ENGINEERING / CADD SYSTEMS OFFICE

FDOT Corridor Modeler and Roadway Designer Templates

Corridor Design with FDOT Templates

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Corridor Design with FDOT Templates

Introduction

Welcome to the **Corridor Design with FDOT Templates Workshop**. This workshop is an introduction to **Template Creation** and the **Roadway Designer Tool** working with **FDOT/ECSO** components and templates.

Prerequisites

To get the most from this workshop the attendee should have a basic understanding of **CAD drafting** using **MicroStation**, a basic understanding of **GEOPAK** concepts and a solid understanding of the engineering necessary to design a roadway.

This workshop does not teach **CAD** drafting or engineering design. **GEOPAK** and subsequently the **Corridor Modeler** tools are to facilitate the engineering design process.

Expectations

What this Workshop Provides

This workshop provides an introduction to basic template and component creation, basic template constraints, template transitions and point controls.

What this Workshop Does Not Provide

This workshop does not provide a description of every GEOPAK command, nor does it provide instruction for advanced template design and constraints, or the use of advanced geometry tools. There are many more commands and techniques that are not covered in this workshop. These commands and techniques may be covered in future workshops or webinars.

Objectives

- Prepare an alignment(s) for importing Plan Graphics.
- Access GEOPAK Corridor Modeling.
- Change and Review Preference File.
- Import Required Information.
- Understanding Smart Update.
- Import MicroStation Graphics using the Import Template command.
- Rename Template/Component.
- Draw a Component.
- Delete Components.
- Apply Feature Name Override to Points.
- Apply Component Name Override.
- Setting and Saving Dynamic Settings.
- Create a New Category and a New Template/Component.
- Manage Components and Templates.
- Assemble Template from Components.
- Apply templates using the Roadway Designer.
- Create a model using the Roadway Designer.
- Cut Cross Sections from the created model.
- Label Cross Sections with the Corridor Modeling Cross Section Labeler.

Prepare an alignment(s) for importing Plan Graphics

Importing Plan Graphics for the **Corridor Modeler** tools to utilize can be a tedious process. There are three (3) methods the designer can use to select plan graphics to import: **Symbology, Feature** and **Selection Set**.

The plan graphics selected to import will be grouped together as a chain in which the designer will be given the opportunity to name the chain. Unique naming conventions are recommended to ensure the management of chains utilized by the corridor modeler are easily recognized and the naming convention should be descriptive, yet use minimal characters (example: On a divided highway, naming the edge of proposed pavement lines could be named '**LT_Outside_EOP, LT_Inside_EOP, RT_Inside_EOP and RT_Outside_EOP**').

> **Note:** *The designer may not want to follow the procedure in this section for the purpose of importing Geometry and subsequently Plan Graphics outside of this workshop. The following procedures are not the only way to import geometry. However, the designer should understand that there is a known issue with importing plan graphics. This issue is if there are selected Plan Graphics to import that are touching the chain selected for offset then those elements will not be imported. The designer will have to select the elements that were not imported manually using the Selection Set method setting up another chain for plan graphics that have the same symbology as plan graphics selected by another method. The designer will have to manually select the plan graphics down their entire project which can be time consuming.*

The following procedure is designed to ensure plan graphics can be imported quickly and without having to manually select plan graphics to save time. In following exercise the class will copy the **CLCON chain** 500ft to the Right of the roadway to use this copied chain to look back 1000ft across the roadway to select and create Plan Graphics chains to import Plan Graphics.

Exercise 1:

Prepare an alignment(s) for importing Plan Graphics.

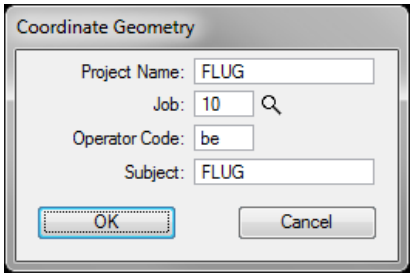
1. Load **MicroStation** by double clicking the **FDOT2010 MicroStation icon** in the **FDOT2010** folder on the desktop. The **MicroStation Manager** appears.

2. On the **MicroStation** dialog, from the **Projects** drop down list, select project **US90_FLUG2010**.

3. Navigate to the roadway folder, and double click **DSGNRD01.dgn** file or highlight the file and **click** the **Open** button.

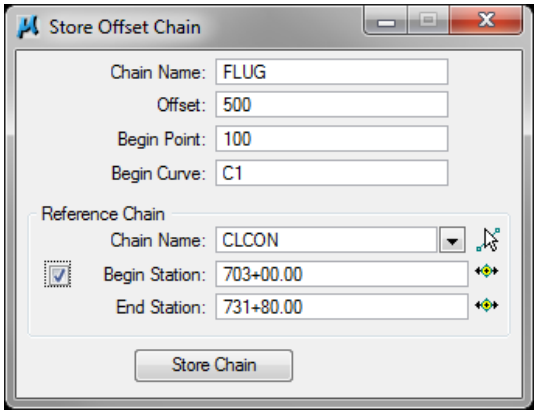
4. When the file opens, on the **MicroStation Menu Bar**, click **Applications** and navigate to **Road > Geometry > Coordinate Geometry**.

5. Complete the **Coordinate Geometry** dialog as shown in the image below then click the **OK** button.



6. In the **Coordinate Geometry Tool**, navigate to **Element > Chain > Store > Offset Chain**.

7. Complete the **Store Offset Chain** dialog as shown in the image below.



8. Click the **Store Chain** button.

9. Close the **Coordinate Geometry** and **do not save settings**.

Access Corridor Modeling

Exercise 2:

Activate GEOPAK Corridor Modeling.

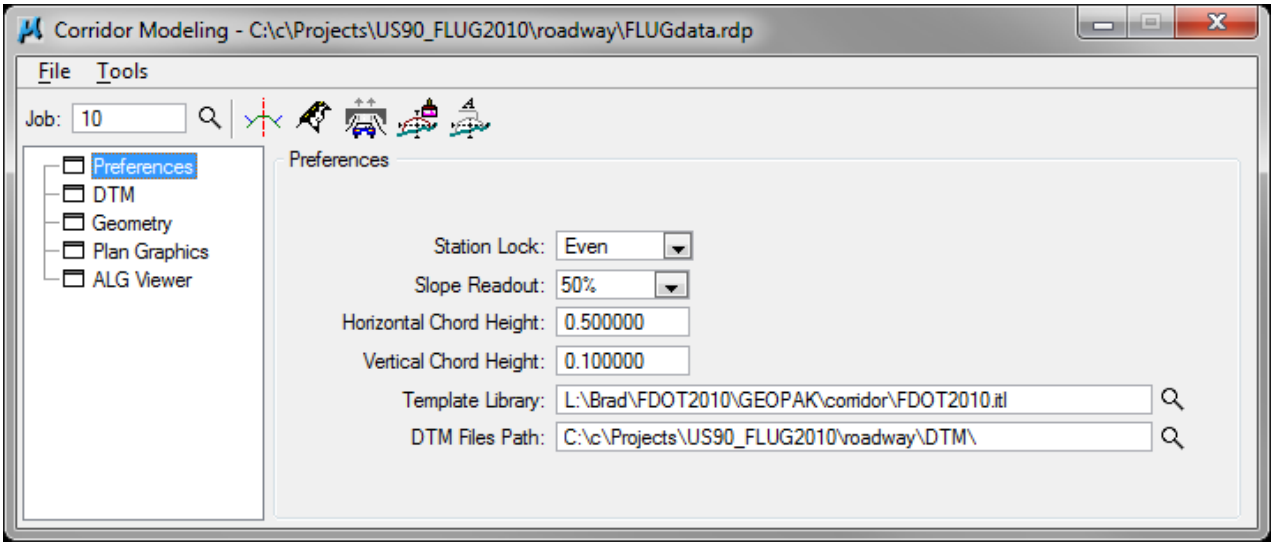
1. Select **Applications > Road > 3D Tools > Corridor Modeling**.
2. The **Corridor Modeling** application should now be open and available for use.

   Note: *The Corridor Modeling application is also available from the Road Tools Palette under the 3D Tools option*  .
3. Open **Windows Explorer** and review the project directory. Note the creation of a new subdirectory **/rddbs**.

   Note: *This subdirectory is where files are created that are needed exclusively by the Corridor Modeling application.*
4. Using the **Select GPK File** icon, select **job10.gpk**.
5. Select **File > Save As**.
6. Type in **FLUGdata** in the file name field. (The software will add the ***.rdp** extension.)
7. **Click** the **Save** button to save the file and then the **OK** on the **Information** dialog.

   Note: *The template library location is configured in the SiteFDOT.txt file by using the GPK_RD_TEMPLATE_LIBRARY configuration variable.*

Corridor Modeling Dialog Overview



The **Corridor Modeling** tool is a front end dialog that allows the designer to set up project specific preferences. The designer will use the **Corridor Modeling** dialog to select a job, set and import preferences such as **Symbology Features** (Site or Project specific *.ddb), select and import **Geometry** information (Chains, Profiles, etc.), and select and import the existing surface(s) (**DTM/TIN**) as well as select and importing **Plan Graphics**. Roadway Designer utilizes the imported information when creating templates, creating roadway design model and cross sections. The preferences and imported information can then be saved in a preference (.rdp) file and recalled for future use.

> **Note:** *Selecting an option in the tree view, the Corridor Modeling dialog changes to reflect that option.*

When the **Corridor Modeling** tool is loaded, a sub folder named **rddbs** which contains files that will be used by **Roadway Designer** is created in the working directory of the active DGN file. This sub folder should NOT be deleted.

