

PennDOT Digital Delivery Update – Traffic Signals

Presented by: Traffic Planning and Design, Inc.,
on behalf of

PennDOT TSMO Arterials & Planning Section

December 6, 2023



What Are We Dealing With?



PennDOT's Digital Delivery Initiative

What, Why, and When?
Models versus Paper
Time and Cost Savings
2025 Goal



Where Do Traffic Signals Fit In

Critical to Design Coordination, Plans, and Approval Process
Vertical and Horizontal Components of Equipment
Follow Roadway/Utility/Drainage Advancements



Existing Traffic Signal Construction and Permit Plans

Data from all Districts
Interviewed for best practices, process, and preferences
Looked for consistencies and inconsistencies

Digital Delivery Directive 2025 ROADMAP



Our Vision

By 2025, construction projects will be bid using 3D technology and no longer be in a traditional construction plan format

Our Mission

To support the digital transformation of project development within PennDOT developing modeling requirements, processes, and workforce development to enable improved asset information transfer by using 3D data-rich information models

Goals



Implement 3D Technology



Advance the Use of Accessible Digital Processes and Tools



Capture Data-Rich Asset Models

Keys to Success

- Manage Pace of Change
- Help People Perceive Progress
- Create Safe Space for Experimentation
- Empower Pilot Project Teams
- Use Construction Partnering

Strategic Approach

- Assess Stakeholder Needs, Desires and Priorities
- Align Technical Solutions with Stakeholder Input
- Advance Technical Solutions Incrementally

Email: RA-PDDIGITALDELIVERY@pa.gov

Webpage: <https://www.penndot.gov/ProjectAndPrograms/3D2025/Pages/default.aspx>

2020

Strategic Plan

- Stakeholder Workshops
- Implementation Plan
- Digital Delivery Web Page
- Communication Plan

2022

Roadway Modeling Requirements

- Modeling Standards
- Education and Training
- Continued Pilot Projects

2024

Drainage and Asset Management Requirements

- Modeling Standards
- Education and Training
- Continued Pilot Projects

2023

Bridge and Construction Modeling Requirements

- Modeling Standards
- Education and Training
- Continued Pilot Projects

2021

Quick Start Tools

- Model Review Checklist
- Procurement Language
- Project Execution Plan Template
- ConceptStation Pilot
- Guidrail As-built Pilot

2025

Digital Delivery Implemented

- Standardized Digital Delivery Process

Where are we and where are we headed?



Digital Delivery Initiative Coordination

Monthly Meeting with Scott McMasters, Digital Delivery Design Lead

Quarterly Meeting/Updates with Statewide ORD Maintenance and Traffic Group



Consistency and Set-up

Where and How do Signals fit in with what else is being developed

Piggy-back on what is being done where possible

Consistent across state



Development of 2D Traffic Signal Component Representation

What do the symbols look like that represent signal items



Creation of Feature Definitions

Engineering properties
3D Traffic Signal Component Development



2D and 3D Features

Used to place or populate the design model

Symbology allow the thing to display properly in the model



Continuing Coordination Efforts

Districts
Design Engineers
Contractors
Suppliers/Vendors



Standardized Permit Process and Plan Presentation as a result

Can they be simplified

When do plans need to get revised

Where do the plans reside? What about models?

When Should Signal Models Be Utilized?



When to Use Models

Department Projects
- Signal Specific
- Roadway with Signal(s)
Possess Detailed Survey



When Not To Use Models

Projects without Detailed Survey
Minor Plan Revisions
-New Support(s) or Signal Head(s)
-Replacement of existing Equipment



Transition from v8i to ORD

Conversion of v8i files
ORD Training
Consistent Signal Features
Consistent Plan Set-up

