *-TOPO-COOR-LALO |
| Geodetic | CoordinateGridCell | Polygon | *-TOPO-COOR-STAT |
| Geodetic | ElevationContour | Line | *-GRAD-AFTR |
| Geodetic | ElevationContour | Line | *-GRAD-EXST |
| Geodetic | ElevationContour | Line | *-GRAD-EXST-BASE |
| Geodetic | ElevationContour | Line | *-GRAD-EXST-SYR1 |
| Geodetic | ElevationContour | Line | *-GRAD-EXST-SYR2 |
| Geodetic | ElevationContour | Line | *-GRAD-EXST-SYR3 |
| Geodetic | ElevationContour | Line | *-GRAD-EXST-SYR4 |
| Geodetic | ElevationContour | Line | *-GRAD-FNSH |
| Geodetic | ElevationContour | Line | *-GRAD-PRED |
| Geodetic | ElevationContour | Line | *-GRAD-SCLN |
| Geodetic | ElevationContour | Line | *-TOPO-BKLN |
| Geodetic | ElevationContour | Line | *-TOPO-DTMP |
| Geodetic | ElevationContour | Line | *-TOPO-DTMT |
| Geodetic | ElevationContour | Line | *-TOPO-MAJR |
| Geodetic | ElevationContour | Line | *-TOPO-MAJR-IDEN |
| Geodetic | ElevationContour | Line | *-TOPO-MINR |
| Geodetic | ElevationContour | Line | *-TOPO-MINR-IDEN |
| Geodetic | ElevationContour | Line | *-TOPO-MINR-ONEF |
| Geodetic | ElevationContour | Line | *-TOPO-MINR-TWOF |
| Geodetic | ElevationContour | Line | *-TOPO-SLOP-FILL |
| Geodetic | ElevationContour | Line | *-TOPO-SLOP-IDEN |
| Geodetic | ElevationContour | Line | *-TOPO-SLOP-TOPT |
| Geodetic | ElevationContour | Line | *-TOPO-SOUN |
| Geodetic | ElevationContour | Line | *-WATR-SURF |
| Geodetic | ImageArea | Polygon | *-AERI-BNDY |
| Geodetic | ImageArea | Polygon | *-AERI-PHOT |
| Geodetic | ImageArea | Polygon | *-AERI-PNPT |
| Geodetic | ImageArea | Polygon | *-IMAG-BDRY-QUAD |

### I-2.2.6 Interior

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Interior | BaggageCarousel | Polygon | *-BAGS-CARR |

| | | | |
|---|---|---|---|
| Interior | BaggageConveyor | Polygon | *-BAGS-CVRI |
| Interior | BaggageConveyor | Polygon | *-BAGS-CVRO |
| Interior | BuildingColumn | Polygon | *-COLS-CNTR |
| Interior | BuildingColumn | Polygon | *-COLS-ENCL |
| Interior | BuildingColumn | Polygon | *-COLS-POST |
| Interior | BuildingColumn | Polygon | *-COLS-PRIM |
| Interior | BuildingColumn | Polygon | *-COLS-RBAR |
| Interior | BuildingColumn | Polygon | *-COLS-SECD |
| Interior | BuildingColumn | Polygon | *-FNDN-FTNG |
| Interior | BuildingColumn | Polygon | *-FNDN-PEDS |
| Interior | BuildingColumn | Polygon | *-FNDN-PILE |
| Interior | Door | Line | *-ALRM-EQPM-SECU |
| Interior | Door | Line | *-DOOR-FULL |
| Interior | Door | Line | *-DOOR-PRHT |
| Interior | Door | Line | *-DOOR-SECR |
| Interior | Door | Line | *-HVAC-ACCS |
| Interior | Door | Line | *-OTLN-OPNG |
| Interior | Elevator | Polygon | *-ACCS-EVTR |
| Interior | Elevator | Polygon | *-FLOR-EVTR |
| Interior | Escalator | Polygon | *-FLOR-ECSL |
| Interior | Floor | Polygon | *-FLOR-LEVL |
| Interior | Floor | Polygon | *-FLOR-OTLN |
| Interior | Floor | Polygon | *-OTLN-FLOR |
| Interior | Floor | Polygon | *-OTLN-ROOF |
| Interior | Furnishing | Point | *-FURN-ACCS |
| Interior | Furnishing | Point | *-FURN-ADPC |
| Interior | Furnishing | Point | *-FURN-ARTW |
| Interior | Furnishing | Point | *-FURN-FLOR |
| Interior | Furnishing | Point | *-FURN-FREE |
| Interior | Furnishing | Point | *-FURN-GRID |
| Interior | Furnishing | Point | *-FURN-IDEN |
| Interior | Furnishing | Point | *-FURN-PLNT |
| Interior | Furnishing | Point | *-FURN-SEAT |
| Interior | Furnishing | Point | *-FURN-STOR |
| Interior | MovingSidewalk | Polygon | *-FLOR-MWLK |
| Interior | Room | Polygon | *-FLOR-OTLN-RPRM |
| Interior | Space | Polygon | *-FLOR-SPCE |
| Interior | Stair | Polygon | *-ACCS-STRS |
| Interior | Stair | Polygon | *-ACCS-STRS-FRMG |
| Interior | Stair | Polygon | *-FLOR-HRAL |
| Interior | Stair | Polygon | *-FLOR-STRS |

| | | | |
|---|---|---|---|
| Interior | Stair | Polygon | *-SITE-STRS |
| Interior | Wall | Line | *-FNDN-ANCH |
| Interior | Wall | Line | *-FNDN-CNTR |
| Interior | Wall | Line | *-FNDN-GRBM |
| Interior | Wall | Line | *-PENE-WALL |
| Interior | Wall | Line | *-WALL-ABUT |
| Interior | Wall | Line | *-WALL-CAVI |
| Interior | Wall | Line | *-WALL-CELL |
| Interior | Wall | Line | *-WALL-CNTR |
| Interior | Wall | Line | *-WALL-COFF |
| Interior | Wall | Line | *-WALL-CURT |
| Interior | Wall | Line | *-WALL-CWMG |
| Interior | Wall | Line | *-WALL-FULL |
| Interior | Wall | Line | *-WALL-FULL-EXTR |
| Interior | Wall | Line | *-WALL-FULL-INTR |
| Interior | Wall | Line | *-WALL-GARD |
| Interior | Wall | Line | *-WALL-HEAD |
| Interior | Wall | Line | *-WALL-JAMB |
| Interior | Wall | Line | *-WALL-LOAD |
| Interior | Wall | Line | *-WALL-MONO |
| Interior | Wall | Line | *-WALL-MOVE |
| Interior | Wall | Line | *-WALL-MSE~ |
| Interior | Wall | Line | *-WALL-NONL |
| Interior | Wall | Line | *-WALL-OPEN-LVRS |
| Interior | Wall | Line | *-WALL-PCST |
| Interior | Wall | Line | *-WALL-PRHT |
| Interior | Wall | Line | *-WALL-RBAR |
| Interior | Wall | Line | *-WALL-RTWL |
| Interior | Wall | Line | *-WALL-SHEA |
| Interior | Wall | Line | *-WALL-SPCL |
| Interior | Wall | Line | *-WALL-STUD |
| Interior | Window | Line | *-GLAZ-FULL |
| Interior | Window | Line | *-GLAZ-PRHT |
| Interior | Window | Line | *-GLAZ-SILL |

### I-2.2.7 Navigational Aids

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-COMM |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-CRIT |

| | | | |
|---|---|---|---|
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-GPS_ |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-ILS_ |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-MCWV |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-OTHR |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-RADI |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-RADR |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-RMTE |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-SITE |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-SYST |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-AIDS-WTHR |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-BCNS-IDEN |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-BCNS-MISC |
| Navigational Aids | NavaidEquipment | Point | *-AFLD-BCNS-STRB |

### I-2.2.8 SeaPlane

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| SeaPlane | NavigationBuoy | Point | *-SEAP-BUOY |
| SeaPlane | NavigationBuoy | Point | *-SIGN-BUOY |
| SeaPlane | SeaplaneRampCenterline | Line | *-SEAP-RAMP-CNTR |
| SeaPlane | SeaplaneRampSite | Polygon | *-SEAP-RAMP |

### I-2.2.9 Security

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Security | SecurityArea | Polygon | *-AFLD-SECR-SECA |
| Security | SecurityIdDisplayArea | Polygon | *-AFLD-SECR-SIDA |
| Security | SterileArea | Polygon | *-AFLD-SECR-STER |
| Security | SurveillanceCamera | Point | *-CCTV-EQPM |

### I-2.2.10 Structures

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Structures | Building | Polygon | *-BLDG-DECK |
| Structures | Building | Polygon | *-BLDG-DOCK |
| Structures | Building | Polygon | *-BLDG-OTLN |
| Structures | Building | Polygon | *-BLDG-OVHD |
| Structures | Building | Polygon | *-BLDG-PRCH |
| Structures | Building | Polygon | *-DECK-FLOR |
| Structures | Building | Polygon | *-DECK-ROOF |

| | | | |
|---|---|---|---|
| Structures | Building | Polygon | *-ELEV-OTLN |
| Structures | Building | Polygon | *-EXST-BLDG |
| Structures | Building | Polygon | *-OTLN-BLDG |
| Structures | Building | Polygon | *-OTLN-STRC |
| Structures | Building | Polygon | *-PLAN-OTLN |
| Structures | ConstructionArea | Polygon | *-PROP-CONS |
| Structures | ConstructionArea | Polygon | *-SITE-OTLN |
| Structures | Fence | Line | *-DETL-FENC-SECU |
| Structures | Fence | Line | *-SAFE-FENC |
| Structures | Fence | Line | *-SITE-FENC |
| Structures | Gate | Line | *-DETL-GATE |
| Structures | Gate | Line | *-GATE-AXIS |
| Structures | Gate | Line | *-GATE-MISC |
| Structures | Gate | Line | *-SITE-GATE |
| Structures | Tower | Point | *-STRC-TOWR |

### I-2.2.11 Surface Transportation

| Category | Feature Class | Geometry | CADD Layer Name |
|---|---|---|---|
| Surface Transportation | Bridge | Polygon | *-BRDG-BEAR |
| Surface Transportation | Bridge | Polygon | *-BRDG-CNTR |
| Surface Transportation | Bridge | Polygon | *-BRDG-DECK |
| Surface Transportation | Bridge | Polygon | *-BRDG-OTLN |
| Surface Transportation | Bridge | Polygon | *-MATL-CRAN |
| Surface Transportation | Bridge | Polygon | *-RAIL-BRDG |
| Surface Transportation | Bridge | Polygon | *-SITE-BRDG |
| Surface Transportation | Bridge | Polygon | *-SITE-STRC |
| Surface Transportation | DrivewayArea | Polygon | *-ROAD-DRIV |
| Surface Transportation | DrivewayCenterline | Line | *-ROAD-DRIV-CNTR |
| Surface Transportation | ParkingLot | Polygon | *-PRKG-OTLN |
| Surface Transportation | RailroadCenterline | Line | *-RAIL-BRDG-CNTR |

| | | | |
|---|---|---|---|
| Surface Transportation | RailroadCenterline | Line | *-RAIL-CNTR |
| Surface Transportation | RailroadCenterline | Line | *-RAIL-TRAK |
| Surface Transportation | RailroadYard | Polygon | *-RAIL-YARD |
| Surface Transportation | RoadCenterline | Line | *-ROAD-CNTR |
| Surface Transportation | RoadPoint | Point | *-ROAD-POIN |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-ASPH |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-CONC |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-CURB |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-GRVL |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-OTLN |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-SHLD |
| Surface Transportation | RoadSegment | Polygon | *-ROAD-UPVD |
| Surface Transportation | Sidewalk | Polygon | *-BRDG-CURB |
| Surface Transportation | Sidewalk | Polygon | *-GATE-WALK |
| Surface Transportation | Sidewalk | Polygon | *-SITE-WALK |
| Surface Transportation | Tunnel | Polygon | *-ACCS-TUNL |
| Surface Transportation | Tunnel | Polygon | *-FNDN-TUNL |
| Surface Transportation | Tunnel | Polygon | *-SITE-TUNL |

# Appendix I-3 - Utilities Supplement

This document defines communications and utilities feature classes that are included in MAA's Geographic Information System (GIS) Data Standard. This document is a supplement to the MAA Geographic Information System Data Standard and should be used by anyone developing or checking GIS data for MAA that includes communications or utility features. This document is related to the content included in the Geographic Information System Data Standard and should only be used in conjunction with that document.

This Utilities Supplement contains a list of 271 GIS Feature Types. The Feature Types are grouped into categories (i.e., General, Electrical, Communications, etc.) for ease of use. For each Feature Type, the class name, geometry type, sensitivity level, and a definition are provided. Suggested accuracies are also provided. Accuracies are indicated at a reasonable level that will meet a broad range of end user requirements. Individual project scopes, technical limitations and other factors may require data to be of a higher or lower level of accuracy. Attributes are also provided along with their type and definition. The following figure provides a key to the information provided in this supplement.

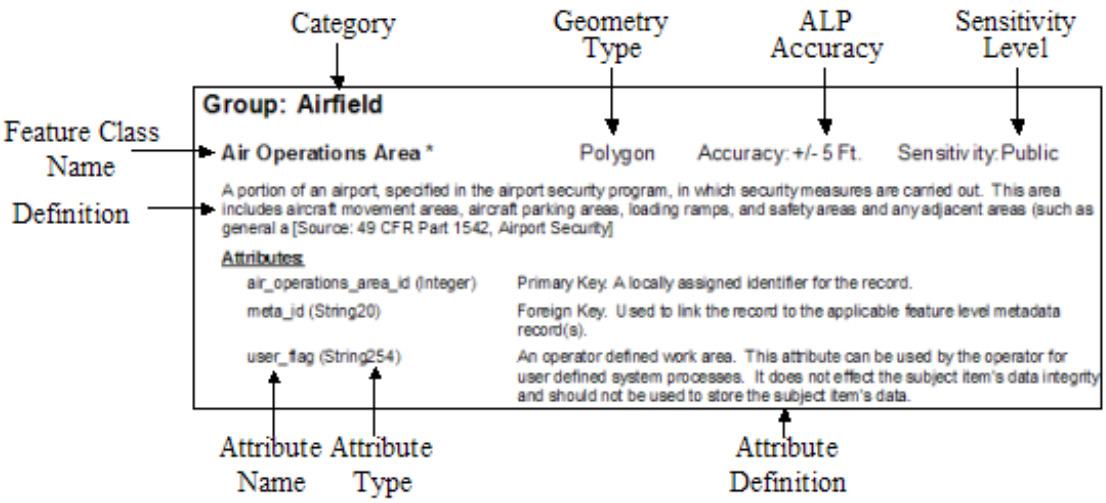



*Figure 1 - Legend*

At the end of this document is a list of acceptable domain values for each attribute domain list.

## Data Set: Air

### Air : Drain Separator

(Database Feature Class Name = CompressedAirDrainSeparator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

This table contains information about compressed air drain separators. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Air : Fitting

(Database Feature Class Name = CompressedAirFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying compressed air. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| fittyp (CodeCompAirFitting) | Discriminator. The type of fitting used for the compressed air unit. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Air : Pipe Line

(Database Feature Class Name = CompressedAirPipeLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry compressed air from location to location [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| length (Double) | The overall length of the feature.[Center]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground air line pipe.[Air Force]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |

| | |
|---|---|
| cblMaterial (CodeElectricCable) | Cable material. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| size (CodePipeDiameter) | The size of the pipe |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record.The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Air : Tank Area

(Database Feature Class Name = CompressedAirTankArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An area of physical boundary encompassing one or more tanks.

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| color (CodeColor) | The color of the compressed air tank. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |

| | |
|---|---|
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| tankCapacity (Integer) | The capacity of the tank. |
| tankSt (CodeStyleTank) | This value differentiates similar entities by use or type. |
| tankUse (CodeTankUse) | The particular kind or use of the industrial waste water tank. |
| topElevation (Double) | The top elevation of the tank. |
| verticalStructureMaterial (String16) | The vertical structure material. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record.The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Air : Valve

(Database Feature Class Name = CompressedAirValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device to control flow through a compressed air line. [SDSFIE REEGIS].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Air : Valve Pit

(Database Feature Class Name = CompressedAirValvePit)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A below grade chamber, too small to enter, containing one or more valves that control the flow of compressed air. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Communications

## Communications : Access Coverage Area

(Database Feature Class Name = CommAccessCoverageArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

The nominal coverage area for a wireless local area network (WLAN) access point. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| avgss (Double) | Average Signal Strength for coverage area.[AIR FORCE]. |
| maxsnr (Double) | Maximum Signal to Noise Ratio (dbm) for coverage area.[AIR FORCE]. |
| minsnr (Double) | Minimum Signal to Noise Ratio (dbm) for coverage area.[AIR FORCE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| maxdr (Double) | Maximum Data Rate for the coverage area.[AIR FORCE]. |
| mindr (Double) | Minimum Data Rate for the coverage area.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Access Point

(Database Feature Class Name = CommAccessPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An access point is a station that transmits and receives data in a wireless local area network (WLAN). [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | The local name of the Access Point.[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| encProt (CodeCryptographyProtocol) | Protocol used to provide encryption for the access point (WEP, WPA, etc.).[AIR FORCE]. |
| antType (CodeCommAntenna) | The type of communications antenna used.[AIR FORCE]. |
| pomx (String16) | The Access Point designator as defined in the POMX Site Survey Report.[AIR FORCE]. |
| ids (CodeBoolean) | A boolean indicating whether the WLAN AP has an Intrusion Detection System (IDS).[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| antennaLocation (CodeBoolean) | A boolean indicating whether the antenna is located inside a building.[AIR FORCE]. |
| ssid (String50) | The service set identification of the device.[AIR FORCE]. |
| mac (String20) | The MAC address of the device.[AIR FORCE]. |
| numSens (Integer) | The number of sensors used for the Intrusion Detection System (IDS).[AIR FORCE]. |
| standard (String16) | IEEE wireless standard used (i.e. 802.11a, b, g, etc.).[AIR FORCE]. |

| | |
|---|---|
| channel (Integer) | Channel number utilized.[AIR FORCE]. |
| gain (Double) | The measure of signal amplification.[AIR FORCE]. |
| height (Double) | Antenna height above ground level.[AIR FORCE]. |
| elevation (Double) | The height of the antenna as measured from a reference point or from sea level.[AIR FORCE]. |
| radiationPattern (CodeAntRadPattern) | The radiation pattern of the antenna.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Air Pipe

(Database Feature Class Name = CommAirLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe which conveys pressurized air to a pressurized telephone cable system [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pipeLength (Double) | A measurement of the longer of two linear axes. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| groundElevation1 (Double) | The elevation of the ground surface at node_id_1, in feet (English units) or meters (SI units) above some datum. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| groundElevation2 (Double) | The elevation of the ground surface at node_id_2, in feet (English units) or meters (SI units) above some datum. |
| pressMax (Double) | The manufacturers or industry standards maximum pressure rating of the subject item. |
| pressNorm (Double) | The manufacturers or industry standards normal pressure rating of the subject item. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Air Pressure Device

(Database Feature Class Name = CommAirPressureDevice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any device which supports a cable pressurization system, for example valves, compressors, pressure transducers, air dryers, and pressure mete. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String16) | The manufacturers serial, or unique identification number of the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| airpType (CodeAirPressureDeviceType) | The type of air pressure device.[Austin and Pitts]. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from list or entered from field inspections. |
| featureUse (CodeValveType) | The site specific use of the valve. |
| devSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| devSize (Double) | The manufacturers nominal size designation. |
| deviceElevation (Double) | The elevation measured at centerline of the valve, in feet (English Units) or meters (SI Units) above some datum. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| placement (CodePlacementOfAirPreType) | Indicates the placement of the device.[AIR FORCE]. |
| description (String255) | A description of the feature. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Amplifier

(Database Feature Class Name = CommAmplifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any electronic device intended to boost the power or amplify the signal associated with a communications system. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| gain (Double) | The measure of signal amplification.[Tinker Air Force Base]. |
| bandwidth (Double) | The difference between the highest and lowest frequencies that an amplifier can pass.[Tinker Air Force Base]. |
| power (Double) | The amplifier power.[Tinker Air Force Base]. |
| ampType (CodeAmplifierType) | Discriminator - Amplifier type[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| inSigLvl (Double) | The amount of the input signal to the amplifier.[Tinker Air Force Base]. |
| outsigLvl (Double) | The output level of the signal.[Tinker Air Force Base]. |
| impedIn (Double) | The input impedance of the amplifier[Tinker Air Force Base]. |
| impedOut (Double) | The output impedance of the amplifier.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Antenna Site

(Database Feature Class Name = CommAntenna)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of a communications antenna. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| corpName (String80) | Name of station corporation.[HSIP]. |

**Attributes:**

| | |
|---|---|
| length (Double) | A measurement of the longer of two linear axes. |
| diameter (Double) | The width of a cylindrical or circular antenna.[Tinker Air Force Base]. |
| antType (CodeCommAntenna) | Discriminator. The type of communications antenna.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| azimuth (Double) | The angle of horizontal deviation. |
| bandwidth (Double) | The difference between the highest and lowest frequencies that an antenna can pass.[Tinker Air Force Base]. |
| elevation (Double) | The height of the antenna as measured from a reference point or from sea level.[Tinker Air Force Base]. |
| gain (Double) | The measure of signal amplification.[Tinker Air Force Base]. |
| txPower (Double) | The transmission power rating of the antenna.[Tinker Air Force Base]. |
| txFreq (Double) | The transmission frequency of the antenna.[Tinker Air Force Base]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| antUse (CodeCommAntennaUsageType) | The usage of communications antenna.[AIR FORCE]. |
| beamwdthE (Integer) | The measurement of vertical beamwidth at half power.[Tinker Air Force Base]. |
| beamwdthH (Integer) | The measurement of horizontal beamwidth at half power.[Tinker Air Force Base]. |
| eqFpArea (Double) | The surface area used for calculating wind loading for tower design.[Tinker Air Force Base]. |
| freqRngH (Double) | The highest frequency antenna is designed to pass.[Tinker Air Force Base]. |
| rxFreq (Double) | The receiving frequency of the antenna.[Tinker Air Force Base]. |
| freqRngL (Double) | The lowest frequency antenna is designed to pass.[Tinker Air Force Base]. |
| ftbRatio (Integer) | The isolation provided by directional antennas away from the beam.[HSIP]. |
| height (Double) | The overall height of an antenna unit - base to top.[HSIP]. |
| maxWind (Integer) | The maximum wind speed antenna is designed to withstand.[HSIP]. |
| polarizatn (Integer) | The rf polarization provided by antenna (as installed).[Tinker Air Force Base]. |
| rdomeDiameter (Double) | The radome diameter.[Tinker Air Force Base]. |
| vswr (Integer) | The maximum voltage that the Standing Wave Ratio antenna will operate at over range.[Tinker Air Force Base]. |

| | |
|---|---|
| weight (Integer) | The weight of the antenna unit for use in tower loading calculations.[Tinker Air Force Base]. |
| polrType (CodeAntennaPolarization) | Polarization type.[AIR FORCE]. |
| aboveGroundLevel (Double) | Antenna height above ground level.[AIR FORCE]. |
| tilt (Double) | Antenna tilt angle for dish and parabolic antennas.[AIR FORCE]. |
| peakpower (Double) | The peak amount of power the antenna can withstand.[AIR FORCE]. |
| avgpwr (Double) | Average power rating for this antenna.[AIR FORCE]. |
| radiationPattern (CodeAntRadPattern) | The radiation pattern of the antenna.[AIR FORCE]. |
| connType (CodeCableConnectorType) | The type of RF connector presented on the antenna.[AIR FORCE]. |
| description (String255) | A description of the feature. |
| size (Integer) | The size of the subject item |
| impedance (Double) | The impedance of antenna for cable matching (in Ohms) apparent opposition in an electrical circuit to the flow of an alternating current. Analogous to the actual electrical resistance to a direct current. It is the ratio of effective electromotive force t[HSIP]. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Antenna Line

(Database Feature Class Name = CommAntennaLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Any device or wire which is intended to transmit or receive electromagnetic impulses to or from air or space. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cblMaterial (CodeElectricCable) | The material of the cable. |
| cblSize (CodeCableDimension) | The size of the cable. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Attenuator

(Database Feature Class Name = CommAttenuator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device for reducing the amplitude of an electrical signal without appreciable distortion [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| attnType (CodeAmplifierType) | The type of attenuator.[Tinker Air Force Base]. |
| loss (Double) | The amount of signal loss of the attenuator.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| bandwidth (Double) | The difference between the highest and lowest frequencies that an attenuator can pass.[Tinker Air Force Base]. |
| inSigLvl (Double) | The amplitude of the input signal.[Tinker Air Force Base]. |
| outsigLvl (Double) | The amplitude of the output signal.[Tinker Air Force Base]. |
| impedIn (Double) | The input impedance of the attenuator.[Tinker Air Force Base]. |
| impedOut (Double) | The output impedance of the attenuator.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Cable Bridge Line

(Database Feature Class Name = CommCableBridgeLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A structure used for the horizontal conveyance of A communications cable that allows passage over or under an obstacle such as a river, chasm, mountain, road or railroad. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (CodeEnclosureMaterials) | The material of the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Cable Ladder

(Database Feature Class Name = CommCableLadder)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A ladder type structure used to support the vertical conveyance of communications cable. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| height (Double) | The height of the cable ladder measured from the ground surface to the top.[Tinker Air Force Base]. |
| width (Double) | A measurement of the shorter of two linear axes.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Cable Rack Line

(Database Feature Class Name = CommCableRackLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A ladder type structure used to support the horizontal conveyance of communications cable. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

| | |
|---|---|
| material (CodeEnclosureMaterials) | The material composition of the cable way.[AIR FORCE]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Cable Tray Line

(Database Feature Class Name = CommCableTrayLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

An elevated structure enclosed on the bottom and sides usually fabricated from sheet metal which is used to support the horizontal conveyance of communications cable. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| width (Double) | A measurement of the shorter of two linear axes.[Tinker Air Force Base]. |
| cawType (CodeCableWayType) | The type of cable way.[Tinker Air Force Base]. |
| material (CodeEnclosureMaterials) | The material composition of the cable way.[AIR FORCE]. |
| height (Double) | The height of the cable way measured from the ground surface to the top.[Tinker Air Force Base]. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| length (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Cable Trough Line

(Database Feature Class Name = CommCableTroughLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A trench along the ground used for the horizontal conveyance of communications cables. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| material (CodeSurfaceComposition) | The material composition of the cable trough line.[Tinker Air Force Base]. |
| width (Double) | A measurement of the shorter of the two linear axes of the cable trough line.[Tinker Air Force Base]. |
| length (Double) | A measurement of the longer of the two linear axes.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Coaxial Line

(Database Feature Class Name = CommCoaxialLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

a transmission line that consists of a tube of electrically conducting material surrounding a central conductor held in place by insulators that is used to transmit telegraph, telephone, and television signals of high frequency [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | Any commonly used name for the cable.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| noConduct (Integer) | The number of conductors within the coaxial cable.[Tinker Air Force Base]. |
| cabUse (CodeCableUse) | Discriminator - The overall use of the coaxial cable. |
| cabNo (String16) | The alphanumeric string assigned to the cable.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cabElev (CodeCableElevation) | The vertical location of the cable.[Tinker Air Force Base]. |

| | |
|---|---|
| cblMaterial (CodeElectricCable) | The material composition of the cable.[Tinker Air Force Base]. |
| riverMile (Double) | The reference of the river mile associated with the cable.[REEGIS]. |
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[Tinker Air Force Base]. |
| frequency (Double) | The number of cycles per unit time of the current in the coaxial cable.[Tinker Air Force Base]. |
| cabOffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| installType (CodeCableInstallationType) | The installation type code for cables.[Austin and Pitts]. |
| chlSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| cblLength (Double) | The length dimension of the cable.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| description (String255) | Any brief description of the feature.[Tinker Air Force Base]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to alternating current within an electrical circuit.[Tinker Air Force Base]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : DbSplice

(Database Feature Class Name = CommDbsplice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A enclosed structure that represents a splice case (aerial or buried). [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | The standard identifier name (i.e. MH-19).[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| ecsType (CodeSpliceCaseEncapsulate) | The type of encapsulate used.[AIR FORCE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.[AIR FORCE]. |
| casType (CodeSpliceCaseTyp) | Used to describe the type of splice case.[AIR FORCE]. |
| casMaterial (CodeSpliceCaseMat) | Used to describe the material composition of the splice case.[AIR FORCE]. |
| size (Integer) | The size of the subject item |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Device

(Database Feature Class Name = CommDevice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A communications system component that lies within the signal transmission path and modifies the transmission characteristics of the media. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| devName (String30) | Any commonly used name for the device.[Tinker Air Force Base]. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| dgtlIn (Integer) | The total number of digital-in ports on the device. |
| dgtlOt (Integer) | The total number of digital-out ports on the device. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noPairlnk (Integer) | The number of cables attached to the device. |
| readout (CodeDisplayType) | The type of display or readout for the device. |
| anlgIn (Integer) | The total number of analog-in ports on the device. |
| anlgOt (Integer) | The total number of analog-out ports on the device. |
| description (String255) | A description of the feature[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| impedance (Double) | The apparent opposition in an electrical circuit to the flow of an alternating current. Analogous to the actual electrical resistance to a direct current. It is the ratio of effective electromotive force to the effective current.[Tinker Air Force Base]. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Ductbank

(Database Feature Class Name = CommDuctbank)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

One or more duct routed in parallel between two nodes [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| noDucts (Integer) | The total number of ducts in the ductbank. |
| noDuHigh (Integer) | The number of ducts in the y-direction |
| noDuWide (Integer) | The number of ducts in the x-direction |
| noSpares (Integer) | The total number of ducts not used in the ductbank. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| dbkSize (Double) | A two dimensional description of the physical size of the ductbank including units of measure (e.g., 2 ft x 2 ft, 3 m x 3 m). |
| dblLength (Double) | The total length of the ductbank from source to load. Manholes and pullboxes should not break the measurement. |
| concEnc (CodeBoolean) | A Boolean indicating whether the ductbank is encased in concrete.[Tinker Air Force Base]. |
| diameter (Double) | Diameter (if round).[AIR FORCE]. |
| width (Double) | Width of horizontal cross section.[AIR FORCE]. |
| height (Double) | Height.[AIR FORCE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| ductMat (CodePipeMaterial) | The material of the duct. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Marker

(Database Feature Class Name = CommElectronicMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Device that aids location of buried communications equipment or pathways. [SDSFIE NGA/NIMA].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| passve (CodeBoolean) | Is it a passive device? (Y/N).[AIR FORCE]. |
| elmpur (CodeElectronicMarkerPurpose) | Purpose of this marker.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| type (String16) | Discriminator - The type of marker.[AIR FORCE]. |
| meterType (CodeDisplayType) | The meter type. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Equipment

(Database Feature Class Name = CommEquipment)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A generic piece of communications equipment, that has not otherwise been defined with the communications equipment entity class. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| eqpName (String60) | The name or type of the equipment.[Tinker Air Force Base]. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |
| stdsyName (String50) | The standard system name.[Air Force]. |
| bLanName (String50) | The domain name.[Air Force]. |
| runwayDesignator (String50) | The name of the runway.[Air Force]. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| portNum (String50) | The port identifier corresponding to port's location on the device(slot/card/port).[Air Force]. |
| portVlan (String50) | The VLAN(s) port is assigned to.[Air Force]. |
| ncc (CodeBoolean) | A boolean indicating whether it is under The Network Control Center control (Y = YES or N = NO)?[Air Force]. |
| coeqpinid (String20) | The identifying number of the input equipment.[Air Force]. |
| installDate (Date) | The date of the Installation. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[Air Force]. |
| secFac (String50) | The secondary facility name.[Air Force]. |
| priFacNa (String30) | The primary facility name.[Air Force]. |
| platform (String50) | The processor class.[Air Force]. |
| priFacNo (String20) | The primary facility number.[Air Force]. |
| contrid (Integer) | The access control system for this portal.[Air Force]. |
| equipmentType (CodeEquipmentType) | The different types of equipment.[Air Force]. |
| barCode (String50) | The IPMS Bar Code.[Air Force]. |
| bandwidth (Double) | The bandwidth of network adapter.[Air Force]. |
| mediaType (CodeMediaType) | The different types of media.[Air Force]. |
| antUse (CodeCommAntennaUsageType) | The different usages of communications antenna.[Air Force]. |
| autoSys (String20) | The Automation System.[Air Force]. |
| cardPorts (Integer) | The total ports used/available on card.[Air Force]. |
| porDuplex (String50) | The transmission duplex of the port.[Air Force]. |

| | |
|---|---|
| portLoc (String50) | The location of the portal.[Air Force]. |
| cardType (String50) | The model/version of card.[Air Force]. |
| crdNoUse (Integer) | The total number of expansion slots in chassis in use.[Air Force]. |
| ifMac (String50) | The MAC Address of interface.[Air Force]. |
| probDescription (String255) | The identifier of processor.[Air Force]. |
| devClass (String50) | The class of device.[Air Force]. |
| devMac (String50) | The MAC Address of device.[Air Force]. |
| devIp (String50) | The IP Address of device.[Air Force]. |
| osVer (String50) | The software version/I.O.S. of device.[Air Force]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| cameraNo (Integer) | The number of cameras on the switch.[Air Force]. |
| monitorNumber (Integer) | The number of monitors on the switch.[Air Force]. |
| keybordNo (Integer) | The number of keyboards on the switch.[Air Force]. |
| maxCamNo (Integer) | The maximum number of cameras switch can have.[Air Force]. |
| maxMonNo (Integer) | The maximum of monitors switch can have.[Air Force]. |
| maxKeyNo (Integer) | The maximum number of keyboards a switch can have.[Air Force]. |
| numSens (Integer) | The number of sensors on an annunciator.[Air Force]. |
| maxSenNo (Integer) | The maximum number of sensors annunciator you can have.[Air Force]. |
| intVid (CodeBoolean) | A boolean indicating of it is integrated w/a video switch (Y = YES and N = NO)?[Air Force]. |
| cblType (CodeCableType) | The type of cable.[Air Force]. |
| onIncmptos (String25) | The name of the operating system.[Air Force]. |
| softVer (String50) | The version of the software being used.[Air Force]. |
| cntrType (CodeElectricControlType) | The list of control type codes.[Air Force]. |
| portalNo (Integer) | The number of controlled portals.[Air Force]. |
| dnsName (String50) | The Domain Name Server name of device if applicable.[Air Force]. |
| netVerNo (String50) | The version number of network device.[Air Force]. |
| physDimension (Double) | The physical dimensions of network device (HxWxD).[Air Force]. |
| pwrInType (String50) | The required input power type.[Air Force]. |
| pwrSupply (Integer) | The number of power supplies network device was designed for.[Air Force]. |
| pwrSupNo (Integer) | The number of power supplies network device has installed.[Air Force]. |
| totalIf (Integer) | The total number of network interfaces/ports network device has.[Air Force]. |
| cardSlots (Integer) | The total number of expansion slots in chassis.[Air Force]. |
| contrlLvl (String50) | The level of control at the portal.[Air Force]. |
| radioCap (Double) | The radio circuit capacity system.[Air Force]. |
| ifIp (String50) | The IP Address of interface.[Air Force]. |
| ifProtocl (String50) | The protocol by which interface communicates.[Air Force]. |
| ifSpeed (String50) | The interface bit rate.[Air Force]. |
| ifMtu (String50) | The maximum transmission unit of interface.[Air Force]. |
| ifApp (String50) | The application for interface.[Air Force]. |
| ifAppDes (String50) | The destination interface/port number.[Air Force]. |
| prtModNo (String50) | The physical module number.[Air Force]. |
| fanTray (String50) | The description of the number of fans that are operational.[Air Force]. |
| maxPorNo (Integer) | The maximum number of controlled portals.[Air Force]. |
| portIndex (String50) | The physical port number.[Air Force]. |

| | |
|---|---|
| voltage (CodeVoltage) | The voltage requirements.[Air Force]. |
| monitorType (String50) | The primary or remote annunciator.[Air Force]. |
| ifTyp (String50) | The physical/electrical type of interface.[Air Force]. |
| rackDescription (String255) | The identifier of rack chassis is located in.[Air Force]. |
| cardIp (String50) | The IP Address of device.[Air Force]. |
| intrfDesc (String255) | A unique Identifier of interface that port corresponds to.[Air Force]. |
| cardMac (String50) | The MAC Address of device.[Air Force]. |
| coeqpoutid (String20) | The identifying number of the output equipment.[Air Force]. |
| remInd (String50) | The type of remote indicators.[Air Force]. |
| crypto (CodeBoolean) | A boolean indicating whether the data is classified or unclassified (Y = YES and N = NO)?[Air Force]. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| lineCap (Double) | The landline circuit capacity system.[Air Force]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| numOpPos (Integer) | The number of operator positions.[Air Force]. |
| numautscop (Integer) | The number of automation scopes or positions.[Air Force]. |
| flCkDate (Integer) | The date of the flight check. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[Air Force]. |
| reflcLoc (String50) | The name of the reflector location.[Air Force]. |
| remindloc (String50) | The location position of the remote indicator.[Air Force]. |
| secFacNo (Integer) | The secondary facility number.[Air Force]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| remarks (String255) | Additional information about the camera switch.[Air Force]. |

**Metadata:**

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Fiberoptic Line

(Database Feature Class Name = CommFiberopticLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Thin transparent fibers of glass or plastic that are enclosed by material of a lower index of refraction and that transmit light throughout their length by internal reflections [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | The name of the feature.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| stationName (String12) | Commercial identifier.[HSIP]. |
| corpName (String80) | Name of station corporation.[HSIP]. |

**Attributes:**

| | |
|---|---|
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[REEGIS]. |
| cabElev (CodeCableElevation) | The vertical location of the cable.[Tinker Air Force Base]. |
| riverMile (Double) | The river mile marker.[REEGIS]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cabUse (CodeCableUse) | Discriminator - The overall use of the fiberoptic cable. |
| installType (CodeCableInstallationType) | The installation type code for cables.[Tinker Air Force Base]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| length (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| cabOffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| fcSm (Integer) | The number of single-mode fibers[Tinker Air Force Base]. |
| fcMm (Integer) | The number of multi-mode fibers in the cable.[Tinker Air Force Base]. |
| fcDs (Integer) | The number of dispersion-shifted fibers in the cable.[Tinker Air Force Base]. |
| fcTotal (Integer) | The total number of fibers in the cable.[Tinker Air Force Base]. |
| cblMaterial (CodeElectricCable) | Types of communication cable.[HSIP]. |
| netAffil (String32) | Network affiliation.[HSIP]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Groundplane Area

(Database Feature Class Name = CommGroundplaneArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A series of ground points electrically connected in a mesh formation necessary to minimize ground resistance and electromagnetic radiation, for example lightening strikes, in support of critical communications systems. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Ground Point

(Database Feature Class Name = CommGroundPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where the communication configuration is grounded. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| resistance (Double) | The measured resistance of the cable.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Groundwave Area

(Database Feature Class Name = CommGroundwaveArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An emanation pattern of Low Frequency Electromagnetic transmissions which use a ground path for transmission. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Impedance Matching Point

(Database Feature Class Name = CommImpedanceMatchingPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that matches the impedance between two transmissions in order to minimize signal attenuation and distortion [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| impType (CodeAmplifierType) | The impedance matching device type.[Tinker Air Force Base]. |
| loss (Double) | The signal amplitude loss of matching device.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| bandwidth (Double) | The difference between the highest and lowest frequencies.[Tinker Air Force Base]. |
| inSigLvl (Double) | The amplitude of the input signal.[Tinker Air Force Base]. |
| outsigLvl (Double) | The amplitude of the output signal.[Tinker Air Force Base]. |
| impedIn (Double) | The input impedance.[Tinker Air Force Base]. |
| impedOut (Double) | The output impedance.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Internet Center

(Database Feature Class Name = CommInternetCenter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A site that contains information about the internet center. [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Junction

(Database Feature Class Name = CommJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The communications junction node represents a transition node of cable path. For example, it can represent terminal, splice, or cross connection points. It can also indicate the transition of the cable into a duct opening. [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| conectedTo (String30) | Table name of Child Equipment that links to this node.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| juncType (CodeJuncType) | The type of junction (e.g. manhole, handhole, other) |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Line Of Sight Line

(Database Feature Class Name = CommLineOfSightLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

An electromagnetic transmission signal path requiring line of sight such as microwave or laser transmission [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the signal path. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| frequency (Double) | The frequency of the signal in the LOS transmission path. |
| power (Double) | The power of the signal in the LOS transmission path. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| txLength (Double) | The length of the LOS transmission path. |
| verticalClearance (Double) | The clearance in feet MHW between the lowest point under the transmission path.[REEGIS]. |
| riverMile (Double) | The river mile marker. |
| description (String255) | A description of the feature. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Load Capacitor

(Database Feature Class Name = CommLoadCapacitor)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Device used to eliminate problems with high-frequencies on long telephone lines using capacitance. Spliced into the line. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| capacity (Double) | Capacitance of each capacitor.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| coDist (Double) | Distance from the build-out unit to the Central Office.[AIR FORCE]. |
| ldcnum (CodeCountsInAssembly) | Number of capacitors making up the build-out unit.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Load Coil

(Database Feature Class Name = CommLoadCoilPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Device used to eliminate problems with high-frequencies on long telephone lines using inductance. Spliced into the line. [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| ldccas (CodeLoadsCoilCaseType) | Type of case in which the load coil(s) are assembled.[AIR FORCE]. |
| ldcType (CodeNumberLoadsCoilType) | Type of loading coils.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| loadPtNo (Integer) | Load point number.[AIR FORCE]. |
| coDist (Double) | Distance from the load coil assembly to the Central Office.[AIR FORCE]. |
| ldcnum (CodeCountsInAssembly) | Number of coils making up the load coil assembly.[AIR FORCE]. |
| ldcsym (CodeLoadCoilSystem) | Type of load coil system used.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Media Converter

(Database Feature Class Name = CommMediaConverter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Device used to convert from one type of signal transmission media to another. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| connt2 (CodeCableConnectorType) | The connector type at port two.[AIR FORCE]. |
| maxcellt (CodeMaxcellType) | For flexible MaxCell inner ducts, this indicates the type used.[AIR FORCE]. |
| mtimzone (CodeMaritimeMgmtType) | Typical Maritime Zones.[NAVFAC]. |
| netbw (CodeNetworkBandwidth) | The data transmission rate through the repeater.[AIR FORCE]. |
| cbltyp1 (CodeCableType) | The type of cable accommodated by port one.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cbltyp2 (CodeCableType) | The type of cable accommodated by port two.[AIR FORCE]. |
| netprc (CodeNetworkProtocol) | The network protocol accommodated by the media converter.[AIR FORCE]. |
| vehtype (CodeTransVehicleType) | The type of vehicles located in the parking area.[AIR FORCE]. |
| connt1 (CodeCableConnectorType) | The connector type at port one.[AIR FORCE]. |
| voltReq (CodeVoltageRequirements) | Voltage Requirements.[AIR FORCE]. |
| mcnvty (CodeMediaConverter) | Converter Type.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Multihop Area

(Database Feature Class Name = CommMultihopArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A radio broadcast transmission which consist of a larger network such as cellular telephone, polygon represents coverage area. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | any commonly used name for the feature.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| riverMile (Double) | The river mile marker.[REEGIS]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| frequency (Double) | The frequency of the signal.[Tinker Air Force Base]. |
| power (Double) | The amount power of the transmission signal.[Tinker Air Force Base]. |
| description (String255) | A description of the feature. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Network Systems Site

(Database Feature Class Name = CommNetworkSystemsSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The Network Standard System name, architecture (i.e. protocol), number of facilities where installed and number of users of system. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | The name for the standard system.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| netAff (CodeNetworkAffiliationType) | The broadcasting network to which the facility is associated.[HSIP]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| convType (String50) | A type of media converter.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| protocol (String60) | The Protocol Description.[Tinker Air Force Base]. |
| numUsers (Integer) | The number of users of standard system.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Other Cable

(Database Feature Class Name = CommOtherCable)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Any type of communications cable transmission not otherwise specified. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | Any commonly used name for the cable.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| cabUse (CodeCableUse) | Discriminator - The overall use of the cable. |
| installType (CodeCableInstallationType) | The installation type code for cables.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cabElev (CodeCableElevation) | The vertical location of the cable.[Tinker Air Force Base]. |
| riverMile (Double) | The river mile marker.[REEGIS]. |
| cblMaterial (CodeElectricCable) | The material composition of the cable.[Tinker Air Force Base]. |
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[REEGIS]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| cblLength (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| coffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| icefacClr (Double) | The clearance in feet between the lowest point under the cable line and the ice facility surface.[S-57]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Path Node Site

(Database Feature Class Name = CommPathNode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Node that represents a transition of different communications path segment types (i.e. duct to aerial) or attributes (i.e. duct material type from PVC to PE). [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| nodeType (CodeCommNodeType) | Discriminator. The type of node this represents.[AIR FORCE]. |
| ductFlap (String20) | The flap on which this duct opening is located (i.e. N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW).[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| ductTag (String8) | The location of the duct within the flap (i.e. A3).[AIR FORCE]. |
| inDiameter (Double) | The inside diameter measurement of the duct, stub out, or hole.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Path Segment Line

(Database Feature Class Name = CommPathSegmentLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Link that represents an enclosure path of communications items outside of a building, manhole, pedestal, or other enclosed structures. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| pathType (CodePathType) | A field that describes what type of thing this segment is representing.[AIR FORCE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.[AIR FORCE]. |
| pathCnt (CodePathCont) | A field that indicates what the path contains.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cabins (CodeCableInstallationType) | A field to describe the type of installation.[AIR FORCE]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground communications path.[AIR FORCE]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| percent (CodePercentModifier) | How continuous the enclosure path is. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Pedestal Site

(Database Feature Class Name = CommPedestal)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above-ground enclosure providing access to buried plant. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | The standard identifier name (i.e. PED-19).[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| type (String16) | The type of communications pedestal.[Austin and Pitts]. |
| terminal (CodeBoolean) | A Boolean indicating the presence of a terminal[Tinker Air Force Base]. |
| bonded (CodeBoolean) | A Boolean indicating whether the pedestal is bonded. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| costrm (CodeEnclosureMaterials) | The material composition of the pedestal.[AIR FORCE]. |
| diameter (Double) | Diameter.[AIR FORCE]. |
| width (Double) | Width of horizontal cross section.[AIR FORCE]. |
| height (Double) | Height.[AIR FORCE]. |
| depth (Double) | Depth of horizontal cross-section.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Pullbox Site

(Database Feature Class Name = CommPullbox)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box with cover used as an aid for pulling cable. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Radar Site

(Database Feature Class Name = CommRadarSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of equipment used for determining the presence and position of an object by measure the direction and timing of electromagnetic waves. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| radType (CodeRadio) | The operating spectrum of the radar.[Tinker Air Force Base]. |
| power (Double) | The amount of power the radar emits.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Radio

(Database Feature Class Name = CommRadio)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of equipment used to transmit and receive communications signals via electromagnetic waves. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Radio Receiver

(Database Feature Class Name = CommRadioReceiver)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location to store individual radio receiver sections that may be in one piece of radio equipment. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| rfAsnFrq (String50) | The frequencies assigned to this unit.[Tinker Air Force Base]. |
| rfHigh (Integer) | The highest capable operating frequency unit.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| rfLow (Integer) | The lowest capable operating frequency unit.[Tinker Air Force Base]. |
| rfBndwdth (Double) | The bandwidth of signal (LMR is 25k wide, 12.5k narrow).[Tinker Air Force Base]. |
| modPos (Integer) | From the left of unit, module number for multiple transmitters in one radio.[Tinker Air Force Base]. |
| rfP25t (CodeBoolean) | Is the unit capable of operating P25 Trunking (Y/N)?[Tinker Air Force Base]. |
| rfP25c (CodeBoolean) | Is the unit capable of operation P25 Conventional (Y/N)?[Tinker Air Force Base]. |
| description (String255) | A description or other unique information concerning the subject item.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Radio Transmitter

(Database Feature Class Name = CommRadioTransmitter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location to store individual radio transmitter sections that may be in one piece of radio equipment. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| rfLow (Integer) | The lowest capable operating frequency unit.[Tinker Air Force Base]. |
| rfP25t (CodeBoolean) | Is the unit capable of operating P25 Trunking (Y/N)?[Tinker Air Force Base]. |
| rfP25c (CodeBoolean) | Is the unit capable of operation P25 Conventional (Y/N)?[Tinker Air Force Base]. |
| modPos (Integer) | From the left of unit, module number for multiple transmitters in one radio.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| rfAsnFrq (String50) | The frequencies assigned to this unit.[Tinker Air Force Base]. |

| | |
|---|---|
| rfFccid (String50) | FCC emission designators.[Tinker Air Force Base]. |
| rfBndwdth (Double) | The bandwidth of signal (LMR is 25k wide, 12.5k narrow).[Tinker Air Force Base]. |
| rfMaxwats (Integer) | The maximum output power of this unit in watts.[Tinker Air Force Base]. |
| rfHigh (Integer) | The highest capable operating frequency unit.[Tinker Air Force Base]. |
| description (String255) | A description or other unique information concerning the subject item.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Relay Station

(Database Feature Class Name = CommRelayStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A piece of equipment used to relay communications signals. [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | Any commonly used name of the feature.[HSIP]. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| stationName (String20) | Indicates the Commercial Identifier.[HSIP]. |

**Attributes:**

| | |
|---|---|
| facilityType (String16) | The type of broadcast facility located at this location.[Tinker Air Force Base]. |
| netAff (CodeNetworkAffiliationType) | The broadcasting network to which the facility is associated.[Tinker Air Force Base]. |
| radioType (CodeRadioType) | Types of radio points[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| radType (CodeRadio) | Discriminator - Radio type[Tinker Air Force Base]. |
| accountCode (String20) | The owners account code.[Tinker Air Force Base]. |
| baseIlc (String20) | ILC code of the installation where this equipment is located.[Tinker Air Force Base]. |
| deployab (CodeBoolean) | Is unit flagged as deployable (Y/N)?[Tinker Air Force Base]. |
| encLvl (String20) | The level of encryption unit supports (TRS is not standard on this).[Tinker Air Force Base]. |
| encMax (CodeEncryptionLevelType) | The highest level of encryption unit can operate .[Tinker Air Force Base]. |
| encProt (String16) | Type of protocol used to provide encryption.[Tinker Air Force Base]. |
| lmrNet (String20) | The network is this unit assigned to (LMR or Conventional).[Tinker Air Force Base]. |
| narrowbn (CodeBoolean) | Narrowband operation 12.5kHz capable (Y/N)?[Tinker Air Force Base]. |
| power (CodePowerUseType) | Alternating Current or Direct Current (AC/DC).[Tinker Air Force Base]. |
| pwrPhase (Integer) | The phase requirement if AC.[Tinker Air Force Base]. |
| pwrVolt (Integer) | The voltage required in Volts.[Tinker Air Force Base]. |
| pwrWatts (Integer) | The maximum power draw.[Tinker Air Force Base]. |
| rackNo (String20) | The rack identifier the unit is in.[Tinker Air Force Base]. |
| rackPos (String20) | The position in the rack if applicable.[Tinker Air Force Base]. |
| rfLmrwd (CodeBoolean) | Is the unit wideband operation capable (Y/N)?[Tinker Air Force Base]. |
| suppSys (String20) | The system that does this asset support (LMR, Giant Voice, Milstar).[Tinker Air Force Base]. |
| thermLoad (Integer) | Thermal loading of unit for HVAC calculations.[Tinker Air Force Base]. |
| trnkP25 (CodeBoolean) | Is the unit capable of operating trunking P25 (Y/N)?[Tinker Air Force Base]. |
| trunkNum (Integer) | Trunking site ID (LMR).[Tinker Air Force Base]. |
| txAnalg (CodeBoolean) | Analog transmission capable (Y/N)?[Tinker Air Force Base]. |
| txDigl (CodeBoolean) | Digital transmission capable (Y/N)?[Tinker Air Force Base]. |
| vehicleNo (String20) | For mobile units assigned to vehicles (LMR).[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| verified (String255) | Whether or not the feature has been verified. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Repeater

(Database Feature Class Name = CommRepeater)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Device used to receive, clean up a signal, and then retransmit it. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| netbw (CodeNetworkBandwidth) | The data transmission rate through the repeater.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Riser

(Database Feature Class Name = CommRiser)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pipe-like structure used for the vertical conveyance of cable [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| duct (CodeBoolean) | A Boolean indicating the presence of a duct.[Tinker Air Force Base]. |
| height (Double) | The height of the riser duct measured from the ground surface to the top.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular riser as measured from the ground surface to the top.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The code used to determine the type of material the riser is made of. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Satellite

(Database Feature Class Name = CommSatellitePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Communications Satellite. Used to retransmit signals from space. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| comnName (String30) | Common Name.[AIR FORCE]. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| noradNo (String5) | NORAD Designation Number.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| origin (String50) | Country of Origin.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| lvehicle (String25) | Launch vehicle used.[AIR FORCE]. |
| launchDate (Date) | Launch date. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Segmented Cable

(Database Feature Class Name = CommSegmentedCable)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Used to represent a portion of the entire cable sheath as it is shown in an enclosed structure (building, manhole, vault, etc.) so that the cable sheath does not have to be drawn between enclosed structures. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cblMaterial (CodeElectricCable) | |
| cblSize (CodeCableDimension) | |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Segmented Cable Point

(Database Feature Class Name = CommSegmentedCablePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location all communication cable types. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | Any commonly used name for the cable.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coreType (CodeCoreType) | Attributes for Core Types.[Air Force]. |
| bufferType (CodeShoreBufferType) | The types of buffers.[Tinker Air Force Base]. |
| cabUse (CodeCableUse) | The overall use of the cable.[Tinker Air Force Base]. |
| installType (CodeCableInstallationType) | The installation type code for cables.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| cblLength (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.[AIR FORCE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| segNum (Integer) | The segment in which the cable section is located.[Tinker Air Force Base]. |
| cabType (CodeCableType) | The type of cable.[Tinker Air Force Base]. |
| cabNo (String16) | Cable name or number.[Tinker Air Force Base]. |
| begincount (Integer) | Starting count of pairs or strands.[Tinker Air Force Base]. |
| endCount (Integer) | Ending count of pairs or strands.[Tinker Air Force Base]. |
| totalCount (Integer) | Total number of pairs or strands associated with a particular cable.[Tinker Air Force Base]. |
| sheathDia (Double) | Overall Diameter of sheath.[Tinker Air Force Base]. |
| mediaDiam (Double) | Diameter of gauge of individual media.[Tinker Air Force Base]. |
| mediaType (CodeMediaType) | The types of media.[Tinker Air Force Base]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Sensor

(Database Feature Class Name = CommSensor)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of equipment used to detect and measure various environmental conditions (e.g. Temperature, Fire, Intrusion, etc.) [SDSFIE Austin and Pitts].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |
| busName (String80) | Name of the Weather Forecast Office. |

**Attributes:**

| | |
|---|---|
| sensorType (String16) | The type of sensor.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| officeType (String30) | National Hurricane Center, Nat. Severe Storm Forecast Center.[HSIP]. |
| sensLoc (String50) | The sensor location (Interior or exterior).[Tinker Air Force Base]. |
| cblType (CodeElectricCable) | Sensor cable connectivity type.[Tinker Air Force Base]. |
| sensZone (String50) | The Detection zone.[Tinker Air Force Base]. |
| annunNum (String50) | The Annunciator in which the sensor is connected.[Tinker Air Force Base]. |

| | |
|---|---|
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Service Loop Point

(Database Feature Class Name = CommServiceLoopPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Service loops contain extra cable that may be required in the future. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| length (Double) | The length of cable contained in the service loop.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Speaker

(Database Feature Class Name = CommSpeaker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that converts an electrical signal into sound. Generally used as part of a public address, giant voice, or mass notification system. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | The local name of the Speaker.[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[AIR FORCE]. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.[AIR FORCE]. |
| weather (CodeBoolean) | Indicates a weather proof speaker case.[AIR FORCE]. |
| multp25 (CodeBoolean) | Indicates a 25 Volt multi-tap transformer.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| multp70 (CodeBoolean) | Indicates a 70 Volt multi-tap transformer.[AIR FORCE]. |
| rmsWatage (Integer) | Average power handling capability over time, in watts AKA average power or mean power.[AIR FORCE]. |
| diameter (Double) | Diameter, if round or cylindrical.[AIR FORCE]. |
| width (Double) | Width.[AIR FORCE]. |

| | |
|---|---|
| height (Double) | Height.[AIR FORCE]. |
| depth (Double) | Depth.[AIR FORCE]. |
| freqRngH (Double) | Highest effective frequency speaker emits in Hz.[AIR FORCE]. |
| freqRngL (Double) | Lowest effective frequency speaker emits in Hz.[AIR FORCE]. |
| weight (Double) | Weight of speaker.[AIR FORCE]. |
| dispertnH (Integer) | Angle of horizontal sound dispersion in degrees.[AIR FORCE]. |
| dispertnV (Integer) | Angle of vertical sound dispersion in degrees.[AIR FORCE]. |
| sensitivty (String50) | Speaker sensitivity or efficiency measured as dB/W/m - decibels output for an input of one nominal watt measured at on meter from the speaker.[AIR FORCE]. |
| spkimp (CodeSpeakerImpedance) | Input impedance.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Splice