Corridor Modeling Dialog Options

File Menu: Options are **Load, Save, Save As or Exit**. After the **Corridor Modeling** dialog is populated according to the specific project information and the information is imported, it is recommended to save the roadway designer preferences to the active design file working directory. The file will be saved with a (.rdp) extension.

Tools Menu: Options are **Export Profile to GPK or Draw Roadway from Template**.

- **Export Profile to GPK –** opens the **Export Profile to GPK** dialog, which allows the designer to pull overlay profiles created with **Roadway Designer** out of an **ALG** file and move them to a **gpk** file.
- **Draw Roadway from Template –** opens the **Create 2D Graphics** dialog, which allows the designer to create **2D graphics** from a specified template in a template library file.

Job: Select a **GEOPAK** job. Key in or click the **magnifying glass** to access available **GPK** files.

Open Create Template: Opens the **Create Template** tool. After the specific project information has been imported, a model of the proposed roadway design is generated by assembling project components/templates and applying them to a corridor using the **Roadway Designer**.

Components, Templates and **End Conditions** are created, edited and stored in the **Template Library File** which has an *.itl extension.

The **Standard Site** or **Project Specific Template Library** can be shared, however, the template library is recommended to be read-only when shared. It's recommended to create a project specific **Template Library** by copying the **Standard Site Template Library** to the **project directory symb folder** which allows the designer to modify the template library to meet the specific needs of the project.

> **Note:** *Templates can be copied from a Standard Template Library to a Project Specific Template Library using Tools > Template Library Organizer in the Create Template Tool.*

Open Roadway Designer: Opens the **Roadway Designer** tool. Templates are designed and subsequently utilized to create a proposed model of the roadway. This is accomplished using the **Roadway Designer** tool. In the **Roadway Designer**, templates are assigned to specific stations along a select alignment and are called **Template Drops**.

The **Roadway Designer**, via the **Edit Transition** tool, connects the points of the template drops, forming a model of the roadway, which is made into a surface model. The connected template points form longitudinal break line features in the surface model.

The **Roadway Designer** is where **Superelevation** is created and/or applied to the design. The **Roadway Designer** tool requires the following preferences be set up prior to accessing the tool:

- **GPK file select (job number)**
- **DDB**
- **DTM**
- **Geometry**
- **Plan Graphics**

The **Roadway Designer** data is saved in the **Roadway Design** file which has an *.ird extension.

The **Roadway Designer** tool has three window viewing areas. They represent the **plan, profile,** and **cross section** views of the design.

Drive Roadway: Opens the **Drive Roadway** tool. The **Drive Roadway** tool allows the designer to view the path a driver would take along a roadway. It also generates a 3D line string along the path which might be used to control camera position along the roadway.

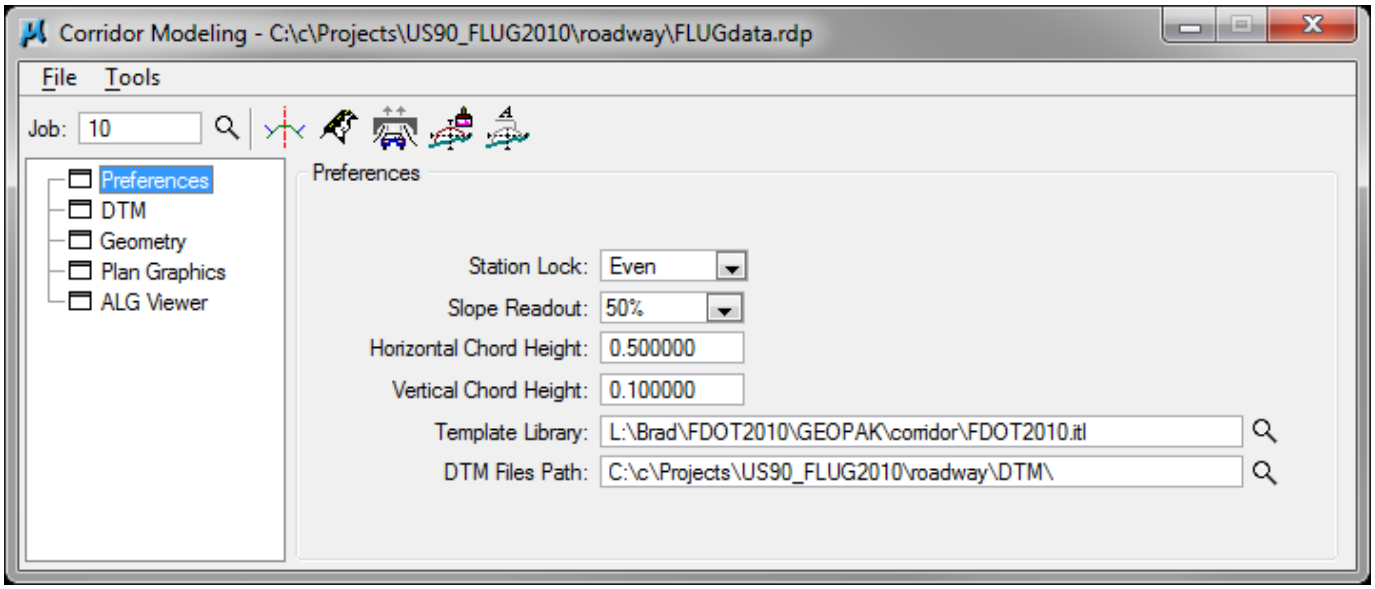
Draw Cross Section from Surfaces: Opens the **Draw Cross Sections** tool. Designers will be familiar with this tool. Proposed cross sections were created using criteria after the existing ground was cut from a TIN file and subsequently after the **Existing Features** criteria was run. The **Corridor Modeling** method does not draw the proposed cross sections like the criteria method.

The **Draw Cross Sections** from **Surfaces** tool is used to draw both the existing ground surface and proposed cross sections at the same time.

Support for a **DTM** created by **Roadway Designer** is a new feature of the tool. All template components are included in the proposed cross sections created from a **Roadway Designer DTM**.

Cross Section Labeling: Opens the **Cross Section Labeler** tool. The **Cross Section Labeler** tool is provided for labeling the different components of the template. This was accomplished with criteria. The cross section point labels that are plotted from **Roadway Designer** when the cross sections are cut are used in the labeling process.

Preferences



Station Lock: Applicable only when the first station specified on the horizontal alignment is an odd-numbered station (for example, 130+93.59).

Options are:

a) **Increment:** Will increment stationing based on the first station. If the first option is odd-numbered and the station interval is defined as 50, the software performs the command action at odd-numbered stations only (for example, 130+93.59, 131+43.59, 131+93.59).
b) **Even:** Will start at the first station then forces all subsequent stations to even-numbered station. For example, if the first station is 130+93.59 and the station interval is defined as 50, the software performs the command action at even numbered stations (for example, 131+50.00, 132+00.00, and so on).

Slope: designates the format for expressing slope from the Slope drop down list. The following list explains each format in the list. In each case, the slope represented is 0.5.

Note: All slopes are in *rise:run* format except the last one (2.0:1).

Format	Represents slope as
0.50	A decimal value.
50%	A percentage value.
0.5:1	A decimal ratio in which the second value is always 1.
0.5':1'	A decimal ratio in which the second value is always 1, in units of feet.
6":1'	A ratio of inches against a value of 1 foot.
12/2":1'	A ratio of inches against a value of 1 foot, in which inches are expressed as a fraction whose numerator is 12.
24/4":1'	A ratio of inches against a value of 1 foot, in which inches are expressed as a fraction whose numerator is 24.
48/8":1'	A ratio of inches against a value of 1 foot, in which inches are expressed as a fraction whose numerator is 48.
96/16":1'	A ratio of inches against a value of 1 foot, in which inches are expressed as a fraction whose numerator is 96.
1:2.0	A decimal ratio in which the first value is always 1.
500%o	A per mille value (per 1000) rather than a per cent value.
2.0:1	A decimal ratio given in run:rise format and in which the second value is always 1.

Horizontal Chord Height: specifies the largest distance between a chord and the arc it subtends (middle ordinate). This parameter is used to control the number of points along a curve that are added during graphic display of spirals and horizontal circles. This parameter also affects the way surface features are imported from graphics. A value of zero could prevent a surface feature from being imported.

Simply put, this preference is used in the final step of creating a surface or model and allows the designer to chord or create additional Cross Sections through a Horizontal curve.

Vertical Chord Height: specifies the largest distance between a chord and the arc it subtends (middle ordinate). This parameter is used to control the number of points along a curve while processing in Roadway Designer.

Simply put, this preference is used in the final step of creating a surface or model and allows the designer to chord or create additional Cross Sections through a Vertical curve.

Template Library: specifies the *.itl file for the project. This field is populated by a configuration variable set in the SiteFdot.txt file. The designer can browse to Template Library File by clicking on the magnifying glass and navigating to the location of the ITL file the designer prefers.

Change Preferences

Exercise 3:

Change and Review Preferences.

1. Change the ***Station Lock*** to ***Even***.
2. Change the ***Slope Readout*** to **50%**.
3. Change the **Horizontal Chord Height** to **0.5**.
4. Change the **Vertical Chord Height** to **0.1**.
5. **Click** the magnifying glass icon next to the **Template Library** field and navigate to the **c:\FDOT2010\GEOPAK\corridor** folder.
6. Select the **FLUG_FDOT2010.itl**.
7. **Click** the magnifying glass icon next to the **DTM Files Path:** field and navigate to the **US90_FLUG2010 > roadway** folder.
8. Click the **Make New Folder** button on the **Browse for Folder** dialog.
9. Name the folder **DTM**.
10. **Click** the **OK** button to finish creating the **DTM** folder and mapping to it.
11. Select **File > Save**.
12. Select the **FLUGdata.rdp** file.
13. **Click** the **Save** button to save the file and then the **OK** on the **Information** dialog.

