FDOT State Kit for AutoCAD Civil 3D

FDOT Subassembly: Existing Features

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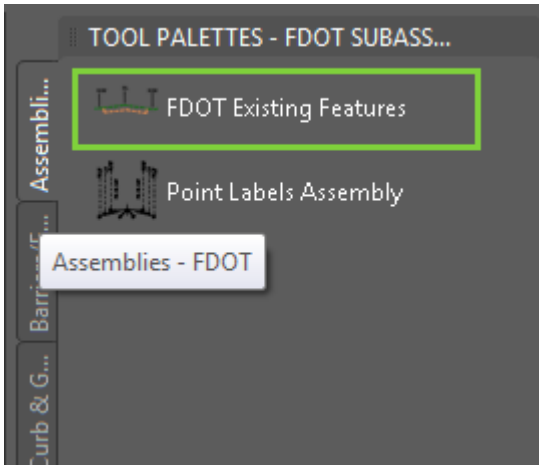
AUTOCAD CIVIL 3D

Software Prerequisites

- Current/latest version of the FDOT Civil 3D State kit.

FDOT Existing Features only available with FDOT C3D State Kit installed.



- The FDOT Civil 3D State kit can be obtained from: http://www.dot.state.fl.us/ecso/downloads/software/software.shtm

Documenting Existing Features

This workflow and tools are design to meet the requirements for Roadway Cross Sections as specified in the PPM Vol. 2 Chapter 18. It utilizes existing survey data and a custom subassembly to create existing feature sections.

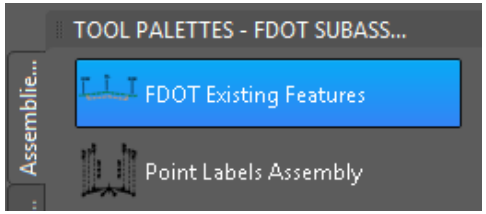
Cross section documentation of Utilities and Drainage, existing and proposed, which use a difference process and can be added to drawings separately after creating the existing features corridor.

Process Description:

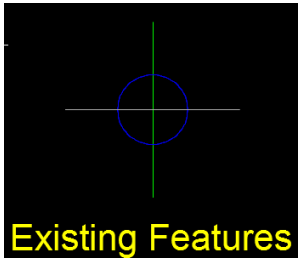
1. Drawing Prerequisites Preparation
2. Create an Existing Features Assembly
3. Create the Existing Features Corridor
4. Edit the Existing Features Corridor
5. Generate Cross-Sections and Views