(Database Feature Class Name = CommSplice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A joining of two or more communications cables, each cable contributing one end of itself to the splice. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

| | |
|---|---|
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| loss (Double) | The signal loss introduced by the splice |
| splType (CodeSplice) | Discriminator. The type of splice.[Austin and Pitts]. |
| casMaterial (CodeSpliceCaseMat) | The material composition of the splice case.[Austin and Pitts]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| method (CodeSpliceMethod) | The method of spicing used.[Austin and Pitts]. |
| length (Double) | Length of the splice case.[AIR FORCE]. |
| insideDiameter (Double) | The inside diameter of the splice case.[AIR FORCE]. |
| casType (CodeSpliceCaseTyp) | Used to describe the type of splice case.[AIR FORCE]. |
| ecsType (CodeSpliceCaseEncapsulate) | The type of encapsulate used.[AIR FORCE]. |
| description (String255) | Any description of the feature. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Splitter

(Database Feature Class Name = CommSplitter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device to split a signal transmission into two or more signal paths while minimizing attenuation and distortion, generally used in broadband cable systems. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| **Attributes:** | |
| inSigLvl (Double) | The input signal amplitude.[Tinker Air Force Base]. |
| outsigLvl (Double) | The amplitude of the output signal.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| spltType (CodeSplitterType) | Discriminator - Splitter Type.[Tinker Air Force Base]. |
| loss (Double) | The signal amplitude loss of splitter.[Tinker Air Force Base]. |
| bandwidth (Double) | The difference between the highest and lowest frequencies that a splitter can pass.[Tinker Air Force Base]. |
| impedIn (Double) | The input impedance of the amplifier[Tinker Air Force Base]. |
| impedOut (Double) | The output impedance of the amplifier[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Telephone

(Database Feature Class Name = CommTelephone)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of an end user telephone set used for voice communications. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | Indicates the name of the feature.[HSIP]. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| color (CodeColor) | The color of the emergency telephone.[FGDC]. |
| appearance (String50) | A description of the appearance of phone.[FGDC]. |
| status (CodeStatus) | A description of the status of the emergency telephone.[FGDC]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections.[FGDC]. |
| phoneType (CodePhoneType) | The type of phone.[Tinker Air Force Base]. |
| phoneNumber (String16) | The phone number of the location.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Telephone Booth

(Database Feature Class Name = CommTelephoneBooth)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of one or more outdoor telephones either in an open air bank or enclosed within a booth or other enclosure. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Terminal

(Database Feature Class Name = CommTerminal)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

a device attached to the end of a wire or cable or to an electrical apparatus for convenience in making connections [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| caseType (CodeTerminalCaseType) | The type of terminal case.[Austin and Pitts]. |
| termType (CodeTerminalType) | The type of terminal[Austin and Pitts]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Terminator

(Database Feature Class Name = CommTerminator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that terminates an electrical or optical transmission media. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| termType (String16) | The type of terminator.[AIR FORCE]. |
| connt (CodeCableConnectorType) | The type of connector used for the terminator.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cbldim3 (CodeCableGaDimensions) | Tertiary. Wire Gauge (AWG) or Core Size (in um).[AIR FORCE]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| impedance (Double) | A measure of the apparent opposition in an electrical circuit to the flow of an alternating current that is analogous to the actual electrical resistance to a direct current and that is the ratio of effective electromotive force to the effective current.[Tinker Air Force Base]. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Twisted Pair Line

(Database Feature Class Name = CommTwistedPairLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Multi-conductor Communications cable generally consisting of copper wire, with each pair being twisted in order to minimize signal loss due to electromagnetic radiation. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | The name of the feature.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[REEGIS]. |
| cabUse (CodeCableUse) | Discriminator - The overall use of the cable. |
| noPairs (Integer) | The number of wire pairs in the cable |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| installType (CodeCableInstallationType) | The installation type code for cables.[Tinker Air Force Base]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| riverMile (Double) | The reference of the river mile associated with the cable.[REEGIS]. |
| cblSize (CodeCableDimension) | The wire gauge of the cable.[Austin and Pitts]. |
| resistance (Double) | The degree of tendency of the cable to oppose the flow of current. |
| numprLow (Integer) | The lowest numbered pair within the cable[Tinker Air Force Base]. |
| numprHigh (Integer) | The highest numbered pair within the cable[Tinker Air Force Base]. |
| coreType (CodeCoreType) | The type of core in the cable.[Tinker Air Force Base]. |
| cabOffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| length (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| cabElev (CodeCableElevation) | The vertical location of the cable. |
| cblMaterial (CodeElectricCable) | The material composition of the cable.[Tinker Air Force Base]. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Vault

(Database Feature Class Name = CommVaultSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A special structure for transitioning the outside cable plant from horizontal orientation to vertical orientation in preparation for termination on the distribution frame. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | The standard identifier name (i.e. MH-19).[AIR FORCE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| serialNumber (String16) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| noCircuit (Integer) | The number of circuits housed in the vault. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| vltMaterial (CodeEnclosureMaterials) | Used to describe the material composition of the vault.[AIR FORCE]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| diameter (Double) | Diameter.[AIR FORCE]. |
| depth (Double) | Depth of horizontal cross-section.[AIR FORCE]. |
| width (Double) | Width of horizontal cross section.[AIR FORCE]. |
| height (Double) | Height.[AIR FORCE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Vertical Site

(Database Feature Class Name = CommVerticalSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A vertical is part of a mainframe where the outside cable plant terminates. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| covtbk (CodeVerticalConnectingBlock) | The type of the connector block.[AIR FORCE]. |
| covtht (CodeVerticalHeight) | The height of this vertical in the frame.[AIR FORCE]. |
| covtma (CodeVerticalMountingArea) | The spacing between mounting brackets for mounting MDF connector blocks.[AIR FORCE]. |
| covtmb (CodeVerticalMountBlock) | The type of mounting bar.[AIR FORCE]. |
| covtsw (CodeVerticalShelfWidth) | The width of the mounting shelf for connector blocks.[AIR FORCE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| covtty (CodeVerticalType) | The type of vertical.[AIR FORCE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| grndbar (CodeBoolean) | Indicates the presences of a grounding bar.[AIR FORCE]. |
| grdrails (CodeBoolean) | Indicates the presences of a guardrail.[AIR FORCE]. |
| endguard (CodeBoolean) | Indicates the presences of an end guard.[AIR FORCE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Video Site

(Database Feature Class Name = CommVideoSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of equipment used to receive or transmit the visual portion of a communications signal. [SDSFIE Tinker Air Force Base].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Name of the recreation feature.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String16) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| convType (String60) | A type of media converter.[Tinker Air Force Base]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| sysDescription (String255) | The system description.[Tinker Air Force Base]. |
| transType (String50) | The transmission type protocol.[Tinker Air Force Base]. |

| | |
|---|---|
| bandwidth (Double) | The data rate.[Tinker Air Force Base]. |
| crypto (CodeBoolean) | Classified or Unclassified (Y/N)?[Tinker Air Force Base]. |
| description (String255) | The name or type of the equipment.[Tinker Air Force Base]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Voice Switch

(Database Feature Class Name = CommVoiceSwitch)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location of equipment used to receive or transmit the voice portion of a communications signal. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item.[Tinker Air Force Base]. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item.[Tinker Air Force Base]. |

**Attributes:**

| | |
|---|---|
| voipTrk (String50) | Number of Trunks Voice IP switch -to- DCO PBX.[Tinker Air Force Base]. |
| numUsers (Integer) | The number of users capability in Voice Mail system.[Tinker Air Force Base]. |
| trkUsed (String50) | The total number of trunk lines being used.[Tinker Air Force Base]. |

| | |
|---|---|
| linCapNo (String50) | The number of lines capability.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| numLused (Integer) | The number of lines used.[Tinker Air Force Base]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| swType (String20) | The code for the different switch types.[Tinker Air Force Base]. |
| softVer (String50) | The software version release number.[Tinker Air Force Base]. |
| swCap (Double) | The number of lines that the software is capable of running.[Tinker Air Force Base]. |
| hwCap (Double) | The total hardware line capacity.[Tinker Air Force Base]. |
| anlgLused (Integer) | The number of analog lines being used.[Tinker Air Force Base]. |
| digtLused (Integer) | The number of digital lines being used.[Tinker Air Force Base]. |
| isdnLused (Integer) | The number of ISDN lines being used.[Tinker Air Force Base]. |
| trkCap (Double) | The total number of trunk lines capacity.[Tinker Air Force Base]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Communications : Waveguide Line

(Database Feature Class Name = CommWaveguideLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A cable designed to confine and direct the propagation of electromagnetic waves. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | The name of the feature.[Tinker Air Force Base]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeCableInstallationType) | The installation type code for cables.[Tinker Air Force Base]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| length (Double) | A measurement of the longer of two linear axes.[Tinker Air Force Base]. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| cabElev (CodeCableElevation) | The vertical location of the cable.[Tinker Air Force Base]. |
| cblMaterial (CodeElectricCable) | The material composition of the cable.[Tinker Air Force Base]. |
| riverMile (Double) | The river mile marker.[REEGIS]. |
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[REEGIS]. |
| cabType (CodeCableType) | The type of cable.[Tinker Air Force Base]. |
| frequency (Double) | The number of cycles per unit time of the energy in the waveguide..[Tinker Air Force Base]. |
| cabOffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| cabUse (CodeCableUse) | Discriminator - The overall use of the cable. |
| description (String255) | A description of the feature.[Tinker Air Force Base]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Deicing

## Deicing : Culvert Center Line

(Database Feature Class Name = DeicingCulvertCenterline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

The centerline of a pipe or structure, the purpose of which is for the interception and conveyance of deicing fluid. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name of the culvert.[Derived from SDSFIE]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| canalName (String30) | The canal name that the structure is located on.[Derived from USACE]. |

**Attributes:**

| | |
|---|---|
| angle (Double) | The angle that the structure symbol should appear on a map.[Derived from USACE]. |
| control (String30) | The means in which the water being controlled; i.e., by gate, weir, flashboard, pump, lock or uncontrolled?[Derived from USACE]. |
| peakFlow (Double) | Q10 runoff (cubic feet per second of the 10 year peak flow associated with a ten year storm).[Derived from ARMY]. |
| purpose (String30) | A summary of the intentions with which the data set was developed.[Derived from USACE]. |
| estuary (String25) | The name of the Estuary, if applicable.[Derived from USACE]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| gateType (CodeCulvert) | Discriminator. The type of gate.[Derived from SDSFIE]. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the culvert.[Derived from SDSFIE]. |
| drainageZone (CodeDrainageZone) | The local name of assigned the hydrographic drainage zone.[Derived from SDSFIE]. |
| materialTexture (CodeDrainageDensity) | The texture of the material surrounding the culvert.[Derived from SDSFIE]. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage.[Derived from SDSFIE]. |
| invElv2 (Double) | The dimension indicating the elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| culvLength (Double) | The length of culvert, measured from node to node along the culvert centerline .[Derived from SDSFIE]. |
| lined (CodeBoolean) | A boolean indicating whether the culvert is lined or not (Y = YES and N = NO)?[Derived from SDSFIE]. |
| flowType (String15) | The type of flow such as culvert, lock, pump, spillway or weir.[Derived from USACE]. |
| material (CodePipeMaterial) | The material composition of the subject item, such as concrete or corrugated metal, etc.[Derived from USACE]. |
| source (String20) | The event's source of information.[Derived from USACE]. |

| | |
|---|---|
| critical (CodeBoolean) | A boolean indicating whether this is a 'critical' structure (Y = YES or N = NO).[Derived from USACE]. |
| voltReq (CodeVoltageRequirements) | Voltage Requirements.[Derived from AIR FORCE]. |
| size (CodePipeDiameter) | The size of the diameter of the pipe opening in inches.[Derived from ARMY]. |
| description (String255) | A description or other unique information concerning the subject item.[Derived from ARMY]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| verified (CodeBoolean) | A boolean indicating whether that a structure has been repositioned and with good source (Y = YES or N = NO).[Derived from USACE]. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Culvert End

(Database Feature Class Name = DeicingCulvertEnd)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

A pipe or structure, the purpose of which is for the interception and conveyance of surface water transported in open drainage lines and ditches [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

owner (String60) — A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

material (String16) — The material of the subject item.

description (String255) — A description or other unique information concerning the subject item.

size (Integer) — The size of the subject item.

disposition (CodeDispositionObject) — The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.

**Metadata:**

collectionProgress (CodeProgress) — The progress of the data collection.

verified (String255) — Whether or not the feature has been verified.

dateAcquired (Date) — The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

projectType (CodeProjectType) — The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) — A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) — A temporal description of the operational status of the feature.

Alternative (Integer) — Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) — An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

qualityLevel (CodeSueQualityLevel) — The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02.

dataSource (CodeDataSource) — The primary source of the data in this record.

dataSource2 (CodeDataSource) — The secondary source of the data in this record.

sourceStatement (String255) — A statement providing additional details about the source of the data.

editorName (String50) — The name of the individual who last edited this data.

lastUpdate (Date) — The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) — A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) — An identifier used to refer to a metadata record that provide additional information about the data in this record.

## Deicing : Discharge Point

(Database Feature Class Name = DeicingDischargePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any location where deicing pipes directly discharge effluent. [Adapted from SDSFIE].

**Names and Identifiers:**

maaID (String30) — A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value)

maaAlias (String60) — An alternative or former name by which the feature is refered.

**Attributes:**

disposition (CodeDispositionObject) — The status of the subject item from lists or entered from field inspections.

dateAcquired (Date) — The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

effluentDischargeType (String16) — A field indicating the kind, class, or group of the subject item.

owner (String60) — A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

sysType (String16) — The type of deicing fluid discharge system.[Derived from USACE OPERATIONS].

description (String255) — A description or other unique information concerning the subject item.

| | |
|---|---|
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Drainage Basin

(Database Feature Class Name = DeicingDrainageBasin)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An area in which surface runoff collects and from which it is carried by a drainage system. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| gradeMean (Double) | The average grade in the drainage basin. |
| gradeMin (Double) | The minimum or shallowest grade in the drainage basin. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| maxGrade (Double) | The maximum or steepest grade in the drainage basin. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |

| | |
|---|---|
| material (String16) | The material of the subject item. |
| valveDrain(String50) | The name of the valve through which the drainage area flows. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Drainage Divide

(Database Feature Class Name = DeicingDrainageDivide)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

The border of a drainage basin where one side directs runoff to one basin and the other side directs runoff to a different basin. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Fitting

(Database Feature Class Name = DeicingFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe deicing fluid [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| fitDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| fitLength (Double) | The overall length of the fitting. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |

| | |
|---|---|
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground deicing system line fitting.[Derived from Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Flow Control Device

(Database Feature Class Name = DeicingFlowControlPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Devices for a storm water system to control the pressure in and out of the open channel. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| cntrlElv (Double) | The elevation at the centerline of the flow control device, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| depth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| length (Double) | The overall length of the flow control. |
| width (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| source (String255) | The source of the deicing flow. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Glycol Recovery Pit

(Database Feature Class Name = DeicingGlycolRecoveryPit)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

Designated places for glycol recovery vehicles to dump the recovered glycol

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Inlet

(Database Feature Class Name = DeicingInlet)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where deicing fluid is collected and received into the utility system. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityDgn (Double) | The design flow capacity of the subject item. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| inletSt (CodeInlets) | Discriminator. The step domain code for an inlet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| weirElevation (Double) | Elevation of the weir invert. |
| description (String255) | A description or other unique information concerning the subject item. |
| pierCode (String7) | The one-letter code for the terminal pier where the inlet is located |
| gateNumber (String20) | The number of the terminal gate where the inlet is located. |

| | |
|---|---|
| trenchDrain (String10) | The identifying name or tag of the Trench drain associated with the inlet |
| diversionVault (String10) | The identifying name or tag of the Div. Vault associated with the inlet |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Junction

(Database Feature Class Name = DeicingJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in deicing systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |

owner (String60) — A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

mhWidth (Double) — The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side.

invertElv (Double) — The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum.

material (CodePipeMaterial) — The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc.

type (String16) — A field indicating the kind, class, or group of manhole for the subject utility.

noPipes (Integer) — The number of the pipes entering and exiting the subject item.

rimElevation (Double) — The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum.

description (String255) — A description or other unique information concerning the subject item.

junctionType (CodeJunctionType) — An indicator as to whether the feature serves as a source, sink or neither in the network.

juncType (CodeJuncType) — The type of junction (e.g. manhole, handhole, other)

**Metadata:**

collectionProgress (CodeProgress) — The progress of the data collection.

verified (String255) — Whether or not the feature has been verified

dateAcquired (Date) — The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

projectType (CodeProjectType) — The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) — A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) — A temporal description of the operational status of the feature.

Alternative (Integer) — Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) — An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

qualityLevel (CodeSueQualityLevel) — The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02.

dataSource (CodeDataSource) — The primary source of the data in this record.

dataSource2 (CodeDataSource) — The secondary source of the data in this record.

sourceStatement (String255) — A statement providing additional details about the source of the data.

editorName (String50) — The name of the individual who last edited this data.

lastUpdate (Date) — The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) — A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) — An identifier used to refer to a metadata record that provide additional information about the data in this record.

## Deicing : Lift Station

(Database Feature Class Name = DeicingLiftStation)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

Equipment used to pump deicing fluid to a higher level to enable gravity flow in pipes.

**Names and Identifiers:**

maaID (String30) — A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value)

maaAlias (String60) — An alternative or former name by which the feature is refered.

**Attributes:**

| | |
|---|---|
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| MAA requirementvaultLength (Double) | Length of diversion vault, in feet |
| vaultWidth (Double) | Width of diversion vault, in feet |
| vaultDepth (Double) | Depth of diversion vault, in feet |
| inletLength (Double) | Length of inlet pipe into diversion vault, in feet |
| inletDiameter (Double) | Diameter of inlet pipe into diversion vault, in inches |
| inletMaterial (String20) | Material of the inlet pipe into the vault |
| outletLength (Double) | Length of outlet pipe from diversion vault, in feet |
| outletDiameter (Double) | Diameter of out;et pipe from diversion vault, in inches |
| outletMaterial (String20) | Material of the outlet pipe from the vault |
| description (String255) | A description or other unique information concerning the subject item. |
| MAA requirementmaterial (String16) | |
| size (Integer) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Line

(Database Feature Class Name = DeicingLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry deicing fluid from location to location (main line, service line, vent line, etc). [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name of the culvert.[Derived from REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainageZone (CodeDrainageZone) | Local name of assigned hydrographic drainage zones. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the pipe. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the pipe. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| pipeWidth (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| lined (CodeBoolean) | An indicator as to whether the pipe is lined or not (yes/no). |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| scrnType (CodeCulvertScreenType) | The type of screen used to cover the end of the culvert. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| featureUse (String16) | Discriminator. The use code for deicing line. |
| pressNorm (Double) | The normal operating pressure of the deicing system pipe. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground deicing line pipe.[Derived from Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Line Clean Out

(Database Feature Class Name = DeicingLineCleanOut)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

Glycol force main cleanouts, which are mechanism used to clear out the pipe line

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Marker

(Database Feature Class Name = DeicingMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of nearby deicing system component. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Pump

(Database Feature Class Name = DeicingPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for deicing system that draws material into itself through an entrance port and forces the material out through an exhaust port. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| outflwAct (Double) | The actual measured pump flow output. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Pump Station

(Database Feature Class Name = DeicingPumpStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a deicing fluid system. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the deicing pump station.[Derived from REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| alrmlvlelv (Double) | The elevation in the wet well that triggers an alarm indicating no additional storage capacity. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| hiWaterElevation (Double) | The high water or overflow elevation of the storage tank at the pumping station, in feet (English units) or meters (SI units) above some datum. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the deicing distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| width (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| length (Double) | The overall length of the pump station plant area. |
| wetwlCapacity (Double) | The wet well capacity. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| riverMile (Double) | River mile marker.[Derived from REEGIS]. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| mxDsgnHd (Double) | The water elevation of the maximum design head of the pump in feet NGVD.[Derived from REEGIS]. |

| | |
|---|---|
| dateEnd (Date) | The date the project was actually completed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915)[Derived from REEGIS]. |
| capacity (Double) | The pumping capacity at the maximum design head in cfs.[Derived from REEGIS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Reservoir

(Database Feature Class Name = DeicingReservoirLocation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where deicing fluid is collected. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of containment measured from normal operating pool. |
| invElvAv (Double) | The average elevation of the bottom of the reservoir. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

| | |
|---|---|
| xDikes (CodeBoolean) | An indicator whether cross dikes exists in the subject item or not (yes or no). |
| outCntr (String12) | The outlet control. |
| featureUse (String16) | The particular application, or use the subject item. |
| resLength (Double) | The overall length of the reservoir. |
| resType (CodeReservoirType) | The type or classification of the reservoir. |
| resWidth (Double) | The average width dimension of the reservoir, measured from top of opposite side slopes. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Tank

(Database Feature Class Name = DeicingTank)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

A tank which holds deicing fluid [Entity MAA requirement database merge, attributes from IndustrialWasteTankPoint].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

altValve (CodeBoolean) Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no).

area (Double) The size of the area, zone, or polygon in square units.

ovrflwElevation (Double) The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum.

disposition (CodeDispositionObject) The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections.

dateAcquired (Date) The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

owner (String60) A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE].

headNorm (Double) The normal operating head for the subject item.

invertElv (Double) The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level.

material (CodePipeMaterial) The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc.

topElevation (Double) The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum.

tankLength (Double) The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side.

tankSt (CodeStyleTank) This value differentiates similar entities by use or type.

tankUse (CodeTankUse) The particular kind or use of the industrial waste water tank.

tankWidth (Double) The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side.

tankCapacity (Double) The tank's storage capacity (e.g., gallons, ft3, etc).

tankDepth (Double) The depth below the ground surface or cover measured from the top of the subject item.

tankDiameter (Double) The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface.

description (String255) A description or other unique information concerning the subject item.

mapGrid (String5) Placeholder for ETL process to hold column 'grid' in MES DI_Tanks feature

color (CodeColor) The color of the deicing tank.

lightCode (String1) The light code of the tank.

lightingType (CodeLightingConfigurationType) Thetype of lighting configuration.

markingFeatureType (CodeMarkingFeatureType) The type of the marking

verticalStructureMaterial (String16) The vertical structure material.

junctionType (CodeJunctionType) An indicator as to whether the feature serves as a source, sink or neither in the network.

**Metadata:**

collectionProgress (CodeProgress) The progress of the data collection.

dateAcquired (Date) The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

verified (String255) Whether or not the feature has been verified.

metadata (Integer) Foreign Key. Used to link the record to the applicable feature level metadata record(s).

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Valve

(Database Feature Class Name = DeicingValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a decing fluid line. [Adapted from SDSFIE].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| dVaultId (String50) | |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | The particular application, or use the subject item. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground deicing fluid line valve.[Derived from Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| pierCode (String10) | The one-letter code for the terminal pier where the valve is located |
| divVaultValve (CodeBoolean) | Indicates if the valve is a diversion vault valve or not. |
| mapGrid (String5) | Placeholder for ETL process to hold column 'grid' in MES DI_Tanks feature |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Deicing : Vault

(Database Feature Class Name = DeicingVault)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Secret

Reservoirs for used deicing fluid and stormwater [Entity MAA requirement database merge, attributes from IndustrialWasteTankPoint].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String60) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of the vault. |
| vaultLength (Double) | The overall length of the vault. |
| vaultType (String20) | The type or classification of the vault. |
| vaultWidth (Double) | The average width dimension of the vault measured from top of opposite side slopes. |
| description (String255) | A description or other unique information concerning the subject item. |
| pipeWidth (Double) | Size of inlet pipe |
| pipeMaterial (CodePipeMaterial) | Material of which inlet pipe is made |
| airReleasePresent (CodeBoolean) | Indicates whether or not an air release valve is present |

| | |
|---|---|
| pumpOutPresent (CodeBoolean) | Indicates whether or not a pump out conection is present |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| mapGrid (String5) | Target column for ETL process to hold column 'grid' in MES database |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| pierCode (String10) | The one-letter code for the terminal pier where the valve is located |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| metadata (Integer) | Foreign Key. Used to link the record to the applicable feature level metadata record(s). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Electrical

## Electrical : Bus Line

(Database Feature Class Name = ElectricalBusLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A rigid metallic conductor (copper or aluminum), typically in the form of a flat bar, angle stock, or square tubing. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| bilRat (CodeBilKv) | The insulators basic insulation level rating. |
| busMat (CodeElectricBus) | The material composition of the electrical bus group. |
| cblUse (CodeElectricCableUse) | The use or purpose of the cable group. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| frameType (String20) | The substation structural frame configuration. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| voltage (CodeVoltage) | The voltage of the bus group. |
| noConduct (Integer) | The total number of ungrounded conductors in the cable. |
| noNeutral (Integer) | The number of neutral conductors. |
| reactance (Double) | The reactance of the bus provided by the manufacturer. |
| sizeNeut (CodeCableDimension) | The size of the neutral conductors. |
| resistance (Double) | The resistance of the bus provided by the manufacturer. |
| length (Double) | The overall length of the feature.[Center]. |
| description (String255) | A description or other unique information concerning the subject item. |
| cblMaterial (CodeElectricCable) | The material of the cable. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Cable

(Database Feature Class Name = ElectricalCable)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A group of conductors used to carry electrical energy from point to point. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the feature.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| condSize (CodeCableDimension) | The size of a single ungrounded conductor in the cable group in American Wire Gauge (AWG) units. |
| cblType (CodeElectricCable) | This value differentiates similar entities by use or type.[REEGIS]. |
| catnav (CodeNavigationLineType) | Category of navigation line[S-57]. |
| cblLength (Double) | The length of the cable between nodes. |
| cblMaterial (CodeElectricCable) | The material composition of the cable. |
| cfgType (CodeElectricConfigType) | The cable mounting configuration on the pole or tower. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| voltage (CodeVoltage) | The system voltage applied to the cable group. |
| installType (CodeElectricCable) | Discriminator. The installation type code. |
| insulMaterial (CodeSheathInsulateType) | The type of material with which the conductors are insulated from each other and from their surroundings. |
| neutSize (CodeCableDimension) | The size of a single neutral conductor in American Wire Gauge (AWG) units. |
| noConduct (Integer) | The total number of ungrounded conductors in the cable. |
| noNeutral (Integer) | The total number of grounded conductors in a ductbank. |
| noPhases (Integer) | The number of phases routed by this cable group. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| riverMile (Double) | River mile marker.[REEGIS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Capacitor

(Database Feature Class Name = ElectricalCapacitor)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An electrical device placed in a circuit to correct power factor by adding reactive power to the circuit. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| cntrType (CodeElectricControlType) | The method of adjusting the kilovar output of the capacitor. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| cpctrKv (CodeElectricKvar) | The rating of the capacitor's ability to provide reactive power to a circuit. |
| voltage (CodeVoltage) | The system voltage across the capacitor. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| installType (CodePumpSta) | The type installation of the subject item. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| switch (CodeBoolean) | This indicates whether the capacitor is presently in the circuit or is not presently in the circuit. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Ductbank

(Database Feature Class Name = ElectricalDuctbank)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A tubular structure that provides protection for underground cables contained in conduit. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Name of the electrical underground conduit.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| ductMat (CodePipeMaterial) | An indication of the type of material of which the duct is composed. |
| dbkLength (Double) | The total length of the ductbank from source to load. Manholes and pullboxes should not break the measurement. |
| dbkSize (Double) | A two dimensional description of the physical size of the ductbank including units of measure (e.g., 2 ft x 2 ft, 3 m x 3 m). |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| voltage (CodeVoltage) | The maximum voltage in the ductbank. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noDucts (Integer) | An indicator of the number of conduits or wireways found in the ductbank. |
| noSpares (Integer) | The number of spare ducts enclosed in the ductbank for future use. |
| riverMile (Double) | River mile marker.[REEGIS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Generator

(Database Feature Class Name = ElectricalGenerator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A machine which converts mechanical energy into electrical energy. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| facilityName (String65) | A commonly used name for the facility.[HSIP]. |

**Attributes:**

| | |
|---|---|
| coolType (CodeEquipmentCooling) | The type of cooling for the generator engine. |
| autotran (CodeBoolean) | An indicator as to whether or not an automatic transfer switch exist. (yes or no) An automatic transfer switch is an electromechanical device used to automatically change states in the event of a power failure on the primary electrical service to use an |
| genType (CodeGeneratorType) | This value differentiates similar entities by use or type. |
| engModel (String20) | The engine Model, Product, Catalog, or Item Number. |
| engSerNo (String20) | The engine serial number. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| engineHp (Integer) | The power rating of the prime mover of the generator in horsepower. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| powerFact (Double) | The cosine of the phase angle between the voltage and the current that the generator creates. |
| fuelType (CodeFuel) | The type of fuel required to operate the prime mover of the generator. |
| hertz (Double) | The frequency of the electrical signal that the generator creates. |
| oilCapacity (Double) | The manufacturer recommended amount of oil that the generator engine requires to operate properly. |

| | |
|---|---|
| voltage (CodeVoltage) | The potential of the electrical energy that the generator creates. |
| kvaRate (Integer) | The rating of the complex power that the generator creates. |
| kwRate (Integer) | The rating of the Double power that the generator creates. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |
| sound (CodeBoolean) | An indicator as to whether or not Insulation was added to dampen the transmission of noise. (yes or no) |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| numPipes (Integer) | The number of powerlines entering the power plant.[HSIP]. |
| pwrsource (String65) | The source of the power used by the plant to generate electricity.[HSIP]. |
| fuelDel (CodeFuelDeliveryMethodType) | The delivery method of the fuel used at the power plant.[HSIP]. |
| numLines (Integer) | The total number of powerlines exiting the power plant.[HSIP]. |
| numStat (Integer) | The total number of substations associated with the power plant.[HSIP]. |
| genCapacity (Double) | The total generating capacity of the power plant.[HSIP]. |
| comAff (String80) | The name of the company that operates the power plant.[HSIP]. |
| numGen (Integer) | The total number of generators at the power plant.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Ground Point

(Database Feature Class Name = ElectricalGround)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where the electrical configuration is grounded. [SDSFIE Air Force].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Head Bolt Outlet

(Database Feature Class Name = ElectricalHeadBoltOutlet)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device which supplies electric current in cold weather climates for vehicle heating. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| type (String16) | The type of head bold outlet.[Air Force]. |
| voltage (CodeVoltage) | The type of voltage used.[Air Force]. |
| noPlugs (Integer) | The number of plug-ins available.[Air Force]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item.[Air Force]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Junction

(Database Feature Class Name = ElectricalJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or metal) typically located below grade with above grade access in which cables intersect, connect, or pass through. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

| | |
|---|---|
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| drainType (CodeDrainType) | The type of subject item drain. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| floorElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| Material (String16) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| noCables (Integer) | The number of the cables entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| juncType (CodeJuncType) | The type of junction (e.g. manhole, handhole, other) |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Light

(Database Feature Class Name = ElectricalLight)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Locations of point sources of general external lighting (excuding airfield lights). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| sensor (CodeBoolean) | A Boolean code indicating whether or not the light has a night sensor.[USACE OPERATIONS]. |
| watts (CodeLightWatts) | The light fixture wattage specification. |
| voltage (CodeVoltage) | The system voltage applied to the light fixture. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noLamps (Integer) | The total number of lamps in fixture. |
| fixtureHt (Double) | The height above the ground/base surface of the light fixture. |
| mountHeight (Double) | The fixture mounting height. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| litType (CodeExternalLight) | The type of the light. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Marker

(Database Feature Class Name = ElectricalMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc., identifying the location of the electrical equipment. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Meter

(Database Feature Class Name = ElectricalMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the electrical power supplied to a facility or through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| ampRate (Integer) | The maximum continuous current rating of the meter. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityKva (Double) | The limit of the complex power which the demand meter can record. |
| meterType (String20) | A label describing the features of the electrical system that the meter is measuring. |
| hertz (Double) | The frequency of the electrical system on which the meter should be used. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| voltage (CodeVoltage) | The potential of the electrical system on which the meter may be used. |
| kwRate (Integer) | The power rating on the meter based on the current and potential transformer ratios. |
| mtrConst (Integer) | The multiplication factor by which one must multiply the difference in present and previous meter readings to determine actual power consumed. |
| mtrUse (CodeElectricDeviceUse) | An indication of the type of service the meter is monitoring. |
| noPhases (Integer) | The number of phases that the meter monitors. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| drgvesty (CodeVesselType) | The types of dredging vessels.[USACE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Motor

(Database Feature Class Name = ElectricalMotor)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A machine that converts electrical energy into mechanical energy. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| enclty (CodeElectricMotorEnclType) | The type enclosure the motor has to protect it from outside elements like the weather. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| powerFact (Double) | The nameplate power factor at which the motor operates at full load. The power factor is the cosine of the phase angle between the voltage and the current. |
| voltage (CodeVoltage) | The nameplate voltage rating of the motor. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| insulCl (CodeElectricMotorInsulType) | The classification of the motor's insulation. |
| startType (CodeElectricMotorStartType) | The startup configuration for the motor. |
| motorHp (Double) | The output power rating of the motor in units of horsepower. |
| motorType (String20) | A label representing the name of a certain category of motors in which the motor fits based on common features of construction with other motors in the same category. |
| noPhases (Integer) | The number of phases at which the motor was designed to operate. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| windType (CodeWindingConnectionType) | A label representing the configuration of the stator winding connections. |
| description (String255) | A description or other unique information concerning the subject item. |
| hertz (CodeHertz) | The frequency of the electrical signal that the motor creates. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Pedestal

(Database Feature Class Name = ElectricalPedestal)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above ground enclosure which provides access to underground cables. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Utility Pole Guy

(Database Feature Class Name = ElectricalPoleGuyConnectionPoi)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A support configuration, which generally includes connecting hardware, cables, and anchor components, used to stabilize structures (poles, towers, etc.). Down guys typically connect to the structures at key stress points and extend to an anchor at the gro [SDSFIE Anteon].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anchorAtt (String15) | The type of anchor attachment to the pole or tower. |
| anchorType (String15) | The type of anchor used with this guy. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| design (String16) | Discriminator. The design code for a utility guy. |
| cblDia (Double) | The nominal diameter of the cable. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| guyLength (Double) | The length of the guy cable from pole connection to anchor. |
| cblMaterial (CodeElectricCable) | The material composition of the cable. |
| cblSht (CodeSheathInsulateType) | The type sheath attached to the guy cable. |
| cblTen (Double) | The tensile force applied to the guy cable. |
| cblType (String16) | The type of cable use for the guy. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| guyType (CodeUtilityGuyType) | A code indicating the configuration of the guy construction. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Utility Pole Guy Line

(Database Feature Class Name = ElectricalPoleGuyLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A support configuration that spans between two structures, which generally includes connecting hardware, cables, and anchor components. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Utility Pole Tower Site

(Database Feature Class Name = ElectricalPoleTower)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A structure used to elevate wires, cables, or other lines above the ground surface. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| design (String16) | Discriminator. The design code for types of poles. |
| capped (CodeBoolean) | Indicates whether or not the pole is capped (yes/no). |
| dateTreat (Date) | The date that the pole was last treated. Format for date is YYYYMMDD (i.e. September 15, 1994 = 19940915). |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| grounded (CodeBoolean) | An indicator as to whether or not the pole is grounded. (yes or no) |
| poleLength (Double) | The overall length of the pole from tip to tip. |
| poleHeight (Double) | The height of the pole measured from the ground surface to the top. |
| material (String16) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| pClass (CodePoleClassificationType) | A classification of the pole diameter, and consequently the breaking strength, of wooden poles. |
| treatType (CodePoleTreatmentType) | Defines any treatment applied to the pole to improve its life. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Regulator

(Database Feature Class Name = ElectricalRegulator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An electrical device that maintains its output voltage at a certain level even though its input voltage varies in a certain range over time. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| dateManufactured (Date) | The date of manufacturer for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| coolType (CodeEquipmentCooling) | The method of controlling the temperature of the regulator. |
| installType (CodePumpSta) | The type installation of the subject item. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| fuseRate (Integer) | The current rating of the fuse protecting the regulator. This will be on the primary side. |
| fuseType (CodeElectricSwitchType) | A label chosen from a standard list of labels describing the characteristics of the fuse. |
| oilCapacity (Double) | The manufacturer suggested volume of oil that should be maintained inside the regulator to assure safe and efficient operation. |
| prcntTap (Double) | The percentage of the voltage that will be changed by moving the connection up or down one tap. |
| kvaRate (Integer) | The maximum continuous complex power rating of the regulator. |
| secVolt (CodeVoltage) | The voltage on the load side of the regulator with the associated units given. |
| noPhases (Integer) | The number of phases regulated by this device. |
| noTaps (Integer) | The number of available points of connection on the regulator which may be used to change the voltage. |
| priVolt (CodeVoltage) | The voltage on the source side of the regulator with the associated units given. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| regType (CodeElectricVoltRegulType) | The type of voltage regulator. |
| regUse (CodeElectricDeviceUse) | An indication of whether the regulator is on a line or in a substation. |
| regWeight (Integer) | The force of the regulator toward the center of the earth due to the regulator's mass. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item.. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Riser

(Database Feature Class Name = ElectricalRiser)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where underground cable transitions to overhead. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| material (String16) | The material composition of the pole riser. |
| installDate (Date) | The date the riser was installed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Splice

(Database Feature Class Name = ElectricalSplice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The connection of two separate cables at their ends or the tapping of a conductor along the path of another conductor. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Substation

(Database Feature Class Name = ElectricalSubstation)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Secret

A facility in an electrical system where the voltage is reduced from transmission levels to distribution levels. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the substation.[USGS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| facilityName (String65) | A commonly used name for the facility.[HSIP]. |

**Attributes:**

| | |
|---|---|
| voltOut (CodeVoltage) | The line-to-line output voltage of the substation. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityOper (Double) | The normal continuous amount of complex power that the substation provides. |
| capacityRate (Double) | The maximum continuous amount of complex power that the substation can provide. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noTrans (Integer) | The total number of transformers presently in use at the substation. |
| noCircuit (Integer) | The total number of circuits that are being fed by the substation. |
| sstType (CodeSubstationType) | A label indicating the type of service that the substation performs (e.g. distribution substation, facility substation). |
| noSpares (Integer) | The number of spare bays for possible substation expansion. |
| voltIn (CodeVoltage) | The line-to-line voltage of the transmission line that is the source for the substation. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Switch

(Database Feature Class Name = ElectricalSwitch)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device which closes and opens (connects and disconnects) an electrical circuit. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| installType (String16) | Discriminator. The installation type code. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| voltage (CodeVoltage) | The system voltage of the electrical line at the point in which the switch is inserted. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noPhases (Integer) | The number of phases opened by the switch |
| noSwitch (Integer) | The number of switches at this installation. Each switch has its own record. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| swCubNo (String20) | A locally assigned switching cubicle number or designator. |
| switchDim (String20) | A three dimensional description of the amount of space which a switch occupies (e.g., 2 x 1 x 4). |
| switchRat (Integer) | The maximum continuous amount of current to which the switch should be subjected. |
| swtSta (CodeStatusElectricSwitch) | The positional condition of a switch during normal circuit conditions (e.g., normally-open, normally closed). |
| swtType (CodeElectricSwitchType) | A label chosen from a standard list of labels indicating the characteristics of a switch. |
| swtWeight (Integer) | The force of the switch toward the center of the earth due to the switch's mass. |
| fuseSize (Double) | The size of the fuse associated with the switch.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| size (Integer) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Transformr Bank

(Database Feature Class Name = ElectricalTransformerBank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A location containing one or more transformers. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| noTrans (Integer) | The number of transformers in the transformer bank. |
| secVolt (CodeVoltage) | The line-to-line voltage of the electrical system that the transformer bank serves. |
| tranCap1 (Double) | The capacity of the first transformer contained in the transformer bank. Used exclusively for displaying the capacities in the bank. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| tranCap2 (Double) | The capacity of the second transformer contained in the transformer bank. Used exclusively for displaying the capacities in the bank. |
| tranCap3 (Double) | The capacity of the third transformer contained in the transformer bank. Used exclusively for displaying the capacities in the bank. |
| mount (CodeElectricTranbnk) | Discriminator. The type of mounting for the transformer bank. |
| totalKva (Double) | The total kva rate for all transformers attached to the transformer bank. |
| feederNo (String20) | An operator generated identifier locally used to identify the feeder to the transformer bank. |
| priVolt (CodeVoltage) | The line-to-line voltage of the electrical system that serves as the source for the transformer bank. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| dateLastInspected (Date) | The last inspection date of the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| condition (CodePoleCondition) | The condition of the subject item when last inspected. |
| phase1 (CodeElectricPhase) | The phase number for the first transformer group. |
| kva1 (CodeElectricKvar) | The capacity of each transformer in a group. (i.e. 2-50kva / 1-25kva, 50 is the capacity of each transformer in the first group - 25 is the capacity of each transformer in the second group.) There can be no more than two groups in a bank. |

| | |
|---|---|
| noTfrs1 (Integer) | The number of transformers in the first group. |
| phase2 (CodeElectricPhase) | The phase number for the second transformer group. |
| noTfrs2 (Integer) | The number of transformers in the second group. |
| kva2 (CodeElectricKvar) | The capacity of each transformer in a group. (i.e. 2-50kva / 1-25kva, 50 is the capacity of each transformer in the first group - 25 is the capacity of each transformer in the second group.) There can be no more than two groups in a bank. |
| pcb (CodeBoolean) | A boolean indicating whether the transformer contains PCB's and can be classified as wet or not (YES = Y and NO = N)?[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Transformer Vault

(Database Feature Class Name = ElectricalTransformerVault)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An enclosure housing one or more transformers. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| noTrans (Integer) | The number of transformers housed inside the transformer vault. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Electrical : Utility Electric Utility Site

(Database Feature Class Name = ElectricalUtilitySite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An electrical power utility company or organization's certificated area of jurisdiction or responsibility as approved by a federal, state, or local utility regulatory authority. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| elutname (String50) | Name of electrical power utility or system. |

**Attributes:**

| | |
|---|---|
| numPipes (Integer) | Number of pipelines entering facility.[HSIP]. |
| numLines (Integer) | Number of powerlines existing on a facility.[HSIP]. |
| numGen (Integer) | Total number of power generators at the plant.[HSIP]. |

| | |
|---|---|
| numStat (Integer) | Number of substations at the facility.[HSIP]. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| reConnect (Integer) | Total number of residential type service connections. |
| coConnect (Integer) | Total number of commercial (i.e., businesses, industrial) type service connections. |
| populationServed (Integer) | Population served by electrical power utility or system. |
| elecutmaaID (String30) | Identifier assigned to the electrical power utility or system by the appropriate federal, state, or local regulatory authority. |
| elecutcap (Double) | Total design capacity of the electrical power utility or system (e.g. megawatts per day). |
| utilown (CodeUtilityOwnershipType) | General category or type of electric utility or system owner. |
| elecsource (String50) | Source of electrical power distributed by electric utility (e.g., electrical power plants owned by utility, electrical power purchased from other utilities). |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: EMCS

## EMCS : Cable

(Database Feature Class Name = EnergyCtrlMonCable)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Data transmission media, typically fiber optics or shielded twisted-pair. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| cblDim (CodeCableDimension) | The cable dimension. |
| cblLength (Double) | The overall cable length. |
| cblMaterial (CodeElectricCable) | The material composition of the cable. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation. |
| cblType (String16) | The type of cable connecting the devices. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| loosbuf (CodeBoolean) | An indicator as to whether or not the cable is loose buffered (yes/no). |
| dbLoss (Double) | Loss of a signal over a conductor expressed in decibels. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (String16) | Discriminator. The installation type code. |
| noLinks (Integer) | Number of links in the cable. |
| noPairs (Integer) | The number of pairs in a twisted pair cable. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## EMCS : Device

(Database Feature Class Name = EnergyCtrlMonDevice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Devices used in an energy monitoring/control system to collect, process or transmit data signals. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| anlgIn (Integer) | The total number of analog-in ports on the device. |
| anlgInSp (Integer) | The number of spare analog-in ports. |
| anlgOt (Integer) | The total number of analog-out ports on the device. |
| anlgOtSp (Integer) | The number of spare analog-out ports. |
| dateManufactured (Date) | The date of manufacturer for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| devType (CodeEcmDevice) | Discriminator: This value differentiates similar entities by use or type. |
| installType (CodePumpSta) | The type installation of the subject item. |
| dgtlIn (Integer) | The total number of digital-in ports on the device. |
| dgtlInSp (Integer) | The number of spare digital-in ports. |
| dgtlOt (Integer) | The total number of digital-out ports on the device. |
| dgtlOtSp (Integer) | The number of spare digital-out ports. |
| readout (CodeDisplayType) | The type of display or readout for the device. |
| noPairlnk (Integer) | The number of twisted pair linked to the device. |
| description (String255) | A description or other unique information concerning the subject item. |
| locationDesc (String50) | Text description of location of item |
| manufacturerName (String60) | Manufacturer's name |
| sensorNumber (Integer) | Sensor number associated with item |
| inspectionFormNo (String50) | Form number used by inspectorswhen inspecting the item, |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| impedance (Double) | The overall device resistance measured in ohms. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## EMCS : Ductbank

(Database Feature Class Name = EnergyCtrlMonDuctbank)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A structure containing multiple conduits used to protect underground cables. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| ductMat (CodePipeMaterial) | The material composition of the ductbank. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dbkLength (Double) | The total length of the ductbank from source to load. Manholes and pullboxes should not break the measurement. |
| dbkSize (Double) | A two dimensional description of the physical size of the ductbank including units of measure (e.g., 2 ft x 2 ft, 3 m x 3 m). |
| voltage (CodeVoltage) | The voltage of the electrical control monitoring ductbank. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noDucts (Integer) | The total number of ducts in the ductbank. |
| noSpares (Integer) | The total number of ducts not used in the ductbank. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## EMCS : Junction

(Database Feature Class Name = EnergyCtrlMonJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault located below grade with above grade access where cables intersect, connect, or pass through. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| type (String16) | Discriminator. The code that represents the type of Junction. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (Integer) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## EMCS : Marker

(Database Feature Class Name = EnergyCtrlMonMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of an energy control monitoring station. [SDSFIE NGA/NIMA].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: FAA

## FAA : Cable

(Database Feature Class Name = CableLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A group of conductors used to carry electrical energy or transmit communications from point to point.

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the feature. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| condSize (CodeCableDimension) | The size of a single ungrounded conductor in the cable group in American Wire Gauge (AWG) units. |
| cblType (CodeElectricCable) | This value differentiates similar entities by use or type.[REEGIS]. |
| catnav (CodeNavigationLineType) | Category of navigation line[S-57]. |
| cblLength (Double) | The length of the cable between nodes. |
| cblMaterial (CodeElectricCable) | The material composition of the cable. |
| cfgType (CodeElectricConfigType) | The cable mounting configuration on the pole or tower. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| voltage (CodeVoltage) | The system voltage applied to the cable group. |
| installType (CodeElectricCable) | Discriminator. The installation type code. |
| insulMaterial (CodeSheathInsulateType) | The type of material with which the conductors are insulated from each other and from their surroundings. |
| neutSize (CodeCableDimension) | The size of a single neutral conductor in American Wire Gauge (AWG) units. |

| | |
|---|---|
| noConduct (Integer) | The total number of ungrounded conductors in the cable. |
| noNeutral (Integer) | The total number of grounded conductors in a ductbank. |
| noPhases (Integer) | The number of phases routed by this cable group. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| cabUse (CodeCableUse) | Discriminator - The overall use of the cable. |
| diameter (Double) | The width of a cylindrical or circular cable.[Tinker Air Force Base]. |
| cabElev (CodeCableElevation) | The vertical location of the cable.[Tinker Air Force Base]. |
| verticalClearance (Double) | The clearance in feet between the lowest point under the cable line and the water's surface at Mean High Water (MHW) referenced to a reading on the appropriate gage.[REEGIS]. |
| cblSht (CodeSheathInsulateType) | The type of cable sheathing or insulation.[Tinker Air Force Base]. |
| coffset (Double) | The distance to the cable as measured from the edge of a paved surface.[Tinker Air Force Base]. |
| icefacClr (Double) | The clearance in feet between the lowest point under the cable line and the ice facility surface.[S-57]. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## FAA : Ductbank

(Database Feature Class Name = Ductbank)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A tubular structure that provides protection for underground cables contained in conduit.

