



Digital Delivery Pilot Project Update

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HELP #EndTheStreakTX

End the streak of daily deaths on Texas roadways.

TxDOT.gov
#EndTheStreakTX Toolkit



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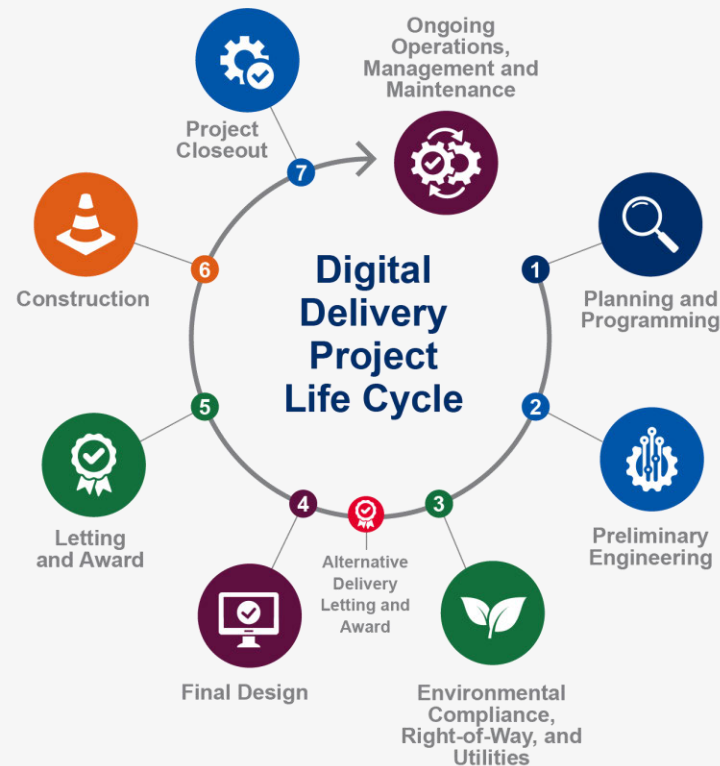
What is Digital Delivery?

Replacing Traditional Plans with Digital Design Models

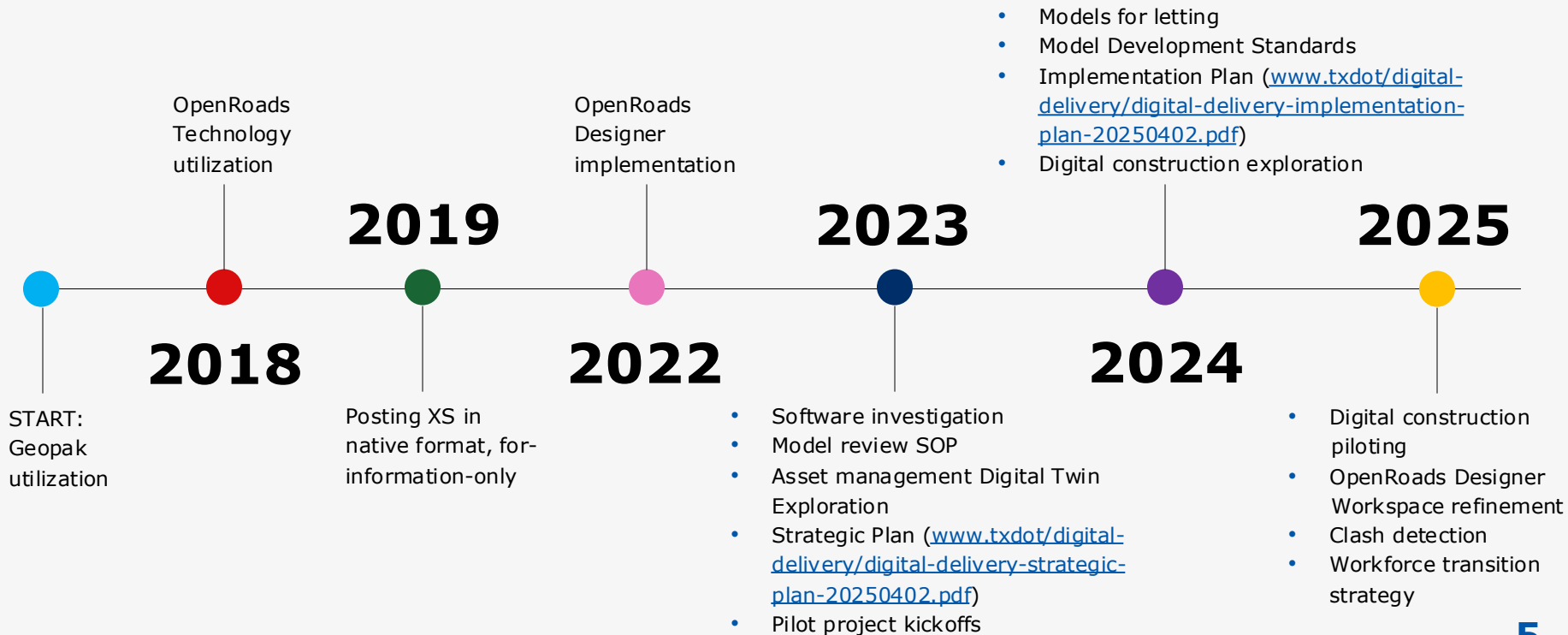
- Model as the Legal Document (MALD)
- Advanced 3D modeling; data-rich design models
- Digital design review tools
- Digital construction management tool