Special Purpose Corridors for C3D

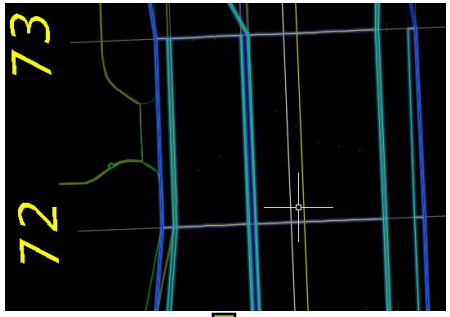
Tool Palette – FDOT Subassembly



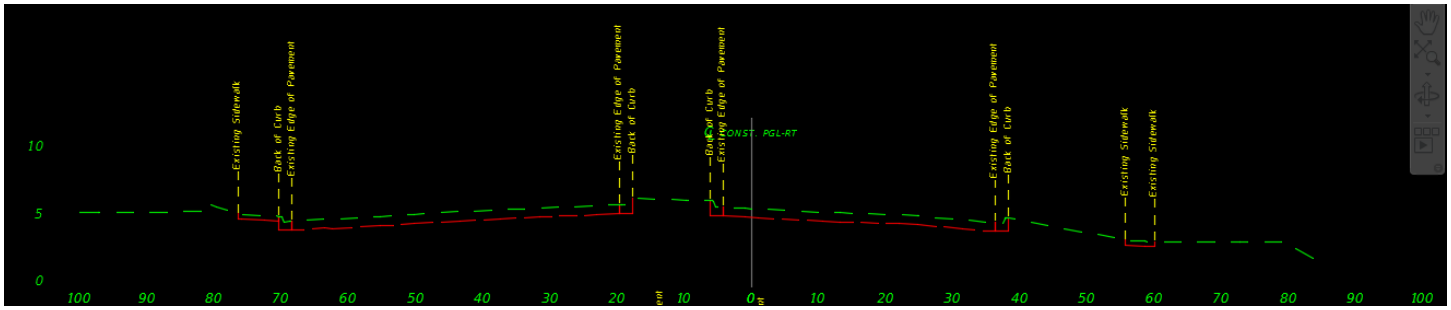
Assembly



Corridor



Cross Sections



Existing Features

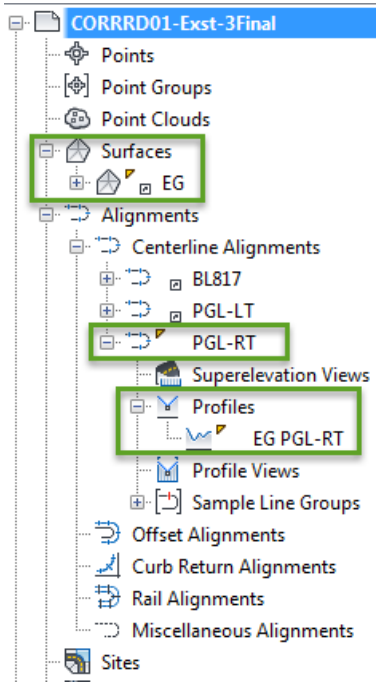
This subassembly searches a set width at each station for intersecting plan graphics and creates a corridor with below ground features; pavement, curbs, shoulders, sidewalks, as well as at grade traffic separators, guardrails and fences for cross sections. It then draws existing features that connect to the defined surface.

3D Model Object Prerequisites

Alignment

Choosing Alignments:

- Use centerline of construction alignment (design baseline).
  - The Alignment that will be your design baseline must be used to insure your roadway design sections are transposed correctly in your section views.
- The same alignment must be used for all mainline corridors which will be sampled.



Profile

- Existing ground profile along the design baseline (alignment).

Surface

- Existing ground surface model.

Geometry Prerequisites

Geometry

- Existing Topography - TOPORD01.dwg (Located in Survey folder)
- Right of Way (optional) - RW######.dwg (Located in RWMap folder)
- No duplicate geometry
- All target geometry must be on correct layers.

TIP!

- Use **LAYISO** command in source files to check that geometry layers are correct.

- Use **MAPCLEAN** command to remove duplicate geometry.

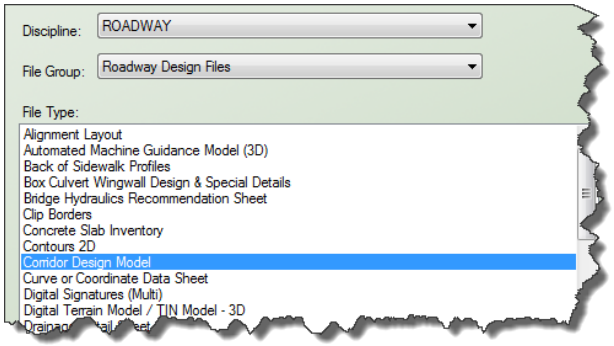
Geometry Prerequisites - Layers

Baseline Survey Line Layer	BaselineSurvey
Curb-Gutter Back Search Layers	CGBack_ep
CenterLine Layer	CLConst_dp
Curb-Gutter Connector Search Layers	TopoMisc_ep,PavtAsph_ep,PavtConc_ep,PavtMisc_ep,SidewalkFront_ep,SidewalkBack_ep,Driveway_ep,ShldrPaved_ep
Existng EOP Search Layers	PavtAsph_ep, PavtConc_ep
Existing Easement Line Layer	EaseLine_ep
Existing Property Line Layer	PropertyLine_ep
Existing Right of Way Limited Access Line Layer	LARWLine_ep
Existing Right of Way Line Layer	RWLine_ep
Existing Wetland Line Layer	Wetland_ep
Guardrail Search Layers	GuardrailDbl_ep,GuardrailLt_ep,GuardrailRt_ep
License Agreement Line Layer	EaseLicLine
Misc Pavement Search Layers	TopoMisc_ep
PGL Left Line Layer	GradeLineLt_dp
PGL Right Line Layer	GradeLineRt_dp
Fence Line Layer	Fence_ep
Proposed Perpetual Easement Line Layer	EasePerpLine
Proposed Right of Way Limited Access Line La...	LARWLine
Proposed Right of Way Line Layer	RWLine
Proposed Temporary Easement Line Layer	EaseTempLine
Entity Types to include in search parameters	LINE,ARC,LWPOLYLINE,POLYLINE,AECC_SVFIGURE
Layer for Search Limit Entity	Scratch2_dp
Shoulder Search Layers	ShldrPaved_ep
Sidewalk Back Search Layers	SidewalkBack_ep
Sidewalk Connector Search Layers	CGBack_ep,Building_ep
Sidewalk Front Search Layers	SidewalkFront_ep
TrafficSeparator Search Layers	TrafSeparator_ep