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Name of the electrical underground conduit.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| ductMat (CodePipeMaterial) | An indication of the type of material of which the duct is composed. |
| dbkLength (Double) | The total length of the ductbank from source to load. Manholes and pullboxes should not break the measurement. |
| dbkSize (Double) | A two dimensional description of the physical size of the ductbank including units of measure (e.g., 2 ft x 2 ft, 3 m x 3 m). |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| voltage (CodeVoltage) | The maximum voltage in the ductbank. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noDucts (Integer) | An indicator of the number of conduits or wireways found in the ductbank. |
| noSpares (Integer) | The number of spare ducts enclosed in the ductbank for future use. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| noDucts (Integer) | The total number of ducts in the ductbank. |
| noDuHigh (Integer) | The number of ducts in the y-direction |
| noDuWide (Integer) | The number of ducts in the x-direction |
| noSpares (Integer) | The total number of ducts not used in the ductbank. |
| concEnc (CodeBoolean) | A Boolean indicating whether the ductbank is encased in concrete.[Tinker Air Force Base]. |
| diameter (Double) | Diameter (if round).[AIR FORCE]. |
| width (Double) | Width of horizontal cross section.[AIR FORCE]. |
| height (Double) | Height.[AIR FORCE]. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## FAA : Junction

(Database Feature Class Name = ElectricalJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or metal) typically located below grade with above grade access in which cables intersect, connect, or pass through. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| drainType (CodeDrainType) | The type of subject item drain. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| floorElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| Material (String16) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| noCables (Integer) | The number of the cables entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| juncType (CodeJuncType) | The type of junction (e.g. manhole, handhole, other) |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Fuel

## Fuel : Air Eliminator

(Database Feature Class Name = FuelAirEliminator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device or structure placed in the fuel distribution system to separate air from petroleum products. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Anode

(Database Feature Class Name = FuelAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A material used for fuel distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Anode Test Station

(Database Feature Class Name = FuelAnodeTestStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in fuel systems. [SDSFIE HSIP].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| noTerm (Integer) | The total number of terminal connections at the test station. |
| type (String16) | The type of anode test station configuration use. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station. |
| wireType (String16) | The conductor configuration, typically solid or stranded. |
| description (String255) | A description or other unique information concerning the subject item. |
| installType (CodeSheathInsulateType) | The type of insulate installed. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Farm Site

(Database Feature Class Name = FuelFarmLocation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An area designated for the storage of POL products which normally includes multiple tanks (above or below ground), berms, and monitoring wells. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | A commonly used name for the feature.[HSIP]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| numPipes (Integer) | The quantity of pipes that access the fuel farm.[HSIP]. |
| jetCapacity (Double) | The quantity of jet fuel that can be stored in the facility.[HSIP]. |
| lubCapacity (Double) | The total storage capacity of lubricants at the fuel farm.[HSIP]. |
| gasCapacity (Double) | The total gas storage capacity for the fuel farm.[HSIP]. |
| numTanks (Integer) | The total number of tanks in the fuel farm.[HSIP]. |
| oilCapacity (Double) | The quantity of oil that can be stored in the facility.[HSIP]. |
| strgpet (CodeBoolean) | A boolean indicating whether the farm is a part of the Strategic Petroleum Reserve (Y - is a part of the reserve, N - is not a part of the reserve)?[HSIP]. |
| material (String16) | |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Filter Strainer

(Database Feature Class Name = FuelFilterStrainer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device through which fuel is passed to remove impurities to the fuel. Usually placed in fuel lines near fill points. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Fitting

(Database Feature Class Name = FuelFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying fuel. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| fitLength (Double) | The overall length of the fitting. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1 gas hydrant, 2 meter, 6 pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| coverDepth (Double) | Depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line fitting.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Hydrant

(Database Feature Class Name = FuelHydrant)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Location where fuel is control discharged to users. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| nozzleNr (Integer) | The number of fuel system hydrant cart nozzles.[Air Force]. |

**Attributes:**

| | |
|---|---|
| hydrantType (CodeHydrantType) | The particular kind, class, or group of hydrant. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| outcon1dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of the largest hydrant outlet. |
| outcon2dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of the second largest hydrant outlet. |
| outcon3dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of the smallest hydrant outlet. |
| pressResd (Double) | The measured pressure at a hydrant or connection during a flow test conducted at the subject hydrant or connection. |
| pressStat (Double) | The numeric pressure head on the subject item under static (i.e., no flow or demand) conditions in the utility system. |
| valveSt (CodeStyleValve) | The style of the valve. |
| noHydrnts (Integer) | The number of Refill for the hydrants.[Air Force]. |
| nozzlType (CodeNozzleType) | Fuel System Hydrant Cart Nozzle Type Code.[Air Force]. |
| truckNr (Integer) | The number of the cart truck.[Air Force]. |
| truckType (CodeTruckType) | The different code types of the cart truck.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| remarks (String255) | Any narrative remarks about the fuel hydrant .[Air Force]. |
| hydrantElvevation (Integer) | The elevation of the hydrant. |

| | |
|---|---|
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Junction

(Database Feature Class Name = FuelJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in fuel systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| airrfValve (CodeBoolean) | Indicates whether or not there is an air relief valve installed on subject item? (yes/no) |
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| noValves (Integer) | The number of valves inside the subject item. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| status (CodeStatus) | The status of the manhole indicating its' usability. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Line

(Database Feature Class Name = FuelLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry fuel from location to location (main line, service line, vent line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| catProt (CodeBoolean) | Indicates whether or not the pipe has been provided with cathodic protection? (yes or no). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| fuelType (CodeFuel) | The type of fuel transported in this pipe. |
| pressNorm (Double) | The normal operating pressure of the fuel pipe. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | Discriminator. The use code for a fuel line. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1 gas hydrant, 2 meter, 6 pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| piplty (CodePipelineLocationType) | The location of the pipeline in relevance to the earth's surface.[USGS]. |
| coverDepth (Double) | Depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line pipe.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line’s geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Marker

(Database Feature Class Name = FuelMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of fuel lines. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Meter

(Database Feature Class Name = FuelMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of fuel to a facility or through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| meterCustomer (String20) | The name of the individual, company, or government agency served by the subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation at the centerline of the meter, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1 gas hydrant, 2 meter, 6 pipe). |
| srvcMtr (CodeBoolean) | An indicator as to whether or not the meter is installed on a service line? (yes or no) |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Oil Water Separator

(Database Feature Class Name = FuelOilWaterSeparator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A filtering device placed in the fuel stream specifically to remove oil and water from the fuel. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| sepName (String12) | The site specific identification name or number assigned to the subject item. |

**Attributes:**

| | |
|---|---|
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| disposal (String30) | Brief description of how the waste is disposed. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. (yes or no) |
| flowCapacity (Double) | The flow capacity of the subject item. |
| oilCapacity (Double) | The retention capacity of the oil-water separator. |
| sepCode (String2) | The oil-water separator code. Usually defined as OW. |
| sepContnt (String20) | Separator contents |
| tempOptim (Double) | The optimum operating temperature for the subject item. |
| separationProcess (String30) | The specific type of separation process. |
| sepVolume (Double) | The volume of the oil-water separator. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Pump

(Database Feature Class Name = FuelPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for a fuel system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| outflwAct (Double) | The actual measured pump flow output. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| primeMethod (String15) | The method by which the pump is primed. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |

| | |
|---|---|
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| bank (CodeBankSide) | The bankside of the river that the feature is located on.[USACE]. |
| riverMile (Double) | River mile marker.[USACE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Pump Booster Station

(Database Feature Class Name = FuelPumpBoosterStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a fuel distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the fuel pump booster station point.[USGS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

| | |
|---|---|
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| design (CodePumpSta) | Discriminator. The design of the pump/booster station. |
| capacityAlrm (Double) | Capacity alarm level. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| fuelSrc (CodeSourceListFuelGas) | The source of fuel for the pumps. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| staCapacity (Double) | The pump station's output capacity (e.g., gpm) rating (with all pumps operating) at a specific total dynamic head (TDH), which correlates to normal system pressure head or design pressure head. |
| staLength (Double) | The length dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| staType (CodePumpSta) | The type of station. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| prodct (CodePipelineProduct) | The product being pumped or carried by the pipeline.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Rectifier

(Database Feature Class Name = FuelRectifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the fuel distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier. |
| currntOut (Double) | The output direct current from the rectifier to the anode system. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Regulator Reducer

(Database Feature Class Name = FuelRegulatorReducer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pressure regulator located in the fuel line automatically reduces the pressure on the downstream side of the valve to a preset magnitude. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| pressIn (Double) | The design fuel system pressure in the line on inlet side of the pressure regulator. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressOut (Double) | The design or maximum system pressure in the line on outlet side of the pressure reducing station. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1 gas hydrant, 2 meter, 6 pipe). |
| pressReqd (Double) | The required maximum outlet pressure setting for the regulator. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Source

(Database Feature Class Name = FuelSource)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The point from which the fuel is supplied a product for processing and distribution. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (CodeFuelSource) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Tank

(Database Feature Class Name = FuelTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above or below grade receptacle or chamber for holding fuels on a temporary basis prior to transfer or use. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| altValve (CodeBoolean) | Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| ovrflwElevation (Double) | The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| headNorm (Double) | The normal operating head for the subject item. |
| fuelType (CodeFuel) | The type fuel stored in the tank. |
| pressNorm (Double) | The normal operating pressure of the fuel tank. |
| invertElv (Double) | The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level. |
| tankSt (CodeStyleTank) | The particular kind, class, or group of tank (e.g., elevated, hydropneumatic, etc.). |
| tankUse (CodeTankUse) | The particular kind or use of the tank. |
| tankWidth (Double) | The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| tankCapacity (Double) | The tank's storage capacity (e.g., gallons, ft3, etc). |
| tankDiameter (Double) | The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface. |
| tankLength (Double) | The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| strgpet (CodeBoolean) | A boolean indicating whether there is a Strategic Petroleum Reserve (Y = YES or N = NO).[HSIP]. |
| numTanks (Integer) | Maximum number of storage tanks, all POL.[HSIP]. |
| numPipes (Integer) | Number of pipelines entering/exiting facility.[HSIP]. |

| | |
|---|---|
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| fllstandrt (Integer) | The Rate of the Fillstand.[Air Force]. |
| resplyCap (Double) | The Resupply Capacity.[Air Force]. |
| secCont (CodeBoolean) | A boolean indicating whether or not the secondary containment that is present (Y = YES or N = NO).[AIR FORCE]. |
| secContam (String255) | A description of the secondary containment that is present.[Army]. |
| description (String255) | A description or other unique information concerning the subject item. |
| remarks (String255) | The narrative remarks about the fuel tank.[Air Force]. |
| color (CodeColor) | The color of the fuel tank. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| topElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| verticalStructureMaterial (String16) | The vertical structure material. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Transmission Pipeline

(Database Feature Class Name = FuelTransPipeline)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

An interstate or intrastate transmission line through which gas, oil, or hazardous liquid is transported for the purpose of supplying a local utility. [SDSFIE DOT - NPMS].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the pipeline.[USGS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| sysName (String40) | The name of a single pipeline system.[DOT - NPMS]. |

**Attributes:**

| | |
|---|---|
| operNm (String40) | The name of the company or organization that physically operates the pipeline system.[DOT - NPMS]. |
| catPipe (CodePipeCategory) | Category of pipe[S-57]. |
| verticalClearance (Double) | Vertical Clearance of pipeline[S-57]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| piprod (CodePipelineProduct) | Discriminator. The type of product carried by pipeline.[HSIP]. |
| diameter (Double) | The diameter of the pipeline in either mm or cm.[HSIP]. |
| tankSt (CodeStyleTank) | The particular kind, class, or group of tank (e.g. elevated, on ground, below ground, floating, on water body bottom.).[HSIP]. |
| capacity (Double) | The capacity of the pipeline.[HSIP]. |
| intersta (CodeBoolean) | Indication whether or not (yes or no) pipeline is an interstate pipeline. Yes = interstate, No = Intrastate.[DOT - NPMS]. |
| cmdtyDesc (String255) | Comma separated list of the names of commodities carried by the pipeline system.[DOT - NPMS]. |
| commody1 (CodePipelineProduct) | Code designation for the primary commodity carried by the pipeline system.[DOT - NPMS]. |
| commody2 (CodePipelineProduct) | Code designation for a secondary commodity carried by the pipeline system (if applicable). Empty (EMT) is not valid.[DOT - NPMS]. |
| commody3 (CodePipelineProduct) | Code designation for an additional secondary commodity carried by the pipeline system (if applicable). Empty (EMT) is not valid.[DOT - NPMS]. |
| prodct (String255) | A description of the product that is being carried in pipeline.[S-57]. |
| length (Double) | The overall length of the feature.[Center]. |
| vertLoc (CodeVerticalLocation) | The vertical location for the pipeline relative to the surface.[USGS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| impedance (Double) | The number representing the total opposition to flow. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Transmission Pipeline Segment Line

(Database Feature Class Name = FuelTransPipelineSegmentLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A linear feature representing part or all of a pipeline system. A pipeline segment must have only two ends. No branches are allowed. A pipeline segment may be a straight line or may have any number of vertices. Each pipeline segment must be uniquely i [SDSFIE CGDII].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe).[DOT - NPMS]. |
| posAcc (CodePosAccuracyQuality) | Estimated positional accuracy of the feature.[DOT - NPMS]. |
| length (Double) | The length of pipe, measured from node to node along the pipeline segment centerline.[DOT - NPMS]. |
| subsysNm (String40) | Name for the pipeline segment, or smaller sub-section of the pipeline system.[DOT - NPMS]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Refinery Site

(Database Feature Class Name = FuelTransRefinery)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An establishment where fossil fuels are refined. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| refName (String50) | The name of the refinery. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| cogenCap (Double) | The co-generation capacity of the refinery in Kw.[HSIP]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| heProd (Double) | The total production capacity of helium for the refinery.[HSIP]. |
| prodCap (Double) | The total production capacity for the refinery.[HSIP]. |
| sProd (Integer) | The total sulpher production produced at the refinery.[HSIP]. |
| h2Prod (Double) | The total production capacity of hydrogen for the refinery.[HSIP]. |
| cokeProd (Double) | The total coke production capacity of the refinery.[HSIP]. |
| co2Prod (Integer) | The total carbon dioxide production capacity of the refinery.[HSIP]. |
| chrgCap (Double) | The total charge capacity of the refinery.[HSIP]. |
| distillateProduction (Double) | The total distillate production capacity of the refinery.[HSIP]. |
| asphProd (Double) | The production capacity of asphalt for the refinery.[HSIP]. |
| capacity (Double) | The Plant capacity.[HSIP]. |
| sprAccess (String32) | Access to Strategic Petroleum Reserve: none, water, pipeline.[HSIP]. |
| distillateType (CodeDistallateProductioType) | The different Distillate Production Types.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Fuel : Valve

(Database Feature Class Name = FuelValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a fuel line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the fuel valve point.[USGS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | The site specific use of the valve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| valveDiameter (CodePipeDiameter) | The manufacturer's nominal diameter. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Gas

## Gas : Anode

(Database Feature Class Name = GasAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A material used for natural gas distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Anode Test Station

(Database Feature Class Name = GasAnodeTestStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in natural gas systems. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeSheathInsulateType) | The type of insulation covering the conductor. |
| noTerm (Integer) | The total number of terminal connections at the test station. |
| type (String16) | The type of anode test station configuration use. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station. |
| wireType (String16) | The conductor configuration, typically solid or stranded. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Fill Point

(Database Feature Class Name = GasFillPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Location where gas is control discharged to users. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| hydrantType (CodeHydrantType) | The particular kind, class, or group of hydrant. |
| outcon1dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| outcon2dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| outcon3dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| gasType (CodeFuel) | The type of fuel or gas dispensed, carried, used or otherwise handled by the subject item. |

| | |
|---|---|
| hydrantElvevation (Double) | The elevation of the hydrant, measured at the hydrant outlet, in feet (English units) or meters (SI units) above some datum. |
| source (CodeSourceListFuelGas) | The source of fuel for the subject item. |
| pressResd (Double) | The measured pressure at a hydrant or connection during a flow test conducted at the subject hydrant or connection. |
| pressStat (Double) | The numeric pressure head on the subject item under static (i.e., no flow or demand) conditions in the utility system. |
| valveSt (CodeStyleValve) | The style of the valve. |
| capacity (Double) | The storage capacity of the hydrant. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Fitting

(Database Feature Class Name = GasFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Hardware used to cap, plug, or join pieces of pipe. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fittinLength (Double) | The overall length of the fitting. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1 gas hydrant, 2 meter, 6 pipe). |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Junction

(Database Feature Class Name = GasJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in natural gas systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| airrfValve (CodeBoolean) | Indicates whether or not there is an air relief valve installed on subject item? (yes/no) |
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| noValves (Integer) | The number of valves inside the subject item. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Light

(Database Feature Class Name = GasLight)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A point graphic representing the location of a gas light fixture. A gas light fixture utilizes gas as it's energy source and contains a flame used for illumination of an area. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fixHeight (Double) | The height of the fixture above a given reference, usually the grounds surface. |
| fixType (String20) | The type of fixture. |
| fixUse (CodeGasFixtureUse) | The use or purpose of the gas fixture. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| gasType (CodeFuel) | The type of fuel or gas dispensed, carried, used or otherwise handled by the subject item. |
| useRate (Integer) | The fuel/gas usage rate for the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Line

(Database Feature Class Name = GasLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry natural gas from location to location (main line, service line, vent line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| catProt (CodeBoolean) | Indicates whether or not the pipe has been provided with cathodic protection? (yes or no). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| gasType (CodeFuel) | The type of fuel or gas dispensed, carried, used or otherwise handled by the subject item. |
| pressNorm (Double) | The normal operating pressure of the gas pipe. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | Discriminator. The use code for natural gas pipes. |
| source (CodeSourceListFuelGas) | The source of fuel for the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| piplty (CodePipelineLocationType) | The location of the pipeline in relevance to the earth's surface.[USGS]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| mapLevel (Integer) | From the MES database, it denotes the numeric Level that the feature is associated with; i.e., 6 for Level 6, etc. |
| mapColor (CodeColor) | From the MES database, it denotes the numeric Level that the feature is associated with; i.e., 6 for Level 6, etc. |

| | |
|---|---|
| mapLayerNo (Integer) | From the MES database, it denotes the textual (label) Level that the feature is associated with; i.e., Level 6 for 6, etc.) |
| entityType (String16) | From the MES database, |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Marker

(Database Feature Class Name = GasMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate natural gas. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Meter

(Database Feature Class Name = GasMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of gas to a facility or through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| meterCustomer (String20) | The name of the individual, company, or government agency served by the subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation of the meter above a specific datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| source (CodeSourceListFuelGas) | The source of fuel for the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| srvcMtr (CodeBoolean) | An indicator as to whether or not the meter is installed on a service line? (yes or no) |

| | |
|---|---|
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| pressMax (Double) | Maximum working pressure. |
| capacity (Double) | Capacity of the gas meter. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Pump

(Database Feature Class Name = GasPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for natural gas system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| outflwAct (Double) | The actual measured pump flow output. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Pump Station

(Database Feature Class Name = GasPumpStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to maintain flow at adequate pressure within a natural gas distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| capacityAlrm (Double) | Capacity alarm level. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |
| staCapacity (Double) | The pump station's output capacity (e.g., gpm) rating (with all pumps operating) at a specific total dynamic head (TDH), which correlates to normal system pressure head or design pressure head. |
| staLength (Double) | The length dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| staType (String16) | Discriminator. The type of station. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| pressOper (Double) | The normal operating gas system pressure in the gas line on the inline side of the station. |
| pressOut (Double) | The design or maximum system pressure in the line on outlet side of the pumping station. |
| source (CodeSourceListFuelGas) | The source of fuel for the subject item. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Rectifier

(Database Feature Class Name = GasRectifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the natural gas distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier. |
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| currntOut (Double) | The output direct current from the rectifier to the anode system. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Reducer

(Database Feature Class Name = GasReducer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pressure regulator automatically reduces the pressure on the downstream side of the valve to a preset magnitude. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| pressIn (Double) | The design gas system pressure in the line on inlet side of the pressure regulator. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressOut (Double) | The design or maximum system pressure in the line on outlet side of the pressure reducing station. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| pressReqd (Double) | The required maximum outlet pressure setting for the regulator. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Source

(Database Feature Class Name = GasSource)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The point from which natural gas is supplied for processing and distribution. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| type (CodeFuel) | A field indicating the kind, class, or group of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item |
| size (Integer) | The size of the subject item |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Tank

(Database Feature Class Name = GasTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above or below grade receptacle or chamber used for holding natural gas on a temporary basis prior to transfer or use. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| altValve (CodeBoolean) | Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| ovrflwElevation (Double) | The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| headNorm (Double) | The normal operating head for the subject item. |
| pressNorm (Double) | The manufacturer's (as rated by American Society of Mechanical Engineers (ASME) testing procedures) maximum pressure rating of the gas tank. |
| invertElv (Double) | The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level. |
| topElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| tankLength (Double) | The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| tankSt (CodeStyleTank) | The particular kind, class, or group of tank (e.g., elevated, hydropneumatic, etc.). |
| tankUse (CodeTankUse) | The particular kind or use of the tank. |

| | |
|---|---|
| tankWidth (Double) | The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| tankCapacity (Double) | The tank's storage capacity (e.g., gallons, ft3, etc). |
| tankDiameter (Double) | The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface. |
| numStruct (Integer) | The total number of gas storage structures that exist on the plant.[HSIP]. |
| featureUse (String16) | The Descriptive Shape Code.[Army]. |
| lngFac (CodeBoolean) | LNG facility (Y or N).[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| ustSensor (CodeBoolean) | Whether or not a sensor exists on the tank. |
| color (CodeColor) | The color of the gas tank. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| verticalStructureMaterial (String16) | The vertical structure material. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| source (String255) | The source of the feature. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Gas : Valve

(Database Feature Class Name = GasValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a natural gas line. [SDSFIE NGA/NIMA].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | Discriminator. The site specific use of the valve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| valveDiameter (CodePipeDiameter) | The manufacturer's nominal diameter. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line valve.[CENTER]. |
| endDate (Date) | The date the evacuation route ended. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[NGA/NIMA]. |
| branchSys (String12) | An operator generated identifier that is a unique site specific name or number designation of a branch or isolated area of a natural gas distribution system. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | The material of the subject item |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: HCS

## HCS : Anchor

(Database Feature Class Name = HeatCoolAnchorPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A structure, typically concrete, used to either guide the expansion of pipes or used to fix the movement of some part of the expansion section. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anchType (CodeHcsAnchor) | Discriminator. This value differentiates similar entities by use or type. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| size (Integer) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Anode

(Database Feature Class Name = HeatCoolAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device used in utility distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Anode Test Station

(Database Feature Class Name = HeatCoolAnodeTestStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in heating/cooling systems. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeSheathInsulateType) | The type of insulation covering the conductor. |
| noTerm (Integer) | The total number of terminal connections at the test station. |
| type (String16) | The type of anode test station configuration use. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station. |
| wireType (String16) | The conductor configuration, typically solid or stranded. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Fitting

(Database Feature Class Name = HeatCoolFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise attach to a heating and cooling system pipe. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fitElv (Double) | The elevation measured at centerline of the fitting, in feet (English units) or meters (SI units) above some datum. |
| diaIn (Double) | The inside, or interior, diameter of the fitting. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| fitLength (Double) | The overall length of the fitting. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground heating and cooling system line fitting.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Junction

(Database Feature Class Name = HeatCoolJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in heating/cooling systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| airrfValve (CodeBoolean) | Indicates whether or not there is an air relief valve installed on subject item? (yes/no) |
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| noValves (Integer) | The number of valves inside the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| area (Double) | The size of the area, zone, or polygon in square units.[Cherry Point]. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units.[Cherry Point]. |

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Line

(Database Feature Class Name = HeatCoolLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry a heating/cooling substances from location to location (main line, service line, vent line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| catProt (CodeBoolean) | Indicates whether or not the pipe has been provided with cathodic protection? (yes or no). |
| expLoop (CodeBoolean) | The expansion loop of the heating and cooling system. |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |

| | |
|---|---|
| groundElevation1 (Double) | The elevation of the ground surface at node_id_1, in feet (English units) or meters (SI units) above some datum. |
| groundElevation2 (Double) | The elevation of the ground surface at node_id_2, in feet (English units) or meters (SI units) above some datum. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| tape (CodeBoolean) | Location marker tape or wire is installed above underground pipe to facilitate locating with a magnetometer? (yes or no). |
| featureUse (String16) | Discriminator. The use code for heating and cooling pipes. |
| pressNorm (Double) | The normal operating pressure of the heating and cooling system pipe. |
| tempNorm (Double) | The normal operating temperature of the subject item. |
| tempMax (Double) | The manufacturer's or industry standard's maximum temperature rating of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground heating and cooling system line pipe.[Air Force]. |
| description (String255) | Narrative text providing a brief description of the feature.[Cherry Point ]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Marker

(Database Feature Class Name = HeatCoolMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc., installed either directly above or immediately adjacent heating/cooling equipment marking its location. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Meter

(Database Feature Class Name = HeatCoolMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of water to a facility or through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| meterCustomer (String20) | The name of the individual, company, or government agency served by the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation at the centerline of the meter, in feet (English units) or meters (SI units) above some datum. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| srvcMtr (CodeBoolean) | An indicator as to whether or not the meter is installed on a service line? (yes or no) |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Plant Area

(Database Feature Class Name = HeatCoolPlantArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A building or structure containing boilers, furnaces, chillers, pumps and appurtenant equipment to produce the water temperature/pressure combinations which are distributed to other buildings and facilities. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| capacCool (Double) | The plant's rated capacity (e.g., tons), which signifies the peak constant cooling ability of the plant. |
| capacHeat (Double) | The plant's rated capacity (e.g. boiler_hp), which signifies the peak constant heating ability of the plant. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| pressCool (Double) | The nominal chilled water pressure leaving the plant. |
| pressHeat (Double) | The nominal hot water or steam pressure leaving the plant. |
| prodType (CodeHeating-CoolingType) | The type of product (chilled water, high temp, etc) produced at this plant. |
| tempCool (Double) | The nominal chilled water temperature leaving the plant. |
| tempHeat (Double) | The nominal hot water temperature leaving the plant. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| plantElv (Double) | The finished floor elevation of the energy plant, in feet (English units) or meters (SI units) above some datum. |
| plantLength (Double) | The overall length dimension of the energy plant. |
| plantwidth (Double) | The overall width dimension of the energy plant. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Pump

(Database Feature Class Name = HeatCoolPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for heating and cooling system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| capacityAct (Double) | The measured capacity of the pump operating under actual normal head and flow conditions. |
| capacityRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| pwrReq (CodeVoltage) | The voltage of the electrical power required by the subject item. |
| primeMethod (String15) | The method by which the pump is primed. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| tdhRated (Double) | The total dynamic head upon which the capacity_rated is based. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Rectifier

(Database Feature Class Name = HeatCoolRectifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier. |
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| currntOut (Double) | The output direct current from the rectifier to the anode system. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |

| | |
|---|---|
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| size (Integer) | |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Regulator

(Database Feature Class Name = HeatCoolRegulator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A regulator located in the heating/cooling line that automatically reduces the pressure on the downstream side of the valve to a preset magnitude. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressIn (Double) | The design water system pressure in the waterline on inlet side of the pressure regulator. |
| pressOut (Double) | The design water system pressure in the waterline on outlet side of the pressure regulator. |
| pressReqd (Double) | The required maximum outlet pressure setting for the regulator. |
| regElevation (Double) | The elevation of the pressure regulator, measured at the regulator centerline. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | The kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Valve

(Database Feature Class Name = HeatCoolValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a heating and cooling line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | The site specific use of the valve. |
| valveSize (Double) | The manufacturer's nominal size designation. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground heating and cooling system line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## HCS : Vault

(Database Feature Class Name = HeatCoolVault)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| airrfValve (CodeBoolean) | |
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | |
| drainType (CodeDrainType) | |
| groundElevation (Integer) | |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| junctionType (CodeJunctionType) | |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| mhDia (Double) | |
| mhLength (Double) | |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| modelNumber (String20) | The model number of the feature. |
| description (String255) | A description or other unique information concerning the subject item. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| noValves (Integer) | The number of the valves. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| perimeter (Integer) | |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| size (Integer) | The size of the subject item |
| type (String16) | |
| use (String50) | Use of the feature. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Industrial_Waste

## Industrial_Waste : Anode

(Database Feature Class Name = IndustrialWasteAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A material used in industrial waste distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet.[FGDC Utilities Classification]. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| dateLastInspected (Date) | The date the anode was last inspected or checked. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Anode Test Station

(Database Feature Class Name = IndustrialWasteAnodeTestSta)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in industrial waste system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeSheathInsulateType) | The type of insulation covering the conductor.[FGDC Utilities Classification]. |
| noTerm (Integer) | The total number of terminal connections at the test station.[FGDC Utilities Classification]. |
| type (String16) | The type of anode test station configuration use.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station.[FGDC Utilities Classification]. |
| wireType (String16) | The conductor configuration, typically solid or stranded.[FGDC Utilities Classification]. |
| description (String255) | A description or other unique information concerning the subject item.[FGDC Utilities Classification]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Discharge Point

(Database Feature Class Name = IndustrialWasteDischargePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any location where industrial waste water pipes directly discharge effluent. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Fitting

(Database Feature Class Name = IndustrialWasteFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying industrial waste. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| fitDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fitLength (Double) | The overall length of the fitting. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| fitloc (CodeWasteFittingLocation) | A coded value designating the location of the fitting.[Cherry Point]. |
| estimatedDischarge (Integer) | Estimated discharge through, or from, fitting.[Cherry Point]. |
| dischargedMaterial (String20) | Material being discharged, or potentially discharged.[Cherry Point]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground heating and cooling system line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Grit Chamber

(Database Feature Class Name = IndustrialWasteGritChamber)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater that those of the organic solids in the waste water in the industrial waste system. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| oWSep (CodeBoolean) | An indicator as to whether or not grit chamber has an integrated oil-water separator. (yes or no) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowCapacity (Double) | The flow capacity of the subject item. |
| gritType (String12) | The predominate type of grit collected in the grit chamber. |
| storCapacity (Double) | The grit chamber overall storage capacity. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Headwall Line

(Database Feature Class Name = IndustrialWasteHeadwallLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A wall (of any material) depicted as a line at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency, divert direction of flow, and serve as a retaining wall. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Headwall

(Database Feature Class Name = IndustrialWasteHeadwallPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A wall (of any material) depicted as a point at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency, divert direction of flow, and serve as a retaining wall. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| topElevation (Double) | The elevation of the top of wall above the pipe. |
| length (Double) | The overall length of the feature.[Center]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Inlet

(Database Feature Class Name = IndustrialWasteInlet)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where water is collected and received into the utility system. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityDgn (Double) | The design flow capacity of the subject item. |
| inletSt (CodeInlets) | The step domain code for an inlet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| weirElevation (Double) | Elevation of the weir invert. |
| estimatedDischarge (Integer) | Estimated quantity of discharge to inlet.[Cherry Point]. |
| dischargedMaterial (String20) | Material being discharged, or potentially discharged.[Cherry Point]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Junction

(Database Feature Class Name = IndustrialWasteJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in industrial waste systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| linerType (CodeManholeLinerType) | The type of liner used if the pit/manhole is used for neutralizing chemicals. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |

| | |
|---|---|
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| reactant (String30) | The chemical in the incoming waste stream being neutralized. |
| neutAgent (String30) | The chemical agent in the pit which chemically neutralizes the in stream reactant. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| estimatedDischarge (Integer) | Estimated quantity of discharge from subject feature.[Cherry Point]. |
| dischargedMaterial (String20) | Material being discharged, or potentially discharged.[Cherry Point]. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections.[USMC]. |
| azimuth (Double) | A direction clockwise in degrees from magnetic north indicating location of pipe opening in manhole.[USMC]. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Lagoon

(Database Feature Class Name = IndustrialWasteLagoon)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A shallow man made pool or pond for the purpose of holding industrial waste. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| labName (CodeLaboratory) | The name of the laboratory primarily responsible for completing the required tests for the subject item. |
| monAgency (String15) | The regulator agency that monitors inflow, containment, and discharge for the subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| aerator (CodeBoolean) | Indicates whether or not the lagoon has aerators. (yes/no) |
| aeratorPow (Double) | The power rating for the aerator, usually in terms of horse power (hp). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| dateAnl (Date) | Date on which water quality analyses were performed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of containment measured from normal operating pool. |
| lgnLength (Double) | The average length of the lagoon. |
| lgnWidth (Double) | The average width dimension of the lagoon, measured from top of opposite side slopes. |
| manageOff (String12) | The managing office/organization. |
| testType (CodeSewageTestType) | The type of test used to evaluate the contained material. |
| invElvAv (Double) | The average elevation of the bottom of the lagoon. |
| labType (CodeLaboratoryType) | The type of the laboratory primarily responsible for completing the required tests for the subject item. |
| userInd (CodeBoolean) | An indicator as to whether or not the lagoon is used for industrial wastewater. (yes or no) |
| userSan (CodeBoolean) | An indicator as to whether or not the lagoon is used for wastewater. (yes or no) |
| smplFreq (Integer) | The frequency at which material sampling is conducted. |
| soilCdn (CodeSoilConsistency) | The consistency of the soil indicating soil condition and strength. |
| werOutl (CodeBoolean) | An indicator as to whether or not the subject item has weir outlets. (yes or no) |
| xDikes (CodeBoolean) | An indicator whether cross dikes exists in the subject item or not (yes or no). |
| outCntr (String12) | The outlet control. |
| noPipesI (Integer) | The number of pipes discharging into the subject item. |
| noPipesO (Integer) | The number of pipes carrying material/fluid out of the subject item. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| soilEro (CodeSoilsErosionK) | The erosion potential of the soil. |
| soilFam (CodeSoilsFamily) | The soil family. |
| soilTex (CodeSoilsTexture) | The soil texture. |

| | |
|---|---|
| pipOutl (CodeBoolean) | An indicator as to whether or not the lagoon has pipe outlets. (yes or no) |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (CodePipeMaterial) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Line

(Database Feature Class Name = IndustrialWasteLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry industrial waste material from location to location (main line, service line, force main line, etc). [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the pipe. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the pipe. |

| | |
|---|---|
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| lined (CodeBoolean) | An indicator as to whether the pipe is lined or not (yes/no). |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| featureUse (String16) | Discriminator. The use code for wastewater lines. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| pressNorm (Double) | The normal operating pressure of the industrial waste water pipe. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground industrial waste line pipe.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Marker

(Database Feature Class Name = IndustrialWasteMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate industrial waste. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Meter

(Database Feature Class Name = IndustrialWasteMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of waste through a section of line. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| design (String16) | Discriminator: The design of the water meter. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation of the meter above a specific datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The ground elevation at the subject item. |
| meterDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| meterLength (Double) | The overall length of the meter. |
| meterWidth (Double) | The overall width dimension of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Neutralizer

(Database Feature Class Name = IndustrialWasteNeutralizer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A receptacle or chamber, which by chemical reactions with reactant materials in the receptacle, makes liquid waste passing through the receptacle chemically neutral for industrial waste systems. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| linerType (CodeManholeLinerType) | The type of liner used if the pit/manhole is used for neutralizing chemicals. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| neutDiameter (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| neutLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| neutWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| reactant (String30) | The chemical in the incoming waste stream being neutralized. |
| neutAgent (String30) | The chemical agent in the pit which chemically neutralizes the in stream reactant. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole/pit for the subject utility. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Oil Water Separator

(Database Feature Class Name = IndustrialWasteOilWatSep)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device or structure placed in the industrial waste stream to separate water from oil products. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| sepName (String12) | The site specific identification name or number assigned to the subject item. |

**Attributes:**

| | |
|---|---|
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| disposal (String30) | Brief description of how the waste is disposed. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. (yes or no) |
| flowCapacity (Double) | The flow capacity of the subject item. |
| oilCapacity (Double) | The retention capacity of the oil-water separator. |
| sepCode (String2) | The oil-water separator code. Usually defined as OW. |
| sepContnt (String20) | Separator contents |
| tempOptim (Double) | The optimum operating temperature for the subject item. |
| separationProcess (String30) | The specific type of separation process. |
| sepVolume (Double) | The volume of the oil-water separator. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| probDescription (String255) | Text describing a problem with the oil and water separator[Cherry Point]. |

| | |
|---|---|
| datePumpd (Date) | The date the oil and water separator was last pumped out. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[Cherry Point]. |
| estimatedDischarge (Integer) | Estimated quantity of discharge from subject feature.[Cherry Point]. |
| shopNo (String20) | Current shop number for subject item.[Cherry Point]. |
| dischargedMaterial (String20) | Material being discharged, or potentially discharged.[Cherry Point]. |
| disType (String20) | Type of discharge point.[Cherry Point]. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Pump

(Database Feature Class Name = IndustrialWastePump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device that draws for industrial waste system material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

| | |
|---|---|
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityAct (Double) | The measured capacity of the pump operating under actual normal head and flow conditions. |
| capacityRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| featureUse (String16) | The particular application, or use of the subject item. |
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Pumpstation Ejector

(Database Feature Class Name = IndustrialWastePumpstnEjector)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to supply industrial waste flowing at adequate pressure to or from a distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| alrmlvlelv (Double) | The elevation in the wet well that triggers an alarm indicating no additional storage capacity. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| design (String16) | Discriminator. The design of the pump station. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| hiWaterElevation (Double) | The high water or overflow elevation of the storage tank at the pumping station, in feet (English units) or meters (SI units) above some datum. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |
| staLength (Double) | The overall length of the pump station plant area. |
| wetwlCapacity (Double) | The wet well capacity. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Rect Point

(Database Feature Class Name = IndustrialWasteRectPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the industrial waste distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil.[FGDC Utilities Classification]. |
| currntOut (Double) | The output direct current from the rectifier to the anode system.[FGDC Utilities Classification]. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no.[FGDC Utilities Classification]. |
| noPhases (Integer) | The number of phases to which this device provides reactive power.[FGDC Utilities Classification]. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item.[FGDC Utilities Classification]. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier.[FGDC Utilities Classification]. |
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system.[FGDC Utilities Classification]. |
| description (String255) | A description or other unique information concerning the subject item.[FGDC Utilities Classification]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Storage Area

(Database Feature Class Name = IndustrialWasteStorageArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A structure used to contain and hold industrial waste. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| facilityNumber (String20) | The organization specific identification code from Army's IFS-M, Air Force's WIMS, or Navy's Property Record Code Number. |
| labName (CodeLaboratory) | The name of the laboratory primarily responsible for completing the required tests for the subject item. |
| monAgency (String15) | The regulator agency that monitors inflow, containment, and discharge for the subject item. |

**Attributes:**

| | |
|---|---|
| dateInstalled (Date) | The date on which the feature was originally installed. |
| dateLastInspected (Date) | The last inspection date of the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| condition (CodePoleCondition) | The condition of the subject item when last inspected. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| userInd (CodeBoolean) | An indicator as to whether or not the vault is used for industrial wastewater. (yes or no) |
| userSan (CodeBoolean) | An indicator as to whether or not the vault is used for wastewater. (yes or no) |
| depthAvg (Double) | The average depth of containment. |
| vltLength (Double) | The average length of the vault. |

| | |
|---|---|
| vltWidth (Double) | The average width dimension of the vault, measured from top of opposite side slopes. |
| invElv (Double) | The elevation of the bottom of the vault. |
| aerator (CodeBoolean) | Indicates whether or not the vault has aerators. (yes/no) |
| aeratorPow (Double) | The power rating for the aerator, usually in terms of horse power (hp). |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| noPipesI (Integer) | The number of pipes discharging into the subject item. |
| noPipesO (Integer) | The number of pipes carrying material/fluid out of the subject item. |
| outCntr (String12) | The outlet control. |
| pipOutl (CodeBoolean) | An indicator as to whether or not the vault has pipe outlets. (yes or no) |
| werOutl (CodeBoolean) | An indicator as to whether or not the subject item has weir outlets. (yes or no) |
| smplFreq (Integer) | The frequency at which material sampling is conducted. |
| testType (CodeSewageTestType) | The type of test used to evaluate the contained material. |
| dateAnl (Date) | Date on which water quality analyses were performed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| labType (CodeLaboratoryType) | The type of the laboratory primarily responsible for completing the required tests for the subject item. |
| manageOff (String12) | The managing office/organization. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Tank

(Database Feature Class Name = IndustrialWasteTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above or below grade receptacle or chamber used for holding industrial waste on a temporary basis prior to disposal. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| altValve (CodeBoolean) | Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| ovrflwElevation (Double) | The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| headNorm (Double) | The normal operating head for the subject item. |
| invertElv (Double) | The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| topElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| tankLength (Double) | The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| tankSt (CodeStyleTank) | This value differentiates similar entities by use or type. |
| tankUse (CodeTankUse) | The particular kind or use of the industrial waste water tank. |
| tankWidth (Double) | The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| tankCapacity (Double) | The tank's storage capacity (e.g., gallons, ft3, etc). |
| tankDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| tankDiameter (Double) | The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface. |
| description (String255) | A description or other unique information concerning the subject item. |
| color (CodeColor) | The color of the industrial waste tank. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| verticalStructureMaterial (String16) | The vertical structure material. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Treatment Plant

(Database Feature Class Name = IndustrialWasteTreatmentPlant)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A structure containing equipment used to treat and remove unwanted constituents from industrial waste.. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| bypass (CodeBoolean) | Indicates whether or not the treatment plant has a bypass line? (yes or no). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowAct (Double) | The measured peak treatment capacity of the water treatment plant when installation has been completed and it is operating under normal inflow and demand conditions. |
| flowRated (Double) | The plant manufacturer's rated treatment plant capacity (e.g., gpm), which signifies the peak constant or daily flow of raw water that the plant can treat and transform to the specified water quality requirements. |

| | |
|---|---|
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| plantElv (Double) | The finished floor elevation of the treatment plant, in feet (English units) or meters (SI units) above some datum. |
| plantLength (Double) | The overall length dimension of the treatment plant. |
| plantwidth (Double) | The overall width dimension of the water treatment plant. |
| description (String255) | A description or other unique information concerning the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Industrial_Waste : Valve

(Database Feature Class Name = IndustrialWasteValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a industrial waste line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

| | |
|---|---|
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | The particular application, or use the subject item. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground industrial waste line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Storm

## Storm : Storm Ceptor

(Database Feature Class Name = StormCeptor)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Confidential

A patented water quality structure that takes the place of a conventional manhole with in a storm drain system.

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| sepName (String50) | The name of the storm captor. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| disposal (String50) | Brief description of how the waste is disposed. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| flowCapacity (Integer) | The flow capacity of the subject item. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. |
| inspectionPhase (String16) | The phase of the inspection. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| oilCapacity (Integer) | The capacity of the storm captor for storing oil. |
| oldMAAAlias (String50) | The old MAA alias. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| perimeter (Integer) | The distance around the boundary of the area, zone, or subject item in linear units. |
| separationProcess (String50) | The specific type of separation process. |
| sepCode (String2) | The oil-water separator code. Usually defined as OW. |
| sepContnt (String20) | Separator contents |
| sepVolume (Integer) | The volume of the oil-water separator. |
| tempOptim (Integer) | The optimum operating temperature for the subject item. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Discharge Point

(Database Feature Class Name = StormDischargePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any location where storm sewer pipes directly discharge effluent. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String40) | Descriptive text of the item |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| sysType (String16) | The type of stormwater discharge system.[USACE OPERATIONS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| coordZ (Double) | The coordinate in the vertical plane. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| iDDE (String10) | |
| inspectionPhase (String16) | The phase of the inspection. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Downspout

(Database Feature Class Name = StormDownspout)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pipe normally attached to the side of a building or structure which conveys rainfall runoff from the roof area to the ground surface or the storm sewer system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| dnsptLength (Double) | The length of the downspout, measured from highest point to its discharge point. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| baseElevation (Double) | The elevation of the discharge point of the downspout in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The elevation of the ground surface at the discharge point, in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Drainage Basin

(Database Feature Class Name = StormDrainageBasin)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An area in which surface runoff collects and from which it is carried by a drainage system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| gradeMean (Double) | The average grade in the drainage basin. |
| gradeMin (Double) | The minimum or shallowest grade in the drainage basin. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| gradeMax (Double) | The maximum or steepest grade in the drainage basin. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| acres (Double) | The size of the drainage basin in acres. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Drainage Divide Line

(Database Feature Class Name = StormDrainageDivideLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

The border of a drainage basin where one side directs runoff to one basin and the other side directs runoff to a different basin. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Storm Filter

(Database Feature Class Name = StormFilter)

Geometry Type: Point Accuracy: +/-5Ft. Sensitivity: Confidential

A filter to remove target pollutants using a variety of sustainable media designed to meet regulatory requirements.

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| sepName (String50) | |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| disposal (String50) | Brief description of how the waste is disposed. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| flowCapacity (Integer) | The flow capacity of the subject item. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. |
| inspectionPhase (String16) | The phase of the inspection. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| numFilters (Integer) | The number of filters in place. |
| oilCapacity (Integer) | The capacity of the storm filter for capturing oil. |
| oldMAAAlias (String50) | The old MAA alias. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| perimeter (Integer) | The distance around the boundary of the area, zone, or subject item in linear units. |
| separationProcess (String50) | The specific type of separation process. |
| sepCode (String2) | The oil-water separator code. Usually defined as OW. |
| sepContnt (String20) | Separator contents |
| sepVolume (Integer) | The volume of the oil-water separator. |
| tempOptim (Integer) | The optimum operating temperature for the subject item. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Fitting

(Database Feature Class Name = StormFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying storm sewage. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| fitDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| fitLength (Double) | The overall length of the fitting. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground storm water line fitting.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| oldMaaAlias (String50) | The old MAA alias. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Flow Control Device

(Database Feature Class Name = StormFlowControlDevice)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Devices for a storm water system to control the pressure in and out of the open channel. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| cntrlElv (Double) | The elevation at the centerline of the flow control device, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| fctDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| fctLength (Double) | The overall length of the flow control. |
| fctWidth (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String100) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Gate

(Database Feature Class Name = StormGate)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A movable barrier used in an open channel. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| gateSt (CodeStyleGates) | The particular kind, class, or group of gate. |
| gateWidth (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| gateLength (Double) | The overall length of the storm gate. |
| gateCapacity (Double) | The flow capacity of the storm gate. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Headwall Line

(Database Feature Class Name = StormHeadwallLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A wall (of any material) depicted as a line at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency, divert direction of flow, and serve as a retaining wall. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Headwall

(Database Feature Class Name = StormHeadwallPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A wall (of any material) depicted as a point at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency, divert direction of flow, and serve as a retaining wall. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the storm sewer headwall.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| riverMile (Double) | River mile marker.[REEGIS]. |
| pollType (String16) | Pollution type.[REEGIS]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| topElevation (Double) | The elevation of the top of wall above the pipe. |
| length (Double) | The overall length of the feature.[Center]. |
| description (String255) | Any brief description of the feature. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Inlet

(Database Feature Class Name = StormInlet)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where water is collected and received into the utility system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityDgn (Double) | The design flow capacity of the subject item. |
| inletSt (CodeInlets) | Discriminator. The step domain code for an inlet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| weirElevation (Double) | Elevation of the weir invert. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| garageInlet (CodeBoolean) | Indicator as to whether the inlet is located within a garage or not. This is important to the MES database. |
| coordZ (Double) | The coordinate in the vertical plane. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| inspectionPhase (String16) | The phase of the inspection. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Junction

(Database Feature Class Name = StormJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in storm sewer systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| type (String100) | A field indicating the kind, class, or group of manhole for the subject utility. |
| drainType (CodeDrainType) | The type of subject item drain. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |

| | |
|---|---|
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| inspectionPhase (String16) | The phase of the inspection. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |
| mhDia (Integer) | The diameter of the manhole. |
| oldMaaAlias (String50) | The old MAA alias. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Line

(Database Feature Class Name = StormLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry storm sewer water from location to location (main line, service line, vent line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name of the culvert.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| idDwnStrmFeat (String50) | The ID of the downstream storm feature. |
| idDwnStrmStruct (String50) | The ID of the downstream storm structure. |
| idUpStrmFeat (String50) | The ID of the upstream storm feature. |
| idUpStrmStruct (String50) | The ID of the upstream storm structure. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainageZone (CodeDrainageZone) | Local name of assigned hydrographic drainage zones. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the pipe. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the pipe. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| pipeWidth (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| lined (CodeBoolean) | An indicator as to whether the pipe is lined or not (yes/no). |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| scrnType (CodeCulvertScreenType) | The type of screen used to cover the end of the culvert. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| featureUse (String16) | Discriminator. The use code for storm sewer line. |
| pressNorm (Double) | The normal operating pressure of the storm system pipe. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground storm water line pipe.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| fromCoordX (Double) | The from, or downstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |
| fromCoordY (Double) | The from, or downstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |
| fromCoordZ (Double) | The from, or downstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| toCoordX (Double) | The to, or upstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |

| | |
|---|---|
| toCoordY (Double) | The to or upstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |
| toCoordZ (Double) | The to, or upstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| dwnStrmStructType (String10) | The type of the downstream structure, if any |
| upStrmStructType (String10) | The type of the downstream structure, if any |
| immediateOutFall (String20) | Identifying tag of the immediate outfall to which the pipe leads. |
| finalOutFall (String20) | Identifying tag of the final outfall to which the pipe leads. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| inspectionPhase (String16) | The phase of the inspection. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Marker

(Database Feature Class Name = StormMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of nearby storm sewer. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Oil Water Separator

(Database Feature Class Name = StormOilWaterSeparator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device or structure placed in the storm sewer stream to separate water from oil products. [SDSFIE USMC].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

| | |
|---|---|
| sepName (String12) | The site specific identification name or number assigned to the subject item. |

**Attributes:**

| | |
|---|---|
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| disposal (String30) | Brief description of how the waste is disposed. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. (yes or no) |
| flowCapacity (Double) | The flow capacity of the subject item. |
| oilCapacity (Double) | The retention capacity of the oil-water separator. |
| sepCode (String2) | The oil-water separator code. Usually defined as OW. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| tempOptim (Double) | The optimum operating temperature for the subject item. |
| sepContnt (String20) | Separator contents |
| separationProcess (String30) | The specific type of separation process. |
| sepVolume (Double) | The volume of the oil-water separator. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| inspectionPhase (String16) | The phase of the inspection. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| invertFeet (Double) | Measurement from the top of the manhole to the bottom |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Open Drainage Area

(Database Feature Class Name = StormOpenDrainageArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

Interception and removal area of ground water or surface water. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| vegMaintID (String16) | The vegetation maintenance ID. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| acreage (Integer) | The size of the open draining area in acres. |
| inspectionPhase (String16) | The phase of the inspection. |
| maintRequirements (String255) | Maintenance requirements of the open drainage area. |
| oldMaaAlias (String50) | The old MAA alias. |
| structureType (String16) | The type of structure. |
| material (String16) | The material of the subject item |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Open Drainage Line

(Database Feature Class Name = StormOpenDrainageLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

Interception and removal of ground water or surface water by natural means. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| reachName (String20) | An operator generated identifier for the reach of an open channel. |
| idDwnStrmFeat (String50) | The ID of the downstream storm feature. |
| idUpStrmFeat (String50) | The ID of the upstream storm feature. |

**Attributes:**

| | |
|---|---|
| chanLength (Double) | The overall length of the open channel. |
| chanSt (CodeStyleOpenChannel) | The style or geometric configuration of the channel |
| bedMaterial (CodeBedMaterial) | The type of bedding material beneath the channel armor. |
| bankArm (CodeBankArmorLining) | The type of channel armor used. |
| design (String16) | Discriminator. The design code for open channel. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainageZone (CodeDrainageZone) | Local name of assigned hydrographic drainage zones. |
| bottomWidth (Double) | The bottom width of the open channel measured from the base of opposite side slopes. |
| fldZon (CodeDrainageZone) | Local name of assigned hydrographic drainage zones. |
| flmeanElv (Double) | The elevation of the mean flow above a specific datum. |
| flmeanTop (Double) | The average top width of the mean flow. |
| flmeanXar (Double) | The cross section area of the mean flow for the open channel. |
| flooddepth (Double) | The average depth of the specific flood. |
| flowMean (Double) | The mean or average flow rate for the open channel. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of channel at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| noFloods (Integer) | The total number of floods recorded for this channel. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |

| | |
|---|---|
| slopeLeft (Double) | The slope of the left channel side expressed as a percentage. |
| slopeRght (Double) | The slope of the right channel side expressed as a percentage. |
| topWidth (Double) | The top width of the open channel measured from the top of opposite side slopes. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units.[USMC]. |
| area (Double) | The size of the area, zone, or polygon in square units.[USMC]. |
| photoFileName (String30) | File location of photo (if applicable) |
| wellDiameter (Double) | MAA requirement The diameter of the monitoring well in the infiltration trench. |
| description (String255) | A description or other unique information concerning the subject item. |
| wellDepth (Double) | MAA requirement The depth of the monitoring well in the infiltration trench. |
| MAA requirementlocationDesc (String255) | MAA requirement, text description of location of trench |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| fromCoordX (Double) | The from, or downstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |
| fromCoordY (Double) | The from, or downstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |
| fromCoordZ (Double) | The from, or downstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| inspectionPhase (String16) | The phase of the inspection. |
| oldMaaAlias (String50) | The old MAA alias. |
| structureType (String16) | The type of structure. |
| toCoordX (Double) | The to, or upstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |
| toCoordY (Double) | The to or upstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |
| toCoordZ (Double) | The to, or upstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |

| | |
|---|---|
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Oil Water Separator Diversion Vault

(Database Feature Class Name = StormOWSDiversionVault)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| mapGrid (String20) | The map grid that the feature resides within. |
| pipeWidth (Integer) | The width of the pipe. |
| vaultWidth (Integer) | The widget of the vault. |

**Attributes:**

| | |
|---|---|
| airReleasePresent (CodeBoolean) | Indicates whether or not an air release valve is present |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Integer) | Average depth of the feature. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| description (String255) | A description or other unique information concerning the subject item. |
| pierCode (String20) | The code of the pier associated with the feature. |
| pipeMaterial (CodePipeMaterial) | Material of which inlet pipe is made |
| pumpOutPresent (CodeBoolean) | Indicates whether or not a pump out conection is present |
| size (Integer) | The size of the subject item. |
| vaultLength (Integer) | The length of the vault. |
| vaultType (CodeVaultType) | The type of the vault. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Pump

(Database Feature Class Name = StormPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for storm sewer system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| outflwAct (Double) | The actual measured pump flow output. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| description (String255) | A description or other unique information concerning the subject item. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| inspectionPhase (String16) | The phase of the inspection. |
| oldMaaAlias (String50) | The old MAA alias. |

| | |
|---|---|
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Pump Station

(Database Feature Class Name = StormPumpStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a storm sewer distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the storm sewer pump station.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| alrmlvlelv (Double) | The elevation in the wet well that triggers an alarm indicating no additional storage capacity. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| hiWaterElevation (Double) | The high water or overflow elevation of the storage tank at the pumping station, in feet (English units) or meters (SI units) above some datum. |

| | |
|---|---|
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| staLength (Double) | The overall length of the pump station plant area. |
| wetwlCapacity (Double) | The wet well capacity. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| riverMile (Double) | River mile marker.[REEGIS]. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| mxDsgnHd (Double) | The water elevation of the maximum design head of the pump in feet NGVD.[REEGIS]. |
| dateEnd (Date) | The date the project was actually completed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915)[REEGIS]. |
| capacity (Double) | The pumping capacity at the maximum design head in cfs.[REEGIS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Reservoir

(Database Feature Class Name = StormReservoirLocation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where storm sewer water is collected. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of containment measured from normal operating pool. |
| invElvAv (Double) | The average elevation of the bottom of the reservoir. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| xDikes (CodeBoolean) | An indicator whether cross dikes exists in the subject item or not (yes or no). |
| outCntr (String12) | The outlet control. |
| featureUse (String16) | The particular application, or use the subject item. |
| resLength (Double) | The overall length of the reservoir. |
| resType (CodeReservoirType) | The type or classification of the reservoir. |
| resWidth (Double) | The average width dimension of the reservoir, measured from top of opposite side slopes. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Stilling Basin

(Database Feature Class Name = StormStillingBasin)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where the energy from turbulent water flow is reduced. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of containment measured from normal operating pool. |
| outCntr (String12) | The outlet control. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| invElvAv (Double) | The average elevation of the bottom of the stilling basin. |
| sbnLength (Double) | The overall length of the stilling basin. |
| sbnWidth (Double) | The average width dimension of the stilling basin, measured from top of opposite side slopes. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| xDikes (CodeBoolean) | An indicator whether cross dikes exists in the subject item or not (yes or no). |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Storm Trench Drain Line

(Database Feature Class Name = StormTrenchDrainLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Confidential

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String50) | The name of the feature. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| idDwnStrmFeat (String50) | The ID of the downstream storm feature. |
| idDwnStrmStruct (String50) | The ID of the downstream storm structure. |
| idUpStrmFeat (String50) | The ID of the upstream storm feature. |
| idUpStrmStruct (String50) | The ID of the upstream storm structure. |
| trenchWidth (Integer) | The width of the trench. |

**Attributes:**

| | |
|---|---|
| coverDepth (Double) | Depth of cover. The depth measured from top of ground's surface (or grade) to top of underground fuel line pipe. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the culvert. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the grease trap. |
| drainageZone (CodeDrainageZone) | The local name of assigned the hydrographic drainage zone. |
| dwnStrmStructType (String20) | The type of the downstream structure, if any. |
| enabled (CodeBoolean) | Flag used for networking functionality in MES application. |
| finalOutFall (String50) | Final outfall. |
| fromCoordX (Double) | The from, or downstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |
| fromCoordY (Double) | The from, or downstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |

| | |
|---|---|
| fromCoordZ (Double) | The from, or downstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| immediateOutFall (String50) | Immediate outfall. |
| impedance (Integer) | The number representing the total opposition to flow. |
| inspectionPhase (String16) | The phase of the inspection. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Integer) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| lined (CodeBoolean) | An indicator as to whether the pipe is lined or not (yes/no). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| modelNumber (String20) | The model number of the feature. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMAAAlias (String50) | The old MAA alias. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressMax (Integer) | The maximum pressure. |
| pressNorm (Integer) | The normal pressure. |
| scrnType (CodeCulvertScreenType) | The type of screen used to cover the end of the culvert. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| slopeBot (Integer) | The bottom slope of the feature. |
| toCoordX (Double) | The to, or upstream,coordinate of the pipe in the east-west plane in as measured by GPS equipment. |
| toCoordY (Double) | The to or upstream, coordinate of the pipe in the north-south plane in as measured by GPS equipment. |
| toCoordZ (Double) | The to, or upstream, coordinate of the pipe in the vertical plane in as measured by GPS equipment. |
| trenchLength (Integer) | The length of the trench. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| upStrmStructType (String16) | Upstream storm structure type. |
| use (String50) | Use of the feature. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Storm : Valve

(Database Feature Class Name = StormValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a storm sewer line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| featureUse (String16) | The particular application, or use the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground storm water line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| oldMaaAlias (String50) | The old MAA alias. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| verified (String255) | Whether or not the feature has been verified. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Wastewater

## Wastewater : Anode

(Database Feature Class Name = WastewaterAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A material used in waste water distribution systems that is electrically connected to a less electrolytically-active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet.[FGDC Utilities Classification]. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| dateLastInspected (Date) | The date the anode was last inspected or checked. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).[FGDC Utilities Classification]. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item.[FGDC Utilities Classification]. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Anode Test Station

(Database Feature Class Name = WastewaterAnodeTestStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in wastewater systems. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeSheathInsulateType) | The type of insulation covering the conductor.[FGDC Utilities Classification]. |
| noTerm (Integer) | The total number of terminal connections at the test station.[FGDC Utilities Classification]. |
| type (String16) | The type of anode test station configuration use.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station.[FGDC Utilities Classification]. |
| wireType (String16) | The conductor configuration, typically solid or stranded.[FGDC Utilities Classification]. |
| description (String255) | A description or other unique information concerning the subject item.[FGDC Utilities Classification]. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Discharge Point

(Database Feature Class Name = WastewaterDischargePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Any location where wastewater pipes directly discharge effluent. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| sysType (String16) | The type of wastewater system.[USACE OPERATIONS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |

| | |
|---|---|
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Disposal Tank

(Database Feature Class Name = WastewaterDisposalTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above or below grade receptacle or chamber for holding waste water on a temporary basis prior to transfer or use. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| altValve (CodeBoolean) | Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| ovrflwElevation (Double) | The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum. |
| headNorm (Double) | The normal operating head for the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| topElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| invertElv (Double) | The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| tankLength (Double) | The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |

| | |
|---|---|
| tankUse (CodeTankUse) | The particular kind or use of the waste water tank. |
| tankWidth (Double) | The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| pressNorm (Double) | The manufacturer's (as rated by American Society of Mechanical Engineers (ASME) testing procedures) maximum pressure rating of the waste water tank. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| tankCapacity (Double) | The tank's storage capacity (e.g., gallons, ft3, etc). |
| tankDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| tankDes (CodeWastewaterTankType) | This value differentiates similar entities by use or type. |
| tankDiameter (Double) | The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface. |
| description (String255) | A description or other unique information concerning the subject item. |
| tankSt (CodeStyleTank) | This value differentiates similar entities by use or type. |
| color (CodeColor) | The color of the disposal tank. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| verticalStructureMaterial (String16) | The vertical structure material. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Downspout

(Database Feature Class Name = WastewaterDownspout)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pipe normally attached to the side of a building or structure which conveys rainfall runoff from the roof area to the ground surface or an underground collection system for wastewater. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| dnsptLength (Double) | The length of the downspout, measured from highest point to its discharge point. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| baseElevation (Double) | The elevation of the discharge point of the downspout in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The elevation of the ground surface at the discharge point, in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Drain Field

(Database Feature Class Name = WastewaterDrainField)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

The area of influence where perforated pipe placed in gravel trenches carries effluent from a waste storage containment for percolation into the earth. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Filtration Bed

(Database Feature Class Name = WastewaterFiltrationBed)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A below grade system consisting of perforated piping installed in sand or gravel beds or trenches designed to permit the uniform distribution and absorption of effluent from a septic tank or aerobic unit into the soil. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Fitting

(Database Feature Class Name = WastewaterFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying wastewater. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| fitDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| fitLength (Double) | The overall length of the fitting. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String100) | Discriminator. The kind, class, or group of the subject item. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground wastewater line fitting.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Grease Trap

(Database Feature Class Name = WastewaterGreaseTrap)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A tank which separates grease from water, collects the grease for removal, and allows the water to exit. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| dstbx (CodeBoolean) | Indicates whether or not a distribution box exists for the subject item. (yes or no) |
| dstbxIEl (Double) | The invert elevation of the inside bottom of the distribution box. |
| drnflSt (CodeStyleDrainField) | The style of field drain system indicating the configuration and layout of the drain lines. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the grease trap. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the grease trap. |
| manhole (CodeBoolean) | An indication as to whether or not is part of a manhole or has access via a manhole (yes/no). |
| gtpWidth (Double) | The width dimension of the subject item, measured from opposite inside faces. |
| latDiTot (Double) | The total diameter of all drainage laterals |
| latdimean (Double) | The average diameter of all drainage laterals |
| laterlSlp (Double) | The average slope of all drainage laterals. |
| laterlTot (Double) | The total (sum) length of all drainage laterals. |
| laterlmean (Double) | The mean or average length of the drainage laterals. |
| flowRate (Double) | The flow rate of the feature. |
| gtpCapacity (Double) | The grease trap's storage capacity (e.g., gallons, ft3, etc). |
| gtpDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| gtpLength (Double) | The overall length of the grease trap. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| noLateral (Integer) | The total number of laterals. |
| trapSt (CodeStyleTank) | The particular kind, class, or group of tank (e.g., elevated, hydropneumatic, etc.). |
| trenchWid (Double) | The trench width excavated for the field drains. |
| soilPerc (Double) | The percolation rate of the soil in which the drain field lines are placed. |
| description (String255) | A description or other unique information concerning the subject item. |

| | |
|---|---|
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Grit Chamber

(Database Feature Class Name = WastewaterGritChamber)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater than those of the organic solids in the waste water system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| oWSep (CodeBoolean) | An indicator as to whether or not grit chamber has an integrated oil-water separator. (yes or no) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowCapacity (Double) | The flow capacity of the subject item. |
| gritType (String12) | The predominate type of grit collected in the grit chamber. |
| storCapacity (Double) | The grit chamber overall storage capacity. |

| | |
|---|---|
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Inlet

(Database Feature Class Name = WastewaterInlet)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where waste water is collected and received into the utility system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityDgn (Double) | The design flow capacity of the subject item. |
| inletSt (String16) | Discriminator: This value differentiates similar entities by use or type. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |

| | |
|---|---|
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| weirElevation (Double) | Elevation of the weir invert. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Junction

(Database Feature Class Name = WastewaterJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in wastewater systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| highLevelAlarmId (String50) | The high level alarm ID. |
| idDestMH (String50) | The ID of the destination manhole. |

**Attributes:**

| | |
|---|---|
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| linerType (CodeManholeLinerType) | The type of liner used if the pit/manhole is used for neutralizing chemicals. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| reactant (String30) | The chemical in the incoming waste stream being neutralized. |
| neutAgent (String30) | The chemical agent in the pit which chemically neutralizes the in stream reactant. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| noSteps (Integer) | Number of manhole steps.[Cherry Point ]. |
| illict (CodeBoolean) | Indication whether or not (yes/no) illicit flow was detected in manhole or box.[Cherry Point ]. |
| description (String255) | The text describing a wastewater manhole.[Cherry Point]. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| coordZ (Double) | The coordinate in the vertical plane in as measured by GPS equipment. |
| highLevelAlarmFlag (CodeBoolean) | Indicator whether manhole is (or has?) a high level alarm |
| apronTroughMaterial (CodeManholeMaterial) | The material of the apron trough. |
| corbelWallsMaterial (CodeManholeMaterial) | The material of the corbel walls. |
| coverMaterial (CodeManholeCoverType) | The cover material. |
| effluentPipeDestination (String50) | The effulent pipe destination. |
| effluentPipeDiameter (CodePipeDiameter) | The effulent pipe diameter. |
| effluentPipeInvert (Double) | The effluent pipe invert. |
| effluentPipeMaterial (CodePipeMaterial) | Material of which the pipe is made. |
| influentPipe1Diameter (CodePipeDiameter) | The influent pipe diameter. |
| influentPipe1Invert (Double) | The influent pipe invert. |
| influentPipe1Material (CodePipeMaterial) | The influent pipe material. |
| influentPipe1Origin (String50) | The influent pipe origin. |
| influentPipe2Diameter (CodePipeDiameter) | The second influent pipe diameter. |
| influentPipe2Invert (Double) | The second influent pipe invert. |
| influentPipe2Material (CodePipeMaterial) | The second influent pipe material. |
| influentPipe2Origin (String50) | The second influent pipe origin. |
| influentPipe3Diameter (CodePipeDiameter) | The third influent pipe origin. |
| influentPipe3Invert (Double) | The third influent pipe invert. |

influentPipe3Material (CodePipeMaterial) The third influent pipe material.

influentPipe3Origin (String50) The third influent pipe origin.

influentPipe4Diameter (CodePipeDiameter) The fourth influent pipe diameter.

influentPipe4Invert (Double) The fourth influent pipe invert.

influentPipe4Material (CodePipeMaterial) The fourth influent pipe material.

influentPipe4Origin (String50) The fourth influent pipe origin.

influentPipe5Diameter (CodePipeDiameter) The fourth influent pipe diameter.

influentPipe5Invert (Double) The fifth influent pipe invert.

influentPipe5Material (CodePipeMaterial) The fifth influent pipe material.

influentPipe5Origin (String50) The fifth influent pipe origin.

manholeSteps (String50) The number of steps in the manhole.

junctionType (CodeJunctionType) An indicator as to whether the feature serves as a source, sink or neither in the network.

