2015 Design Training Expo

FDOT Corridor Essentials

FDOT State Kit for AutoCAD Civil 3D

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FDOT Corridor Essentials

This session is will focus building Corridors from the previous session (Subassembly Essentials). We will build a Corridor, edit parameters and add daylighting to a typical road assembly. We will demonstrate how create a corridor surface and generate cross sections. Extract Feature lines and extract Edge of Pavement surface boundary for quantities. We will also take a closer look at the FDOT Drive Way subassembly.

Software prerequisites:

- The most current/latest version of the FDOT Civil 3D State kit should be installed. This will ensure you are using the latest subassemblies developed specific for FDOT roadway modeling Design Standards.

User prerequisites:

- Should have a good understanding of AutoCAD and a basic understanding of AutoCAD Civil 3D.

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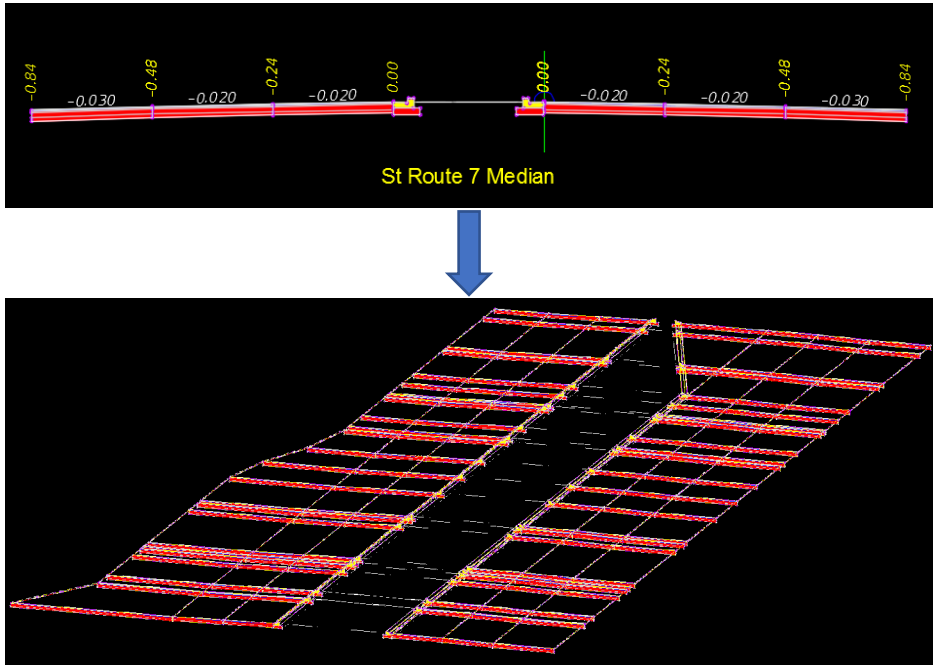
FDOT Corridor Essentials

Session Objectives:

- **What is Corridor?**
- **What are the components of a Corridor?**
- **Corridor Feature Lines.**
- **Creating a Corridor.**
  - Build a road corridor using an FDOT assembly, alignment and profile.
  - Use alignments and feature lines targets for lane widening.
  - Correcting Feature lines.
  - Add FDOT Sidewalk and FDOT SimpleDaylight to the assembly then create a corridor surface with boundary.
  - Correcting Feature lines.
  - Add Existing conditions corridor to cross sections.
  - Demonstrate how to utilize the FDOT Driveway subassembly.

What is a Corridor?

- A corridor object is a three-dimensional model that combines the horizontal geometry of an alignment, the vertical geometry of a profile, and the cross-sectional geometry of an assembly.
- Corridors can be used to model many linear designs such as roads, channels, trenches, tunnels…
- In a transportation project the corridor is a critical element of the 3D model. Use AutoCAD Civil 3D and the FDOT State Kit to create corridors that meet FDOT CADD standards.



FDOT Corridor Essentials

What are the components of a Corridor?

➢ **Five components.**

➢ **Baseline**

- First component for any Corridor.
- Baseline or Alignment must contain the horizontal layout, and a profile providing the vertical layout.

➢ **Region**

- When the geometry along a base line requires a new assembly, a new region is needed.
- Each region has a start and end station, and may not overlap.

➢ **Assembly**

- Assembly's are required to generate the corridor by providing cross-sectional information to be applied a along some of all of the length of the baseline. Assemblies contain the subassemblies that are coded with marker points, links and shapes that generate roadways, curbs, sidewalks…

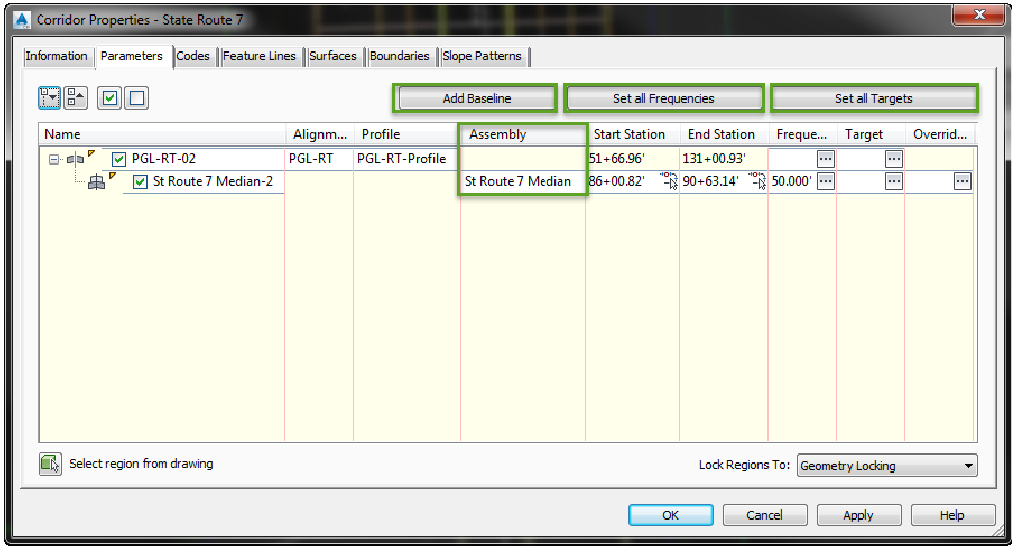
What are the components of a Corridor?

