

ACEC – 2026 INFRASTRUCTURE CONFERENCE

PennDOT Digital Delivery Directive

SEPTEMBER 14, 2026



Pennsylvania
Department of Transportation

AGENDA

Digital Delivery Program

Design Projects

Viewing 3D Models

Construction Inspection

Summary



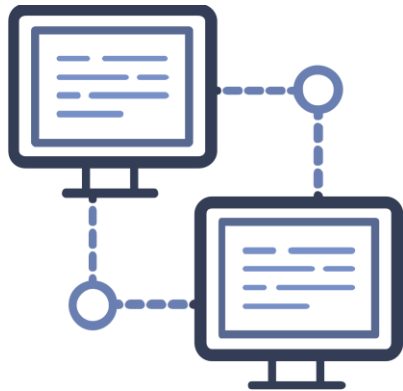
DIGITAL DELIVERY PROGRAM



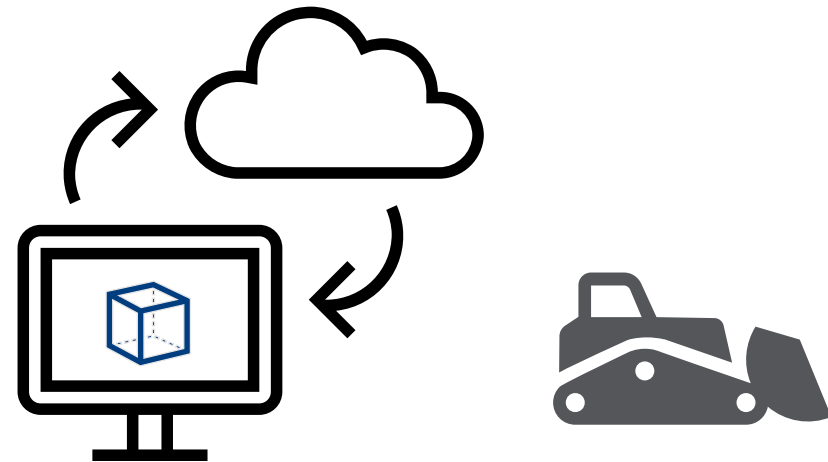
Pennsylvania
Department of Transportation

WHAT IS DIGITAL DELIVERY

A modernized approach to project delivery processes and contract media that incorporates digital data.



DIGITAL WORKFLOWS are data-based exchanges, in which information can be easily transferred to a computer system with little to no manual entry.



DIGITAL DELIVERY of project data in which 3D models and other files are created and delivered to enhance design, facilitate construction and incorporate digital information to support the asset management lifecycle

Vision Statement:

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.

DESIGN PROJECTS



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DIGITAL DELIVERY PROJECTS

Digital Delivery Project

- Part of the Digital Delivery program
- Fully modeled and delivered as a Model as a Legal Deliverable
- ECMS Group ID code: DDP

Flags

Rapid Deployment

☐

Digital Delivery

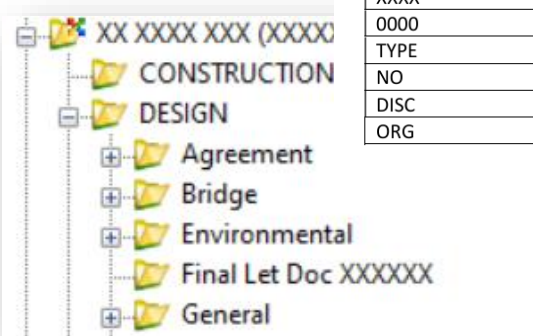
☒



MPMS Project Flag

Folder and File Naming Convention

- ProjectWise folder structure defined for BIC connections and faster processing
- File naming structure is defined for all projects moving forward



Format: CO_SSSS_XXXX_0000_TYPE_NO_DISC_ORG.DGN

Identifier	Description
CO	County Number (2 Character Max.)
SSSS or TNNN	State Route Number (4 Character Max.) or Township Route Number ("T" followed by 3 Characters)
XXXX	Segment Number (4 Character Max.)
0000	Offset Number (4 Character Max.)
TYPE	File Type (4 Character Max.)
NO	Numeric (2 Character Max.)
DISC	Discipline (4 Character Max.)
ORG	Organization (3 Character Max.)

Modeling Standards

DIGITAL DELIVERY SCOPING

- Established WBS Codes for Digital Delivery Tasks in 2025
 - Currently in ECMS with training documentation
- Mutual Gains Document in Development
 - Creating a framework for digital delivery projects to support transparent discussions
- Improving Negotiations and Project Planning
 - Align expectations on hours and resources



Business Partner Solicitation Engineering Agreements Construction Projects References Administration Work Queue Prequal

Ok Apply Cancel Help

COMMON SELECTION - SCOPE OF WORK - WBS TASK SELECTION

Available Records

Filter WBS ID 2.10.34 Go

WBS ID: 2.10.34 RESET

Records 1 to 1 of 1 Page 1 of 1

☐ WBS ID	WBS Task Name	WBS Task Scope
☐ 2.10.34	Final Design Federated Digital Model	This task includes the federation of the discipline model files in accordance with the Digital Design Model. This task also includes the setup of the cloud based model review session and the preliminary design federated digital model may include the following discipline models: - Final Wetland Mitigation Model - Final Roundabout Model - Final Drainage Model - Final Relocation Model - Final Structures Model - Final Pavement Marking Model - Final Traffic Management Model - Final Traffic Signal Model - Final Signing and Sign Lighting Model.