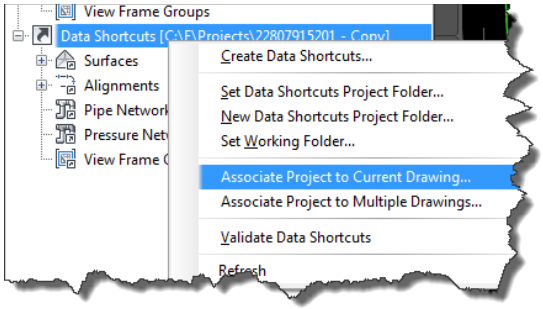
Drawing Preparation

Create Existing Features Corridor Model File

1. Open **Create File** located on the FDOT ribbon.
2. Select File Group > Roadway Design Files > Corridor Design Model file.
3. Select Create and Open File.



4. Check that correct zone is set.
   Command Shortcuts = SETFLEAST, SETFLNORTH or SETFLWEST
5. Save again as ‘CORRRD01-Exist’
6. On the Toolspace palette, right-click on Data Shortcuts link and Associate Project to Current Drawing…

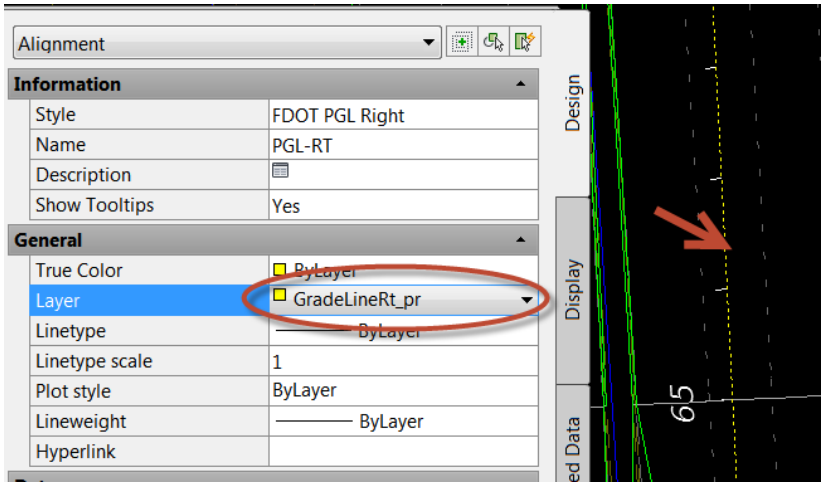


Create Data References - Alignments

Alignment

PGL-RT in ALGNRD01

- Apply alignment label set and scale for easy viewing. (Label Set: Station Extension Alignment Label Set)
- Promote alignment into the drawing to label if optional labeling for the alignment desired. Subassembly cannot target alignment objects.
- Make sure alignment is on the intended use layer.



Remember

In order to use the ROW labeling features of this subassembly, you MUST promote the desired alignments that will be targeted for labeling into the corridor model.

Create Data References - Surface and Profile

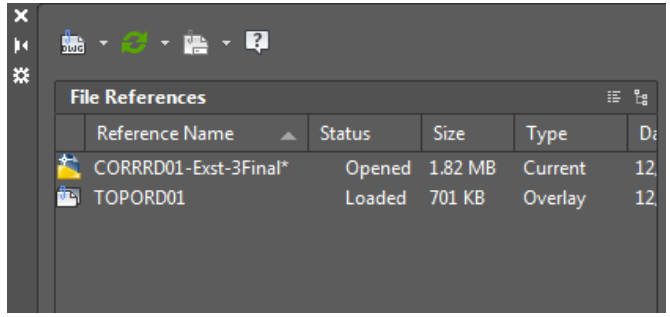
Surfaces - Existing Ground Surface, EG in GDTMRD01
Set style for 'Border Only'

Profile - Existing ground profile at the alignment with naming convention.
Example: EG PGL-RT

Existing Profile - Does not need be data referenced. Create this directly in the Corridor.

