MEMORANDUM

TO: Distribution

RECOMMENDED BY: Ali Logmanni, Manager
Division of Planning and Engineering
GIS and Engineering Technology Section

APPROVED BY: Paul Shank, P.E., C.M.
Chief Engineer
Division of Planning and Engineering

DATE: September 18, 2018

SUBJECT: Design Standards Supplement
DST-18-003, Subsurface Utility Engineering (SUE)

Effective immediately, the following modifications shall be made to the MAA 2018 Design Standards Manual:

Volume 1: **Chapter 7, Site Development; Section 7.1, Site Exploration**

- Delete Existing Subsection 7.1.2 Subsurface Utility Engineering (SUE), in its entirety
- Insert New Subsection 7.1.2, Subsurface Utility Engineering (SUE)

Consultants listed herein are required to distribute this design standard to their respective staff and subconsultants.

If you believe the attached design standards conflict with any other codes or regulations, or if you should have any questions regarding this matter, please contact the Manager, GIS and Engineering Technology Section at (410)859-7768.

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7.1.2 Subsurface Utility Engineering (SUE)

Prior to submitting a fee proposal for a project at BWI Marshall and MTN Airports, consultants are required to coordinate with their MAA Project Manager and the GIS & Engineering Technology Section (GETS) to identify the requirements for Subsurface Utility Engineering (SUE). Projects that typically require SUE include, but are not limited to, projects that may require: excavation, installation of new utilities, relocation of existing utilities, and/or building a new structure/facility.

SUE is not limited to identification and disposition of existing underground utilities. Accordingly, existing aboveground utilities, such as storage tanks, pipes, overhead poles and power lines, electrical transformers, and other structures shall also be identified. Surface features which are associated with underground or aboveground utilities shall also be identified, including but are not limited to, lights, manholes, handholes, inlets, etc.

MAA has established a SUE grid for BWI Marshall and Martin State Airports. The SUE grid is available by visiting AIRPortal/BWI or MTN GIS Applications/SUE Status.

Unless approved in writing, SUE work shall be conducted at the grid level, meaning that SUE shall be completed for all utilities above and below ground in the entire grid and for every grid that the project touches.

The following information shall be provided in the consultant's fee proposal as it relates to SUE:

a. A list or table of Grid ID Numbers [(i.e. 33-30) – the unique identifier for the SUE grid(s)] that will be investigated. Grid IDs can be obtained by visiting AIRPortal/BWI or MTN GIS Applications/SUE Status.

b. An image of the grids highlighting those that are included in the SUE investigation.

c. List of the consultant's and/or subconsultant's Engineer and GIS staff that will be involved with the SUE work. Qualification statements, resumes, and QA/QC plan may be required for review and approval.

7.1.2.1 SUE Quality Levels

The consultant, MAA Project Manager, and GETS representative shall determine the appropriate quality level to be captured based on the last SUE survey performed, as well as, the type of work being performed within the affected grids. The consultant must involve an Engineer and a GIS Analyst in the project, regardless of the quality level being collected/submitted.

a. All SUE services shall be provided in accordance with applicable quality levels A through D of ASCE 38-02 Standard, latest edition.

b. Per ASCE 38-02 Standard, quality level designations A through D are cumulative, meaning that each quality level includes the activities performed for the quality levels below it in ranking. Levels are ranked from A (highest) to D (lowest). For example, if a project requires Quality Level C, the consultant must perform and deliver Quality Levels C and D.

c. Quality Levels are defined in its simplest form below. For full requirements refer to ASCE 38-02 Standard.

    1. Level D – Records research
    2. Level C – Identify ground surface features + Level D
    3. Level B – Topographic survey + Levels C and D
    4. Level A – Excavate and expose utility + Levels B, C, and D

d. If Quality Level A is required, the consultant is required to use minimally intrusive equipment such as vacuum excavation or hand excavation for test pits/test holes. Backhoe excavations are not permitted. Consultant must obtain an MAA Digging Authorization prior to any ground disturbance activities.

7.1.2.2 SUE Data Incorporating/Editing Process

Because SUE quality levels are cumulative, all SUE services will include Level D, records research. Using AIRPortal, the consultant may perform a review of all available drawings to identify existing utilities in the affected grid area(s). The BWI Projects Locator and MTN Projects Locator application in AIRPortal are also available to perform a spatial search for projects. Both Airports' Projects Locator viewers only contain a partial number of the projects that have been completed at BWI Marshall and Martin State Airports and should not be solely relied upon to identify all projects in the grid area(s).