The Why

- Already established and proven overseas
- FHWA and AASHTO recognized
- TxDOT wants to be the leader in these initiatives



Digital Delivery Timeline: Past and Present



Pilot Project Digital Delivery Goals

DESIGN

3D modeling
constructability and
clash detection

Data attribution to CAD
elements for model-based
quantity reporting

Digital review tools for
model review and
comment resolution

DELIVERABLES

Models as legal
documents

3D Model Breaklines for
Automated Machine
Guidance (AMG) and
estimating

CONSTRUCTION

Digital review in the field

Digital as-builts e-Ticketing
for materials
documentation

Digital construction
management tool

ASSET MANAGEMENT

Data attribute to CAD
elements for asset tracking

Digital as-builts

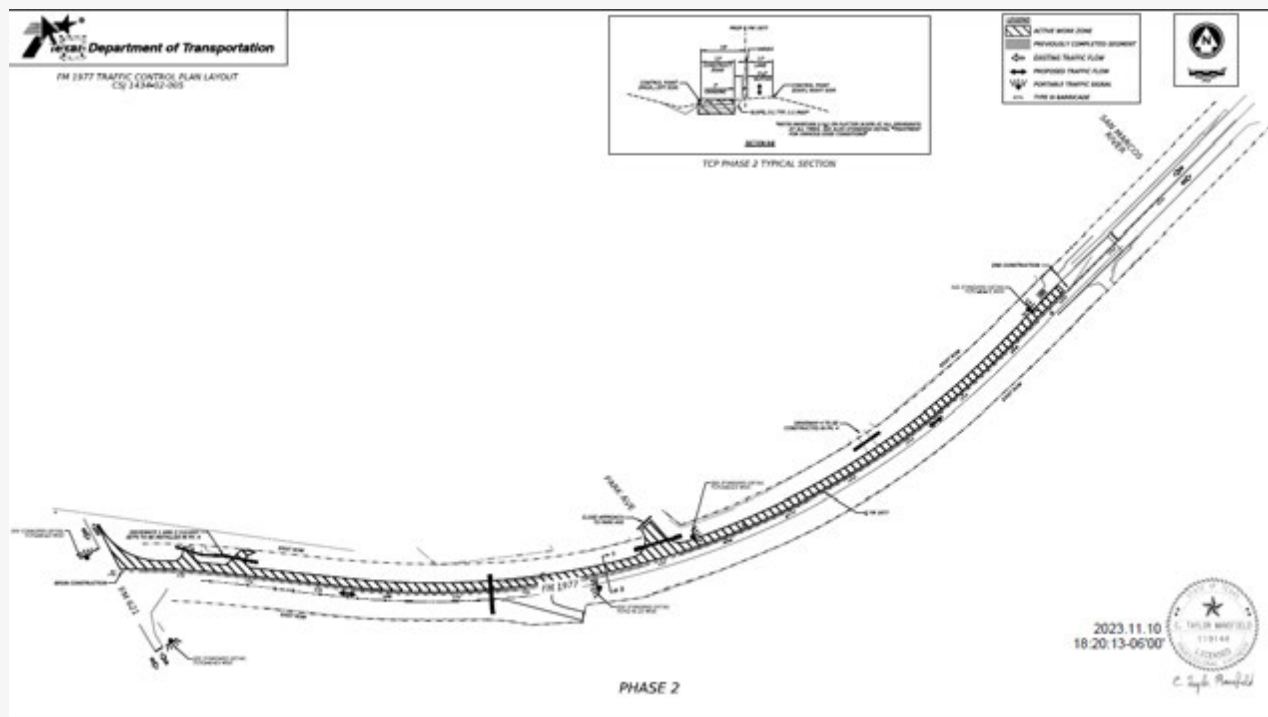
3D Model Breaklines for Automated Machine Guidance (AMG)