Placing Mast Arms



Placing Junction Box

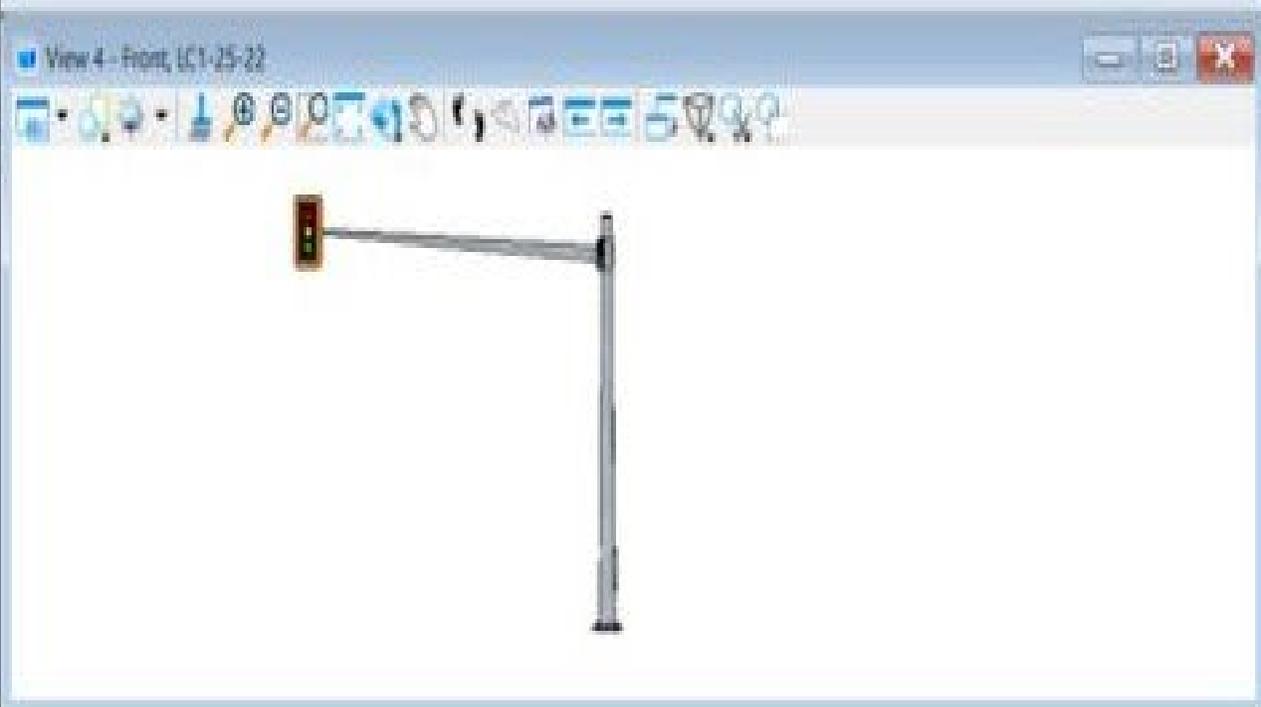
