



PennDOT Digital Delivery

September 10th, 2024



What is Digital Delivery?



Building Deliverables for Computers and People

What is Digital Delivery?

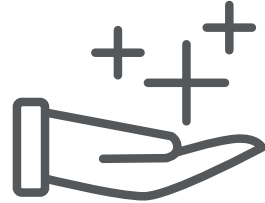
- Use of digital data to deliver projects
- Transfer of relevant information from Design to Construction to Asset Management
- Method to offer new ways to view, understand and use project design in the field
- Way to capture as-built asset information during construction acceptance



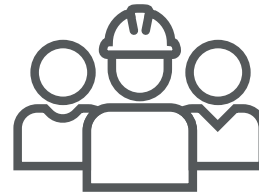
Benefits of Digital Delivery



**Improve
Design Quality**



**Reduce Risk
and Project
Cost**



**Increased
construction
efficiency**



**Improve As-Built
Records**

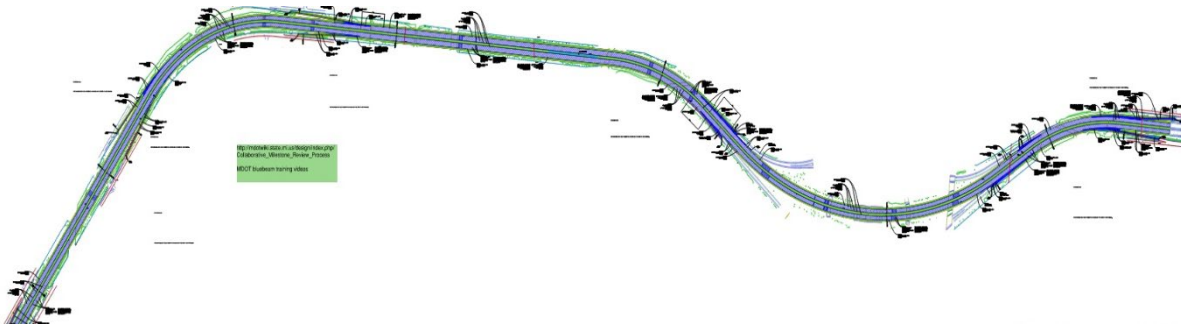
National Movement



DIGITAL DELIVERY DIRECTIVE

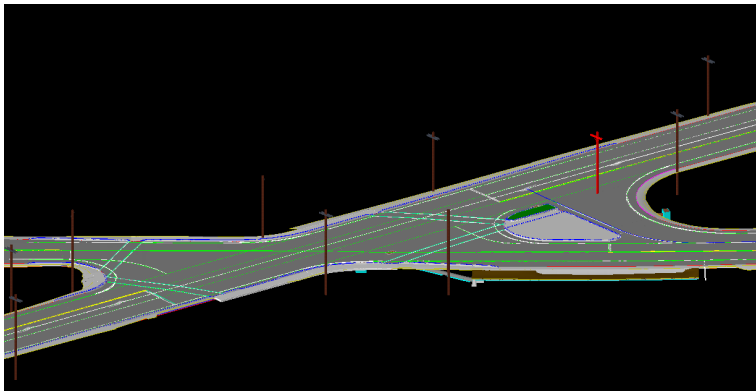
By 2025, construction projects will have the ability to be bid using 3D technology and will no longer be in a traditional construction plan format.