➢**Frequency**

- Frequency refers to how often the assembly is applied to the corridor.
- You specify the frequency and placement settings for station along the corridor.

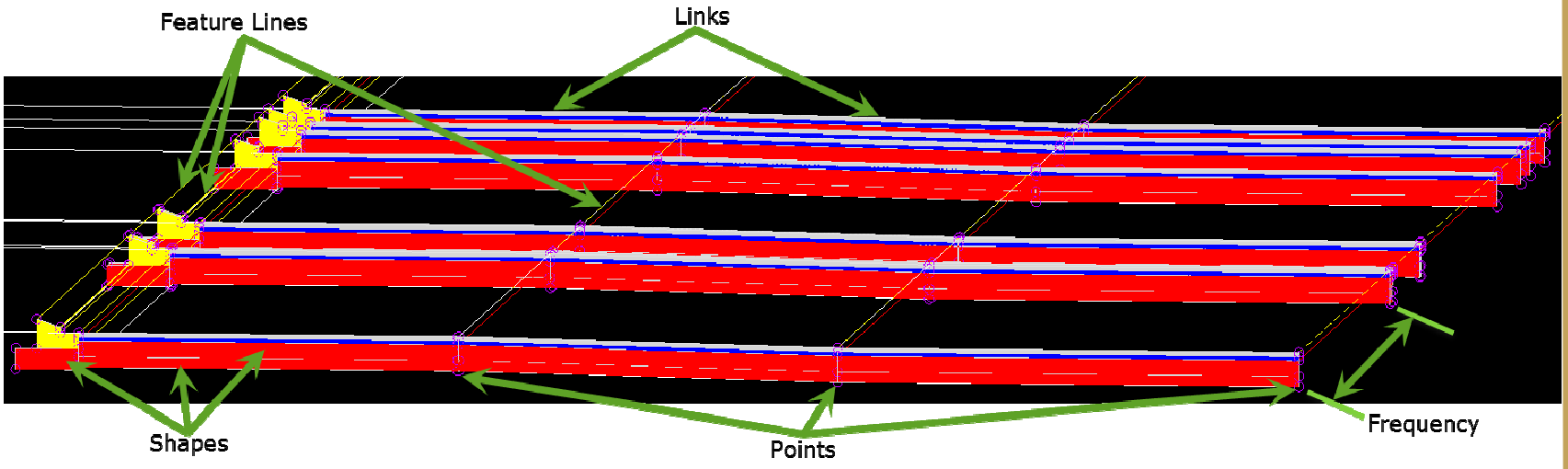
➢**Targets**

- Targets are used to change the corridor geometric characteristics such as cross slope (elevation targets) and lane width (elevation targets).
- Surface targets an be used for daylighting
- Refer to each assembly help file for a detailed explanation for targeting options.



➢Corridor Feature Lines.

- When a corridor is created feature lines are generated. Feature lines are drawn along the corridor, connecting points with identical codes in between assembly frequencies.
- Feature lines can represent back of curb, top of curb, edge of pavement, crowns.



- Cross sections that occur at each specified frequency becomes a dynamic three-dimensional object. If the corridor changes, cross sections change accordingly.

Create a Corridor

➢**Create a Corridor** –

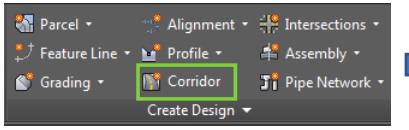
Build a road corridor using an FDOT assembly, alignment and profile.

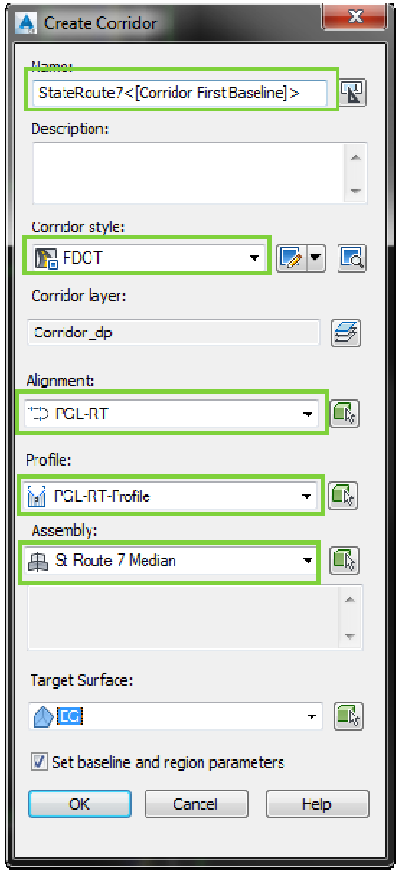
1. On the Home tab, in the Create Design panel, select Corridor to create a new corridor.
2. Fill out the Create Corridor dialog box. Be sure to use the Street name to help identify were the corridor is located in your file (See screen capture on next page for reference).
3. The Target Surface is optional since we do not have any subassemblies that do not target a surface at this time.
4. Select the “Set baseline and region parameters” check box. This will allow the Corridor Properties dialog box to appear

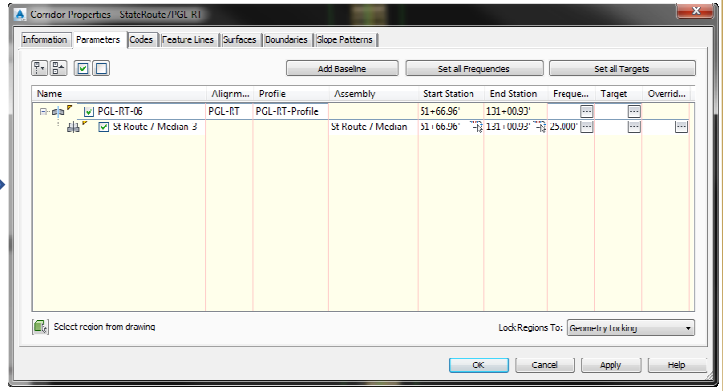
Create a Corridor

➢**Create a Corridor –**

5. Select the “Set baseline and region parameters” check box. This will allow the Corridor Properties dialog box to appear.







