FDOT Subassemblies for Civil 3D

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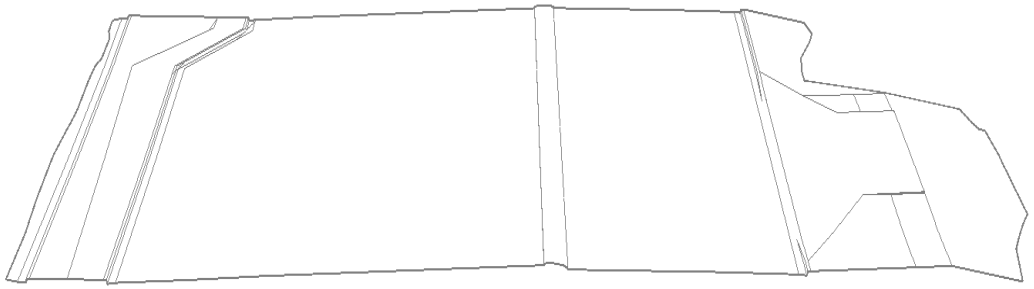
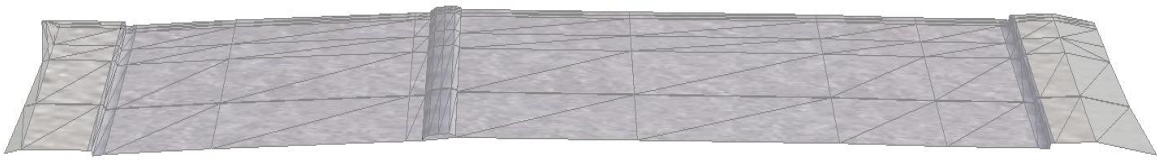
The Basics

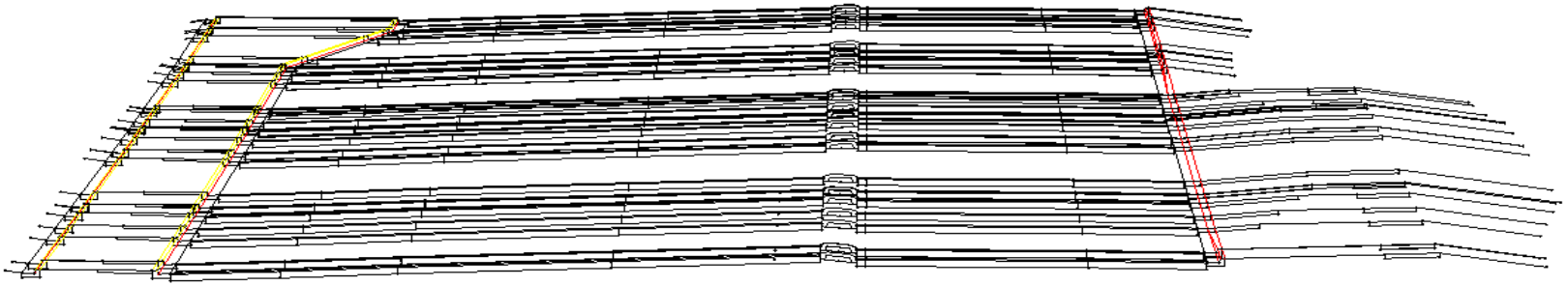
WHAT ARE CIVIL 3D SUBASSEMBLIES?