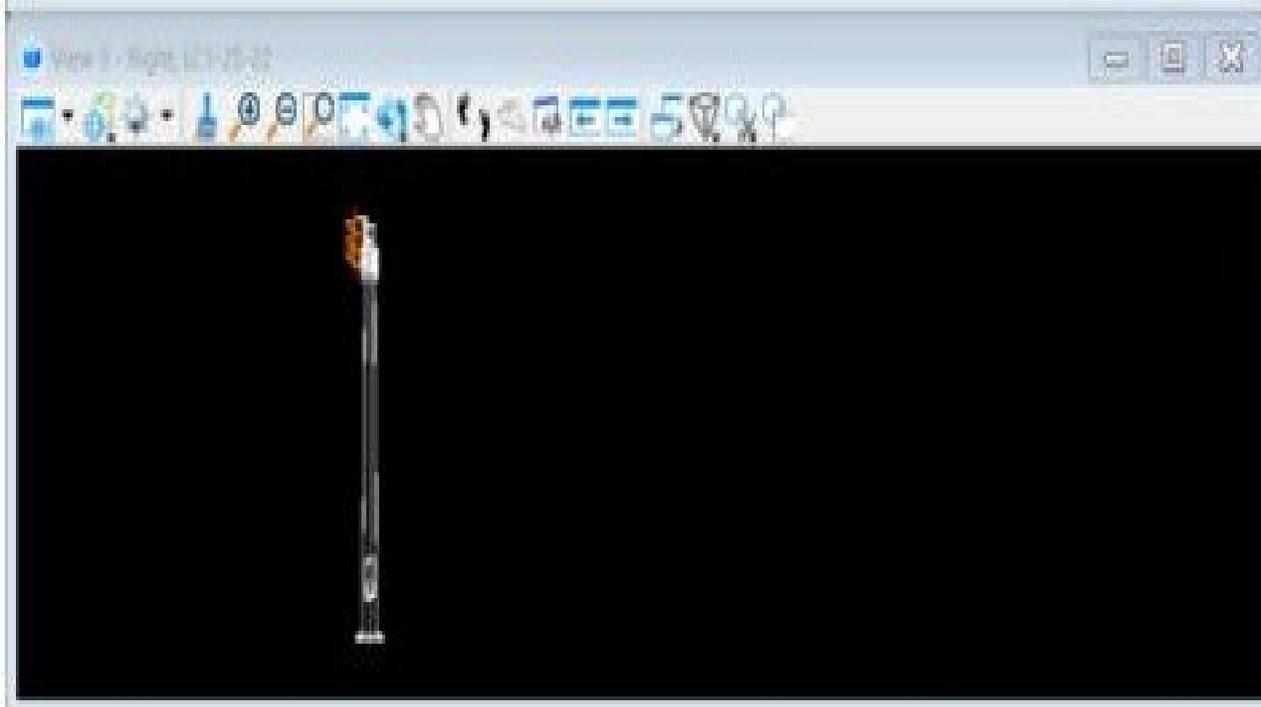
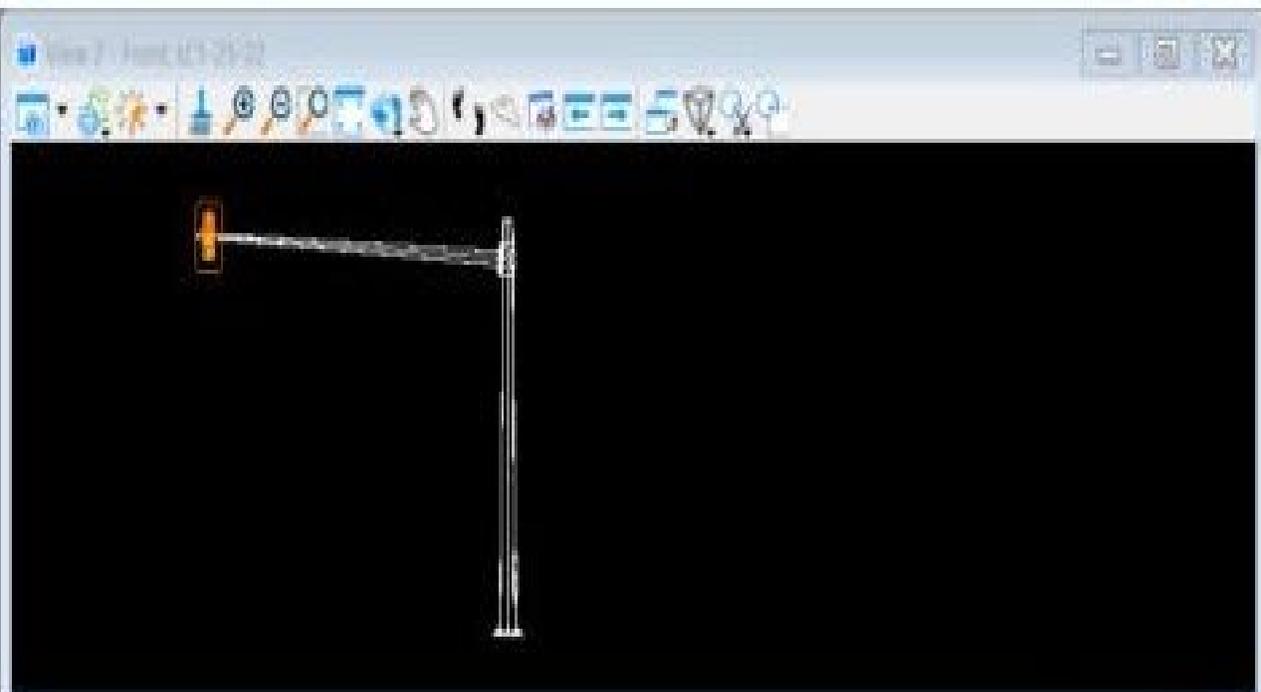
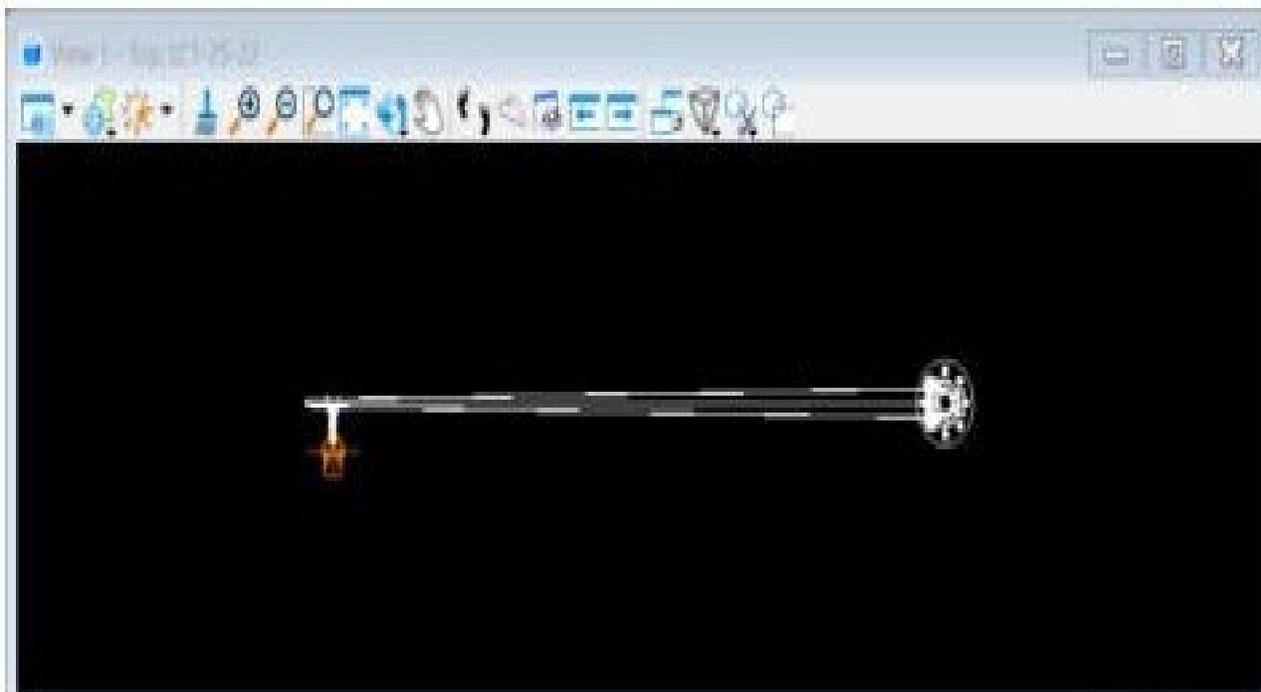