> **Note:** *The template library location is configured in the SiteFDOT.txt file by using the GPK_RD_TEMPLATE_LIBRARY configuration variable.*

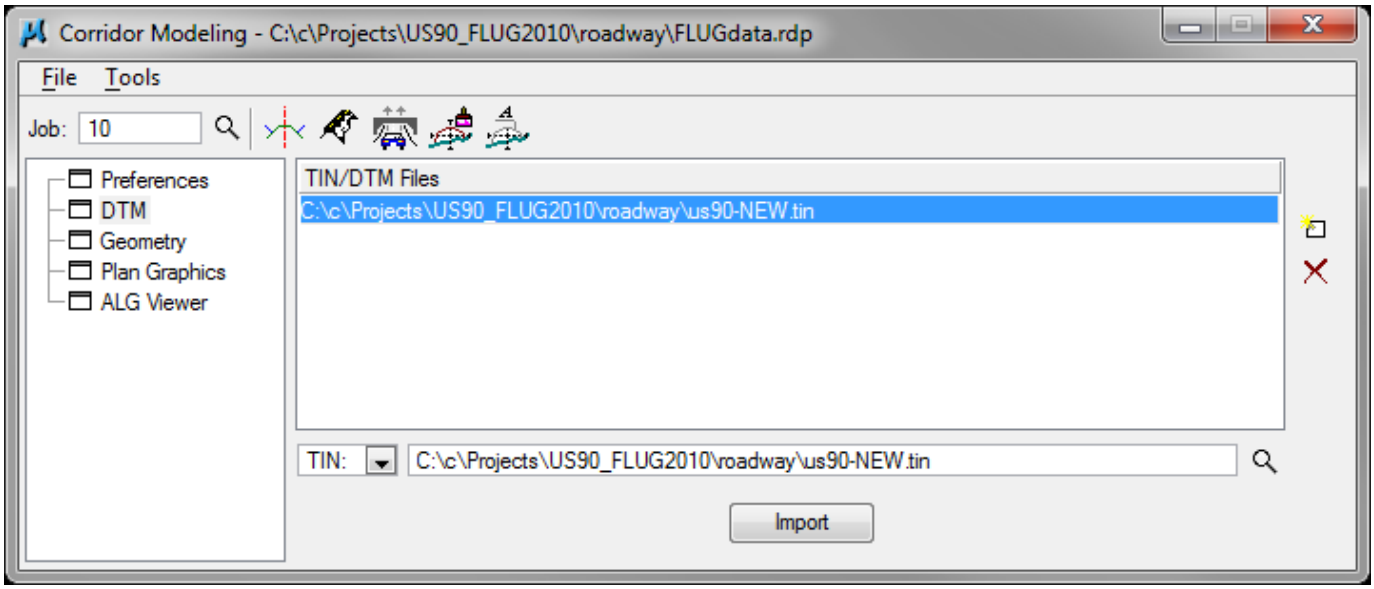
DDB

Drafting Standards: imports drafting standards from a **DDB** file into an *.xin file. This field is populated by a configuration variable set in the **SiteFdot.txt** file (**GPK_ACBOOK_DDBFILE_STYLES**).

Click **Import** and the default and drafting standards from the **DDB** file are imported into an **XIN** file. The **Corridor Modeling > DDB** software puts the **XIN** file in the **rddbs** directory.

> **Note:** *The FDOT has a Site DDB/XIN configured already and the DDB category will not show in the category due to two (2) configuration variables set in the SiteFDOT.txt file.*

DTM



TIN/DTMS Files: Allows the designer to select **TIN/DTM** files to add to a list import the selected **DTM** or **TIN** file(s). Importing a **TIN** file converts it to a **DTM** file.

Select the file type, either **DTM** or **TIN** and then click the **magnifying glass** to navigate to the location of the **TIN/DTM**. Add the **TIN/DTM** by clicking the **Add TIN** to List button or remove a **TIN/DTM** from the list by clicking the **Delete TIN** of Selected **Row** button.

When all required files are added to the **TIN/DTM** Files list, click **Import**. All files listed are imported.

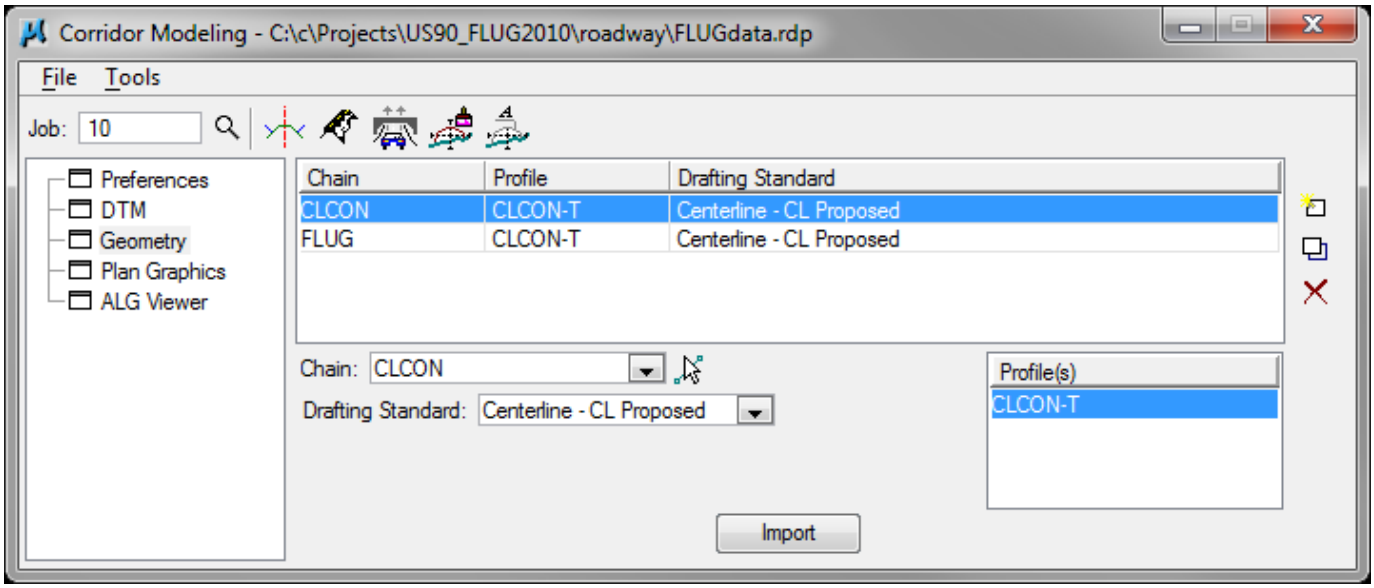
Exercise 4a:

Import Required information

DTM:

1. Select **TIN** option from the drop down list.
2. Click the **magnifying glass**, and navigate to the **c:\c\projects\US90_FLUG2010\roadway** folder.
3. Select the **us90-NEW.tin** file.
4. Click the **Add TIN to List** button on the right side of the **TIN/DTM files list box**.
5. Click the **Import** button. (This will import the TIN file and create the **us90-NEW.dtm** file in the **roadway** folder.)
6. Click **OK** on the information dialog.
7. Select **File > Save,** to save changes to the **FLUGdata.rdp** file.

Geometry



This tool imports various types of geometry data from the selected **GPK** file and generates an **ALG** file based on the information provided. Once the **ALG** file is created, it's put in the **rddbs** directory.

By selecting a row in the list box and clicking the **Import** button, the geometry is updated in the **ALG** file with the selected **Chain, Profile,** and **Drafting Standard**.

> **Note:** *If a list box entry is **blue**, that indicates some change has been made since the last update. To store the updated geometry, click **Import**. If a list box entry is **red**, that indicates the entry has been deleted since the last update.*

Exercise 4b:

Import Required information

Geometry:

1. Set the **Geometry** dialog as follows:

   Chain – **CLCON**
   Drafting Standard – **Centerline of Construction**
   Profiles –**CLCON-T**

2. Click the **Add Chain to List** button to add the **Chain to the list box**.

3. Set the **Geometry** dialog as follows:

   Chain – **FLUG**
   Drafting Standard – **Centerline of Construction**
   Profiles –**CLCON-T**

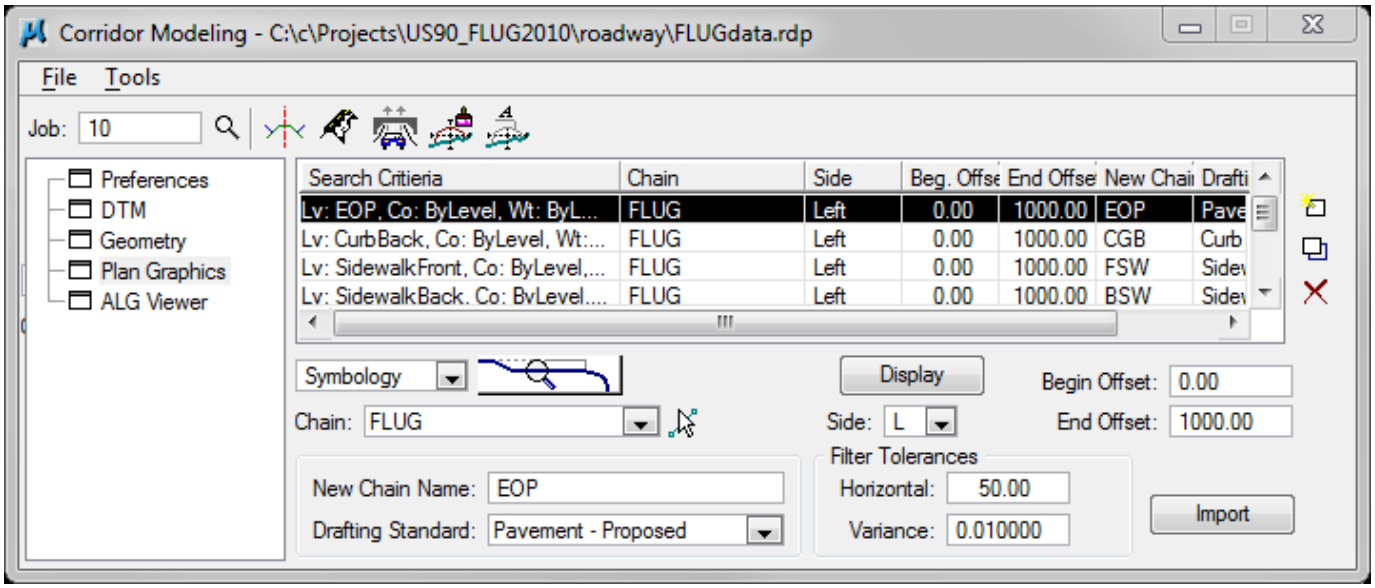
4. Click the **Add Chain to List** button  to add the **Chain to the list box**.