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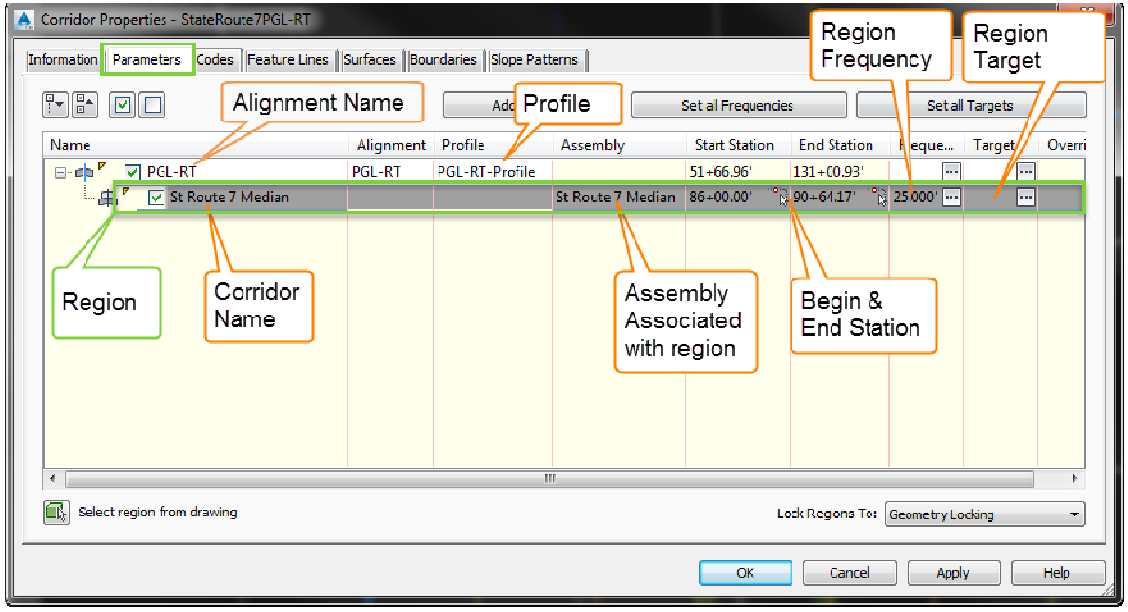
Create a Corridor

➢**Create a Corridor –**

6. When the Corridor Properties dialog appears click on the Parameters tab.

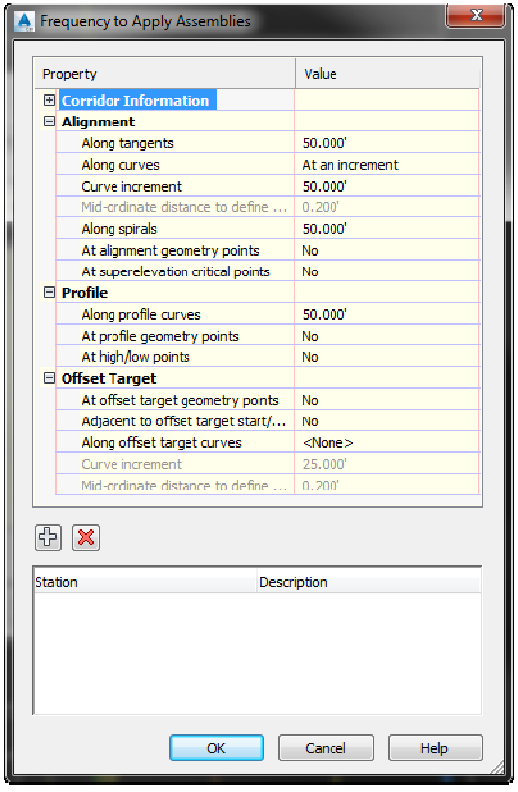


7. Click the ellipsis button in the frequency column in the first row associated with the baseline to display the Frequency To Apply Assemblies dialog.

Create a Corridor

➢**Create a Corridor –**

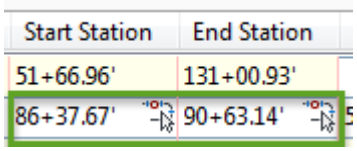
8. Examine the setting in the Frequency To Apply Assemblies dialog, as shown in the screen capture below. Set the numerical values to 50’ and all other settings to “No”. Setting the frequency to a high value during design helps to speed the process of rebuilding the corridor every time there is a change and the corridor needs to be rebuilt. Click OK to return to the Corridor Properties dialog box.



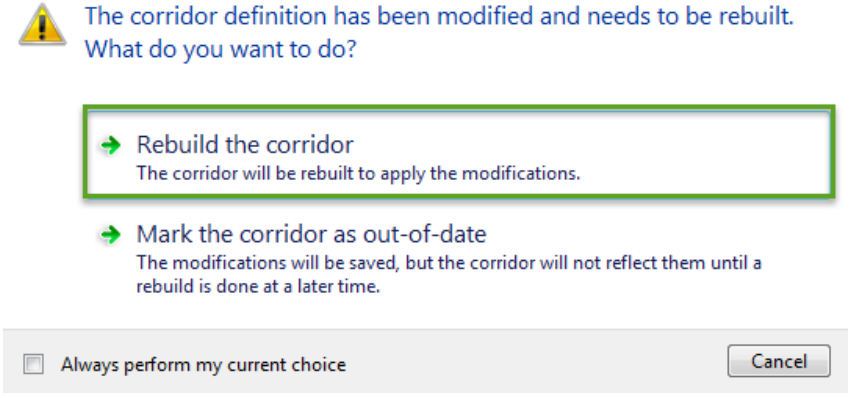
Create a Corridor

➢**Create a Corridor –**

9. Next, click the value in the Start Station column and change the station to 86+37 Do the same for the End Station column and change to 90+63. This specifies were your corridor for the region will begin and end.



10. Click OK on the Corridor Properties dialog box. A prompt will display asking you to Rebuild the Corridor, since changes have been made. Click on Rebuild the corridor option.