Used in Corridor Modeling



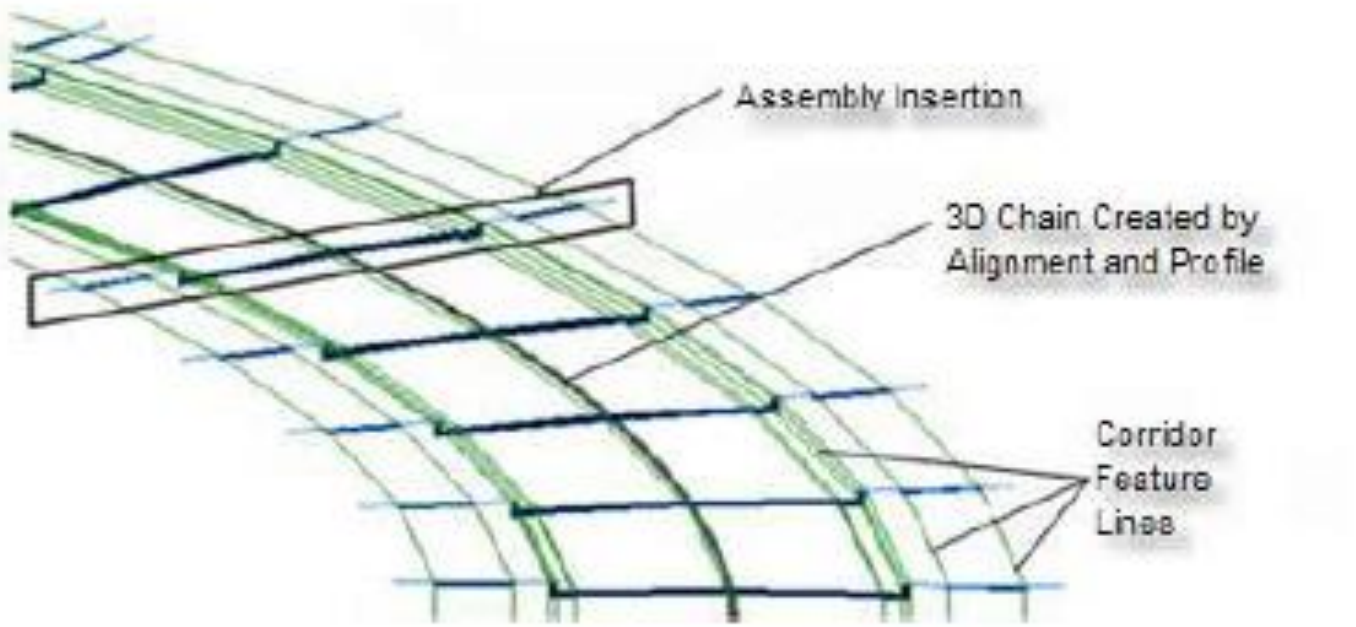


Assemblies are essential to the Civil 3D Corridor



*The corridor consists of a 3D framework created series of **sections**. The sections consist typicals referred to as **Assemblies** in Civil 3D.*

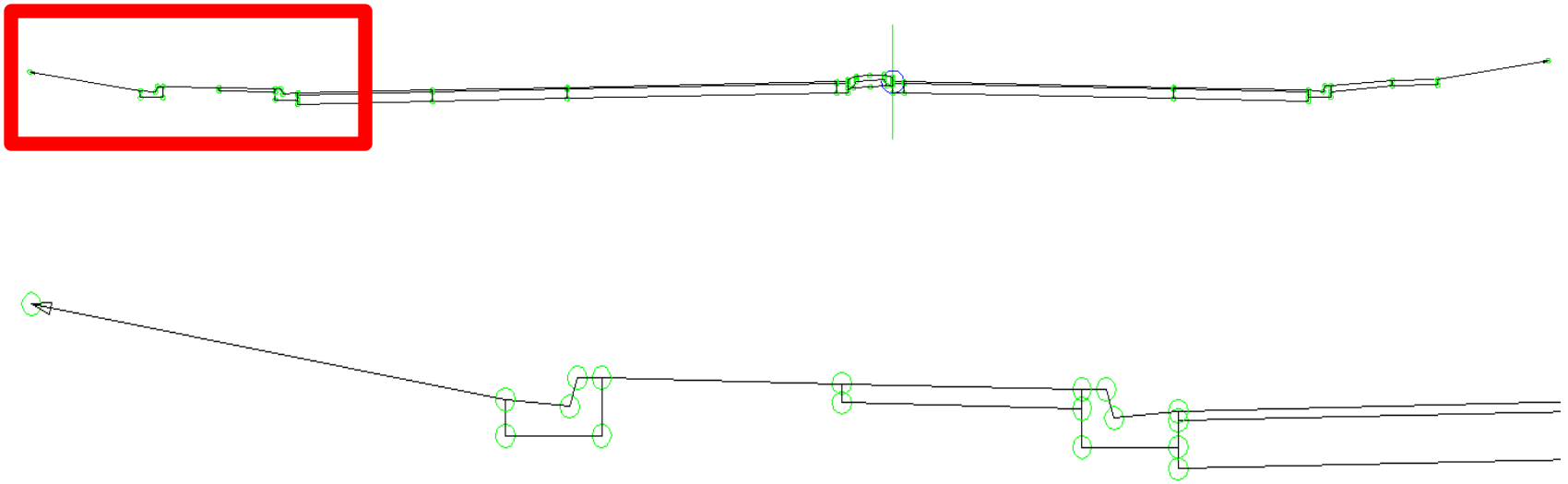
Assemblies are essential to the Civil 3D Corridor



*The corridor consists of a 3D framework created series of **sections**. The sections represent typicals.*

***Assemblies** are assigned to Regions as per design*

What are Assemblies?

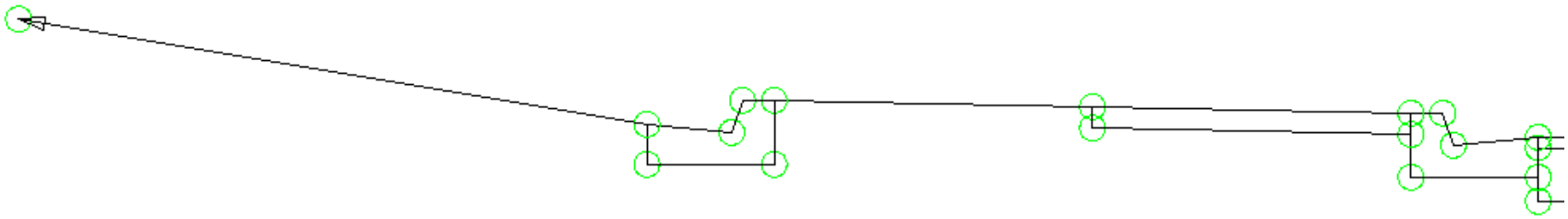


An assembly is a collection of intelligent objects called **subassemblies**.