5. Click the **Import** button to import the Geometry into the **cmjob10.alg** file.

6. Click **OK** on the information dialog.

7. Select **File > Save,** to save changes to the **FLUGdata.rdp** file.

Plan Graphics

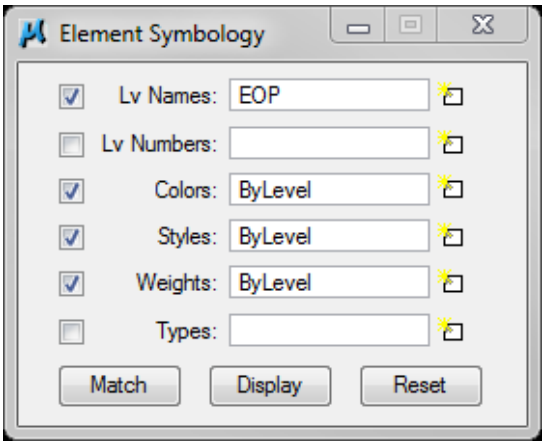


This tool imports graphic data into an **ALG** file as alignments/chains and can import graphics based on **Symbology, Feature, Selection Set** or any combination of the three. Set the dialog options to define the search criteria and define the selected **Symbology, Feature** or **Selection Set** with a new chain name and select a drafting standard. Import the new chains by clicking the **Import** button. The new alignments are checked and store in the **ALG** file.

> **Note:** *If a list box entry is **blue**, that indicates some change has been made since the last update. To store the updated geometry, click **Import**.*

Symbology: If **Symbology** is selected in the first drop down list, then the **Plan Graphics** dialog changes face to look like the image above.

Clicking this button displays the **Element Symbology** dialog, which allows the designer to define the symbology used to import elements. Mouse over this button gives the designer the element information listed out in a tooltip.



Feature: If **Feature** is selected in the first drop down list then, the **Plan Graphics** dialog changes face to look like the image above.

This allows the designer to select a feature from a **DDB** file by clicking the **paint brush button**.

Selection Set: If **Selection Set** is selected in the first drop down list, then the **Plan Graphics** dialog changes face to look like the image above.

This allows the designer to define a **selection set** of graphics to import.

Chain: Allows the designer to select a chain from the list of existing chains or identify a chain in the data set.

Display Button: The **Display** button displays only the graphics defined in the search criteria of the selected row. **Display** attempts to create the alignment graphically for the designer to view the results prior to storing the alignment in the **ALG** file.

If the software cannot create the chain as defined, an error message displays. Click **OK** and the **Connect Element Errors** dialog appears. Click the error description to go to the problem area in the display and fix it.

Side: Designates which way the software will look along the selected chain (**Left or Right**).

Begin/End Offsets: Defines the distance to the left or right the software will search along the selected chain.

New Chain Name/Drafting Standard: When the search criteria is set, define the results of the search with a new chain name and select a drafting standard.

All new chains must be added to the search criteria to the list box. Check the **Store** box on the rows to import when the **Import** button is clicked. Any chains added can be modified or deleted after the fact.

Filter Tolerances: Both **Horizontal** and **Variance** filter tolerances are considered together for each pair of cross section segments. The middle point is deleted if both segment lengths are less than the **Horizontal** filter tolerance while the projected distance between the mid-point and the chord between the two end points is less than the **Variance** tolerance.

Exercise 4c:

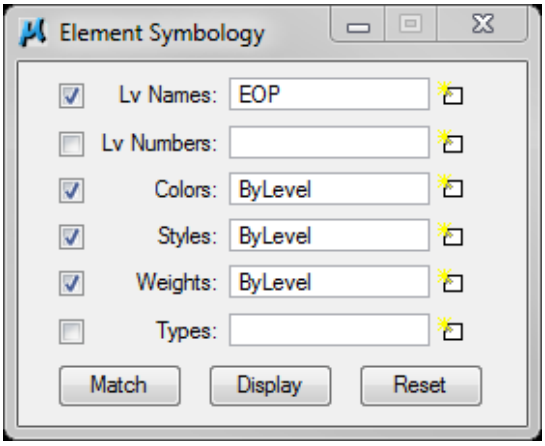
Import Required information

Plan Graphics:

1. Setup the **Plan Graphics** dialog as follows:

   Search Criteria – **Symbology**
   Chain – **FLUG**
   Side – **L** (Left)
   Begin Offset – **0.00**
   End Offset – **1000.00**
   Filter Tolerances – **(Default Settings)**

2. Click on the  button to open the **Element Symbology** dialog.



3. **Toggle** on the **Lv Names, Colors, Styles and Weights** check boxes.

4. Click the **Match** button and select the **EOP Plan Graphic** in the **DSGNRD01.dgn** file.

   Note: *If a level is already set, click the **Reset** button to clear the dialog. If **Reset** is clicked, the **ByLevel** settings for **Color**, **Weight** and **Style** will have to be set as well.*

5. **Click** the **Red X** in the upper right corner to close the **Element Symbology** dialog.

6. Type in **EOP** in the **New Chain Name** field to name the **EOP Plan Graphics** as the new alignment/chain. (For other plan graphics name accordingly.)

7. Select **Pavement - Proposed** from the **Drafting Standards** drop down list. (For other plan graphics select the correct draft standard accordingly.)

8. Click the **Add Search Criteria to List** button  to add the selected **Plan Graphic** to the **search criteria list**.

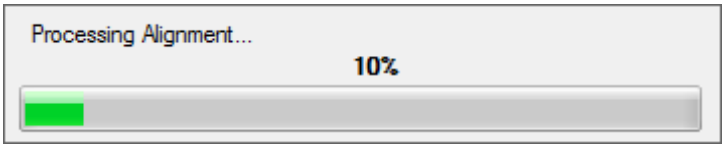
9. **Repeat steps 1-8** for the following **Plan Graphics**:

Plan Graphic	New Chain Name	Drafting Standard
CurbBack	**CGB**	**Curb - Back Proposed**
CurbFace	**FOC**	**Curb - Face Proposed**
SidewalkFront	**FSW**	**Sidewalk - Front Proposed**
SidewalkBack	**BSW**	**Sidewalk - Back Proposed**
TrafSeparator	**TRAFSEP**	**Traffic Separator Proposed**
RetainWall	**RETWALL**	**Wall – Retaining**
GravityWall	**GRAVWALL**	**Wall – Gravity**

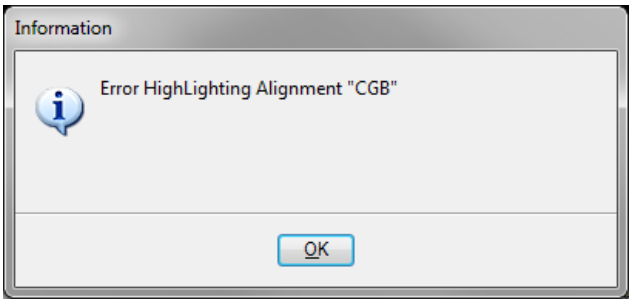
Note: *The **Gravity Wall** is located around station **709+90.00** on the **right side** of the road.*

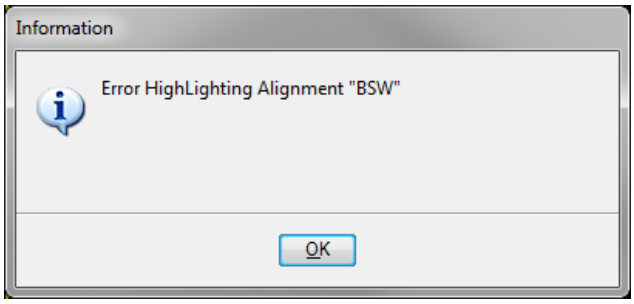
10. **Click** the **Display** button to **Process the Alignment** and check for E**rrors** for each added **Plan Graphic**. R**epeat steps 10-15** for each **Plan Graphic** that present errors.

    This process will scan the file for the selected search criteria and check for errors in the chain.



    If the software cannot resolve the chain due to errors found in the chain, an information dialog will appear indicating the chain that has the error.