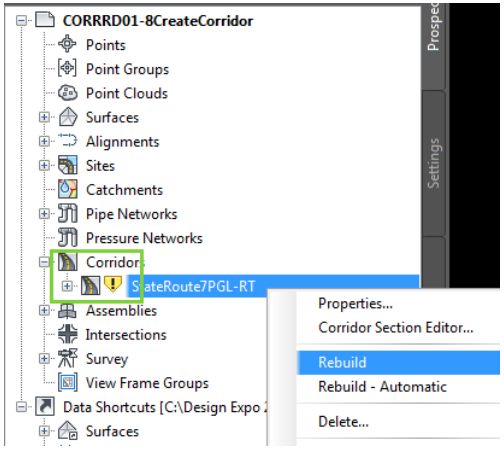


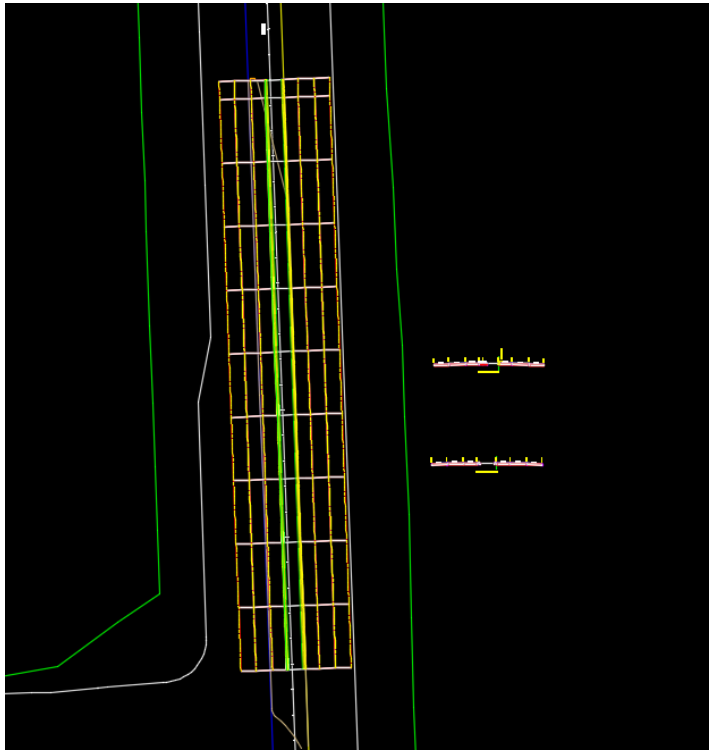
Create a Corridor

➢**Create a Corridor –**

At this point you should have a Corridor that resembles the figure below. On your Toolspace on the Prospector tab you should have a Corridor defined as well.

The corridor is a dynamic model and may be out-of-date due to changes that have been made. If your corridor shows that it is out-of-date in the Prospector, right click on the name and choose rebuild.



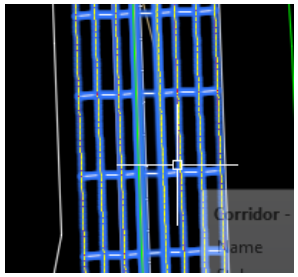


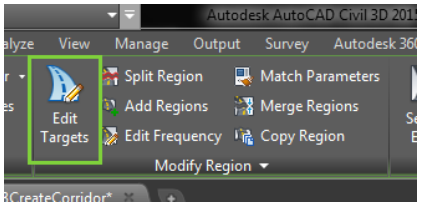
Create a Corridor

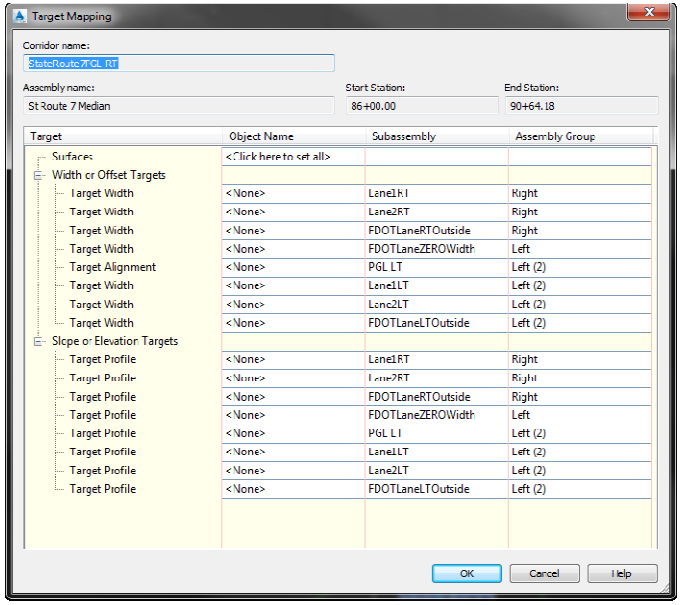
- Use alignments and feature lines targets for lane widening.

Subassemblies in your Assembly have the ability to target objects such as Alignments, Feature lines, survey figures and polylines for width or offset's.

1. With no command active, select the corridor in model space. Notice that the Civil 3D ribbon is context sensitive according to what object type you select in your drawing. On the ribbon under the Modify Panel, choose the Edit Targets option.
2. The command line will prompt you to select a region to edit. Click again inside the corridor in model space. A Target Mapping dialog box will appear.