**Metadata:**

collectionProgress (CodeProgress) The progress of the data collection.

dateAcquired (Date) The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

verified (String255) Whether or not the feature has been verified.

projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

qualityLevel (CodeSueQualityLevel) The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02.

dataSource (CodeDataSource) The primary source of the data in this record.

dataSource2 (CodeDataSource) The secondary source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) An identifier used to refer to a metadata record that provide additional information about the data in this record.

## Wastewater : Lagoon

(Database Feature Class Name = WastewaterLagoon)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A shallow man made pool or pond for the purpose of providing treatment of domestic wastewater. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

maaID (String30) A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value)

name (String16) The site specific identification name or number assigned to the subject item.

maaAlias (String60) An alternative or former name by which the feature is refered.

| | |
|---|---|
| labName (CodeLaboratory) | The name of the laboratory primarily responsible for completing the required tests for the subject item. |
| monAgency (String15) | The regulator agency that monitors inflow, containment, and discharge for the subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| aerator (CodeBoolean) | Indicates whether or not the lagoon has aerators. (yes/no) |
| aeratorPow (Double) | The power rating for the aerator, usually in terms of horse power (hp). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| dateAnl (Date) | Date on which water quality analyses were performed. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| depthAvg (Double) | The average depth of containment measured from normal operating pool. |
| lgnLength (Double) | The average length of the lagoon. |
| lgnWidth (Double) | The average width dimension of the lagoon, measured from top of opposite side slopes. |
| outCntr (String12) | The outlet control. |
| manageOff (String12) | The office/organization responsible for managing the lagoon. |
| testType (CodeSewageTestType) | The type of test used to evaluate the contained material. |
| invElvAv (Double) | The average elevation of the bottom of the lagoon. |
| labType (CodeLaboratoryType) | The type of the laboratory primarily responsible for completing the required tests for the subject item. |
| userInd (CodeBoolean) | An indicator as to whether or not the lagoon is used for industrial wastewater. (yes or no) |
| userSan (CodeBoolean) | An indicator as to whether or not the lagoon is used for wastewater. (yes or no) |
| smplFreq (Integer) | The frequency at which material sampling is conducted. |
| soilCdn (CodeSoilConsistency) | The consistency of the soil indicating soil condition and strength. |
| werOutl (CodeBoolean) | An indicator as to whether or not the subject item has weir outlets. (yes or no) |
| xDikes (CodeBoolean) | An indicator whether cross dikes exists in the subject item or not (yes or no). |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| soilEro (CodeSoilsErosionK) | The erosion potential of the soil. |
| soilFam (CodeSoilsFamily) | The soil family. |
| soilTex (CodeSoilsTexture) | The soil texture. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| pipOutl (CodeBoolean) | An indicator as to whether or not the lagoon has pipe outlets. (yes or no) |
| description (String255) | A description or other unique information concerning the subject item. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Line

(Database Feature Class Name = WastewaterLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry waste water from location to location (main line, service line, force main line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| idDwnStrmMH (String50) | The ID of the downstream manhole. |
| idUpStrmMH (String50) | The ID of the upstream manhole. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the pipe. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the pipe. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| lined (CodeBoolean) | An indicator as to whether the pipe is lined or not (yes/no). |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |

| | |
|---|---|
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| featureUse (String16) | Discriminator. The use code for wastewater lines. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| pressNorm (Double) | The normal operating pressure of the waste water system pipe. |
| type (CodeWastewaterLineType) | A field indicating the kind, class, or group of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| piplty (CodePipelineLocationType) | The location of the pipeline in relevance to the earth's surface.[USGS]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground wastewater line pipe.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Marker

(Database Feature Class Name = WastewaterMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of waste water. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Meter

(Database Feature Class Name = WastewaterMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of water through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| design (String16) | Discriminator: The design of the water meter. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation at the centerline of the meter, in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| meterDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| meterLength (Double) | The overall length of the meter. |
| meterWidth (Double) | The overall width dimension of the subject item. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Neutralizer

(Database Feature Class Name = WastewaterNeutralizer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A receptacle or chamber where chemicals react with reactant materials, resulting in making liquid waste passing through chemically neutral for wastewater systems. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| linerType (CodeManholeLinerType) | The type of liner used if the pit/manhole is used for neutralizing chemicals. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| neutDiameter (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| neutLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| neutWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| reactant (String30) | The chemical in the incoming waste stream being neutralized. |
| neutAgent (String30) | The chemical agent in the pit which chemically neutralizes the in stream reactant. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of manhole/pit for the subject utility. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |

| | |
|---|---|
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Oil Water Separator

(Database Feature Class Name = WastewaterOilWaterSeparator)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device or structure placed in the waste water stream to separate water from oil products. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| sepName (String12) | The site specific identification name or number assigned to the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| datePerX (Date) | The date the current permit expires for the subject item. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| oilCapacity (Double) | The retention capacity of the oil-water separator. |
| disposal (String30) | Brief description of how the waste is disposed. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| grtchbr (CodeBoolean) | An indicator as to whether or not the subject item has a grit chamber. (yes or no) |
| flowCapacity (Double) | The flow capacity of the subject item. |
| separatorCode (String2) | The oil-water separator code. Usually defined as OW. |
| tempOptim (Double) | The optimum operating temperature for the subject item. |
| sepContnt (String20) | Separator contents |
| separationProcess (String30) | The specific type of separation process. |
| sepVolume (Double) | The volume of the oil-water separator. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| size (Double) | The manufacturer's designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 6 inches).[Cherry Point ]. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |

| | |
|---|---|
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum.[Cherry Point ]. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Pump

(Database Feature Class Name = WastewaterPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for wastewater system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the pump/lift station.[REEGIS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| outflwAct (Double) | The actual measured pump flow output. |
| outflwRat (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| featureUse (String16) | The particular application, or use the subject item. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| pumpHp (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| riverMile (Double) | River mile marker.[REEGIS]. |
| noPumps (Integer) | The number of pumps located at the station.[REEGIS]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Pump Ejector Station

(Database Feature Class Name = WastewaterPumpEjectorStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to pump wastewater flowing at adequate pressure to or from a distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| alrmlvlelv (Double) | The elevation in the wet well that triggers an alarm indicating no additional storage capacity. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| design (String16) | Discriminator. The design of the pump station. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| hiWaterElevation (Double) | The high water or overflow elevation of the storage tank at the pumping station, in feet (English units) or meters (SI units) above some datum. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| wetwlCapacity (Double) | The wet well capacity. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| staLength (Double) | The overall length of the pump station plant area. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |

| | |
|---|---|
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Rectifier

(Database Feature Class Name = WastewaterRectifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the wastewater distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system.[FGDC Utilities Classification]. |
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil.[FGDC Utilities Classification]. |
| currntOut (Double) | The output direct current from the rectifier to the anode system.[FGDC Utilities Classification]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier.[FGDC Utilities Classification]. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no.[FGDC Utilities Classification]. |
| noPhases (Integer) | The number of phases to which this device provides reactive power.[FGDC Utilities Classification]. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item.[FGDC Utilities Classification]. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier.[FGDC Utilities Classification]. |
| description (String255) | A description or other unique information concerning the subject item.[FGDC Utilities Classification]. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Septic Tank

(Database Feature Class Name = WastewaterSepticTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Typically, a below grade receptacle or chamber in which solid organic waste is decomposed and purified by anaerobic bacteria. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| dstbx (CodeBoolean) | Indicates whether or not a distribution box exists for the subject item. (yes or no) |
| dstbxIEl (Double) | The invert elevation of the inside bottom of the distribution box. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| drainageTexture (CodeDrainageDensity) | The texture of the material surrounding the tank. |
| drnflSt (CodeStyleDrainField) | The style of field drain system indicating the configuration and layout of the drain lines. |
| drainagePattern (CodeDrainagePattern) | The drainage pattern of the material surrounding the tank. |

| | |
|---|---|
| manhole (CodeBoolean) | An indication as to whether or not is part of a manhole or has access via a manhole (yes/no). |
| laterlSlp (Double) | The average slope of all drainage laterals. |
| laterlTot (Double) | The total (sum) length of all drainage laterals. |
| laterlmean (Double) | The mean or average length of the drainage laterals. |
| flowRate (Double) | The rate of flow through the device or pipe. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| noLateral (Integer) | The total number of laterals. |
| trenchWid (Double) | The trench width excavated for the field drains. |
| tankLength (Double) | The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| tankSt (CodeStyleTank) | The particular kind, class, or group of tank (e.g., elevated, hydropneumatic, etc.). |
| tankWidth (Double) | The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| featureUse (CodeWastewaterTankType) | This value differentiates similar entities by use or type. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| soilPerc (Double) | The percolation rate of the soil in which the drain field lines are placed. |
| tankCapacity (Double) | The tank's storage capacity (e.g., gallons, ft3, etc). |
| tankDepth (Double) | The depth below the ground surface or cover measured from the top of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| color (CodeColor) | The color of the septic tank. |
| lightCode (String1) | The light code of the tank. |
| lightingType (CodeLightingConfigurationType) | Thetype of lighting configuration. |
| markingFeatureType (CodeMarkingFeatureType) | The type of the marking |
| topElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| verticalStructureMaterial (String16) | The vertical structure material. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Service Area

(Database Feature Class Name = WastewaterServiceArea)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Secret

A wastewater utility company or organization's certificated area of jurisdiction or responsibility as approved by a federal, state, or local utility regulatory authority. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| wwutilname (String50) | Name of the wastewater utility or system.[EPA]. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| wwutilmaaID (String30) | Identifier assigned to the water utility by the appropriate federal, state, or local regulatory authority.[EPA]. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| city (String40) | The name of the incorporated municipality (city, township, or other local government, excluding counties) in which the address is physically located.[FGDC Street Address Data Standard]. |
| state (String2) | Name of state where wastewater utility or system provides service.[EPA]. |
| populationServed (Integer) | Population served by wastewater system or utility.[EPA]. |
| wwPlant (Integer) | Total number of wastewater treatment plants serving wastewater utility or system. |
| dtreatcap (Double) | Total design capacity of wastewater treatment plants serving wastewater utility or system. Usually expressed in mgd. |
| reConnect (Integer) | Total number of residential type service connections. |
| coConnect (Integer) | Total number of commercial (i.e., businesses, industrial) type service connections. |
| wwsystem (CodeWastewaterSystemType) | General type or category of a wastewater system or utility.[EPA]. |
| utilown (CodeUtilityOwnershipType) | General category of type of utility owner. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Sludge Bed

(Database Feature Class Name = WastewaterSludgeBed)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

An area used for spreading and drying waste sludge. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String30) | Any commonly used name for the wastewater sludge bed area.[USGS]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| bedWidth (Double) | The exterior width dimension of the sludge bed, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| bedLength (Double) | The length dimension of the sludge bed, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| bedDia (Double) | The inside diameter of the sludge bed, measured from the interior wall surface to the opposite interior wall surface. |
| bedDepth (Double) | The depth measured from the top of the subject item. |
| invertElv (Double) | The elevation measured at bottom of the sludge bed, in feet (English units) or meters (SI units) above some datum. mean sea level. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| bedCapacity (Double) | The sludge bed's storage capacity (e.g., gallons, ft3, etc). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

| | |
|---|---|
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Treatment Plant

(Database Feature Class Name = WastewaterTreatmentPlant)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Secret

A structure containing equipment used to treat and remove unwanted constituents from wastewater. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Treatment Unit

(Database Feature Class Name = WastewaterTreatmentUnit)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A waste water treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | Indicates the name for the sewage treatment plant.[HSIP]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| bypass (CodeBoolean) | Indicates whether or not the treatment plant has a bypass line? (yes or no). |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowRated (Double) | The plant manufacturer's rated treatment plant capacity (e.g., gpm), which signifies the peak constant or daily flow of raw water that the plant can treat and transform to the specified water quality requirements. |
| flowAct (Double) | The measured peak treatment capacity of the water treatment plant when installation has been completed and it is operating under normal inflow and demand conditions. |
| noPumps (Integer) | The total number of pumps located at the subject item. |

| | |
|---|---|
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| plantElv (Double) | The finished floor elevation of the treatment plant, in feet (English units) or meters (SI units) above some datum. |
| plantLength (Double) | The overall length dimension of the treatment plant. |
| plantwidth (Double) | The overall width dimension of the water treatment plant. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| remMth (String32) | The method used to remove solids from the wastewater during processing.[HSIP]. |
| trtLev (CodeWaterTreatmentLevel) | The overall level of treatment for the wastewater process.[HSIP]. |
| comAff (String80) | The name of the company that operates the wastewater treatment facility.[HSIP]. |
| chlorint (CodeBoolean) | Chlorination (Y/N)?[HSIP]. |
| maxCapacity (Double) | Capacity rate of the plant.[HSIP]. |
| capacityRate (Double) | Maximum waste water treatment capacity.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Wastewater : Valve

(Database Feature Class Name = WastewaterValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a wastewater line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | The particular application, or use the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground wastewater line valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

# Data Set: Water

## Water : Anode

(Database Feature Class Name = WaterAnode)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A material used for water distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| anodeWeight (Double) | The initial weight of the anode or anode packet. |
| material (CodeAnodes) | The type of material composition of the anode or anode packet. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Anode Test Station

(Database Feature Class Name = WaterAnodeTestStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A central location where anodes are tested for performance in water systems. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| installType (CodeSheathInsulateType) | The type of insulation covering the conductor. |
| noTerm (Integer) | The total number of terminal connections at the test station. |
| type (String16) | The type of anode test station configuration use. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| wireSize (CodeCableDimension) | The AWG size designation for the wire connecting the anode/anode packet to the anode test station. |
| wireType (String16) | The conductor configuration, typically solid or stranded. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Drinking Water Sample Point

(Database Feature Class Name = WaterDrinkingWaterSamplePoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A point location where one or more water samples are collected from a water utility or system. [SDSFIE ].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| dwslocname (String50) | Commonly used name for the location where a drinking water sample was collected.[EPA]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| dwslocty (CodeDrinkingWaterSamLoc) | Code designating the type of location where a drinking water sample was collected. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Fire Connection Point

(Database Feature Class Name = WaterFireConnectionPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An apparatus which dispenses fluids for use in fire management. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| roadName (String30) | A common name or street name used to refer to the stretch of road that the hydrant is facing.[FGDC]. |

**Attributes:**

| | |
|---|---|
| fireFlow (Double) | The code or regulation required fire flow rate from a fire hydrant or fire flow connection. |
| hydrantType (CodeHydrantType) | The particular kind, class, or group of hydrant. |
| location (String255) | A textual description of the location of this feature. |
| hydclass (CodeHydrantClass) | The hydrant classification according to their rated capacity according to the National Fire Protection Association. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| inletDiameter (Double) | The diameter of the hydrant inlet connection. |
| conType (CodeFireConnection) | Discriminator. This value differentiates fire connections by use or type. |
| measType (CodeDiameterMeasureType) | This attribute provides information concerning the basis for the subject item's inlet and outlet dimensions (e.g., inside diameter, outside diameter, nominal). |
| outcon1dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| outcon2dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| outcon3dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| flowTest (Integer) | The date of the last fire flow test conducted at the subject fire hydrant or fire department connection. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| hydrantElvevation (Double) | The elevation of the hydrant, measured at the hydrant outlet, in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| pressResd (Double) | The measured pressure at a hydrant or connection during a flow test conducted at the subject hydrant or connection. |
| pressStat (Double) | The numeric pressure head on the subject item under static (i.e., no flow or demand) conditions in the utility system. |
| valveSt (CodeStyleValve) | The style of the valve. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections.[FGDC]. |
| verify (CodeBoolean) | A boolean indicating whether the blue reflectors was placed correctly in the street (Y = YES and N = NO).[FGDC]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Fitting

(Database Feature Class Name = WaterFitting)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting is an item used to connect, cap, plug or otherwise alter a pipe carrying water. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| fitElv (Double) | The elevation measured at centerline of the fitting, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| diaIn (Double) | The inside, or interior, diameter of the fitting. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| fitLength (Double) | The overall length of the fitting. |
| fitWidth (Double) | The width dimension of the subject item measured at its' widest point. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |

| | |
|---|---|
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| drawingNo (Integer) | The drawing number of the Pig Drawing. This is a separate field from media_id. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground waterline fitting.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| mapGrid (String5) | Number of grid on map on which item is shown on |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Hydrant

(Database Feature Class Name = WaterHydrant)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An apparatus which dispenses fluids. [SDSFIE IENC].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| fireFlow (Double) | The code or regulation required fire flow rate from a fire hydrant or fire flow connection. |
| flowStandard (CodeFireFlow) | National Fire Protection Association classification for flow rate of a fire hydrant or fire flow connection. |

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| measType (CodeDiameterMeasureType) | This attribute provides information concerning the basis for the subject item's inlet and outlet dimensions (e.g., inside diameter, outside diameter, nominal). |
| design (String16) | Discriminator. The design code for a water hydrant. |
| hydrantType (CodeHydrantType) | The particular kind, class, or group of hydrant. |
| owner (CodeHydrantOrg) | The agency that owns the hydrant. |
| hydrantElvevation (Double) | The elevation of the hydrant, measured at the hydrant outlet, in feet (English units) or meters (SI units) above some datum. |
| sourceDiameter (Double) | Diameter of source main in inches. |
| outcon1dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| outcon2dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| outcon3dia (Double) | The diameter of the hydrant outlet, or for hydrants with more than one outlet, the diameter of one of the hydrant outlets. |
| flowTest (Integer) | The date of the last fire flow test conducted at the subject fire hydrant or fire department connection. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| connectSize (CodeConnectSize) | The size of the hydrant connection |
| pressResd (Double) | The residual pressure of the hydrant in psi format. |
| pressStat (Double) | The static pressure of the hydrant in psi format. |
| valveSt (CodeStyleValve) | The style of the valve. |
| bldgLevel (CodeBldgLevel) | Level of the building where the hydrant is located. |
| maintAgency (CodeHydrantOrg) | The agency that is responsible for maintenance of the hydrant. |
| Manufacturer (String255) | The manufacturer of the hydrant. |
| firePumpArea (CodePumpArea) | The fire pump coverage area at BWI. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| mapGrid (String5) | Number of grid on map on which item is shown on |
| locationDesc (String255) | MAA requirement, text description of location of trench |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| physicalStatus (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |

| | |
|---|---|
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Intake

(Database Feature Class Name = WaterIntake)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The location where water is allowed into the water distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |

| | |
|---|---|
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Intake Line

(Database Feature Class Name = WaterIntakeLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

The location where water is allowed into the water distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| material (String16) | The material of the subject item. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |

| | |
|---|---|
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Junction

(Database Feature Class Name = WaterJunction)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A box or small vault (usually concrete, brick, or cast iron) in water systems located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| airrfValve (CodeBoolean) | Indicates whether or not there is an air relief valve installed on subject item? (yes/no) |
| drainType (CodeDrainType) | The type of subject item drain. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| noValves (Integer) | The number of valves inside the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| mhDia (Double) | The diameter dimension of the subject item, measured from inside face of wall to inside face of opposite wall. |
| mhLength (Double) | The length dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| mhWidth (Double) | The width dimension of the subject item, from outside face of exterior wall/side to outside face of opposite exterior wall/side. |
| invertElv (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | A field indicating the kind, class, or group of manhole for the subject utility. |
| featureUse (String16) | Discriminator. An attribute that differentiates the use of the subject item. |
| noPipes (Integer) | The number of the pipes entering and exiting the subject item. |
| rimElevation (Double) | The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum. |
| description (String255) | A description or other unique information concerning the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Line

(Database Feature Class Name = WaterLine)

Geometry Type: Line Accuracy: +/-5Ft. Sensitivity: Secret

A pipe used to carry water from location to location (main line, service line, vent line, etc). [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| catProt (CodeBoolean) | Indicates whether or not the pipe has been provided with cathodic protection? (yes or no). |
| pipeLength (Double) | The length of pipe, measured from node to node along the pipe centerline . |
| pressMax (Double) | The manufacturer's or industry standard's maximum pressure rating of the subject item. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation1 (Double) | The elevation of the ground surface at node_id_1, in feet (English units) or meters (SI units) above some datum. |
| groundElevation2 (Double) | The elevation of the ground surface at node_id_2, in feet (English units) or meters (SI units) above some datum. |
| invElv1 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_1 in feet (English units) or meters (SI units) above some datum.[Derived from SDSFIE]. |
| invElv2 (Double) | The elevation of the bottom of pipe (i.e., pipe invert) at node_id_2 in feet (English units) or meters (SI units) above some datum. |

| | |
|---|---|
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| material (CodePipeMaterial) | The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc. |
| type (String16) | The kind, class, or group of the subject item. |
| slopeBot (Double) | The slope of the bottom of the subject item expressed as a percentage. |
| tape (CodeBoolean) | This attribute indicates whether or not location marker tape or wire been installed above the waterline pipe to facilitate it's location with a magnetometer? (yes or no). |
| featureUse (String16) | Discriminator. The use code for water pipes. |
| pressNorm (Double) | The normal operating pressure of the water system pipe. |
| piplty (CodePipelineLocationType) | The location of the pipeline in relevance to the earth's surface.[USGS]. |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground waterline pipe.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| dateInstalled (Date) | The date on which the feature was originally installed. |
| lineType (String16) | The type of water line. |
| directionality (CodeDirectionality) | The directionality of flow with repsect to the line's geometry. |
| impedance (Double) | The number representing the total opposition to flow. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Marker

(Database Feature Class Name = WaterMarker)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc to indicate the presence of water. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| poleMat (String16) | The material composition of the pole. |
| poleDepth (Double) | The depth the pole is buried in the foundation (usually the ground surface). |
| poleHeight (Double) | The distance the pole extends above the foundation (usually the ground surface). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| signHeight (Double) | The height dimension of the sign. |
| signMaterial (String16) | The material composition of the sign. |
| signText (String30) | The text on the sign. |
| signWidth (Double) | The width dimension of the sign. |
| soilCnd (CodeSoilConsistency) | The soil condition indicating the soil's strength and integrity. |
| rockCnd (CodeRockStrength) | The condition of the rock relative to the rocks strength and integrity. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Meter

(Database Feature Class Name = WaterMeter)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device installed in a line for measuring the quantity and or rate of water flowing to a facility or through a section of line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| meterCustomer (String20) | The name of the individual, company, or government agency served by the subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| installType (CodePumpSta) | The type installation of the subject item. |
| meterElv (Double) | The elevation at the centerline of the meter, in feet (English units) or meters (SI units) above some datum. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| srvcMtr (CodeBoolean) | An indicator as to whether or not the meter is installed on a service line? (yes or no) |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Pig Launch Point

(Database Feature Class Name = WaterPigLaunchPoint)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

Fittings where a pigging device is inserted in order to clean or maintain a pipe. [SDSFIE DOT - NPMS].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| material (String16) | The material of the subject item. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Pressure Reducing Station

(Database Feature Class Name = WaterPressureReducingStation)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A station consists of a box/pit containing one or more pressure regulators and appurtenant shutoff valves and fittings. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |

**Attributes:**

| | |
|---|---|
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| dateConstructed (Date) | The date on which the subject item construction was complete and user occupancy provided. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915) |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| staElevation (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| pressIn (Double) | The design or maximum water system pressure in the waterline on inlet side of the pressure reducing station. |
| pressOper (Double) | The normal operating water system pressure in the waterline on inlet side of the pressure reducing station. |
| source (String16) | The point of origin of a water system's water supply. |
| pressOut (Double) | The design or maximum water system pressure in the waterline on outlet side of the pressure reducing station. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Pump

(Database Feature Class Name = WaterPump)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A mechanical device for water system that draws material into itself through an entrance port and forces the material out through an exhaust port. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the pump is cooled. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| capacityAct (Double) | The measured capacity of the pump operating under actual normal head and flow conditions. |
| capacityRate (Double) | The manufacturer's pump capacity (e.g., gpm) rating at a specific design total dynamic head (TDH), usually depicted by a pump curve. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| pwrGen (Double) | The power generated by the pump, equal in the U.S. to 746 watts and nearly equivalent to the English gravitational unit of the same name that equals 550 foot-pounds of work per second. |
| pwrReq (CodeVoltage) | The voltage of the electrical power required by the subject item. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| primRqd (CodeBoolean) | An indicator as to whether or not the pump has to be primed? (yes or no). |
| primeMethod (String15) | The method by which the pump is primed. |
| tdhRated (Double) | The total dynamic head upon which the capacity_rated is based. |
| featureUse (String16) | The particular application, or use the subject item. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |

| | |
|---|---|
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Pump Station

(Database Feature Class Name = WaterPumpStation)

Geometry Type: Polygon Accuracy: +/-1Ft. Sensitivity: Secret

A building in which one or more pumps operate to maintain flow at adequate pressure within a water distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | The name of the pumping station.[HSIP]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| tributaryId (String20) | An operator generated identifier used locally to identify a tributary subsystem of the main utility system. |
| srcName (String16) | The name of the water source (e.g., Mississippi River, Bayou LaFouche, etc.). |

**Attributes:**

| | |
|---|---|
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| hiWaterElevation (Double) | The high water or overflow elevation of the elevated water storage tank downstream of the pumping station, in feet (English units) or meters (SI units) above some datum. |
| nodalElv (Double) | The elevation of subject node, which is used in performing computer analyses of the water distribution system. The node elevation is usually the ground elevation at the subject node, or the elevation of the subject item located at the subject node (e.g., |

| | |
|---|---|
| wetwlCapacity (Double) | The wet well capacity. |
| staWidth (Double) | The width dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| staCapacity (Double) | The pump station's output capacity (e.g., gpm) rating (with all pumps operating) at a specific total dynamic head (TDH), which correlates to normal system pressure head or design pressure head. |
| staElevation (Double) | The top surface elevation of the subject item's interior floor/bottom in feet (English units) or meters (SI units) above some datum. |
| staType (CodePumpSta) | Discriminator. The type of station. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| source (String16) | The point of origin of a water system's water supply. |
| staLength (Double) | The length dimension of the station, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side. |
| pumpElevation (Double) | The elevation measured at centerline of the pump, in feet (English units) or meters (SI units) above some datum. |
| tnkalrmelv (Double) | Elevation of water in upstream ground water storage tank(s) which represents a low level which activates a low water/pressure alarm. |
| area (Double) | The size of the area, zone, or polygon in square units. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| description (String255) | A description or other unique information concerning the subject item. |
| mapGrid (String5) | Number of grid on map on which item is shown on |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| **Metadata:** | |
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Rectifier

(Database Feature Class Name = WaterRectifier)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the water distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| coolMethod (CodeEquipmentCooling) | The method by which the rectifier is cooled, typically air or oil. |
| enclType (CodeElectricMotorEnclType) | The type of enclosure used to protect the rectifier. |
| voltOut (CodeVoltage) | The output DC voltage from the rectifier to the anode system. |
| currntOut (Double) | The output direct current from the rectifier to the anode system. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| internalMeter (CodeBoolean) | An indicator as to whether or not the rectifier has an internal meter, yes/no. |
| noPhases (Integer) | The number of phases to which this device provides reactive power. |
| phaseLeter (CodeElectricPhaseType) | The letter(s) of the phase(s) for the subject item. |
| voltIn (CodeVoltage) | The input AC voltage to the rectifier. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |

| | |
|---|---|
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Regulator Reducer

(Database Feature Class Name = WaterRegulatorReducer)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A pressure regulator located in the water line that automatically reduces the pressure on the downstream side of the valve to a preset magnitude. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| size (CodePipeDiameter) | The manufacturers designated size, or nominal (i.e., rounded to the nearest unit) diameter for the subject item (e.g., 1in gas hydrant, 2in meter, 6in pipe). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| pressIn (Double) | The design water system pressure in the waterline on inlet side of the pressure regulator. |
| type (String16) | Discriminator. The kind, class, or group of the subject item. |
| pressOut (Double) | The design water system pressure in the waterline on outlet side of the pressure regulator. |
| pressReqd (Double) | The required maximum outlet pressure setting for the regulator. |
| regElevation (Double) | The elevation of the pressure regulator, measured at the regulator centerline. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |

| | |
|---|---|
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Reservoir

(Database Feature Class Name = WaterReservoirArea)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A body of water which supplies water to a water distribution system. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Source Site

(Database Feature Class Name = WaterSourceSite)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

The point from which water is supplied for processing and distribution. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | The name of the water intake.[HSIP]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| sysType (String16) | The type of water system.[USACE OPERATIONS]. |
| catPipe (CodePipeCategory) | Category of pipe[S-57]. |
| length (Double) | The overall length of the feature.[Center]. |
| maxFlow (Double) | The intake capacity of the pipe.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Tank

(Database Feature Class Name = WaterTank)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

An above or below grade receptacle or chamber used for holding water on a temporary basis prior to transfer or use. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String80) | Indicates the name as given for the water system control facility.[HSIP]. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |
| modelNumber (String12) | The Model, Product, Catalog, or Item Number of subject item. |
| serialNumber (String15) | The manufacturer's serial, or unique identification number of the subject item. |

**Attributes:**

| | |
|---|---|
| alarmLevel (Double) | The elevation of the preset level in a tank which activates a low water level alarm, in feet (English units) or meters (SI units) above mean sea level. Mean sea level is universally considered as the elevation reference surface although local surveys may |
| altValve (CodeBoolean) | Indicates whether or not the tank has an altitude valve which controls the flow into the tank? (yes or no). |
| area (Double) | The size of the area, zone, or polygon in square units. |
| level1On (Double) | The elevation of the preset level in a tank which activates one pump or one control valve which supplies water to the tank, in feet (English units) or meters (SI units) above some datum. |
| level2On (Double) | The elevation of the preset level in a tank which activates a second pump, or control valve, which operates in conjunction with the first activated pump, or control valve, to supply water to the tank, in feet or meters above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| levelOff (Double) | The elevation of the preset level in a tank which turns off the pump(s) or control valve(s) which supply water to the tank, in feet (English units) or meters (SI units) above some datum. |
| levelShut (Double) | The elevation of the preset level in a tank (ground storage or supply tank) which indicates a dangerously low water level in the tank and turns off all pumps which draw water from the tank, in feet (English units) or meters (SI units) above some datum. |
| ovrflwElevation (Double) | The elevation measured at the point of overflow, or entrance, into the tank overflow pipe,, in feet (English units) or meters (SI units) above some datum. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| headNorm (Double) | The normal operating head for the subject item. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| pressAlrm (Double) | The preset pressure setting of a tank which activates a low tank pressure alarm. |
| pressHigh (Double) | The preset high, or maximum, operating pressure setting of a tank. For a hydropneumatic (i.e., pressure) type tank this is the setting at which all pumps supplying water to the tank, and all air compressors supplying compressed air to the tank, are off. |
| invertElv (Double) | The elevation measured at bottom of the tank, in feet (English units) or meters (SI units) above some datum. mean sea level. |

material (CodePipeMaterial) The material composition of the subject item, such as wood, concrete, steel, cast iron, plastic, etc.

topElevation (Double) The elevation of exterior top surface of the subject item's lid, hatch, rim, or roof in feet (English units) or meters (SI units) above some datum.

tankLength (Double) The length dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side.

tankSt (CodeStyleTank) The particular kind, class, or group of tank (e.g., elevated, hydropneumatic, etc.).

tankUse (CodeTankUse) The particular kind or use of the tank (e.g., raw water, potable, etc.).

tankVol (Double) The tank's storage capacity (e.g., gallons, ft3, etc).

tankWidth (Double) The exterior width dimension of the tank, measured from outside face of the exterior wall/side to outside face of the opposite exterior wall/side.

pressLow (Double) The preset low, or minimum, operating pressure setting of a tank. For a hydropneumatic (i.e., pressure) type tank this is the setting which activates the pump(s) supplying water to the tank. For an elevated type tank, this is the setting which activates

perimeter (Double) The distance around the boundary of the area, zone, or subject item in linear units.

pressNorm (Double) The manufacturer's (as rated by American Society of Mechanical Engineers (ASME) testing procedures) maximum pressure rating of the water tank.

tankDiameter (Double) The inside diameter of the tank, measured from the interior wall surface to the opposite interior wall surface.

description (String255) A description or other unique information concerning the subject item.

color (CodeColor) The color of the water tank.

lightCode (String1) The light code of the tank.

lightingType (CodeLightingConfigurationType) Thetype of lighting configuration.

markingFeatureType (CodeMarkingFeatureType) The type of the marking

verticalStructureMaterial (String16) The vertical structure material.

junctionType (CodeJunctionType) An indicator as to whether the feature serves as a source, sink or neither in the network.

**Metadata:**

collectionProgress (CodeProgress) The progress of the data collection.

dateAcquired (Date) The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915).

verified (String255) Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature.

projectId (String20) A unique identifier associated with the project or work activity that installed or first recorded the location of this feature.

status (CodeStatus) A temporal description of the operational status of the feature.

Alternative (Integer) Discriminator used to tie features of a plan or proposal together into a version.

userFlag (String254) An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE].

qualityLevel (CodeSueQualityLevel) The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02.

dataSource (CodeDataSource) The primary source of the data in this record.

dataSource2 (CodeDataSource) The secondary source of the data in this record.

sourceStatement (String255) A statement providing additional details about the source of the data.

editorName (String50) The name of the individual who last edited this data.

lastUpdate (Date) The date upon which any data associated with this record was last updated.

**System Keys:**

guid (String60) A globally unique identifier applied to each feature in the database for reference.

metaId (Integer) An identifier used to refer to a metadata record that provide additional information about the data in this record.

## Water : Treatment Plant

(Database Feature Class Name = WaterTreatmentPlant)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A water treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | A description or other unique information concerning the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified. |
| source (String255) | The source of the feature. |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Treatment Unit

(Database Feature Class Name = WaterTreatmentUnit)

Geometry Type: Polygon Accuracy: +/-5Ft. Sensitivity: Confidential

A water separation pond or other pool designed to allow solid material decomposition. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String16) | The site specific identification name or number assigned to the subject item. |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| area (Double) | The size of the area, zone, or polygon in square units. |
| condition (CodePoleCondition) | Indicates a state of being, or readiness for use of the subject item (e.g., good, fair, poor), from lists or field inspections. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| bypass (CodeBoolean) | Indicates whether or not the treatment plant has a bypass line? (yes or no). |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| flowRated (Double) | The plant manufacturer's rated treatment plant capacity (e.g., gpm), which signifies the peak constant or daily flow of raw water that the plant can treat and transform to the specified water quality requirements. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| flowAct (Double) | The measured peak treatment capacity of the water treatment plant when installation has been completed and it is operating under normal inflow and demand conditions. |
| noPumps (Integer) | The total number of pumps located at the subject item. |
| perimeter (Double) | The distance around the boundary of the area, zone, or subject item in linear units. |
| source (String16) | The point of origin of a water system's water supply. |
| type (String16) | A field indicating the kind, class, or group of the subject item. |
| plantElv (Double) | The finished floor elevation of the treatment plant, in feet (English units) or meters (SI units) above some datum. |
| plantLength (Double) | The overall length dimension of the treatment plant. |
| plantwidth (Double) | The overall width dimension of the water treatment plant. |
| numCust (Integer) | The number of customers being served by the treatment facility.[HSIP]. |
| description (String255) | A description or other unique information concerning the subject item. |
| material (String16) | The material of the subject item. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |

| | |
|---|---|
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Valve

(Database Feature Class Name = WaterValve)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A fitting or device used for shutting or throttling flow through a water line. [SDSFIE FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| name (String20) | Descriptive identifying text |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| branchSys (String12) | An operator generated identifier that is a unique site specific name or number designation of a branch or isolated area of a water distribution system. |
| groundElevation (Double) | The elevation of the ground surface in feet (English units) or meters (SI units) above some datum. |
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| valveElv (Double) | The elevation measured at centerline of the valve, in feet (English units) or meters (SI units) above some datum. |
| featureUse (String16) | Discriminator. The site specific use of the valve. |
| valveSize (CodePipeDiameter) | A code indicating the manufacturer's nominal size designation. |
| valveSt (CodeStyleValve) | The particular kind, class, or group of valve (e.g., gate, check, etc.). |
| coverDepth (Double) | The depth of cover. The depth measured from top of ground's surface (or grade) to top of underground waterline valve.[Air Force]. |
| description (String255) | A description or other unique information concerning the subject item. |
| coordX (Double) | The coordinate in the east-west plane, expressed in decimal degrees. |
| coordY (Double) | The coordinate in the north-south plane, expressed in decimal degrees. |
| MAA requirementmapGrid (String5) | Number of grid on map on which item is shown on |
| locationNotes (String255) | Notes on the location of the feature. |
| valveDesc (CodeValveType) | The valve type. |
| valveUse (String25) | A description of the valve's use. |
| material (String16) | The material of the subject item. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |
| valveOpen (CodeValveOpen) | The direction a valve must be turned to open. |
| operatingStatus (CodeValveStatus) | The normal operating status of the valve. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |
| verified (String255) | Whether or not the feature has been verified.projectType (CodeProjectType) The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |

**System Keys:**

| | |
|---|---|
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Water : Vent

(Database Feature Class Name = WaterVent)

Geometry Type: Point Accuracy: +/-1Ft. Sensitivity: Secret

A valve installed in a line to either release air trapped in the line, and/or allow air into a line to relieve a vacuum condition. [FGDC Utilities Classification].

**Names and Identifiers:**

| | |
|---|---|
| maaID (String30) | A unique identifier used by people to refer to this feature (note: this is not a system primary or foreign key value) |
| maaAlias (String60) | An alternative or former name by which the feature is refered. |

**Attributes:**

| | |
|---|---|
| owner (String60) | A person, organization, or agency with legal control or management responsibility of the utility asset.[Adopted from SDSFIE]. |
| description (String255) | Any brief description of the feature. |
| material (String16) | The material of the subject item. |
| size (Integer) | The size of the subject item. |
| disposition (CodeDispositionObject) | The status of the subject item (e.g., permanent, temporary, proposed, abandoned, etc.), from lists or entered from field inspections. |
| junctionType (CodeJunctionType) | An indicator as to whether the feature serves as a source, sink or neither in the network. |

**Metadata:**

| | |
|---|---|
| collectionProgress (CodeProgress) | The progress of the data collection. |
| dateAcquired (Date) | The date on which the subject item was originally acquired or purchased. Format for date is YYYYMMDD (i.e., September 15, 1994 = 19940915). |

| | |
|---|---|
| verified (String255) | Whether or not the feature has been verified.source (String255) |
| projectType (CodeProjectType) | The type of project or work activity that installed or first recorded the location of this feature. |
| projectId (String20) | A unique identifier associated with the project or work activity that installed or first recorded the location of this feature. |
| status (CodeStatus) | A temporal description of the operational status of the feature. |
| Alternative (Integer) | Discriminator used to tie features of a plan or proposal together into a version. |
| userFlag (String254) | An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not affect the subject items data integrity and should not be used to store the subject items data.[SDSFIE]. |
| qualityLevel (CodeSueQualityLevel) | The subsurface utility engineering quality level assigned to utilities features as defined in ASCE38-02. |
| dataSource (CodeDataSource) | The primary source of the data in this record. |
| dataSource2 (CodeDataSource) | The secondary source of the data in this record. |
| sourceStatement (String255) | A statement providing additional details about the source of the data. |
| editorName (String50) | The name of the individual who last edited this data. |
| lastUpdate (Date) | The date upon which any data associated with this record was last updated. |
| **System Keys:** | |
| guid (String60) | A globally unique identifier applied to each feature in the database for reference. |
| metaId (Integer) | An identifier used to refer to a metadata record that provide additional information about the data in this record. |

## Domain Values

This section lists the acceptable domain values for each of the attributes bound by list domains. Each list of acceptable values is an enumeration, which means that one of the values must be selected in order to be compliant with the standard. For each value there is a definition, notes, and a source. Notes are captured in parentheses and the source is provided in brackets.

### CodeAirPressureDeviceType

Used by Attributes: Air Pressure Device - Airp Type

| Value | Definition (Notes) [Source] |
|---|---|
| A | Transducer [SDSFIE V2 Austin and Pitts] |
| AIRFLOW_B | Meter Panel Component [SDSFIE V2 Austin and Pitts] |
| ALARM_PIPE | Meter Panel Component [SDSFIE V2 Austin and Pitts] |
| AV | Automatic Shut-Off Valve [SDSFIE V2 Austin and Pitts] |
| B | By-Pass [SDSFIE V2 Austin and Pitts] |
| BV | By-Pass Valve [SDSFIE V2 Austin and Pitts] |
| C | Pressure Contactor [SDSFIE V2 Austin and Pitts] |
| CA_3131 | Gas Feeder Pipe [SDSFIE V2 Austin and Pitts] |
| CD | Compressed Dry Air Source [SDSFIE V2 Austin and Pitts] |
| CO | Central Office [SDSFIE V2 Austin and Pitts] |
| CT | Pressure Contactor Terminal [SDSFIE V2 Austin and Pitts] |
| DBV | Dual (Shutoff) Valve. [SDSFIE V2.5 AIR FORCE] |
| E | Pressure Contactor [SDSFIE V2 Austin and Pitts] |
| GT | Gas-Tight Cable Terminal [SDSFIE V2 Austin and Pitts] |
| GT_500CFD | Air Dryer (greater than 500 Cfd) [SDSFIE V2 Austin and Pitts] |
| LT_500CFD | Air Dryer (less than 500 Cfd) [SDSFIE V2 Austin and Pitts] |
| M | Flow Meter [SDSFIE V2 Austin and Pitts] |

| | |
|---|---|
| M_262 | Manifold [SDSFIE V2 Austin and Pitts] |
| MF | Pipe Manifold [SDSFIE V2 Austin and Pitts] |
| MODEL_3000 | Compressor Dehydrator [SDSFIE V2 Austin and Pitts] |
| MP | Meter Panel [SDSFIE V2 Austin and Pitts] |
| P | Pressure Plug [SDSFIE V2 Austin and Pitts] |
| PRESS_C | Transducer [SDSFIE V2 Austin and Pitts] |
| R | Pressure Regulator [SDSFIE V2 Austin and Pitts] |
| RV | Excessive Pressure Relief Valve [SDSFIE V2 Austin and Pitts] |
| T | Gas-Tight Cable Terminal [SDSFIE V2 Austin and Pitts] |
| TD | Pressure Transducer [SDSFIE V2 Austin and Pitts] |
| V | Pressure Testing Valve [SDSFIE V2 Austin and Pitts] |
| VALVE_750 | Transducer [SDSFIE V2 Austin and Pitts] |
| VALVE_BLK | Pressure [SDSFIE V2 Austin and Pitts] |
| VALVE_C | Pressure [SDSFIE V2 Austin and Pitts] |
| VT | Cable Vent [SDSFIE V2 Austin and Pitts] |

## CodeAmplifierType

Used by Attributes: Amplifier - Amp Type;Attenuator - Attn Type;Impedance Matching Point - Imp Type

| Value | Definition (Notes) [Source] |
|---|---|
| CATV | Cable Television Amplifier [SDSFIE V2 Tinker Air Force Base] |
| OTHER | Other [SDSFIE V2 ] |
| PHONE_LINE_AMP | Telephone Line Amplifier [SDSFIE V2 Tinker Air Force Base] |
| RADIO | Radio [SDSFIE V2 Tinker Air Force Base] |
| TBD | To Be Determined [SDSFIE V2 Tinker Air Force Base] |
| UNKNOWN | Unknown [SDSFIE V2 ] |
| VIDEO | Video Amplifier [SDSFIE V2 Tinker Air Force Base] |

## CodeAnodes

Used by Attributes: Anode - Material;Anode - Material;Anode - Material;Anode - Material;Anode - Material;Anode - Material

| Value | Definition (Notes) [Source] |
|---|---|
| AL | aluminum [SDSFIE V1.4 ] |
| CI | cast iron [SDSFIE V1.4 ] |
| GR | graphite [SDSFIE V1.4 ] |
| MG | magnesium [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| ZN | zinc [SDSFIE V1.4 ] |

## CodeAntennaPolarization

Used by Attributes: Antenna Site - Polr Type

| Value | Definition (Notes) [Source] |
|---|---|
| CLOCKWISE | Installed with the plane of polarization rotating right-hand circular. [SDSFIE V2.5 Air Force] |
| COUNT_CLOCKWISE | Installed with the plane of polarization rotating left-hand circular. [SDSFIE V2.5 Air Force] |
| HORIZONTAL | Installed with the plane of polarization parallel to earth's surface. [SDSFIE V2.5 Air Force] |

| | |
|---|---|
| OTHER | Other |
| TBD | To be Determined |
| UNKNOWN | Unknown |
| VERTICAL | Installed with the plane of polarization perpendicular to the earth's surface. [SDSFIE V2.5 Air Force] |

## CodeAntRadPattern

Used by Attributes: Access Point - Radiation Pattern;Antenna Site - Radiation Pattern

| Value | Definition (Notes) [Source] |
|---|---|
| DIRECTIONAL | Directional Antenna. [SDSFIE V2.5 AIR FORCE] |
| LOS | Line of Sight. [SDSFIE V2.5 AIR FORCE] |
| OMNI | Omnidirectional Antenna. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeBankArmorLining

Used by Attributes: Open Drainage Line - Bank Arm

| Value | Definition (Notes) [Source] |
|---|---|
| ASPHALT | asphalt [SDSFIE V1.4 ] |
| CEMENTD_STONE | cemented stones [SDSFIE V1.4 ] |
| CONCRETE_LINED | concrete lined [SDSFIE V1.4 ] |
| DUMP_BRICK_CONC | dumped brick and concrete [SDSFIE V1.4 ] |
| DUMPED_ROCK | dumped rocks [SDSFIE V1.4 ] |
| FORMEDLINING | formed channel lining [SDSFIE V1.4 ] |
| GABIONS | gabions [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PILEDIKE | pile dike [SDSFIE V1.4 ] |
| PLACED_STONE | placed stone [SDSFIE V1.4 ] |
| SAND_CEMNBGRR | sand cement/bag riprap [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WILLOW_MAT | willow mat [SDSFIE V1.4 ] |

## CodeBankSide

Used by Attributes: Pump - Bank

| Value | Definition (Notes) [Source] |
|---|---|
| L_DESCENDING | Left descending bank [SDSFIE V1.8 REEGIS] |
| LEFT | left [SDSFIE V1.8 REEGIS] |
| NON_RIVERINE | non riverine [SDSFIE V2.6 LEVEE DATABASE] |
| R_DESCENDING | Right descending bank [SDSFIE V1.8 REEGIS] |
| RIGHT | right [SDSFIE V1.8 REEGIS] |

## CodeBedMaterial

Used by Attributes: Open Drainage Line - Bed Material

| Value | Definition (Notes) [Source] |
|---|---|
| AQUATCWEED | aquatic weed [SDSFIE V1.4 ] |
| CEMENTED_STONE | cemented stones [SDSFIE V1.4 ] |
| CLAY | clay [SDSFIE V1.4 ] |
| CONCRETE_LINED | concrete lined [SDSFIE V1.4 ] |
| CRSAND_GRAVEL | coarse sand and gravel [SDSFIE V1.4 ] |
| EXPOSED_ROCK | exposed rock [SDSFIE V1.4 ] |
| FINE_SAND | fine sand [SDSFIE V1.4 ] |
| GRASSED | grassed [SDSFIE V1.4 ] |
| GRAVEL_STONE | gravel to larger stone [SDSFIE V1.4 ] |
| ORGANIC_MUD | organic mud [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PLACED_STONE | placed stone [SDSFIE V1.4 ] |
| SAND | Sand. [SDSFIE V2.5 USACE] |
| SILT_SAND | Silty sand. [SDSFIE V2.5 USACE] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNDERBRUSH | underbrush [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeBilKv

Used by Attributes: Bus Line - Bil Rat

| Value | Definition (Notes) [Source] |
|---|---|
| 15KV | 15kv basic insulation level [SDSFIE V1.4 ] |
| 25KV | 25kv basic insulation level [SDSFIE V1.4 ] |
| 5KV | 5kv basic insulation level [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |

## CodeBldgLevel

Used by Attributes: Hydrant – Building Level

| Value | Definition (Notes) [Source] |
|---|---|
| LOWER_LEVEL_TERMINAL | Lower level BWI terminal |
| UPPER_LEVEL_TERMINAL | Upper level BWI terminal |

## CodeBoolean

Used by Attributes: Lagoon - Aerator;Lagoon - Aerator;Storage Area - Aerator;Vault - Air Release Present;Junction - Air Relief Valve Code;Oil Water Separator Diversion Vault - airReleasePresent;Junction - Airrf Valve;Junction - Airrf Valve;Junction - Airrf Valve;Vault - airrfValve;Disposal Tank - Alt Valve;Tank - Alt Valve;Tank - Alt Valve;Tank - Alt Valve;Tank - Altitude Valve;Tank - Altitude Valve;Access Point - Antenna Location;Generator - Automatic Transfer Switch Code;Pedestal Site - Bonded;Treatment Plant - Bypass;Treatment Unit - Bypass;Treatment Unit - Bypass;Utility Pole Tower Site - Capped;Line - Cat Prot;Line - Cat Prot;Line - Cat Prot;Line - Cathodic Protection;Treatment Unit - Chlorint;Ductbank - Conc Enc;Culvert Center Line - Critical;Equipment - Crypto;Video Site - Crypto;Relay Station - Deployab;Grease Trap - Dist Box Id;Valve - Diversion Vault Valve;Septic Tank - Dstbx;Riser - Duct;Discharge Point - Enabled;Drainage Divide Line - Enabled;Fitting - Enabled;Inlet - Enabled;Junction - Enabled;Line - Enabled;Oil Water Separator - Enabled;Oil Water Separator Diversion Vault - enabled;Open Drainage Line - Enabled;Pump - Enabled;Storm Ceptor - enabled;Storm Filter - enabled;Storm Trench Drain Line - enabled;Vault - Enabled;Vertical Site - Endguard;Line - Exp Loop;Inlet - Garage Inlet;Vertical Site - Grdrails;Vertical Site - Grndbar;Utility Pole Tower Site - Grounded;Oil Water Separator - Grtchbr;Oil Water Separator - Grtchbr;Oil Water Separator - Grtchbr;Oil Water Separator - Grtchbr;Storm Ceptor - grtchbr;Storm Filter - grtchbr;Junction - High Level Alarm Flag;Access Point - Ids;Junction -