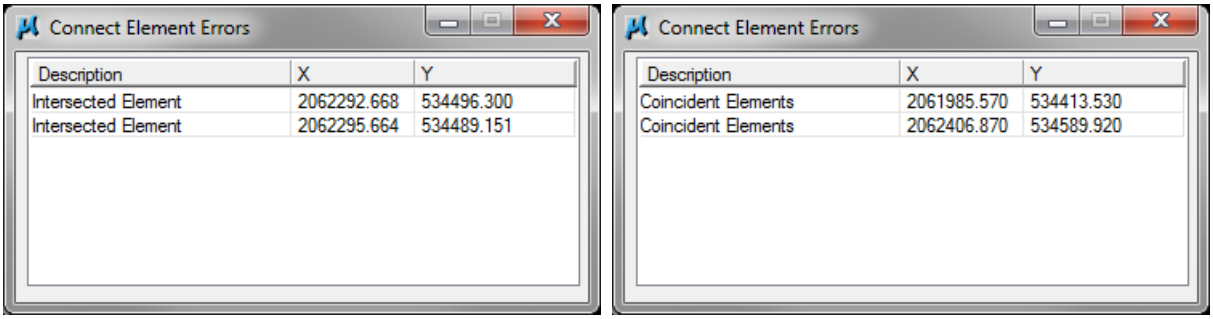




Note: *Clicking the **Display** button will highlight the **plan graphic** in the **DGN** file associated to the selected row in the **search criteria** list box.*

11. Click the **OK** button on the **Information** dialog.

12. Select the **first error** listed on the **Connect Element Errors** dialog.



> **Note:** *It helps to manually zoom in, in the DGN file to allow the software to focus in on the error listed.*

13. Fix the **DGN** elements using **MicroStation tools**.

14. When finished fixing elements in the **DGN**, click the **Red X** in the upper right corner to close the **Connect Element Errors** dialog.

15. **Click** the **Display** button again to **verify** the **MicroStation elements** are fixed.

16. **Click** the **Import** button to import the **Plan Graphics** specified in the **search criteria list box** into the **ALG** file.

17. When the **Plan Graphics import** is complete click **OK** on the **Information** dialog.

18. On the **Corridor Modeling** dialog, select **File > Save** to save changes to the **FLUGdata.rdp** file.

19. **Click OK** on the **Information** dialog.

20. **Close** the **Corridor Modeling** dialog.

Understanding Smart Update

In previous exercises, both **geometric** and **graphical data** have been **imported** into the **Corridor Modeling** application. However, the data in the **geometry database** as well as the **graphical data** has a tendency to change throughout the life of a project. **GEOPAK** has included a method to keep the data in synch. This exercise will show how a functionality called **Smart Update** does just that.

Exercise 5:

Modifying Design File Data

1. In the **dsgnrd01.dgn** design file, **delete gravity wall element** on the right side of the roadway around **station range 709+80.00 to 710+00.00**.

Plan Graphics - Smart Update

2. **Access Corridor Modeling**. An **Information** dialog should appear.
3. **Click OK** on the **Information** dialog.
4. Select the **Plan Graphics** tree option on the left of the dialog.

> **Note:** *The **gravity wall** entry is now listed in **RED** which means that all the elements used to import the item have been **DELETED**.*
>
> **Note:** *If something is denoted with the color **BLUE** it means that it has been modified. In this case, it would mean only a few of the graphical elements that were used to import the wall have been deleted, so the design file data is out of synch with the **Corridor Modeling** application.*

5. **Select** the **gravity wall** item in the list box.
6. Click on the **Delete Search Criteria of Selected Row** icon  .
7. Click the **Yes** button on the **Alert** dialog.

> **Note:** *The wall item is removed from the list box AND it is also removed from the .alg file in the /rddbs subdirectory.*

8. Select **File > Save**, to save changes to the **FLUGdata.rdp** file.
9. Click the **Yes** button on the **Alert** dialog.
10. **Click OK** on the **Information** dialog.

ALG Viewer

The **ALG Viewer** accesses and manipulates data directly within the **ALG** file. The purpose of the **ALG Viewer** is two-fold:

- Allows the designer to **delete** alignments **from** the **ALG**.
- Allows the designer to **visualize alignments for review**.

Exercise 6: (Optional)

Display and Undisplay

1. In the **dsgnrd01.dgn** design file, on the **Primary Tools** palette, create a new model  and name it **ALG Viewer**.

2. **Select** the **ALG Viewer** tree option on the left of the dialog.

3. **Select** the **EOP Alignment Name**.

4. **Click** on the **Display Select Rows** button  or click in the **Display column** on the **EOP row**.

5. **Click** the **Fit View** button on the top of the **MicroStation View Window**  .

6. **Review** the **EOP** elements displayed.

7. To '**undisplay**' the **EOP** elements, either click on the **Undisplay Select Rows** button  or **Display column** on the **EOP row**.

   Note: *Clicking on the **Delete Selected Rows** button*  *will remove the alignment from the **ALG** file **permanently**.*

8. **Highlight** the first **Alignment Name** in the list, hold down the **Shift key** on the **Keyboard** and select the last **Alignment Name** in the list.

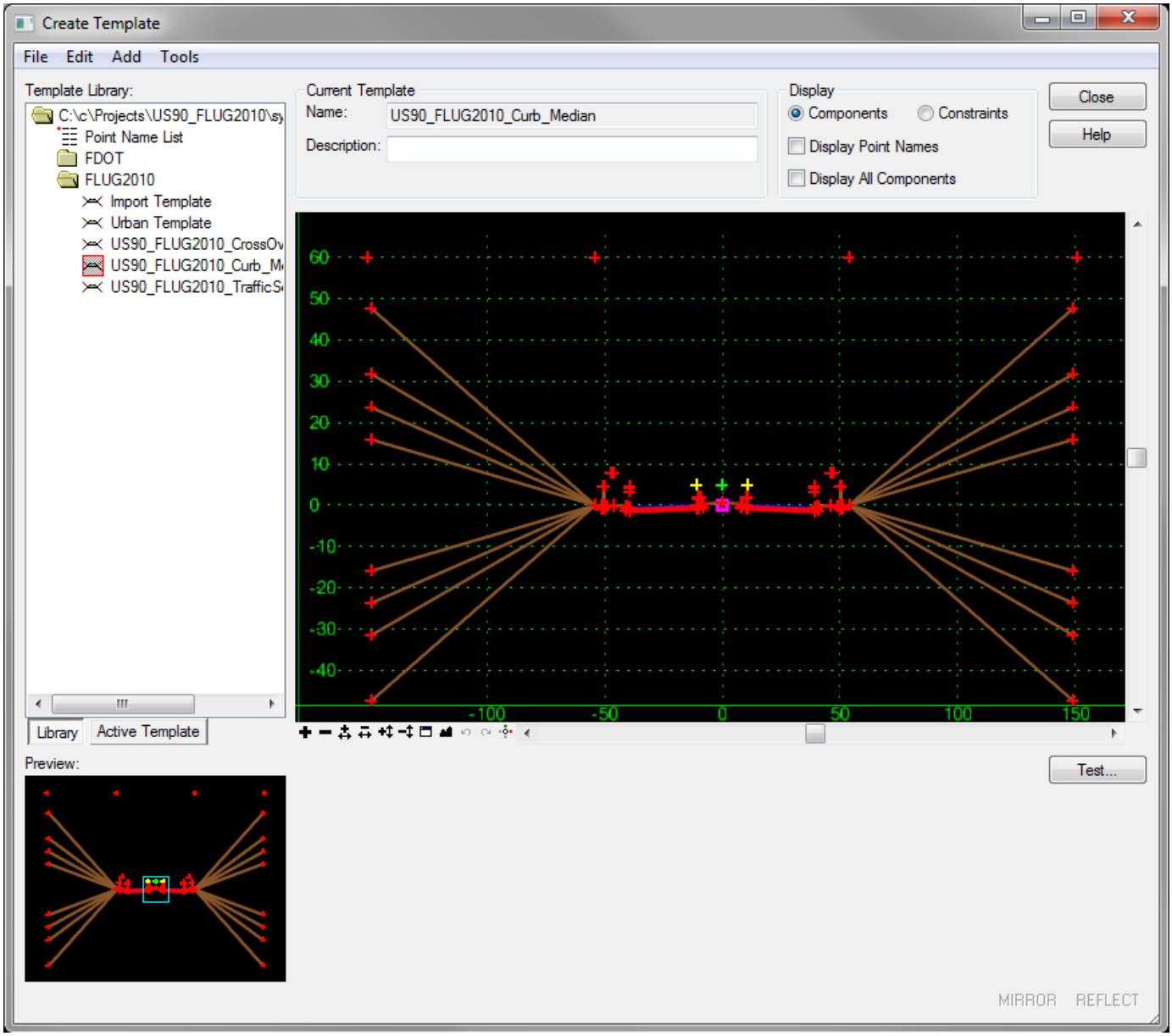
9. **Click** on the **Display Select Rows** button  to display all the alignments in the **ALG** file in the newly created model.

10. **Reference** the default model to the **ALG Viewer** model and review the Alignments for differences.

11. Select **File > Save**, to save changes to the **FLUGdata.rdp** file.

12. **Click OK** on the **Information** dialog.

Create Template Overview - Assemble Templates



Create Template Dialog

The Create Template tool is accessed from the **Corridor Modeling** interface. To access the **Corridor Modeling** tool select **Applications > ROAD > 3D Tools > Corridor Modeling**. To create or edit a **Template Library**, click the **Open Create Template** icon on the **Corridor Modeling** dialog.

 **Open Create Template:** Opens the **Create Template** tool. After the specific project information has been imported, a model of the proposed roadway design is generated by assembling project components/templates and applying them to a corridor using the **Roadway Designer**.

Components, Templates and **End Conditions** are created, edited and stored in the **Template Library File** which has an ***.itl** extension.