Placing Conduit

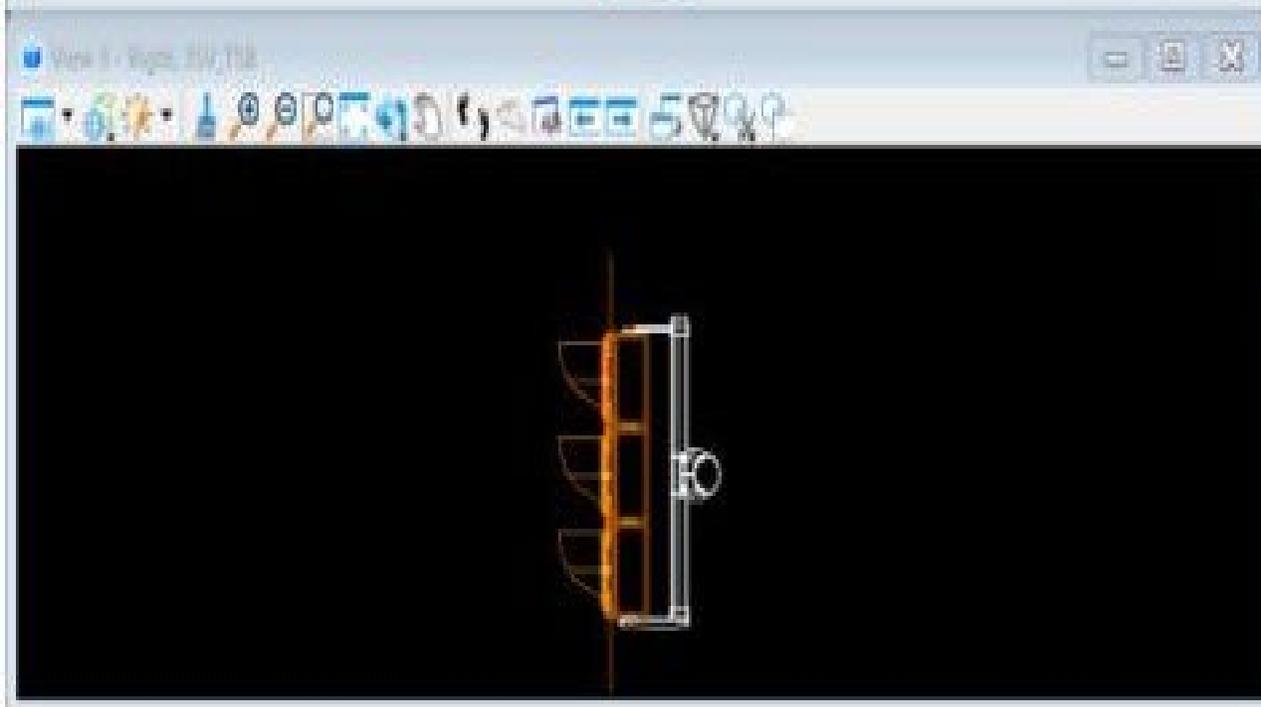