Putting it Back Together

- Connect points, links and shapes to create subassemblies and their automatic labels.
- Connect subassemblies to create an assembly.
- Connect assemblies to create a region.
- Create multiple regions (if needed) to create the corridor.
- The help file is the user interface. Without it we cannot use the subassembly efficiently.

What are Subassemblies?



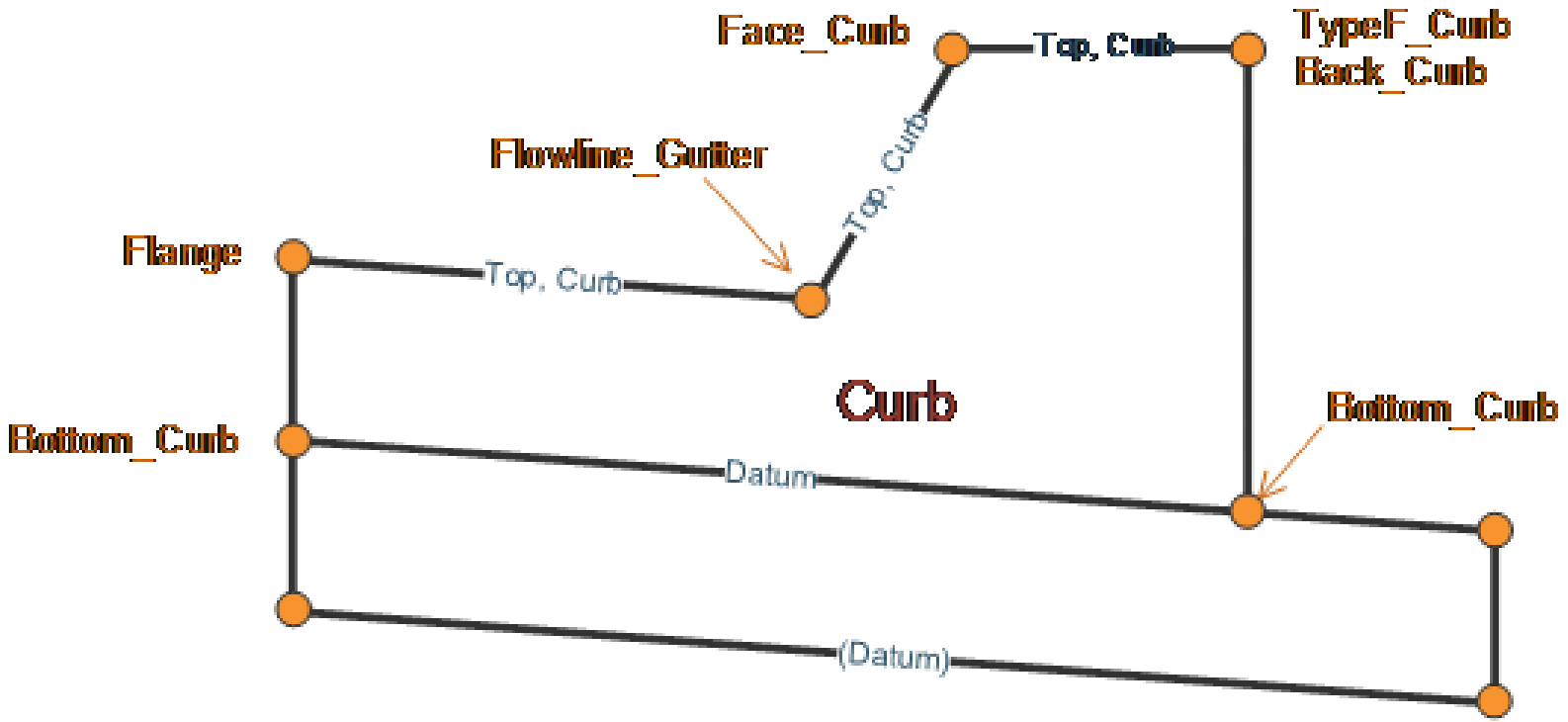
- Subassemblies are the individual design components needed to represent a road feature
- FDOT has created many subassemblies that are specific to the Design Standards

Elements of a Subassembly

- **Point Codes**
  - ✓ controls automatic labeling
  - ✓ creates feature lines which can then be used almost anywhere.
- **Link Codes**
  - ✓ controls automatic labeling
  - ✓ simplifies surface creation
- **Shape Codes**
  - ✓ used for creating volumes

Subassembly code example, FDOT Type F Curb

Coding Diagram



Code Set Styles = master set of graphic settings for the points, links and shapes in all possible view directions (model, plan, profile and section)

- Applied to a Corridor or Assembly to control the appearance of the cross section
- Used to add a label to a Point, Link or Shape
- Can be used to add a render material
- Can assign pay items

Controlling a Subassembly

Subassemblies use Parameters and/or Targets to decide what to do.