When data has been collected to the Level required in the scope of work, the consultant is required to assemble all utilities' data and edit MAA's existing GIS data via geodatabase checkout. A checkout must be requested from GETS using a Digital Data Request Form, available for download in AIRPortal.

Data shall be separated by utility type into the appropriate feature classes in accordance with MAA's GIS Data Standards found in Appendix "I" of the MAA Design Standards Manual. The utility data shall be attributed with the following information:

a. Type of utility
b. Size
c. Material
d. Year built
e. Disposition
f. Data source
g. Quality level

h. Owner
i. Phase
j. Editor Name
k. Date of Last Update

Detailed information about each of the above listed attributes can be found in MAA's Utility Data Editing Guidelines. GETS maintains and frequently updates the Data Utility Editing Guideline. GETS will provide the most current guideline with every geodatabase checkout.

Utilities found on drawings shown as abandoned shall be captured and attributed in the same manner as in-service utilities, but with a disposition of "abandoned". Utilities are only deleted in cases of duplicate geometry; all other cases are handled by adjusting the disposition.

If a utility line exits the target grid(s), the consultant shall attempt to logically trace and connect the utility line to the existing utility feature in the adjacent grid. This could mean extending or adjusting the line to connect to the nearest physical feature (i.e. manhole, handhole, pole, etc.) if the utility records indicate a connection. In cases where the utility cannot be logically connected, the consultant shall place a notation in the description field to alert MAA GETS that there is a utility connecting into a feature of an adjacent grid.

Newly incorporated spatial data may not align exactly with the location of existing utility system features. When determining which geometry to use, the consultant must consider the quality level of the utility features in both the source and destination. The higher Quality Levels take precedence over the lower Quality Levels. Refer to Section 7.1.2.1 SUE Quality Levels.

Attribute information identified during SUE projects may conflict with attribute information found in the existing utility system dataset. When that occurs, the consultant must determine which dataset contains more accurate information. The consultant shall consider the age of the data source and quality level in making the determination.

7.1.2.3 Electronic Deliverables

a. GIS Data
SUE data shall be submitted to MAA GETS in GIS format. The delivery of the GIS format shall be coordinated with GETS and delivered via a geodatabase checkout. Refer to Appendix I, Section 6 of the MAA Design Standards Manual, for MAA GIS Data Compliance Requirements.

The GIS deliverable must pass all ESRI Data Reviewer Quality Control Tests in accordance with Appendix I, Section 8.1 of the MAA Design Standards Manual, before being accepted. Tests will be provided by GETS to the consultant at the same time as the geodatabase checkout.

b. CADD Data
If topographic survey is performed for a project, the survey data shall be submitted to MAA in CADD (dwg) format. The topographic surveys shall be submitted to MAA via AIRPortal ADM at the time of the first scheduled deliverable to MAA.

All topographic survey data performed shall be submitted to MAA. For SUE tasks, the topographic survey data submitted will be used to confirm that the consultant has successfully captured all utility features in the geodatabase checkout submissions. Topographic surveys that do not contain any "utilities," will still be used by MAA to update other surface features such as pavement markings. For design projects, the topographic survey data will be used to confirm the existing GIS-related features in AIRPortal.

Topographic survey data CADD (dwg) files shall be etransmitted and submitted on via AIRPortal ADM by choosing the following options:

Submittal Group: Topographic Survey
Document Type: Topographic Survey

Standard naming of both dwg and etransmit is as follows:
CX-TOPO-<AE Task Number>

Ex: "CX-TOPO-3901.dwg" and "CX-TOPO-3901.zip"

7.1.2.4 Data Exceptions

In cases where GIS features fail a Data Reviewer check but have a valid exception, the consultant will provide MAA with the file geodatabase used for the Data Reviewer session. This geodatabase shall have all corrected features removed from the reviewer table and only contain the exceptions. The consultant shall include a brief explanation for any feature exceptions.

7.1.2.5 Schedule

The consultant shall coordinate the schedule for delivery of SUE GIS data with their MAA Project Manager and GETS. All SUE work shall be initiated, completed, and delivered to MAA prior to the 30% submission of a task or in advance of the draft report submission, unless otherwise approved by MAA.