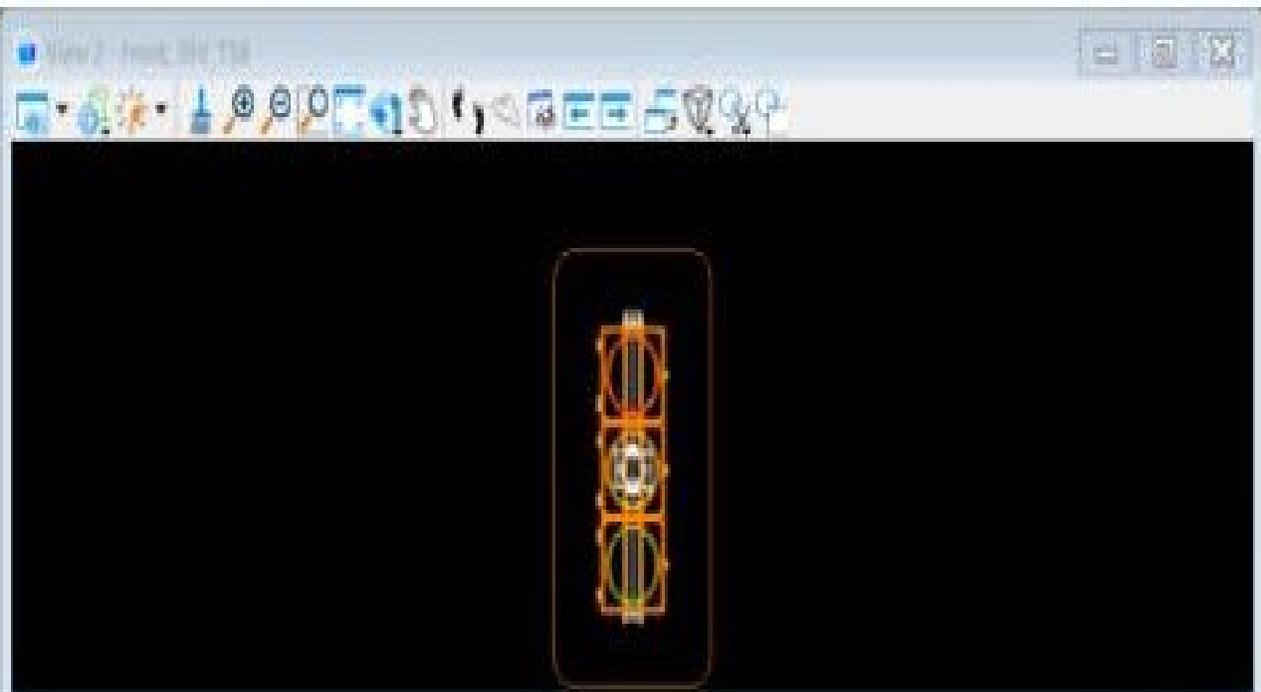
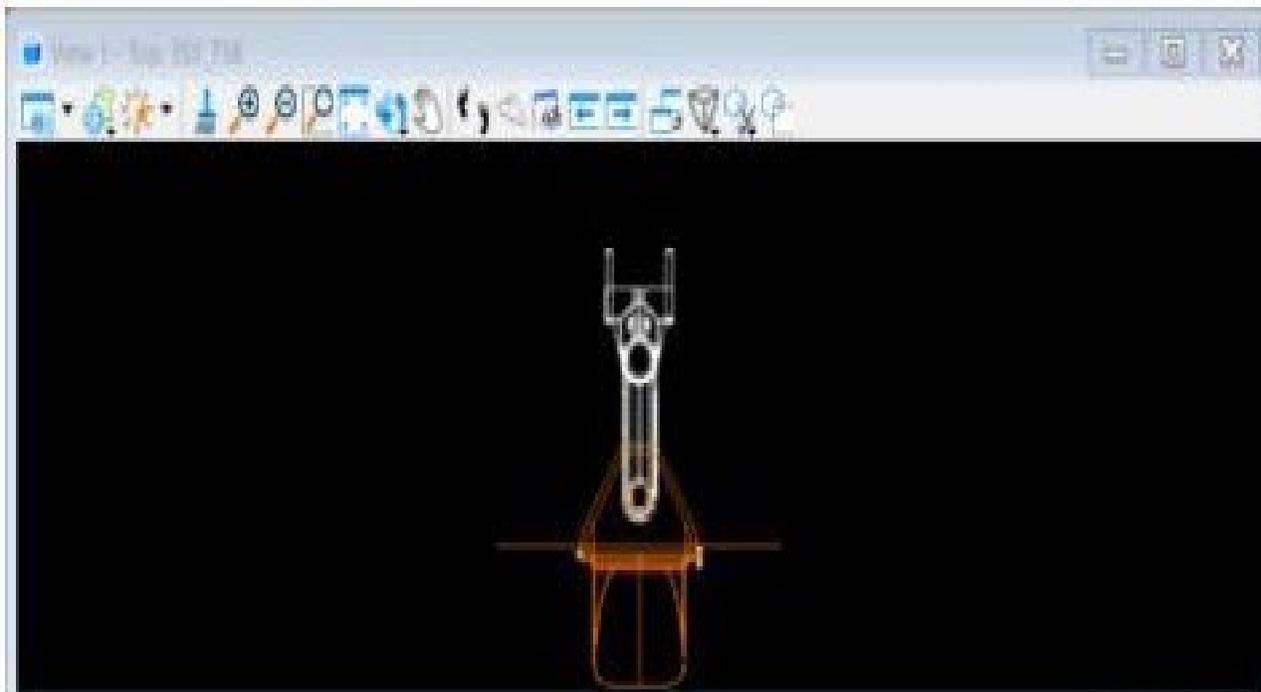