Records 1 to 1 of 1 Page 1 of 1

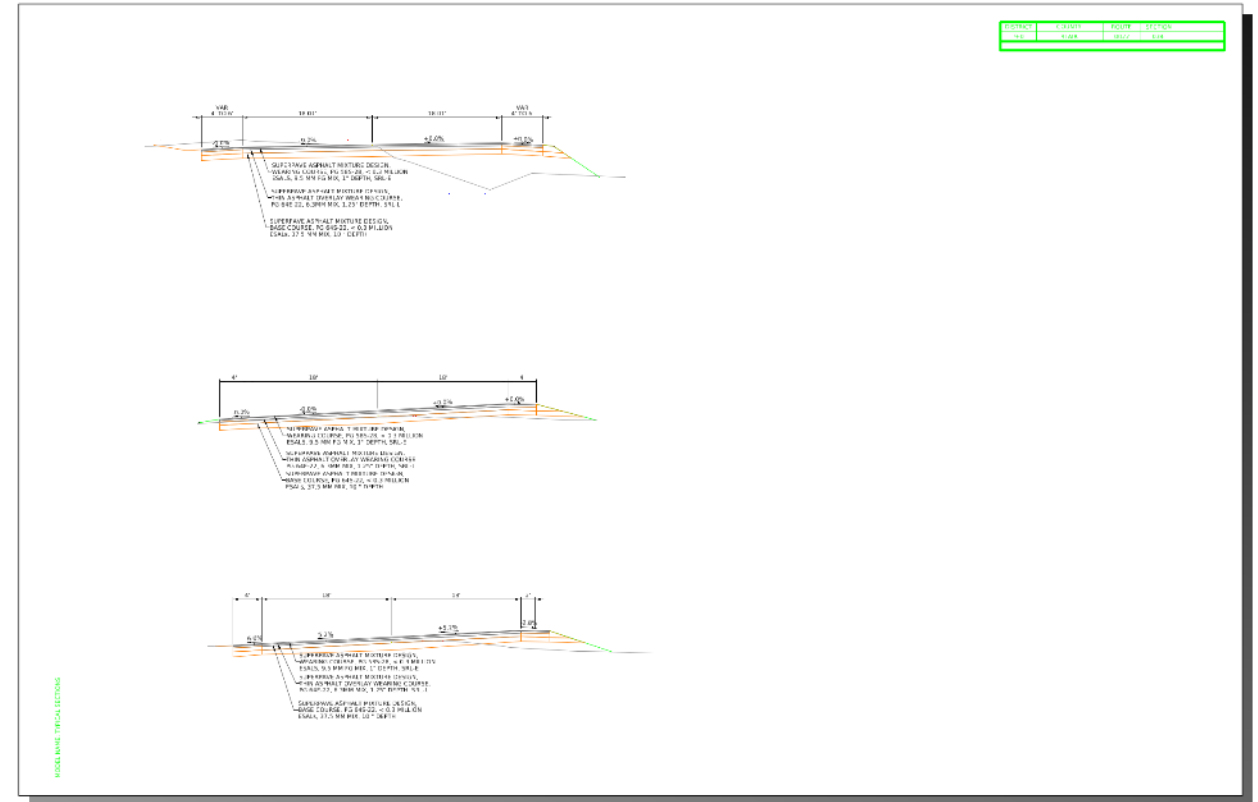
MODEL DELIVERABLES

DGN files:

- Federated 3D model files

2D Sheet Models (contained with dgn files):

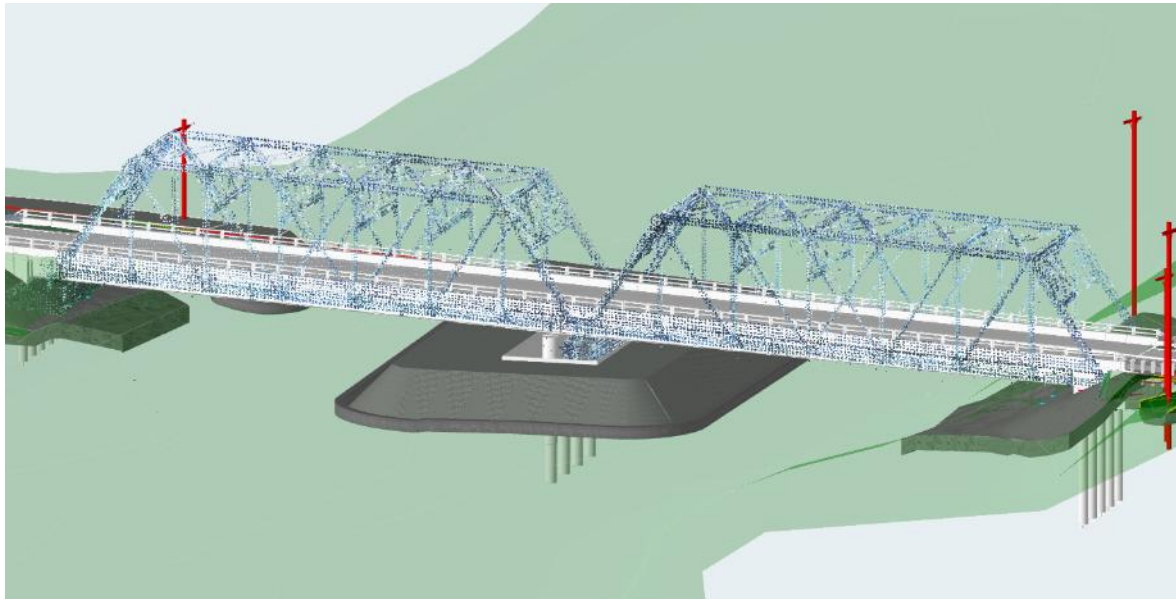
- Tabs and Summary
- General Notes
- Typical Sections and Details
- Also Plans (e.g. Traffic Control, Lighting, Signing)
- Traditional Plan Sets
 - Right of Way (ROW) and Erosion and Sediment Control (E&S) are separately signed and sealed



A Sheet Model is an electronic drawing sheet which contains views of the design model with no traditional border.

SURVEY FOR DIGITAL DELIVERY

- Geospatial data fusion used for higher accurate survey on digital delivery projects
- Mobile LiDAR can also provide accurate scans of existing bridges and overhead wires



— MOBILE LIDAR
— PHOTOGRAMMETRY
— STATIC LIDAR
— SUPPLEMENTAL SURVEY
LARGE/LONG COMPLEX PROJECT

Image: 2.1.4
Pub 122M

Mobile and static lidar provides higher accuracy on hard surfaces and combined with photogrammetry

GUIDANCE DOCUMENTS

Digital Delivery
Guidance documents
are provided for design
and construction staff
on the website

- Digital Delivery Execution Plan
- Project Index File
- Model Element Breakdown Structure
- Modeling Standards
- Crosswalks

MODELING STANDARDS MANUAL

Draft Edition
August 2025 Change No. 6



KEY ELEMENT COLOR DESIGNATION

KEY ELEMENT DESCRIPTION

Reinforcement shown in model with attributes attached for bar mark, spacing, and cover. Saved view will be added for reinforcement per element and annotated as necessary for hard to determine situations (staggered deck bars, etc.)

Geometry and key information included in model and shown in saved views. Annotation will generally not be provided for this information, and it is assumed that user will be able to measure within the model environment and obtain the information needed without explicit annotation in views.

Added as named element attributes, item types in model, and/or assigned specific levels (such as with symbols or utilities). Also includes any embedded information within the model such as the Saved View List.

Information provided as separate document linked to model. This could be a pdf report, spreadsheet, or other documents.

Annotated information in the model saved views. This is also included in the model that can be measured, etc., but for more common views (typical section, profile view, etc.) or critical information and dimensions not able to be easily conveyed in the model.

KEY ELEMENT EXAMPLE

MODEL ELEMENT	IN PROJECT	LG&TS	DPV	FDOM	PS&E	IN SUBMITTAL	MIN DETAIL	MIN INFORMATION	2D/3D	COMMENTS	INTEGRITY CHECK
GEOMETRY											
Horizontal Alignment	YES						D-3	I-3	3D	Meets detail and information needs	Complete
Superelevation	YES						D-3	I-3	3D	Review model	Incomplete
Vertical Alignment	YES						D-3	I-3	3D	Meets detail and information needs	Complete

CERTIFICATION MEMO



DATE: April 8, 2026
SUBJECT: CONTRACTUAL ELECTRONIC DATA AND FOR INFORMATION ONLY DATA
PROJECT NAME: SR 5 OVER SIXMILE CREEK ECMS NUMBER: 116741
STATE ROUTE: 0005 SECTION: B21
COUNTY: ERIE HARBORCREEK TOWNSHIP
DISTRICT: 1-0
TO: ALL BIDDING CONTRACTORS
FROM: STEPHEN SCHEITTLER, PROJECT MANAGER

The seals affixed below are associated with the below referenced versions of the Official Project Document and information only files. Official Project Document and information only files are further defined and explained in the special provisions. Any design changes made during construction must be coordinated through the PennDOT Project Collaboration Center.