Illict;Equipment - Int Vid;Rect Point - Internal Meter;Rectifier - Internal Meter;Rectifier - Internal Meter;Rectifier - Internal Meter;Rectifier - Internal Meter;Rectifier - Internal Meter;Transmission Pipeline - Interstate;Culvert Center Line - Lined;Line - Lined;Line - Lined;Line - Lined;Line - Lined;Storm Trench Drain Line - lined;Tank - Lng Fac;Cable - Loosbuf;Grease Trap - Manhole;Septic Tank - Manhole;Speaker - Multp 2 5;Speaker - Multp 7 0;Relay Station - Narrowbn;Equipment - Ncc;Grit Chamber - O W Sep;Grit Chamber - O W Sep;Marker - Passve;Transformr Bank - Pcb;Lagoon - Pip Outl;Lagoon - Pip Outl;Storage Area - Pip Outl;Pump - Prim Required;Pump - Prim Rqd;Pump - Prim Rqd;Pump - Prim Rqd;Pump - Prim Rqd;Pump - Prim Rqd;Pump - Prim Rqd;Pump - Priming Required;Vault - Pump Out Present;Oil Water Separator Diversion Vault - pumpOutPresent;Relay Station - Rf Lmrwd;Radio Receiver - Rf P 2 5C;Radio Transmitter - Rf P 2 5C;Radio Receiver - Rf P 2 5T;Radio Transmitter - Rf P 2 5T;Tank - Secondary Containment;Light - Sensor;Meter - Service Meter;Meter - Service Meter;Meter - Service Meter;Meter - Service Meter;Generator - Sound;Farm Site - Strategic Petroleum Reserve Code;Tank - Strategic Petroleum Reserve Code;Capacitor - Switch;Line - Tape;Line - Tape;Pedestal Site - Terminal;Relay Station - Trnk P 2 5;Relay Station - Tx Analg;Relay Station - Tx Digl;Lagoon - User Ind;Lagoon - User Ind;Storage Area - User Ind;Lagoon - User San;Lagoon - User San;Storage Area - User San;Tank - ustSensor;Culvert Center Line - Verified;Fire Connection Point - Verify;Speaker - Weather;Lagoon - Wer Outl;Lagoon - Wer Outl;Storage Area - Wer Outl;Lagoon - X Dikes;Lagoon - X Dikes;Reservoir - X Dikes;Reservoir - X Dikes;Stilling Basin - X Dikes

| Value | Definition (Notes) [Source] |
|---|---|
| N | No |
| Y | Yes |

## CodeCableConnectorType

Used by Attributes: Antenna Site - Conn Type;Terminator - Connt;Media Converter - Connt 1;Media Converter - Connt 2

| Value | Definition (Notes) [Source] |
|---|---|
| 1_0_2_3_F | 1.0/2.3, Female. [SDSFIE V2.5 AIR FORCE] |
| 1_0_2_3_M | 1.0/2.3, Male. [SDSFIE V2.5 AIR FORCE] |
| 1_6_5_6_F | 1.6/5.6, Female. [SDSFIE V2.5 AIR FORCE] |
| 1_6_5_6_M | 1.6/5.6, Male. [SDSFIE V2.5 AIR FORCE] |
| 7_16_DIN_F | 7-16 Deutsh Industries Norm (DIN), Female. [SDSFIE V2.5 AIR FORCE] |
| 7_16_DIN_M | 7-16 Deutsh Industries Norm (DIN), Male. [SDSFIE V2.5 AIR FORCE] |
| AMC_F | Amphenol Micro Coaxial (AMC), Male. [SDSFIE V2.5 AIR FORCE] |
| AMC_M | Amphenol Micro Coaxial (AMC), Female. [SDSFIE V2.5 AIR FORCE] |
| BI_F | Bionic, Female. [SDSFIE V2.5 AIR FORCE] |
| BI_M | Bionic, Male. [SDSFIE V2.5 AIR FORCE] |
| BNC_F | Bayonet Neill Concelman (BMC), Female. [SDSFIE V2.5 AIR FORCE] |
| BNC_M | Bayonet Neill Concelman (BMC), Male. [SDSFIE V2.5 AIR FORCE] |
| C_F | C Connector, Female. [SDSFIE V2.5 AIR FORCE] |
| C_M | C Connector, Male. [SDSFIE V2.5 AIR FORCE] |
| D4_F | D4, Female. [SDSFIE V2.5 AIR FORCE] |
| D4_M | D4, Male. [SDSFIE V2.5 AIR FORCE] |
| DB_25_F | 25-pin D-type connector, Female. [SDSFIE V2.5 AIR FORCE] |
| DB_25_M | 25-pin D-type connector, Male. [SDSFIE V2.5 AIR FORCE] |
| DB_9_F | 9-pin D-type connector, Female. [SDSFIE V2.5 AIR FORCE] |
| DB_9_M | 9-pin D-type connector, Male. [SDSFIE V2.5 AIR FORCE] |
| DE_9_F | 9-pin D-type connector, Female AKA DB-10. [SDSFIE V2.5 AIR FORCE] |
| DE_9_M | 9-pin D-type connector, Male AKA DB-10. [SDSFIE V2.5 AIR FORCE] |
| F_TYPE_F | F TYPE, Female. [SDSFIE V2.5 AIR FORCE] |
| F_TYPE_M | F-M - F TYPE, Male. [SDSFIE V2.5 AIR FORCE] |
| FC_F | MIL-C-39012 category D type, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| FC_M | MIL-C-39012 category D type, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| FDDI_F | Fiber Distributed Data Interface, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| FDDI_M | Fiber Distributed Data Interface, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| FIREWIRE_4F | IEEE 1394 Fire wire connector, 4-pin, Female. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| FIREWIRE_4M | IEEE 1394 Fire wire connector, 4-pin, Male. [SDSFIE V2.5 AIR FORCE] |
| FIREWIRE_6F | IEEE 1394 Fire wire connector, 6-pin, Female. [SDSFIE V2.5 AIR FORCE] |
| FIREWIRE_6M | IEEE 1394 Fire wire connector, 6-pin, Male. [SDSFIE V2.5 AIR FORCE] |
| FME_F | FME, Female. [SDSFIE V2.5 AIR FORCE] |
| FME_M | FME, Male. [SDSFIE V2.5 AIR FORCE] |
| G_TYPE_F | G-F - Type G, Female. [SDSFIE V2.5 AIR FORCE] |
| G_TYPE_M | G-M - Type G, Male. [SDSFIE V2.5 AIR FORCE] |
| HM_F | HN, weatherproof, RF connector, Female. [SDSFIE V2.5 AIR FORCE] |
| HN_M | HN, weatherproof, RF connector, Male. [SDSFIE V2.5 AIR FORCE] |
| LC_F | Limited Co-ordination Specification (LC Spec.), Female. [SDSFIE V2.5 AIR FORCE] |
| LC_M | Limited Co-ordination Specification (LC Spec.), Male. [SDSFIE V2.5 AIR FORCE] |
| MINI_UHF_F | MINI UHF, Female. [SDSFIE V2.5 AIR FORCE] |
| MINI_UHF_M | MINI UHF, Male. [SDSFIE V2.5 AIR FORCE] |
| MT_RJ_F | MT-RJ, FO, RJ45 footprint connector, Female. [SDSFIE V2.5 AIR FORCE] |
| MT_RJ_M | MT-RJ, FO, RJ45 footprint connector, Male. [SDSFIE V2.5 AIR FORCE] |
| N_TYPE_F | N TYPE, Female. [SDSFIE V2.5 AIR FORCE] |
| N_TYPE_M | N TYPE, Male. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| RJ21_F | RJ21, RJ21 AKA Telco 50-pin connector, Female. [SDSFIE V2.5 AIR FORCE] |
| RJ21_M | RJ21 AKA Telco 50-pin connector, Male. [SDSFIE V2.5 AIR FORCE] |
| RJ45_F | RJ45, Female. [SDSFIE V2.5 AIR FORCE] |
| RJ45_M | RJ45, Male. [SDSFIE V2.5 AIR FORCE] |
| SC_F | Plug and socket, push-pull latch, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| SC_M | Plug and socket, push-pull latch, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| SMA_F | SubMiniature Version A, Female. [SDSFIE V2.5 AIR FORCE] |
| SMA_M | Subminiature Version A, Male. [SDSFIE V2.5 AIR FORCE] |
| SMC_F | Subminiature Version C, Female. [SDSFIE V2.5 AIR FORCE] |
| SMC_M | Subminiature Version C, Male. [SDSFIE V2.5 AIR FORCE] |
| ST_F | ST, Female. [SDSFIE V2.5 AIR FORCE] |
| ST_M | ST, Male. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| TNC_F | TNC Female. [SDSFIE V2.5 AIR FORCE] |
| TNC_M | TNC Male. [SDSFIE V2.5 AIR FORCE] |
| UHF_F | UHF, Female. [SDSFIE V2.5 AIR FORCE] |
| UHF_M | UHF, Male. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| USB_F | Universal Serial Bus, Female. [SDSFIE V2.5 AIR FORCE] |
| USB_M | Universal Serial Bus, Male. [SDSFIE V2.5 AIR FORCE] |

## CodeCableDimension

Used by Attributes: Cable - Cbl Dim;Twisted Pair Line - Cbl Size;Cable - Cond Size;Cable - Neut Size;Antenna Line - Size;Segmented Cable - Size;Bus Line - Size Neut;Anode Test Station - Wire Size;Anode Test Station - Wire Size;Anode Test Station - Wire Size;Anode Test Station - Wire Size;Anode Test Station - Wire Size;Anode Test Station - Wire Size

| Value | Definition (Notes) [Source] |
|---|---|
| #1/0 | #1/0 [SDSFIE V2.1 FGDC Utilities Classification] |
| #10 | #10 [SDSFIE V2.1 FGDC Utilities Classification] |
| #14 | #14 [SDSFIE V2.1 FGDC Utilities Classification] |
| #16 | #16 [SDSFIE V2.1 FGDC Utilities Classification] |
| #18 | #18 [SDSFIE V2.1 FGDC Utilities Classification] |
| #19 | #19 [SDSFIE V2.1 FGDC Utilities Classification] |
| #2/0 | #2/0 [SDSFIE V2.1 FGDC Utilities Classification] |

| | |
|---|---|
| #20 | #20 [SDSFIE V2.1 FGDC Utilities Classification] |
| #22 | #22 [SDSFIE V2.1 FGDC Utilities Classification] |
| #24 | #24 [SDSFIE V2.1 FGDC Utilities Classification] |
| #26 | #26 [SDSFIE V2.1 FGDC Utilities Classification] |
| #28 | #28 [SDSFIE V2.1 FGDC Utilities Classification] |
| #3/0 | #3/0 [SDSFIE V2.1 FGDC Utilities Classification] |
| #30 | #30 [SDSFIE V2.1 FGDC Utilities Classification] |
| #32 | #32 [SDSFIE V2.1 FGDC Utilities Classification] |
| #34 | #34 [SDSFIE V2.1 FGDC Utilities Classification] |
| #36 | #36 [SDSFIE V2.1 FGDC Utilities Classification] |
| #4/0 | #4/0 [SDSFIE V2.1 FGDC Utilities Classification] |
| 0.375 | 3/8 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 0.5 | 0.5 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 0.75 | 0.75 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 0_375 | 3/8 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 0_5 | 0.5 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 0_75 | 0.75 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 1 | 1 inch [SDSFIE V2.1 FGDC Utilities Classification] |
| 1.25 | 1.25 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 1.5 | 1.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 1_25 | 1.25 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 1_5 | 1.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 1000_MCM | 1000 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 1033.5_MCM | 1033.5 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 1113_MCM | 1113 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 12 | 12 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 1272_MCM | 1272 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 1431_MCM | 1431 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 1590_MCM | 1590 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 2 | 2 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 2.5 | 2.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 2_5 | 2.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 2156_MCM | 2156 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 250_MCM | 250 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 266.8_MCM | 266.8 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 3 | 3 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 3.5 | 3.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 3_5 | 3.5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 300_MCM | 300 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 336.4_MCM | 336.4 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 336_MCM | 336 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 350_MCM | 350 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 397.5_MCM | 397.5 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 4 | 4 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 400_MCM | 400 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 477_MCM | 477 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 477_MCM_A | 477 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 5 | 5 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 500_MCM | 500 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 556.5_MCM | 556.5 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 556_5_MCM_A | 556.5 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 6 | 6 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 600_MCM | 600 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |

| | |
|---|---|
| 636_MCM | 636 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 636_MCM_A | 636 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 7 | 7 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 700_MCM | 700 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 750_MCM | 750 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 795_MCM_A | 795 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| 8 | 8 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 800_MCM | 800 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 9 | 9 inches [SDSFIE V2.1 FGDC Utilities Classification] |
| 900_MCM | 900 K circular mils [SDSFIE V2.1 FGDC Utilities Classification] |
| 954_MCM_A | 954 K circular mils, ACSR [SDSFIE V2.1 FGDC Utilities Classification] |
| BITTERN | 1272 K circular mils, ACSR,45/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| BLUEBIRD | 2156 K circular mils, ACSR,84/19 [SDSFIE V2.1 FGDC Utilities Classification] |
| BLUEJAY | 1113 K circular mils, ACSR,45/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| BOBOLINK | 1431 K circular mils, ACSR,45/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| CARDINAL | 954 K circular mils, ACSR,54/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| CHICKADEE | 397.5 K circular mils, ACSR,18/1 [SDSFIE V2.1 FGDC Utilities Classification] |
| DOVE | 556.5 K circular mils, ACSR,26/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| DRAKE | 795 K circular mils, ACSR,26/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| FALCON | 1590 K circular mils, ACSR,54/19 [SDSFIE V2.1 FGDC Utilities Classification] |
| FINCH | 1113 K circular mils, ACSR,54/19 [SDSFIE V2.1 FGDC Utilities Classification] |
| FLICKER | 477 K circular mils, ACSR,24/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| GROSBEAK | 636 K circular mils, ACSR,24/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| HAWK | 477 K circular mils, ACSR,26/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| HEN | 477 K circular mils, ACSR,30/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| IBIS | 397.5 K circular mils, ACSR,26/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| LAPWING | 1590 K circular mils, ACSR,45/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| LINNET | 336.4 K circular mils, ACSR,26/7 [SDSFIE V2.1 FGDC Utilities Classification] |
| MERLIN | 336.4 K circular mils, ACSR,18/1 [SDSFIE V2.1 FGDC Utilities Classification] |
| N1 | #1 [SDSFIE V2.1 FGDC Utilities Classification] |
| N1_0 | #1/0 [SDSFIE V1.4 ] |
| N10 | #10 [SDSFIE V1.4 ] |
| N12 | #12 [SDSFIE V1.4 ] |
| N14 | #14 [SDSFIE V1.4 ] |
| N16 | #16 [SDSFIE V1.4 ] |
| N18 | #18 [SDSFIE V1.4 ] |
| N19 | #19 [SDSFIE V1.4 ] |
| N2 | #2 [SDSFIE V1.4 ] |
| N2_0 | #2/0 [SDSFIE V1.4 ] |
| N20 | #20 [SDSFIE V1.4 ] |
| N22 | #22 [SDSFIE V1.4 ] |
| N24 | #24 [SDSFIE V1.4 ] |
| N26 | #26 [SDSFIE V1.4 ] |
| N28 | #28 [SDSFIE V1.4 ] |
| N3 | #3 [SDSFIE V1.4 ] |
| N3_0 | #3/0 [SDSFIE V1.4 ] |
| N30 | #30 [SDSFIE V1.4 ] |
| N32 | #32 [SDSFIE V1.4 ] |
| N34 | #34 [SDSFIE V1.4 ] |
| N36 | #36 [SDSFIE V1.4 ] |
| N4 | #4 [SDSFIE V1.4 ] |
| N4_0 | #4/0 [SDSFIE V1.4 ] |
| N5 | #5 [SDSFIE V1.4 ] |

| | |
|---|---|
| N6 | #6 [SDSFIE V1.4 ] |
| N8 | #8 [SDSFIE V1.4 ] |
| ORIOLE | 336.4 K circular mils, ACSR,30/7 [SDSFIE V1.7 ] |
| ORTOLAN | 1033.5 K circular mils,45/7 [SDSFIE V1.7 ] |
| OSPREY | 556.5 K circular mils, ACSR,18/1 [SDSFIE V1.7 ] |
| OSTRICH | 300 K circular mils, ACSR,26/7 [SDSFIE V1.7 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PARAKEET | 556.5 K circular mils, ACSR,24/7 [SDSFIE V1.7 ] |
| PARTRIDGE | 556.5 K circular mils, ACSR,26/7 [SDSFIE V1.7 ] |
| PELICAN | 266.8 K circular mils, ACSR,18/1 [SDSFIE V1.7 ] |
| PHEASANT | 477 K circular mils, ACSR,54/19 [SDSFIE V1.7 ] |
| PLOVER | 1272 K circular mils, ACSR,54/19 [SDSFIE V1.7 ] |
| RAIL | 1431 K circular mils, ACSR,45/7 [SDSFIE V1.7 ] |
| ROOK | 954 K circular mils, ACSR,24/7 [SDSFIE V1.7 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TERN | 795 K circular mils, ACSR,45/7 [SDSFIE V1.7 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WAXWING | 266.8 K circular mils, ACSR,18/1 [SDSFIE V1.7 ] |

## CodeCableElevation

Used by Attributes: Coaxial Line - Cab Elev;Fiberoptic Line - Cab Elev;Other Cable - Cab Elev;Twisted Pair Line - Cab Elev;Waveguide Line - Cab Elev

| Value | Definition (Notes) [Source] |
|---|---|
| MAIN_BURIED | Underground main communications cables [SDSFIE V1.6 ] |
| MAIN_OHEAD | Overhead communications cables, normally suspended from or between poles. [SDSFIE V1.6 ] |
| MAIN_SUBMERGE | Submerged communications cables, either on the bottom or buried in the bottom of a water body or water course. [SDSFIE V1.6 ] |
| SERV_BURIED | The cable is a secondary service line which has been buried below ground. [SDSFIE V1.6 ] |
| SERV_OHEAD | A secondary service line which is suspended overhead, normally between poles. [SDSFIE V1.6 ] |
| SERV_SUBMERGE | A secondary service line which lies on the bottom of a watercourse or water body or which has been buried in the bottom. [SDSFIE V1.6 ] |

## CodeCableGaDimensions

Used by Attributes: Terminator - Cbldim 3

| Value | Definition (Notes) [Source] |
|---|---|
| 100_UM | 101 micron core (obsolete). [SDSFIE V2.5 AIR FORCE] |
| 1000_UM | 2 mm (Plastic Optical Fiber). [SDSFIE V2.5 AIR FORCE] |
| 125_UM | 126 micron cladding. [SDSFIE V2.5 AIR FORCE] |
| 140_UM | 141 micron cladding (obsolete). [SDSFIE V2.5 AIR FORCE] |
| 200_UM | 201 micron core. [SDSFIE V2.5 AIR FORCE] |
| 240_UM | 241 micron cladding. [SDSFIE V2.5 AIR FORCE] |
| 50_UM | 51 micron core. [SDSFIE V2.5 AIR FORCE] |
| 62_5_UM | 62.5 micron core. [SDSFIE V2.5 AIR FORCE] |
| 8_3_UM | 8.3 micron core. [SDSFIE V2.5 AIR FORCE] |
| N14 | #14 or 14 Gage. [SDSFIE V2.5 AIR FORCE] |
| N16 | #16 or 16 Gage. [SDSFIE V2.5 AIR FORCE] |
| N18 | #18 or 18 Gage. [SDSFIE V2.5 AIR FORCE] |
| N19 | #19 or 19 Gage. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| N20 | #20 or 20 Gage. [SDSFIE V2.5 AIR FORCE] |
| N22 | #22 or 22 Gage. [SDSFIE V2.5 AIR FORCE] |
| N24 | #24 or 24 Gage. [SDSFIE V2.5 AIR FORCE] |
| N26 | #26 or 26 Gage. [SDSFIE V2.5 AIR FORCE] |
| N28 | #28 or 28 Gage. [SDSFIE V2.5 AIR FORCE] |
| N30 | #30 or 30 Gage. [SDSFIE V2.5 AIR FORCE] |
| N32 | #32 or 33 Gage. [SDSFIE V2.5 AIR FORCE] |
| N34 | #34 or 34 Gage. [SDSFIE V2.5 AIR FORCE] |
| N36 | #36 or 36 Gage. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeCableInstallationType

Used by Attributes: Path Segment Line - Cabins;Coaxial Line - Install Type;Fiberoptic Line - Install Type;Other Cable - Install Type;Segmented Cable Point - Install Type;Twisted Pair Line - Install Type;Waveguide Line - Install Type

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | abandoned [SDSFIE V1.6 ] |
| ABOVEGROUND | above ground [SDSFIE V1.6 ] |
| AER | aerial attachment [SDSFIE V2 Austin and Pitts] |
| BORE | jack and bore, pull cable [SDSFIE V2 Austin and Pitts] |
| BURY | direct bury cable [SDSFIE V2 Austin and Pitts] |
| DB | directional bore conduit, pull cable [SDSFIE V2 Austin and Pitts] |
| INSIDE | inside [SDSFIE V1.6 ] |
| JSC | jet submarine cable [SDSFIE V2 Austin and Pitts] |
| OUTSIDE | outside [SDSFIE V1.6 ] |
| OVERHEAD | overhead [SDSFIE V1.6 ] |
| TR | trench and place conduit, pull cable [SDSFIE V2 Austin and Pitts] |
| TUNNEL | tunnel [SDSFIE V1.6 ] |
| UNDERGROUND | underground [SDSFIE V1.6 ] |

## CodeCableType

Used by Attributes: Segmented Cable Point - Cab Type;Waveguide Line - Cab Type;Equipment - Cbl Type;Media Converter - Cbltyp 1;Media Converter - Cbltyp 2

| Value | Definition (Notes) [Source] |
|---|---|
| 1_WIRE | 1-wire, single conductor [SDSFIE V1.4 ] |
| 18_7_FC | 18x7 FC [SDSFIE V1.4 ] |
| 19_7 | 19x7 [SDSFIE V1.4 ] |
| 3_19_FLUSHER | 3x19 slusher [SDSFIE V1.4 ] |
| 3_7_GRD_RAIL | 3x7 guard rail [SDSFIE V1.4 ] |
| 3_WIRE_PRKWY | 3-wire parkway [SDSFIE V1.4 ] |
| 3_WIRE_ROUND | 3-wire, round [SDSFIE V1.4 ] |
| 3_WIRE_SGMNT | 3-wire, segmental [SDSFIE V1.4 ] |
| 4_WIRE_ROUND | 4-wire, quad conductor [SDSFIE V1.4 ] |
| 5_19_CLAD | 5x19 marlin clad FC [SDSFIE V1.4 ] |
| 6_12_FILLER_FC | 6x12 filler wire FC [SDSFIE V1.4 ] |
| 6_12_GALV_FC | 6x12 galvanized running rope FC [SDSFIE V1.4 ] |
| 6_19_CLAD | 6x19 marlin clad [SDSFIE V1.4 ] |
| 6_19_SEALE_IWRC | 6x19 Seale IWRC [SDSFIE V1.4 ] |

| | |
|---|---|
| 6_24_HAWSER | 6x24 hawser [SDSFIE V1.4 ] |
| 6_25_FILL_IWRC | 6x25 filler wire IWRC [SDSFIE V1.4 ] |
| 6_25B_FLAT_FC | 6x25B flattened strand FC [SDSFIE V1.4 ] |
| 6_26_WARR_IWRC | 6x26 Warrington Seale IWRC [SDSFIE V1.4 ] |
| 6_27H_FLAT_FC | 6x27H flattened strand FC [SDSFIE V1.4 ] |
| 6_3_19_SPRING | 6x3x19 spring lay [SDSFIE V1.4 ] |
| 6_30_HAWSER | 6x30 hawser [SDSFIE V1.4 ] |
| 6_30G_FLAG_FC | 6x30G flattened strand FC [SDSFIE V1.4 ] |
| 6_31_FILL_IWRC | 6x31 filler wire IWRC [SDSFIE V1.4 ] |
| 6_31_WARR_IWRC | 6x31 Warrington Seale IWRC [SDSFIE V1.4 ] |
| 6_36_SEALE_IWRC | 6x36 Seale filler wire IWRC [SDSFIE V1.4 ] |
| 6_36_WARR_IWRC | 6x36 Warrington Seale IWRC [SDSFIE V1.4 ] |
| 6_41_SEALE_IWRC | 6x41 Seale filler wire IWRC [SDSFIE V1.4 ] |
| 6_41_WARR_IWRC | 6x41 Warrington Seale IWRC [SDSFIE V1.4 ] |
| 6_42_TILLER_FC | 6x42 tiller rope FC [SDSFIE V1.4 ] |
| 6_46_SEALE_IWRC | 6x46 Seale filler wire IWRC [SDSFIE V1.4 ] |
| 6_49_FILL_FC | 6x49 filler wire Seale FC [SDSFIE V1.4 ] |
| 6_6_7_TILLER | 6x6x7 tiller rope [SDSFIE V1.4 ] |
| 6_7_FC | 6x7 FC [SDSFIE V1.4 ] |
| 8_19_SEALE_FC | 8x19 Seale FC [SDSFIE V1.4 ] |
| 8_25_FILLER_IWR | 8x25 filler wire IWRC [SDSFIE V1.4 ] |
| 8_9_SEALE_IWRC | 8x9 Seale IWRC [SDSFIE V1.4 ] |
| BARE | bare [SDSFIE V1.4 ] |
| COAX | coaxial [SDSFIE V1.4 ] |
| DUPLEX | 2-wire, dual conductor [SDSFIE V1.4 ] |
| EHS | Extra High Strength Steel [SDSFIE V1.4 ] |
| EIP | Extra Improved Plow Steel [SDSFIE V1.4 ] |
| FC | FiberCore [SDSFIE V1.4 ] |
| FE | Iron [SDSFIE V1.4 ] |
| FIBER_OPTICS | Fiber Optics Cable. [SDSFIE V2.3 Tinker Air Force Base] |
| HSS | High Strength Steel [SDSFIE V1.4 ] |
| IPS | Improved Plow Steel [SDSFIE V1.4 ] |
| IWRC | Independent Wire Rope Core [SDSFIE V1.4 ] |
| MPS | Mild Plow Steel [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PORTAL | Portal. [SDSFIE V2.31 Air Force] |
| PRIMARY | primary [SDSFIE V1.4 ] |
| PS | Plow Steel [SDSFIE V1.4 ] |
| RECEIVE | Receive. [SDSFIE V2.31 Air Force] |
| REMOTE | Remote. [SDSFIE V2.31 Air Force] |
| SECONDARY | secondary [SDSFIE V1.4 ] |
| SENSOR | Sensor. [SDSFIE V2.31 Air Force] |
| SOLIDCORE | solid core [SDSFIE V1.4 ] |
| SOLIDCORETB | solid core-twisted bundle around [SDSFIE V1.4 ] |
| SOLIDCORETS | solid core-twisted strand around [SDSFIE V1.4 ] |
| SOLIDIELEC | solid dielectric [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TRANSMIT | Transmit. [SDSFIE V2.31 Air Force] |
| TRIPLEX | triplex [SDSFIE V1.4 ] |
| TS | twisted strands [SDSFIE V1.4 ] |
| TSCORE | twisted strands core [SDSFIE V1.4 ] |
| TWINAX | Twin Coaxial Cable [SDSFIE V2.31 ] |
| TWISTED_PAIR | Twisted Pair Cable. [SDSFIE V2.3 Tinker Air Force Base] |

| | |
|---|---|
| UNKNOWN | Unknown [SDSFIE V2.31 ATT] |
| WAVEGUIDE | Waveguide [SDSFIE V2.31 ATT] |
| WEATHRPROFCU | weatherproofed-Copper [SDSFIE V1.4 ] |
| WSC | Wire-Strand Core [SDSFIE V1.4 ] |

## CodeCableUse

Used by Attributes: Coaxial Line - Cab Use;Fiberoptic Line - Cab Use;Other Cable - Cab Use;Segmented Cable Point - Cab Use;Twisted Pair Line - Cab Use;Waveguide Line - Cab Use

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | other cable [SDSFIE V2 ] |
| TBD | to be determined [SDSFIE V2 ] |
| TELEGRAPH | Telegraph [SDSFIE V2.2 ] |
| TELEPHONE | telephone cable [SDSFIE V2 ] |
| TELEVISION | television cable [SDSFIE V2 ] |
| UNKNOWN | unknown use [SDSFIE V2 ] |

## CodeCableWayType

Used by Attributes: Cable Tray Line - Caw Type

| Value | Definition (Notes) [Source] |
|---|---|
| BRIDGE | Cable Bridge [SDSFIE V2 Tinker Air Force Base] |
| RACK | Cable Rack [SDSFIE V2 ] |
| TRAY | Cable Tray [SDSFIE V2 Tinker Air Force Base] |

## CodeColor

Used by Attributes: Disposal Tank - Color;Septic Tank - Color;Tank - Color;Tank - Color;Tank - Color;Tank - Color;Tank - Color;Tank Area - Color;Telephone - Color;Line - Map Color

| Value | Definition (Notes) [Source] |
|---|---|
| AMBER | Amber [U.S. CADD] |
| BLACK | Black [U.S. CADD] |
| BLUE | Blue [U.S. CADD] |
| BROWN | Brown [U.S. CADD] |
| GREEN | Green [U.S. CADD] |
| GREEN-GREEN | Bidirectional (Source AC 150/5345-46C) |
| GREEN-RED | Bidirectional (Source AC 150/5345-46C) |
| GREEN-YELLOW | Bidirectional (Source AC 150/5345-46C) |
| GREY | Grey [U.S. CADD] |
| LIGHTGREY | LightGrey [U.S. CADD] |
| MAGENTA | Magenta [U.S. CADD] |
| ORANGE | Orange [U.S. CADD] |
| OTHER | Other [U.S. CADD] |
| PINK | Pink [U.S. CADD] |
| PURPLE | Purple [AIXM] |
| RED | Red [U.S. CADD] |
| RED-GREEN | Bidirectional (Source AC 150/5345-46C) |
| RED-RED | Bidirectional (Source AC 150/5345-46C) |
| TBD | To be determined |
| VIOLET | Violet [U.S. CADD] |

| | |
|---|---|
| WHITE | White [U.S. CADD] |
| WHITE-RED | Bidirectional (Source AC 150/5345-46C) |
| WHITE-WHITE | Bidirectional (Source AC 150/5345-46C) |
| WHITE-YELLOW | Bidirectional (Source AC 150/5345-46C) |
| YELLOW | Yellow [U.S. CADD] |
| YELLOW-GREEN | Bidirectional (Source AC 150/5345-46C) |
| YELLOW-RED | Bidirectional (Source AC 150/5345-46C) |
| YELLOW-YELLOW | Bidirectional (Source AC 150/5345-46C) |

## CodeCommAntenna

Used by Attributes: Access Point - Ant Type;Antenna Site - Ant Type

| Value | Definition (Notes) [Source] |
|---|---|
| DIPOLE | dipole antenna [SDSFIE V2 Tinker Air Force Base] |
| FIELD | field antenna [SDSFIE V2 Tinker Air Force Base] |
| PARABOLIC | parabolic antenna [SDSFIE V2 Tinker Air Force Base] |
| PATCH | Directional Patch Antenna. [SDSFIE V2.5 AIR FORCE] |
| YAGI | Directional Yagi Antenna. [SDSFIE V2.5 AIR FORCE] |

## CodeCommAntennaUsageType

Used by Attributes: Antenna Site - Ant Use;Equipment - Ant Use

| Value | Definition (Notes) [Source] |
|---|---|
| 14_DF | 14 element dual frequency. [SDSFIE V2.31 Air Force] |
| 14_SF | 14 element single frequency. [SDSFIE V2.31 Air Force] |
| 8_DF | 8 element dual frequency. [SDSFIE V2.31 Air Force] |
| 8_SF | 8 element single frequency. [SDSFIE V2.31 Air Force] |
| CAPTURE | Capture. [SDSFIE V2.31 Air Force] |
| NULL | Null. [SDSFIE V2.31 Air Force] |
| RANTEC | Rantec. [SDSFIE V2.31 Air Force] |
| ROTATING | Rotating. [SDSFIE V2.31 Air Force] |
| SIDEBAND | Sideband. [SDSFIE V2.31 Air Force] |

## CodeCommNodeType

Used by Attributes: Path Node Site - Node Type

| Value | Definition (Notes) [Source] |
|---|---|
| DBGROUP | Virtual Ductbank Group (not drawn). [SDSFIE V2.5 AIR FORCE] |
| DUCT_OPENING | Duct or Inner duct Opening. [SDSFIE V2.5 AIR FORCE] |
| DUCT2DIRECT | Duct to/from a Direct-Buried Path. [SDSFIE V2.5 AIR FORCE] |
| GENERAL | General Transition (i.e. PVC to PE duct). [SDSFIE V2.5 AIR FORCE] |
| HOLE | Vault Vertical Hole. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| RISER | Vertical pipe or covering. [SDSFIE V2.5 AIR FORCE] |

## CodeCompAirFitting

Used by Attributes: Fitting - Fittyp

| Value | Definition (Notes) [Source] |
|---|---|
| CAP | Pipe Cap [SDSFIE V1.75 ] |
| CROSS | Pipe Cross [SDSFIE V1.75 ] |
| FLANGE | Pipe Flange [SDSFIE V1.75 ] |
| TEE | Pipe Tee [SDSFIE V1.75 ] |

## CodeConnectSize

Used by Attributes: Hydrant – Connection Size

| Value | Definition (Notes) [Source] |
|---|---|
| 1X4.5IN_BC_PLUS_2X2.5IN_NST | 1 x 4.5" Baltimore City + 2 x 2.5" NST |
| 2X2.5IN_NST | 2 x 2.5" NST |
| 1X5IN_STORZ_PLUS_2x2.5IN_NST | 1 x 5" Storz + 2 x 2.5" NST |
| OTHER | Other |
| UNKNOWN | Unknown |

## CodeCoreType

Used by Attributes: Segmented Cable Point - Core Type;Twisted Pair Line - Core Type

| Value | Definition (Notes) [Source] |
|---|---|
| AIR_CORE | Air core [SDSFIE V2 Tinker Air Force Base] |
| FILLED | Filled Core by unknown substance. [SDSFIE V2.5 AIR FORCE] |
| INSULATION | Insulation core [SDSFIE V2 Tinker Air Force Base] |
| PAPER | Paper Core [SDSFIE V2 Tinker Air Force Base] |
| PRESSURIZED | Pressurized core [SDSFIE V2 Tinker Air Force Base] |

## CodeCountsInAssembly

Used by Attributes: Load Capacitor - Ldcnum;Load Coil - Ldcnum

| Value | Definition (Notes) [Source] |
|---|---|
| 0001 | 1. [SDSFIE V2.5 AIR FORCE] |
| 0002 | 2. [SDSFIE V2.5 AIR FORCE] |
| 0003 | 3. [SDSFIE V2.5 AIR FORCE] |
| 0004 | 4. [SDSFIE V2.5 AIR FORCE] |
| 0005 | 5. [SDSFIE V2.5 AIR FORCE] |
| 0006 | 6. [SDSFIE V2.5 AIR FORCE] |
| 0010 | 10. [SDSFIE V2.5 AIR FORCE] |
| 0011 | 11. [SDSFIE V2.5 AIR FORCE] |
| 0012 | 12. [SDSFIE V2.5 AIR FORCE] |
| 0015 | 15. [SDSFIE V2.5 AIR FORCE] |
| 0016 | 16. [SDSFIE V2.5 AIR FORCE] |
| 0018 | 18. [SDSFIE V2.5 AIR FORCE] |
| 0020 | 20. [SDSFIE V2.5 AIR FORCE] |
| 0024 | 24. [SDSFIE V2.5 AIR FORCE] |
| 0025 | 25. [SDSFIE V2.5 AIR FORCE] |
| 0050 | 50. [SDSFIE V2.5 AIR FORCE] |
| 0100 | 100. [SDSFIE V2.5 AIR FORCE] |
| 0200 | 200. [SDSFIE V2.5 AIR FORCE] |
| 0300 | 300. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| 0400 | 400. [SDSFIE V2.5 AIR FORCE] |
| 0600 | 600. [SDSFIE V2.5 AIR FORCE] |
| 0900 | 900. [SDSFIE V2.5 AIR FORCE] |
| 1200 | 1200. [SDSFIE V2.5 AIR FORCE] |
| 1500 | 1500. [SDSFIE V2.5 AIR FORCE] |
| 1800 | 1800. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeCryptographyProtocol

Used by Attributes: Access Point - Enc Prot

| Value | Definition (Notes) [Source] |
|---|---|
| 3DES | Triple DES encryption (will be replaced by AES). [SDSFIE V2.3 Tinker Air Force Base] |
| A_NEEDH_SCHR_SK | Amended Needham Schroeder Symmetric Key. [SDSFIE V2.5 AIR FORCE] |
| AES | Advanced Encryption Standard, a Type I capable encryption module. [SDSFIE V2.3 Tinker Air Force Base] |
| AS_RPC | Andrew Secure RPC. [SDSFIE V2.5 AIR FORCE] |
| BAN_CON_AS_RPC | BAN concrete Andrew Secure RPC. [SDSFIE V2.5 AIR FORCE] |
| BAN_MOD_AS_RPC | BAN modified Andrew Secure RPC. [SDSFIE V2.5 AIR FORCE] |
| BAN_MOD_CCITT_3 | BAN modified version of CCITT X.509 (3). [SDSFIE V2.5 AIR FORCE] |
| BAN_YAHALOM | BAN simplified version of Yahalom. [SDSFIE V2.5 AIR FORCE] |
| CAM | CAM. [SDSFIE V2.5 AIR FORCE] |
| CCITT_X_509_1 | CCITT X.509 (1). [SDSFIE V2.5 AIR FORCE] |
| CCITT_X_509_1C | CCITT X.509 (1c). [SDSFIE V2.5 AIR FORCE] |
| CCITT_X_509_3 | CCITT X.509 (3). [SDSFIE V2.5 AIR FORCE] |
| CJ_HC_SPLICE_AS | Clark and Jacob modified Hwang and Chen modified Splice/As. [SDSFIE V2.5 AIR FORCE] |
| DENNING_SACCO_SK | Denning-Sacco shared key. [SDSFIE V2.5 AIR FORCE] |
| DES | Digital Encryption Standard [SDSFIE V2.3 Tinker Air Force Base] |
| DES-OFB | Digital Encryption Standard - Output Feedback [SDSFIE V2.3 Tinker Air Force Base] |
| DIFFIE_HELMAN | Diffie Helman. [SDSFIE V2.5 AIR FORCE] |
| DNSSEC | Domain Name Server Security. [SDSFIE V2.5 AIR FORCE] |
| DSS | DSS. [SDSFIE V2.5 AIR FORCE] |
| FASCINATOR | Fascinator is a series of Type I capable encryption module. [SDSFIE V2.31 Tinker Air Force Base] |
| GJM | GJM. [SDSFIE V2.5 AIR FORCE] |
| GNUPG_PGP | GnuPG/PGP. [SDSFIE V2.5 AIR FORCE] |
| GONG | Gong. [SDSFIE V2.5 AIR FORCE] |
| GSSAPI | Generic Security Services API. [SDSFIE V2.5 AIR FORCE] |
| HC_SPLICE_AS | Hwang and Chen modified Splice/As. [SDSFIE V2.5 AIR FORCE] |
| HWANG_NEUM_STUB | Hwang modified version of Neumann Stubblebine. [SDSFIE V2.5 AIR FORCE] |
| IDEA | IDEA. [SDSFIE V2.5 AIR FORCE] |
| IEEE_P1363 | IEEE P1364. [SDSFIE V2.5 AIR FORCE] |
| IPSEC | IP Secure Protocol. [SDSFIE V2.5 AIR FORCE] |
| KAO_CHOW_AUTH_1 | Kao Chow Authentication v.1. [SDSFIE V2.5 AIR FORCE] |
| KAO_CHOW_AUTH_2 | Kao Chow Authentication v.2. [SDSFIE V2.5 AIR FORCE] |
| KAO_CHOW_AUTH_3 | Kao Chow Authentication v.3. [SDSFIE V2.5 AIR FORCE] |
| KERBEROS_V5 | Kerberos V6. [SDSFIE V2.5 AIR FORCE] |
| KSL | KSL. [SDSFIE V2.5 AIR FORCE] |
| L_BAN_CON_AS_RPC | Lowe modified BAN concrete Andrew Secure RPC. [SDSFIE V2.5 AIR FORCE] |
| L_DENNING_SAC_DK | Lowe modified Denning-Sacco shared key. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| L_NEEDH_SCHR_PK | Lowes fixed version of Needham-Schroder Public Key. [SDSFIE V2.5 AIR FORCE] |
| LOWE_MOD_KSL | Lowe modified KSL. [SDSFIE V2.5 AIR FORCE] |
| LOWE_WMF | Lowe modified Wide Mouthed Frog. [SDSFIE V2.5 AIR FORCE] |
| LOWES_YAHALOM | Lowes modified version of Yahalom. [SDSFIE V2.5 AIR FORCE] |
| MARS | MARS. [SDSFIE V2.5 AIR FORCE] |
| NEEDHAM_SCHR_PK | Needham-Schroeder Public Key. [SDSFIE V2.5 AIR FORCE] |
| NEEDHAM_SCHR_SK | Needham Schroeder Symmetric Key. [SDSFIE V2.5 AIR FORCE] |
| NEUMANN_STUBBLE | Neumann Stubblebine. [SDSFIE V2.5 AIR FORCE] |
| OPENPGP | OpenPGP. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| OTWAY_REES | Otway Rees. [SDSFIE V2.5 AIR FORCE] |
| PAULSONS_YAHALOM | Paulsons strengthened version of Yahalom. [SDSFIE V2.5 AIR FORCE] |
| PKCS | Public Key Encryption Standards. [SDSFIE V2.5 AIR FORCE] |
| RC4 | RC5. [SDSFIE V2.5 AIR FORCE] |
| ROT | ROT. [SDSFIE V2.5 AIR FORCE] |
| RSA | RSA. [SDSFIE V2.5 AIR FORCE] |
| SEAL | SEAL. [SDSFIE V2.5 AIR FORCE] |
| SERPENT | Serpent. [SDSFIE V2.5 AIR FORCE] |
| SHTTP | Secure Hypertext Transfer Protocol. [SDSFIE V2.5 AIR FORCE] |
| SK3 | SK3. [SDSFIE V2.5 AIR FORCE] |
| SMARTRIGHT_VO | SmartRight view-only. [SDSFIE V2.5 AIR FORCE] |
| SOBER | SOBER. [SDSFIE V2.5 AIR FORCE] |
| SPLIC_AS | SPLICE/AS. [SDSFIE V2.5 AIR FORCE] |
| SSH1 | Secure Shell v2. [SDSFIE V2.5 AIR FORCE] |
| SSH2 | Secure Shell v3. [SDSFIE V2.5 AIR FORCE] |
| SSL | Secure Socket Layer. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| TLS | TLS. [SDSFIE V2.5 AIR FORCE] |
| TMN | TMN. [SDSFIE V2.5 AIR FORCE] |
| TWOFISH | Twofish. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| WAKE | WAKE. [SDSFIE V2.5 AIR FORCE] |
| WEP | Wired Equivalent Privacy. [SDSFIE V2.5 AIR FORCE] |
| WMF | Wide Mouthed Frog. [SDSFIE V2.5 AIR FORCE] |
| WOO_AND_LAM_P_3 | Woo and Lam Pi 3. [SDSFIE V2.5 AIR FORCE] |
| WOO_AND_LAM_PI | Woo and Lam Pi. [SDSFIE V2.5 AIR FORCE] |
| WOO_AND_LAM_PI_1 | Woo and Lam Pi 1. [SDSFIE V2.5 AIR FORCE] |
| WOO_AND_LAM_PI_2 | Woo and Lam Pi 2. [SDSFIE V2.5 AIR FORCE] |
| WOO_LAM_MA | Woo and Lam Mutual Authentication. [SDSFIE V2.5 AIR FORCE] |
| WOO_LAM_PI_F | Woo and Lam Pi f. [SDSFIE V2.5 AIR FORCE] |
| WPA | Wi-Fi Protected Access. [SDSFIE V2.5 AIR FORCE] |
| XOR | XOR. [SDSFIE V2.5 AIR FORCE] |
| YAHALOM | Yahalom. [SDSFIE V2.5 AIR FORCE] |

## CodeCulvert

Used by Attributes: Culvert Center Line - Gate Type

| Value | Definition (Notes) [Source] |
|---|---|
| GATED | The culvert is equipped with gates to block or divert water flow. [SDSFIE V1.8 REEGIS] |
| NONGATED | The culvert contains no provision to block or divert water flow. [SDSFIE V1.8 REEGIS] |

## CodeCulvertScreenType

Used by Attributes: Line - Screen Type;Line - Scrn Type;Storm Trench Drain Line - scrnType

| Value | Definition (Notes) [Source] |
|---|---|
| HORZBAR | horizontal bar/pipe [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VERTBAR | vertical bar/pipe [SDSFIE V1.4 ] |

## CodeDataSource

Used by Attributes: Access Coverage Area - collectionProgress;Access Point - collectionProgress;Air Pipe - collectionProgress;Air Pressure Device - collectionProgress;Amplifier - collectionProgress;Anchor - collectionProgress;Anode - collectionProgress;Anode - collectionProgress;Anode - collectionProgress;Anode Test Station - collectionProgress;Anode Test Station - collectionProgress;Anode Test Station - collectionProgress;Antenna Line - collectionProgress;Antenna Site - collectionProgress;Attenuator - collectionProgress;Bus Line - collectionProgress;Cable - collectionProgress;Cable Bridge Line - collectionProgress;Cable Ladder - collectionProgress;Cable Rack Line - collectionProgress;Cable Tray Line - collectionProgress;Cable Trough Line - collectionProgress;Capacitor - collectionProgress;Coaxial Line - collectionProgress;DbSplice - collectionProgress;Device - collectionProgress;Device - collectionProgress;Discharge Point - collectionProgress;Drain Separator - collectionProgress;Ductbank - collectionProgress;Ductbank - collectionProgress;Equipment - collectionProgress;Fiberoptic Line - collectionProgress;Fill Point - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Generator - collectionProgress;Grit Chamber - collectionProgress;Ground Point - collectionProgress;Ground Point - collectionProgress;Groundplane Area - collectionProgress;Groundwave Area - collectionProgress;Head Bolt Outlet - collectionProgress;Headwall - collectionProgress;Headwall Line - collectionProgress;Impedance Matching Point - collectionProgress;Inlet - collectionProgress;Internet Center - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Lagoon - collectionProgress;Light - collectionProgress;Line - collectionProgress;Line Of Sight Line - collectionProgress;Load Capacitor - collectionProgress;Load Coil - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Media Converter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Motor - collectionProgress;Multihop Area - collectionProgress;Network Systems Site - collectionProgress;Neutralizer - collectionProgress;Oil Water Separator - collectionProgress;Other Cable - collectionProgress;Path Node Site - collectionProgress;Path Segment Line - collectionProgress;Pedestal - collectionProgress;Pedestal Site - collectionProgress;Pipe Line - collectionProgress;Pullbox Site - collectionProgress;Pump - collectionProgress;Pump - collectionProgress;Pump - collectionProgress;Pump Station - collectionProgress;Pumpstation Ejector - collectionProgress;Radar Site - collectionProgress;Radio - collectionProgress;Radio Receiver - collectionProgress;Radio Transmitter - collectionProgress;Rect Point - collectionProgress;Rectifier - collectionProgress;Rectifier - collectionProgress;Reducer - collectionProgress;Refinery Site - collectionProgress;Regulator - collectionProgress;Regulator - collectionProgress;Relay Station - collectionProgress;Repeater - collectionProgress;Riser - collectionProgress;Riser - collectionProgress;Satellite - collectionProgress;Segmented Cable - collectionProgress;Segmented Cable Point - collectionProgress;Sensor - collectionProgress;Service Loop Point - collectionProgress;Source - collectionProgress;Speaker - collectionProgress;Splice - collectionProgress;Splice - collectionProgress;Splitter - collectionProgress;Storage Area - collectionProgress;Substation - collectionProgress;Switch - collectionProgress;Tank - collectionProgress;Tank Area - collectionProgress;Telephone - collectionProgress;Telephone Booth - collectionProgress;Terminal - collectionProgress;Terminator - collectionProgress;Transformer Vault - collectionProgress;Transformr Bank - collectionProgress;Transmission Pipeline - collectionProgress;Transmission Pipeline Segment Line - collectionProgress;Treatment Plant - collectionProgress;Twisted Pair Line - collectionProgress;Utility Electric Utility Site - collectionProgress;Utility Pole Guy - collectionProgress;Utility Pole Guy Line - collectionProgress;Utility Pole Tower Site - collectionProgress;Valve - collectionProgress;Valve - collectionProgress;Valve - collectionProgress;Valve Pit - collectionProgress;Vertical Site - collectionProgress;Video Site - collectionProgress;Voice Switch - collectionProgress;Waveguide Line - collectionProgress

| Value | Definition (Notes) [Source] |
|---|---|
| AERIAL | 2005/2007 Aerial Photography |
| CAD | Georeferenced CAD File/Scan |
| CAD_ASBUILT | CAD As-Built |

| | |
|---|---|
| CAD_DIGITAL | CAD Digital |
| CAD_PAPER | CAD Paper |
| CNTRLIMG | Controlled Image |
| COGO | COGO |
| CONSTRSURVEY | Construction Survey |
| CONVSURVEY | Conventional Survey |
| DIG_RTK | Dig Survey - RTK |
| DIGITAL_OTHER | Digital File (Other) |
| FIELD | Field Observatin |
| FIELDMEASURE | Field Measurement |
| GIS_DIGITAL | GIS Digital |
| GIS_PAPER | GIS Paper |
| GPS_COM | Commercial GPS |
| GPS_MAP | Mapping GPS |
| GPS_RTK | Trimble R8/5800 Receiver and TSC2 Data Collector |
| LEGACY | Existed in Legacy Database |
| LEGAL | Legal Description |
| NA | NA |
| NO_ACCESS | Cannot Access Feature |
| ORTHOGT6 | Ortho (Greater than 6 Inch GSD) |
| ORTHOLT6 | Ortho (Less than 6 Inch GSD) |
| OTHER | Other |
| PARSONS | Parsons Data |
| PLAT | Plat |
| RECOLLECTION | Personal Recollection |
| ROD_LEVEL | Laser Rangefinder and Survey Rod & Level |
| TOWSON | Towson Data |
| UNCNTRLIMG | Uncontrolled Image |
| UNKNOWN | Unknown |
| WRITTEN | Written Description |

## CodeDiameterMeasureType

Used by Attributes: Hydrant - Meas Type;Fire Connection Point - Measurement Type

| Value | Definition (Notes) [Source] |
|---|---|
| INSIDE | inside diameter [SDSFIE V1.4 ] |
| NOMINAL | nominal or average diameter [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| OUTSIDE | outside diameter [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeDirectionality

Used by Attributes: Air Pipe - Directionality;Antenna Line - Directionality;Bus Line - Directionality;Cable - Directionality;Cable - Directionality;Cable Bridge Line - Directionality;Cable Rack Line - Directionality;Cable Tray Line - Directionality;Cable Trough Line - Directionality;Coaxial Line - Directionality;Culvert Center Line - Directionality;Drainage Divide - Directionality;Drainage Divide Line - Directionality;Ductbank - Directionality;Ductbank - Directionality;Ductbank - Directionality;Fiberoptic Line - Directionality;Headwall Line - Directionality;Headwall Line - Directionality;Intake Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line - Directionality;Line Of Sight Line - Directionality;Open Drainage Line - Directionality;Other Cable - Directionality;Path Segment Line - Directionality;Pipe Line - Directionality;Segmented Cable - Directionality;Storm Trench Drain Line - Directionality;Transmission Pipeline - Directionality;Transmission Pipeline Segment Line - Directionality;Twisted Pair Line - Directionality;Utility Pole Guy Line - Directionality;Waveguide Line - Directionality

| Value | Definition (Notes) [Source] |
|---|---|
| BI | Bidirectional |
| ES | One way from end-to-startpoint |

| | |
|---|---|
| SE | One way from start-to-endpoint |

## CodeDisplayType

Used by Attributes: Marker - meterType;Device - Readout;Device - Readout

| Value | Definition (Notes) [Source] |
|---|---|
| ANALOG | analog (dial) display [SDSFIE V1.4 ] |
| DIGITAL | digital display [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeDispositionObject

Used by Attributes: Access Coverage Area - Disposition;Access Point - Disposition;Air Eliminator - Disposition;Air Pipe - Disposition;Air Pressure Device - Disposition;Amplifier - Disposition;Anchor - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Antenna Line - Disposition;Antenna Site - Disposition;Attenuator - Disposition;Bus Line - Disposition;Cable - Disposition;Cable - Disposition;Cable Bridge Line - Disposition;Cable Ladder - Disposition;Cable Rack Line - Disposition;Cable Tray Line - Disposition;Cable Trough Line - Disposition;Capacitor - Disposition;Coaxial Line - Disposition;Culvert Center Line - Disposition;Culvert End - Disposition;DbSplice - Disposition;Device - Disposition;Device - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Disposal Tank - Disposition;Downspout - Disposition;Downspout - Disposition;Drain Field - Disposition;Drain Separator - Disposition;Drainage Basin - Disposition;Drainage Basin - Disposition;Drainage Divide - Disposition;Drainage Divide Line - Disposition;Drinking Water Sample Point - Disposition;Ductbank - Disposition;Ductbank - Disposition;Ductbank - Disposition;Equipment - Disposition;Farm Site - Disposition;Fiberoptic Line - Disposition;Fill Point - Disposition;Filter Strainer - Disposition;Filtration Bed - Disposition;Fire Connection Point - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Flow Control Device - Disposition;Flow Control Device - Disposition;Gate - Disposition;Generator - Disposition;Glycol Recovery Pit - Disposition;Grease Trap - Disposition;Grit Chamber - Disposition;Grit Chamber - Disposition;Ground Point - Disposition;Ground Point - Disposition;Groundplane Area - Disposition;Groundwave Area - Disposition;Head Bolt Outlet - Disposition;Headwall - Disposition;Headwall - Disposition;Headwall Line - Disposition;Headwall Line - Disposition;Hydrant - Disposition;Hydrant - Disposition;Impedance Matching Point - Disposition;Inlet - Disposition;Inlet - Disposition;Inlet - Disposition;Inlet - Disposition;Intake - Disposition;Intake Line - Disposition;Internet Center - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Lagoon - Disposition;Lagoon - Disposition;Lift Station - Disposition;Light - Disposition;Light - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line Clean Out - Disposition;Line Of Sight Line - Disposition;Load Capacitor - Disposition;Load Coil - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Media Converter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Motor - Disposition;Multihop Area - Disposition;Network Systems Site - Disposition;Neutralizer - Disposition;Neutralizer - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator Diversion Vault - disposition;Open Drainage Area - Disposition;Open Drainage Line - Disposition;Other Cable - Disposition;Path Node Site - Disposition;Path Segment Line - Disposition;Pedestal - Disposition;Pedestal Site - Disposition;Pig Launch Point - Disposition;Pipe Line - Disposition;Plant Area - Disposition;Pressure Reducing Station - Disposition;Pullbox Site - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump Booster Station - Disposition;Pump Ejector Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pumpstation Ejector - Disposition;Radar Site - Disposition;Radio - Disposition;Radio Receiver - Disposition;Radio Transmitter - Disposition;Rect Point - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Reducer - Disposition;Refinery Site - Disposition;Regulator - Disposition;Regulator - Disposition;Regulator Reducer - Disposition;Regulator Reducer - Disposition;Relay Station - Disposition;Repeater - Disposition;Reservoir - Disposition;Reservoir -

Disposition;Reservoir - Disposition;Riser - Disposition;Riser - Disposition;Satellite - Disposition;Segmented Cable - Disposition;Segmented Cable Point - Disposition;Sensor - Disposition;Septic Tank - Disposition;Service Area - Disposition;Service Loop Point - Disposition;Sludge Bed - Disposition;Source - Disposition;Source - Disposition;Source Site - Disposition;Speaker - Disposition;Splice - Disposition;Splice - Disposition;Splitter - Disposition;Stilling Basin - Disposition;Storage Area - Disposition;Storm Ceptor - disposition;Storm Filter - disposition;Storm Trench Drain Line - disposition;Substation - Disposition;Switch - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank Area - disposition;Telephone - Disposition;Telephone Booth - Disposition;Terminal - Disposition;Terminator - Disposition;Transformer Vault - Disposition;Transformr Bank - Disposition;Transmission Pipeline - Disposition;Transmission Pipeline Segment Line - Disposition;Treatment Plant - Disposition;Treatment Plant - Disposition;Treatment Plant - Disposition;Treatment Unit - Disposition;Treatment Unit - Disposition;Twisted Pair Line - Disposition;Utility Electric Utility Site - Disposition;Utility Pole Guy - Disposition;Utility Pole Guy Line - Disposition;Utility Pole Tower Site - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve Pit - Disposition;Vault - Disposition;Vault - Disposition;Vault - disposition;Vent - Disposition;Vertical Site - Disposition;Video Site - Disposition;Voice Switch - Disposition;Waveguide Line - Disposition

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | abandoned in place (not in use) [SDSFIE V1.4 ] |
| IN_SERVICE | In service and being used. [SDSFIE V2.1 DOT - NPMS] |
| IN_SERVICE_REPAIRS | In service but requires maintenance |
| INCOMPLETE | incomplete or unfinished [SDSFIE V1.4 ] |
| OUT_OF_SERVICE | Out of service |
| OTHER | other [SDSFIE V1.4 ] |
| PROPOSED | proposed [SDSFIE V1.4 ] |
| SERV_NOT_USED | Servicable Not Used |
| TBD | to be determined [SDSFIE V1.4 ] |
| TEMPORARY | temporary [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| UNSERVICEABLE | Unservicable |
| BURIED | Burried |
| NATURAL | Natural |
| PERMANENT | Permanent |
| RETIRED | Retired |
| REMOVED | Removed |

## CodeDistallateProductioType

Used by Attributes: Refinery Site - Distillate Type

| Value | Definition (Notes) [Source] |
|---|---|
| ASPHALT | Asphalt Production. [SDSFIE V2.3 HSIP] |
| CO2 | CO2 Production. [SDSFIE V2.3 HSIP] |
| DISTALLATES | Distallates Production. [SDSFIE V2.3 HSIP] |
| H2 | H2 Production. [SDSFIE V2.3 HSIP] |
| HE | He Production. [SDSFIE V2.3 HSIP] |
| S | S Production. [SDSFIE V2.3 HSIP] |

## CodeDrainageDensity

Used by Attributes: Grease Trap - Drainage Texture;Line - Drainage Texture;Line - Drainage Texture;Line - Drainage Texture;Line - Drainage Texture;Septic Tank - Drainage Texture;Storm Trench Drain Line - drainageTexture;Culvert Center Line - Material Texture

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| COARSE | coarse [SDSFIE V1.4 ] |
| FINE | fine [SDSFIE V1.4 ] |
| MEDIUM | medium [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeDrainagePattern

Used by Attributes: Culvert Center Line - Drainage Pattern;Grease Trap - Drainage Pattern;Line - Drainage Pattern;Line - Drainage Pattern;Line - Drainage Pattern;Septic Tank - Drainage Pattern;Storm Trench Drain Line - drainagePattern

| Value | Definition (Notes) [Source] |
|---|---|
| ANGULATE | Angulate. [SDSFIE V1.4 ] |
| ANNULAR | Annular. [SDSFIE V1.4 ] |
| ARTIFICIAL | Artificial. [SDSFIE V1.4 ] |
| BARBED | Barbed. [SDSFIE V1.4 ] |
| BRAIDED | Braided. [SDSFIE V1.4 ] |
| CENTRIPETAL | Centripetal. [SDSFIE V1.4 ] |
| COMPLEX | Complex. [SDSFIE V1.4 ] |
| COMPOUND | Compound. [SDSFIE V1.4 ] |
| CONTORTED | Contorted. [SDSFIE V1.4 ] |
| DENDRITANAST | Dendritic Anastomotic. [SDSFIE V1.4 ] |
| DENDRITDISTR | Dendritic Distributary (dichotomic). [SDSFIE V1.4 ] |
| DENDRITPINNT | Dendritic Pinnate. [SDSFIE V1.4 ] |
| DENDRITSUBDN | Dendritic Subdendritic. [SDSFIE V1.4 ] |
| DERANGED | Deranged. [SDSFIE V1.4 ] |
| INTERNAL | Internal. [SDSFIE V1.4 ] |
| MULTIBSKARST | Multibasinal Karst. [SDSFIE V1.4 ] |
| MULTIBSTHERM | Multibasinal Thermokarst. [SDSFIE V1.4 ] |
| MULTIELNGBAY | Multibasinal Elongate Bay. [SDSFIE V1.4 ] |
| MULTIGLACLDS | Multibasinal Glacially Disturbed. [SDSFIE V1.4 ] |
| NODEVLSYSTEM | No developed system. [SDSFIE V1.4 ] |
| OTHER | Other. [SDSFIE V1.4 ] |
| PALIMPSEST | Palimpsest. [SDSFIE V1.4 ] |
| PARLLCOLINER | Parallel Collinear. [SDSFIE V1.4 ] |
| PARLLSUBPARL | Parallel Subparallel. [SDSFIE V1.4 ] |
| PINNATE | Pinnate. [SDSFIE V1.4 ] |
| RADILCENTRIP | Radial Centripetal. [SDSFIE V1.4 ] |
| RECTANGLARAN | Rectangular Angulate. [SDSFIE V1.4 ] |
| TBD | To be determined. [SDSFIE V1.4 ] |
| TRELISUBTREL | Trellis Subtrellis. [SDSFIE V1.4 ] |
| TRELSDIRECTN | Trellis Directional. [SDSFIE V1.4 ] |
| TRELSFAULT | Trellis Fault. [SDSFIE V1.4 ] |
| TRELSJOINT | Trellis Joint. [SDSFIE V1.4 ] |
| TRELSRECURVE | Trellis Recurved. [SDSFIE V1.4 ] |
| UNKNOWN | Unknown. [SDSFIE V1.4 ] |

## CodeDrainageZone

Used by Attributes: Culvert Center Line - Drainage Zone;Line - Drainage Zone;Line - Drainage Zone;Open Drainage Line - Drainage Zone;Storm Trench Drain Line - drainageZone;Open Drainage Line - Fld Zon

| Value | Definition (Notes) [Source] |
|---|---|
| MERLIN | Merlin Drainage District [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| ZONE_1 | zone 1 [SDSFIE V1.4 ] |

## CodeDrainType

Used by Attributes: Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Junction - Drain Type;Neutralizer - Drain Type;Neutralizer - Drain Type;Vault - drainType

| Value | Definition (Notes) [Source] |
|---|---|
| FAN | fan [SDSFIE V1.4 ] |
| NETWORK | network [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SEALED | sealed [SDSFIE V1.4 ] |
| SEEPAGEPIT | seepage pit [SDSFIE V1.4 ] |
| STORMCONNECT | connected to storm system [SDSFIE V1.4 ] |
| SUBDRAIN | sub drain (French drain) [SDSFIE V1.4 ] |
| SUMPPUMP | sump pump [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TILEFIELD | tile field [SDSFIE V1.4 ] |

## CodeDrinkingWaterSamLoc

Used by Attributes: Drinking Water Sample Point - Dwslocty

| Value | Definition (Notes) [Source] |
|---|---|
| DISTRIBUTION_SYS | Distribution System [SDSFIE V2 Mississippi Dept. of Health] |
| PLANT_TREATED | Finished water from a water treatment plant. [SDSFIE V2 Mississippi Dept. of Health] |
| SOURCE_RAW | Raw water from the water source (i.e., well or surface water) prior to treatment. [SDSFIE V2 Mississippi Dept. of Health] |
| WELL | Chlorinated well water. [SDSFIE V2 Mississippi Dept. of Health] |

## CodeEcmDevice

Used by Attributes: Device - Dev Type

| Value | Definition (Notes) [Source] |
|---|---|
| FIELD_INTERFC | field interface [SDSFIE V1.8 ] |
| MULTIPLEX | multiplexer [SDSFIE V1.8 ] |
| Emergency Generator Panel | Emergency Generator Panel |

## CodeElectricBus

Used by Attributes: Bus Line - Bus Mat

| Value | Definition (Notes) [Source] |
|---|---|
| ALUMINUM | aluminum metal [SDSFIE V1.4 ] |
| COPPER | copper metal [SDSFIE V1.4 ] |

| | |
|---|---|
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricCable

Used by Attributes: Cable - Cable Material;Cable - Cable Type;Cable - Cbl Material;Coaxial Line - Cbl Material;Fiberoptic Line - Cbl Material;Other Cable - Cbl Material;Twisted Pair Line - Cbl Material;Utility Pole Guy - Cbl Material;Waveguide Line - Cbl Material;Sensor - Cbl Type;Cable - Install Type;Antenna Line - Material;Bus Line - Material;Pipe Line - Material;Segmented Cable - Material

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | abandoned/inactive |
| AIRFIELD_UG | Underground Airfield Cable. |
| OTHER | Other |
| PRIMARY_OH | primary overhead |
| PRIMARY_UG | primary underground |
| PRIMARY_UG_DIRECT_BURIAL | Underground primary electrical cable installed direct burial (i.e., without conduit). |
| PRIMARY_UG_ENCASED | Underground primary electrical cable installed in conduit. |
| SECONDARY_OH | secondary overhead |
| SECONDARY_UG | secondary underground |
| SECONDARY_UG_DIRECT_BURIAL | Underground secondary electrical cable installed direct burial (i.e., without conduit). |
| SECONDARY_UG_ENCASED | Underground secondary electrical cable installed in conduit. |
| SENSOR | Sensor Type Cable. |
| SERVICE_OH | service overhead |
| SERVICE_UG | service underground |
| SERVICE_UG_DIRECT_BURIAL | Underground service electrical cable installed direct burial (i.e., without conduit). |
| SERVICE_UG_ENCASED | Underground service electrical cable installed in conduit. |
| UNKNOWN | Unknown |

## CodeElectricCableUse

Used by Attributes: Bus Line - Cbl Use

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | abandoned/inactive cable [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PRIMARY_OH | primary overhead cable [SDSFIE V1.4 ] |
| PRIMARY_UG | primary underground cable [SDSFIE V1.4 ] |
| SECONDARY_OH | secondary overhead cable [SDSFIE V1.4 ] |
| SECONDARY_UG | secondary underground cable [SDSFIE V1.4 ] |
| SERVICE_OH | service, overhead cable [SDSFIE V1.4 ] |
| SERVICE_UG | service, underground cable [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricConfigType

Used by Attributes: Cable - Config Type

| Value | Definition (Notes) [Source] |
|---|---|
| ARMLESS | The cable group is mounted in a cluster at the top of the pole. [SDSFIE V1.4 ] |

| | |
|---|---|
| CROSSARM_EQL | The individual line mounts in a cable group are equally spaced on a standard length crossarm. [SDSFIE V1.4 ] |
| CROSSARM_UNEQL | The individual line mounts in a cable group are not equally spaced on a standard crossarm. [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SHORTARM | The individual line in a cable group are mounted on a cross arm less than 24-inches long. [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VERTICAL | The individual line mounts in a cable group are vertically spaced down the pole. [SDSFIE V1.4 ] |

## CodeElectricControlType

Used by Attributes: Capacitor - Cntr Type;Equipment - Cntr Type

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | other [SDSFIE V1.4 ] |
| PRIMARY | Primary. [SDSFIE V2.31 Air Force] |
| REMOTE | Remote. [SDSFIE V2.31 Air Force] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricDeviceUse

Used by Attributes: Regulator - Reg Use;Meter - Use

| Value | Definition (Notes) [Source] |
|---|---|
| ACPOWERPANEL | ac power panel [SDSFIE V1.4 ] |
| ALARMPULLBOX | alarm pullbox [SDSFIE V1.4 ] |
| BATTERY | battery [SDSFIE V1.4 ] |
| CAPACITOR | capacitor [SDSFIE V1.4 ] |
| CIRCUITBREAK | circuit breaker [SDSFIE V1.4 ] |
| COMMERCIAL | commercial service [SDSFIE V1.4 ] |
| DCPOWERPANEL | dc power panel [SDSFIE V1.4 ] |
| DISTRIBFRAME | distribution frame [SDSFIE V1.4 ] |
| DISTRIBPANEL | distribution panel [SDSFIE V1.4 ] |
| ELEC_METER | electric meter [SDSFIE V1.4 ] |
| ELEC_MOTOR | electric motor [SDSFIE V1.4 ] |
| FIELDINTERFC | field interface [SDSFIE V1.4 ] |
| GENERATOR | generator [SDSFIE V1.4 ] |
| GROUND | ground [SDSFIE V1.4 ] |
| INTDISTRFRAM | intermediate distribution frame [SDSFIE V1.4 ] |
| JUNCTIONBOX | junction box [SDSFIE V1.4 ] |
| LIGHT | light [SDSFIE V1.4 ] |
| LOAD_POINT | load point [SDSFIE V1.4 ] |
| MAINDISTFRAM | main distribution frame [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PEDESTAL | pedestal [SDSFIE V1.4 ] |
| RECTIFIER | rectifier [SDSFIE V1.4 ] |
| RESIDENTIAL | residential service [SDSFIE V1.4 ] |
| SPLICE | splice [SDSFIE V1.4 ] |
| SWITCH | switch [SDSFIE V1.4 ] |

| | |
|---|---|
| TBD | to be determined [SDSFIE V1.4 ] |
| TRAFFICSIGNL | traffic signal [SDSFIE V1.4 ] |
| TRANSFORMER | transformer [SDSFIE V1.4 ] |
| TRFSIGCONBOX | traffic signal control box [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VOLTREGULATE | voltage regulator [SDSFIE V1.4 ] |

## CodeElectricKvar

Used by Attributes: Capacitor - Cpctr Kv;Transformr Bank - Kva 1;Transformr Bank - Kva 2

| Value | Definition (Notes) [Source] |
|---|---|
| 10 | 10 kvar [SDSFIE V1.4 ] |
| 100 | 100 kvar [SDSFIE V1.4 ] |
| 1000 | 1000 kvar [SDSFIE V1.4 ] |
| 10000 | 10000 kvar [SDSFIE V1.4 ] |
| 112.5 | 112.5 kvar [SDSFIE V1.7 ] |
| 112_5 | 112.5 kvar [SDSFIE V1.4 ] |
| 1250 | 1250 kvar [SDSFIE V1.4 ] |
| 14K20K | 14000 20000 kvar [SDSFIE V1.4 ] |
| 15 | 15 kvar [SDSFIE V1.4 ] |
| 150 | 150 kvar [SDSFIE V1.4 ] |
| 1500 | 1500 kvar [SDSFIE V1.4 ] |
| 167 | 167 kvar [SDSFIE V1.4 ] |
| 16K22K | 16000 22000 kvar [SDSFIE V1.4 ] |
| 225 | 225 kvar [SDSFIE V1.4 ] |
| 25 | 25 kvar [SDSFIE V1.4 ] |
| 250 | 250 kvar [SDSFIE V1.4 ] |
| 300 | 300 kvar [SDSFIE V1.4 ] |
| 333 | 333 kvar [SDSFIE V1.4 ] |
| 37.5 | 37.5 kvar [SDSFIE V1.7 ] |
| 37_5 | 37.5 kvar [SDSFIE V1.4 ] |
| 3750 | 3750 kvar [SDSFIE V1.4 ] |
| 45 | 45 kvar [SDSFIE V1.4 ] |
| 50 | 50 kvar [SDSFIE V1.4 ] |
| 500 | 500 kvar [SDSFIE V1.4 ] |
| 5000 | 5000 kvar [SDSFIE V1.4 ] |
| 55 | 55 kvar [SDSFIE V1.4 ] |
| 7.5 | 7.5 kvar [SDSFIE V1.7 ] |
| 7_5 | 7.5 kvar [SDSFIE V1.4 ] |
| 75 | 75 kvar [SDSFIE V1.4 ] |
| 750 | 750 kvar [SDSFIE V1.4 ] |
| 775 | 775 kvar [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricMotorEnclType

Used by Attributes: Rect Point - Encl Type;Rectifier - Encl Type;Rectifier - Encl Type;Rectifier - Encl Type;Rectifier - Encl Type;Rectifier - Enclosure Type;Motor - Enclty

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| AIR/AIR | totally enclosed, air-to-air cooled [SDSFIE V1.4 ] |
| AIR_OVER | totally enclosed, air-over [SDSFIE V1.4 ] |
| DUST_PROOF | totally enclosed, dust-ignition proof [SDSFIE V1.4 ] |
| ENCL_FAN | totally enclosed, fan cooled [SDSFIE V1.4 ] |
| ENCL_FANG | totally enclosed, fan cooled, guarded [SDSFIE V1.4 ] |
| ENCL_NON | totally enclosed, nonventilated [SDSFIE V1.4 ] |
| ENCL_WAC | totally enclosed, water/air cooled [SDSFIE V1.4 ] |
| ENCL_WATER | totally enclosed, water cooled [SDSFIE V1.4 ] |
| EXPL_PROOF | totally enclosed, explosion proof [SDSFIE V1.4 ] |
| OPEN | open [SDSFIE V1.4 ] |
| OPEN_DGUARD | open, drip-proof guarded [SDSFIE V1.4 ] |
| OPEN_DP | open, drip-proof [SDSFIE V1.4 ] |
| OPEN_EV | open, externally ventilated [SDSFIE V1.4 ] |
| OPEN_GUARD | open, guarded [SDSFIE V1.4 ] |
| OPEN_PVENT | open, pipe ventilated [SDSFIE V1.4 ] |
| OPEN_SG | open, semiguarded [SDSFIE V1.4 ] |
| OPEN_SP | open, splash-proof [SDSFIE V1.4 ] |
| OPEN_WEATI | open, weather protected - Type I [SDSFIE V1.4 ] |
| OPEN_WEATII | open, weather protected - Type II [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PIPE_VENT | totally enclosed, pipe ventilated [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WATER_PROOF | totally enclosed, water-proof [SDSFIE V1.4 ] |

## CodeElectricMotorInsulType

Used by Attributes: Motor - Insul Cl

| Value | Definition (Notes) [Source] |
|---|---|
| A | IEEE Std 1, 60- 70 deg C. [SDSFIE V1.4 ] |
| B | IEEE Std 1, 80- 90 deg C. [SDSFIE V1.4 ] |
| F | IEEE Std 1, 105- 115 deg C. [SDSFIE V1.4 ] |
| H | IEEE Std 1, 125- 135 deg C. [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricMotorStartType

Used by Attributes: Motor - Start Type

| Value | Definition (Notes) [Source] |
|---|---|
| AUTOTRN_STRT | autotransformer start [SDSFIE V1.4 ] |
| CAPCTR_RUN | capacitor run [SDSFIE V1.4 ] |
| CAPCTR_STRT | capacitor start [SDSFIE V1.4 ] |
| LINE_STRT | line start [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| REACTR_REDUV | reactor type, reduced voltage [SDSFIE V1.4 ] |
| RESIST_REDUV | resistor type, reduced voltage [SDSFIE V1.4 ] |
| SHADED_POLE | shaded pole [SDSFIE V1.4 ] |
| SOLDSTATSTRT | solid state start [SDSFIE V1.4 ] |

| | |
|---|---|
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| Y_STRT_D_RUN | Y start delta run [SDSFIE V1.4 ] |

## CodeElectricPhase

Used by Attributes: Transformr Bank - Phase 1;Transformr Bank - Phase 2

| Value | Definition (Notes) [Source] |
|---|---|
| A | 1 [SDSFIE V1.9 ] |
| B | 2 [SDSFIE V1.9 ] |
| C | 3 [SDSFIE V1.9 ] |

## CodeElectricPhaseType

Used by Attributes: Cable - Phase Leter;Capacitor - Phase Leter;Generator - Phase Leter;Meter - Phase Leter;Motor - Phase Leter;Rect Point - Phase Leter;Rectifier - Phase Leter;Rectifier - Phase Leter;Rectifier - Phase Leter;Rectifier - Phase Leter;Regulator - Phase Leter;Switch - Phase Leter;Rectifier - Phase Letter

| Value | Definition (Notes) [Source] |
|---|---|
| A | A phase [SDSFIE V1.4 ] |
| AB | AB phase [SDSFIE V1.4 ] |
| ABC | ABC phase [SDSFIE V1.4 ] |
| AC | AC phase [SDSFIE V1.4 ] |
| B | B phase [SDSFIE V1.4 ] |
| BC | BC phase [SDSFIE V1.4 ] |
| C | C phase [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeElectricSwitchType

Used by Attributes: Regulator - Fuse Type;Switch - Swt Type

| Value | Definition (Notes) [Source] |
|---|---|
| DISCONNECT | disconnect [SDSFIE V1.4 ] |
| ISO | ISO switch [SDSFIE V1.4 ] |
| OIL | oil switch [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| RAC6WOIL | RAC 6way oil switch [SDSFIE V1.4 ] |
| RACOIL | RAC oil switch [SDSFIE V1.4 ] |
| RAMOIL | RAM oil switch [SDSFIE V1.4 ] |
| SOLIDBLADISC | solid blade disconnect [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VACUUM | vacuum [SDSFIE V1.4 ] |

## CodeElectricTranbnk

Used by Attributes: Transformr Bank - Mount

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| CEILING_MOUNTED | Ceiling mounted. [SDSFIE V2.3 Tinker Air Force Base] |
| PAD_MOUNTED | pad mounted transformer bank [SDSFIE V2.1 FGDC Utilities Classification] |
| POLE_MOUNTED | pole mounted transformer bank [SDSFIE V2.1 FGDC Utilities Classification] |
| WALL_MOUNTED | Wall mounted [SDSFIE V2.3 Tinker Air Force Base] |

## CodeElectricVoltRegulType

Used by Attributes: Regulator - Reg Type

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VOLTREG_1 | 1-phase, 7.5-19.9 Kvs, 50-418 amps, 7.6-19.9 Kva, metered or digital parameters, multiple microprocessor controlled step-voltage regulator. [SDSFIE V1.4 ] |
| VOLTREG_3 | 3-phase, 13-34 Kvs, 220-445 amps, 500-2670 Kva, metered or digital parameters, multiple microprocessor controlled step-voltage regulator. [SDSFIE V1.4 ] |

## CodeElectronicMarkerPurpose

Used by Attributes: Marker - Elmpur

| Value | Definition (Notes) [Source] |
|---|---|
| BUILDING_ENTER | Conduit Entrance to Building. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| ROAD_CROSSING | Road Crossing. [SDSFIE V2.5 AIR FORCE] |
| ROUTE | Cable or Duct Route. [SDSFIE V2.5 AIR FORCE] |
| ROUTE_CHANGE | Change in Direction of Cable or Duct Route. [SDSFIE V2.5 AIR FORCE] |
| SPLICE | Cable Splice Location. [SDSFIE V2.5 AIR FORCE] |
| STUBOUT | Manhole Stubout. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeEnclosureMaterials

Used by Attributes: Pedestal Site - Costrm;Cable Bridge Line - material;Cable Rack Line - material;Cable Tray Line - Material;Vault - Vlt Material

| Value | Definition (Notes) [Source] |
|---|---|
| AL | Aluminum. [SDSFIE V2.5 AIR FORCE] |
| CIS | Concrete Cast inSitu/Cast in Place. [SDSFIE V2.5 AIR FORCE] |
| COMBINATION | Combination of materials. [SDSFIE V2.5 AIR FORCE] |
| FIBERGLASS | Fiberglass. [SDSFIE V2.5 AIR FORCE] |
| IRON | Iron (Cast or Forged). [SDSFIE V2.5 AIR FORCE] |
| MASONRY | Masonry (Brick or Block). [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| PLASTIC | Plastic. [SDSFIE V2.5 AIR FORCE] |
| PRECAST | Pre-Cast Concrete. [SDSFIE V2.5 AIR FORCE] |
| STEEL | Steel. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeEncryptionLevelType

Used by Attributes: Relay Station - Enc Max

| Value | Definition (Notes) [Source] |
|---|---|
| I | First [SDSFIE V2.3 Tinker Air Force Base] |
| II | Second [SDSFIE V2.3 Tinker Air Force Base] |
| III | Third [SDSFIE V2.3 Tinker Air Force Base] |
| IV | Fourth [SDSFIE V2.3 Tinker Air Force Base] |
| V | Fifth [SDSFIE V2.3 Tinker Air Force Base] |

## CodeEquipmentCooling

Used by Attributes: Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Pump - Cool Method;Rect Point - Cool Method;Rectifier - Cool Method;Rectifier - Cool Method;Rectifier - Cool Method;Rectifier - Cool Method;Generator - Cool Type;Regulator - Cool Type;Rectifier - Cooling Method

| Value | Definition (Notes) [Source] |
|---|---|
| AIR | air [SDSFIE V1.4 ] |
| FAN | fan [SDSFIE V1.4 ] |
| OIL | oil [SDSFIE V1.4 ] |
| OILAIR | oil and air (OA) [SDSFIE V1.4 ] |
| OILAIRFAN | oil, air, and fan (FA) [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| REFRIGERATE | refrigeration units [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |

## CodeEquipmentType

Used by Attributes: Equipment - Equipment Type

| Value | Definition (Notes) [Source] |
|---|---|
| AN/FPN-62 | AN/FPN-62. [SDSFIE V2.31 Air Force] |
| AN/GPN-11 | AN/GPN-11. [SDSFIE V2.31 Air Force] |
| AN/GPN-12 | AN/GPN-12. [SDSFIE V2.31 Air Force] |
| AN/GPN-20 | AN/GPN-20. [SDSFIE V2.31 Air Force] |
| AN/GPN-22 | AN/GPN-22. [SDSFIE V2.31 Air Force] |
| ARSR-4 | ARSR-4. [SDSFIE V2.31 Air Force] |
| ASR-11 | ASR-11. [SDSFIE V2.31 Air Force] |
| ASR-5 | ASR-5. [SDSFIE V2.31 Air Force] |
| ASR-7 | ASR-7. [SDSFIE V2.31 Air Force] |
| ASR-8 | ASR-8. [SDSFIE V2.31 Air Force] |
| ASR-9 | ASR-9. [SDSFIE V2.31 Air Force] |
| MACS | MACS. [SDSFIE V2.31 Air Force] |
| WSR-88D | WSR-88D. [SDSFIE V2.31 Air Force] |

## CodeExternalLight

Used by Attributes: Light - litType

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | Other |

| | |
|---|---|
| SAFETY | Lights used for safety. |
| SECURITY | Security Light [SDSFIE V1.9 REEGIS] |
| STREET | Lights specifically designed to illuminate the street below. [SDSFIE V1.6 ] |
| UNKNOWN | Unknown |
| WALKWAY | Normally a low mounted light designed to illuminate a walkway or beside a driveway. [SDSFIE V2.1 FGDC Utilities Classification] |
| WORKSITE | Lights ysed to illuminate a work site. |

## CodeFireConnection

Used by Attributes: Fire Connection Point - Connection Type

| Value | Definition (Notes) [Source] |
|---|---|
| FIRE_CONNECT | fire department connection [SDSFIE V2.1 FGDC Utilities Classification] |
| FIRE_HYDRANT | fire hydrant [SDSFIE V2.1 FGDC Utilities Classification] |

## CodeFireFlow

Used by Attributes: Hydrant – Flow Standard

| Value | Definition (Notes) [Source] |
|---|---|
| C | Less than 500 gal/min, red hydrant cap |
| B | 500-999 gal/min, orange hydrant cap |
| A | 1000-1499 gal/min, green hydrant cap |
| AA | 1500 gal/min or higher, light blue hydrant cap |
| TBD | To be determined |
| UNKNOWN | Unknown |

## CodeFuel

Used by Attributes: Generator - Fuel Type;Line - Fuel Type;Tank - Fuel Type;Fill Point - Gas Type;Light - Gas Type;Line - Gas Type;Source - Type

| Value | Definition (Notes) [Source] |
|---|---|
| 100 | 100/130 octane gasoline, leaded, MIL-L-5572F (GREEN) |
| 100LL | 100/130 MIL Spec, low lead, aviation gasoline (BLUE) |
| 115 | 115/145 octane gasoline, leaded, MIL-L-5572F (PURPLE) |
| 7 | JP-7, Jet Propellant type 7 (Glass Tank Fuel) |
| 80 | 80/87 octane gasoline, leaded, MIL-L-5572F (RED) |
| A | Jet A, without icing inhibitor |
| A+ | Jet A+, Kerosene fuel, Type A, Jet A or JP-1 With icing inhibitor. |
| A1 | Jet A1, without icing inhibitor |
| A1+ | Jet A1+, Jet A1 with icing inhibitor. |
| B | Jet B, Wide cut turbine fuel, Without icing inhibitor. |
| B+ | Jet B+, wide cut turbine fuel with icing inhibitor. |
| C | 91/96 octane gasoline, leaded, No MIL Spec. |
| F | 80 octane gasoline, unleaded, No MIL Spec. |
| G | Aviation Gasoline (AVGAS), octane unknown |
| H | 108/135 octane gasoline, leaded, No MIL Spec |
| J | Jet fuel available but type is unknown |
| J4 | JP-4, Wide cut turbine fuel MIL Spec T-5624 |
| J5 | JP-5, Kerosene MIL Spec T-5624 |
| J8 | JP-8, Semi Kerosene MIL Spec T-83133, without icing inhibitor |
| K | 73 octane gasoline, unleaded, No MIL Spec |

| | |
|---|---|
| X | Storage tanks available and fuel type unknown or the tanks were used at one time for aviation products but may now store other products |
| LqNaturalGas | Liguified Natural Gas |

## CodeFuelDeliveryMethodType

Used by Attributes: Generator - Fuel Delivery Method

| Value | Definition (Notes) [Source] |
|---|---|
| CONVEYOR | Conveyor. [SDSFIE V2.31 HSIP] |
| OTHER | Other. [SDSFIE V2.31 HSIP] |
| PIPELINE | Pipeline. [SDSFIE V2.31 HSIP] |
| RAIL | Railroad. [SDSFIE V2.31 HSIP] |
| SHIP_BARGE | Ship or Fuel Barge. [SDSFIE V2.31 HSIP] |
| TRUCK | Truck/Vehicle. [SDSFIE V2.31 HSIP] |

## CodeFuelSource

Used by Attributes: Source - Name

| Value | Definition (Notes) [Source] |
|---|---|
| 5 | lagoon #5 [SDSFIE V1.4 ] |
| ART_WELL_7 | Artisan Well #7 [SDSFIE V1.6 ] |
| FEDERALES | Arroyo Federales [SDSFIE V1.6 ] |
| LAFOUCHE | Bayou LaFouche [SDSFIE V1.6 ] |
| MAGEES_CREEK | Magees Creek [SDSFIE V1.6 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TYLERTOWN | Tylertown Wellfield [SDSFIE V1.6 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeGasFixtureUse

Used by Attributes: Light - Fix Use

| Value | Definition (Notes) [Source] |
|---|---|
| EX_LIGHT | exterior light [SDSFIE V1.4 ] |
| IN_LIGHT | interior light [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SEC_LIGHT | security light [SDSFIE V1.4 ] |
| ST_LIGHT | street light [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeGeneratorType

Used by Attributes: Generator - Type

| Value | Definition (Notes) [Source] |
|---|---|
| BACKUP | Backup generator. [SDSFIE V2 Cherry Point] |
| EMERGENCY | Emergency generator. [SDSFIE V2 Cherry Point] |
| OTHER | other [SDSFIE V1.4 ] |
| PRIMARY | Primary generator. [SDSFIE V2 Cherry Point] |
| TBD | to be determined [SDSFIE V1.4 ] |

| | |
|---|---|
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeHcsAnchor

Used by Attributes: Anchor - Anch Type

| Value | Definition (Notes) [Source] |
|---|---|
| GUIDE_ANCHOR | guide anchor [SDSFIE V2.1 FGDC Utilities Classification] |
| RIGID_ANCHOR | rigid anchor [SDSFIE V2.1 FGDC Utilities Classification] |

## CodeHeating-CoolingType

Used by Attributes: Plant Area - Prod Type

| Value | Definition (Notes) [Source] |
|---|---|
| CHW | chilled water: water less than 45 deg. F. [SDSFIE V1.4 ] |
| HTW_CHW | high temp - chilled water [SDSFIE V1.4 ] |
| LTW | low temperature water: water less than 250 deg. F. [SDSFIE V1.4 ] |
| LTW_CHW | low temp - chilled water [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| S | steam [SDSFIE V1.4 ] |
| S_CHW | steam - chilled water [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeHertz

Used by Attributes: Motor - hertz

| Value | Definition (Notes) [Source] |
|---|---|
| temp | temp |

## CodeHydrantClass

Used by Attributes: Fire Connection Point - Hydrant Class

| Value | Definition (Notes) [Source] |
|---|---|
| GREEN | green - Class A - rated capacity of 1000-1499 gpm (3785-5675 L/min). [SDSFIE V1.8 ] |
| LT_BLUE | light blue - Class AA - rated capacity of 1500 gpm or greater (5680 L/min). [SDSFIE V1.8 ] |
| ORANGE | orange - Class B - rated capacity of 500-999 gpm (1900-3780 L/min). [SDSFIE V1.8 ] |
| RED | red - Class C - rated capacity less than 500 gpm (1900 L/min). [SDSFIE V1.8 ] |

## CodeHydrantOrg

Used by Attributes: Hydrant – Owner;Hydrant – Maintenance Agency

| Value | Definition (Notes) [Source] |
|---|---|
| AA_COUNTY | Anne Arundel County |
| BALTIMORE_CITY | Baltimore City |
| FAA | Federal Aviation Administration |
| MAA | Maryland Aviation Administration |
| OTHER | Other |
| PRIVATE | Private |

| | |
|---|---|
| SHA | Maryland State Highway Administration |
| UNKNOWN | Unknown |

## CodeHydrantType

Used by Attributes: Fill Point - Hydrant Type;Fire Connection Point - Hydrant Type;Hydrant - Hydrant Type;Hydrant - Hydrant Type

| Value | Definition (Notes) [Source] |
|---|---|
| AIRPORT | airport hydrant [SDSFIE V1.4 ] |
| BUILDING | building hydrant [SDSFIE V1.4 ] |
| DRINKFOUNT | drinking fountain [SDSFIE V1.4 ] |
| DRYBARREL | dry barrel [SDSFIE V1.4 ] |
| FREEZEPROOF | freeze proof [SDSFIE V1.4 ] |
| FUEL | fuel hydrant [SDSFIE V1.4 ] |
| NATGAS | natural gas hydrant [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| STREETWASH | street washer [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WASHRACK | wash rack hydrant [SDSFIE V1.4 ] |
| WATER | water hydrant [SDSFIE V1.4 ] |
| WETBARREL | wet barrel [SDSFIE V1.4 ] |
| YARD | yard hydrant [SDSFIE V1.4 ] |
| ELEVATED | connection on elevated roadway with valve on lower level |
| UNDERGROUND | hydrant contained in underground vault |
| WALL | hydrant is wall-mounted connection inside building |

## CodeInlets

Used by Attributes: Inlet - Inlet St;Inlet - Inlet St;Inlet - Inlet Step

| Value | Definition (Notes) [Source] |
|---|---|
| AC_CONDENSATE | air conditioner condensate [SDSFIE V2.3 Cherry Point] |
| BWV_DRAIN | backwater valve drain [SDSFIE V2.3 Cherry Point] |
| CATCH_BASIN | catch basin [SDSFIE V2.3 Cherry Point] |
| CONDENSATE_DRAIN | condensate drain [SDSFIE V2.3 Cherry Point] |
| CURB_INLET | curb opening inlet [SDSFIE V2.1 FGDC Utilities Classification] |
| DRAIN | drain [SDSFIE V2.3 Cherry Point] |
| DROP_INLET | drop inlet [SDSFIE V2.1 FGDC Utilities Classification] |
| GRATECRBOPEN | combined grate and curb opening inlet [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| ROOF_DRAIN | roof drain [SDSFIE V2.3 Cherry Point] |
| STANDARDA | inlet standard type A inlet [SDSFIE V1.4 ] |
| STANDARDB | inlet standard type B inlet [SDSFIE V1.4 ] |
| STANDARDC | inlet standard type C inlet [SDSFIE V1.4 ] |
| STANDARDD | inlet standard type D inlet [SDSFIE V1.4 ] |
| SURFACE_LINEAR | surface linear [SDSFIE V2.1 FGDC Utilities Classification] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WASTE_DRAIN | waste drain [SDSFIE V2.3 Cherry Point] |
| WEIRINLET | weir inlet [SDSFIE V1.4 ] |

## CodeJunctionType

Used by Attributes: Access Point - Junction Type;Air Eliminator - Junction Type;Air Pressure Device - Junction Type;Amplifier - Junction Type;Anchor - Junction Type;Anode - Junction Type;Anode - Junction Type;Anode - Junction Type;Anode - Junction Type;Anode - Junction Type;Anode - Junction Type;Anode Test Station - Junction Type;Anode Test Station - Junction Type;Anode Test Station - Junction Type;Anode Test Station - Junction Type;Anode Test Station - Junction Type;Anode Test Station - Junction Type;Antenna Site - Junction Type;Attenuator - Junction Type;Cable Ladder - Junction Type;Capacitor - Junction Type;Culvert End - Junction Type;DbSplice - Junction Type;Device - Junction Type;Device - Junction Type;Discharge Point - Junction Type;Discharge Point - Junction Type;Discharge Point - Junction Type;Discharge Point - Junction Type;Disposal Tank - Junction Type;Downspout - Junction Type;Downspout - Junction Type;Drain Separator - Junction Type;Drinking Water Sample Point - Junction Type;Equipment - Junction Type;Farm Site - Junction Type;Fill Point - Junction Type;Filter Strainer - Junction Type;Fire Connection Point - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Fitting - Junction Type;Flow Control Device - Junction Type;Flow Control Device - Junction Type;Gate - Junction Type;Generator - Junction Type;Grease Trap - Junction Type;Grit Chamber - Junction Type;Grit Chamber - Junction Type;Ground Point - Junction Type;Ground Point - Junction Type;Head Bolt Outlet - Junction Type;Headwall - Junction Type;Headwall - Junction Type;Hydrant - Junction Type;Hydrant - Junction Type;Impedance Matching Point - Junction Type;Inlet - Junction Type;Inlet - Junction Type;Inlet - Junction Type;Inlet - Junction Type;Intake - Junction Type;Internet Center - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Junction - Junction Type;Light - Junction Type;Light - Junction Type;Load Capacitor - Junction Type;Load Coil - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Marker - Junction Type;Media Converter - Junction Type;Meter - Junction Type;Meter - Junction Type;Meter - Junction Type;Meter - Junction Type;Meter - Junction Type;Meter - Junction Type;Meter - Junction Type;Motor - Junction Type;Network Systems Site - Junction Type;Neutralizer - Junction Type;Neutralizer - Junction Type;Oil Water Separator - Junction Type;Oil Water Separator - Junction Type;Oil Water Separator - Junction Type;Oil Water Separator - Junction Type;Path Node Site - Junction Type;Pedestal - Junction Type;Pedestal Site - Junction Type;Pig Launch Point - Junction Type;Pressure Reducing Station - Junction Type;Pullbox Site - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump - Junction Type;Pump Booster Station - Junction Type;Pump Ejector Station - Junction Type;Pump Station - Junction Type;Pump Station - Junction Type;Pump Station - Junction Type;Pump Station - Junction Type;Pumpstation Ejector - Junction Type;Radar Site - Junction Type;Radio - Junction Type;Radio Receiver - Junction Type;Radio Transmitter - Junction Type;Rect Point - Junction Type;Rectifier - Junction Type;Rectifier - Junction Type;Rectifier - Junction Type;Rectifier - Junction Type;Rectifier - Junction Type;Reducer - Junction Type;Refinery Site - Junction Type;Regulator - Junction Type;Regulator - Junction Type;Regulator Reducer - Junction Type;Regulator Reducer - Junction Type;Relay Station - Junction Type;Repeater - Junction Type;Reservoir - Junction Type;Reservoir - Junction Type;Riser - Junction Type;Riser - Junction Type;Satellite - Junction Type;Segmented Cable Point - Junction Type;Sensor - Junction Type;Septic Tank - Junction Type;Service Area - Junction Type;Service Loop Point - Junction Type;Source - Junction Type;Source - Junction Type;Source Site - Junction Type;Speaker - Junction Type;Splice - Junction Type;Splice - Junction Type;Splitter - Junction Type;Stilling Basin - Junction Type;Storm Ceptor - Junction Type;Storm Filter - Junction Type;Substation - Junction Type;Switch - Junction Type;Tank - Junction Type;Tank - Junction Type;Tank - Junction Type;Tank - Junction Type;Tank - Junction Type;Tank Area - Junction Type;Telephone - Junction Type;Telephone Booth - Junction Type;Terminal - Junction Type;Terminator - Junction Type;Transformer Vault - Junction Type;Transformr Bank - Junction Type;Treatment Plant - Junction Type;Treatment Unit - Junction Type;Utility Electric Utility Site - Junction Type;Utility Pole Guy - Junction Type;Utility Pole Tower Site - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve - Junction Type;Valve Pit - Junction Type;Vault - Junction Type;Vault - Junction Type;Vent - Junction Type;Vertical Site - Junction Type;Video Site - Junction Type;Voice Switch - Junction Type

| Value | Definition (Notes) [Source] |
|---|---|
| NEITHER | A junction feature that neither pushes or pulls flow away or towards itself. |
| SINK | A junction feature that pulls flow toward itself through the edges of a geometric network [ESRI] |
| SOURCE | A junction feature that pushes flow away from itself through the edges of a geometric network [ESRI] |

## CodeJuncType

Used by Attributes: Comm Junction – JuncType; Deicing Junction – JuncType; Electrical Junction - JuncType

| Value | Definition (Notes) [Source] |
|---|---|
| UNKNOWN | UNKNOWN |
| MANHOLE | MANHOLE |
| HANDHOLE | HANDHOLE |
| SWITCHBOX | SWITCHBOX |

## CodeLaboratory

Used by Attributes: Lagoon - Lab Name;Lagoon - Lab Name;Storage Area - Lab Name

| Value | Definition (Notes) [Source] |
|---|---|
| LAW_ENG | Law Engineering [SDSFIE V1.4 ] |
| LAW_ENV | Law Environmental [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WES | Waterways Experiment Station [SDSFIE V1.4 ] |

## CodeLaboratoryType

Used by Attributes: Lagoon - Lab Type;Lagoon - Lab Type;Storage Area - Lab Type

| Value | Definition (Notes) [Source] |
|---|---|
| CHEMICAL | chemical testing laboratory [SDSFIE V1.4 ] |
| ENVIRONMENTAL | environmental testing laboratory [SDSFIE V1.4 ] |
| GEOTECHNICAL | geotechnical (soils and rock) testing laboratory [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| STRUCTURAL | structural testing laboratory [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeLightingConfigurationType

Used by Attributes: Disposal Tank - Lighting Type;Septic Tank - Lighting Type;Tank - Lighting Type;Tank - Lighting Type;Tank - Lighting Type;Tank - Lighting Type;Tank - Lighting Type;Tank Area - Lighting Type

| Value | Definition (Notes) [Source] |
|---|---|
| ALSF-1 | High Intensity Approach Lighting System - Configuration 1 |
| ALSF-2 | High Intensity Approach Lighting System - Configuration 2 |
| APAP | Alignment of Element Systems |
| APBN | Airport Rotating Beacon |
| CLRBAR | Taxiway Clearance Bar Lights |
| CODEBEACON | Code Beacon |
| COURSE | Course Lights |
| F | Fixed |
| FL | Flashing (Sea Plane Navigation Buoy use only) |
| FL (2) | Group Flashing (Sea Plane Navigation Buoy use only) |
| FL (2+1) | Composite Group-Flashing (Sea Plane Navigation Buoy use only) |
| HLL | Hover Lane Light |
| HLLL | Hover Lane Limit Light |
| HPIL | Helipad Perimeter Inset Light |

| | |
|---|---|
| HPPEL | Helipad Perimeter Light (Elevated) |
| HPPLSF | Helipad Perimeter Light (Semiflush) |
| ISO | Isophase (Sea Plane Navigation Buoy use only) |
| L-804 | Unidirectional elevated runway guard lights |
| L-850A | Bi directional or unidirectional runway in pavement light used for runway centerline, Land and Hold Short Operations (LAHSO). |
| L-850B | Unidirectional runway in pavement light used for runway touchdown zone and medium intensity approach light system applications. |
| L-850C | Bi directional runway in pavement light used for runway edge lights and displaced threshold applications. |
| L-850D | Bi directional or unidirectional runway in pavement lights used for runway threshold or runway end light applications. |
| L-850E | Unidirectional runway in pavement light used for runway threshold light and Medium Intensity Approach Light System applications |
| L-850F | Unidirectional runway in pavement lights white flashing lights used for LAHSO |
| L-852A | Bi directional or unidirectional taxiway centerline in pavement lights used for the straight sections of taxiways where operations are permitted when the Runway Visual Range (RVR) is greater than or equal to 1200 feet. |
| L-852B | Bi directional or unidirectional taxiway centerline in pavement lights for curved sections of taxiways where operations are permitted when the Runway Visual Range (RVR) is greater than or equal to 1200 feet. |
| L-852C | bi directional or unidirectional taxiway centerline in pavement lights for straight portions of taxiways where operations are permitted when the Runway Visual Range (RVR) is less than 1200 feet. |
| L-852D | Bi directional or unidirectional taxiway centerline in pavement lights used for curved portions of taxiways where operations are permitted when the Runway Visual Range is less than 1200 feet. |
| L-852E | Omni directional taxiway intersection in pavement lights where operations are permitted when the Runway Visual Range is greater than or equal to 1200 feet. |
| L-852E/F | Runway Guard Light in-pavement |
| L-852F | Omni directional taxiway intersection in pavement lights where operations are permitted when the Runway Visual Range is less than 1200 feet. |
| L-852G | Unidirectional Runway Guard in pavement lights |
| L-852G/S | Combination Runway Guard/Stop bar light in-pavement |
| L-852J | Bi directional taxiway centerline in pavement lights for the curved portions of taxiways where operations are permitted when the Runway Visual Range is greater than or equal to 1200 feet. |
| L-852K | Bi directional taxiway centerline in pavement lights for the curved portions of taxiway where operation are permitted when the Runway Visual Ranger is less than 1200 feet. |
| L-852S | Unidirectional in pavement Stop Bar lights |
| L-852T | Omni directional in pavement taxiway edge and Apron edge lights |
| L-853 | Reflective Marker |
| L-854 | Radio Controller (Pilot Controlled Lights) |
| L-860 | Omni directional elevated runway edge lights for Visual Flight Rules (VFR) operations. |
| L-860E | Bi directional or unidirectional elevated runway threshold or runway end lights for Visual Flight Rules operations. |
| L-861 | Omni directional or bi directional elevated runway edge or displaced threshold lights for non-precision Instrument Flight Rules (IFR) operations. |
| L-861E | Bi directional or unidirectional elevated runway threshold or runway end lights for non-precision Instrument Flight Rule operations. |
| L-861SE | Bi directional and unidirectional elevated runway threshold, runway end, and displaced threshold lights for non-precision Instrument Flight Rule operations |
| L-861T | Omni directional elevated taxiway and apron edge lights. |
| L-862 | Bi directional elevated runway edge, threshold, and displaced threshold lights for precision Instrument Flight Rule operations. |
| L-862E | Bi directional or unidirectional elevated runway threshold, runway end, and displaced threshold lights for precision Instrument Flight Rule operations. |

| | |
|---|---|
| L-862S | Unidirectional elevated stop bar lights |
| L-880/L881 | Precision Approach Path Indicator |
| LDIN | Lead In Lighting System |
| MALS | Medium Intensity Approach Lighting System |
| MALSF | Medium Intensity Approach Lighting System with Sequenced Flashing Lights |
| MALSR | Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (RAIL) |
| MO (A) | Morse Code (Sea Plane Navigation Buoy use only) |
| NONE | No lights |
| OBSCAT | Catenary Lighting |
| OBSDUAL | A combination of OBSRED and OBSWHT |
| OBSRED | Aviation red Obstruction Lights |
| OBSWHITE | Flashing White Obstruction Lights |
| OC | Occulting (Sea Plane Navigation Buoy use only) |
| ODALS | Omnidirectional Approach Lighting System |
| OTHER | Other |
| PAPI2 | Precision Approach Path Indicator with 2 lights |
| PAPI4 | Precision Approach Path Indicator with 4 lights |
| PORTABLE | Portable Lights |
| PVASI | Pulsating visual Approach Slope Indicator |
| Q | Quick (Flashing) (Sea Plane Navigation Buoy use only) |
| RAIL | Runway Alignment Indicator Lights |
| REIL | Runway End Identifier Lights |
| RWSL | Runway Status Lights |
| SALS | Short Approach lighting System |
| SMGCS | Surface Movement Guidance Control System |
| SSALF | Short Simplified Approach Light System with Sequenced Flashing Lights |
| SSALR | Simplified Short Approach Lighting System with Runway Alignment Indicator |
| TRCV | TriColor VASI |
| T-VASI | Visual Approach Slope Indicator |
| TWYON_OFFLGT | Taxiway Lead on/off lights |
| VASI-12 | Visual Approach Slope Indicator with 2 bars and 12 boxes |
| VASI-16 | Visual Approach Slope Indicator with 3 bars and 16 boxes |
| VASI-2 | Visual Approach Slope Indicator with 2 bars |
| VASI-2-2 | Visual Approach Slope Indicator with 2 bars and 2 boxes |
| VASI-3 | Visual Approach Slope Indicator with 3 bars |

## CodeLightWatts

Used by Attributes: Light - Watts

| Value | Definition (Notes) [Source] |
|---|---|
| 100 | 100w. [SDSFIE V2.4 USMC] |
| 1000 | 1000w. [SDSFIE V2.4 USMC] |
| 150 | 150w. [SDSFIE V2.4 USMC] |
| 175 | 175w. [SDSFIE V2.4 USMC] |
| 200 | 200w. [SDSFIE V2.4 USMC] |
| 250 | 250w. [SDSFIE V2.4 USMC] |
| 400 | 400w. [SDSFIE V2.4 USMC] |
| 7 | 7w [SDSFIE V1.9 ] |
| 70 | 70w [SDSFIE V1.9 ] |

## CodeLoadCoilSystem

Used by Attributes: Load Coil - Ldcsym

| Value | Definition (Notes) [Source] |
|---|---|
| B88 | B88 - 88 Mh Coil Spaced Every 3,000 Feet. [SDSFIE V2.5 AIR FORCE] |
| D66 | D66 - 66 Mh Coil Spaced Every 4,500 Feet. [SDSFIE V2.5 AIR FORCE] |
| D66DSL | D66DSL - 66 Mh Coil Spaced Every 4,500 Feet. Permits ADSL Services. [SDSFIE V2.5 AIR FORCE] |
| D88 | D88 - 88 Mh Coil Spaced Every 4,500 Feet. [SDSFIE V2.5 AIR FORCE] |
| H88 | H88 - 88 Mh Coil Spaced Every 6,000 Feet. [SDSFIE V2.5 AIR FORCE] |
| H88DSL | H88DSL - 88 Mh Coil Spaced Every 6,000 Feet. Permits ADSL Services. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeLoadsCoilCaseType

Used by Attributes: Load Coil - Ldccas

| Value | Definition (Notes) [Source] |
|---|---|
| 124C | 124C Case. [SDSFIE V2.5 AIR FORCE] |
| 235A | 235A Case. [SDSFIE V2.5 AIR FORCE] |
| 236C | 236C Case. [SDSFIE V2.5 AIR FORCE] |
| 723 | 723 Aerial Load Coil Case. [SDSFIE V2.5 AIR FORCE] |
| 724 | 724 Aerial Load Coil Case. [SDSFIE V2.5 AIR FORCE] |
| 772 | 772 Aerial Load Coil Case. [SDSFIE V2.5 AIR FORCE] |
| NREC | Non-reenterable factory sealed case designed to be placed within an enclosure. [SDSFIE V2.5 AIR FORCE] |
| NREX | Non-reenterable factory sealed case designed to be direct buried or exposed to weather. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| REC | Coils are assembled in a case that can be opened for maintenance, designed to be placed in an enclosure. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeManholeCoverType

Used by Attributes: Junction - Cover Material

| Value | Definition (Notes) [Source] |
|---|---|
| MRND25 | Round (25 centimeter diameter). [SDSFIE V2.5 AIR FORCE] |
| MRND40 | Round (40 centimeter diameter). [SDSFIE V2.5 AIR FORCE] |
| MRND45 | Round (45 centimeter diameter). [SDSFIE V2.5 AIR FORCE] |
| REC | Rectangular (24 inch by 36 inch) [SDSFIE V2 Austin and Pitts] |
| RND24 | Round (24 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND27 | Round (27 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND28 | Round (28 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND30 | Round (30 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND36 | Round (36 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND38 | Round (38 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND42 | Round (42 inch diameter) [SDSFIE V2 Austin and Pitts] |
| RND48 | Round (48 inch diameter) [SDSFIE V2 Austin and Pitts] |

## CodeManholeLinerType

Used by Attributes: Junction - Liner Type;Junction - Liner Type;Neutralizer - Liner Type;Neutralizer - Liner Type

| Value | Definition (Notes) [Source] |
|---|---|
| GLASS | glass liner [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PLASTIC | plastic liner [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeManholeMaterial

Used by Attributes: Junction - Apron Trough Material;Junction - Corbel Walls Material

| Value | Definition (Notes) [Source] |
|---|---|
| temp | temp |

## CodeMaritimeMgmtType

Used by Attributes: Media Converter - Mtimzone

| Value | Definition (Notes) [Source] |
|---|---|
| CZ | The Contiguous Zone is a U.S. maritime boundary extending to 24 nautical miles from the baseline. [SDSFIE V2.5 NAVFAC] |
| EEX | The Exclusive Economic Zone is an area beyond and adjacent to the territorial sea. [SDSFIE V2.5 NAVFAC] |
| FZ | The Fishing Zone area as defined in the Fisheries Management Act 1991 (FMA). [SDSFIE V2.5 NAVFAC] |
| HS | High Seas, International Waters, meaning the open seas of the world outside the territorial waters of any nation. [SDSFIE V2.5 NAVFAC] |
| IW | Internal Waters. [SDSFIE V2.5 NAVFAC] |
| JDZ | Joint Development Zones. [SDSFIE V2.5 NAVFAC] |
| MZ | Military Zones. [SDSFIE V2.5 NAVFAC] |
| SZ | Special Zones. [SDSFIE V2.5 NAVFAC] |
| TS | The Territorial Sea is U.S. maritime boundary extending to 12 nautical miles as measured from the baseline. [SDSFIE V2.5 NAVFAC] |

## CodeMarkingFeatureType

Used by Attributes: Disposal Tank - markingFeatureType;Septic Tank - markingFeatureType;Tank - markingFeatureType;Tank - markingFeatureType;Tank - markingFeatureType;Tank - markingFeatureType;Tank - markingFeatureType;Tank Area - markingFeatureType

| Value | Definition (Notes) [Source] |
|---|---|
| AIMING_POINT | Runway Aiming Point (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| ALTBAND | Iternating bands of aviation orange and white [Source AC 70/7640-1] |
| APRON_SIGN | Surface painted apron position/entrance sign (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| ARROW | Arrows identify the displaced threshold area to provide centerline guidance for takeoffs and rollouts (Geometry Type: Line) [Source: AC 150/5340-1] |
| ARROW_HEAD | Arrow heads are used in conjunction with a threshold bar to further highlight the beginning of a runway (Geometry Type: Line) [Source: AC 150/5340-1] |
| CHECKERBOARD | Checkerboard obstruction marking pattern [Source AC 70/7640-1] |

| | |
|---|---|
| CHEVRON | A marking used to designate blast pads and other areas that are not suitable for aircraft (Geometry Type: Line) [Source: AC 150/5340-1] |
| DEMARCATION | Demarcation Bar (Geometry Type: Line) [Source: AC 150/5340-1] |
| DIR_SIGN | Surface painted taxiway direction signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| GATE_LINE | All painted taxilines covering a parking stand area are regarded as stand guidance lines and will be individual objects in the database. There may be several stand guidance taxilines leading to an aircraft stand to accommodate different aircraft types. |
| GATE_SIGN | Surface painted gate position signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| HOLD_SIGN | Surface painted holding position signs (Geometry Type: AC 150/5340-1] |
| ILS_HOLD | Holding position markings for Instrument Landing Systems (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| INTERSECTION_HOLD | Holding position marking for taxiway/taxiway intersections (Geometry Type: Line) [Source: AC 150/5340-1] |
| LAHSO | Marking associated with a Land And Hold Short Operations (LAHSO) |
| LOCATION_SIGN | Surface painted taxiway location signs (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| NON_MOVE_AREA | Non-movement area marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| NONE | No marking(s) |
| OTHER | Other markings not listed |
| OTHER_LINE | Other markings suitable for representation as a line |
| OTHER_POLYGON | Other markings suitable for representation as a polygon |
| PERM_CLOSED | Markings for permanently closed runways and taxiways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| POS_SIGN | Geographic position markings (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_CL | Runway Centerline (Geometry Type: Line) [Source: AC150/5340-1] |
| RWY_HOLD | Runway holding position markings on Runways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_ID | Runway Designation Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| RWY_SHD | Runway shoulder markings (Geometry Type: Line) [Source: AC 150/5340-1] |
| RWY_THRSH | Runway Threshold Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| SIDE_STRP | Runway Side Stripe Marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| SOLID | Solid pattern obstruction marking [Source AC 70/7640-1] |
| TDZ_MARK | Runway Touchdown Zone Marking (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TEMP_CLOSED | Markings for temporarily closed runways and taxiways (Geometry Type: Line) [Source: AC 150/5340-1] |
| THRSH_BAR | Runway Threshold Bar (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TIEDOWN | Aircraft tiedown |
| TWY_CL | Taxiway Centerline (Geometry Type: Line) [Source: AC 150/5340-1] |
| TWY_EDGE | Taxiway edge marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| TWY_HOLD | Runway hold position markings on taxiways (Geometry Type: Polygon) [Source: AC 150/5340-1] |
| TWY_SHD | Taxiway shoulder marking (Geometry Type: Line) [Source: AC 150/5340-1] |
| VEHICLE | Vehicle roadway markings (Geometry Type: Line) [Source: AC 150/5340-1] |

## CodeMaxcellType

Used by Attributes: Media Converter - Maxcellt

| Value | Definition (Notes) [Source] |
|---|---|
| MXC_1_25_1 | Standard 1.25 Inch 1 Cell (White - Teardrop) - 1.25 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXC_2_2 | Standard 2 Inch 2 Cell (Purple) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXC_2_3 | Standard 2 Inch 3 Cell (Yellow) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXC_3_3 | Standard 3 Inch 3 Cell (Black, Red, or Blue) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXC_4_3 | Standard 4 Inch 3 Cell (Green) - 1.25 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| MXD_1_25_1 | Detachable 1.25 Inch 1 Cell (White - Teardrop) - 1.25 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXD_2_2 | Detachable 2 Inch 2 Cell (Purple) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXD_2_3 | Detachable 2 Inch 3 Cell (Yellow) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXD_3_3 | Detachable 3 Inch 3 Cell (Black, Red, or Blue) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXD_4_3 | Detachable 4 Inch 3 Cell (Green) - 1.25 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXP_1_25_1 | Plenum 1.25 Inch 1 Cell (White - Teardrop) - 1.25 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXP_2_2 | Plenum 2 Inch 2 Cell (Purple) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXP_2_3 | Plenum 2 Inch 3 Cell (Yellow) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| MXP_3_3 | Plenum 3 Inch 3 Cell (Black, Red, or Blue) - 1 Inch Cable OD Max. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeMediaConverter

Used by Attributes: Media Converter - Mcnvty

| Value | Definition (Notes) [Source] |
|---|---|
| COAX_TO_MM | Coaxial Cable to Multi Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| COAX_TO_SM | Coaxial Cable to Single Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| SM_TO_MM | Single Mode Fiber to Multi Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| STP_TO_MM | Shielded Twisted Pair to Multi Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| STP_TO_SM | Shielded Twisted Pair to Single Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| UTP_TO_MM | Unshielded Twisted Pair to Multi Mode Fiber. [SDSFIE V2.5 AIR FORCE] |
| UTP_TO_SM | Unshielded Twisted Pair to Single Mode Fiber. [SDSFIE V2.5 AIR FORCE] |

## CodeMediaType

Used by Attributes: Equipment - Media Type;Segmented Cable Point - Media Type

| Value | Definition (Notes) [Source] |
|---|---|
| COPPER | Copper. [SDSFIE V2.3 Tinker Air Force Base] |
| FIBER_OPTIC | Fiber Optics. [SDSFIE V2.31 Air Force] |
| MICROWAVE | Microwave. [SDSFIE V2.31 Air Force] |
| MULTI_MODE_FIBER | Multi-Mode Fiber [SDSFIE V2.3 Tinker Air Force Base] |
| SINGLE_MODE_FIBE | Single Mode Fiber. [SDSFIE V2.3 Tinker Air Force Base] |