- ✓ Parameters are values that are typed in properties when subassembly is placed or edited thru subassembly properties.
- ✓ Targets are objects the subassembly react with. They can be, for example:
  - Existing ground surface for daylighting links
  - The edge of travel way polyline for a lane
  - A profile for a back of sidewalk

Civil 3D 2012 & 2014 Targets

- Civil 3D 2012
  - ✓ Cannot target any geometry thorough Xrefs, but can target data reference geometry
  - ✓ Source geometry must be converted to alignments and data referenced to share between dwg files
- Civil 3D 2014
  - ✓ Objects like **2D and 3D polylines, feature lines, and survey figures** can be selected in xrefs as corridor targets; you can select the objects in the xref either graphically or by layer.

The Help File

- Determine what can of target or parameters can be set with the subassembly.
- Provides the integral details about each subassembly and its behavior
- Lists the objects, the definitions of the names, all codes and how it behaves.

Value Name	Default Input
Debug (Y/N)?	N
Driveway Type	
Curb Transition Length	3.00
Driveway Depth	0.50
Driveway Taper Offset	0.00
Driveway Taper Width	60.14
Sidewalk Depth	0.50
Outside SE (to control gutter slope)	DoNotUse
Pad 2 Length	10.86
Pad 1 Tolerance	0.10
Pad 2 Tolerance	0.10
user Pad 1 Length	12.5
user Pad 1 Slope	0.07
user Pad 2 Slope	0.02
user Sidewalk Slope	0.02
user Sidewalk Width	6.00
user Utility Slope	0.02
user Utility Width	17.57

Where do we get subassemblies?

EXPLORING THE FDOT SUBASSEMBLIES

Mommy, Where Do Subassemblies Come From?

- FDOT Subassemblies were created with .NET, Subassembly Composer (Autodesk) and Subassembly Studio (Civil 3D Power Tools)
- The FDOT Subassemblies are installed with the State Kit and stored in ATC files and organized on Tool Palettes
  - NOTE: .ATC files are Autodesk Catalog files in XML which can be imported to Tool Palettes using Content Browser.
  - ✓ FDOT Subassembly master ATC Catalog is located:

C:\ProgramData\Autodesk\Civil3D2012\Enu\FDOTSubassemblies.atc

  - ✓ Individual palette ATC sources are located:

C:\FDOT2012.C3D\Support\ToolPalettes\Palettes

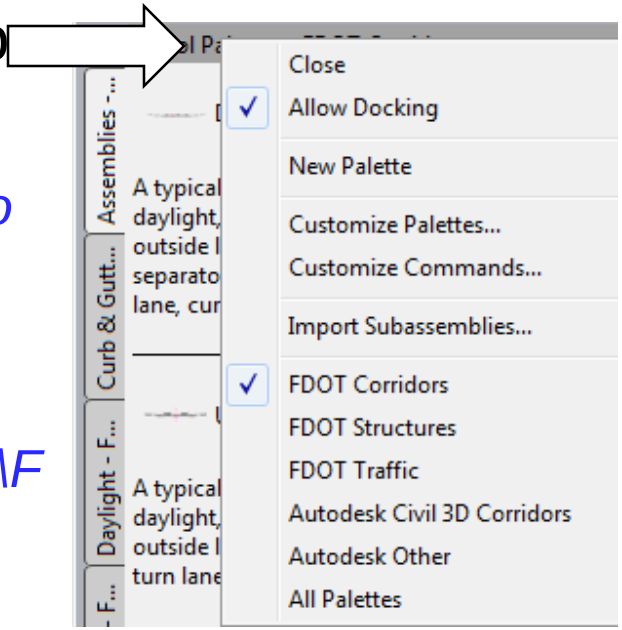
FDOT Subassemblies

we made a few…

- Curbs
  - FDOT Type A Curb
  - FDOT Type B Curb
  - FDOT Type D Curb
  - FDOT Type E Curb
  - FDOT Type F Curb
  - FDOT Type RA Curb
  - FDOT Valley Gutter
  - FDOT Drop Curb
  - FDOT Shoulder Gutter
- Lanes
  - FDOT Lane
  - FDOT Lane to Marked Point
  - FDOT Lane to Surface
  - FDOT Shoulder
- Daylighting
  - FDOT Daylight
  - FDOT Daylight Ditch
  - FDOT Daylight Fill
  - FDOT Simple Daylight
- Fences & Railings
  - FDOT Pedestrian Bicycle Railing
  - FDOT Corral Shape Traffic Railing
  - FDOT Fence Type A
  - FDOT 32inch F-Shape Traffic Railing
  - FDOT 42inch F-Shape Traffic Railing
  - FDOT 32inch Vertical Shape Traffic Railing
  - FDOT 42inch Vertical Shape Traffic Railing
- Medians
  - FDOT Median Fixed Slope and Depth
  - FDOT Barrier Cantilever Wall
  - FDOT Barrier L Wall
  - FDOT Lane Median
  - FDOT Link to Marked Point
- Resurfacing, Restoration, Rehab (RRR)
  - FDOT Mill and Overlay - Crowned 2 Lane
  - FDOT Mill and Overlay - Paved Shoulder
  - FDOT Side Street Reconstruction Daylight
- Urban
  - FDOT Driveway with Curb
  - FDOT Sidewalk
  - FDOT Traffic Separators
  - FDOT Pipe Guardrail
  - FDOT Ditch Pavement
- Walls
  - FDOT Cast-In-Place Coping
  - FDOT Cast-In-Place Junction Slab
  - FDOT Cast-In-Place Raised Sidewalk
  - FDOT Cast-In-Place Retaining Wall
  - FDOT Barrier Cantilever Wall in Shoulder
  - FDOT Barrier Cantilever L in Shoulder
  - FDOT Barrier Wall Curb and Gutter
  - FDOT Precast Coping
  - FDOT Precast Coping with Junction Slab
  - FDOT MSE RetaingingWall
  - FDOT Sound Barrier
  - FDOT Gravity Wall
- FDOT SE Surface
- FDOT Conditional Horizontal Target
- FDOT Existing Features
- FDOT Stop Processing
- FDOT Link Offset and Slope

Locating Subassemblies

- FDOT Corridor Palette is installed with the State Kit
- Launch Tool Palette (Ctrl+3) or from Ribbon.
  - ✓ *Tool Palettes are fully customizable. However, only one tool palette path is unlocked at a time*
- Rt-Click on the Tool Palette Header to see the Palette Group Menu
  - ✓ *Groups were organized to make it easy to access all the information available from FDOT & Autodesk*
  - ✓ *Groups can be re-imported from C:\FDOT2012.C3D\Support\ToolPalettes\FDOT Palette Groups.XPG*



FDOT Assemblies

- 2 basic assemblies are provided in the FDOT Corridor Palette
- Assemblies are very easy to create and edit
- Designers create custom assemblies per the project requirements

Divided Roadway

A typical section containing (from left to right): daylight, sidewalk, curb & gutter, turn lane, outside lane, inside lane, turn lane, traffic separator, turn lane, inside lane, outside lane, turn lane, curb & gutter, sidewalk and daylight

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Undivided Roadway

A typical section containing (from left to right): daylight, sidewalk, curb & gutter, turn lane, outside lane, inside lane, inside lane, outside lane, turn lane, curb & gutter, sidewalk and daylight

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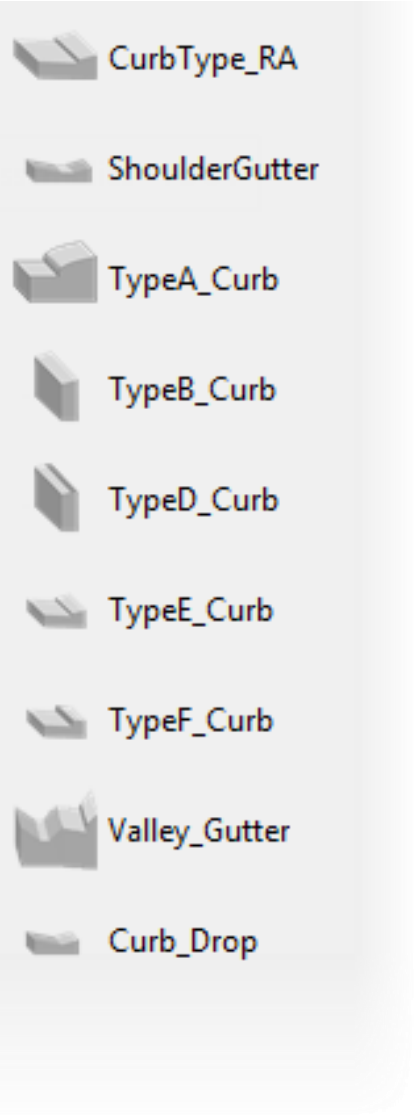
Point Labels

Adds elevation and limits points to corridor model for cross sections.