What is Digital Delivery? – Roll Plots

Roll Plots

- P&P (plan & profile)
- Phased TCP
- Removal
- Environmental



Example of phased TCP roll plot.

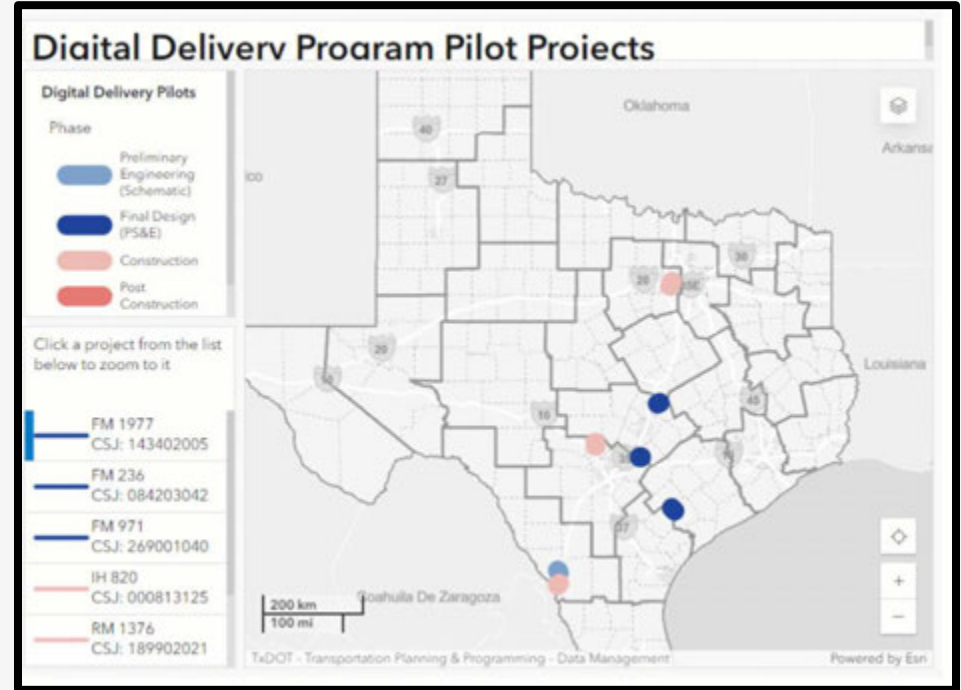
Pilot Project Tracker

HIGHWAY NAME	DISTRICT	SCOPE	LETTING DATE
FM 1977	San Antonio	PS&E. 0.311 mi. reconstruction and widening from FM 621 to the Guadalupe/ Caldwell county line.	January 2025
FM 1929	San Angelo	PS&E. ~8.5 mi. of rehabilitation of existing road from US 83 to Lake County Rd.	November 2026
FM 236	Yoakum	PS&E. ~5 mi. conversion from 2 to 3 lane facility. Includes proposed roadway realignment, widening, medians, and drainage improvements.	May 2027
US 83	Laredo	Schematic and PS&E. 3.741 mi. roadway widening and reconstruction from 1 mi. north of SH 255 to Los Botines Ln.	September 2027
FM 971	Austin	PS&E. 3.14 mi roadway widening from CR 334 to SH 95. Includes proposed pedestrian and drainage improvements.	December 2029

Pilot Project Map



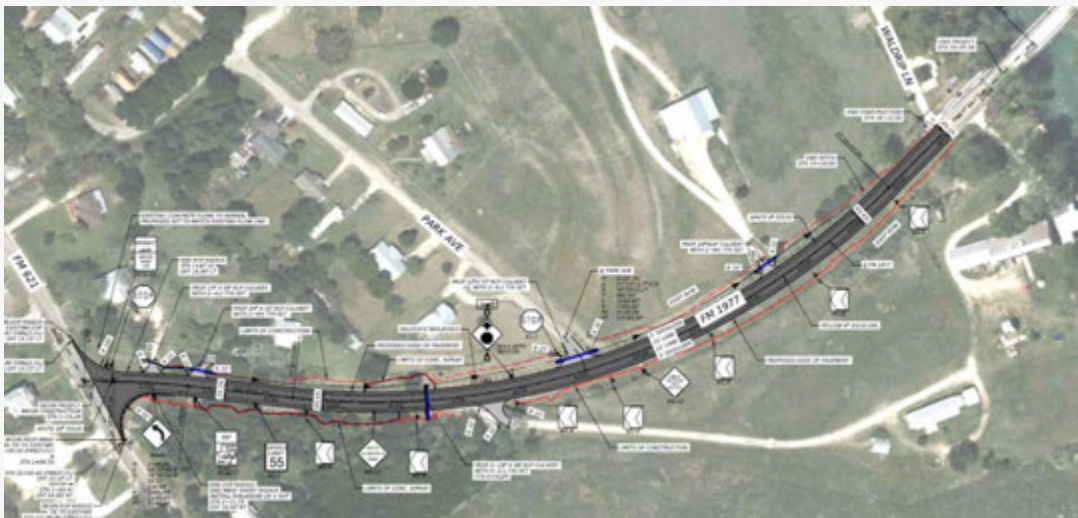
**Scan QR Code to
view the GIS Pilot
Project Map**



