

Civil 3D Design & Modeling Basics



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First things first....

- Civil 3D is **NOT** AutoCAD *just saying.....*
Contains Civil 3D, MAP 3D, and AutoCAD.
AutoCAD exists as a separate program and just cannot touch this.
- ◆ Civil 3D is object oriented 3D design. Use AutoCAD Civil 3D and the FDOT State Kit to create corridors that meet FDOT CADD standards.
- ◆ Use **CreateProject** to setup required files and folders essential to Civil 3D
- ◆ Use **Create Files** to create all drawings. Data and model is stored in these drawings, not a database.
- ◆ Get to know your Civil 3D project design objectives



FDOT Project Structure

Essential Folders for Civil 3D

_shortcuts
(who doesn't **love** a shortcut)

data
contains FDOT Master Sheet Set Template.dst

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Files for Corridors in a FDOT Project

- ◆ Alignment
 - ✓ ALGNRD
- ◆ Vertical Alignment (Profile)
 - ✓ DSPFRD or ALGNRD
- ◆ Assembly
 - ★ CORRRD
- ◆ Targets for Subassembly
 - ✓ Surface > GDTMRD
 - ✓ Geometry > DSGNRD, TOPORD

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Reference Essentials in a FDOT Project

- ◆ Alignment
 - ✓ **ALGNRD** -Data Reference
- ◆ Vertical Alignment (Profile)
 - ✓ ~~DSPRD~~ **ALGNRD** Data Reference
- ◆ Assembly
 - ★ **CORRRD**-Source Drawing File
- ◆ Targets for Subassembly
 - ✓ Surface > **GDTMRD**-Data Reference
 - ✓ Geometry > **DSGNRD, TOPORD**-Cannot be targeted by references in 2012. In Civil 2014 can be targeted in XREF



2 Types of References in Civil 3D

1. XREF – External References
2. DREF – Data References



Differences in Reference Types

XREF – External References

- ◆ Graphics only
 - ✓ Displays C3D objects and AutoCAD graphics
 - ✓ Adjusted in Layers
- ◆ Surfaces and Parcel objects can be labeled
- ◆ Corridors objects can be sampled for XSections

DREF – Data References

- ◆ Share and target object geometry and data only
- ◆ Graphics
 - ✓ Style Based
- ◆ References limited to:
 - Alignments
 - Profiles
 - Surfaces
 - Pipe Networks
 - View Frame Groups



Dissecting the Corridor Model

WHAT IS A CORRIDOR



Essentials of the Civil 3D Corridor

- ◆ Alignment
- ◆ Profile
- ◆ Assembly
- ◆ Targets for Subassembly
 - ✓ Surface
 - ✓ Geometry
 - Design
 - Existing

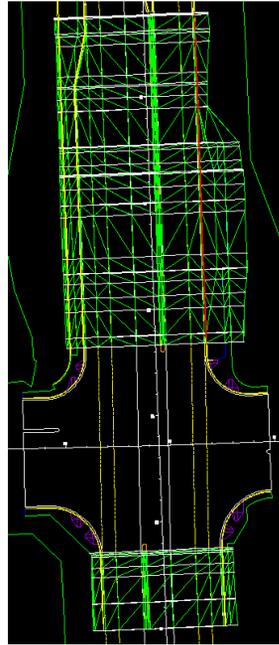
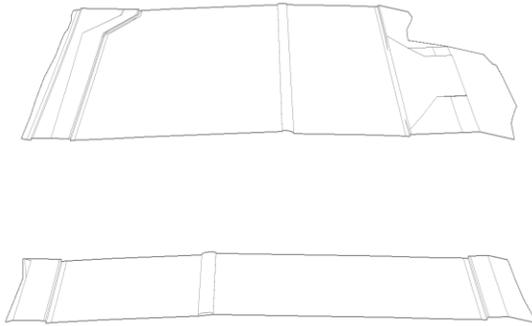


What is a Corridor?

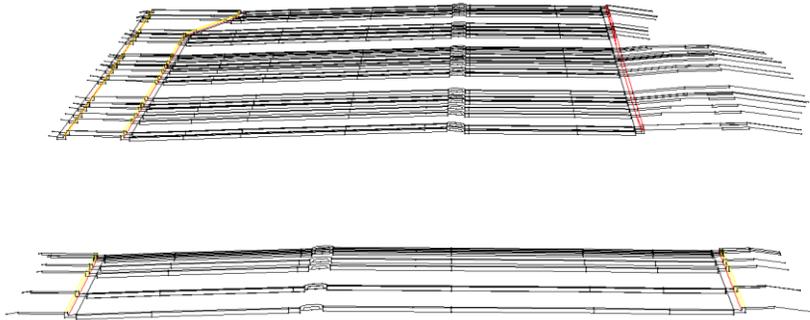
- ◆ A Corridor object is created by placing 2D objects at incremental locations (frequencies) along an alignment.
 - ✓ Used to get cross sectional volumes, surfaces, and feature lines
 - ✓ Used to create cross section sheets
- ◆ It is a dynamic 3D object that responds to updates
- ◆ Requires alignments, profiles and assemblies



What is a Corridor?



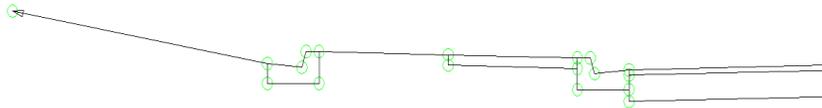
Under the Corridor Surface



The corridor consists of a series of **cross sections** placed at frequency intervals. The cross sections are created from one or more typical referred to as **Assemblies** in Civil 3D.



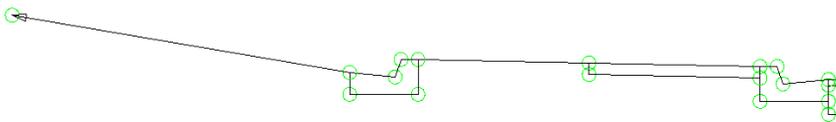
What are Assemblies?



An assembly is a collection of intelligent objects called **subassemblies**.



What are Subassemblies?



- Subassemblies are the basic objects needed to build a cross section of a road.
- FDOT has created many subassemblies that are specific to the Design Standards.
- For more information attend the FDOT Subassembly session.



FDOT Corridor Basics

CREATING EXISTING CONDITIONS CORRIDOR



First Corridor required for a project:

- ◆ Existing Conditions
 - ✓ Used for Cross Sections
 - ✓ Converts a basic drawings into a 3D corridor showing existing structure detail

- DTM surface
- Topo
- Right of way

