PLANNING AND ENGINEERING GUIDELINES & STANDARDS (PEGS)
SUPPLEMENT NUMBER: PEGS-25-001, CONFINED SPACE - INTERIORS

JANUARY 17, 2025

VOLUME 1, AIRPORTAL

A. Chapter 3, CAD Standards – Section 3.3.3 Updates
B. Chapter 4, GIS Standards – Section 4.3.1, Item I Update
C. Appendix 1D, CAD Standards Appendix – Section 1D.1.2 Table Update

VOLUME 7, SAFETY AND SECURITY

D. Chapter 2, Confined Spaces – Section 2.6 Updates

Effective immediately, the following modification shall be made to the MDOT MAA 2025 PEGS Manual:

A. Volume 1, Chapter 3 CAD Standards – Section 3.3.3 Updates

- Remove Section 3.3.3 and all subsections in its entirety.
- Replace with Attachment A (7 pages).

B. Volume 1, Chapter 4 GIS Standards – Section 4.3.1, Item I Update

- Remove Item I in its entirety.
- Replace with the following:

Confined/Non-Confined/No-Entry Spaces – A field for specific Utility feature classes that may store features fitting the definition of a Confined Space, Non-Confined Space or NoEntry Space. This field shall be assigned the domain Code Boolean as defined and provided in PEGS V1, Appendix 1E.1 Feature Types, which will limit potential values to Yes, No, or <null>.

C. Volume 1, Appendix 1D CAD Standards Appendix – Section 1D.1.2 Table Update

- Add the following rows under Letter N:

NOCO	Non-Confined
NOEN	No-Entry

D. Volume 7, Chapter 2 Confined Spaces – Section 2.6 Updates

- Remove Section 2.6 in its entirety.
- Replace with Attachment B (2 pages).

PEGS Supplement: PEGS-25-001
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Consultants listed herein are required to distribute this PEGS standard supplement to their respective staff and subconsultants.

If you believe this standard supplement conflicts with any other codes or regulations or if you should have any questions regarding this matter, please contact the Director of Engineering at (410) 859-7093.

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Division of Planning and Engineering
Office of Engineering and Construction

Paul L. Shank, P.E., C.M., Chief Engineer
Division of Planning and Engineering
(Niqui D. Clark, P.E., Deputy Chief Engineer for Paul Shank)
ATTACHMENTS:
A. Volume 1, Chapter 3 CAD Standards – Section 3.3.3 Updates
B. Volume 7, Chapter 2 Confined Spaces – Section 2.6 Updates

DISTRIBUTION

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Attachment B
Volume 7, Chapter 2, Section 2.6

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

MDOT MAA requires that the creation of confined spaces resulting from the design of new facilities be minimized. The Consultant shall identify and report all possible new confined spaces during the design process, so that informed consent can be obtained from MDOT MAA. This MDOT MAA Design Standard provides guidance to Consultants related to potential new confined spaces. These requirements may vary for tenant projects

The Consultant shall be familiar with the MDOT 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 Consultant 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 Consultant 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, ejector pits, return air duct, sewer manholes) shall be identified by the Consultant in the 30% design submittal/design report. The Consultant 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 consultant 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 Consultant 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 Consultant 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 Consultant 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. Confined Space CAD standards, including

Confined Space Structure IDs, are documented in Volume 1, Chapter 3.3.3 ~~Civil/SUE~~ Confined Space/Non-Confined Space/No-Entry Drawings. Confined Space GIS data standards are documented in Volume 1, Chapter 4.3 Attributes & Domains.

As part of the Consultant Phase 3 Services, the Consultant 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 Consultant shall also document all new confined spaces and provide the MDOT MAA Office of Safety & Risk Management and MDOT MAA Project Manager with a completed Confined Space Entry Evaluation Form for each new confined space.