Deliverables from Model Based Design



2D Roll Plot

The entire design in a layered PDF



3D Models

Signed and sealed models provided for construction documents

Everything
is
developed
from the
same
model

Sheet #	Sheet n...
1	Title Sheet
2	Summary Sheet
3	Summary Sheet
4	Location Map

2D Sheets

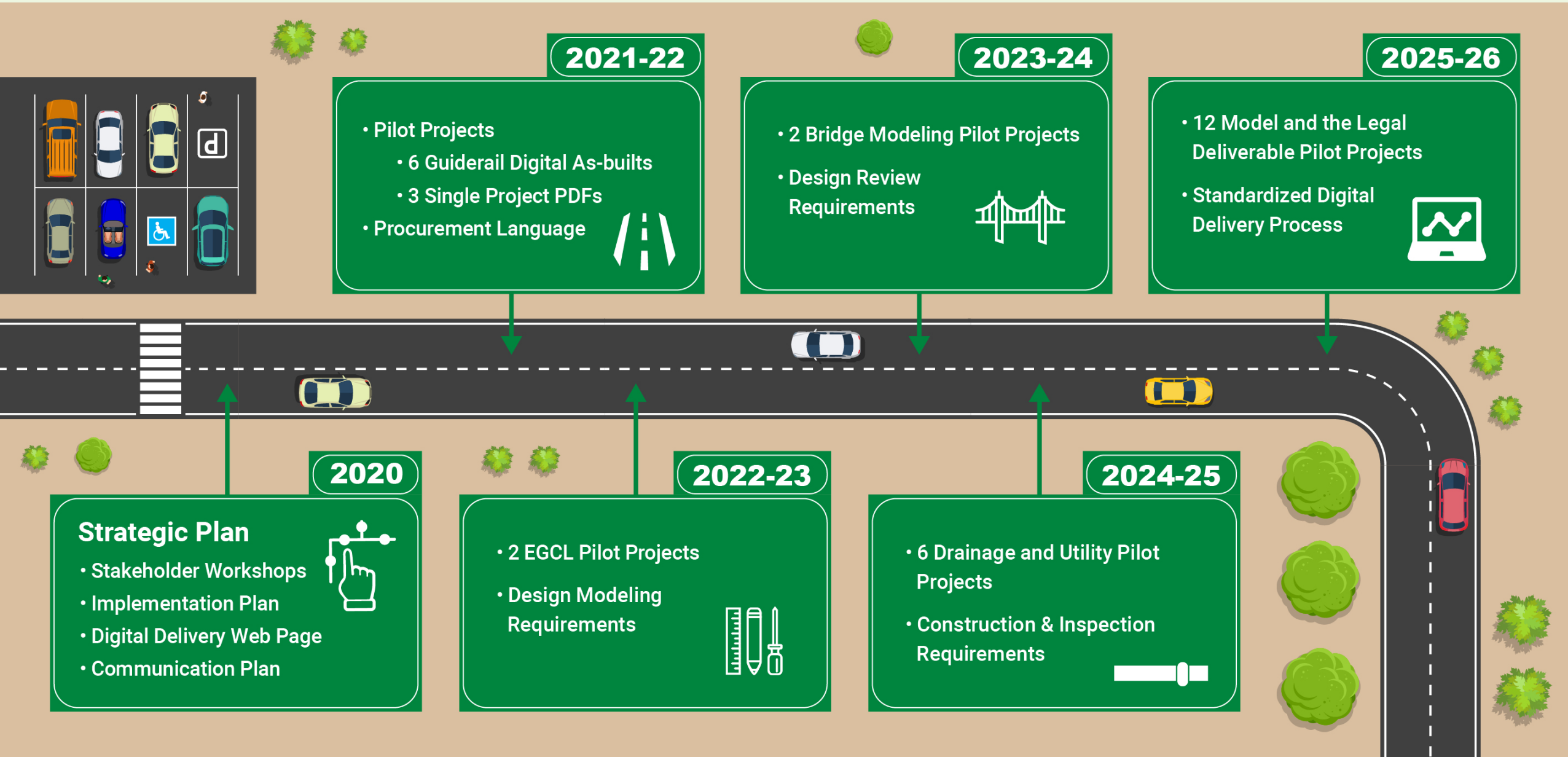
External stakeholder deliverables when necessary



Model exports

Terrain & drainage file types, IFC files for open data standards

Digital Delivery Directive



Tioga County SR 6/660 Intersection

Project Description

- Relocate SR 660 and SR 4001 to make perpendicular intersections with SR 6
- 9 Traffic Phases During Construction
- May 2023 Through October 2023