The **Standard Site** or **Project Specific Template Library** can be shared, however, the template library is recommended to be read-only when shared. It's recommended to create a project specific **Template Library** and store it in the **project directory symb folder** which allows the designer to be able to modify the template library to meet the specific needs of the project.

> **Note:** *Templates can be copied from a Standard Template Library to a Project Specific Template Library using **Tools > Template Library Organizer** in the Create Template Tool.*

File Menu

Options

- **New**
  - **Folder –** Use this command to create a new folder in the template library.
  - **Template Library –** Use this command to create a new template library.
  - **Template –** Use this command to create a new template in the template library.
- **Open –** Use this command to save the current template library.
- **Save –** Use this command to save the current template library.
- **Save As –** Use this command to save the current template library to a different name.
- **Import Template –** Use this command to import MicroStation graphics into a template.
- **Close –** This command closes the **Create Template** dialog. If the template library has been modified, the designer is prompted to save the changes before exiting.

Edit Menu

Options

- **Undo –** Use this command to undo the last edit of the current template.
- **Redo –** Use this command to redo the last edit of the current template.
- **Cut –** Use this command to cut the selected template or folder from the template library and place it in the paste buffer.
- **Copy –** Use this command to copy the selected template or folder into the paste buffer.
- **Paste –** Use this command to paste the content of the paste buffer in the template library.
- **Delete –** Use this command to delete the selected template or folder from the template library.
- **Rename –** Use this command to rename the selected template or folder.
- **Clear –** Use this command to erases all of the points and components in the current template.

Add Menu

Options

- **Simple –** Use this command to add a simple component to a template.
- **Constrained –** Use this command to add a constrained component to a template.
- **Unconstrained –** Use this command to add a unconstrained component to a template.
- **Null Point –** Use this command to add a null point to a template.
- **End Condition –** Use this command to add an end condition component to a template.
- **Overlay/Stripping –** Use this command to add an overlay/stripping component to a template. Milling is handled by the Overlay/Stripping component. Use this command to handle all milling/stripping type operations. This command can also be used to handle leveling (overlay) operations.

Tools Commands

Options

- **Template Library Organizer –** Use this dialog to easily move (drag and drop) templates from one template library to another. This command can also be used to copy templates from a (*.*ird*) roadway design into a template library.
- **Apply Feature Name Override –** Use this dialog to set the Feature Name Override property on a group of points.
- **Apply Component Name Override –** Use this dialog to set the Component Name Override property on a group of components.
- **Options –** Use this dialog to specify naming and step options for the current template.
- **Dynamic Settings –** Use this dialog to specify precision input. Step locks are overridden when snapping to an existing point or component.
- **Template Library Report (itl File) –** Displays the Bentley Civil Report Browser to view the available template library reports.

Exercise 7:

Create Project Specific Template Library

1. From the **Corridor Modeling** dialog, click on the  to open **Create Template**.
2. Navigate to **File**, and select **New > Template Library**.
3. Navigate to the **US90_FLUG2010 > symb** project directory.
4. In the '**File name:**' field type **FLUG2010**.
5. **Click** the **Save** button to save the **FLUG2010.itl** file. (This will be the project specific template library.)
6. **Select File > Exit to close the Create Template dialog.**
7. **On the Corridor Modeling interface, select the Preferences category.**
8. **Click** the magnifying glass icon next to the **Template Library** field and navigate to the **c:\e\projects\US90_FLUG2010\symb** folder.
9. **Select** the **FLUG2010.itl** file.
10. Select **File > Save**, to save changes to the **FLUGdata.rdp** file.

Current Template Window

In the center of the **Create Template** dialog is the main graph for creating templates. The graph is called the **Current Template Window**. The **Current Template Window** uses its own graphics engine and is not a **MicroStation View**. The scale of the graph is dynamic and changes as when zooming in and out.

The center point of the **Current Template Window** is marked by the **dynamic origin**, which is a magenta-colored box. At the bottom of the graph there are view commands, which are similar to **MicroStation View** commands.

In the graph area, right-click to access commands and double click on elements in the graph for editing purposes.

Template Preview Window

Under the **Template Library** area is the **Preview** area. When a **template** is highlighted (not selected/active) it will be displayed in the **preview window**. This is useful for previewing the **component** before inserting it into the **active template**.

Click on a **point** displayed in the **preview window** will select that **point** as the previewed **template/components insertion point**.

Components

Components are logical parts of a template. Examples of components include curb and gutter, median barrier, pavement/base, cut and fill slopes, and ditches.

Components are normally kept in separate folders in the template library and are used to assemble complete templates.

Components/Template Point Names

Templates are used by the **Roadway Designer** to **create surfaces** of the **proposed roadway**. Each **template point** will be connected longitudinally to the next **template drop**, based on the interval, to form longitudinal break line **surface features**. The names of those features are the name of the **template points**.

Individual **component** names also appear in the ensuing **surfaces**. These **components** are used for **volume calculations**, so **standard naming conventions** should be applied to ensure consistent results.

When **transitioning** between two **templates** (going from a two-lane to a four-lane roadway, for example), the **Roadway Designer** attempts to connect template points of the same name to model the transition.

Template transitioning makes consistent **template component** and **template point naming** even more important.

Each **template point name** and **component name** must be **unique** within a **template**. For accurate **volume calculations** and **surface creation** (especially during **template transition**), different **templates** should use **consistent component** and **template point names**.

Constraints on Template Points

Point constraints are used to manage the behavior of **template points**. A **template point** has a maximum of two constraints on it.

- A **point** with two **constraints** is considered "**fully constrained**." A **point** that is **fully constrained** is represented by a **red plus sign**.
- A **point** has only one **constraint** on it is considered "**partially constrained**" and is shown as a **yellow plus sign**.
- A **point** with **no constraints** (**unconstrained**) is shown as a **green plus sign**.

Types of Constraints

Horizontal – The **child point** remains at the specified **horizontal distance** from the **parent point**.

Vertical – The **child point** remains at the specified **vertical distance** from the **parent point**.

Slope – The **child point** maintains the specified **slope** from the **parent point**. **Slope constraints** can, additionally, have **rollover values** assigned to them. **Rollover values** are used to set the **slope constraint** based on a **high side slope** difference and a **low side slope** difference relative to a **reference point** which defines the controlling **slope** to the **parent point**. **Slope constraints** are absolute. **Slopes** going from lower-left to upper-right are positive regardless of whether the **child point** is to the left or right of the **parent**.

Horizontal Maximum –The **child point** has two **parent points** and remains at the specified **horizontal distance** from the **parent point** that is farthest to the right (has the **maximum horizontal** or X value).

Horizontal Minimum – The **child point** has two **parent points** and remains at the **specified horizontal distance** from the **parent point** that is farthest to the left (has the **minimum horizontal** or X value).

Vertical Maximum – The **child point** has two **parent points** and remains at the specified **vertical distance** from the **parent point** that is highest (has the **maximum vertical** or Y value).

Vertical Minimum – The **child point** has two **parent points** and remains at the specified **vertical distance** from the **parent point** that is lowest (has the **minimum vertical** or Y value).

Vector Offset – The **child point** is projected onto the **vector** defined by two **parent points**. If the **offset** is not zero, then the **child point** will maintain a **perpendicular offset** from the **parent vector** at the specified **offset value**. **Negative values** indicate an **offset** to the **left** of the **vector** defined by the **parent points**. **Positive values** indicate an **offset** to the **right**. If the **offset** is zero, the **child point** is located on the **parent vector**.

Project to Surface – This **constraint** must be used in conjunction with one of the previously defined **constraints**. The other **constraint** will define the **projection direction**. The **child point** will then be **projected** to the **surface** with the specified name. If the **surface** does not exist, or no solution is found, the **point** will remain where it is placed in the **template**.

Project to Design – This **constraint** is similar to **Project to Surface**, except that the point is **projected** to the **design surface** of the **template**. A **projection value** is given to indicate whether the **projection** is to be to the **left** or to the **right**. Again, the **point** must also be **constrained** by one of the previous **constraints**, excluding the **Project to Surface constraint**, so that a direction for the **projection** may be determined. If no solution is found, then the **point** will remain where it is placed in the **template**.

Angle Distance – Use this command to **fully constrain** a **point** in the **template**. This **constraint** requires **two parent points**, **a distance**, and **an angle**. The **point** is **constrained** to the location defined by the **distance** from the **first parent**, and the **angle** from the **first parent** relative to the **vector** defined by the two **parent points**. This **constraint** creates a **rigid-body rotation**. When selected, no other **constraint** types are available.

Apply Feature Name Override to Points

Use the **Apply Feature Name Override to Points** dialog to set the **Feature Name Override** property on a group of points. Be careful when using this feature to ensure that only points that are mutually exclusive to the solution at any given station will be assigned the same feature name. The feature name override can be tested using the **Verify Features** button on the **Test End Conditions** dialog.

Feature Name Override – specifies the feature name to be applied to the selected point(s).

Apply to points – lists available points to apply the feature name. Points that already have an override appear in red, and the override name is also displayed.

Apply – applies the feature name to the selected points.

Close – closes the dialog.

Help – displays help.

Apply Component Name Override

Use the **Apply Component Name Override** dialog to set the **Component Name Override** property on a group of components. Be careful when using this dialog to ensure that only components that are mutually exclusive to the solution at any given station will be assigned the same component name. The component name override can be tested using the **Verify Features** button on the **Test End Conditions** dialog.

Component Name Override does not apply to **component display rules**, **Active Template list**, or **Parent/Child pulldown**.

The first encountered component's style is used for all components with that override.

Component Name Override – specifies the component name to be applied to the selected component(s).

Apply to Components – lists available components to which to apply the component name. Components that already have an override appear in red, and the override name is also displayed.