STATE ROUTE: 0005 SECTION B21
IN ERIE COUNTY
FROM STA 276+75.00 TO STA 331+00.00 LENGTH 280.83 FT 0.053 MI
FROM SEG 0750 OFFSET 0619 TO SEG 0750 OFFSET 1044

DESIGN DESIGNATION		TRAFFIC DATA	
HIGHWAY CLASSIFICATION	- URBAN MINOR ARTERIAL	CURRENT ADT	- 6198 (2026)
ROADWAY TYPOLOGY	- COMMUNITY ARTERIAL	DESIGN YEAR ADT	- 6321 (2046)
DESIGN SPEED	- 45 MPH	DHV	- 570 (9%)
PAVEMENT WIDTH	- 22'0"	D	- 66%
SHOULDER WIDTH	- 6'	T	- 4%

PREPARED BY: LARSON DESIGN GROUP 1000 COMMERCE PARK DRIVE, SUITE 201 WILLIAMSPORT, PA 17701		RECOMMENDED DATE: 4/8/2026
		RECOMMENDED DATE: 2026.04.09 09:05:39 -04'00' on behalf of Brian Smith, P.E.
BRADLEY MARK GREENAWAY ENGINEER PE081105 PENNSYLVANIA		DISTRICT TRAFFIC ENGINEER
DAVID J. JOHNSON ENGINEER PE074510 PENNSYLVANIA		RECOMMENDED DATE: 2026.04.09 09:22:13 -04'00'
BRADLEY M. GREENAWAY PROFESSIONAL ENGINEER STRUCTURE & ROADWAY		DISTRICT EXECUTIVE
DAVID J. JOHNSON PROFESSIONAL ENGINEER EROSION & SEDIMENT & TRAFFIC		RECOMMENDED DATE: 4/9/2026
DATE: 4/8/2026		RECOMMENDED DATE: 4/9/2026
		SECRETARY OF TRANSPORTATION (ON BEHALF OF THE GOVERNOR AS WELL AS THE SECRETARY)

Please refer to the Section 105 Special Provision in the project for the delineation between Legal Documents and For Information Only Documents.

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Please enter an ECMS Project Number:

ECMS#. 116741

Test & Publish your project URLs below.

FolderName	FolderURL
Original	https://projectwisewebapi.pa.gov/DigitalDelivery/GetPWFiles.aspx?ParentGuid='76299bd0-5934-4a3a-90dd-2a30bcd7a000'

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File Folder Original

Download your files below.

Class	FileName	FolderName	FileSize	Version	Created Date	Updated Date	MDS Checksum
Document	250005B21_ROAD TYPES.dgn	250005B21_ROAD TYPES.dgn	405.5 Kb	Original	2026-02-26T16:19:02.32Z	2026-03-30T15:54:50.39Z	10fbefaf348d9b4088a1391324e730979
Document	250005B21_MOSC.dgn	250005B21_MOSC.dgn	76.8 Kb	Original	2024-03-14T11:55:36.107Z	2026-03-31T12:22:39.077Z	8abce99163f00343de580c32f17b67c6
Document	250005B21_LOCM.dgn	250005B21_LOCM.dgn	4.1 Mb	Original	2023-12-12T17:36:59.623Z	2026-03-31T12:19:47.317Z	344c61e96b5d5220f415d68c813758d6
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Document	250005B21_RTOW.dgn	250005B21_RTOW.dgn	174.8 Kb	Original	2026-02-13T18:13:15.387Z	2026-03-31T12:22:49.86Z	3db6d9f813e4a8b2831243dd67403ad5
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Document	ESB21_ROADWAYBACK.pod	ESB21_ROADWAYBACK.pod	348.2 Kb	Original	2026-03-30T19:00:15.293Z	2026-03-31T12:25:09.607Z	e90ce93410db9cdbee8f6f4627f832ca
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LogicalSet	250005B21_INFRA TYPES.dgn	250005B21_INFRA TYPES.dgn	843.7 Kb	Original	2026-02-26T16:18:57.92Z	2026-03-30T15:54:35.183Z	e6abe046ae469f307d428889d7b68174
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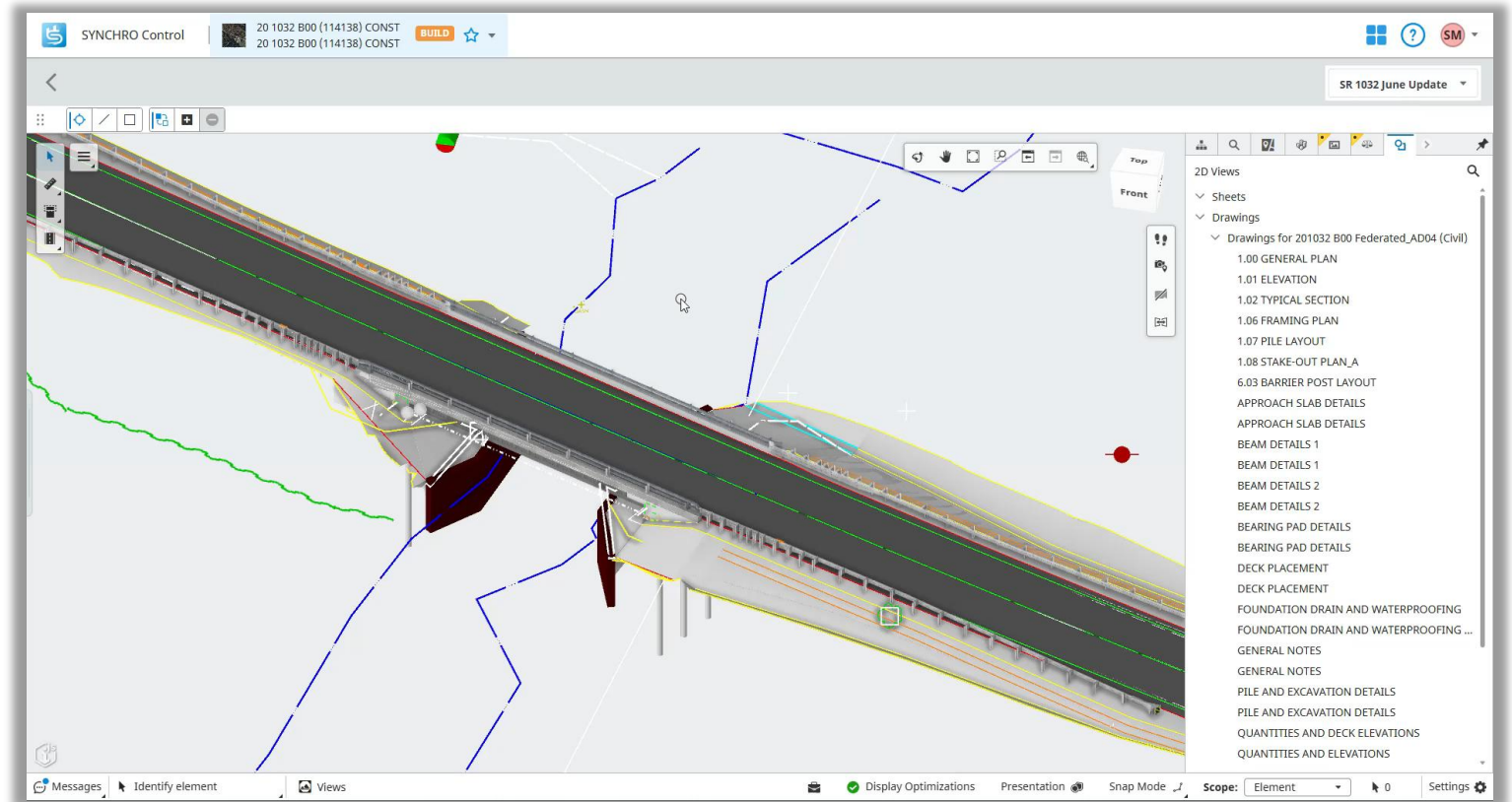
VIEWING 3D MODELS