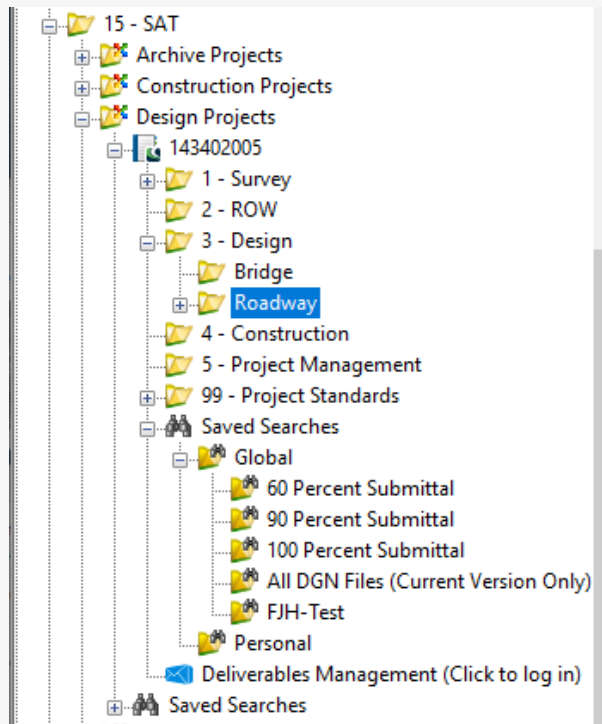
FM 1977 Pilot Project Scope

FM 1977, from FM 621 to Guadalupe/Caldwell County Line

- Location: San Antonio District, Guadalupe County
- Length: 0.3 miles
- 3R widening and rehabilitation
- No structures, 1 cross culvert
- Ditch and swale
- Construction estimate:
\$1.9 Million



FM 1977 Project Foundational Considerations



- Survey: Lidar vs. traditional survey
- ORD Workspace Enhancements: Item Types
- ProjectWise Architecture
- Utility Coordination and Design: 3D Modeling