Attachment A
Volume 1, Chapter 3, Section 3.3.3

3.3.3 ~~Civil/SUE~~ Confined Space/Non-Confined Space/No-Entry Space Drawings

When a Civil, or Subsurface Utility, Structural, Architectural, Mechanical, Plumbing or Electrical Engineering project includes either an inspection of existing **or design of new** confined space (CS) structures, non-confined space (NC) with safety entry procedures structures, or no-entry space (NE) structures ~~or design of new CS structures~~, data regarding each structure shall be included in the contract drawings and associated digital data submissions. Consultants shall submit confined space, non-confined space and no-entry space CAD data at all design phases beginning with the 30% design phase (see PEGS V2, Chapter 3.2 Deliverables by Design Phase).

Before working with confined space data, consultants should be familiar with the MDOT MAA Confined Spaces guidelines in PEGS V7, Chapter 2 Confined Spaces, and the MDOT MAA GIS Standards in PEGS V1, Chapter 4 GIS Standards.

3.3.3.1 Submissions Format

Confined space, non-confined space with safety entry procedures, and No-Entry space data in CAD shall be entered in a dedicated AutoCAD .DWG file, attached to plan sheets as an external reference (xref) as needed. Each CS, NC and NE structure shall be represented by an AutoCAD block entity.

~~Two~~ CS, NC and NE block definitions, named **spac-conf-prmt, spac-conf-nopr, spac-nent** and **spac-sfty-read** ~~conf spac and conf space prmt~~, have been pre-defined by MDOT MAA, and contain attribute definitions which must be populated by the consultant. **Spac-conf-nopr** ~~Conf- space~~ is to be used to represent unpermitted confined spaces and ~~conf-spac-prmt~~ **spac-conf-prmt** is to be used to represent permitted confined spaces. **Spac-nent** is to be used to represent no entry spaces and **spac-sfty-read** is to be used to represent non-confined spaces with safety entry procedures.

*Figure 3.3.3.1**a** examples of **spac-conf-nopr.dwg** ~~conf-spac.dwg~~ **(non-permitted confined spaces)** and ~~conf-spac-prmt.dwg~~ **spac-conf-prmt.dwg (permit required confined spaces)***

Figure 3.3.3.1b example of a spac-sfty-read.dwg (non-confined space with safety entry procedures)

Figure 3.3.3.1c example of a spac-nent.dwg (no-entry spaces)

Click the following ~~here~~ to download **the** AutoCAD DWG2013 files which may be inserted into any

existing AutoCAD file to represent CS, NC and NE structures: ~~conf-spac.dwg, or here to download conf-spac-prmt.dwg, two AutoCAD DWG2013 files which may be inserted into any existing AutoCAD file to represent CS structures.~~

- Spac-conf-nopr.dwg
- Spac-conf-prmt.dwg
- Spac-sfty-read.dwg
- Spac-nent.dwg

3.3.3.2 AutoCAD Drawing Composition

Instances of the blocks spac-conf-nopr, spac-conf-prmt, spac-sfty-read, and spac-nent ~~conf-spac and conf-spac-prmt~~ should be inserted on the appropriate layer. Instances representing existing CS, NC and NE structures may be inserted on layers C-CONF-EXST, C-NCONF-EXST, and N-NOEN-EXST while those representing new work may be inserted on layers C-CONF-NEWW, C-NCONF-NEWW, and N-NOEN-NEWW.

The blocks **spac-conf-nopr, spac-conf-prmt, spac-sfty-read,** and **spac-nent** ~~conf-spac and conf-spac-prmt~~ are dynamic blocks with multiple visibility states, each corresponding to a type of CS, NC or NE structure. After an instance of the block is inserted, the visibility state must be changed to indicate the type of ~~CS~~ structure it represents. By default, the block's visibility state is set to EMH (electrical manhole).

The blocks also contain a set of AutoCAD Attributes, representing various types of data relating to CS, NC and NE structures. These attributes shall be populated by the consultant with all data known for each ~~CS~~ structure. See Section 3.3.3.4 Confined space attribute data for a list of these attributes.

3.3.3.3 Structure ID

Each CS, NC or NE structure shall be given a unique Structure ID by the consultant. This Structure ID will be confirmed by MDOT-MAA following submission at the Conformed design phase. CS Structure IDs for Civil and SUE projects shall consist of five parts, separated by underscores or dashes, as illustrated in Figure 3.3.3.3a.