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IN THE BEGINNING

- Models were gray scale colors due to materials not pulling from workspace.
- Font and symbols missing.
- No sheet models with details in drawing models that could only be accessed through 2D Views.
- 2D Views limited the ability to review or use model when looking at the details.

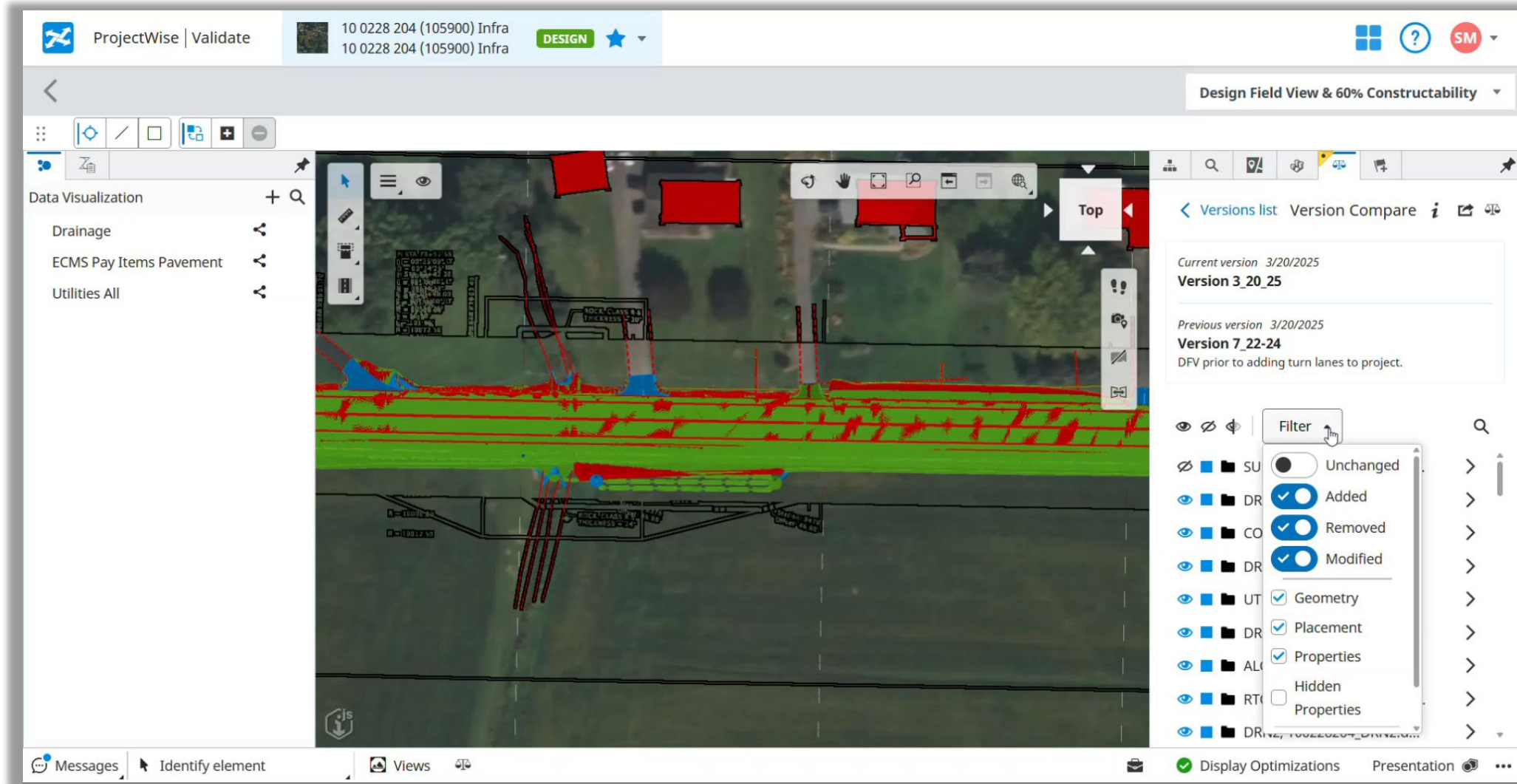


TODAY – DESIGN REVIEW

- Data Visualization for existing features, pay items, utilities, etc.
- Drainage Profile, drainage mode, and integrated views that zoom.
- Sheet models in the Sheet Index that are integrated with the model. NOT Drafted.
- Ability to review sheets and model together.
- Annotations starting to populate in the cross sections based of groups.