FDOT Curb and Gutter



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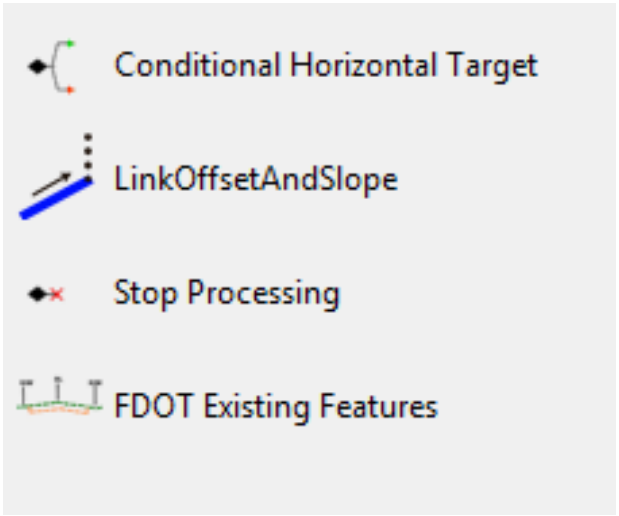
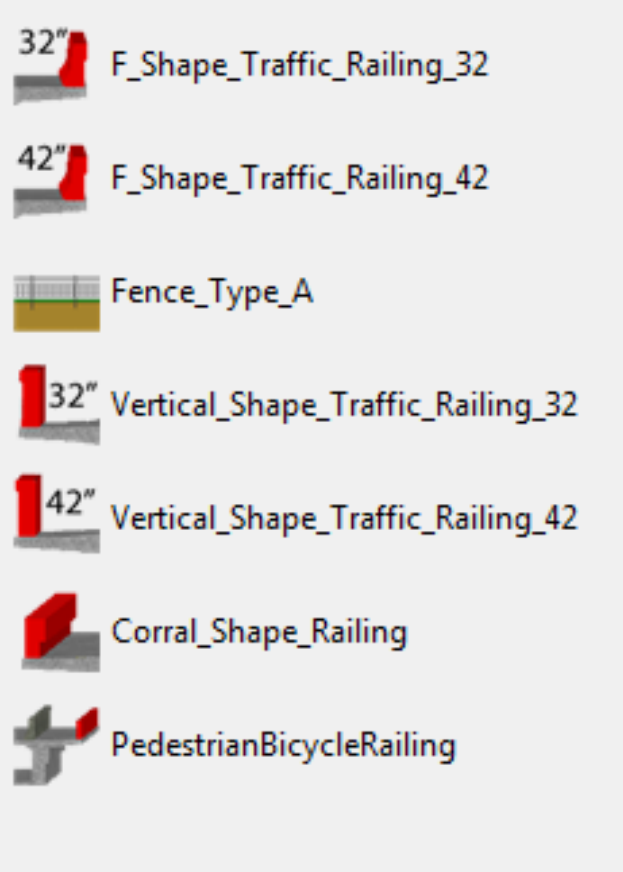
FDOT Generics

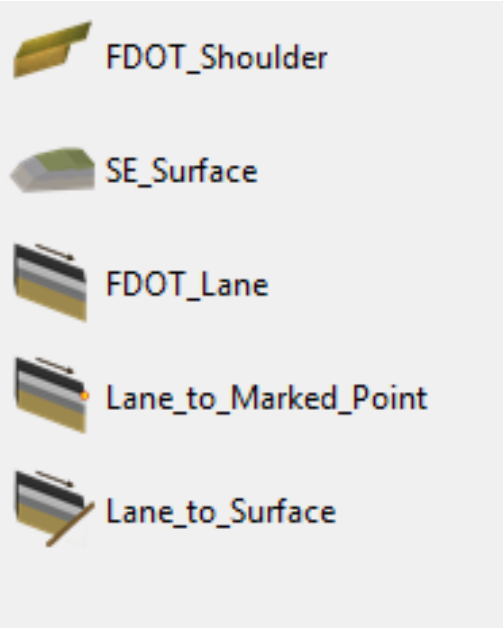


FDOT Daylight

FDOT Fences



FDOT Lanes



FDOT Medians and Traffic Separators

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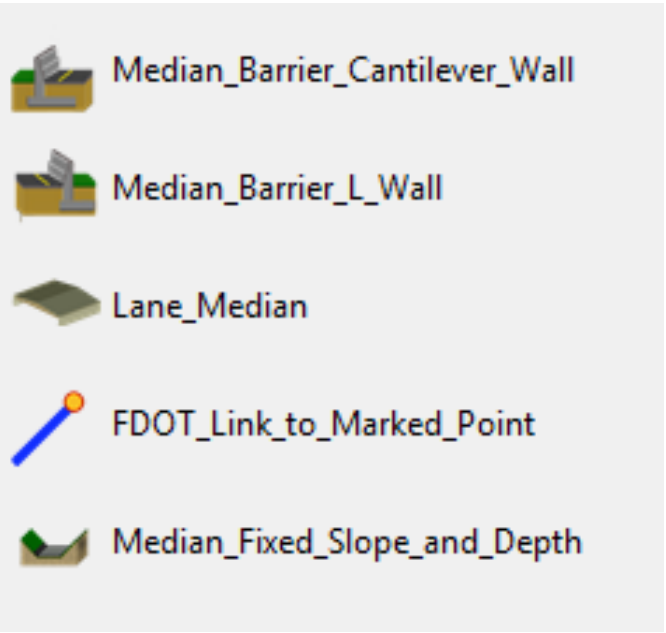

