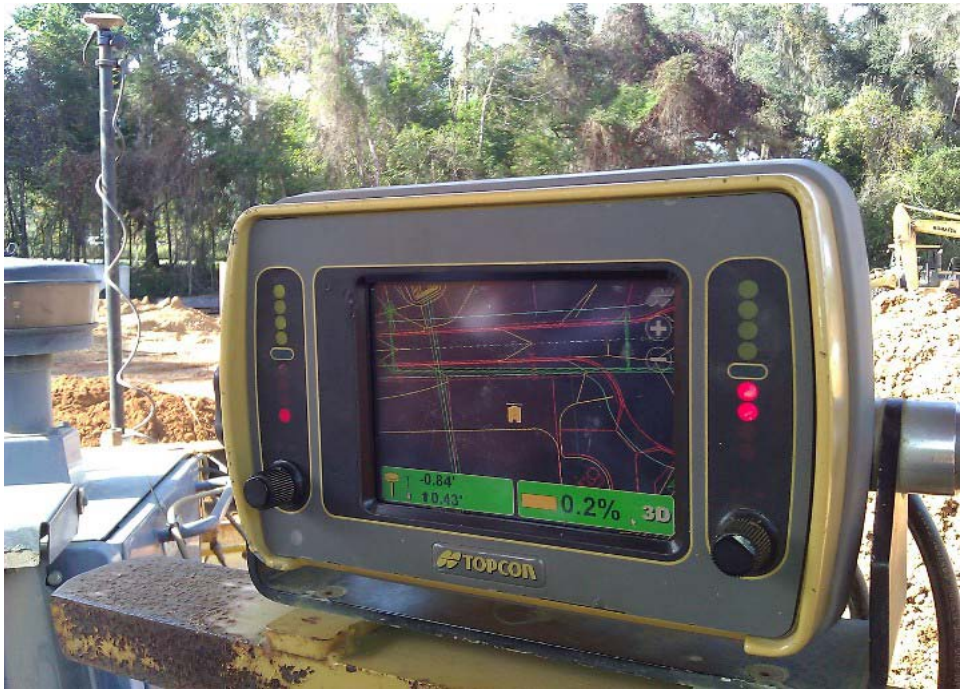
FDOTSS3 Design and 3D Modeling
Chapter 10
3D Models for Construction



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5.12.4.2 3D Deliverables Supporting AMG for 3D Projects

The following table describes the file to be provided for use in construction on all the Department's Projects utilizing 3D design techniques. These are usually copies of files produced in the ordinary course of 3D design CADD work and copied to a convenient location for contractor usage. The Department provides a tool called Create3DDeliverables to aid designers copying \ renaming the files for the contractor.

3D DELIVERABLES SUPPORTING AMG for 3D PROJECTS	
File Name *(put in .\3DDeliverables)*	**Description**
Design Alignments and Profiles	
AMG-ALGN##.xml	All Alignments and Profiles extracted from the .\Roadway\ALGNRD, PROF or model files..\Roadway\DSGNRD OR CORRRD file in LandXML format.
2D Proposed Planimetrics Design	
AMG-2DSGN##.dwg/dgn	2D proposed Roadway design extracted from the .\Roadway\DSGNRD file. (Production of this file for construction is at the designer's discretion.)
AMG-2DRPR##.dwg/dgn	2D proposed Drainage design extracted from the .\Roadway\DRPRRD file. (Production of this file for construction is at the designer's discretion.)
AMG-2PDPL##.dwg/dgn	2D proposed Pond design extracted from the .\Roadway\PDPLRD file. (Production of this file for construction is at the designer's discretion.)
2D Existing Survey *(Note: These are being considered to merge into a single survey Planimetrics file)*	
AMG-2TOPO##.dwg/dgn	2D proposed existing Topography extracted from the .\Survey\TOPORD file. (Production of this file for construction is at the designer's discretion.)
AMG-2DREX##.dwg/dgn	2D proposed existing Drainage extracted from the .\Survey\DREXRD file. (Production of this file for construction is at the designer's discretion.)

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5.12.5 Maximum Corridor Frequency Interval Spacing for 3D Design

Design software used by the Department's samples the 3D corridor models at user defined intervals in order to create surfaces. To ensure reasonable fidelity in surface models for AMG operations, maximum intervals are described below:

Note The designer may choose to sample more frequently to more accurately represent his design model in the exported surface files, although there is limiting return (larger files and poorer computer performance) if sampling too frequently. The designer must balance these competing consequences when deciding appropriate sampling frequency for their projects.

Facility	Design Speed < 45 MPH	Design Speed > 45 MPH
Rural Sections	maximum corridor interval	
Tangents	20 feet	20 feet
Curves	10 feet	10 feet
Intersections	5 feet	5 feet
Urban Sections	maximum corridor interval	
Tangents	10 feet	20 feet
Curves	5 feet	10 feet
Intersections	2 feet	5 feet

Additional sampling intervals may be needed at critical regions in horizontal geometry stations (i.e. PC's, PT's), superelevation transition locations, and at profile geometry critical locations (i.e. PVC's, PVT's, and profile high/low points). The designer must also add sampling at other critical regions along the corridor, such as change of typical section, critical drainage locations, approach and interior to intersecti[illegible] etc.

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5.12.6 Quality Control of Corridor Models and Extracted Surface

3D Design is intended to produce output of a corridor model from which surfaces may be derived. It is incumbent upon the designer to verify these corridor and surface models representing the design intent so the resulting models and data derived from them can be relied upon by downstream users, especially the contractor Section 5.12.5 describes minimum sampling intervals for developing corridor models based upon facility and design speed; however more frequent sampling may be required to achieve the desired accuracy or resolution of the 3D model.

There are several methods that can be used to check the quality of the proposed models and surfaces, and many checks rely upon visualization techniques on the data. These can include:

- Visual Inspection through examining the models/surfaces using 3D perspective views and orbits. The Z (elevation) can sometimes be exaggerated during these operations to show discontinuity in the surface where problems might lie.
- Visual Inspection through examining the models/surfaces using drive and fly through animation. Other simulation techniques can be employed also.
- Contouring the surface models and examining the resulting contours.
- Surface display rendered/stylized as triangles or as faceted lattices/grids. In some software these views can be shaded indicating slope or elevation change. Surface analysis of models shaded to indicate a variety of surface conditions such as slope or elevation change.
- Cross Section and Profile Extraction - Do these corroborate the contract plans? Equally, are plan sections and profiles contemporary with the model?

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Creating 3D_Deliverables

Steps to follow:

- Alignments
  - Design File Alignments Reports to XML
- 2D files
  - Create Saved View for 2D planimetrics*
  - Use fence copy to new file
  - Save as DGN and DWG
- 3D files
  - Set Corridor Stage to final
  - Create Saved View for 3D breaklines*
  - Use fence copy to new file
  - Save as DGN and DWG

*Top view, references, levels, construction elements, etc.

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Creating 3D_Deliverables

Steps to follow:

- Existing Surface
  - Export to Land XML
- Proposed Surface
  - Create Terrain from Elements
  - Export to Land XML
  - Save as DGN and DWG
- XML Visualizer

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QUESTIONS AND COMMENTS

Thank you for attending !

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