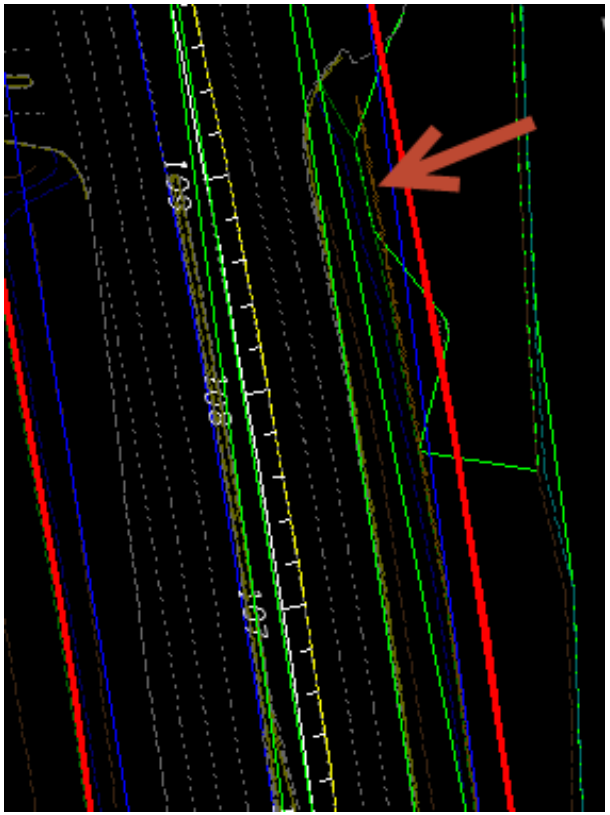
Insert External References

Create External References (Xref's) for:
...\Survey\TOPORD01
...\RW\RW123456701 (optional)



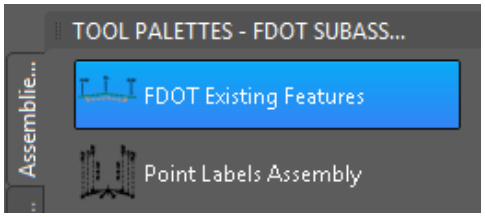
Drawing Suggestions for Model Review

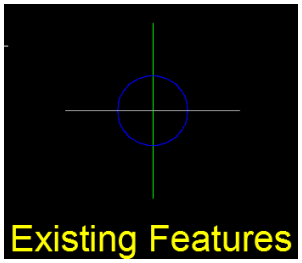
- Make sure surface is set to Border Only style.
- Make sure you have station labels assigned to your corridor baseline. (Station Extension Alignment Label Set)
- Insert External References on Xreference_dp layer.
- Isolate the subassembly target layers to be visible to make is easier to check target points at cross section stations.
- Make sure geometry targets do not fall outside of the EG surface at the station desired for cross-sections.



How the Existing Features Subassembly works

- This subassembly scans plan graphics for existing feature layers and draws the feature at each corridor station. It looks for feature pairs at frequency and geometry points to create corridor links and points.
- Events are logged in event viewer when points occur at incorrect positions or quantity to model. User must interactively refine search parameters and supplemental targets to seek features in most cases.