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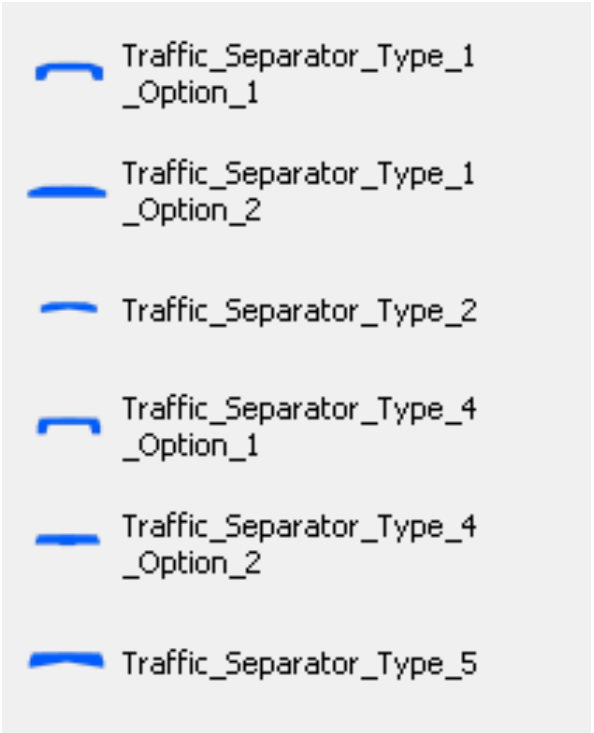
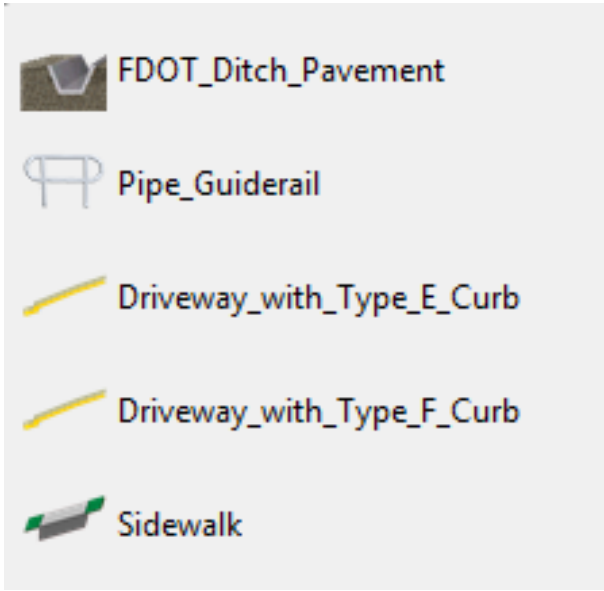