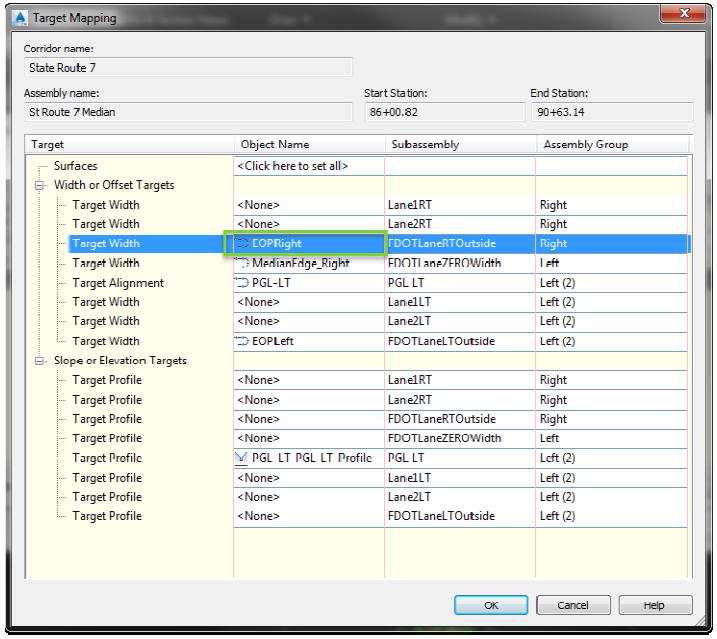


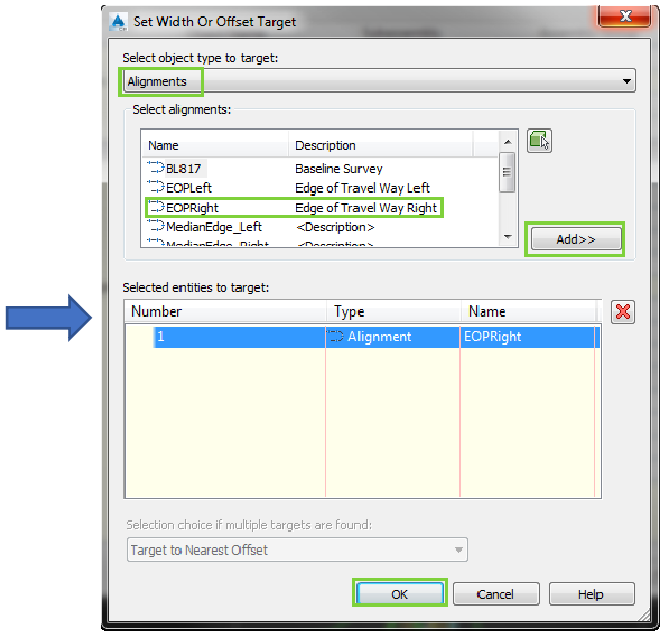




Create a Corridor

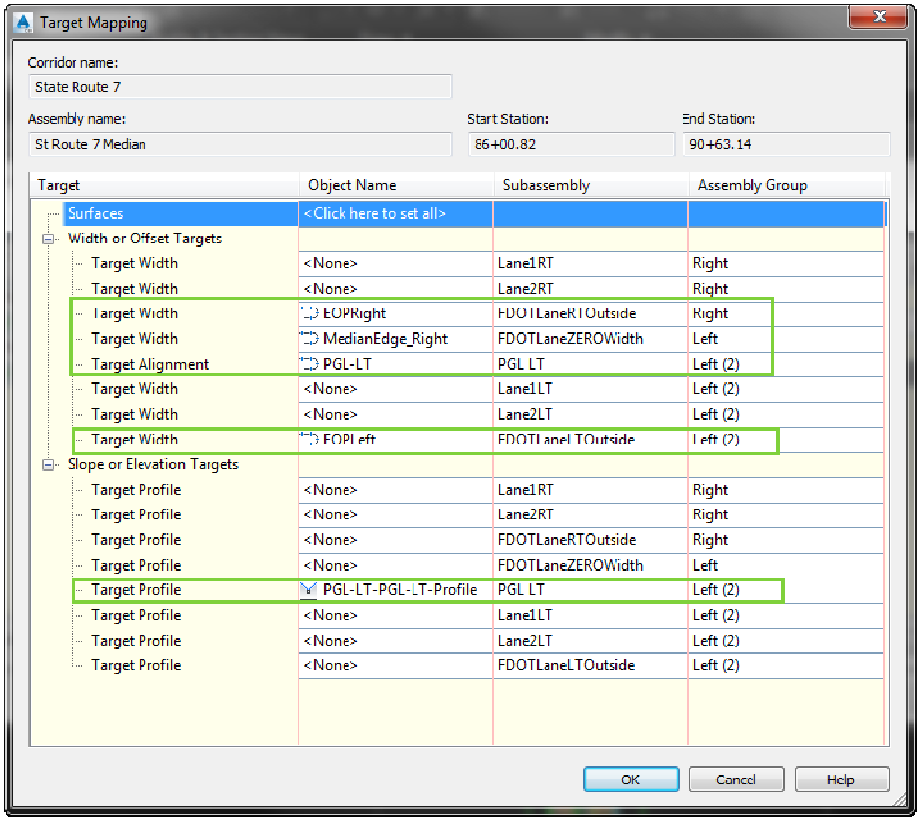
3. In the Width or Offset Targets, Target Width branch for FDOTLaneRTOutside Subassembly, click <none> to display the Set Width Or Offset Target dialog.
4. With the Select Object Type To Target drop-down set to Alignments, select from the Select Alignments list, EOPRight.
5. Click the Add>> button to add the Alignment name to the Selected entities to target: list below. If you select the wrong alignment, select the red "X" to remove from the list.





Create a Corridor

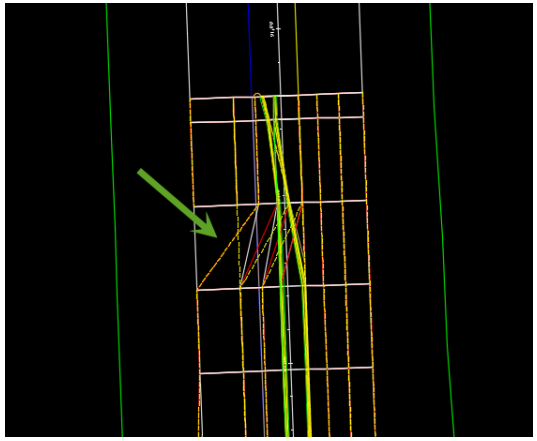
6. Perform the same steps to match the settings shown in the figure below. Click ok when finished to view the updated corridor.