Figure 3.3.3.3a, Structure ID Format

- SUE Grid ID: The first part of the Structure ID shall be the Grid ID of the 500'x500' SUE grid name in which the structure is located (See PEGS V1, Chapter 1.5 Subsurface Utility Engineering (SUE) Data Requirements for AIRPortal).
- Structure Type Code: The second part of the Structure ID shall be the applicable Structure Type Code (see Table 33.3.3 below). The structure type codes coincide with SUE Aliases. NOTE: Consultants may request that MDOT-MAA create additional structure type codes, as needed.
- X Position: The third part of the Structure ID shall be the distance perpendicular to the west edge of the SUE grid containing the structure, to the center of the structure (i.e. the X-coordinate within the SUE grid), rounded to the nearest foot; should a structure's center fall

directly on the boundary between two SUE grids, it shall be assumed to be located in the grid to the west at position 000

- NOTE: Parts three and four are separated by a dash rather than an underscore
- Y Position: The fourth part of the Structure ID shall be the distance perpendicular to the south edge of the SUE grid containing the structure, to the center of the structure (i.e. the Y-coordinate with the SUE grid), rounded to the nearest foot; should a structure's center fall directly on the boundary between two grids, it shall be assumed to be located in the grid to the north, at position 000
- Date of Installation: The fifth part of the Structure ID shall be the month and year of the structure's installation in MMYYYY format; this part shall not be added until the Record or As-Built design phase, following the structure's construction.

Click here to download **BWI_SUE_Grid.dwg**, or here to download MTN_SUE_Grid.dwg, two AutoCAD DWG2013 files containing the SUE grids for both airports.

Example Structure ID's:

- 38-35_TMH_152-156_012003 - SUE grid 38-35, Telecommunications Manhole, position 152G east by 156G north, installed January 2003
- 38-33_EMH_069-219_122003 - SUE grid 38-33, Electrical Manhole, position 069G east by 219G north, installed December 2003
- 36-31_SWI_385-385_011988 - SUE grid 36-31, Stormwater Inlet, position 385G east by 385G north, installed January 1988

CS, NC and NE Structure IDs for Structural, Architectural, Mechanical, Plumbing and Electrical projects shall consist of two parts, separated by an underscore or dash as illustrated in Figure 3.3.3.3b.

Figure 3.3.3.3b, Structure ID Format

Confined/Non-Confined/No-Entry Space Structure Types and Codes			
Structure Type	**Structure Type Code**	**Location**	**Space Type**
Electrical Manhole	EMH	Exterior/Interior	Confined
Telecommunications Manhole	TMH		
Sanitary Sewer Manhole	SSM	Exterior	
Sanitary Sewer LiG Station/Ejector	SSL		
Storm Water Manhole	SWM		
Storm Water LiG Station	SWL		
Storm Water Inlet	SWI		
Water Booster Pump Station	WPS		
Glycol Diversion Vault	GDV		
Glycol Force Main Vault	GFM		
Glycol LiG Station	GLS		
Glycol Storage Tank	GST		

Oil Water Separator	OWS		
Hydrant Fuel Manhole	HFM		
Ejector Sewer Pit	ESP	Interior	Confined
Plumbing Chase (w/Access Panel)	PC2		
Air Intake Shaftway	AIS		Non-Confined
Plumbing Chase (w/Access Door)	PC1		
Utility Chase	UCH		
Utility Shaftway	USH		
Louver Intake Shaftway	LIS		
Exhaust Air Louver	EAL		Confined
Outdoor Air Intake	OAI		Non-Confined
Heating and Ventilation Unit	HVU		
Electrical Trench	ELT		
Storm/Sanitary Drain Manhole	SMH		Confined
Abandon Pit	PIT		
Air Handling Unit	AHU		Non-Confined
Supply Air Duct	SAD		
Return Air Duct	RAD		Confined
Fire Damper Access	FDA		No-Entry
Outside Air Duct	OAD		Non-Confined
Interstitial Space	ISS		Confined

Table 3.3.3.3c, Confined/Non-Confined/No-Entry Space Structure Types and Codes

3.3.3.4 Confined/Non-Confined/No-Entry space attribute data

The blocks ~~conf spac~~ **spac-conf-nopr, spac-conf-prmt, spac-sfty-read, and spac-nent** contains AutoCAD attribute definitions which must be populated for each CS, NC, and NE structure. There is no AutoCAD attribute definition for Structure Type, since this data is represented by the block's visibility state.