DESIGN VERSIONING



CONSTRUCTION PROJECT UPDATES

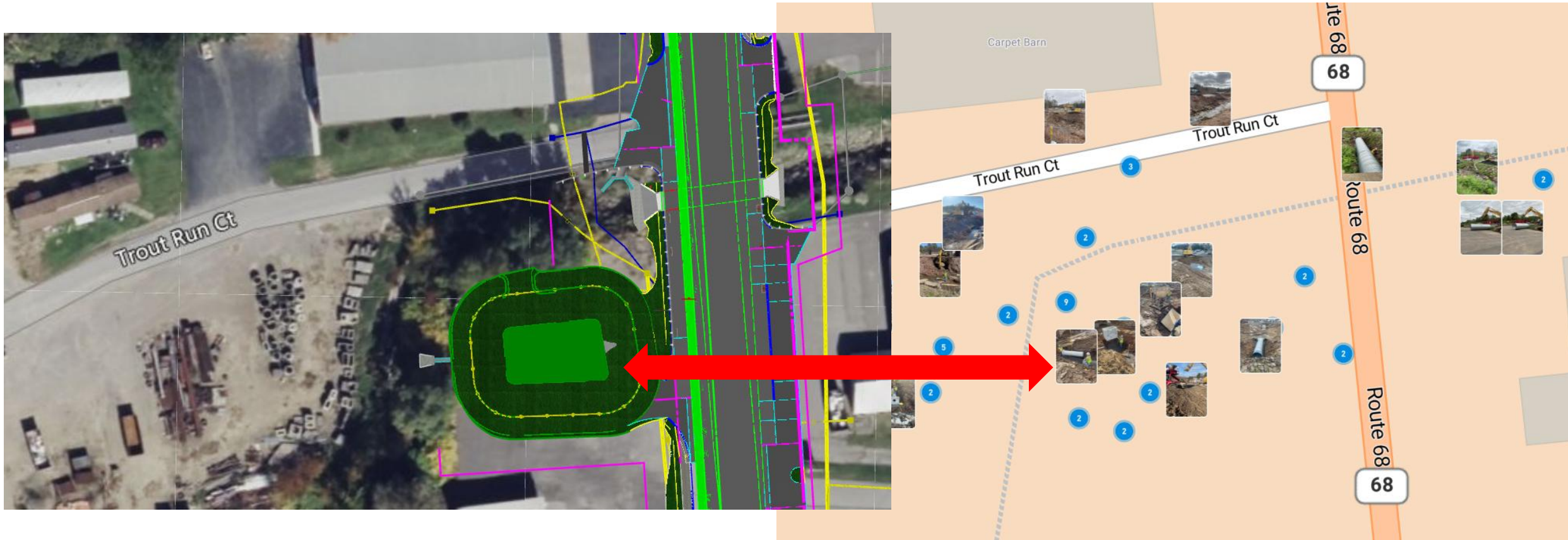
District 1: Crawford County (ECMS 57945)

- US 6 French Creek Bridge Replacement Project



Before and after construction phases

CONTRACTOR SUPPORT



Partnering meetings provide discussions and updates between the contractor and design team

Media Explorer provides a map where project images are geospatially located

CONSTRUCTION INSPECTION



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Department of Transportation

TEAM WORK!



FEATURE CODE DEFINITION

Name	Code	WHERE	Category	PT/Linear
ABUT WINGS	AWCI	CORNER, SEAM, PI	BRIDGE	PT
				Linear
BRIDGE BOTTOM OF BEAM	BBEAMCI	CORNER, SEAM, PI	BRIDGE	PT
				Linear
BRIDGE TOP OF BEAM	TBEAMCI	CORNER, SEAM, PI	BRIDGE	PT
				Linear
BRIDGE BEAM SEAT	BSCI	CORNER, CENTER	BRIDGE	PT
				Linear
BRIDGE BOTTOM PARAPET	BPARCI	CORNER, SEAM, PI	BRIDGE	Linear
				PT
BRIDGE TOP PARAPET	TPARCI	CORNER, SEAM, PI	BRIDGE	PT
				Linear
BRIDGE DECK CONC	BRDKCCI	CORNER, SEAM, PI	BRIDGE	Linear
				PT
BRIDGE DECK JOINT	BRDJTCI	CORNER, SEAM, PI		
BRIDGE FOOTER	BRFTCI	CORNER, SEAM, PI		
BRIDGE PIER FOOTER	FTPIERCI	CORNER, SEAM, PI		
BRIDGE ABUT FOOTER	FTABUTCI	CORNER, SEAM, PI		
BRIDGE RAILING	BRDRLCI			

Name	Code	WHERE	Category	PT/Linear
BRIDGE TOP PILE	TPILECI	TOP CORNER	BRIDGE	PT ONLY
CHECK SHOT	CHKCI	CENTER	INSPECTION	PT ONLY
GUIDERAIL	GRCI	RAIL FACE, SEAM	GUIDE RAIL	PT
				Linear
EDGE SHOULDER BITUMINOUS	ESBCI	SEAM, PI	ROADWAY	PT
				Linear
EDGE ROAD BITUMINUS	ERBCI	SEAM, PI	ROADWAY	PT
				Linear
EDGE ROAD CONCRETE	ERCCI	CORNER, SEAM, PI	ROADWAY	PT
				Linear
EDGE SHOULDER CONCRETE	ESCCI	CORNER, SEAM, PI	ROADWAY	PT
				Linear
EDGE ROAD WIDENING BITUMINOUS	ERWBCI	CORNER, SEAM, PI	ROADWAY	PT
				Linear
	HWCI	CENTER, FLOW LINE, PI	STORM WATER	PT
				Linear
	TICI	CORNERS	STORM WATER	PT
				Linear
	IOCI	CENTER, FLOW LINE	STORM WATER	PT
				Linear
	PIPECI	CENTER, FLOW LINE, PI	STORM WATER	PT
				Linear

Feature Definition Manager - C:\Users\CABBOTT\OneDrive - HDR, Inc\Documents\1\Feature Definition Manager\PD_BridgeAsB_FieldInspection_11.fxd

File Edit Help

C:\Users\CABBOTT\OneDrive - HDR, Inc\Documents\1\Feature Definition Manager\PD_BridgeAsB_FieldInspection_11.fxd