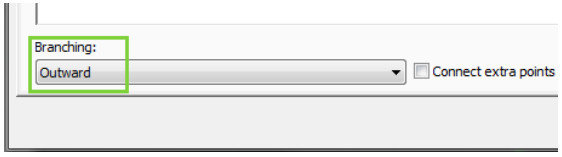
Create a Corridor

Correcting Feature lines

- There maybe times when feature lines for the corridor branch's to an undesired point code that is being used a varying number of times at different station. To correct this we need to specify whether the feature line should branch inward or outward to the innermost or outermost point code.



- Select the corridor, right click and choose corridor properties. On the Feature Lines tab, locate the Branching option pull down menu and select Outward. Click OK to see your changes.



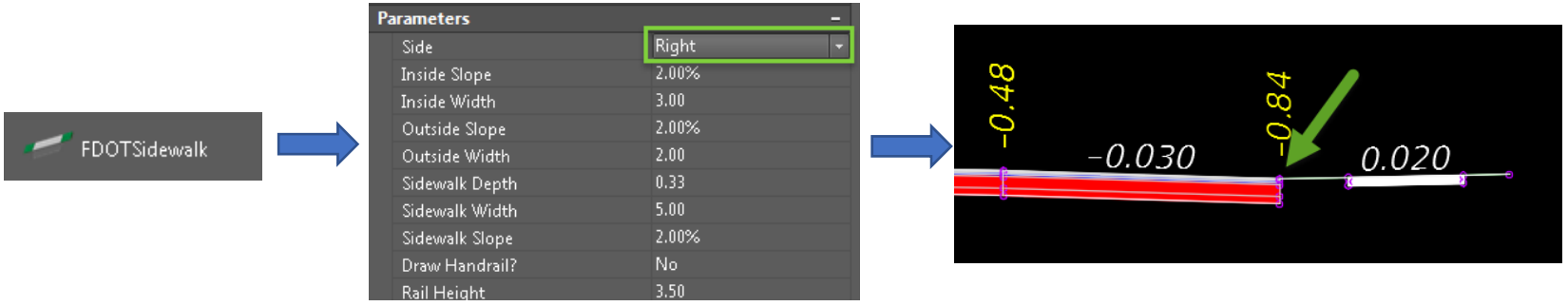
Create a Corridor

➢**Create a Corridor –**

- Add FDOT Sidewalk and FDOT SimpleDaylight to the assembly then create a corridor surface with boundary.

We will add FDOT Sidewalk and FDOT SimpleDaylight to the assembly and target the existing surface. Then target an LWPOLYLINE object through an external referenced drawing for the horizontal position for the front of sidewalk.

1. Locate the FDOTSidewalk subassembly on the Urban-FDOT tab. Select it to place it on the right side of the StRoute 7 Median Assembly.

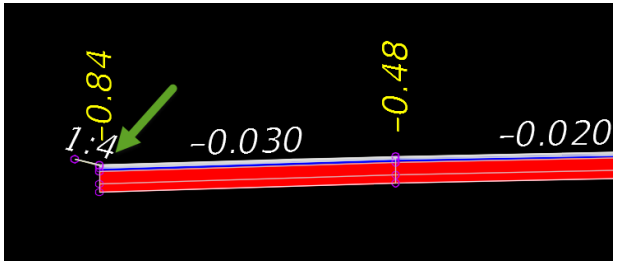


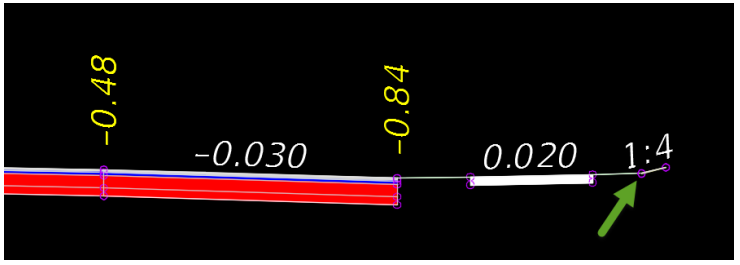
Create a Corridor

2. Next locate the FDOTSimpleDaylight subassembly on the Daylight-FDOT tab. Select it to place it on the left and right side of the StRoute 7 Median Assembly.

Left Side

Right Side





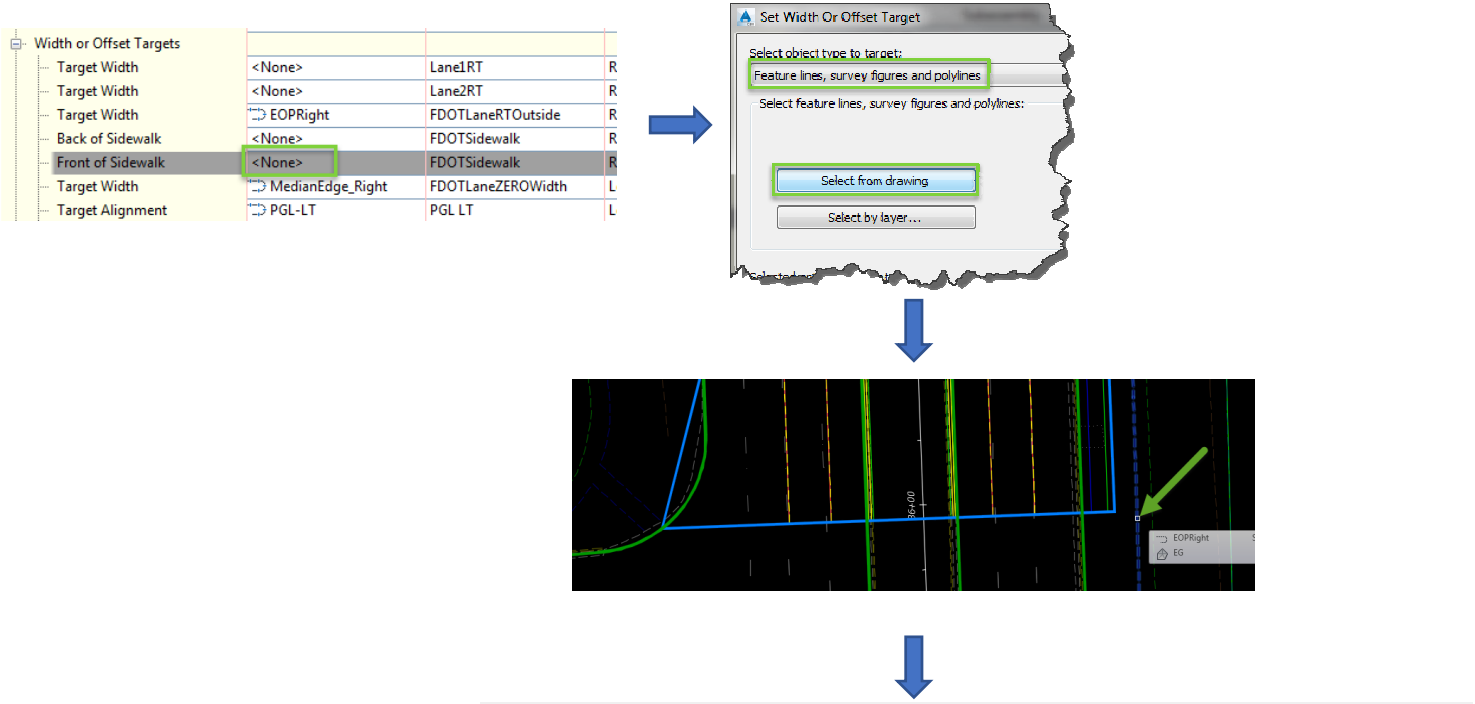
3. Lets turn on the existing topography drawing to locate the existing sidewalkfront polyline target. Go to the Home tab, click the drop down arrow on the palettes Panel and select the External Reference Manager. Right-click on the TOPORD01 file reference and select Reload from the short cut menu