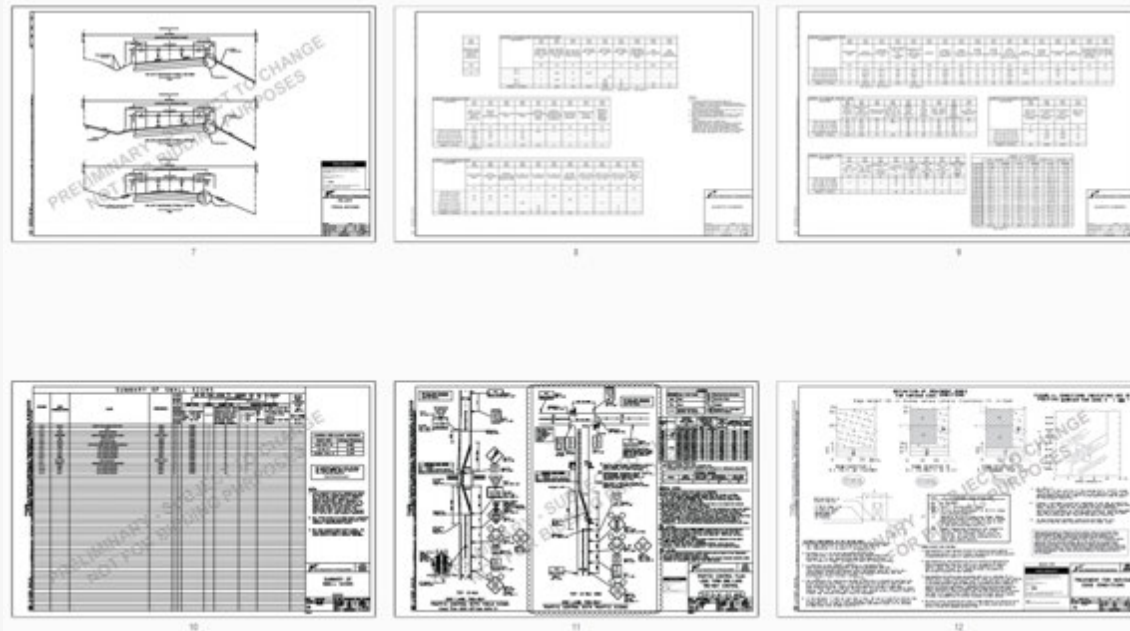
FM 1977 Design: Traditional Steps

Design for 2D representation

- Base file DGN's
- Reduced planset

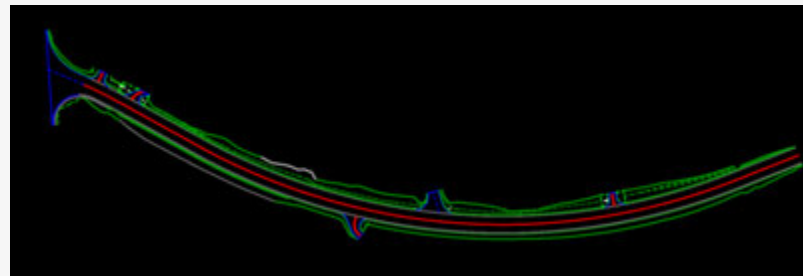