Line Control Codes

Block Control Codes

BRIDGE

CONTROL

ROADWAY

STORM WATER

TOPO

UTILITY

Groups

Feature Definition Properties

Feature

Name: EDGE ROAD BITUMINUS

Code: ERBCI

Category: ROADWAY

Feature layer: I-ROAD-EDGE-LN

Line

Line style: Solid

Line style scale: 1.00

Line label style: <<None>>

Field line style: Solid

Color: By Layer

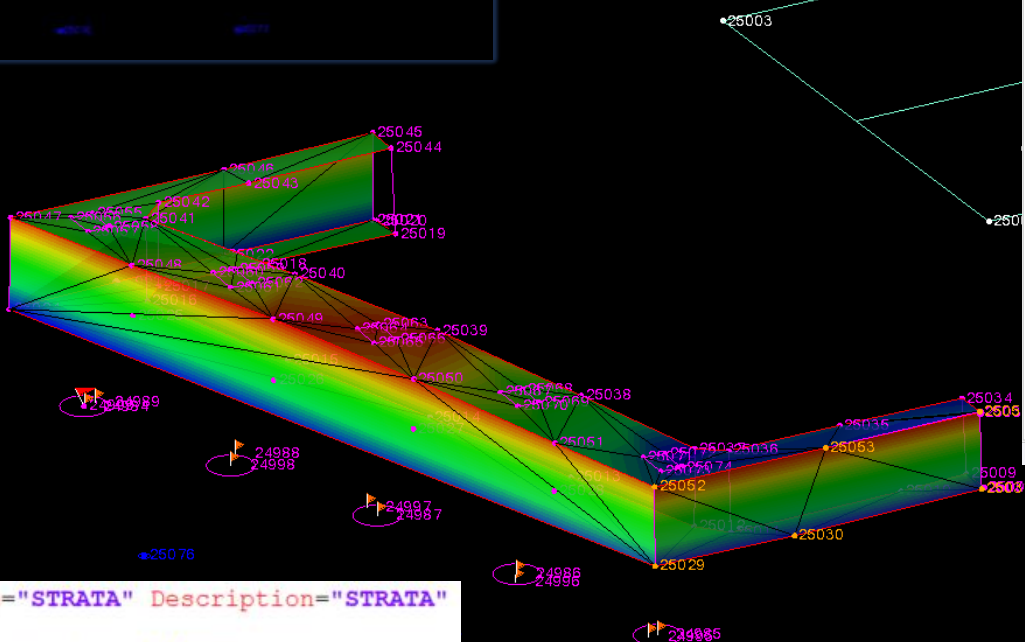
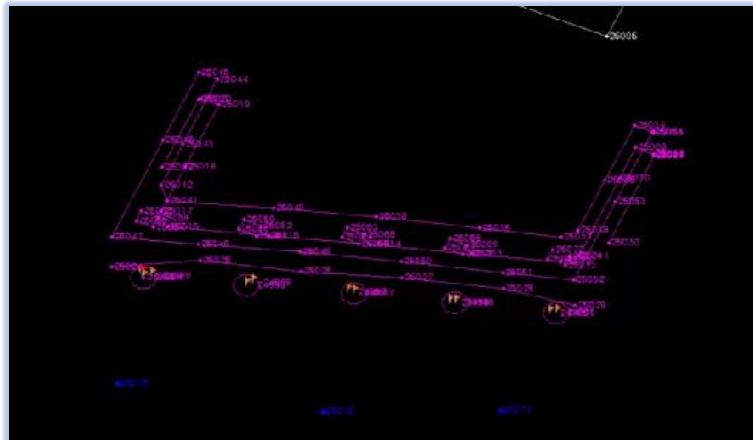
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ARC DESCRIPTION	Optional		
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STRATA	Optional		STRATA
PHOTO	Optional		
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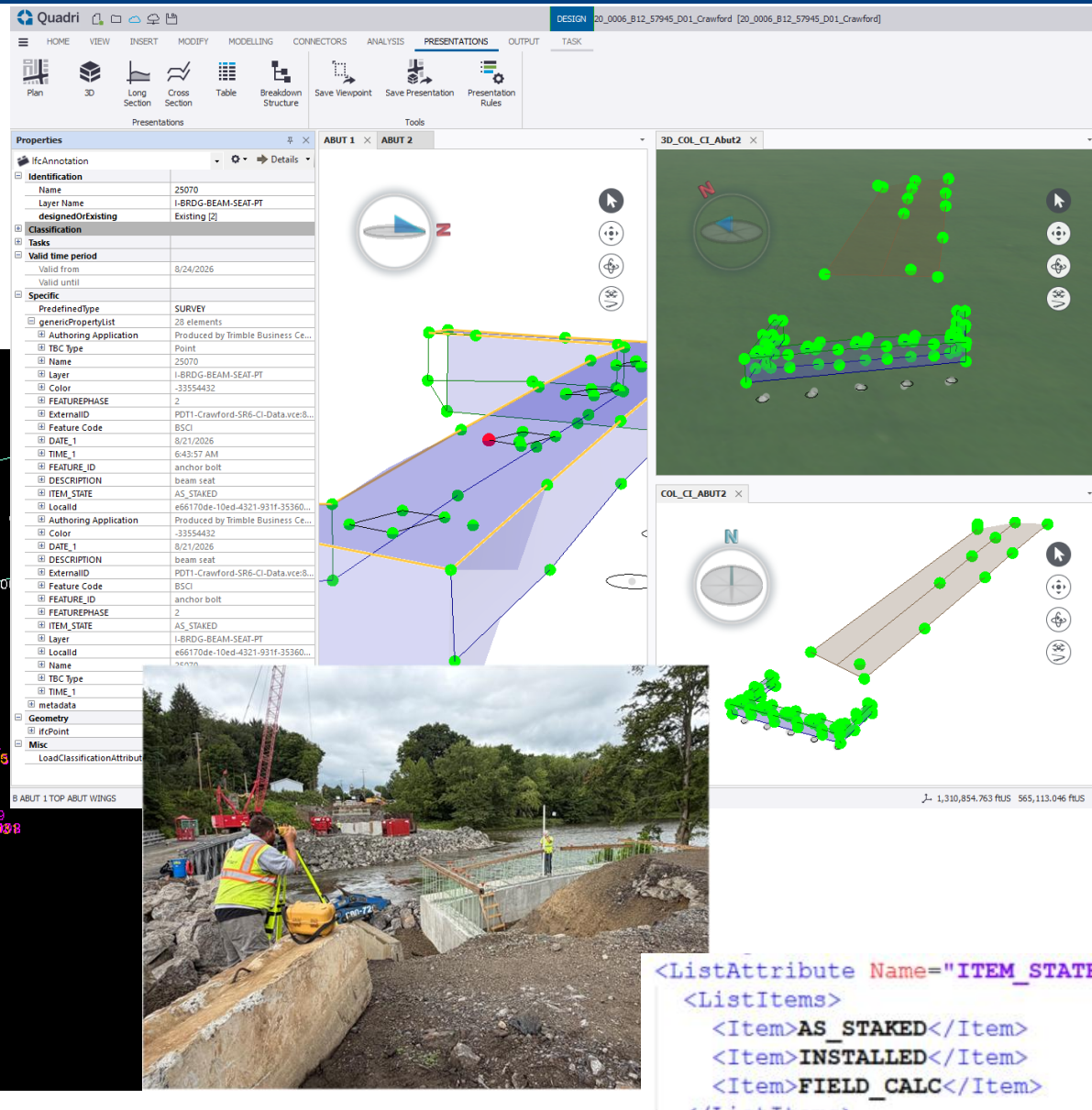
Line Control Codes and Features

Name	Category	Code
Close Line		CL
Close Rectangle		CLR
Exclude from Triangulation		DNC
Join Point		JP
Non-Tangent Curve PC		NT
Non-Tangent Curve PT		NTT
Point of Curvature		PC
Point of Tangency		PT
Start Line		ST
Start Rectangle		RECT
Starts a Smooth Curve		SCR
BRIDGE TOP PILE	BRIDGE	TPILECI