Project Work

Digital Delivery

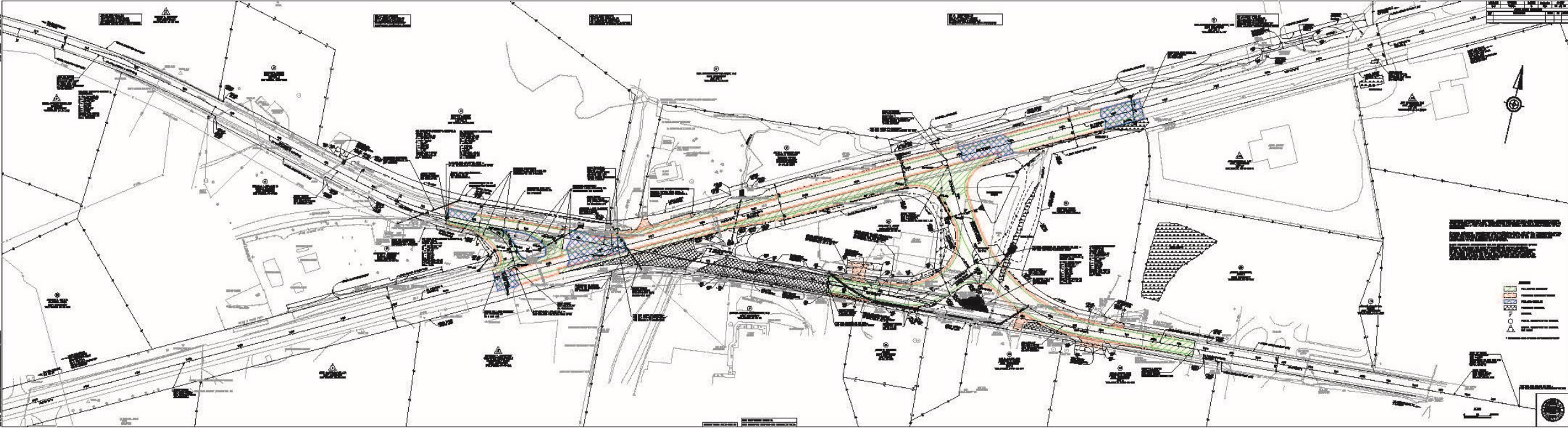
- E/S
- Excavation
- Stone Base
- Paving
- PCSM