Create a Corridor

4. Select the corridor in the drawing, right click and choose Corridor Properties.
5. On the Parameters tab, click on the ellipsis icon under the Target column.
6. In the Target Mapping dialog box, locate the Width or Offset Targets for the Front of Sidewalk next to the FDOTSidewalk subassembly. Click on the <none> option.
7. With the Select Object Type to Target drop-down set to Feature Lines, survey and polylines, use the Select From the Drawing button to select the offset sidewalk polyline from the TOPORD01 xref we loaded earlier. Press Enter when finished selecting to return to the Set Width Or Offset dialog box.

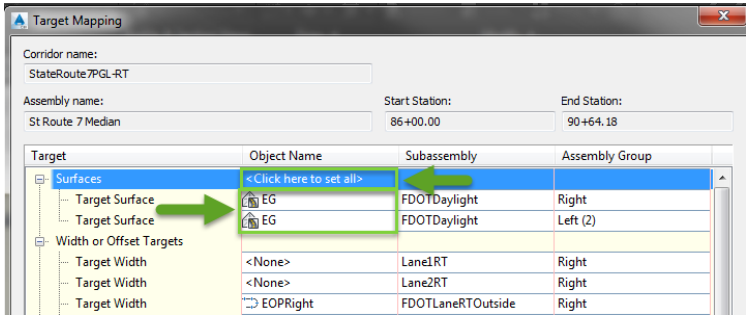
Create a Corridor

8. The Polyline should be under the Type column and TOPORD01|Polyline-80FE should be under the Name column. If the wrong object was selected, you can click on the red “X” to deselect.
9. Click OK to return to the Target Mapping dialog box.



Create a Corridor

10. Select the <Click here to set all> option under Object Name column for Surfaces. This is to set both Target Surfaces for the FDOTDaylight Subassemblies.
11. When the Pick a Surface dialog box appears, select the EG surface and click OK.
12. Verify that EG shows for both Target Surface's in the Target Mapping dialog box. Click OK to accept the settings in the dialog and click OK to accept to accept the settings in the Corridor Properties dialog box. Rebuild the Corridor.



13. You will notice that you now have daylighting on both sides of your corridor along with the sidewalk targeting a width offset on the TOPO reference file. **Note**: If you unload the xref, the offset distance for the sidewalk will revert back until you reload the xref and rebuild the corridor.

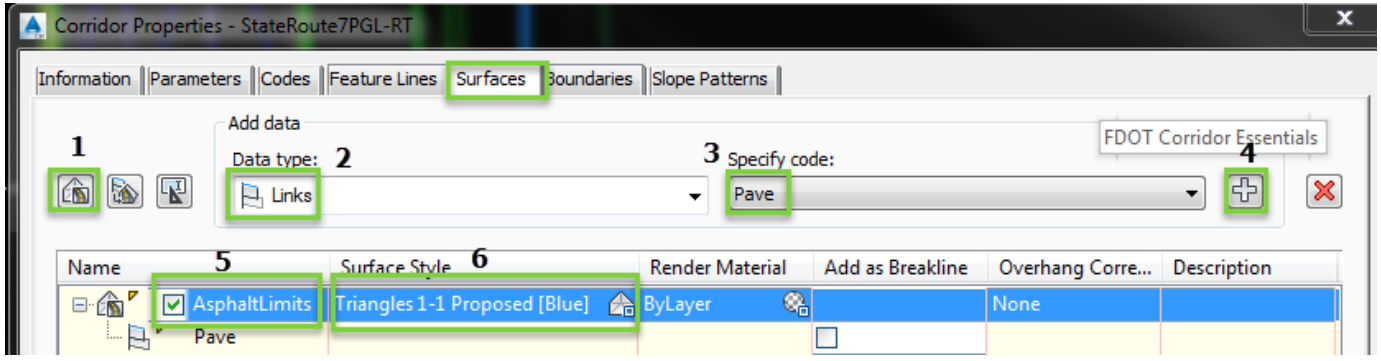
Create a Corridor

- Next lets create a dynamic Asphalt Limits corridor surface based on the Pavement link code defined in the FDOT_Lane subassembly. We will also define an inner boundary to remove the Traffic Median from the surface. This can be used to add pay item information or extended data for quantifying.

1. Select the corridor in the drawing, right-click and choose Corridor Properties from the short cut menu. Click the Surface tab at the top of the dialog box.
2. Click the Create A Corridor Surface button in the upper-left corner of the dialog to add a surface item to the list below. You should now have a surface item in the bottom half of the dialog.
3. Click the surface item under the name column and change the default name of your surface to AsplaltLimits.

