Elliott County – KY 7
3D Modeling Pilot Project

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Project Overview

- Designed by KYTC
- Obtained input from Division of Construction and KY Association of Highway Contractors
- Requires contractor to use design model
- Model rules over plans
Project Details

- 5 miles of KY 7 in Elliott Co from KY 885 to Grayson Lake
- Rural, 2-lane relocation
- ~3M CY excavation
Project Goals

- Determine “Best Modeling Practice”
- Determine best submittal to contractor
- Determine role of designer after letting
- Create dialog between Design/Construction/Contractor
- Set new policy for better models
KY 7 Model

- Modeled entirely in Roadway Designer
- Mainline, Approaches, Entrances, Ditches, Radii
- Finished grade, Subgrade, etc.
Why Model in 3D?

**Design Benefits**
- Catch design errors prior to construction
- Better communication of intent
- Utility/sewer clash detection

**Construction Benefits**
- Decreased bids
- Decreased change orders
- Better construction inspection

Better overall product!!!
Special Notes were included to override KY Standard Specs

- Use of 3D Design Model
- Corrections to 3D Surface Model
- Mandatory Progress Meetings
- Earthwork Quantity Calculation
Project Progress

Earthwork
- Completed: 25%
- Remaining: 75%

Expenditures
- Billed: 20%
- Remaining: 80%
Lessons Learned

• Force template drops at each horizontal/vertical cardinal station, superelevation event, begin/end of transitions, etc.
• Use continuous breaklines as much as possible
• Provide surfaces for each subsurface layer
Lessons Learned
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• Don’t forget to model lane additions/drops, widening for guardrail end treatments, etc.

• Pay close attention when modeling intersections, gore areas, etc.
Which way do we go?

- 2nd pilot project
- 3D Modeling guidelines
  - And 3D Model expectations
  - Diminishing Return?
- Update electronic submittals
- Standard naming convention?
Electronic Submittals

- DXF files
- Coordinate Control file
- Cross Section Report file
- Expanded surface files
- File Index
3D Resources

- www.fhwa.dot.gov/3d
  - Technical Support Service Center
- FHWA web-based training modules
- KYTC Highway Design Webinars
Questions?

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