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Elliott County – KY 7 3D Modeling Pilot Project

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Project Overview

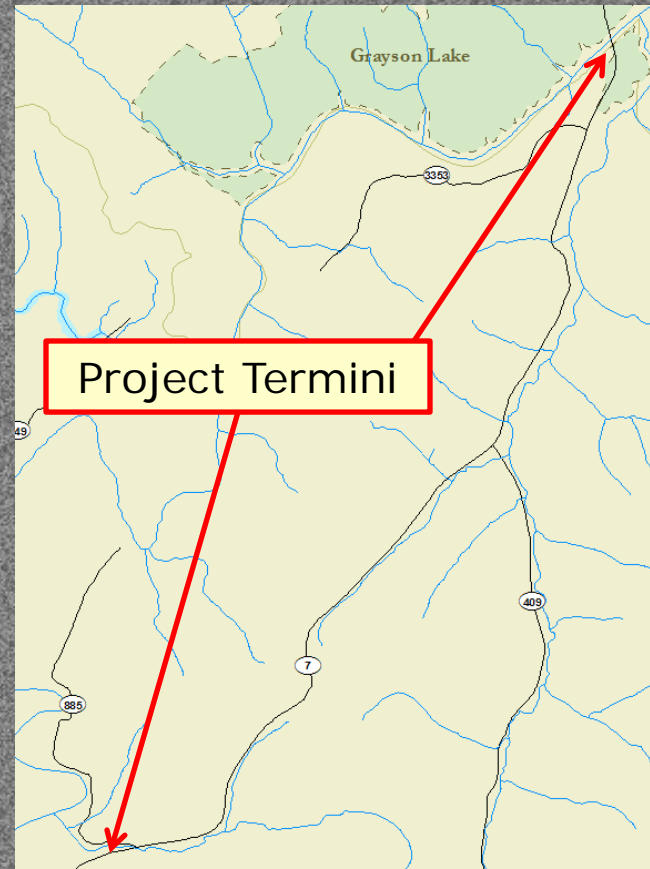


- Designed by KYTC
- Obtained input from Division of Construction and KY Association of Highway Contractors
- Requires contractor to use design model
- Model rules over plans



Project Details

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





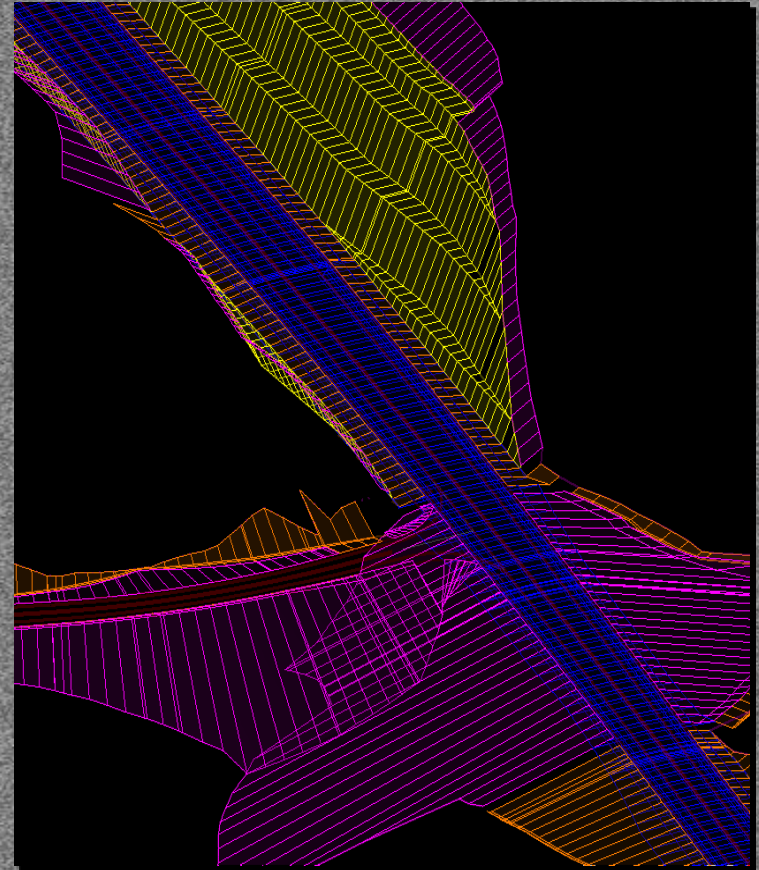
Project Goals

- 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?



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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