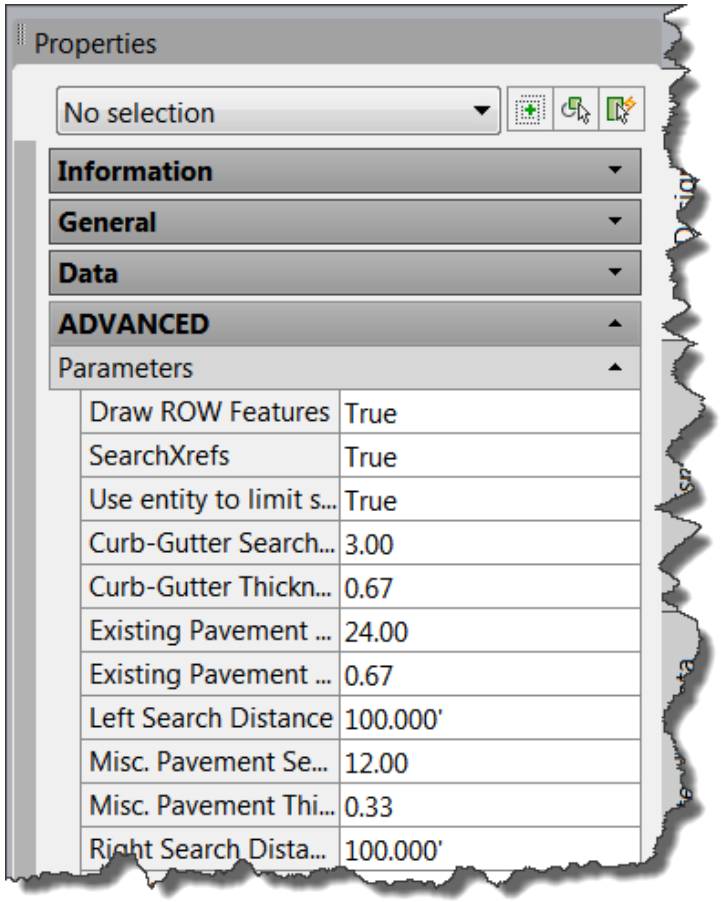


Create the Existing Features Assembly

1. Open the Properties Palette and the Tool Palettes
2. Create Assembly with name ‘Existing Features’
3. Left-click select the ‘Existing Features’ subassembly from the tool palette to expose the parameters in the Properties Palette.

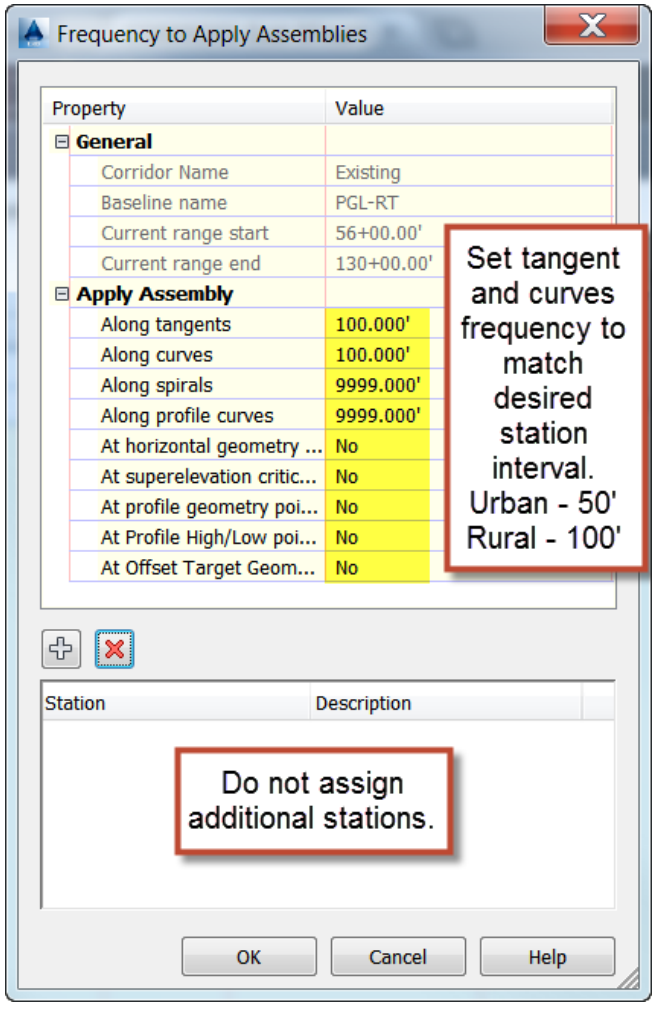
4. Right-click select to open the help document. Check that the layers in source drawings match.