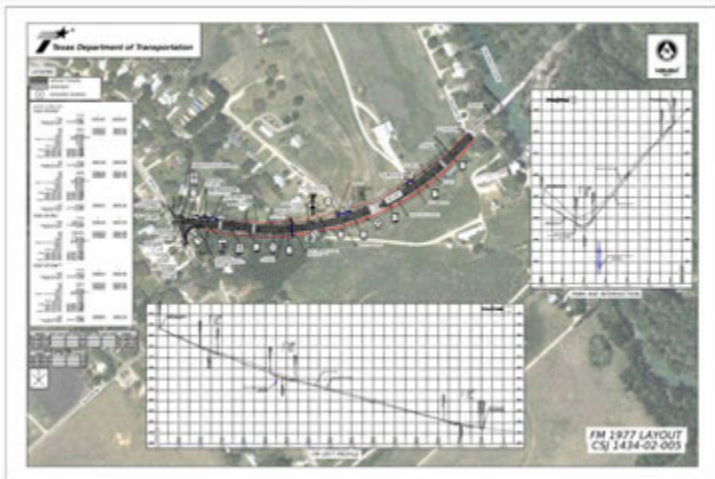
Design for 3D representation

- Roadway 3D corridor model
- DU model for drainage

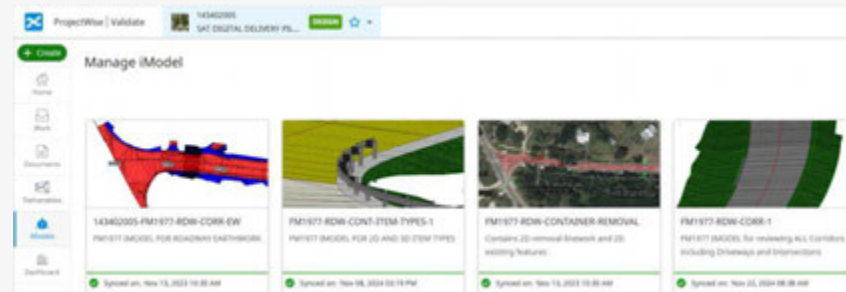
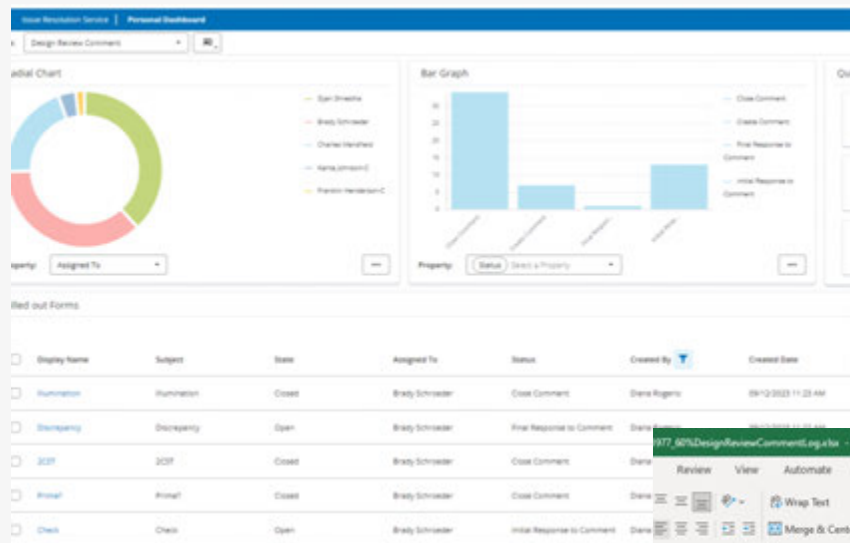