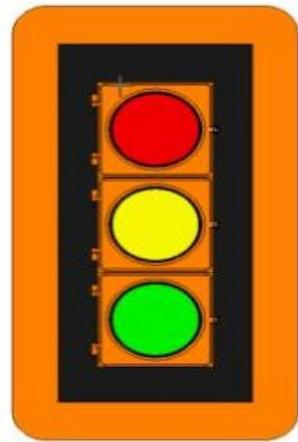
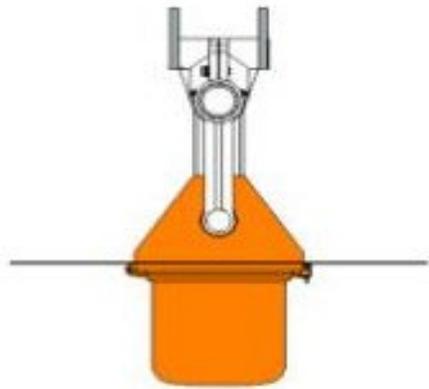
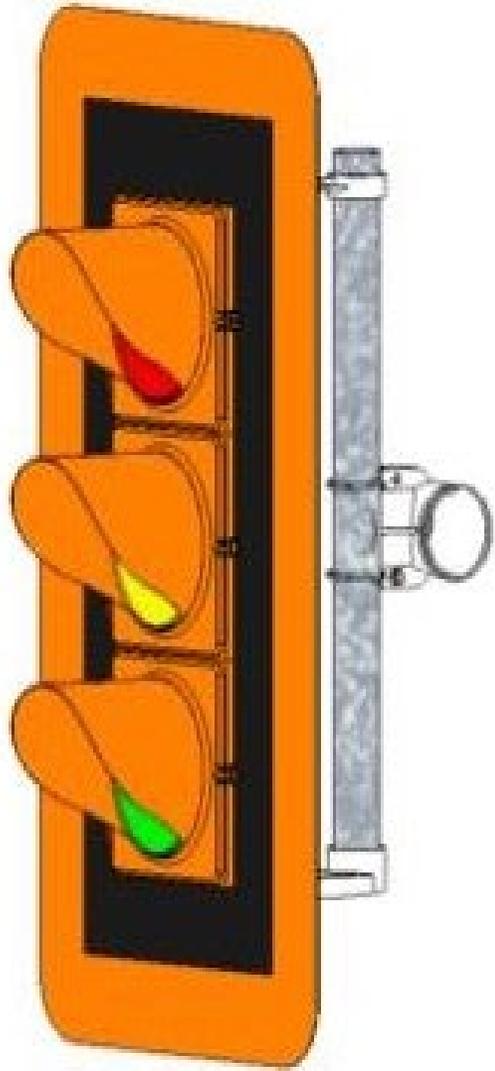
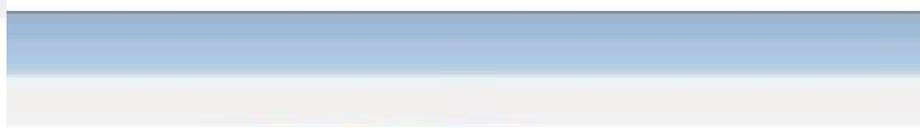
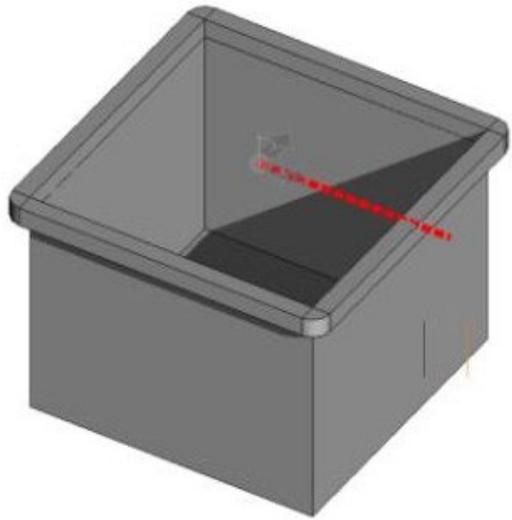
Adjusting Conduit Size