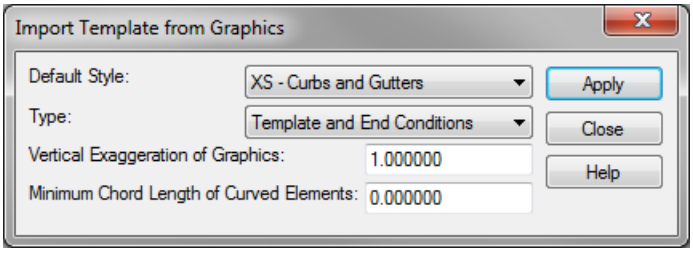
Apply – applies the component name to the selected components.

Close – closes the dialog.

Help – displays help.

Import Template from Graphics

If the designer's preference is to draft **components/templates** (not recommended) in **MicroStation**, **GEOPAK** has provided a method to **Import MicroStation** graphics (shapes and elements). Once a **component/template** is graphically created and identified in a **MicroStation selection set**, the **Import Template** can be used to import the template in the into the **Create Template** dialog.



Default Style: specifies the style applied to all created components.

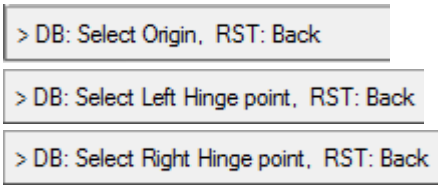
Type: displays the type of template that is imported.

- **Template and End Conditions -** indicates a template with left and/or right side end conditions.
- **Template -** indicates a backbone template.
- **End Condition -** indicates an end condition component.

Vertical Exaggeration of Graphics: specifies the vertical exaggeration of the original graphics. Y values are divided by this value when graphics are imported in the template.

Minimum Chord Length of Curved Elements: specifies the value by which to reduce the number of created points based on the **Tools > Options> Tolerances> Horizontal Chord Height** value.

Apply: imports the template. However, the toll with asked for the following information displayed in the MicroStation Status Bar:



= Select the **Template Origin**.

= Select the **Left Side** of the **Template**.

= Select the **Right Side** of the **Template**.

Close: closes the dialog.

Help: displays help.

End Conditions Component Settings

End Conditions are **template components** which are used to **model cut and fill treatments** and are created like other **template components**. They are different than **simple** and **constrained components** because they have the ability to **target surfaces**, **elevations**, **alignments** and **surface features**.

Target Types – To edit a **target type**, open the **Component Properties** dialog by double-clicking on the **component** or by right-clicking on the **component** and selecting **Edit Component**.

Surface – **targets** the **active surface** or any specified **surface**. Using the **active surface** as the **target** helps when applying the **end conditions** to different **projects**. This is because the **end condition** will still work even though the **target surface** name may be different, so long as it is designated as the **active surface**.

Elevation – targets any specified **elevation**.

Feature XY – targets the **horizontal offset** of any specified **surface feature**.

Feature Elevation – targets the **vertical elevation** of any specified **surface feature**.

Feature XYZ – targets the **horizontal offset** and **vertical elevation** of any specified **surface feature**.

Alignment XY – targets the **horizontal offset** of any specified **alignment**.

Alignment Elevation – targets the **vertical elevation** of any specified **alignment**.

Alignment XYZ – targets the **horizontal offset** and **vertical elevation** of any specified **alignment**.

Style Elevation – targets the **elevation** of any specified **style**.

Style XY – targets the **horizontal offset** of any specified **style**.

Style XYZ – targets the **horizontal offset** and **vertical elevation** of any specified **style**.

End Condition Point Settings

End Condition Priority – Priority is used when more than one end condition starts at the same point.

Check for Interception – when set, the line segment will search for the specified target. If not set, the line segment will be created at its full width regardless of whether it intersects the target.

Place Point at Interception – when set, a point will be placed at the location of the interception. If not set, the line segment will be created at its full width.

End Condition is Infinite – when set, the line segment will automatically be extended to intercept the target. If not set, the line segment will only extend to its maximum constraint to meet its target. This applies only to the last line segment in an end condition.

Do Not Construct – If set, the end point of the line segment will be used as a reference point to find a subsequent point. The point will be solved like any other end condition point, but that point will be skipped when drawing the final component segments. This is normally not set and is used only for more complex condition testing.

Testing End Conditions

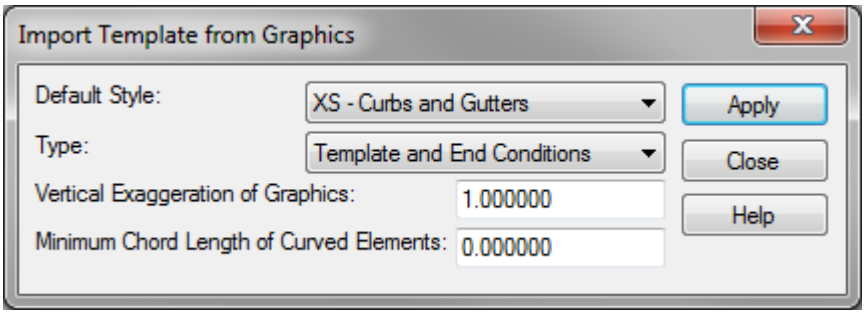
Testing simulates how the end conditions will behave during modeling, without using the Roadway Designer.

To test that the end conditions produce the desired results, select the Test button located under the Current Template window. This opens the Test End Conditions dialog. Select one of the available targets and select the Draw button located on the right side of the dialog. The end conditions will change from a dotted line to a solid line, revealing the final solution for the proposed target intercept. If there are any priority conflicts, a warning message will appear. Select the Check Priorities button to review and edit the priority of each end condition.

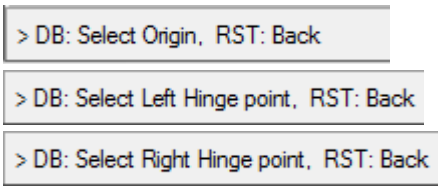
Exercise 8:

Import MicroStation Graphics using the Import Template Command

1. Open the file ***typsrd01.dgn***.
2. **Zoom** into the left outside **Type F Curb** in the first sheet.
3. Use **MicroStation tools and/or commands** to select the elements of the **Type F Curb**.
4. From the **Create Template Dialog**, select **File > Import Template**.
5. **Set** the **Import Template from Graphics** dialog lie the image below:



6. **Click Apply** on the **Import Template from Graphics** dialog.
7. Follow the instructions in the **MicroStation Status Bar**:



= Select the **Right Bottom** of the **Type F Curb**.

= Select the **Center Left** of the **Type F Curb**.

= Select the **Center Right** of the **Type F Curb**.

8. **Click** the **Close** button on the **Import Template from Graphics** dialog.
9. **Right click** on the **bottom right point** of the curb component in the **Current Template Window** and select **Change Template Origin**.

Rename Template/Component

10. **Right mouse click** on the **template** and select **Rename** to rename the newly created **template**.

> **Note:** *Review the Type F Curb Component just imported. Notice curb is made up of multiple components instead of a closed shape. In some cases the components can be merged. In order to utilize this component in a template correctly the component will need to be a closed shape.*

11. **Rename** the curb component template to **Import Template**.

Draw a Component

12. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > Constrained** or select **Add > Constrained** from the **Create Template Menu Bar**.

13. Below the **Current Template Window**, type **'CurbTypeF'** in the **Name** field of the Current **Component** section of the **Create Template Dialog**.

14. Change the **Style** to **XS – Curbs and Gutters**.

15. Start with the **Blank Point Name** (bottom left of the curb component) and line the cursor up with that point until it turns to a **white plus '+' symbol** and **click** to begin drafting.

16. Line up with every point until the point is a **white plus '+' symbol** and **click** on every point**,** tracing the curb component until the last point is clicked.

17. **Right mouse click** and select **Finish** to end the process and complete the trace.

Delete Components

18. **Right mouse click** along the **perimeter** of the component on each **segment (between points)** and select **Delete Component** for each segment (delete the blank or numbered components).

Apply Feature Name Override to Points

19. Select **Tools > Apply Feature Name Override to Points** from the **Create Template Menu Bar**.

20. Select the first point listed in the **Apply to points:** window section of the dialog.

21. **Type** the **Point Name** in the **Feature Name Override:** field.

22. **Click** the **Apply** button.

23. **Click** the **Close** button on **Apply Feature name Override to Points** dialog.

> **Note:** *Notice in the Current Template Window the point name turned red. The red text (point name) indicates there is a Feature Name Override on that point.*

24. **Double click** on the **Point** that was just modified to review the **Point Properties** dialog and check that the change was made.

25. **Click** the **Close** button to exit the **Point Properties** dialog.

Apply Component Name Override

26. Select **Tools > Apply Component Name Override** from the **Create Template Menu Bar**.

27. Select the **CurbTypeF** component listed in the **Apply to components:** window section of the dialog.

28. **Type** the **Component Name** in the **Component Name Override:** field.

29. **Click** the **Apply** button.

30. **Click** the **Close** button on **Apply Feature Name Override to Points** dialog.

31. **Double click** on the **Component** that was just modified to review the **Component Properties** dialog and check that the change was made.

32. **Click** the **Close** button to exit the **Component Properties** dialog.

Dynamic Settings

The **Dynamic Settings** dialog is used for precision input of the **template components** and to assign point names and styles when **creating components**. It also serves as a compass for the location of the cursor with respect to the **dynamic origin**.