## CodeNavigationLineType

Used by Attributes: Cable - Cable Category

| Value | Definition (Notes) [Source] |
|---|---|
| CLEARING_LINE | Clearing Line [SDSFIE V2.2 S-57] |
| LD_LN_BEAR_A_TRA | Leading Line Bearing A Recommended Track [SDSFIE V2.2 S-57] |
| TRANSIT_LINE | Transit Line [SDSFIE V2.2 S-57] |

## CodeNetworkAffiliationType

Used by Attributes: Network Systems Site - Net Aff;Relay Station - Net Aff

| Value | Definition (Notes) [Source] |
|---|---|
| ABC | ABC Network. [SDSFIE V2.31 HSIP] |
| CBL | CBL Network. [SDSFIE V2.31 HSIP] |
| CBS | CBS Network. [SDSFIE V2.31 HSIP] |
| FOX | FOX Network. [SDSFIE V2.31 HSIP] |
| NBC | NBC Network. [SDSFIE V2.31 HSIP] |
| PBS | PBS Network. [SDSFIE V2.31 HSIP] |

## CodeNetworkBandwidth

Used by Attributes: Media Converter - Netbw;Repeater - Netbw

| Value | Definition (Notes) [Source] |
|---|---|
| 0_3 | 300 bps - 300 Bits Per Second (Bell 103, ITU-T V.21). [SDSFIE V2.5 AIR FORCE] |
| 1_1_2 | 1200 bps - 1200 Bits Per Second (Bell 212A, ITU-T V.22). [SDSFIE V2.5 AIR FORCE] |
| 1_14_4 | 14.4K bps - 14.4K Bits Per Second (ITU-T V.32bis, V.33). [SDSFIE V2.5 AIR FORCE] |
| 1_19_2 | 19.2K bps - 19.2K Bits Per Second (ITU-T V.34, V.32terbo) [SDSFIE V2.5 AIR FORCE] |
| 1_2_4 | 2400 bps - 2400 Bits Per Second (ITU-T V.22bis). [SDSFIE V2.5 AIR FORCE] |
| 1_28_8 | 28.8K bps - 28.8K Bits Per Second (ITU-T V.34). [SDSFIE V2.5 AIR FORCE] |
| 1_33_6 | 33.6K bps - 33.6K Bits Per Second (ITU-T V.34). [SDSFIE V2.5 AIR FORCE] |
| 1_38_4 | 38.4K bps - 38.4K Bits Per Second. [SDSFIE V2.5 AIR FORCE] |
| 1_4_8 | 4800 bps - 4800 Bits Per Second (Bell 208 A/B, ITU-T V.29). [SDSFIE V2.5 AIR FORCE] |
| 1_48_0 | 48K bps - 48K Bits Per Second. [SDSFIE V2.5 AIR FORCE] |
| 1_56_0 | 56K bps - 56K Bits Per Second (ITU-T V.9x). [SDSFIE V2.5 AIR FORCE] |
| 1_57_6 | 57.6K bps - 57.6K Bits Per Second. [SDSFIE V2.5 AIR FORCE] |
| 1_64_0 | 64K bps - 64K Bits Per Second. [SDSFIE V2.5 AIR FORCE] |
| 1_7_2 | 7200 bps - 7200 Bits Per Second (ITU-T V.29). [SDSFIE V2.5 AIR FORCE] |
| 1_9_6 | 9600 bps - 9600 Bits Per Second (ITU-T V.29, V.32, V.22bis). [SDSFIE V2.5 AIR FORCE] |
| 1115_2 | 115.2K bps - 115.2K Bits Per Second. [SDSFIE V2.5 AIR FORCE] |
| 2_1_544_T_1 | 1.544 Mbps (T-1, DS-1). [SDSFIE V2.5 AIR FORCE] |
| 2_10_BT | 10 Mbps (10 BaseT Copper). [SDSFIE V2.5 AIR FORCE] |
| 2_2_048_E_1 | 2.048 Mbps (E-1). [SDSFIE V2.5 AIR FORCE] |
| 2_44_736_T_3 | 44.736 Mbps (T-3, DS-3). [SDSFIE V2.5 AIR FORCE] |
| 2_51_84_OC1 | 51.84 Mbps (OC1). [SDSFIE V2.5 AIR FORCE] |
| 2100_BTF | 100 Mbps (100 BaseT Copper, 100 BaseF Fiber). [SDSFIE V2.5 AIR FORCE] |
| 2155_52_OC3 | 155.52 Mbps (OC3c, OC3/STM-1). [SDSFIE V2.5 AIR FORCE] |
| 2622_08_OC12 | 622.08 Mbps (OC12c, OC12/STM-4). [SDSFIE V2.5 AIR FORCE] |
| 3_1_BTF | 1 Gbps (1000 BaseT Copper, 1000 BaseF Fiber). [SDSFIE V2.5 AIR FORCE] |
| 3_10_BF | 10 Gbps (10000 BaseF Fiber). [SDSFIE V2.5 AIR FORCE] |
| 3_2_488_OC48 | 2.488 Gbps (OC48c, OC48/STM-16). [SDSFIE V2.5 AIR FORCE] |
| 3_39_81_OC768 | 39.81 Gbps (OC-768c, OC-768/STM-256). [SDSFIE V2.5 AIR FORCE] |
| 3_40_OC48WDM | 40 Gbps (OC48 WDM). [SDSFIE V2.5 AIR FORCE] |
| 3_9_952_OC192 | 9.952 Gbps (OC192c, OC192/STM-64). [SDSFIE V2.5 AIR FORCE] |
| 3160_OC3072 | 160 Gbps (OC-3072). [SDSFIE V2.5 AIR FORCE] |
| 4_6_4_OC768DWDM | 6.4 Tbps (OC-768 DWDM). [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeNetworkProtocol

Used by Attributes: Media Converter - Netprc

| Value | Definition (Notes) [Source] |
|---|---|
| ADSL | Asymmetric Digital Subscriber Loop. [SDSFIE V2.5 AIR FORCE] |
| ATM | Asynchronous Transfer Mode. [SDSFIE V2.5 AIR FORCE] |
| DSL | Digital Subscriber Loop. [SDSFIE V2.5 AIR FORCE] |
| ETHERNET | Ethernet. [SDSFIE V2.5 AIR FORCE] |
| FDDI | Fiber Distributed Data Interface. [SDSFIE V2.5 AIR FORCE] |
| FIBERCHANNEL | Fiber Channel. [SDSFIE V2.5 AIR FORCE] |
| FRAMERELAY | Frame Relay. [SDSFIE V2.5 AIR FORCE] |
| ISDN | Integrated Services Digital Network. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| SONET | Synchronous Optical Network. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| TOKENRING | Token Ring. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeNozzleType

Used by Attributes: Hydrant - Nozzle Type

| Value | Definition (Notes) [Source] |
|---|---|
| OVERWING | Jumbo VASI with a TCH to accommodate long-bodied or jumbo aircraft. [SDSFIE V2.4 Air Force] |
| SINGLE_PT | None. [SDSFIE V2.4 Air Force] |
| SINGLEPT_OVRWING | Not Applicable. [SDSFIE V2.4 Air Force] |
| UNKNOWN | PVASI (Pulsating VASI). [SDSFIE V2.4 Air Force] |

## CodeNumberLoadsCoilType

Used by Attributes: Load Coil - Ldc Type

| Value | Definition (Notes) [Source] |
|---|---|
| 632 | 633 Type 88 Mh Load Coil. [SDSFIE V2.5 AIR FORCE] |
| 656 | 657 Type 66 Mh Load Coil. [SDSFIE V2.5 AIR FORCE] |
| 662 | 663 Type 88 Mh Load Coil. [SDSFIE V2.5 AIR FORCE] |
| 666 | 667 Type 66 Mh Load Coil. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodePathCont

Used by Attributes: Path Segment Line - Path Cnt

| Value | Definition (Notes) [Source] |
|---|---|
| 3 | Fiber and Copper (twisted-pair). [SDSFIE V2.5 AIR FORCE] |
| 4 | Coax. [SDSFIE V2.5 AIR FORCE] |
| 5 | Coax and Fiber. [SDSFIE V2.5 AIR FORCE] |
| 6 | Coax and Copper (twisted-pair). [SDSFIE V2.5 AIR FORCE] |
| 7 | Coax, Copper (twisted-pair), Fiber. [SDSFIE V2.5 AIR FORCE] |

## CodePathType

Used by Attributes: Path Segment Line - Path Type

| Value | Definition (Notes) [Source] |
|---|---|
| AERIAL | Above ground path between, poles, towers or buildings. [SDSFIE V2.5 AIR FORCE] |
| CABLE_BRIDGE | Bridge only used for cables. [SDSFIE V2.5 AIR FORCE] |
| CABLE_TROUGH | Pathway on top of ground for cables. [SDSFIE V2.5 AIR FORCE] |
| DIRECT_BURIED | Below ground path where soil has direct contact with cable. [SDSFIE V2.5 AIR FORCE] |
| DUCT | Single communications duct. [SDSFIE V2.5 AIR FORCE] |
| DUCTBANK | A container for multiple ducts. [SDSFIE V2.5 AIR FORCE] |
| ROAD_CROSSING | A duct for cables, usually under a road. [SDSFIE V2.5 AIR FORCE] |
| STUB_OUT | Short duct used with manholes and vaults. [SDSFIE V2.5 AIR FORCE] |

## CodePercentModifier

Used by Attributes: Path Segment Line - percent

| Value | Definition (Notes) [Source] |
|---|---|
| 0 | Unknown. [SDSFIE V2.5 NAVFAC] |
| 1 | Bare. [SDSFIE V2.5 NAVFAC] |
| 2 | Sparse. [SDSFIE V2.5 NAVFAC] |
| 3 | Patchy. [SDSFIE V2.5 NAVFAC] |
| 4 | Continuous. [SDSFIE V2.5 NAVFAC] |

## CodePhoneType

Used by Attributes: Telephone - Phone Type

| Value | Definition (Notes) [Source] |
|---|---|
| COURTESY | Courtesy [SDSFIE V2 Tinker Air Force Base] |
| EMERGENCY | Emergency [SDSFIE V2 ] |
| EXTENSION | Extension [SDSFIE V2 Tinker Air Force Base] |
| HOTLINE | Hotline [SDSFIE V2 Tinker Air Force Base] |
| OTHER | Other [SDSFIE V2 ] |
| PAYPHONE | Payphone [SDSFIE V2 Tinker Air Force Base] |
| TBD | To Be Determined [SDSFIE V2 ] |
| UNKNOWN | Unknown [SDSFIE V2 ] |

## CodePipeCategory

Used by Attributes: Source Site - Cat Pipe;Transmission Pipeline - Pipe Category

| Value | Definition (Notes) [Source] |
|---|---|
| BUBBLER_SYSTEM | Bubbler System [SDSFIE V2.2 S-57] |
| INTAKE_PIPE | Intake Pipe [SDSFIE V2.2 S-57] |
| OUTFALL_PIPE | Outfall Pipe [SDSFIE V2.2 S-57] |
| SEWER | Sewer [SDSFIE V2.2 S-57] |
| SUPPLY_PIPE | Supply Pipe [SDSFIE V2.2 S-57] |

## CodePipeDiameter

Used by Attributes: Junction - effluentPipeDiameter;Junction - influentPipe1Diameter;Junction - influentPipe2Diameter;Junction - influentPipe3Diameter;Junction - influentPipe4Diameter;Junction - influentPipe5Diameter;Culvert Center Line - Openning Diameter;Air Pipe - Size;Downspout - Size;Downspout - Size;Fire Connection Point - Size;Fitting - Size;Fitting - Size;Fitting - Size;Fitting - Size;Fitting - Size;Fitting - Size;Fitting - Size;Fitting - Size;Flow Control Device - Size;Flow Control Device - Size;Gate - Size;Hydrant - Size;Intake Line - Size;Line - Size;Line - Size;Line - Size;Line - Size;Line - Size;Line - Size;Line - Size;Meter - Size;Meter - Size;Meter - Size;Meter - Size;Meter - Size;Meter - Size;Pipe Line - Size;Reducer - Size;Regulator - Size;Regulator Reducer - Size;Regulator Reducer - Size;Storm Trench Drain Line - Size;Transmission Pipeline Segment Line - Size;Valve - Size;Valve - Size;Valve - Size;Valve - Size;Valve - Valve Diameter;Valve - Valve Diameter;Valve - Valve Size

| Value | Definition (Notes) [Source] |
|---|---|
| 0.25 | 1/4 inch (0.25 inch) [SDSFIE V2 ] |
| 0.5 | 1/2 inch (0.5 inch) [SDSFIE V2 ] |
| 0.75 | 3/4 inch (0.75 inch) [SDSFIE V2 ] |
| 1 | 1inch (1.0 inch) [SDSFIE V2 ] |
| 1.25 | 1 1/4 inch (1.25 inches) [SDSFIE V2 ] |
| 1.5 | 1 1/2 inch (1.5 inches) [SDSFIE V2 ] |
| 1.75 | 1 3/4 inch (1.75 inches) [SDSFIE V2 ] |
| 10 | 10 inch (10.0 inches) [SDSFIE V2 ] |
| 12 | 12 Inch (12.0 inches) [SDSFIE V2 ] |
| 14 | 14 Inch (14.0 inches) [SDSFIE V2 Cherry Point] |
| 15 | 15 Inch (15.0 inches) [SDSFIE V2 Cherry Point] |
| 16 | 16 Inch (16.0 inches) [SDSFIE V2 Cherry Point] |
| 18 | 18 Inch (18.0 inches) [SDSFIE V2 Cherry Point] |
| 2 | 2 inch (2.0 inches) [SDSFIE V2 ] |
| 2.5 | 2 1/2 inch (2.5 inches) [SDSFIE V2 ] |
| 20 | 20 Inch (20.0 inches) [SDSFIE V2 ] |
| 21 | 21 Inch (21.0 inches) [SDSFIE V2 Cherry Point] |
| 22 | 22 Inch (22.0 inches) [SDSFIE V2 ] |
| 24 | 24 Inch (24.0 inches) [SDSFIE V2 Cherry Point] |
| 28 | 28 Inch (28.0 inches) [SDSFIE V2 ] |
| 3 | 3 inch (3.0 inches) [SDSFIE V2 ] |
| 30 | 30 Inch (30.0 inches) [SDSFIE V2 Cherry Point] |
| 32 | 32 Inch (32.0 inches) [SDSFIE V2 ] |
| 36 | 36 Inch (36.0 inches) [SDSFIE V2 ] |
| 4 | 4 inch (4.0 inches) [SDSFIE V2 ] |
| 42 | 42 Inch (42.0 inches) [SDSFIE V2 ] |
| 48 | 48 Inch (48.0 inches) [SDSFIE V2 ] |
| 5 | 5 Inch (5.0 inches) [SDSFIE V2 Cherry Point] |
| 6 | 6 inch (6.0 inches) [SDSFIE V2 ] |
| 60 | 60 Inch (60.0 inches) [SDSFIE V2 ] |
| 64_INCH | 64 Inch (64.0 inches). [SDSFIE V2.5 AIR FORCE] |
| 65_INCH | 65 Inch (65.0 inches). [SDSFIE V2.5 AIR FORCE] |
| 66_INCH | 66 Inch (66.0 inches). [SDSFIE V2.5 AIR FORCE] |
| 67_INCH | 67 Inch (67.0 inches). [SDSFIE V2.5 AIR FORCE] |
| 72 | 72 Inch (72.0 inches) [SDSFIE V2 ] |
| 8 | 8 inch (8.0 inches) [SDSFIE V2 ] |
| 84_INCH | 84 Inch (84.0 inches). [SDSFIE V2.5 AIR FORCE] |
| 85_INCH | 85 Inch (84.0 inches). [SDSFIE V2.5 AIR FORCE] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodePipelineLocationType

Used by Attributes: Line - Location Type;Line - Piplty;Line - Piplty;Line - Piplty

| Value | Definition (Notes) [Source] |
|---|---|
| ABOVE_GROUND | above ground [SDSFIE V1.8 USGS] |
| ELEVATED | elevated [SDSFIE V1.8 USGS] |
| SUBMERGED | submerged [SDSFIE V1.8 USGS] |
| TBD | to be determined [SDSFIE V1.8 USGS] |
| UNDERGROUND | underground [SDSFIE V1.8 USGS] |
| UNKNOWN | unknown [SDSFIE V1.8 USGS] |

## CodePipelineProduct

Used by Attributes: Transmission Pipeline - Commodity 1;Transmission Pipeline - Commodity 2;Transmission Pipeline - Commodity 3;Pump Booster Station - Prodct;Transmission Pipeline - Product Descriminator

| Value | Definition (Notes) [Source] |
|---|---|
| AA | Anhydrous Ammonia [SDSFIE V2.1 DOT - NPMS] |
| BAUXITE | BAUXITE [SDSFIE V2.2 S-57] |
| CEMENT | CEMENT [SDSFIE V2.2 S-57] |
| CHEMICALS | Chemicals - type unspecified [SDSFIE V2.2 S-57] |
| CO2 | Carbon Dioxide [SDSFIE V2.1 DOT - NPMS] |
| COAL | COAL [SDSFIE V2.2 S-57] |
| COKE | COKE [SDSFIE V2.2 S-57] |
| CRD | Crude or unprocessed oil. [SDSFIE V2.3 DOT - NPMS] |
| DRINKING_WATER | DRINKING_WATER [SDSFIE V2.2 S-57] |
| EMP | empty [SDSFIE V2.1 DOT - NPMS] |
| GAS | Gas - type not specified [SDSFIE V2.2 S-57] |
| GRAIN | GRAIN [SDSFIE V2.2 S-57] |
| HG | Hydrogen Gas [SDSFIE V2.1 DOT - NPMS] |
| HVL | Highly Volatile Liquid [SDSFIE V2.1 DOT - NPMS] |
| IRON_INGOTS | IRON_INGOTS [SDSFIE V2.5 S-57CENTER] |
| LIQUIF_PETROGAS | LIQUIFIED_PETROLEUM_GAS [SDSFIE V2.2 S-57] |
| LIQUIFIED_NATGAS | LIQUIFIED_NATURAL_GAS [SDSFIE V2.2 S-57] |
| LPG | Liquefied Petroleum Gas [SDSFIE V2.1 DOT - NPMS] |
| MILK | MILK [SDSFIE V2.2 S-57] |
| NG | Natural Gas [SDSFIE V2.1 DOT - NPMS] |
| NGL | Natural Gas Liquids [SDSFIE V2.1 DOT - NPMS] |
| OIL | OIL [SDSFIE V2.2 S-57] |
| ORE | ORE [SDSFIE V2.2 S-57] |
| PRD | Product is not known. [SDSFIE V2.1 DOT - NPMS] |
| SALT | SALT [SDSFIE V2.2 S-57] |
| SAND | SAND [SDSFIE V2.2 S-57] |
| SAWDUST_WOODCHIP | SAWDUST_WOODCHIPS [SDSFIE V2.2 S-57] |
| SCRAP_METAL | SCRAP_METAL [SDSFIE V2.2 S-57] |
| STONE | STONE [SDSFIE V2.2 S-57] |
| TIMBER | TIMBER [SDSFIE V2.2 S-57] |
| WATER | Water - potable or otherwise. [SDSFIE V2.2 S-57] |
| WINE | WINE [SDSFIE V2.2 S-57] |

## CodePipeMaterial

Used by Attributes: Ductbank - Duct Material;Ductbank - ductMat;Junction - effluentPipeMaterial;Junction - influentPipe1Material;Junction - influentPipe2Material;Junction - influentPipe3Material;Junction - influentPipe4Material;Junction - influentPipe5Material;Air Pipe - Material;Culvert Center Line - Material;Disposal Tank - Material;Downspout - Material;Downspout - Material;Ductbank - Material;Filtration Bed - Material;Fitting - Material;Fitting - Material;Fitting - Material;Fitting - Material;Fitting - Material;Fitting - Material;Fitting - Material;Fitting - Material;Gate - Material;Grease Trap - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Junction - Material;Lagoon - Material;Lagoon - Material;Line - Material;Line - Material;Line - Material;Line - Material;Line - Material;Line - Material;Line - Material;Line - Material;Neutralizer - Material;Neutralizer - Material;Septic Tank - Material;Sludge Bed - Material;Storm Trench Drain Line - Material;Tank - Material;Tank - Material;Tank - Material;Tank - Material;Tank - Material;Vault - Material;Vault - Pipe Material;Oil Water Separator Diversion Vault - pipeMaterial

| Value | Definition (Notes) [Source] |
|---|---|
| ABS | acrylonitrile butadiene styrene [SDSFIE V1.4 ] |
| ALUMINUM | Aluminum [SDSFIE V1.4 ] |
| ARMORED_GLASS | Armored-glass. [SDSFIE V2 ] |
| ASBESTCEMENT | asbestos cement [SDSFIE V1.4 ] |
| BLACK_FE | black iron [SDSFIE V1.4 ] |
| BRICK | brick [SDSFIE V1.4 ] |
| BUILTUP | builtup [SDSFIE V1.4 ] |
| CANVAS | canvas [SDSFIE V1.4 ] |
| CARDBOARD | cardboard [SDSFIE V1.4 ] |
| CASTIRON | cast iron [SDSFIE V1.4 ] |
| CEMENT | cement [SDSFIE V1.4 ] |
| CEMENTBLOCK | cement block [SDSFIE V1.4 ] |
| CINDERBLOCK | cinder block [SDSFIE V1.4 ] |
| CIS | Concrete Cast inSitu/Cast in Place [SDSFIE V2 Tinker Air Force Base] |
| COATWRAPSTEL | coated and wrapped steel [SDSFIE V1.4 ] |
| COMBINATION | combination of materials [SDSFIE V1.4 ] |
| COMPO | Composolite [SDSFIE V2 Tinker Air Force Base] |
| COMPOSOLITE | Composolite [SDSFIE V2 Tinker Air Force Base] |
| CONCRETBLOCK | concrete block [SDSFIE V1.4 ] |
| CONCRETE | concrete [SDSFIE V1.4 ] |
| CONCRETEPILE | concrete pile [SDSFIE V1.4 ] |
| CONCRT_AND_STEEL | Concrete and Steel. [SDSFIE V2.31 Air Force] |
| CONCRT_AND_WOOD | Concrete and Wood. [SDSFIE V2.31 Air Force] |
| COPPER | Copper [SDSFIE V1.4 ] |
| CORR_METAL | corrugated metal [SDSFIE V1.4 ] |
| CORR_STEEL | corrugated steel [SDSFIE V1.4 ] |
| CORRALBITMEN | corrugated Aluminum with bituminous coating [SDSFIE V1.4 ] |
| CORRALPAVINV | corrugated Aluminum with paved invert [SDSFIE V1.4 ] |
| CORRMETLBITM | corrugated metal with bituminous coating [SDSFIE V1.4 ] |
| CORRMETPAVIN | corrugated metal with paved invert [SDSFIE V1.4 ] |
| CORRSTELBITM | corrugated steel with bituminous coating [SDSFIE V1.4 ] |
| CORRSTELPAVI | corrugated steel with paved invert [SDSFIE V1.4 ] |
| CORRUGATEDAL | corrugated Aluminum [SDSFIE V1.4 ] |
| CRESOTEDWOOD | creosoted wood [SDSFIE V1.4 ] |
| DUCTILEFE | ductile iron [SDSFIE V1.4 ] |
| EARTHEN | earthen, dirt [SDSFIE V1.4 ] |
| FEPT_STEEL | FEP Teflon-lined steel. [SDSFIE V2 ] |
| FIBER | fiber [SDSFIE V1.4 ] |
| FIBERGLASS | fiberglass [SDSFIE V1.4 ] |

| | |
|---|---|
| FRP | Fiberglass reinforced polyester. [SDSFIE V2 ] |
| FRV | Fiberglass Reinforced Vinylester. [SDSFIE V2 ] |
| GALVANIZEDFE | galvanized iron [SDSFIE V1.4 ] |
| GALVNIZSTEEL | galvanized steel [SDSFIE V1.4 ] |
| GLASS | glass [SDSFIE V1.4 ] |
| GLASS_LINED | Glass-lined [SDSFIE V2 ] |
| GLASS_REIN_PLAS | Glass Reinforced Plastic [SDSFIE V2.2 S-57] |
| GLASSBLOCK | glass block [SDSFIE V1.4 ] |
| GRASS | grass [SDSFIE V1.4 ] |
| HARD_SURFACED | Hard Surfaced [SDSFIE V2.2 S-57] |
| HASTELLOY | Hastelloy [SDSFIE V2 ] |
| HDPE | High Density Polyethylene (HDPE) [SDSFIE V2 ] |
| HELIWOUND | helically wound [SDSFIE V1.4 ] |
| HIDES | hides [SDSFIE V1.4 ] |
| INCONEL | Inconel [SDSFIE V2 ] |
| INSULATCONCR | insulating concrete [SDSFIE V1.4 ] |
| KYN_STEEL | Kynar-lined steel. [SDSFIE V2 ] |
| LOGS | logs [SDSFIE V1.4 ] |
| LOOSE_BOULDERS | Loose Boulders [SDSFIE V2.2 S-57] |
| MASNRY_AND_STEEL | Masonry and Steel. [SDSFIE V2.31 Air Force] |
| MASONRY | MASONRY [SDSFIE V2.2 S-57] |
| MASONRY_AND_WOOD | Masonry and Wood. [SDSFIE V2.31 Air Force] |
| METAL | metal conduit [SDSFIE V1.4 ] |
| MONEL | Monel [SDSFIE V2 ] |
| MULTIPLECLAY | multiple clay [SDSFIE V1.4 ] |
| MULTIPLETILE | multiple tile [SDSFIE V1.4 ] |
| NICKEL | Nickel [SDSFIE V2 ] |
| OTHER | other [SDSFIE V1.4 ] |
| OTHERMASONRY | other [SDSFIE V1.4 ] |
| PAINTED | Painted [SDSFIE V2.2 S-57] |
| PFA | PFA Teflon-lined. [SDSFIE V2 ] |
| PLASTIC | plastic [SDSFIE V1.4 ] |
| POLYETHYLENE | polyethylene [SDSFIE V1.4 ] |
| POLYSTYRENE | polystyrene [SDSFIE V1.4 ] |
| PPE_STEEL | Polypropylene-lined steel. [SDSFIE V2 ] |
| PRECAST | precast [SDSFIE V1.4 ] |
| PRESTRESSED | prestressed [SDSFIE V1.4 ] |
| PTFE | PTFE Teflon-lined. [SDSFIE V2 ] |
| PVC | polyvinyl chloride [SDSFIE V1.4 ] |
| REINFORCONCR | reinforced concrete [SDSFIE V1.4 ] |
| REINFPLASMOR | reinforced plastic mortar [SDSFIE V1.4 ] |
| RUB_STEEL | Rubber-lined steel. [SDSFIE V2 ] |
| SARAN_LINED | Saran lined [SDSFIE V2 ] |
| SHEETMETAL | sheet metal [SDSFIE V1.4 ] |
| SINGLE_CLAY | single clay [SDSFIE V1.4 ] |
| SINGLE_TILE | single tile [SDSFIE V1.4 ] |
| SNOW | snow [SDSFIE V1.4 ] |
| STAINLESS_STEEL | Stainless steel [SDSFIE V2 ] |
| STEEL | steel [SDSFIE V1.4 ] |
| STEEL_AND_WOOD | Steel and Wood. [SDSFIE V2.31 Air Force] |
| STEEL_WRAPED | steel wrapped [SDSFIE V1.4 ] |
| STEELPILE | steel pile [SDSFIE V1.4 ] |
| STONE | stone [SDSFIE V1.4 ] |

| | |
|---|---|
| STYROFOAM | Styrofoam [SDSFIE V1.4 ] |
| TAN_STEEL | Tantalum-lined steel [SDSFIE V2 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TERRACOTTA | terra cotta [SDSFIE V1.4 ] |
| TILE | tile [SDSFIE V1.4 ] |
| TILE_RESIN | tile resin [SDSFIE V1.4 ] |
| TITANIUM | Titanium [SDSFIE V2 ] |
| UNEARTHEN | Unearthen. [SDSFIE V2.4 USGS] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| UNSURFACED | Unsurfaced [SDSFIE V2.2 S-57] |
| VITRIFIDCLAY | vitrified clay [SDSFIE V1.4 ] |
| WOOD | wood [SDSFIE V1.4 ] |
| WOODENPILE | wooden pile [SDSFIE V1.4 ] |
| WROUGHT_FE | wrought iron [SDSFIE V1.4 ] |
| ZIRCONIUM | Zirconium [SDSFIE V2 ] |

## CodePlacementOfAirPreType

Used by Attributes: Air Pressure Device - Placement

| Value | Definition (Notes) [Source] |
|---|---|
| EXTENDED | Extended and not in or on cable sheath. [SDSFIE V2.5 AIR FORCE] |
| ON_BYPASS | On the bypass. [SDSFIE V2.5 AIR FORCE] |
| ON_CASE | On the case. [SDSFIE V2.5 AIR FORCE] |
| ON_SHEATH | On or in sheath. [SDSFIE V2.5 AIR FORCE] |
| ON_SLEEVE | On the lead sleeve. [SDSFIE V2.5 AIR FORCE] |
| ON_STUB | Located on a stub and not in or on the cable sheath. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodePoleClassificationType

Used by Attributes: Utility Pole Tower Site - P Class

| Value | Definition (Notes) [Source] |
|---|---|
| CLASS_1 | Class 1, MHBL 4500, Minimum Top Circumference 27 [SDSFIE V1.75 ] |
| CLASS_2 | Class 2, MHBL 3700, Minimum Top Circumference 25 [SDSFIE V1.75 ] |
| CLASS_3 | Class 3, MHBL 3000, Minimum Top Circumference 23 [SDSFIE V1.75 ] |
| CLASS_4 | Class 4, MHBL 2400, Minimum Top Circumference 21 [SDSFIE V1.75 ] |
| CLASS_5 | Class 5, MHBL 1900, Minimum Top Circumference 19 [SDSFIE V1.75 ] |
| CLASS_6 | Class 6, MHBL 1500, Minimum Top Circumference 17 [SDSFIE V1.75 ] |
| CLASS_7 | Class 7, MHBL 1200, Minimum Top Circumference 15 [SDSFIE V1.75 ] |

## CodePoleCondition

Used by Attributes: Fire Connection Point - Condition;Gate - Condition;Grease Trap - Condition;Junction - Condition;Pressure Reducing Station - Condition;Pump Booster Station - Condition;Pump Ejector Station - Condition;Pump Station - Condition;Pump Station - Condition;Pump Station - Condition;Pump Station - Condition;Pumpstation Ejector - Condition;Septic Tank - Condition;Storage Area - Condition;Telephone - Condition;Transformr Bank - Condition;Treatment Plant - Condition;Treatment Unit - Condition;Treatment Unit - Condition;Utility Pole Tower Site - Condition

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| BOARDEDUP | boarded up [SDSFIE V1.4 ] |
| BROKENNOUSE | broken and unusable [SDSFIE V1.4 ] |
| BURNTNOUSE | burnt and not useable [SDSFIE V1.4 ] |
| BURNTUSEABLE | burnt but useable [SDSFIE V1.4 ] |
| CONDEMNED | condemned [SDSFIE V1.4 ] |
| CRACKED | cracked but useable [SDSFIE V2.1 FGDC Utilities Classification] |
| DAMAGED | damaged [SDSFIE V1.4 ] |
| DAMAGEHEVUSE | heavily damage, but useable [SDSFIE V1.4 ] |
| DAMAGELITUSE | light damage, but useable [SDSFIE V1.4 ] |
| DAMAGEMODUSE | moderate damage, but useable [SDSFIE V1.4 ] |
| DAMAGHEVNO | heavy damage, and unusable [SDSFIE V1.4 ] |
| DAMAGLITNO | light damage, and unusable [SDSFIE V1.4 ] |
| DAMAGMODNO | moderate damage, and unusable [SDSFIE V1.4 ] |
| DANGEROUS | dangerous to use [SDSFIE V1.4 ] |
| FAIR | fair or medium condition [SDSFIE V1.4 ] |
| FAIRESTIMATED | Estimated in fair condition. [SDSFIE V2.31 Air Force] |
| GOOD | good condition [SDSFIE V1.4 ] |
| GOODESTIMATED | Estimated in good condition. [SDSFIE V2.31 Air Force] |
| GOODNOTNEW | good, but not new [SDSFIE V1.4 ] |
| HABITABLE | habitable [SDSFIE V1.4 ] |
| HABITABLENO | not habitable [SDSFIE V1.4 ] |
| MINORUSE | minor use [SDSFIE V1.4 ] |
| NEWLYBUILT | newly built [SDSFIE V1.4 ] |
| NEWUNFINISH | newly built, but not yet finished [SDSFIE V1.4 ] |
| NOTRESPASSNG | no trespassing [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| POOR | poor or unsuitable condition [SDSFIE V1.4 ] |
| POORESTIMATED | Estimated in poor condition. [SDSFIE V2.31 Air Force] |
| QUARANTINED | quarantined [SDSFIE V1.4 ] |
| RADIOACTIVE | radioactive [SDSFIE V1.4 ] |
| SERVICEABLE | Servicable |
| SPLINTER | splintered but useable [SDSFIE V2.1 FGDC Utilities Classification] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNDERCONSTRUCT | Planned or under construction. [SDSFIE V2.31 Air Force] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| UNSERVICEABLE | Unserviceable or not a weight bearing surface. [SDSFIE V2.31 Air Force] |
| UNUSEABLE | unusable [SDSFIE V2.1 FGDC Utilities Classification] |
| USEABLE | useable [SDSFIE V1.4 ] |
| USEABLENO | not useable [SDSFIE V1.4 ] |

## CodePoleTreatmentType

Used by Attributes: Utility Pole Tower Site - Treat Type

| Value | Definition (Notes) [Source] |
|---|---|
| CREOSOTE | The pole has been treated with creosote. [SDSFIE V1.6 ] |
| OTHER | Other, Not otherwise listed [SDSFIE V1.6 ] |
| PAINT | The pole has been painted to prevent corrosion. [SDSFIE V1.6 ] |
| TBD | To be determined [SDSFIE V1.6 ] |
| UNKNOWN | Unknown [SDSFIE V1.6 ] |

## CodePosAccuracyQuality

Used by Attributes: Transmission Pipeline Segment Line - Pos Acc

| Value | Definition (Notes) [Source] |
|---|---|
| EXCELLENT | Excellent (0 to 50 feet). [SDSFIE V2.1 DOT - NPMS] |
| GOOD | Good (301 to 500 feet). [SDSFIE V2.1 DOT - NPMS] |
| POOR | Poor (501 to 1000 feet). [SDSFIE V2.1 DOT - NPMS] |
| UNKNOWN | Unknown [SDSFIE V2.1 DOT - NPMS] |
| VERY_GOOD | Very Good (51 to 300 feet). [SDSFIE V2.1 DOT - NPMS] |

## CodePowerUseType

Used by Attributes: Relay Station - Power

| Value | Definition (Notes) [Source] |
|---|---|
| AC | Alternating Current [SDSFIE V2.3 Tinker Air Force Base] |
| DC | Direct Current [SDSFIE V2.3 Tinker Air Force Base] |

## CodeProgress

Used by Attributes: Access Coverage Area - collectionProgress;Access Point - collectionProgress;Air Pipe - collectionProgress;Air Pressure Device - collectionProgress;Amplifier - collectionProgress;Anchor - collectionProgress;Anode - collectionProgress;Anode - collectionProgress;Anode - collectionProgress;Anode Test Station - collectionProgress;Anode Test Station - collectionProgress;Anode Test Station - collectionProgress;Antenna Line - collectionProgress;Antenna Site - collectionProgress;Attenuator - collectionProgress;Bus Line - collectionProgress;Cable - collectionProgress;Cable Bridge Line - collectionProgress;Cable Ladder - collectionProgress;Cable Rack Line - collectionProgress;Cable Tray Line - collectionProgress;Cable Trough Line - collectionProgress;Capacitor - collectionProgress;Coaxial Line - collectionProgress;DbSplice - collectionProgress;Device - collectionProgress;Device - collectionProgress;Discharge Point - collectionProgress;Drain Separator - collectionProgress;Ductbank - collectionProgress;Ductbank - collectionProgress;Equipment - collectionProgress;Fiberoptic Line - collectionProgress;Fill Point - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Fitting - collectionProgress;Generator - collectionProgress;Grit Chamber - collectionProgress;Ground Point - collectionProgress;Ground Point - collectionProgress;Groundplane Area - collectionProgress;Groundwave Area - collectionProgress;Head Bolt Outlet - collectionProgress;Headwall - collectionProgress;Headwall Line - collectionProgress;Impedance Matching Point - collectionProgress;Inlet - collectionProgress;Internet Center - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Junction - collectionProgress;Lagoon - collectionProgress;Light - collectionProgress;Line - collectionProgress;Line Of Sight Line - collectionProgress;Load Capacitor - collectionProgress;Load Coil - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Marker - collectionProgress;Media Converter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Meter - collectionProgress;Motor - collectionProgress;Multihop Area - collectionProgress;Network Systems Site - collectionProgress;Neutralizer - collectionProgress;Oil Water Separator - collectionProgress;Other Cable - collectionProgress;Path Node Site - collectionProgress;Path Segment Line - collectionProgress;Pedestal - collectionProgress;Pedestal Site - collectionProgress;Pipe Line - collectionProgress;Pullbox Site - collectionProgress;Pump - collectionProgress;Pump - collectionProgress;Pump - collectionProgress;Pump Station - collectionProgress;Pumpstation Ejector - collectionProgress;Radar Site - collectionProgress;Radio - collectionProgress;Radio Receiver - collectionProgress;Radio Transmitter - collectionProgress;Rect Point - collectionProgress;Rectifier - collectionProgress;Rectifier - collectionProgress;Reducer - collectionProgress;Refinery Site - collectionProgress;Regulator - collectionProgress;Regulator - collectionProgress;Relay Station - collectionProgress;Repeater - collectionProgress;Riser - collectionProgress;Riser - collectionProgress;Satellite - collectionProgress;Segmented Cable - collectionProgress;Segmented Cable Point - collectionProgress;Sensor - collectionProgress;Service Loop Point - collectionProgress;Source - collectionProgress;Speaker - collectionProgress;Splice - collectionProgress;Splice - collectionProgress;Splitter - collectionProgress;Storage Area - collectionProgress;Substation - collectionProgress;Switch - collectionProgress;Tank - collectionProgress;Tank Area - collectionProgress;Telephone - collectionProgress;Telephone Booth - collectionProgress;Terminal - collectionProgress;Terminator - collectionProgress;Transformer Vault - collectionProgress;Transformr Bank - collectionProgress;Transmission Pipeline - collectionProgress;Transmission Pipeline Segment Line - collectionProgress;Treatment Plant - collectionProgress;Twisted Pair Line - collectionProgress;Utility Electric Utility Site - collectionProgress;Utility Pole Guy - collectionProgress;Utility Pole Guy Line - collectionProgress;Utility Pole Tower

Site - collectionProgress;Valve - collectionProgress;Valve - collectionProgress;Valve - collectionProgress;Valve Pit - collectionProgress;Vertical Site - collectionProgress;Video Site - collectionProgress;Voice Switch - collectionProgress;Waveguide Line - collectionProgress

| Value | Definition (Notes) [Source] |
|---|---|
| temp | temp |

## CodeProjectType

Used by Attributes: Access Coverage Area - Disposition;Access Point - Disposition;Air Eliminator - Disposition;Air Pipe - Disposition;Air Pressure Device - Disposition;Amplifier - Disposition;Anchor - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Anode Test Station - Disposition;Antenna Line - Disposition;Antenna Site - Disposition;Attenuator - Disposition;Bus Line - Disposition;Cable - Disposition;Cable - Disposition;Cable Bridge Line - Disposition;Cable Ladder - Disposition;Cable Rack Line - Disposition;Cable Tray Line - Disposition;Cable Trough Line - Disposition;Capacitor - Disposition;Coaxial Line - Disposition;Culvert Center Line - Disposition;Culvert End - Disposition;DbSplice - Disposition;Device - Disposition;Device - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Discharge Point - Disposition;Disposal Tank - Disposition;Downspout - Disposition;Downspout - Disposition;Drain Field - Disposition;Drain Separator - Disposition;Drainage Basin - Disposition;Drainage Basin - Disposition;Drainage Divide - Disposition;Drainage Divide Line - Disposition;Drinking Water Sample Point - Disposition;Ductbank - Disposition;Ductbank - Disposition;Ductbank - Disposition;Equipment - Disposition;Farm Site - Disposition;Fiberoptic Line - Disposition;Fill Point - Disposition;Filter Strainer - Disposition;Filtration Bed - Disposition;Fire Connection Point - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Fitting - Disposition;Flow Control Device - Disposition;Flow Control Device - Disposition;Gate - Disposition;Generator - Disposition;Glycol Recovery Pit - Disposition;Grease Trap - Disposition;Grit Chamber - Disposition;Grit Chamber - Disposition;Ground Point - Disposition;Ground Point - Disposition;Groundplane Area - Disposition;Groundwave Area - Disposition;Head Bolt Outlet - Disposition;Headwall - Disposition;Headwall - Disposition;Headwall Line - Disposition;Headwall Line - Disposition;Hydrant - Disposition;Hydrant - Disposition;Impedance Matching Point - Disposition;Inlet - Disposition;Inlet - Disposition;Inlet - Disposition;Inlet - Disposition;Intake - Disposition;Intake Line - Disposition;Internet Center - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Junction - Disposition;Lagoon - Disposition;Lagoon - Disposition;Lift Station - Disposition;Light - Disposition;Light - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line - Disposition;Line Clean Out - Disposition;Line Of Sight Line - Disposition;Load Capacitor - Disposition;Load Coil - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Marker - Disposition;Media Converter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Meter - Disposition;Motor - Disposition;Multihop Area - Disposition;Network Systems Site - Disposition;Neutralizer - Disposition;Neutralizer - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator - Disposition;Oil Water Separator Diversion Vault - disposition;Open Drainage Area - Disposition;Open Drainage Line - Disposition;Other Cable - Disposition;Path Node Site - Disposition;Path Segment Line - Disposition;Pedestal - Disposition;Pedestal Site - Disposition;Pig Launch Point - Disposition;Pipe Line - Disposition;Plant Area - Disposition;Pressure Reducing Station - Disposition;Pullbox Site - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump - Disposition;Pump Booster Station - Disposition;Pump Ejector Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pump Station - Disposition;Pumpstation Ejector - Disposition;Radar Site - Disposition;Radio - Disposition;Radio Receiver - Disposition;Radio Transmitter - Disposition;Rect Point - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Rectifier - Disposition;Reducer - Disposition;Refinery Site - Disposition;Regulator - Disposition;Regulator - Disposition;Regulator Reducer - Disposition;Regulator Reducer - Disposition;Relay Station - Disposition;Repeater - Disposition;Reservoir - Disposition;Reservoir - Disposition;Reservoir - Disposition;Riser - Disposition;Riser - Disposition;Satellite - Disposition;Segmented Cable - Disposition;Segmented Cable Point - Disposition;Sensor - Disposition;Septic Tank - Disposition;Service Area - Disposition;Service Loop Point - Disposition;Sludge Bed - Disposition;Source - Disposition;Source - Disposition;Source Site - Disposition;Speaker - Disposition;Splice - Disposition;Splice - Disposition;Splitter - Disposition;Stilling Basin - Disposition;Storage Area - Disposition;Storm Ceptor - disposition;Storm Filter - disposition;Storm Trench Drain Line - disposition;Substation - Disposition;Switch - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank - Disposition;Tank Area - disposition;Telephone - Disposition;Telephone Booth - Disposition;Terminal - Disposition;Terminator -

Disposition;Transformer Vault - Disposition;Transformr Bank - Disposition;Transmission Pipeline - Disposition;Transmission Pipeline Segment Line - Disposition;Treatment Plant - Disposition;Treatment Plant - Disposition;Treatment Plant - Disposition;Treatment Unit - Disposition;Treatment Unit - Disposition;Twisted Pair Line - Disposition;Utility Electric Utility Site - Disposition;Utility Pole Guy - Disposition;Utility Pole Guy Line - Disposition;Utility Pole Tower Site - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve - Disposition;Valve Pit - Disposition;Vault - Disposition;Vault - Disposition;Vault - disposition;Vent - Disposition;Vertical Site - Disposition;Video Site - Disposition;Voice Switch - Disposition;Waveguide Line - Disposition

| Value | Definition (Notes) [Source] |
|---|---|

## CodePumpArea

Used by Attributes: Hydrant – Fire Pump Area

| Value | Definition (Notes) [Source] |
|---|---|
| WHITE_AREA_MER_2 | White Area MER 2 Fire Pump |
| RED_AREA_A_PIER | Red Area A Pier Fire Pump |
| YELLOW_AREA_B_PIER | Yellow Area B Pier Fire Pump |
| GREEN_AREA_E_PIER | Green Area E Pier Fire Pump |
| BLUE_AREA_HRLY_GARAGE | Blue Area Hourly Garage Pump |
| NA | Not applicable |
| UNKNOWN | Unknown |

## CodePumpSta

Used by Attributes: Pump Booster Station - Design;Capacitor - Install Type;Device - Install Type;Flow Control Device - Install Type;Meter - Install Type;Meter - Install Type;Meter - Install Type;Meter - Install Type;Meter - Install Type;Meter - Install Type;Regulator - Install Type;Flow Control Device - Installation Type;Pump Station - Sta Type;Pump Booster Station - Station Type

| Value | Definition (Notes) [Source] |
|---|---|
| BOOSTER | booster station [SDSFIE V2.1 FGDC Utilities Classification] |
| DOUBLE_POLE | double pole [SDSFIE V2.1 FGDC Utilities Classification] |
| DOWN_GUY | A wire guy running from the top of a pole to an anchor in the ground. [SDSFIE V2.1 FGDC Utilities Classification] |
| EJECTOR | ejector system [SDSFIE V1.6 ] |
| FAUCET | faucet [SDSFIE V2.1 FGDC Utilities Classification] |
| HYDRANT | hydrant [SDSFIE V2.1 FGDC Utilities Classification] |
| METER | meter [SDSFIE V1.4 ] |
| OPEN_DRAINAGE | The channel is part of an unaltered drainage system [SDSFIE V2.1 FGDC Utilities Classification] |
| PARSHALL_FLUME | parshall flume meter [SDSFIE V1.4 ] |
| PAVED_DITCH | The channel has a concrete or other paved surface [SDSFIE V2.1 FGDC Utilities Classification] |
| POLE | pole [SDSFIE V2.1 FGDC Utilities Classification] |
| PRESS_REDUCE | pressure reducer station [SDSFIE V2.1 FGDC Utilities Classification] |
| PUMP | pump station [SDSFIE V2.1 FGDC Utilities Classification] |
| RISER_POLE | riser pole [SDSFIE V2.1 FGDC Utilities Classification] |
| SPAN_GUY | A wire guy running from the top of a pole to the top of the adjacent pole [SDSFIE V2.1 FGDC Utilities Classification] |
| SPRINKLER | sprinkler head [SDSFIE V2.1 FGDC Utilities Classification] |
| TBD | To Be Determined [SDSFIE V2.1 ] |
| TOWER | tower [SDSFIE V2.1 FGDC Utilities Classification] |
| UNKNOWN | Unknown [SDSFIE V2.1 ] |
| UNPAVED_DITCH | The channel has no constructed or prepared surface [SDSFIE V2.1 FGDC Utilities Classification] |

## CodeRadio

Used by Attributes: Radar Site - Rad Type;Relay Station - Rad Type

| Value | Definition (Notes) [Source] |
|---|---|
| HF | High Frequency. [SDSFIE V2.3 Tinker Air Force Base] |
| LF | Low Frequency. [SDSFIE V2.3 Tinker Air Force Base] |
| UHF | Ultra High Frequency. [SDSFIE V2.3 Tinker Air Force Base] |
| VHF | Very High Frequency. [SDSFIE V2.3 Tinker Air Force Base] |

## CodeRadioType

Used by Attributes: Relay Station - Radio Type

| Value | Definition (Notes) [Source] |
|---|---|
| BASE_STATION | Base Station Type. [SDSFIE V2.3 Tinker Air Force Base] |
| MOBILE | Mobile Type. [SDSFIE V2.3 Tinker Air Force Base] |
| PORTABLE | Portable Type. [SDSFIE V2.3 Tinker Air Force Base] |
| REPEATOR | Repeator Type. [SDSFIE V2.3 Tinker Air Force Base] |

## CodeReservoirType

Used by Attributes: Reservoir - Res Type;Reservoir - Res Type

| Value | Definition (Notes) [Source] |
|---|---|
| CONSERVATION | The reservoir is used primarily for water conservation and storage. [SDSFIE V1.6 ] |
| FLOOD_CONTROL | The reservoir is used primarily for control of excessive rain fall to temporarily store excessive water. [SDSFIE V1.6 ] |
| LAGOON | lagoon [SDSFIE V1.4 ] |
| LAKE | lake [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| POND | pond [SDSFIE V1.4 ] |
| RECREATION | Recreation [SDSFIE V1.9 REEGIS] |
| TANK | tank [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeRockStrength

Used by Attributes: Marker - Rock Cnd

| Value | Definition (Notes) [Source] |
|---|---|
| HIGH | high dry strength/toughness [SDSFIE V1.4 ] |
| LOW | low dry strength/toughness [SDSFIE V1.4 ] |
| MEDIUM | medium dry strength/toughness [SDSFIE V1.4 ] |
| NONE | very weak, no strength, probably should class as soil [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VERYHIGH | very high dry strength/toughness [SDSFIE V1.4 ] |

## CodeSewageTestType

Used by Attributes: Lagoon - Test Type;Lagoon - Test Type;Storage Area - Test Type

| Value | Definition (Notes) [Source] |
|---|---|
| BOD | biological O2 dissolved [SDSFIE V1.4 ] |
| COD | chemical O2 dissolved [SDSFIE V1.4 ] |
| DO | dissolved O2 [SDSFIE V1.4 ] |
| FC | fecal coliform [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SS | suspended solids [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TC | total coliform bacteria [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeSheathInsulateType

Used by Attributes: Cable - Cbl Sht;Fiberoptic Line - Cbl Sht;Other Cable - Cbl Sht;Segmented Cable Point - Cbl Sht;Twisted Pair Line - Cbl Sht;Utility Pole Guy - Cbl Sht;Waveguide Line - Cbl Sht;Coaxial Line - Chl Sht;Anode Test Station - Install Type;Anode Test Station - Install Type;Anode Test Station - Install Type;Anode Test Station - Install Type;Anode Test Station - installType;Cable - Insul Material

| Value | Definition (Notes) [Source] |
|---|---|
| ALPETH | Aluminum Polyethylene [SDSFIE V2 Austin and Pitts] |
| ARP | Aluminum Rodent Protected Polyethylene [SDSFIE V2 Austin and Pitts] |
| ASBEST_SIL | asbestos-silicone bond [SDSFIE V1.4 ] |
| ASBESTOS | asbestos [SDSFIE V1.4 ] |
| AT | Aerial Tape Armor [SDSFIE V2 Austin and Pitts] |
| BT | Buried Tape Armor [SDSFIE V2 Austin and Pitts] |
| CAMBRIC_PB_COV | varnished cambric, Pb covered [SDSFIE V1.4 ] |
| CELLULOSE | cellulose-acetate fiber [SDSFIE V1.4 ] |
| COTTON_YARN | cotton yarn [SDSFIE V1.4 ] |
| CP | Corrosion Protection [SDSFIE V2 Austin and Pitts] |
| CPNM | Cross Ply Non Metallic [SDSFIE V2 Austin and Pitts] |
| DA | Double Wire Armor [SDSFIE V2 Austin and Pitts] |
| DJ | Jacketed Double Wire Armor [SDSFIE V2 Austin and Pitts] |
| DOUBLE_TAPE | double tape armored [SDSFIE V1.4 ] |
| F_FILLED | Foam Filled. [SDSFIE V2.5 AIR FORCE] |
| FIBER_PAPER | polyimide fiber paper [SDSFIE V1.4 ] |
| GLASS_FIBER | glass fiber-organic bond [SDSFIE V1.4 ] |
| GLASS_ORGANIC | glass/polyesterfib-organic bond [SDSFIE V1.4 ] |
| GLASS_SILICONE | glass/polyesterfib-silicone bond [SDSFIE V1.4 ] |
| GT | Gopher Tape Armor [SDSFIE V2 Austin and Pitts] |
| JP | Jute Protection [SDSFIE V2 Austin and Pitts] |
| JUTE | jute protected [SDSFIE V1.4 ] |
| KP | Kevlar Polyethylene [SDSFIE V2 Austin and Pitts] |
| KPSP | Kevlar Polyethylene Corrugated Steel [SDSFIE V2 Austin and Pitts] |
| LA | Light Armor [SDSFIE V2 Austin and Pitts] |
| LJ | Jacketed Light Wire Armor [SDSFIE V2 Austin and Pitts] |
| MG | Modified Gopher Tape Armor [SDSFIE V2 Austin and Pitts] |
| MP | Mechanical Protection [SDSFIE V2 Austin and Pitts] |
| NEOPRENE | neoprene [SDSFIE V1.4 ] |
| NONE | No outer sheath protection [SDSFIE V2 Austin and Pitts] |
| OPEN_WIRE | open wire [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PAP | Polyethylene Fused Aluminum [SDSFIE V2 Austin and Pitts] |

| | |
|---|---|
| PAPER | paper [SDSFIE V1.4 ] |
| PAPER_PB_COV | paper insulated Pb covered [SDSFIE V1.4 ] |
| PB_ARMOR | Pb armored [SDSFIE V1.4 ] |
| PB_COVER | Pb covered [SDSFIE V1.4 ] |
| PLASTIC_CLAD | plastic clad [SDSFIE V1.4 ] |
| PLASTIC_FOAM | Plastic, Foam Filled. [SDSFIE V2.5 AIR FORCE] |
| PLASTIC_GEL | plastic, gel-filled [SDSFIE V1.4 ] |
| POLY_CROSS | polyethylene (XLPE), cross-linked [SDSFIE V1.4 ] |
| POLY_FOAM | polyethylene (PE), foamed [SDSFIE V1.4 ] |
| PPP | polypropylene (PPP) [SDSFIE V1.4 ] |
| PVC | polyvinyl chloride [SDSFIE V1.4 ] |
| QUAD_TAPE | quad tape, armored [SDSFIE V1.4 ] |
| RPS | Rodent Protection Shield Polyethylene [SDSFIE V2 Austin and Pitts] |
| RUBBER_BUT | rubber-butyl [SDSFIE V1.4 ] |
| RUBBER_EPT | rubber-EPT [SDSFIE V1.4 ] |
| RUBBER_NBR | rubber-NBR [SDSFIE V1.4 ] |
| SA | Single Wire Armor [SDSFIE V2 Austin and Pitts] |
| SHIELDED | shielded [SDSFIE V1.4 ] |
| SJ | Jacketed Single Wire Armor [SDSFIE V2 Austin and Pitts] |
| SUBDA | Submarine Double Wire Armor [SDSFIE V2 Austin and Pitts] |
| SUBDJ | Submarine Jacketed Double Wire Armor [SDSFIE V2 Austin and Pitts] |
| TAPE_ARMOR | tape armored [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TFE | polytetrafluroethylene (TFE) [SDSFIE V1.4 ] |
| UM | Unsoldered Mechanical Protection [SDSFIE V2 Austin and Pitts] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| WEATHERPROOF | weatherproofed [SDSFIE V1.4 ] |
| WIRE_ARMOR | single wire, armored [SDSFIE V1.4 ] |

## CodeShoreBufferType

Used by Attributes: Segmented Cable Point - Buffer Type

| Value | Definition (Notes) [Source] |
|---|---|
| CRITICAL_AREA | The area that is 1000 feet landward of the mean high tide coastline and any tidal waterways. [SDSFIE V1.75 ] |
| NO_BUILD_ZONE | The area that is 100 feet landward of the mean high tide coastline and any tidal waterways. [SDSFIE V1.75 ] |

## CodeSoilConsistency

Used by Attributes: Lagoon - Soil Cdn;Lagoon - Soil Cdn;Marker - Soil Cnd

| Value | Definition (Notes) [Source] |
|---|---|
| FIRM | firm [SDSFIE V1.4 ] |
| HARD | hard [SDSFIE V1.4 ] |
| MEDIUMFIRM | medium firm [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SOFT | soft [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VERYHARD | very hard [SDSFIE V1.4 ] |
| VERYSOFT | very soft [SDSFIE V1.4 ] |