Resources:

- PennDOT:

<https://www.penndot.pa.gov/ProjectAndPrograms/3D2025/Pages/default.aspx>

- UDOT:

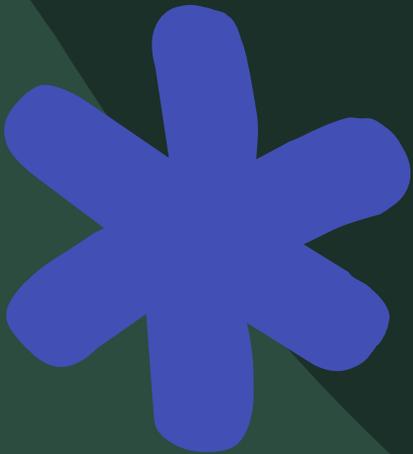
<https://digitaldelivery.udot.utah.gov/>

- MDOT

[https://portal.ct.gov/-/media/DOT/documents/AEC/IHEEP/MDOT BIM Digital Delivery IHEEP 2021.pdf](https://portal.ct.gov/-/media/DOT/documents/AEC/IHEEP/MDOT_BIM_Digital_Delivery_IHEEP_2021.pdf)

- HDR:

<https://www.hdrinc.com/portfolio/penndot-digital-delivery-directive-2025>





QUESTIONS? Interested in providing input?

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