5. Check and adjust the Parameters.



Create the Existing Features Corridor

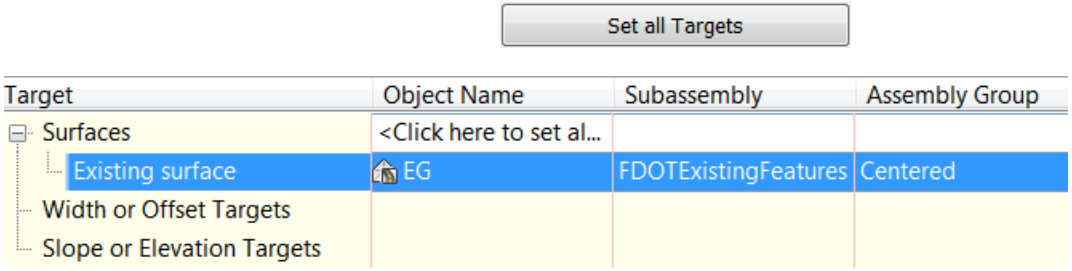
1. Create a Corridor object ‘Exist Conditions’.
   - A project may have secondary roadways with secondary alignments. Create separate Corridor drawings and name them with their respective corridor names appended when practical. Example, ‘Exist-2ndSt’.
2. Select ‘PGL-RT’ for the Baseline.
3. Select ‘EG PGL-RT’ for the Profile.
4. Select desired Station Range.
   - **TIP**: To improve performance if needed, select sequential smaller station range for initial processing for faster review and editing. Set the entire desired corridor station range after editing.
5. Set Frequency.



Create the Existing Features Corridor

1. Set Targets

   - Set the EG surface to use for connection.



- **TIP**:

  Civil 3D will not flag the Corridor to be Rebuilt if LAYER targets are modified. To update the Corridor after adjustments are made, the file can be saved, closed and reopened or small modifications to Region Parameters. This will enable the corridor to be rebuilt.

Adjusting the Corridor

After you've reviewed the model you will make adjustments to refine.

Examine intersections and driveways and add EOP extensions across gaps at station sample. Draw target on layer 'PaveAsph_ep'.

Sidewalks need a Front and Back line.

Traffic Separators must lie between pavement pairs.

Guardrails and Shoulders cannot lie between pavement geometry.

Guardrails must be on the correct side layer in direction of alignment (Ex: RT or LT).

To limit the number of pavement lines searched, create a line or polyline on 'Scratch2' to exclude areas of pavement not required in section.

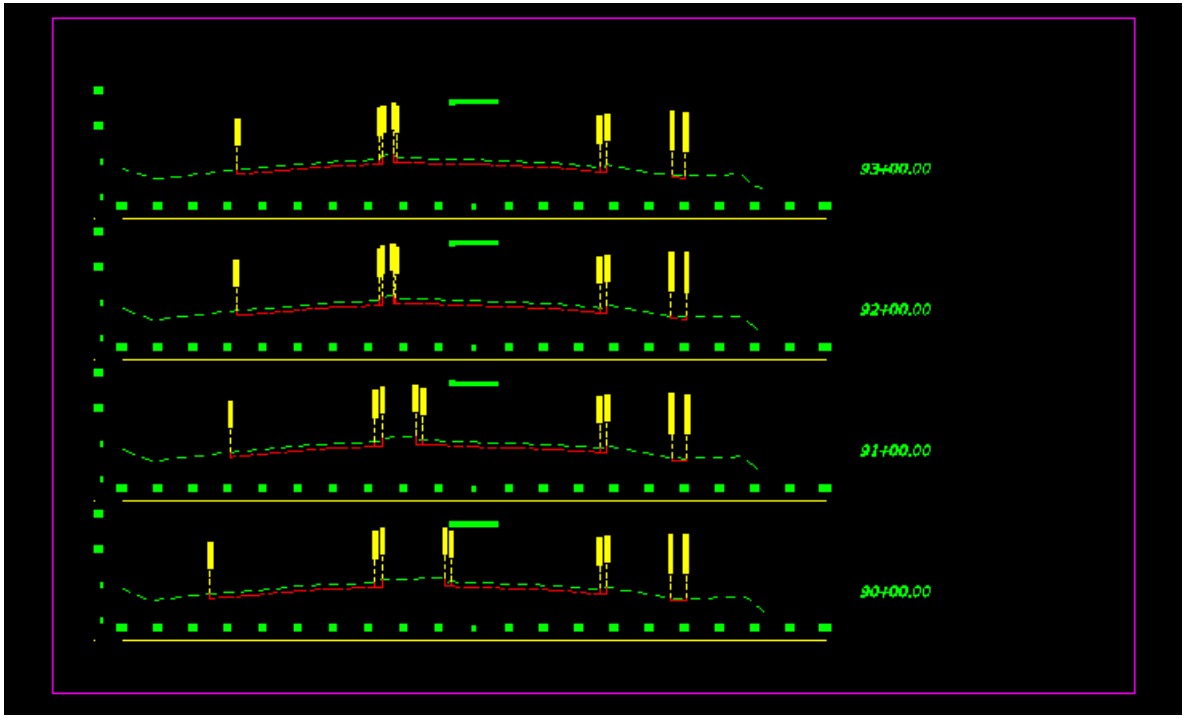
Proposed Temporary Easeme...	EaseTempLine
Entity Types to include in sea	LINE,ARC,LWPOLYLINE,POL...
Layer for Search Limit Entity	Scratch2_dp
Shoulder Search Layers	ShldrPaved_ep
Sidewalk Back Search Layers	SidewalkBack_ep