## CodeSoilsErosionK

Used by Attributes: Lagoon - Soil Ero;Lagoon - Soil Ero

| Value | Definition (Notes) [Source] |
|---|---|
| 0.02 | 0.02 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.05 | 0.05 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.10 | 0.10 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.17 | 0.17 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.20 | 0.20 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.24 | 0.24 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.28 | 0.28 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.32 | 0.32 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.37 | 0.37 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.43 | 0.43 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.49 | 0.49 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.55 | 0.55 [SDSFIE V1.7 FGDC Soils Classification] |
| 0.64_OR_MORE | 0.64 or more [SDSFIE V1.7 FGDC Soils Classification] |
| 0_02 | 0.02 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_05 | 0.05 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_10 | 0.10 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_15 | 0.15 [SDSFIE V1.8 FGDC Soils Classification] |
| 0_17 | 0.17 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_20 | 0.20 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_24 | 0.24 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_28 | 0.28 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_32 | 0.32 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_37 | 0.37 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_43 | 0.43 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_49 | 0.49 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_55 | 0.55 [SDSFIE V1.4 FGDC Soils Classification] |
| 0_64_OR_MORE | 0.64 or more [SDSFIE V1.4 FGDC Soils Classification] |
| TBD | to be determined [SDSFIE V1.4 FGDC Soils Classification] |
| UNKNOWN | unknown [SDSFIE V1.4 FGDC Soils Classification] |

## CodeSoilsFamily

Used by Attributes: Lagoon - Soil Fam;Lagoon - Soil Fam

| Value | Definition (Notes) [Source] |
|---|---|
| ALTAVISTA | fine-loamy, mixed, thermic Aquic Hapludults [SDSFIE V1.4 ] |
| AUTRYVILLE | loamy, siliceous, thermic Arenic Paleudults [SDSFIE V1.4 ] |
| AYCOCK | fine-silty, siliceous, thermic Typic Paleudults [SDSFIE V1.4 ] |
| BLANEY | loamy, siliceous, thermic Arenic Hapludults [SDSFIE V1.4 ] |
| BRAGG | fine-loamy, siliceous, acid, thermic Typic Udorthents [SDSFIE V1.4 ] |
| BUTTERS | coarse-loamy, siliceous, thermic Typic Paleudults [SDSFIE V1.4 ] |
| BYARS | clayey, kaolinitic, thermic Umbric Paleaquults [SDSFIE V1.4 ] |
| CANDOR | sandy, siliceous, thermic Arenic Paleudults [SDSFIE V1.4 ] |
| CAPEFEAR | clayey, mixed, thermic Typic Umbraquults [SDSFIE V1.4 ] |
| CHEWACLA | fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts [SDSFIE V1.4 ] |
| COXVILLE | clayey, kaolinitic, thermic Typic Paleaquults [SDSFIE V1.4 ] |

| | |
|---|---|
| CRAVEN | clayey, mixed, thermic Aquic Hapludults [SDSFIE V1.4 ] |
| CROATAN | loamy, siliceous, dysic, thermic Terric Medisaprists [SDSFIE V1.4 ] |
| DELOSS | fine-loamy, mixed, thermic Typic Umbraquults [SDSFIE V1.4 ] |
| DOGUE | clayey, mixed, thermic Aquic Hapludults [SDSFIE V1.4 ] |
| DOTHAN | fine-loamy, siliceous, thermic Plinthic Paleudults [SDSFIE V1.4 ] |
| DUNBAR | clayey, kaolinitic, thermic Aeric Paleaquults [SDSFIE V1.4 ] |
| DUPLIN | clayey, kaolinitic, thermic Aquic Paleudults [SDSFIE V1.4 ] |
| DYSTROCHREPT | loamy, thermic Dystrochrepts [SDSFIE V1.4 ] |
| EXUM | fine-silty, siliceous, thermic Aquic Paleudults [SDSFIE V1.4 ] |
| FACEVILLE | clayey, kaolinitic, thermic Typic Paleudults [SDSFIE V1.4 ] |
| FUQUAY | loamy, siliceous, thermic Arenic Plinthic Paleudults [SDSFIE V1.4 ] |
| GILEAD | clayey, kaolinitic, thermic Aquic Hapludults [SDSFIE V1.4 ] |
| GOLDSBORO | fine-loamy, siliceous, thermic Aquic Paleudults [SDSFIE V1.4 ] |
| GRANTHAM | fine-silty, siliceous, thermic Typic Paleaquults [SDSFIE V1.4 ] |
| JOHNSTON | coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts [SDSFIE V1.4 ] |
| KALMIA | fine-loamy over sandy or sandy skeletal, siliceous, thermic Typic Hapludults [SDSFIE V1.4 ] |
| KENANSVILLE | loamy, siliceous, thermic Arenic Hapludults [SDSFIE V1.4 ] |
| KUREB | thermic, uncoated Spodic Quartzipsamments [SDSFIE V1.4 ] |
| LAKELAND | thermic, coated Typic Quartzipsamments [SDSFIE V1.4 ] |
| LENOIR | clayey, mixed, thermic Aeric Paleaquults [SDSFIE V1.4 ] |
| LEON | sandy, siliceous, thermic Aeric Haplaquods [SDSFIE V1.4 ] |
| LYNCHBURG | fine-loamy, siliceous, thermic Aeric Paleaquults [SDSFIE V1.4 ] |
| LYNNHAVEN | sandy, siliceous, thermic Typic Haplaquods [SDSFIE V1.4 ] |
| MCCOLL | clayey, kaolinitic, thermic Typic Fragiaquults [SDSFIE V1.4 ] |
| NAHUNTA | fine-silty, siliceous, thermic Aeric Paleaquults [SDSFIE V1.4 ] |
| NORFOLK | fine-loamy, siliceous, thermic Typic Paleudults [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PACTOLUS | thermic, coated Aquic Quartzipsamments [SDSFIE V1.4 ] |
| PANTEGO | fine-loamy, siliceous, thermic Umbric Paleaquults [SDSFIE V1.4 ] |
| RAINS | fine-loamy, siliceous, thermic Typic Paleaquults [SDSFIE V1.4 ] |
| ROANOKE | clayey, mixed, thermic Typic Ochraquults [SDSFIE V1.4 ] |
| STALLINGS | coarse-loamy, siliceous, thermic Aeric Paleaquults [SDSFIE V1.4 ] |
| TARBORO | mixed, thermic Typic Udipsamments [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TORHUNTA | coarse-loamy, siliceous, acid, thermic Typic Humaquepts [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VAUCLUSE | fine-loamy, siliceous, thermic Typic Hapludults [SDSFIE V1.4 ] |
| WAGRAM | loamy, siliceous, thermic Arenic Paleudults [SDSFIE V1.4 ] |
| WAHEE | clayey, mixed, thermic Aeric Ochraquults [SDSFIE V1.4 ] |
| WICKHAM | fine-loamy, mixed, thermic Typic Hapludults [SDSFIE V1.4 ] |
| WOODINGTON | coarse-loamy, siliceous, thermic Typic Paleaqults [SDSFIE V1.4 ] |

## CodeSoilsTexture

Used by Attributes: Lagoon - Soil Tex;Lagoon - Soil Tex

| Value | Definition (Notes) [Source] |
|---|---|
| ASHY | Ashy [SDSFIE V1.8 FGDC Soils Classification] |
| BOLDGRAVEL | boulder gravel [SDSFIE V1.4 ] |
| BY | Bouldery [SDSFIE V1.8 FGDC Soils Classification] |
| BYV | Very bouldery [SDSFIE V1.8 FGDC Soils Classification] |
| BYX | Extremely bouldery [SDSFIE V1.8 FGDC Soils Classification] |

| | |
|---|---|
| C/SS | Clay/Sand with Stone. [SDSFIE V2.4 Army] |
| CB | Cobbly [SDSFIE V1.8 FGDC Soils Classification] |
| CBV | Very cobbly [SDSFIE V1.8 FGDC Soils Classification] |
| CBX | Extremely cobbly [SDSFIE V1.8 FGDC Soils Classification] |
| CLAY | clay [SDSFIE V1.4 FGDC Soils Classification] |
| CLAYLOAM | clay loam [SDSFIE V1.4 FGDC Soils Classification] |
| CN | Channery [SDSFIE V1.8 FGDC Soils Classification] |
| CNV | Very channery [SDSFIE V1.8 FGDC Soils Classification] |
| CNX | Extremely channery [SDSFIE V1.8 FGDC Soils Classification] |
| COARSANDYLOM | course sandy loam [SDSFIE V1.4 FGDC Soils Classification] |
| COARSESAND | coarse sand [SDSFIE V1.4 FGDC Soils Classification] |
| COARSESILT | coarse silt [SDSFIE V1.4 ] |
| COP | Coprogenous [SDSFIE V1.8 FGDC Soils Classification] |
| CORSCOBLGRAV | coarse cobble gravel [SDSFIE V1.4 ] |
| CORSPBLGRAVL | coarse pebble gravel [SDSFIE V1.4 ] |
| CS/CS | Clay-Sand/Clay-Silt. [SDSFIE V2.4 Army] |
| DIA | Diatomaceous [SDSFIE V1.8 FGDC Soils Classification] |
| FINCOBLGRAV | fine cobble gravel [SDSFIE V1.4 ] |
| FINEPBLGRAVL | fine pebble gravel [SDSFIE V1.4 ] |
| FINESAND | fine sand [SDSFIE V1.4 FGDC Soils Classification] |
| FINESANDYLOM | fine sandy loam [SDSFIE V1.4 FGDC Soils Classification] |
| FINESILT | fine silt [SDSFIE V1.4 ] |
| FL | Flaggy [SDSFIE V1.8 FGDC Soils Classification] |
| FLV | Very flaggy [SDSFIE V1.8 FGDC Soils Classification] |
| FLX | Extremely flaggy [SDSFIE V1.8 FGDC Soils Classification] |
| G/GS | Gravel/Gravel-Sand. [SDSFIE V2.4 Army] |
| GR | Gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GRAVEL | gravel [SDSFIE V1.4 ] |
| GRC | Coarse gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GRF | Fine gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GRM | Medium gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GRV | Very gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GRX | Extremely gravelly [SDSFIE V1.8 FGDC Soils Classification] |
| GS | Grassy [SDSFIE V1.8 FGDC Soils Classification] |
| GYP | Gypsiferous [SDSFIE V1.8 FGDC Soils Classification] |
| HB | Herbaceous [SDSFIE V1.8 FGDC Soils Classification] |
| HYDR | Hydrous [SDSFIE V1.8 FGDC Soils Classification] |
| LOAM | loam [SDSFIE V1.4 FGDC Soils Classification] |
| LOAMCOARSAND | loamy course sand [SDSFIE V1.4 FGDC Soils Classification] |
| LOAMFINESAND | loamy fine sand [SDSFIE V1.4 FGDC Soils Classification] |
| LS | loamy sand [SDSFIE V1.8 FGDC Soils Classification] |
| LVFS | loamy very fine sand [SDSFIE V1.8 FGDC Soils Classification] |
| MEDCOBLGRAVL | medium cobble gravel [SDSFIE V1.4 ] |
| MEDIUMSAND | medium sand [SDSFIE V1.4 ] |
| MEDIUMSILT | medium silt [SDSFIE V1.4 ] |
| MEDL | Medial [SDSFIE V1.8 FGDC Soils Classification] |
| MEDPEBLGRAVL | medium pebble gravel [SDSFIE V1.4 ] |
| MK | Mucky [SDSFIE V1.8 FGDC Soils Classification] |
| MR | Marly [SDSFIE V1.8 FGDC Soils Classification] |
| MS | Mossy [SDSFIE V1.8 FGDC Soils Classification] |
| OTHER | other [SDSFIE V1.4 ] |
| PBY | Parabouldery [SDSFIE V1.8 FGDC Soils Classification] |
| PBYV | Very parabouldery [SDSFIE V1.8 FGDC Soils Classification] |

| | |
|---|---|
| PBYX | Extremely parabouldery [SDSFIE V1.8 FGDC Soils Classification] |
| PCB | Paracobbly [SDSFIE V1.8 FGDC Soils Classification] |
| PCBV | Very paracobbly [SDSFIE V1.8 FGDC Soils Classification] |
| PCBX | Extremely paracobbly [SDSFIE V1.8 FGDC Soils Classification] |
| PCN | Parachannery [SDSFIE V1.8 FGDC Soils Classification] |
| PCNV | Very parachannery [SDSFIE V1.8 FGDC Soils Classification] |
| PCNX | Extremely parachannery [SDSFIE V1.8 FGDC Soils Classification] |
| PERMAFROST | permafrost [SDSFIE V1.4 ] |
| PF | Permanently frozen [SDSFIE V1.8 FGDC Soils Classification] |
| PFL | Paraflaggy [SDSFIE V1.8 FGDC Soils Classification] |
| PFLV | Very paraflaggy [SDSFIE V1.8 FGDC Soils Classification] |
| PFLX | Extremely paraflaggy [SDSFIE V1.8 FGDC Soils Classification] |
| PGR | Paragravelly [SDSFIE V1.8 FGDC Soils Classification] |
| PGRV | Very paragravelly [SDSFIE V1.8 FGDC Soils Classification] |
| PGRX | Extremely paragravelly [SDSFIE V1.8 FGDC Soils Classification] |
| PST | Parastony [SDSFIE V1.8 FGDC Soils Classification] |
| PSTV | Very parastony [SDSFIE V1.8 FGDC Soils Classification] |
| PSTX | Extremely parastony [SDSFIE V1.8 FGDC Soils Classification] |
| PT | Peaty [SDSFIE V1.8 FGDC Soils Classification] |
| ROCK | Rock. [SDSFIE V2.4 Army] |
| S | sand [SDSFIE V1.8 FGDC Soils Classification] |
| S/GS | Sand/Gravel Sand. [SDSFIE V2.4 Army] |
| S/SC | Silt/Silty-Clay. [SDSFIE V2.4 Army] |
| SANDYCLAY | sandy clay [SDSFIE V1.4 FGDC Soils Classification] |
| SANDYCLAYLOM | sandy clay loam [SDSFIE V1.4 FGDC Soils Classification] |
| SANDYLOAM | sandy loam [SDSFIE V1.4 FGDC Soils Classification] |
| SI | silt [SDSFIE V1.8 FGDC Soils Classification] |
| SILTYCLAY | silty clay [SDSFIE V1.4 FGDC Soils Classification] |
| SILTYLOAM | silty loam [SDSFIE V1.4 FGDC Soils Classification] |
| SLITYCLAYLOM | silty clay loam [SDSFIE V1.4 FGDC Soils Classification] |
| SR | Stratified [SDSFIE V1.8 FGDC Soils Classification] |
| SS/SC | Sand-Silt/Sand-Clay. [SDSFIE V2.4 Army] |
| ST | Stony [SDSFIE V1.8 FGDC Soils Classification] |
| STONES | stones [SDSFIE V1.4 ] |
| STV | Very stony [SDSFIE V1.8 FGDC Soils Classification] |
| STX | Extremely stony [SDSFIE V1.8 FGDC Soils Classification] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| VERYCOARSAND | very coarse sand [SDSFIE V1.4 ] |
| VERYFINESAND | very fine sand [SDSFIE V1.4 FGDC Soils Classification] |
| VERYFINESILT | very fine silt [SDSFIE V1.4 ] |
| VRYCRSPBGRVL | very coarse pebble gravel [SDSFIE V1.4 ] |
| VRYFINPBLGRV | very fine pebble gravel [SDSFIE V1.4 ] |
| VRYFINSANLOM | very fine sandy loam [SDSFIE V1.4 FGDC Soils Classification] |
| WD | Woody [SDSFIE V1.8 FGDC Soils Classification] |

## CodeSourceListFuelGas

Used by Attributes: Pump Booster Station - Fuel Source;Fill Point - Source;Line - Source;Meter - Source;Pump Station - Source

| Value | Definition (Notes) [Source] |
|---|---|
| ARROYO | arroyo/draw/wash [SDSFIE V1.4 ] |

| | |
|---|---|
| ARTISAN_WELL | artisan well [SDSFIE V1.4 ] |
| BAYOU | bayou [SDSFIE V1.4 ] |
| CREEK | creek [SDSFIE V1.4 ] |
| DEEPWELL | deep well [SDSFIE V1.4 ] |
| DRY_PLAYA | dry playa [SDSFIE V1.4 ] |
| FUMAROLE | fumarole [SDSFIE V1.8 USGS] |
| GEOTHERMAL | geothermal well [SDSFIE V1.8 USGS] |
| GEYSER | geyser [SDSFIE V1.4 ] |
| GLACIER | glacier [SDSFIE V1.4 ] |
| GULF | gulf [SDSFIE V1.4 ] |
| HAIL | hail [SDSFIE V1.4 ] |
| ICEBERG | iceberg [SDSFIE V1.4 ] |
| LAKE | lake [SDSFIE V1.4 ] |
| MUD_POT | mud pot [SDSFIE V1.8 USGS] |
| OCEAN | ocean [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| POND | pond [SDSFIE V1.4 ] |
| RAINFALL | rainfall [SDSFIE V1.4 ] |
| RESERVOIR | reservoir [SDSFIE V1.4 ] |
| RIME | hoarfrost, dew, condensed fog [SDSFIE V1.4 ] |
| RIVER | river [SDSFIE V1.4 ] |
| RUNOFF | runoff [SDSFIE V1.4 ] |
| SLEET | sleet [SDSFIE V1.4 ] |
| SLOUGH | slough [SDSFIE V1.4 ] |
| SNOWFALL | snowfall [SDSFIE V1.4 ] |
| SPRING | spring [SDSFIE V1.4 ] |
| STREAM | stream [SDSFIE V1.4 ] |
| SWAMP | swamp [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| WET_PLAYA | wet playa [SDSFIE V1.4 ] |

## CodeSpeakerImpedance

Used by Attributes: Speaker - Spkimp

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| VARIABLE | Variable (selectable). [SDSFIE V2.5 AIR FORCE] |

## CodeSplice

Used by Attributes: Splice - Spl Type

| Value | Definition (Notes) [Source] |
|---|---|
| DROP_INSERT | DROP INSERT SPLICE [SDSFIE V2 Air Force] |
| HALFTAP_FOLDBACK | Halftap fold back splice. [SDSFIE V2 AIR FORCE] |
| HALFTAP_INLINE | halftap inline splice [SDSFIE V2 ] |
| JUNCTION_FOLDBAC | Junction fold back splice. [SDSFIE V2.5 AIR FORCE] |
| JUNCTION_INLINE | junction inline splice [SDSFIE V2 ] |

| | |
|---|---|
| LOAD_FOLDBACK | Load fold back splice. [SDSFIE V2.5 AIR FORCE] |
| LOAD_INLINE | load inline splice [SDSFIE V2 ] |
| MULTIPLE_INLINE | Multiple inline splice. [SDSFIE V2.5 AIR FORCE] |
| MULTIPLEFOLDBACK | Multiple fold back splice. [SDSFIE V2.5 AIR FORCE] |
| STRAIGHT_INLINE | straight inline splice [SDSFIE V2 ] |
| STRAIGHTFOLDBACK | Straight inline splice. [SDSFIE V2.5 AIR FORCE] |

## CodeSpliceCaseEncapsulate

Used by Attributes: DbSplice - Ecs Type;Splice - Ecs Type

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| RE | Reenterable compound. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeSpliceCaseMat

Used by Attributes: DbSplice - Cas Material;Splice - Cas Material

| Value | Definition (Notes) [Source] |
|---|---|
| AL | Aluminum [SDSFIE V2 Austin and Pitts] |
| EVA | Ethylene Vinyl Acetate (Heat Shrinkable Tubing). [SDSFIE V2.5 AIR FORCE] |
| FIBER | Fiberglass [SDSFIE V2 Austin and Pitts] |
| IRON | Cast Iron [SDSFIE V2 Austin and Pitts] |
| LEAD | Lead [SDSFIE V2 Austin and Pitts] |
| OTHER | Other [SDSFIE V2 ] |
| PE | Polyethylene. [SDSFIE V2.5 AIR FORCE] |
| PP | Polypropylene. [SDSFIE V2.5 AIR FORCE] |
| PVC | Polyvinyl Chloride [SDSFIE V2 Austin and Pitts] |
| SS | Stainless Steel [SDSFIE V2 Austin and Pitts] |
| TBD | To Be Determined [SDSFIE V2 Austin and Pitts] |
| UNKNOWN | Unknown [SDSFIE V2 ] |

## CodeSpliceCaseTyp

Used by Attributes: DbSplice - Cas Type;Splice - Cas Type

| Value | Definition (Notes) [Source] |
|---|---|
| 12_5SS | 12.5 Inch Stainless Steel. [SDSFIE V2.5 AIR FORCE] |
| 2_TYPE | 3 Type. [SDSFIE V2.5 AIR FORCE] |
| 3BB | 4 Inch Better Buried. [SDSFIE V2.5 AIR FORCE] |
| 3RS | 4 Inch ReddiSeal. [SDSFIE V2.5 AIR FORCE] |
| 3SS | 4 Inch Stainless Steel. [SDSFIE V2.5 AIR FORCE] |
| 4BB | 5 Inch Better Buried. [SDSFIE V2.5 AIR FORCE] |
| 4RS | 5 Inch ReddiSeal. [SDSFIE V2.5 AIR FORCE] |
| 4SS | 5 Inch Stainless Steel. [SDSFIE V2.5 AIR FORCE] |
| 6_5BB | 6.5 Inch Better Buried. [SDSFIE V2.5 AIR FORCE] |
| 6_5RE | 6.5 Inch ReddiSeal. [SDSFIE V2.5 AIR FORCE] |
| 6_5SS | 6.5 Inch Stainless Steel. [SDSFIE V2.5 AIR FORCE] |
| 9_5BB | 9.5 Inch Better Buried. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| 9_5RS | 9.5 Inch ReddiSeal. [SDSFIE V2.5 AIR FORCE] |
| 9_5SS | 9.5 Inch Stainless Steel. [SDSFIE V2.5 AIR FORCE] |
| FOSC_100_B_H | Raychem FOSC-100 B/H [SDSFIE V2 Austin and Pitts] |
| HS | Heat Shrinkable. [SDSFIE V2.5 AIR FORCE] |
| KBV | K and B Vault. [SDSFIE V2.5 AIR FORCE] |
| LEAD | Lead Tube. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other [SDSFIE V2 ] |
| READY_ACCESS | Ready Access Aerial Terminal. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined [SDSFIE V2 ] |
| UC_6_9 | Siemens UC 6-9 [SDSFIE V2 Austin and Pitts] |
| UCN_7_10 | Siemens UCN 7-10 [SDSFIE V2 Austin and Pitts] |
| UNKNOWN | Unknown [SDSFIE V2 ] |

## CodeSpliceMethod

Used by Attributes: Splice - Method

| Value | Definition (Notes) [Source] |
|---|---|
| AMP | Amp [SDSFIE V2 Austin and Pitts] |
| B | B-connectors [SDSFIE V2 Austin and Pitts] |
| ELAST | Elastomeric Fiber Splice [SDSFIE V2 Austin and Pitts] |
| FACTORY | Factory Splice [SDSFIE V2 Austin and Pitts] |
| FUSION | Fusion Fiber Splice [SDSFIE V2 Austin and Pitts] |
| M | Modular [SDSFIE V2 Austin and Pitts] |
| MECH | Other Mechanical [SDSFIE V2 Austin and Pitts] |
| OTHER | Other [SDSFIE V2 Austin and Pitts] |
| ROTARY | Rotary Fiber Splice [SDSFIE V2 Austin and Pitts] |
| SL | Scotch Locks (Copper) [SDSFIE V2 Austin and Pitts] |
| TBD | To Be Determined [SDSFIE V2 ] |
| TS | Twist and Solder or Sleeve [SDSFIE V2 Austin and Pitts] |
| UNKNOWN | Unknown [SDSFIE V2 ] |

## CodeSplitterType

Used by Attributes: Splitter - Splt Type

| Value | Definition (Notes) [Source] |
|---|---|
| 2_WAY | 2 Way Splitter [SDSFIE V2 Tinker Air Force Base] |
| 3_WAY | 3 Way Splitter [SDSFIE V2 Tinker Air Force Base] |
| 4_WAY | 4 Way Splitter [SDSFIE V2 Tinker Air Force Base] |
| 5_WAY | 5 Way Splitter [SDSFIE V2 Tinker Air Force Base] |
| 6_WAY | 6 Way Splitter [SDSFIE V2 Tinker Air Force Base] |

## CodeStatus

Used by Attributes: Junction - Status;Telephone - Status

| Value | Definition (Notes) [Source] |
|---|---|
| ABANDONED | Abandoned |
| ACTIVE | Active surface |
| AIRSPACED | A favorable airspace determination has been issued |
| AS_BUILT | As-Built |

| | |
|---|---|
| BROKEN | Broken or rough surface |
| CLOSED | Closed surface |
| CONDEMNED | Condemned |
| DEMOLISHED | Demolished |
| ENV_CLEARED | All required environmental actions and documentation described in FAAO 5050.4 National Environmental Policy Act (NEPA) have been satisfied |
| FAILED_AID | Failure or irregular operation of visual aides |
| INACTIVE | Inactive |
| LIMITED | Limited operations] |
| LONG_TERM | Indicates the feature is part of a long term (11 + years) plan |
| MEDIUM_TERM | Indicates the feature is part of a midterm (6 - 10 year) plan |
| NON_OPERATIONAL | Non-operational |
| OCCUPIED | Occupied |
| OPERATIONAL | Operational (fully) |
| OTHER | Other |
| PARKED | Parked or disabled aircraft |
| PERMANENT | Permanent |
| PORTABLE | Portable |
| RELEASED | Used to track land released by the airport |
| S_POWER | Secondary power supply in operation |
| SEMI_PERMANENT | Semi_Permanent |
| SHORT_TERM | Indicates the feature is part of a short term (0 - 5 year) plan |
| TBD | To be determined |
| TEMPORARY | Temporary |
| TERMINATED | Terminated no longer used |
| UNDER_CONSTRUCTION | Planned or under construction |
| UNKNOWN | Unknown |
| UNOCCUPIED | Unoccupied |
| WORK_IN_PROGRESS | Construction or work in progress |
| PROPOSED | Planned to be installed |
| REMOVED | Removed from location, though pipes may still be present |
| BURIED | Partially or completely covered by soil |
| INCOMPLETE | Partially disassembled |

## CodeStatusElectricSwitch

Used by Attributes: Switch - Swt Sta

| Value | Definition (Notes) [Source] |
|---|---|
| CLOSED | closed [SDSFIE V1.4 ] |
| CLOSEDCLOSED | closed - normally closed [SDSFIE V1.4 ] |
| CLOSEDOPEN | closed - normally open [SDSFIE V1.4 ] |
| OPEN | open [SDSFIE V1.4 ] |
| OPENCLOSED | open - normally closed [SDSFIE V1.4 ] |
| OPENOPEN | open - normally open [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeStyleDrainField

Used by Attributes: Septic Tank - Drnfl St;Grease Trap - Field Drain Style

| Value | Definition (Notes) [Source] |
|---|---|

| | |
|---|---|
| FAN | fan drain field [SDSFIE V1.4 ] |
| NETWORK | network drain field [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SEEP_PIT | seepage pit [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TILE | tile field [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeStyleGates

Used by Attributes: Gate - Gate St

| Value | Definition (Notes) [Source] |
|---|---|
| FLAP | flap gate [SDSFIE V1.4 ] |
| LIFT | lift gate [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeStyleOpenChannel

Used by Attributes: Open Drainage Line - Chan St

| Value | Definition (Notes) [Source] |
|---|---|
| CANALCMPLSEC | canal complex section [SDSFIE V1.4 ] |
| CANALTRPZSEC | canal trapezoidal section [SDSFIE V1.4 ] |
| LAKE | lake [SDSFIE V1.4 ] |
| OPENDRAINAGE | open drainage [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| PAVEDDITCH | paved ditch [SDSFIE V1.4 ] |
| PAVEDINVRTDR | paved invert drain [SDSFIE V1.4 ] |
| POND | pond [SDSFIE V1.4 ] |
| RIVER | river [SDSFIE V1.4 ] |
| STORMWATER | storm water retention reservoir [SDSFIE V1.4 ] |
| SWALE | swale [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| UNPAVEDITCH | unpaved ditch [SDSFIE V1.4 ] |

## CodeStyleTank

Used by Attributes: Septic Tank - Tank St;Tank - Tank St;Tank - Tank St;Tank - Tank St;Tank - Tank St;Tank - Tank Style;Transmission Pipeline - Tank Style;Disposal Tank - tankSt;Tank Area - tankSt;Grease Trap - Trap Style

| Value | Definition (Notes) [Source] |
|---|---|
| ABOVEGROUND | A receptacle or chamber of which 90 percent or more is located above the surface of the ground. [SDSFIE V1.4 ] |
| ABVGRND_UNDRGRND | Aboveground and underground. [SDSFIE V2.31 Air Force] |
| ALODINE_TANK | alodine tank [SDSFIE V2.3 Edwards Air Force Base] |
| BARRELS | Barrels, drums or cans. [SDSFIE V2.31 Air Force] |
| DRAINSUMP | drain sump tank [SDSFIE V1.4 ] |
| ELEVATED | elevated [SDSFIE V1.4 ] |
| HOT_WATER_TANK | hot water rinse tank [SDSFIE V2.3 Edwards Air Force Base] |

| | |
|---|---|
| HYDROPNEU | hydropneumatic [SDSFIE V1.4 ] |
| IND_WASTE_TANK | industrial waste tank [SDSFIE V2.3 Edwards Air Force Base] |
| OTHER | other [SDSFIE V1.4 ] |
| RAILROAD_TANKCAR | Railroad Tank Car. [SDSFIE V2.31 Air Force] |
| SCP | self contained propane gas tank [SDSFIE V1.4 ] |
| SEMIBRD_UNDRGRND | Semi-buried and Underground. [SDSFIE V2.31 Air Force] |
| SEMIBURIED | Semi-buried. [SDSFIE V2.31 Air Force] |
| STANDPIPE | standpipe [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TRUCK | Truck. [SDSFIE V2.31 Air Force] |
| UNCONFNDRESV | unconfined reservoir [SDSFIE V1.4 ] |
| UNDERGROUND | A receptacle or chamber of which 10 percent or more is located beneath the surface of the ground. [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| TEMP | temp |

## CodeStyleValve

Used by Attributes: Air Pressure Device - Dev St;Fill Point - Valve St;Hydrant - Valve St;Valve - Valve St;Valve - Valve St;Valve - Valve St;Valve - Valve St;Valve - Valve St;Valve - Valve St;Fire Connection Point - Valve Style;Hydrant - Valve Style;Valve - Valve Style;Valve - valveSt

| Value | Definition (Notes) [Source] |
|---|---|
| ANGLE | angle [SDSFIE V1.4 ] |
| BALL | ball [SDSFIE V1.4 ] |
| BUTTERFLY | butterfly [SDSFIE V1.4 ] |
| CHECK | check [SDSFIE V1.4 ] |
| DRYPIPE | dry pipe [SDSFIE V1.4 ] |
| GATE | gate [SDSFIE V1.4 ] |
| GLOBE | globe [SDSFIE V1.4 ] |
| NEEDLE | needle [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| OTHERPOSTIND | other post indicator [SDSFIE V1.4 ] |
| PLUG | plug [SDSFIE V1.4 ] |
| PRESSREDUCNG | pressure reducing [SDSFIE V1.4 ] |
| PRESSRELIEF | pressure relief [SDSFIE V1.4 ] |
| QUAD | quad [SDSFIE V1.4 ] |
| REGULATING | regulating [SDSFIE V1.4 ] |
| STOP_WASTE | stop and waste [SDSFIE V1.4 ] |
| SWINGCHECK | swing check [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| TRIPLEDUTY | triple duty [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeSubstationType

Used by Attributes: Substation - Sst Type

| Value | Definition (Notes) [Source] |
|---|---|
| DISTRIBUTION | Substations located in the middle of a load area. [SDSFIE V1.6 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SUBTRANSMISSION | Electric substations with equipment used to switch circuits operating at voltages in the range of 34.5 to 161kV. [SDSFIE V1.6 ] |

| | |
|---|---|
| TBD | to be determined [SDSFIE V1.4 ] |
| TRANSMISSION | A substation which uses alternating current which contains equipment used to sectionalize the system when a fault or circuit develops. [SDSFIE V1.6 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeSueQualityLevel

Used by Attributes:

| Value | Definition (Notes) [Source] |
|---|---|
| A | Potholing |
| B | Subsurface Detection |
| C | Field Survey of Apurtenances |
| D | Records |
| UNKNOWN | Unknown |

## CodeSurfaceComposition

Used by Attributes: Cable Trough Line - Material

| Value | Definition (Notes) [Source] |
|---|---|
| AGS | Asphalt and turf |
| ASPH | Asphalt |
| BE | Bare earth |
| BITUM | Bitumen |
| BRICK | Brick |
| CA | Concrete and asphalt |
| CG | Concrete grooved |
| CGS | Concrete and turf |
| CLAY | Clay |
| CONC | Concrete |
| CORAL | Coral |
| DS | Desert/Sand |
| GRADE | Graded surface |
| GRAVEL | Gravel |
| GS | Turf |
| ICE | ice |
| LATERITE | Laterite |
| MACADAM | Macadam |
| MATS | MATS |
| MEMBRANE | MEMBRANE |
| METAL | METAL |
| OTHER | Other type of surface composition |
| PSP | PSP |
| SAND | SAND |
| SI | Snow/Ice |
| SNOW | Snow |
| STONE | Stone |
| WATER | Water |
| WOOD | Wood |

## CodeTankUse

Used by Attributes: Disposal Tank - Tank Use;Tank - Tank Use;Tank - Tank Use;Tank - Tank Use;Tank - Tank Use;Tank - Tank Use;Tank Area - tankUse

| Value | Definition (Notes) [Source] |
|---|---|
| CHEMICAL | chemical [SDSFIE V1.4 ] |
| DISPOSAL | disposal tank [SDSFIE V1.4 ] |
| EWS | Reserve water source used by emergency firefighting services. [SDSFIE V2.21 Lakenheath AFB] |
| FUEL | fuel [SDSFIE V1.4 ] |
| NATGAS | natural gas [SDSFIE V1.4 ] |
| OIL | oil [SDSFIE V1.75 ] |
| OTHER | other [SDSFIE V1.4 ] |
| POL | Petroleum, Oil, and Lubricants. [SDSFIE V2.31 Air Force] |
| POTWATER | potable water [SDSFIE V1.4 ] |
| PROPGAS | propane gas [SDSFIE V1.4 ] |
| RAWWATER | raw water [SDSFIE V1.4 ] |
| SEPTIC_TANK | septic tank [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeTerminalCaseType

Used by Attributes: Terminal - Case Type

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | Other [SDSFIE V2 ] |
| PED12 | 12 Inch Pedestal [SDSFIE V2 Austin and Pitts] |
| PED4 | 4 Inch Pedestal [SDSFIE V2 Austin and Pitts] |
| PED6 | 6 Inch Pedestal [SDSFIE V2 Austin and Pitts] |
| PED8 | 8 Inch Pedestal [SDSFIE V2 Austin and Pitts] |
| TBD | To Be Determined [SDSFIE V2 ] |
| TRANS | Transducer [SDSFIE V2 Austin and Pitts] |
| UNKNOWN | Unknown [SDSFIE V2 ] |

## CodeTerminalType

Used by Attributes: Terminal - Term Type

| Value | Definition (Notes) [Source] |
|---|---|
| BNC_F | BNC-F - Bayonet Neill Concelman (BMC), Female. [SDSFIE V2.5 AIR FORCE] |
| BNC_M | BNC-M - Bayonet Neill Concelman (BMC), Male. [SDSFIE V2.5 AIR FORCE] |
| ENC | Enclosure [SDSFIE V2 Austin and Pitts] |
| ENCAP | Encapsulated [SDSFIE V2 Austin and Pitts] |
| F_TYPE_F | F-F - F TYPE, Female. [SDSFIE V2.5 AIR FORCE] |
| F_TYPE_M | F-M - F TYPE, Male. [SDSFIE V2.5 AIR FORCE] |
| FC | Fixed Count [SDSFIE V2 Austin and Pitts] |
| FC_F | FC-F - MIL-C-39012 category D type, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| FC_M | FC-M - MIL-C-39012 category D type, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| FCCP | Fixed Count Control Point [SDSFIE V2 Austin and Pitts] |
| FCTP | Fixed Count Taper Point [SDSFIE V2 Austin and Pitts] |
| FDDI_F | FDDI-F - Fiber Distributed Data Interface, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| FIDDI_M | FDDI-M - Fiber Distributed Data Interface, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| LC_F | LC-F - Limited Co-ordination Specification (LC Spec.), Female. [SDSFIE V2.5 AIR FORCE] |

| | |
|---|---|
| LC_M | LC-M - Limited Co-ordination Specification (LC Spec.), Male. [SDSFIE V2.5 AIR FORCE] |
| N_TYPE_F | N-F - N TYPE, Female. [SDSFIE V2.5 AIR FORCE] |
| N_TYPE_M | N-M - N TYPE, Male [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| RA | Ready Access [SDSFIE V2 Austin and Pitts] |
| RACP | Ready Access Control Point [SDSFIE V2 Austin and Pitts] |
| RATP | Ready Access Taper Point [SDSFIE V2 Austin and Pitts] |
| RE | Reenterable [SDSFIE V2 Austin and Pitts] |
| SC_F | SC-F - Plug and socket, push-pull latch, FO connector, Female. [SDSFIE V2.5 AIR FORCE] |
| SC_M | SC-M - Plug and socket, push-pull latch, FO connector, Male. [SDSFIE V2.5 AIR FORCE] |
| SMA_AF | SMA-AF - Subminiature Version A, Female. [SDSFIE V2.5 AIR FORCE] |
| SMA_AM | SMA-AM - Subminiature Version A, Male. [SDSFIE V2.5 AIR FORCE] |
| SMC_CF | SMC-CF - Subminiature Version C, Female. [SDSFIE V2.5 AIR FORCE] |
| SMC_CM | SMC-CM - Subminiature Version C, Male. [SDSFIE V2.5 AIR FORCE] |
| ST_F | ST-F - ST, Female. [SDSFIE V2.5 AIR FORCE] |
| ST_M | ST-M - ST, Male. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| TNC_F | TNC-F - TNC Female. [SDSFIE V2.5 AIR FORCE] |
| TNC_M | TNC-M - TNC Male. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeTransVehicleType

Used by Attributes: Media Converter - Vehtype

| Value | Definition (Notes) [Source] |
|---|---|
| GOV | Areas that contain government owned vehicles only. [SDSFIE V2.5 ] |
| POV | Areas that contain privately owned vehicles. [SDSFIE V2.5 ] |

## CodeTruckType

Used by Attributes: Hydrant - Truck Type

| Value | Definition (Notes) [Source] |
|---|---|
| FUEL_SVC_UNIT | Trailer-mounted Fuel Servicing Unit [SDSFIE V2.31 Air Force] |
| HOSE_CART | Hose cart - truck only [SDSFIE V2.31 Air Force] |
| UNKNOWN | Unknown [SDSFIE V2.31 Air Force] |
| WATER_SEPARATOR | Filter - Water separator [SDSFIE V2.31 Air Force] |

## CodeUtilityGuyType

Used by Attributes: Utility Pole Guy - Guy Type

| Value | Definition (Notes) [Source] |
|---|---|
| ANCHOR_GUY | anchor guy [SDSFIE V1.4 ] |
| BUILDING_GUY | building guy [SDSFIE V1.4 ] |
| COMPRESS_GUY | compressive guy [SDSFIE V1.4 ] |
| DOWN_GUY | A wire guy running from the top of a pole to an anchor in the ground. [SDSFIE V1.75 ] |
| OTHER | other [SDSFIE V1.4 ] |
| SPAN_GUY | A wire guy running from the top of a pole to the top of the adjacent pole [SDSFIE V1.75 ] |
| STUB_GUY | stub guy [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |

| | |
|---|---|
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeUtilityOwnershipType

Used by Attributes: Utility Electric Utility Site - Utility Owner Type;Service Area - Utilown

| Value | Definition (Notes) [Source] |
|---|---|
| PRIVATE | Private entity (e.g., individual, corporation, etc.). [SDSFIE V2 AWWA] |
| PUBLIC | Public entity (e.g., federal, state, or local government). [SDSFIE V2 AWWA] |

## CodeValveOpen

Used by Attributes:

| Value | Definition (Notes) [Source] |
|---|---|
| CLOCKWISE | CLOCKWISE |
| COUNTER_CLOCKWISE | COUNTER_CLOCKWISE |
| UNKNOWN | UNKNOWN |

## CodeValveType

Used by Attributes: Air Pressure Device - Use;Valve - valveDesc

| Value | Definition (Notes) [Source] |
|---|---|
| BACKFLOW | BACKFLOW [FGDC Utilities Classification] |
| BLOW_OFF | BLOW_OFF [FGDC Utilities Classification] |
| CHECK | CHECK [AWWA] |
| GATE | GATE [AWWA] |
| GLOBE | GLOBE [AWWA] |
| OTH | Other |
| POSTINDICATOR | POSTINDICATOR [AWWA] |
| PRV | PRV [FGDC Utilities Classification] |
| TAP | TAP [FGDC Utilities Classification] |
| UNK | Unknown |

## CodeValveStatus

Used by Attributes:

| Value | Definition (Notes) [Source] |
|---|---|
| OPEN | OPEN |
| CLOSED | CLOSED |
| UNKNOWN | UNKNOWN |

## CodeVerticalConnectingBlock

Used by Attributes: Vertical Site - Covtbk

| Value | Definition (Notes) [Source] |
|---|---|
| 303 | 303. [SDSFIE V2.5 AIR FORCE] |
| 305 | 305. [SDSFIE V2.5 AIR FORCE] |
| 355 | 355. [SDSFIE V2.5 AIR FORCE] |
| 399 | 399. [SDSFIE V2.5 AIR FORCE] |
| 700 | 700. [SDSFIE V2.5 AIR FORCE] |
| 713 | 713. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeVerticalHeight

Used by Attributes: Vertical Site - Covtht

| Value | Definition (Notes) [Source] |
|---|---|
| 11_FT_6_IN | 11 Foot 6 Inch. [SDSFIE V2.5 AIR FORCE] |
| 7_FT | 7 Foot. [SDSFIE V2.5 AIR FORCE] |
| 8_FT | 8 Foot. [SDSFIE V2.5 AIR FORCE] |
| 9_FT | 9 Foot. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeVerticalLocation

Used by Attributes: Transmission Pipeline - Vertical Location

| Value | Definition (Notes) [Source] |
|---|---|
| ELEVATED | Elevated. [SDSFIE V2.4 USGS] |
| NEAR | Near. [SDSFIE V2.4 USGS] |
| UNDERGROUND | Underground. [SDSFIE V2.4 USGS] |
| UNSPECIFIED | Unspecified. [SDSFIE V2.4 USGS] |

## CodeVerticalMountBlock

Used by Attributes: Vertical Site - Covtmb

| Value | Definition (Notes) [Source] |
|---|---|
| 8_IN | 8 Inch. [SDSFIE V2.5 AIR FORCE] |
| NONE | None. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To be determined. [SDSFIE V2.5 AIR FORCE] |
| UNIVERSAL | Universal. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeVerticalMountingArea

Used by Attributes: Vertical Site - Covtma

| Value | Definition (Notes) [Source] |
|---|---|
| 126_IN | 126 Inch. [SDSFIE V2.5 AIR FORCE] |
| 76_IN | 76 Inch. [SDSFIE V2.5 AIR FORCE] |
| 84_IN | 84 Inch. [SDSFIE V2.5 AIR FORCE] |
| 92_IN | 92 Inch. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeVerticalShelfWidth

Used by Attributes: Vertical Site - Covtsw

| Value | Definition (Notes) [Source] |
|---|---|
| 14_IN | 14 Inch. [SDSFIE V2.5 AIR FORCE] |
| 20_5_IN | 20.5 Inch. [SDSFIE V2.5 AIR FORCE] |
| 26_5_IN | 26.5 Inch. [SDSFIE V2.5 AIR FORCE] |
| 32_5_IN | 32.5 Inch. [SDSFIE V2.5 AIR FORCE] |
| 5_5_IN | 5.5 Inch. [SDSFIE V2.5 AIR FORCE] |
| 8_5_IN | 8.5 Inch. [SDSFIE V2.5 AIR FORCE] |
| 9_IN | 9 Inch. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |

## CodeVerticalType

Used by Attributes: Vertical Site - Covtty

| Value | Definition (Notes) [Source] |
|---|---|
| DOUBLE_SIDED | Double sided. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| SINGLE_SIDED | Single sided. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |
| UNKNOWN | Unknown. [SDSFIE V2.5 AIR FORCE] |
| WALL_MOUNT | Wall Mount. [SDSFIE V2.5 AIR FORCE] |

## CodeVesselType

Used by Attributes: Meter - Dredge Vessel Type

| Value | Definition (Notes) [Source] |
|---|---|
| BACKHOE | A dredge with a single bucket on an arm which moves towards the vessel as the bucket excavates the soil. [SDSFIE V2.2 COE Dredging] |
| CLAMSHELL | Type of mechanical cable excavator dredge that uses a single bucket attached to the dredge crane with cables. [SDSFIE V2.2 COE Dredging] |
| CUTTERHEAD | A hydraulic dredge that uses a cutterhead at the suction entrance to dislodge bottom material. [SDSFIE V2.2 COE Dredging] |
| DIPPER | A power shovel operated from a barge. [SDSFIE V2.2 COE Dredging] |
| DRAGLINE | An excavating machine with a bucket that is dropped by a boom and then dragged toward the machine by a cable. [SDSFIE V2.2 COE Dredging] |
| HOPPER | A self-propelled floating plant capable of dredging material, storing it, transporting it to the disposal area, and placing the material at a designated site. [SDSFIE V2.2 COE Dredging] |
| OTHER | Dredges using non-conventional means or a combination of hydraulic and mechanical processes, e.g., pneumatic, agitation, etc. [SDSFIE V2.2 COE Dredging] |
| PLAIN_SUCTION | Hydraulic dredge with no mechanical device at suction mouth, a cutter for dislodging bottom material [SDSFIE V2.2 COE Dredging] |
| TUGBOAT | Used for agitation dredging [SDSFIE V2.2 COE Dredging] |
| WATER_INJECTION | A type of dredge that injects water at high velocity and/or volume, into the shoaled material to move it to deeper area. [SDSFIE V2.2 COE Dredging] |

## CodeVoltage

Used by Attributes: Regulator - Pri Volt;Transformr Bank - Pri Volt;Pump - Pwr Req;Pump - Pwr Req;Regulator - Sec Volt;Transformr Bank - Sec Volt;Rect Point - Volt In;Rectifier - Volt In;Rectifier - Volt In;Rectifier - Volt In;Rectifier - Volt In;Substation - Volt In;Rect Point - Volt Out;Rectifier - Volt Out;Rectifier - Volt Out;Rectifier - Volt Out;Rectifier - Volt

Out;Substation - Volt Out;Bus Line - Voltage;Cable - Voltage;Capacitor - Voltage;Ductbank - Voltage;Ductbank - Voltage;Equipment - Voltage;Generator - Voltage;Head Bolt Outlet - Voltage;Light - Voltage;Meter - Voltage;Motor - Voltage;Switch - Voltage;Rectifier - Voltage Input;Rectifier - Voltage Output

| Value | Definition (Notes) [Source] |
|---|---|
| 110V | 110 volts [SDSFIE V1.4 ] |
| 115000V | 115,000 volts [SDSFIE V1.4 ] |
| 115V | 115 volts [SDSFIE V1.4 ] |
| 120_240V | 120/240 volts [SDSFIE V1.4 ] |
| 12000V | 12,000 volts [SDSFIE V1.4 ] |
| 12000Y_6930V | 12,000Y/6,930 volts [SDSFIE V1.4 ] |
| 120V | 120 volts [SDSFIE V1.4 ] |
| 12470V | 12,470 volts [SDSFIE V1.4 ] |
| 12470Y_7200V | 12,470Y/7,200 volts [SDSFIE V1.4 ] |
| 12V | 12 volts [SDSFIE V1.4 ] |
| 13200V | 13,200 volts [SDSFIE V1.4 ] |
| 13200Y_7620V | 13,200Y/7,620 volts [SDSFIE V1.4 ] |
| 138000V | 138,000 volts [SDSFIE V1.4 ] |
| 15000V | 15,000 volts [SDSFIE V1.4 ] |
| 15930V | 15,930 volts [SDSFIE V1.4 ] |
| 19920V | 19,920 volts [SDSFIE V1.4 ] |
| 20780V | 20,780 volts [SDSFIE V1.4 ] |
| 20780Y_12000V | 20,780Y/12,000 volts [SDSFIE V1.4 ] |
| 208V | 208 volts [SDSFIE V1.4 ] |
| 208Y_120V | 208Y/120 volts [SDSFIE V1.4 ] |
| 220V | 220 volts [SDSFIE V1.4 ] |
| 22860V | 22,860 volts [SDSFIE V1.4 ] |
| 22860Y_13200V | 22,860Y/13,200 volts [SDSFIE V1.4 ] |
| 230000V | 230,000 volts [SDSFIE V1.4 ] |
| 230V | 230 volts [SDSFIE V1.4 ] |
| 2400V | 2,400 volts [SDSFIE V1.4 ] |
| 240V | 240 volts [SDSFIE V1.4 ] |
| 24940V | 24,940 volts [SDSFIE V1.4 ] |
| 24940Y_14400V | 24,940Y/14,400 volts [SDSFIE V1.4 ] |
| 24V | 24 volts [SDSFIE V1.4 ] |
| 27600V | 27,600 volts [SDSFIE V1.4 ] |
| 27600Y_15930V | 27,600Y/15,930 volts [SDSFIE V1.4 ] |
| 277V | 277 volts [SDSFIE V1.4 ] |
| 345000V | 345,000 volts [SDSFIE V1.4 ] |
| 34500V | 34,500 volts [SDSFIE V1.4 ] |
| 34500Y_19920V | 34,500Y/19,920 volts [SDSFIE V1.4 ] |
| 400V | 400 volts [SDSFIE V1.4 ] |
| 4160V | 4,160 volts [SDSFIE V1.4 ] |
| 4160Y_2400V | 4,160Y/2400 volts [SDSFIE V1.4 ] |
| 43800V | 43,800 volts [SDSFIE V1.4 ] |
| 460V | 460 volts [SDSFIE V1.4 ] |
| 4800V | 4,800 volts [SDSFIE V1.4 ] |
| 480V | 480 volts [SDSFIE V1.4 ] |
| 480Y_277V | 480Y/277 volts [SDSFIE V1.4 ] |
| 48V | 48 volts [SDSFIE V1.4 ] |
| 500000V | 500,000 volts [SDSFIE V1.4 ] |
| 5000V | 5,000 volts [SDSFIE V1.4 ] |
| 52V | 52 volts [SDSFIE V1.4 ] |

| | |
|---|---|
| 600V | 600 volts [SDSFIE V1.4 ] |
| 69000V | 69,000 volts [SDSFIE V1.4 ] |
| 7200V | 7,200 volts [SDSFIE V1.4 ] |
| 7620V | 7,620 volts [SDSFIE V1.4 ] |
| 765000V | 765,000 volts [SDSFIE V1.4 ] |
| 7970V | 7,970 volts [SDSFIE V1.4 ] |
| 8320V | 8,320 volts [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |

## CodeVoltageRequirements

Used by Attributes: Media Converter - Volt Req;Culvert Center Line - Voltage Requirements

| Value | Definition (Notes) [Source] |
|---|---|
| AC_+120V | +120 Volt AC. [SDSFIE V2.5 AIR FORCE] |
| DC_+5V | +5 Volt DC. [SDSFIE V2.5 AIR FORCE] |
| DC_+5V_+12V | +5 and +12 Volt DC. [SDSFIE V2.5 AIR FORCE] |
| DC_+9V | +9 Volt DC. [SDSFIE V2.5 AIR FORCE] |
| DC_12V | -12 Volt DC. [SDSFIE V2.5 AIR FORCE] |
| DC_24V | -24 Volt DC. [SDSFIE V2.5 AIR FORCE] |
| OTHER | Other. [SDSFIE V2.5 AIR FORCE] |
| TBD | To Be Determined. [SDSFIE V2.5 AIR FORCE] |

## CodeWasteFittingLocation

Used by Attributes: Fitting - Fitloc

| Value | Definition (Notes) [Source] |
|---|---|
| CHILLWATER_TANK | chilled water tank [SDSFIE V2.3 Cherry Point] |
| CLEANING_BOOTH | Cleaning Booth. [SDSFIE V2.3 Cherry Point] |
| CONDENSATE_TANK | condensate tank [SDSFIE V2.3 Cherry Point] |
| COOKER | cooker [SDSFIE V2.3 Cherry Point] |
| COOLING_TOWER | cooling tower [SDSFIE V2.3 Cherry Point] |
| COOLING_WATER | cooling water [SDSFIE V2.3 Cherry Point] |
| CORROSION_REMOVE | corrosion remover [SDSFIE V2.3 Cherry Point] |
| DESCALER | descaler [SDSFIE V2.3 Cherry Point] |
| DISHWASHER | dishwasher [SDSFIE V2.3 Cherry Point] |
| DRINK_FOUNTAIN | drinking fountain [SDSFIE V2.3 Cherry Point] |
| EYEWASH_STATION | eyewash station [SDSFIE V2.3 Cherry Point] |
| HOT_WATER_RINSE | hot water rinse [SDSFIE V2.3 Cherry Point] |
| HUMIDIFIER | humidifier [SDSFIE V2.3 Cherry Point] |
| ICE_DISPENER | ice dispenser [SDSFIE V2.3 Cherry Point] |
| PAINT_BOOTH | paint booth [SDSFIE V2.3 Cherry Point] |
| PARTS_WASHER | parts washer [SDSFIE V2.3 Cherry Point] |
| PHOTO_TRAY | photo tray [SDSFIE V2.3 Cherry Point] |
| PIT | pit [SDSFIE V2.3 Cherry Point] |
| RESPIRATOR_WASH | respirator washer [SDSFIE V2.3 Cherry Point] |
| SINK | sink [SDSFIE V2.3 Cherry Point] |
| STACK | stack [SDSFIE V2.3 Cherry Point] |
| STEAM_CONDEN | steam condensate [SDSFIE V2.3 Cherry Point] |

| | |
|---|---|
| STRIPPER_VAT | stripper vat [SDSFIE V2.3 Cherry Point] |
| TEST_TEE | test tee [SDSFIE V2.3 Cherry Point] |
| TOILET | toilet [SDSFIE V2.3 Cherry Point] |
| URINAL | urinal [SDSFIE V2.3 Cherry Point] |
| VENT_PIPE | vent pipe [SDSFIE V2.3 Cherry Point] |
| WASTE_OIL_DISC | waste oil discharge [SDSFIE V2.3 Cherry Point] |

## CodeWastewaterLineType

Used by Attributes: Line - Type

| Value | Definition (Notes) [Source] |
|---|---|
| FORCE | Force |
| MAIN | Main |
| OTHER | Other |
| SERVICE | Service |
| UNKNOWN | Unknown |

## CodeWastewaterSystemType

Used by Attributes: Service Area - Wwsystem

| Value | Definition (Notes) [Source] |
|---|---|
| COMMERCIAL | Commercial type wastewater system (i.e., serves residential areas, businesses, industry, etc. outside the boundaries of a municipality). [SDSFIE V2 EPA] |
| MUNICIPAL | Municipal type of wastewater treatment system or utility (i.e., serves residential areas, businesses, and industry located within a municipality. [SDSFIE V2 EPA] |

## CodeWastewaterTankType

Used by Attributes: Disposal Tank - Tank Des;Septic Tank - Use

| Value | Definition (Notes) [Source] |
|---|---|
| DISPOSAL | disposal tank [SDSFIE V1.8 ] |
| SEPTIC_TANK | septic tank [SDSFIE V1.8 ] |

## CodeWaterTreatmentLevel

Used by Attributes: Treatment Unit - Trt Lev

| Value | Definition (Notes) [Source] |
|---|---|
| OTHER | Other. [SDSFIE V2.31 HSIP] |
| PRIMARY | Primary. [SDSFIE V2.31 HSIP] |
| QUATERNARY | Quaternary. [SDSFIE V2.31 HSIP] |
| SECONDARY | Secondary. [SDSFIE V2.31 HSIP] |
| TERTIARY | Tertiary. [SDSFIE V2.31 HSIP] |

## CodeWindingConnectionType

Used by Attributes: Motor - Wind Type

| Value | Definition (Notes) [Source] |
|---|---|
| DELTA | delta [SDSFIE V1.4 ] |

| | |
|---|---|
| GROUNDED_Y | grounded wye [SDSFIE V1.4 ] |
| HIGHLEG_DELTA | high-leg delta [SDSFIE V1.4 ] |
| OPEN_DELTA | open delta [SDSFIE V1.4 ] |
| OTHER | other [SDSFIE V1.4 ] |
| TBD | to be determined [SDSFIE V1.4 ] |
| UNKNOWN | unknown [SDSFIE V1.4 ] |
| Y | wye [SDSFIE V1.4 ] |