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

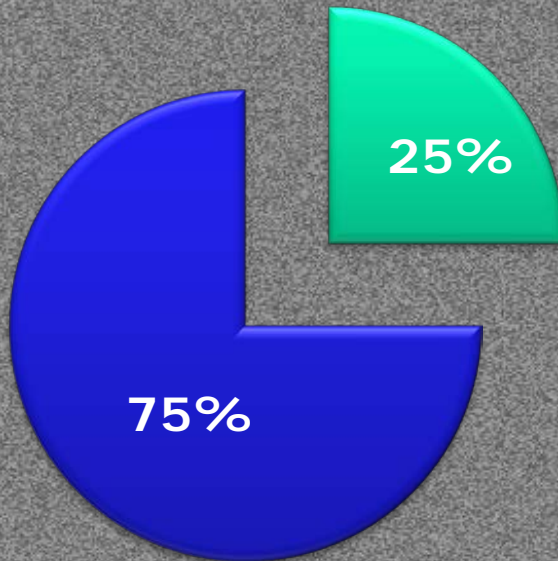
Project Progress



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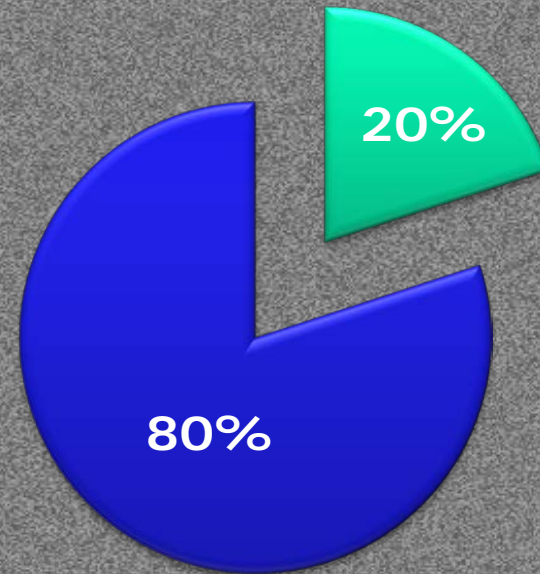
Earthwork

■ Completed ■ Remaining



Expenditures

■ Billed ■ Remaining





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Lessons Learned



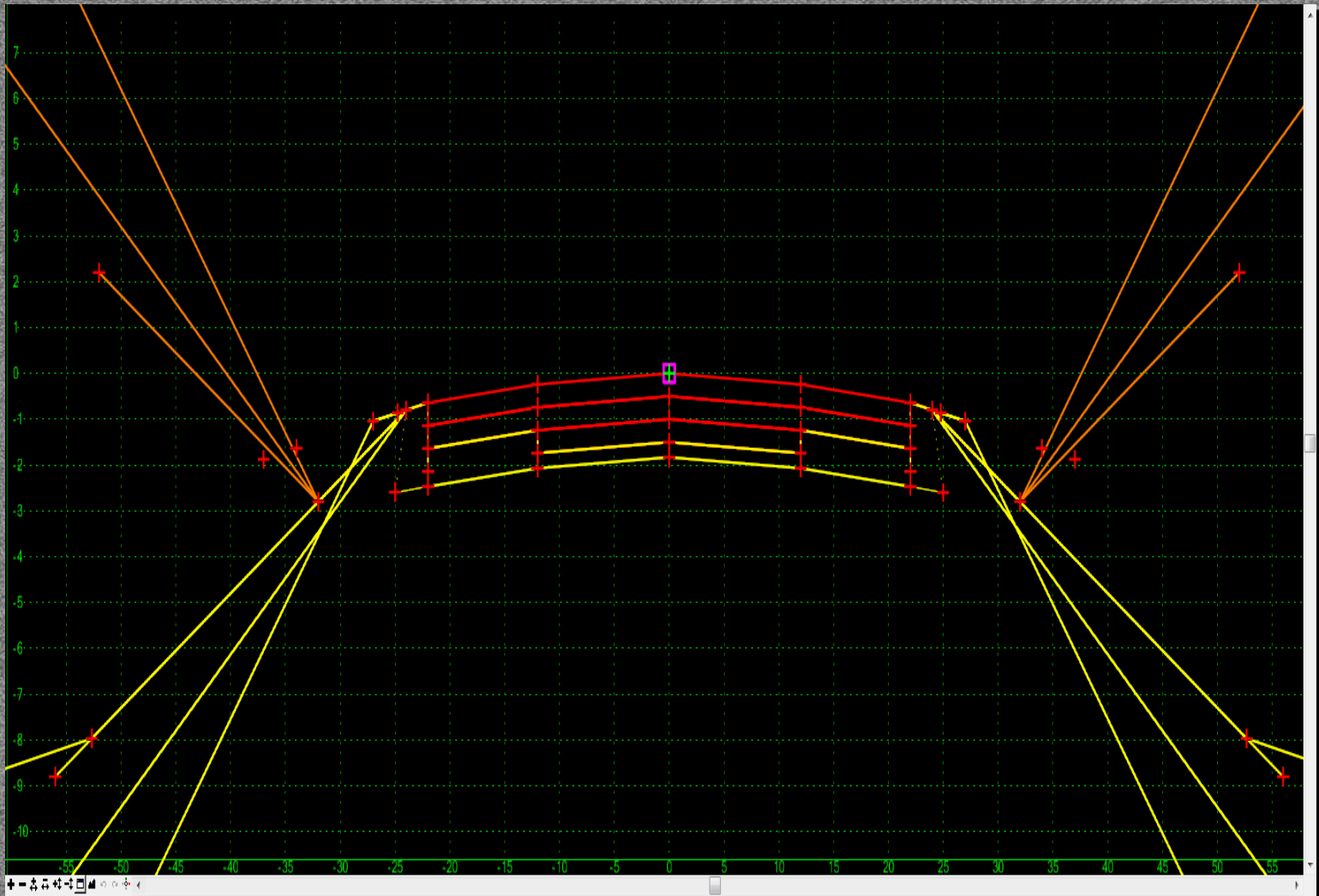
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- Force template drops at each horizontal/vertical cardinal station, superelevation event, begin/end of transitions, etc.
- Use continuous breaklines as much as possible
- Provide surfaces for each subsurface layer

Lessons Learned



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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



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- 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
 - <http://transportation.ky.gov/Highway-Design/Pages/Software-and-Support.aspx>



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Questions?

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