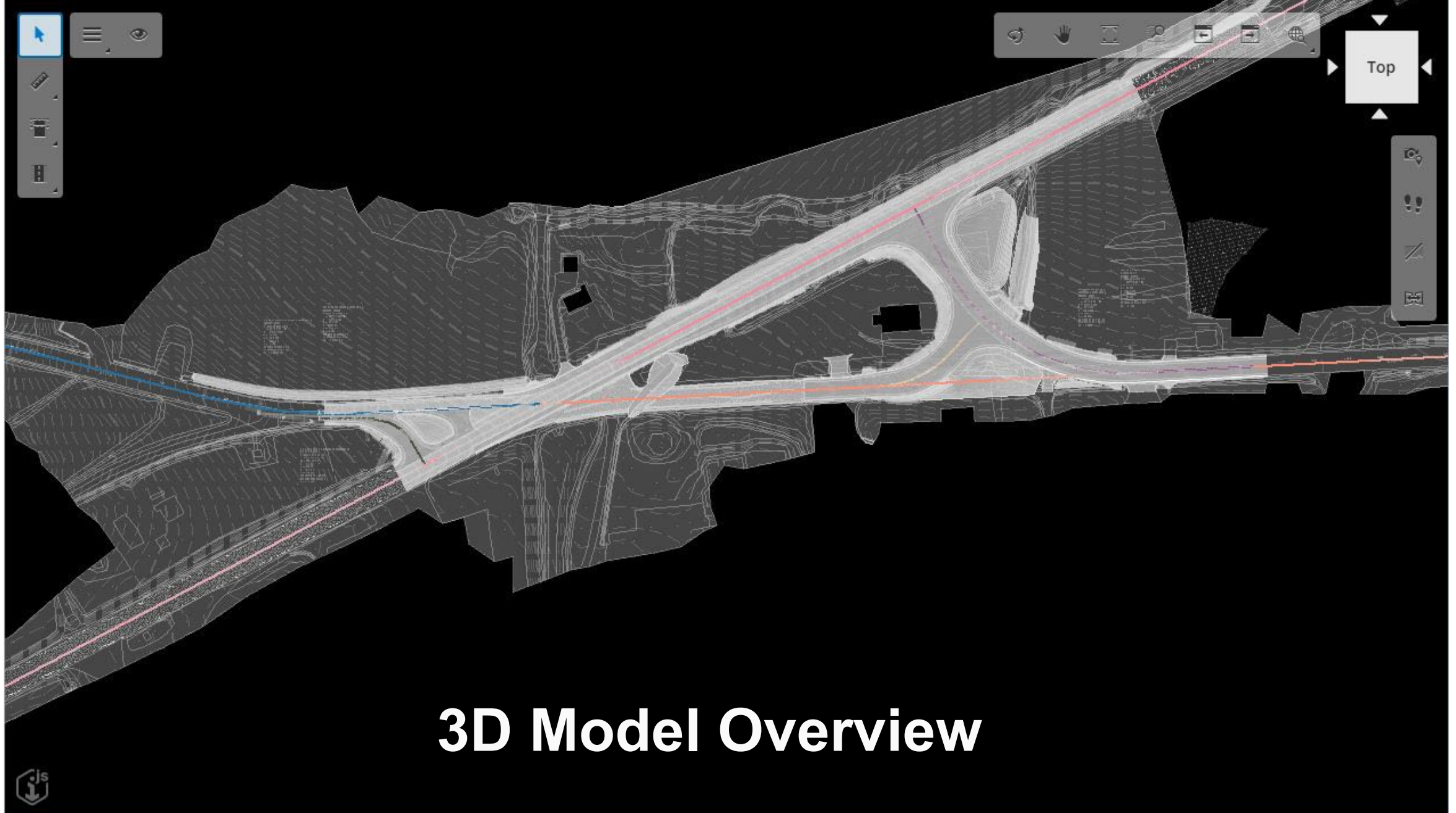


Standard

- Drainage
- Utility Relocation
- Signage
- Pavement Markings

PDF Roll Plan





3D Model Overview

Engineering the Model for GPS Equipment



- **Practical look at Plans vs Model**
- **Eliminating Grade Breaks**
- **Tie-In Points**
- **Need to have good Existing TOPO**

Field Advantages

- Works well with GPS Equipment
- Easy and Fast for Layout
- Using Measuring tool can Check Dimensions ANYWHERE
- Can Take A Cross Section ANYWHERE
- Can Highlight Items of Work on Planview
- Live Location is Shown on Model



Field Disadvantages

- Difficult for Inspectors to check without using Contractors GPS
- The model can be “overly accurate” and not practical to build
- Searching on the model can be a lot more time consuming than paper plans
- Model Layers can be hard to locate and unorganized without a high level of familiarity with the software
- Difficult for workforce veterans that may not embrace technology
- Hard to see viewer in the sun or collaborate in a group



Summary

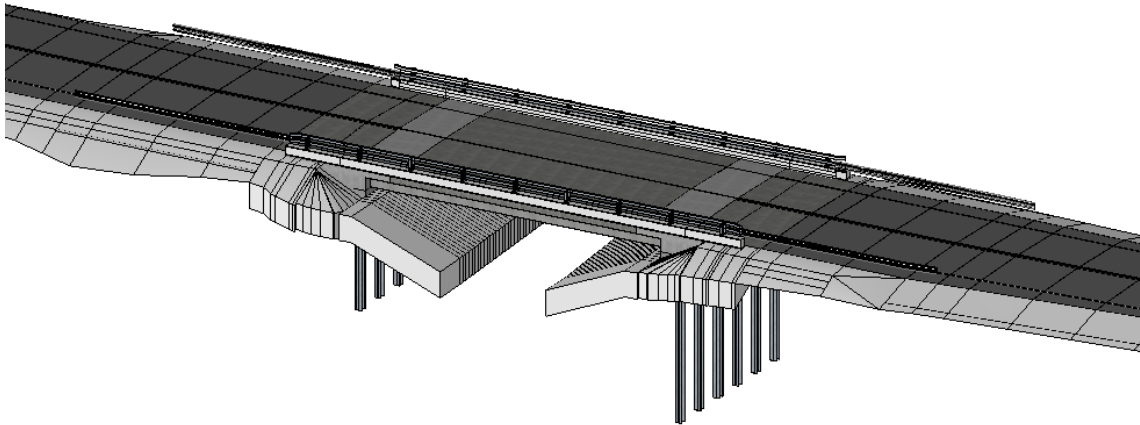
As the models progressed and we become more familiar with the software and how it works, we can see it to be a major benefit to the construction industry.