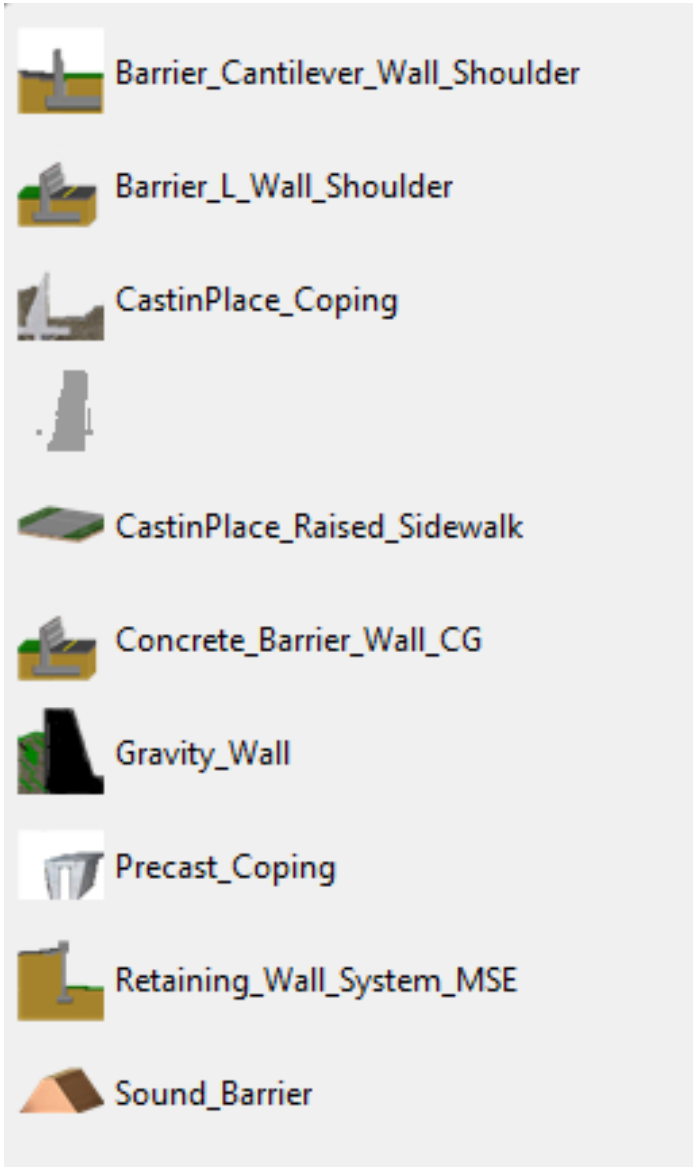
FDOT RRR

- New Milling and Overlay assembly ready for 2014

FDOT Urban



FDOT Walls



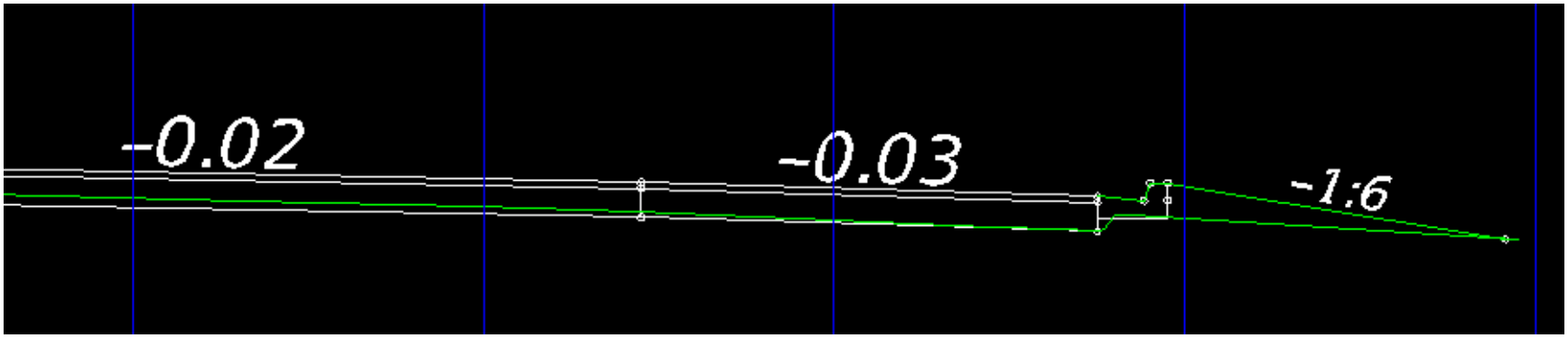
The FDOT Subassembly Suite Target Review

- Subassemblies that don't target; Curb and Gutters, Barriers, Railings
- Subassemblies that target other objects; Lanes, Shoulders, Daylights, Driveways, Medians, Milling and Overlay, Traffic Separators
- Subassemblies that access external files; Existing Features subassembly

FDOT Corridor Basics

CREATING POINT LABEL CORRIDOR

Special FDOT Subassembly Link Codes

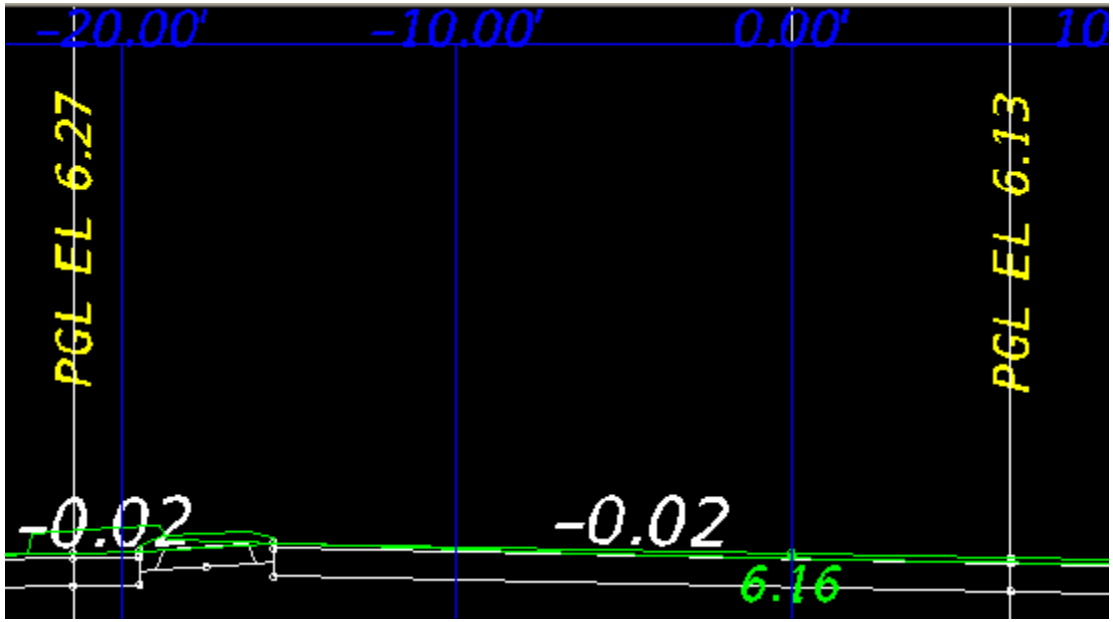


Pave – labels the link slope using decimal format.

Daylight – labels the link grade using rise:run format.

Use with Code Set Style:
FDOT_XSection_Typical_with_XSlopes

Special FDOT Subassembly Point Codes



- **PGL** – labels the PGL elevations
- **EG0Offset** – labels the existing ground elevation.