3D MODELING – TBC AND QUADRI

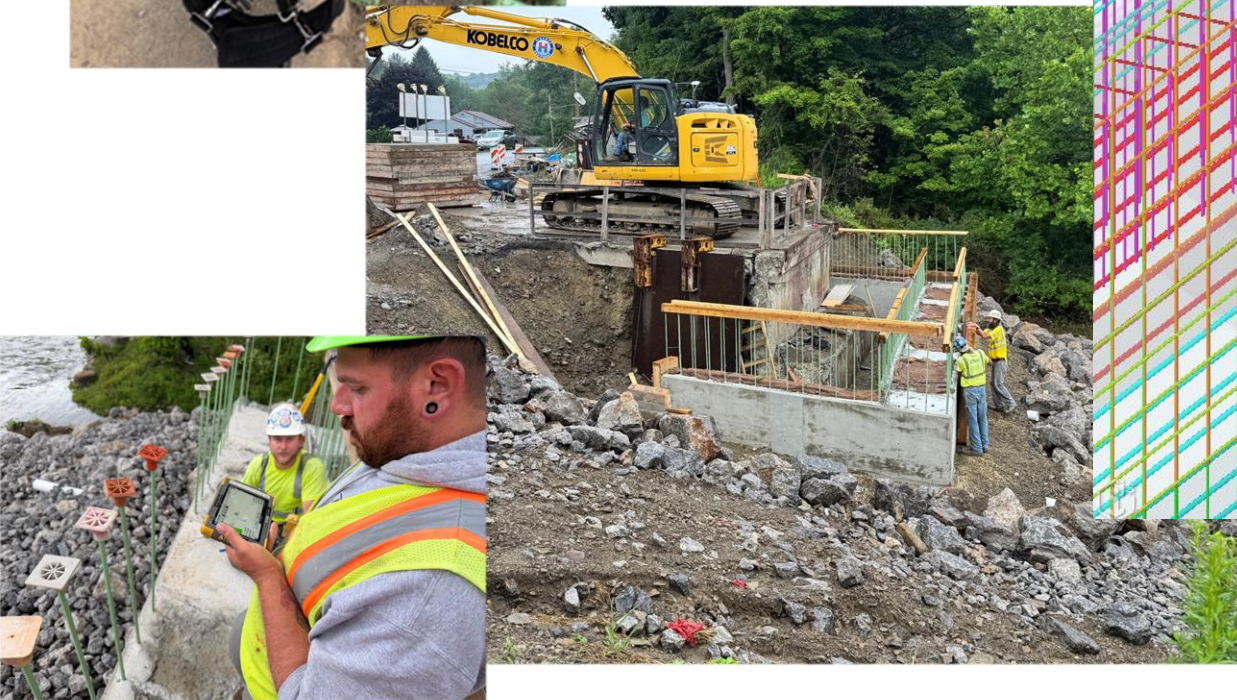
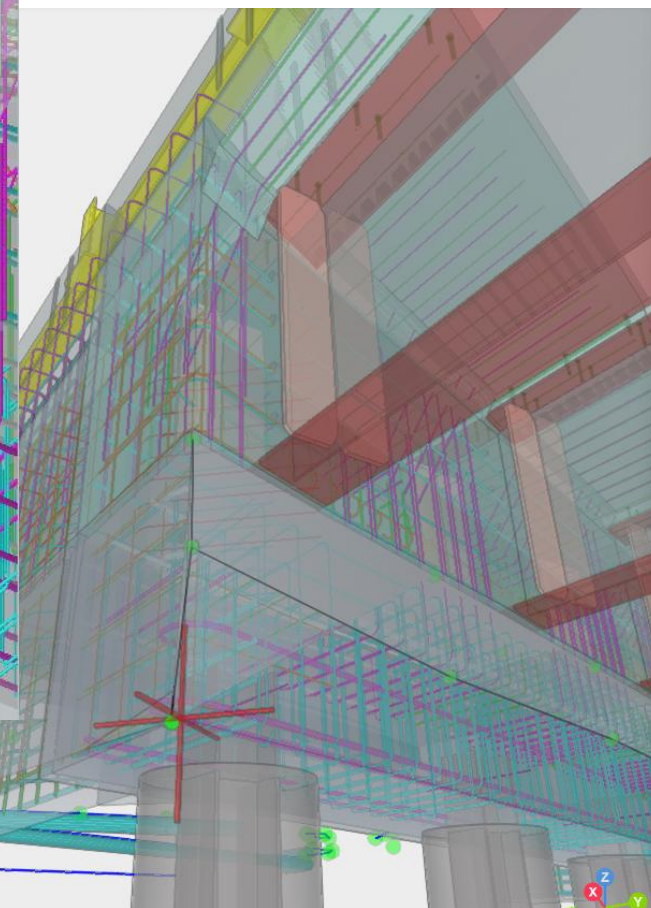
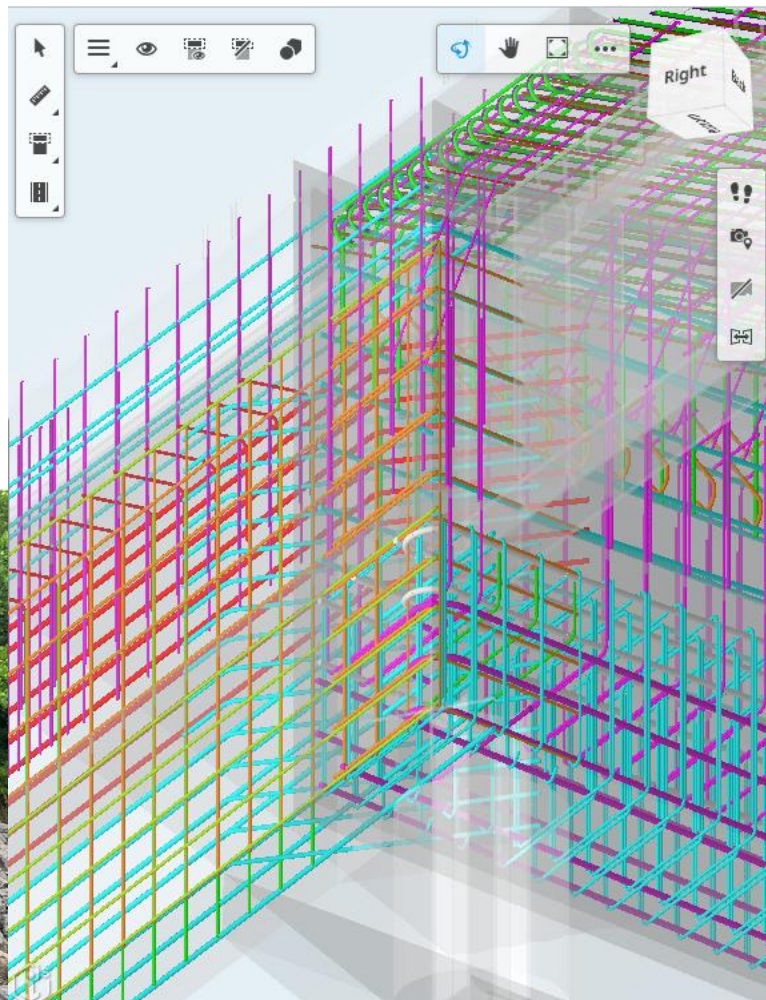
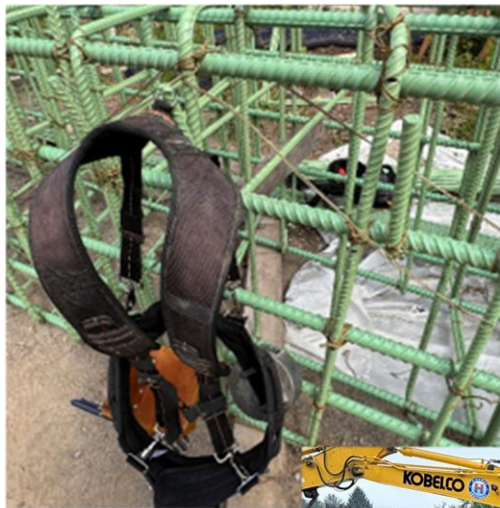