Cross Sections - Drawing Preparation Overview

Roadway Cross Sections – Using the Existing Features Corridor in Production

- Inside FDOT Create File tool, create a new DWG using Roadway Cross-Sections File Type
- Create Data Reference for project alignment.
  - PGL-RT in ALGNRD01
- Create External Reference for;
  - CORRRD01-Exist
- Create Sample Lines and Multiple Section Views
  - It is important that you add Sample Lines to the baseline used in corridor if you will want your sections to show design and existing conditions together. This will ensure your sections display correctly.
  - Use the code set style 'FDOT_Xsections_Existing'
  - Unlike, plan and profile sheets, Section Sheets can only be automatically created in the same file containing Sample Lines.

Section View Group (Production Layout) Considerations

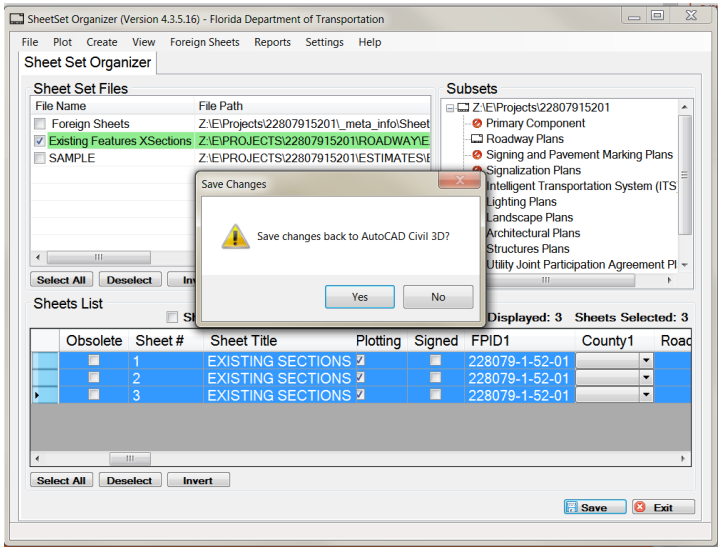


Excessive numbers of Layouts/Sheets (>15) can affect performance. You may manually copy the drawing and divide the range of Sheets by deleting Layouts, making sure you do not have duplicate sheets.

Finishing Touches

1. Add sheets to desired Sheet Set Manager (.DST) file into the Roadway Plans subset.
   - It is important that the .DST file be saved in FDOT project folders only.
   - Autodesk recommends that the .DST file be in the same location as the source drawing files.

2. Close Civil 3D and open Sheet Set Organizer (SSO).
   - Go to File> Open and browse to the Project.
   - It will take a few minutes for the project to be scanned.
   - Select the sheet set you just create and Rename or Renumber.
   - Save and changes are saved back to the Layouts.



Notes:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

FDOT Subassemblies: Existing Features

Thank You!

Email us:

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The Civil 3D FDOT State kit is available for download at:

http://www.dot.state.fl.us/ecso/downloads/software/FDOT2015CADDSoftware.shtm

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