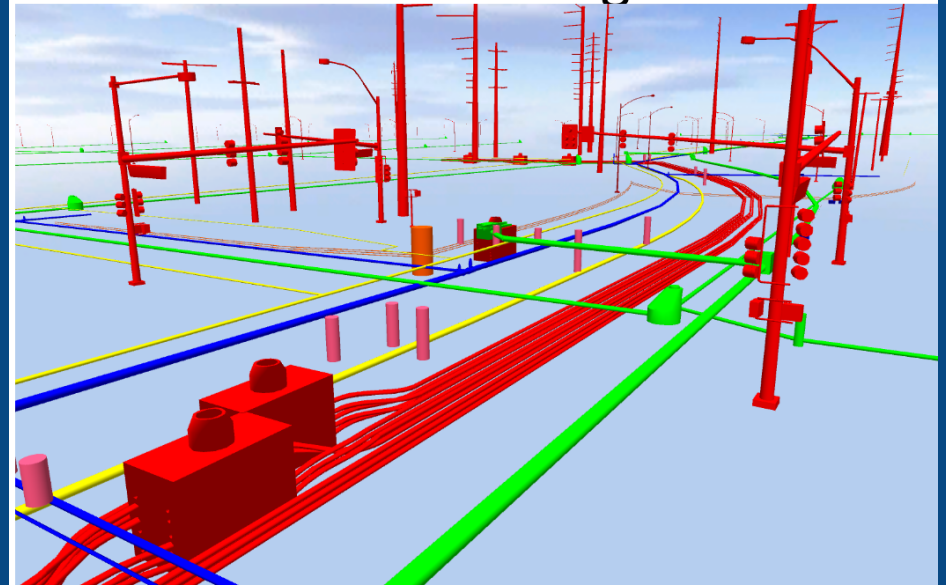


MassDOT Highway Division

Subsurface Utility Engineering Guidance



3D Model of Existing Facilities



Engineering Directive E-2021-005

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Number: E-21-005

Date: 12/21/21

ENGINEERING DIRECTIVE

Carrie Lavallee, P.E. (signature on original)

CHIEF ENGINEER

Subsurface Utility Engineering (SUE)

Effective immediately, all new projects approved by the Project Review Committee (PRC) and anticipated to involve subsurface utility relocations shall include scope and workhour provisions for the completion of Subsurface Utility Engineering (SUE) Level B during the project design phase. This requirement applies to all new projects, regardless of whether MassDOT, a municipality or another entity is responsible for funding the design.

Once the design commences, the District Utility and Constructability Engineer (DUCE) will determine whether SUE Level B is required upon their initial review of the project. Preferably, all required SUE Level B work will be performed at the pre-25% or 25% design stage.

The Designer is responsible for performing the required services or for hiring a qualified subconsultant to perform the required services. The work shall only be performed by qualified firms. The MassDOT Architects and Engineers Review Board maintains a list of prequalified SUE firms, which is publicly available on mass.gov (<https://www.mass.gov/prequalification-of-architectural-engineering-firms>).

For active designs and other projects approved by the PRC prior to issuance of this directive, MassDOT recommends the use of appropriate Subsurface Utility Engineering services where subsurface utility relocations are required.



How it Started:

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- Updated Line types, Layers and Callouts
 - ▣ Quality Level Designation
- To Scale Linework for Subsurface Utilities
 - ▣ For Subsurface Utility Infrastructure $\geq 12''$
- Graphical Presentation Easily Distinguishable from Utility Survey and Record Base Plans
- Updates to Ch. 18 of the PDDG



Where We're Going:

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- Utility Cross Sections
- Drainage Profiles (Proposed Drainage)
- 3D Modeling of Subsurface Utilities
 - ▣ 2D Option ~ Updated 2D Graphical Standard
- Automated Clash Detection
- Utility Conflict Matrix



Where We're Going:

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- Updates to the Project Development Workflow:
 - ▣ Pre-25%: Begin Utility Conflict Management
 - Define min Criteria for SUE Requirements
 - Pre 25% QL-B Designation with DUCE Coordination at Scoping
 - Identify Constraints Posed by Subsurface Utilities to Better Inform Design ~ SUE B PRIOR to 25% Submission
 - Iterative Deconfliction
 - 25% Deconfliction using QL-B
 - Pre-75% in Conjunction with Drainage Design
 - QL-A Locations

Next Steps

6

- ❑ BETA Testing of the New Template, 3D Model and UCM
 - ❑ Designer(s)/Consulting Firms

- ❑ Soft Roll Out
 - ❑ Test Template, UCM and Process with Selected Project(s)
 - ❑ Further Refining the Program Before Release

2025 Innovation Conference

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May 6 & 7, 2025 • DCU Center, Worcester, MA

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