The attribute definitions within the block are all set to be invisible, to avoid creating visual clutter in the plan set. However, attribute values may be viewed and edited at any time by double- clicking an instance of the block, which will open AutoCAD's Enhanced Attribute Editor.

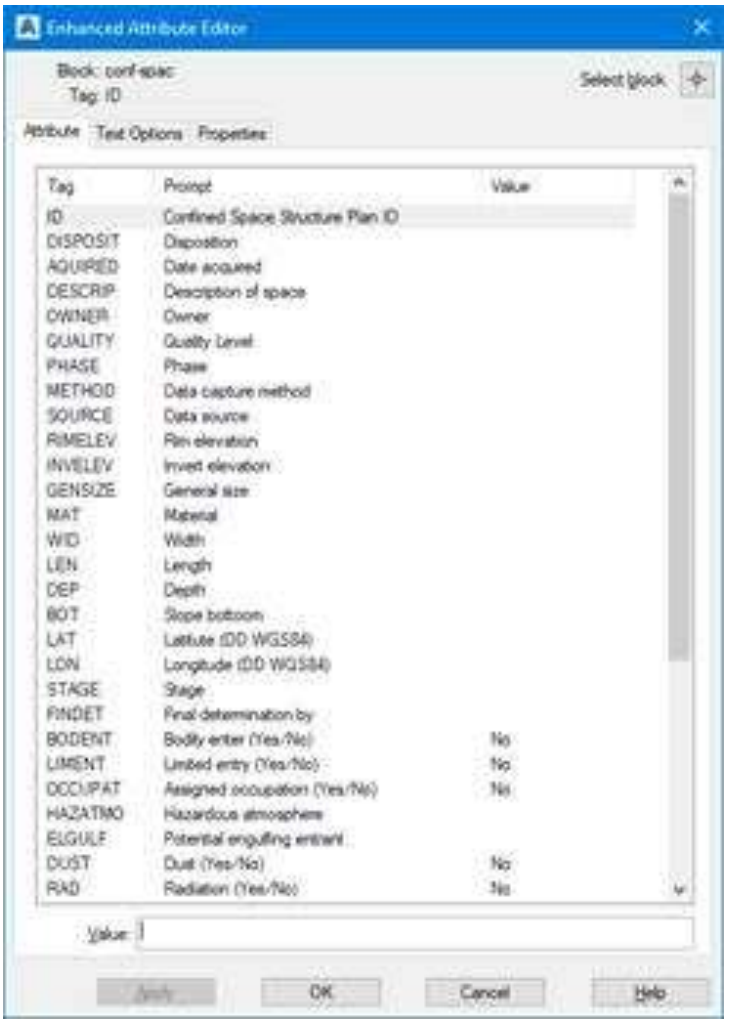

Figure 3.3.3.4 AutoCAD Enhanced Attribute Editor

Attributes defined in blocks spac-conf-nopr/spac-conf-prmt/spac-sfty-read/spac-nent ~~conf-spac~~				
Category	**Attribute Name**	**Attribute Tag**	**Attribute Prompt**	**Example Value**
GENERAL INFORMATION	ID:	ID	Structure ID	*404-54-EMH-001*
	DISPOSITION:	DISPOSIT	Disposition	*IN SERVICE*
	DATE ACQUIRED:	ACQUIRED	Date Acquired	*20190405 (forma1ed YYYYMMDD)*
	DESCRIPTION OF SPACE:	DESCIP	Description of Space	*ELECTRICAL MANHOLE WEST OF EMPLOYEE PARKING LOT*
	SPACE ID:	SPACEID	Room ID	*BT303A*
	OWNER:	OWNER	Owner	*MAA*
	QUALITY LEVEL:	QUALITY	Data quality level	*D*
	PHASE:	PHASE	Phase	*CONFORMED*
	CAPTURE METHOD:	METHOD	Data capture method	*CAD DIGITAL*
	DATASOURCE:	SOURCE	Data source	*MAA-CO-19-006_C2.02*
PHYSICAL PROPERTIES	RIM ELEVATION:	REMELEV	Rim elevation	*110.55*
	INVERT ELEVATION:	INVELEV	Invert elevation	*108.08*
	GENERAL SIZE:	GENSIZE	General size	*4'-2"*
	MATERIAL:	MAT	Material	*PRECAST*
	WIDTH:	WID	Width	*5'-6"*
	LENGTH:	LEN	Length	*3'-6"*
	DEPTH:	DEP	Depth	*3'-0"*
	SLOPE BOT:	BOT	Slope bottom	*999*
	LATITUDE (DD WGS84):	LAT	Latitude (DD WGS84):	*39.177579*
	LONGITUDE (DD WGS84):	LON	Longitude (DD WGS84):	*-76.668939*
ASSESSMENT VALUES	STAGE:	STAGE	Stage	*PERMIT REQUIRED CONFINED SPACE*
	FINAL DETERMINATION BY:	FINDET	Final determination by	*JOHN SMITH*
	BODILY ENTRY:	BODENT	Bodily entry (Yes/No)	*YES*