FM 1977 Design: New Steps

- Item Types
- Phased TCP modeling
- Signed/sealed rollplots
- Delivery of 2D and 3D models, for milestone reviews and as legal letting documents
- DU model for utilities
- 3D Linestrings
- Export of 2D plan-view design to web-hosted GIS model



FM 1977 Design: New Steps

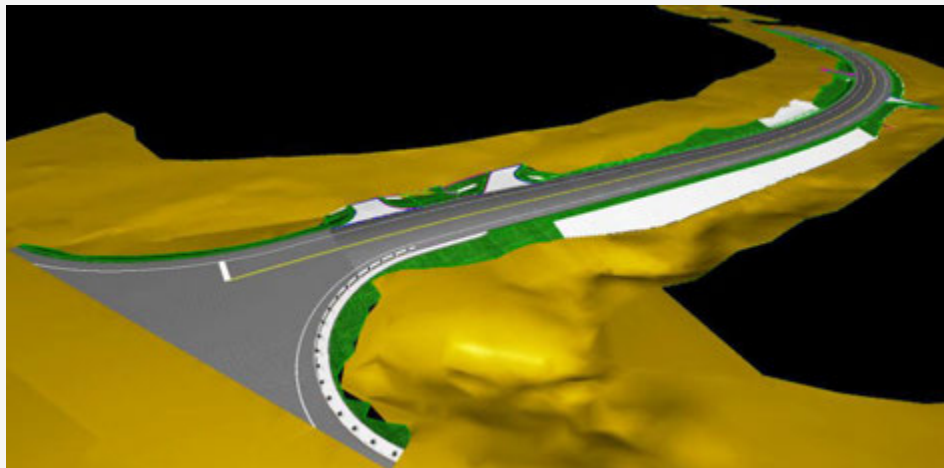


FM1977-DesignReviewCommentLog.xlsx - Read Only

Review	View	Automate	Add-ins	Help	BLUEBEAM	ProjectWise	Acrobat
General	Conditional Formatting	Format as Table	Cell Styles	Insert	Delete	Format	AutoSum
Alignment	Number	Styles	Cells	Editing	Analysis		
B	U	X	Y				
DOO Discipline Final Response Code Review Comment	Response Comment						
Utilities A (Agree) Ensure you send all illumination to Roy McQue for his review.	Sent illumination sheet and quantity sheet to Roy McQue for review						PM's Comments (illumination & Removal) (More)
Roadway A (Agree) Called out as 12" in model	Changed text of removal item to remove 12"						Summary of Qd
Roadway A (Agree) 2CST requires two different aggregate sizes	Emailled Jose Ramos and got the following for bid items for 2 CST						Prime Coat on
Roadway D (Disagree) Isn't an inverted prime (3CST more appropriate)?	Proposed pavement section provided to DES will remain a 2 CST						Final Quantity
Brady Schrader (Disagree) Is that quantity for all of the new flow lane? If so, check the quantity unit and check with Matthews' inputs							

FM 1977 Letting

- Deliverables posted via folder structure on Plans Online FTP site
- 000 SP: Important Notice to Contractors
 - Guidance on Digital Delivery bidding and construction processes
- Mandatory Pre Bid Meetings
 - Example Discussion Point:
Responsibilities of sub-contractors
 - Example Request:
Guidance on project's CAD architecture
- Low Bid amount: \$1.0 Million
- Low Bidder: Hunter Industries, LTD



FM 1977 Design and Letting Lessons Learned

- TCP phase earthwork in per station sub-totals
- 3D models reflecting field-fit conditions for riprap tie-ins
- Acceptable tolerances TBD for 3D line strings
- Refine processes for Design Review comment/issue forms
- Refine file naming convention for lean project folder structure
- Deliverables file governance (digital files vs. PDF files)
- Interoperability of digital deliverables with alternate CAD/BIM platforms

Digital Delivery Through Construction Lens

- Tools and Technology
 - Synchro Control and Field
 - Trimble SiteVision
 - Drones



Questions?