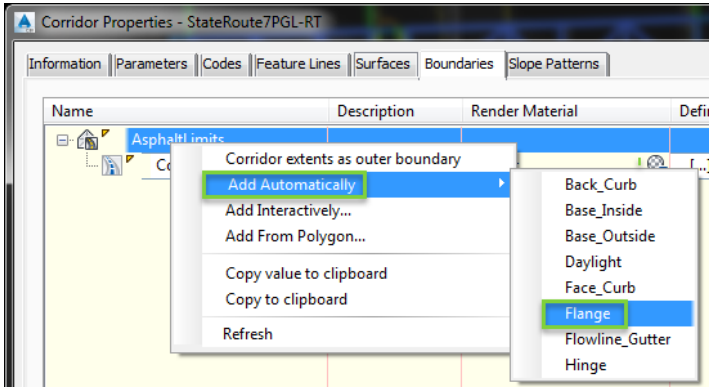
Create a Corridor

4. Verify that Links has been selected from the drop-down list for Data type.
5. Verify that Pave has been selected from the drop-down list on the Specify Code.
6. Click the Add Surface item button to add Pave Link to the Surface Definition.
7. Change the Surface Style to Triangles 1-1 Proposed [Blue].
8. Click Apply, then select the Boundaries tab.

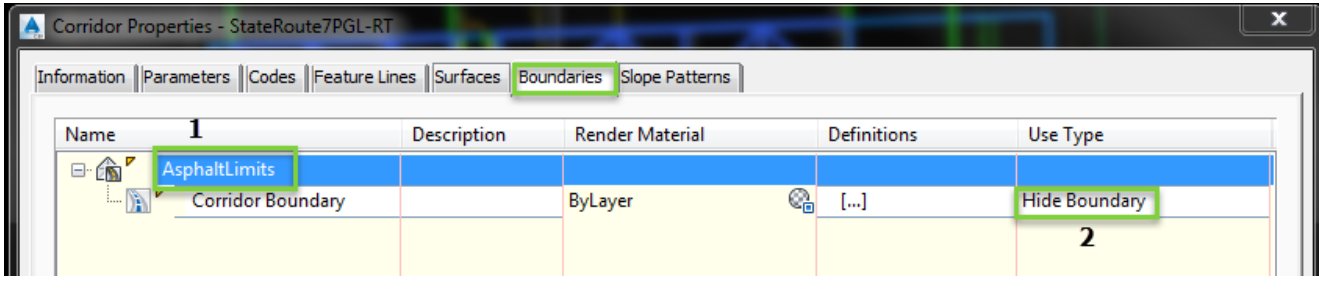


Create a Corridor

9. On the Boundaries tab of the Corridor Properties dialog box, right-click AsphaltLimits in the listing.
10. Select Add Automatically -> and Flange from the fly out menu. This will use the flange point code from the Curb subassembly to create a boundary.

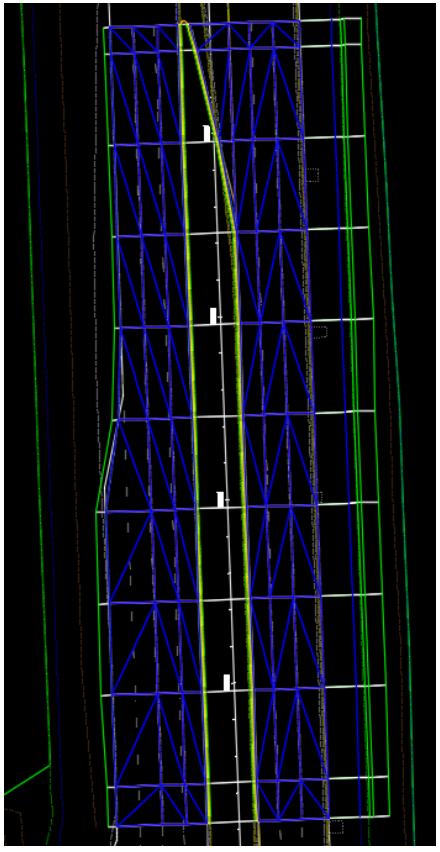


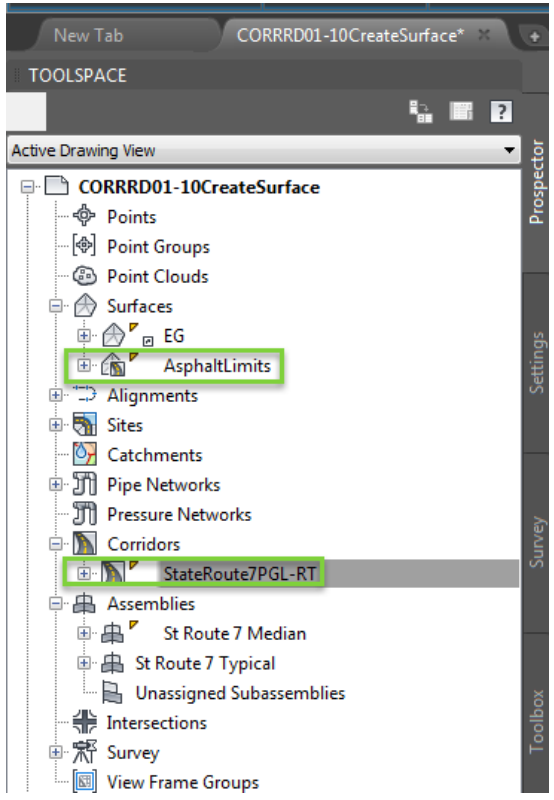
11. Under Use Type column, select Hide Boundary. This creates a void area or punches holes in the corridor surface. Click Ok and rebuild the Corridor.



Create a Corridor

12. On the ToolSpace pallet, Prospector tab expand the Surface category and observe your new AsphaltLimits surface created. Notice the icon resembles the Corridors icon. This help you identify that the surface is derived from a corridor.





Notes:

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2. _____

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4. _____

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9. _____

10. _____

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Thank You!

Questions?

Email me:

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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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