	LIMITED ENTRY:	LIMENT	Limited entry (Yes/No)	*YES*
	ASSIGNED OCCUPATION:	OCCUPAT	Assigned occupation (Yes/No)	*YES*
	HAZARDOUS ATMOSPHERE:	HAZATMO	Hazardous atmosphere	*CARBON MONOXIDE*
	POTENTIAL ENGULFING ENTRANT:	ENGULF	Potential engulfing entrant	*NONE*
	DUST:	DUST	Dust (Yes/No)	*NO*
	RADIATION:	RAD	Radiation (Yes/No)	*NO*
	NOISE:	NOISE	Noise (Yes/No)	*NO*
	HEAT / STEAM:	HEAT	Heat / steam (Yes/No)	*NO*
	MECHANICAL / MOVING PARTS:	MECHMOV	Mechanical / moving parts (Yes/No)	*NO*
	POTENTIAL ENERGY:	POTENG	Potential energy (Yes/No)	*NO*
	ELECTRICAL:	ELEC	Electrical (Yes/No)	*NO*
	BIOLOGICAL HAZARD:	BIOHAZ	Biological hazard (Yes/No)	*NO*
	LACK OF O2:	LACKO2	Lack of oxygen/O2 (Yes/No)	*NO*
	HAZARDOUS CHEMICAL:	HAZCHEM	Hazardous chemical (Yes/No)	*NO*
	NO HAZARD:	NOHAZ	No hazard (Yes/No)	*NO*
	OTHER HAZARD:	OTHHAZ	Other hazard (Yes/No)	*NO*
	HORIZONTAL ENTRY:	HORIZ	Horizontal entry (Yes/No)	*YES*
	VERTICAL ENTRY:	VERT	Vertical entry (Yes/No)	*NO*
	HORIZONTAL / VERTICAL ENTRY COMBINATION	HORZVER	Horizontal / vertical entry combination (Yes/No)	*NO*

Table 3.3.3.4 Attributes defined in block spac-conf-nopr/spac-conf-prmt/spac-sfty-read/spac-nent ~~conf-spac~~

3.3.3.5 GIS Data

Electronic deliverables for design projects include GIS data (see PEGS V2, Chapter 3.2 Deliverables by Design Phase and PEGS V1, Chapter 4 GIS Standards for details). GIS data will include a field denoting whether a structure is a confined space, which must be populated with a Confined Space - No Permit Required or Confined Space - Permit Required value for each structure that is a confined space and with Non Confined Space value for each structure that is not a confined space; see PEGS V1, Chapter 4.3 Attributes & Domains for details.