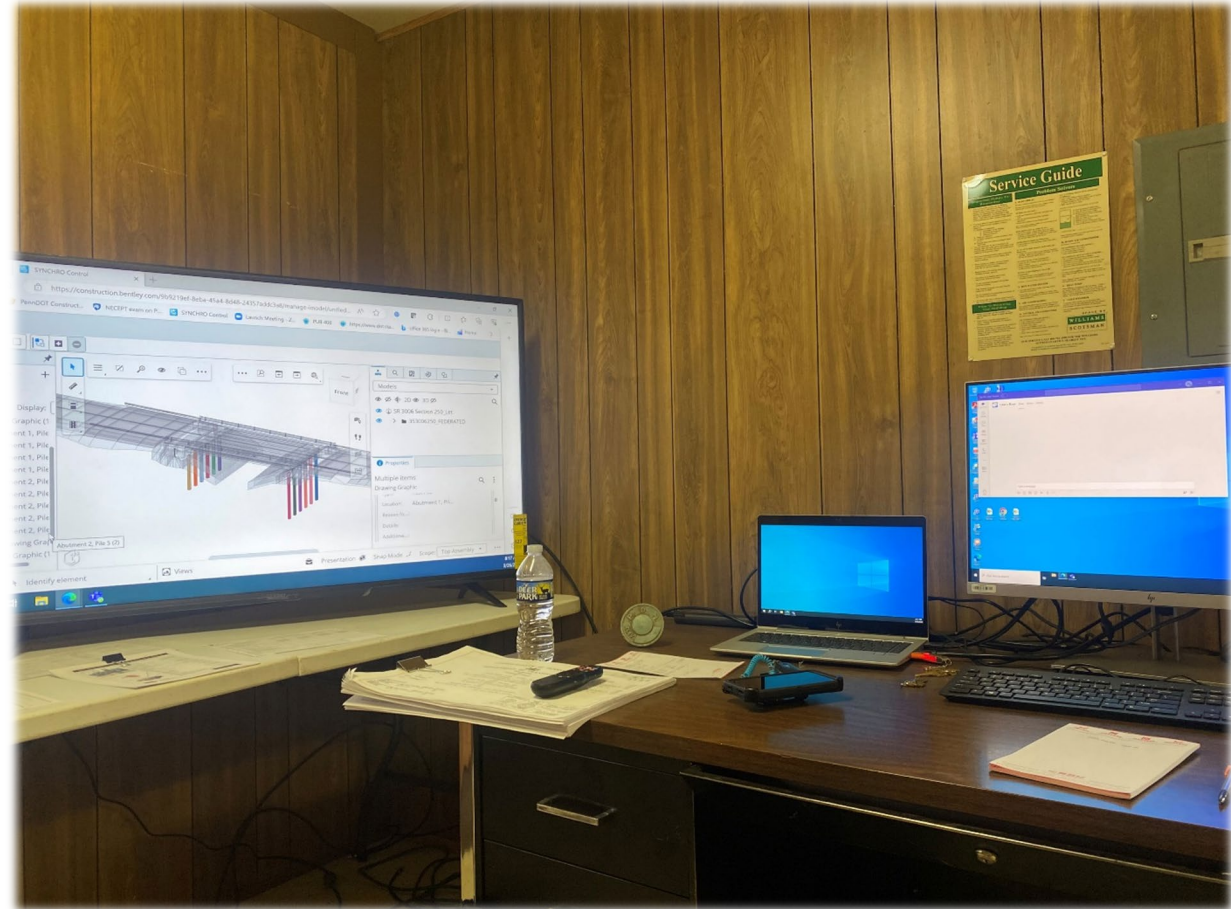
We would love to see it being implemented more into schools, trainings, and any other places that will help familiarize future candidates of the work force prior to putting boots on the ground.