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MODEL COMPARISON – AS BUILT

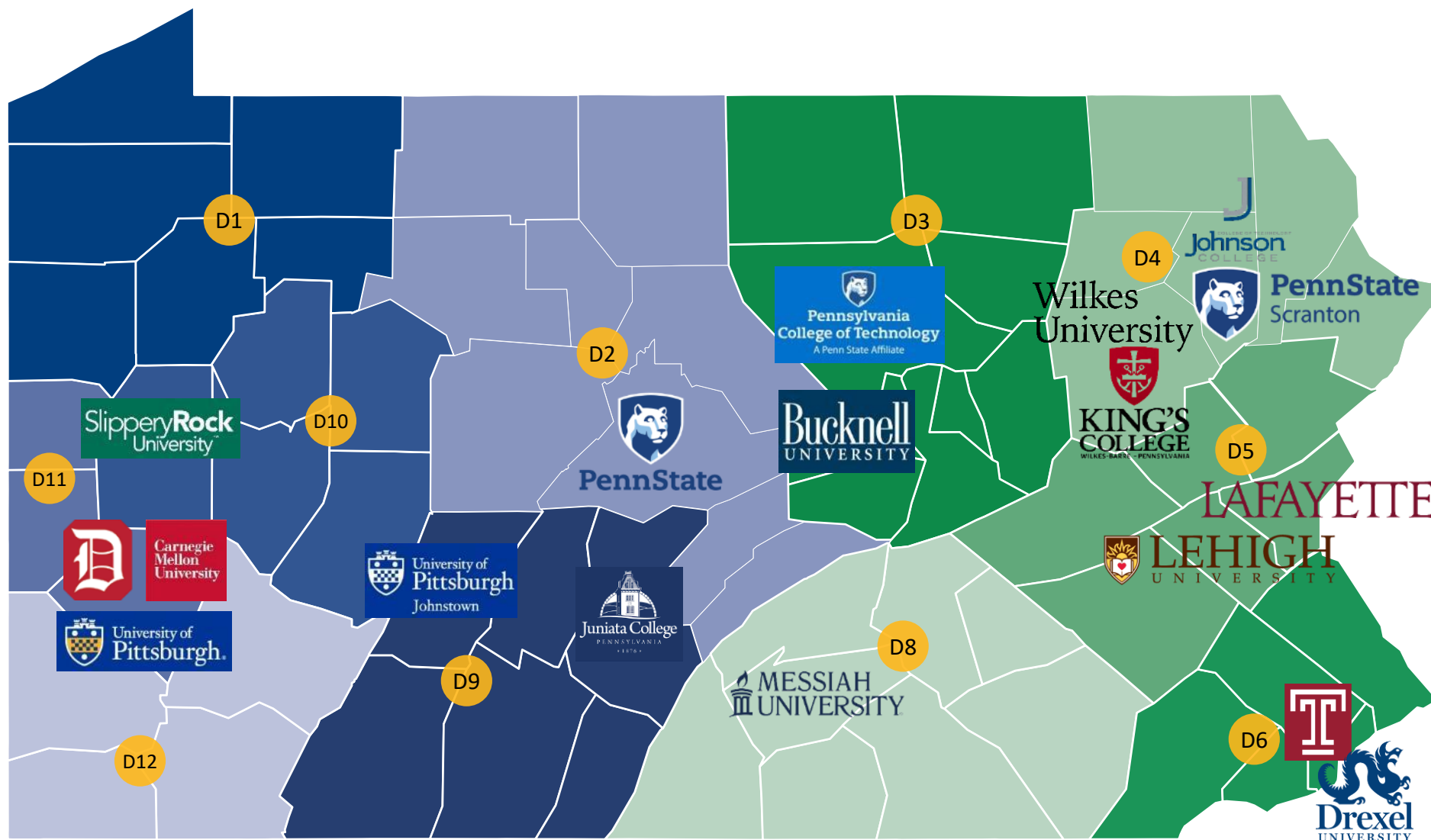


SUMMARY



Pennsylvania
Department of Transportation

HIGHER EDUCATION ADVISORY COMMITTEE



19 higher
education schools
across PA
participate

Digital Delivery
Team has been
guest lecturers at
7 schools in 2026



AASHTO J-Stan
Joint Subcommittee on Data Standardization

BIM FOR
BRIDGES
AND STRUCTURES
TPF-5(372)



BIM FOR
INFRASTRUCTURE
POOLED FUND
TPF-5(480)



2026
openBIM
ROADS & BRIDGES
TRANSPORTATION
— SUMMIT —

**NOVEMBER 2-3, 2026**

EMBASSY SUITES DOWNTOWN | PITTSBURGH, PA

Session 1: buildingSMART International

Session 2: National Updates

FHWA openBIM update

BIM Transportation Pooled Fund Updates

Session 3: Industry and Stakeholder Updates

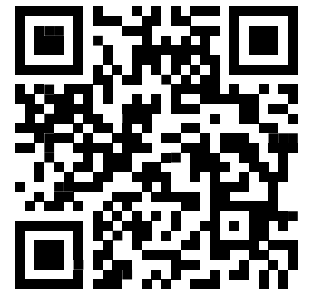
Contractor Panel Discussion

Industry Updates

Session 4: openBIM in Action

Pilot Projects

Technology Provider Challenge



SEPT. 26-30, 2027

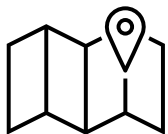
HERSHEY
Lodge

Hershey, Pa



SUMMARY

Digital Delivery Program



The roadmap continues to move forward



Central Office Digital Delivery group has been created

Projects to Institutionalization



PennDOT Digital Delivery Projects are labeled in ECMS

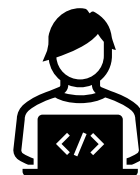


3D model deliverables and standards are on the website

From Office to Field



Technology development has helped to progress reviews



Project stakeholders are using the 3D model for tasks

3D Models & Inspection



Feature codes link design information to field points



Piloting and training digital as-built workflows

STAYING INFORMED



Digital Delivery

PennDOT Digital
Delivery Website



Digital Delivery Email:
RA-PDDigitalDelivery@pa.gov

Resources, Guidance
documents, Newsletters &
Webinars

Q&A



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