Bridge Pilot Project – District 4 SR 3006

Bridge Authoring model deliverables included 3D model of the bridge, 2D view details, and data visualizations







Next Steps

2026 – Two (2) active projects for each District

2027 – Three (3) active projects for each District

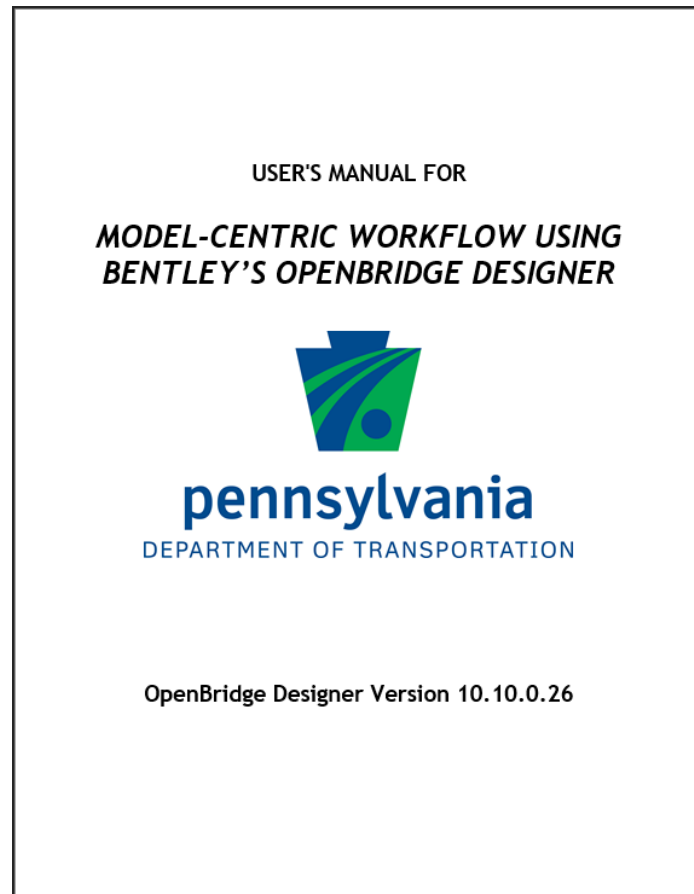
2028 – Full implementation for one (1) project type


2029 – Full implementation for two (2) project types

2030 – Full implementation for all identified appropriate project types

Guides and Training

Training



Input	Description
Skew Angle	AASHTO skew angle for SupportLines normal to the alignment.
Length	Length of SupportLine element generated in the model space. <i>Note: If length is not specified, the distance away from the alignment where you select the data point will be taken as half the SupportLine length. The additional half being generated on the opposite side of the alignment.</i>
Station	Station to place SupportLine. If stations are not specified, then the point on the alignment closes to where your data point will be taken as the station.
Direction Mode	Select input: Skew - AASHTO skew angle will be displaced next to the alignment to aid in the placement of the SupportLine.  Direction - A direction angle will be displaced to aid in the placement of the SupportLine.

Internal Development of PennDOT workspace

- **PennDOT controls workspace development**
- **Reduced overall cost**
 - PennDOT develops specific content (paying for it once)
 - Levels, Item types, templates, and cells to be used in 3D models
 - Consultants are not required to develop this content (this saves on time and money)
 - Workspace is published and required to be used for PennDOT projects
 - Guidance documents are being developed and provided to ensure consistency

Communication



Upcoming Events

Monthly PennDOT Workspace Updates

4th Tuesday of every month,
11am – 12pm

Next Quarterly Webinar

September 2024

Newsletters

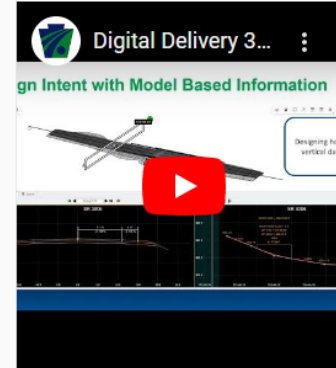
[Issue #3](#)

[Issue #2](#)

[Issue #1](#)

Digital Delivery Quarterly Informational Sessions

Jan 2024



Recording of the January
2024 Digital Delivery
Quarterly Session

Sept 2023



Recording of the September
2023 Digital Delivery
Quarterly Session

[Questions & Answers from
September 2023 Session](#)

Email Us!

RA-PDDigitalDelivery@pa.gov

Advisory Committee Representation



Contact Information

Allen S. Melley, P.E.

Chief, Digital Delivery Section

Email: amelley@pa.gov

Phone: 717.787.0185

Digital Delivery Email:

RA-PDDigitalDelivery@pa.gov

Digital Delivery Website:

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