> **Note:** *There is also a small icon*  *at the bottom of the template view that can be used to enable and disable this dialog.*

Exercise 9:

Setting and Saving Dynamic Settings:

1. Select **Tools > Options**.
2. Set the **Apply Affixes** check box. Enter the following **Prefix** values:

   Left Prefix: LT_
   Right Prefix: RT_

3. Set the Steps Options to:

   X: 0.1
   Y: 0.1

4. Click the **Preferences** button to open the **Preferences** dialog.

5. Click the **Save** button to open the **Save Preferences As** dialog.

6. Type '**default**' in the **Name** field and click **OK** and the **Close** button on the **Preferences** dialog.

Exercise 10:

Building a Template

Create a New Category and a New Template/Component

1. **Right click** on the **Template Library** root (the folder with the **path** to the **ITL** file).
2. Select **New > Folder**.
3. **Rename** the **folder** to **FLUG2010**.
4. **Right click** on the **FLUG2010 folder**.
5. Select **New > Template**.
6. **Rename** the **Template** to '**Urban Template**'.
7. **Click** the **Toggle On/Off Dynamic Settings dialog box** button  . (Last icon under the **Current Template Window** next the **Left and Right Slide bar**.)
8. High light the **Import Template** with a single click.
9. In the P**review Window** click the **Curb Tie Point**. (The green point above the **Import Template Origin Point**.)
10. From the **Curb Tie Point** in the **Preview Window** drag and right mouse button and left mouse button **chord** click in the grid of the **active template**.
11. **Select Mirror** from the **popup menu**.
12. Let the curb components cross (curb backs facing each other) and data point at where the grid unit numbers '0' and '15' intersect.

Add a Simple Mirrored Component - Pavement

13. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > Simple** or select **Add > Simple** from the **Create Template Menu Bar**.
14. Below the **Current Template Window**, type **'Pavement'** in the **Name** field of the **Current Component** section of the **Create Template Dialog**.
15. Change the **Style** to **XS – Proposed Ground Line**.
16. With the **Simple Component Mirrored** hover over the **Curb Tie Point** until the point turns to a **white plus sign** and data point.

Place Outside Curb Components

17. In the P**review Window** click the **Curb Tie Point**. (The green point above the **Import Template Origin Point**.)

18. From the **Curb Tie Point** in the **Preview Window** drag and right mouse button and left mouse button **chord** click in the grid of the **active template**.

19. **Select Mirror** from the popup menu.

20. Attach the **Mirrored Curb Component** to the end of the **Left Side** of the **Pavement**.

Add a Simple Mirrored Component - Sidewalk

21. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > Simple** or select **Add > Simple** from the **Create Template Menu Bar**.

22. Below the **Current Template Window**, type **'Sidewalk'** in the **Name** field of the **Current Component** section of the **Create Template Dialog**.

23. Change the **Style** to **XS – Sidewalk Proposed**.

24. **Change** the **Slope** to **2%**.

25. **Change** the **Width** to 5 Feet.

26. Attach the **Mirrored Sidewalk Component** by hovering over the outside **Curb Back** until the point turns to a **white plus sign** and data point.

Add Constrained Components – Sidewalk Buffers

27. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > Constrained** or select **Add > Constrained** from the **Create Template Menu Bar**.

28. Below the **Current Template Window**, type **'SidewalkBuffer'** in the **Name** field of the **Current Component** section of the **Create Template Dialog**.

29. Change the **Style** to **XS – Unpaved Shoulder**.

30. **Right click** again to bring up the **popup menu**.

31. **Uncheck Closed Shape**.

32. Attach the **Mirrored SidewalkBuffer Component** by hovering over the left outside **Back of Sidewalk** until the point turns to a **white plus sign** and data point.

33. Draw to the left and up at about a 2% slope for about 2 ft and data point. (Does not have to be exact.)

34. **Right click** to bring up the **popup menu** and select **Finish**.

Add Constrained Components – Raised Median

35. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > Constrained** or select **Add > Constrained** from the **Create Template Menu Bar**.

36. Below the **Current Template Window**, type **'RaisedMedian'** in the **Name** field of the **Current Component** section of the **Create Template Dialog**.

37. Change the **Style** to **XS – Medians**.

38. **Right click** again to bring up the **popup menu**.

39. Ensure that **Closed Shape** is unchecked.

40. **Data Point** in the **Grid** above the **Template Origin**. (Magenta Square.)

41. Draw to the left and down to the median curb back.

42. Hover over the **Back of Curb** until the point turns to a **white plus sign** and data point.

43. **Right click** to bring up the **popup menu** and select **Finish**.

Add Constrained Components – End Condition

44. **Right Click** in a blank area the graph of the **Current Template Window** and select **Add New Component > End Condition** or select **Add > End Condition** from the **Create Template Menu Bar**.

45. Below the **Current Template Window**, type **'FILL'** in the **Name** field of the **Current Component** section of the **Create Template Dialog**.

46. Change the **Style** to **XS – Ditch Slopes**.

47. Hover over the left **Outside Sidewalk Buffer** point until the point turns to a **white plus sign** and data point.

48. Draw to the left approximately 20 feet/units on the grid and down approximately 5 feet/units on the grid and data point.

49. **Right click** to bring up the **popup menu** and select **Finish**.

Test – End Condition

50. **Click** the Text Button located bottom right under the **Current Template Window**.

51. In the **Available Targets** window select **<Active>-Surface** and **click** the **Draw** button.

52. **Drag** the **Active Surface** up and down to test the **End Condition**.

53. **Close** the **Test End Condition** dialog.

Managing the ITL File

Templates can be easily **transferred** from another project's **ITL/IRD** file or from a **Site ITL** into the **project specific ITL** file easily. In some cases it is much more time effective to **copy** an **existing template** and **modify** it than making one from scratch.

The **Template Library Organizer** can be used to bring in **Templates & Components** from another **ITL** or **IRD** file instead of redesigning **components/templates** every time the design calls for **modifications**.

Exercise 11:

Template Library Organizer

1. **Open** the **typsrd01.dgn** file.
2. **Highlight** the **Path** and **Template Library** name in the **Template Library Window**.
3. **Select File > New > Folder** for the **Create Template Menu Bar**.
4. Name the folder **FDOT**.
5. **Right click** on the **FDOT** folder and create the following folders:

   Folder Name

   Component
   End Conditions
   Typical Sections
   Typical Section – Sub Sets

6. **Select Tools** > **Template Library Organizer** from the **Create Template Menu Bar**.
7. **Click** the **Browse** button  in the upper right hand corner of the **Template Library Organizer**.
8. **Navigate** to the local **c:\FDOT2010\Geopak\corridor** folder.
9. **Select** the **FDOT2010.itl** file and **click** the **Open** button.
10. **Select** the following **component folders** from the **FDOT2010.itl** and drag them to the **FLUG2010.itl** file:

Location In FDOT2010	Component Folder	Destination ITL & Folder
FDOT > Component	**Barriers & Retaining Walls**	**FLUG2010 – Component**
FDOT > Component	**Medians**	**FLUG2010 – Component**
FDOT > Component	**Pavement**	**FLUG2010 – Component**
FDOT > Component	**Cut & Fill**	**FLUG2010 – End Condition**
" >Typical Section – Sub Sets	**Pavmt w/ Base & Curb/Sidewalk**	**" >Typical Section – Sub Sets**
FDOT > Typical Sections	**EXHIBIT TYP-05**	**FLUG2010 – Typical Sections**

11. **Click** the **OK** button.
12. **Click YES** to save changes to the **FLUG2010.itl** file.
13. **Review** the **FLUG2010.itl** file contents to ensure that all the **components** to build the **Typical Section** in the **typsrd01.dgn** file have been transferred to the project specific **ITL (FLUG2010.itl)**.

Creating Project Specific Templates using FDOT Components

In this section of the **workshop**, students learn how to **design templates** using **template components** based on **FDOT Design Standards** in accordance with **FDOT/ECSO CADD Standards** using the **GEOPAK Corridor Modeling** tools.

Exercise 12a: ***(This will be based on station range 703+00.00 thru 703+27.58)***

Insert Cross Over Median Component and set point constraints:

1. **Open** the **dsgnrd01.dgn** file.
2. **Right click** on the **FLUG2010 folder**.
3. Select **New > Template**.
4. **Name** the **Template** to '**US90_FLUG2010_CrossOver_Median**'.
5. **Click** the **Toggle On/Off Dynamic Settings dialog box** button  . (Last icon under the **Current Template Window** next the **Left and Right Slide bar**.)
6. **Toggle** off the **Apply Affixes** check box in the **Dynamic Settings** dialog.
7. **Navigate** to the **FDOT > Medians > Cross Over Median** component and **highlight** the **Cross Over Median** component.
8. **Drag** the **Cross Over Median** component into the **US90_FLUG2010_CrossOver_Median Template**.
9. **Hover** over the **magenta square** (**Dynamic Origin**) and place the **PGL Divided** component when the **X/Y** on the **Dynamic Settings** shows **0,0**.
10. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Exercise 12b: ***(This will be based on stations 703+00.00 thru 703+27.58)***

Insert Left and Right Pavement Components:

1. **Toggle** off the **Apply Affixes** check box in the **Dynamic Settings** dialog.
2. In the **FLUG2010.itl** file, **navigate** to the **FDOT > Component > Pavement > Travel Lanes** folder.
3. **Drag** and **right click** the **12' Travel Lane** to bring up the **popup menu** and select **Mirror**.
4. **Drop** the **12' Travel Lane** component into the **US90_FLUG2010_CrossOver_Median Template** by lining the **PVT_EOP_IN** point of the **12' Travel Lane** component with the **RT_PVT_XOVER_OUT** point of the **US90_FLUG2010_CrossOver_Median Template**.
5. **Navigate** to the **FDOT > Component > Pavement > Travel Lanes > Base** folder.
6. **Drag** and **drop** the **Base 12' 2%** component into the **US90_FLUG2010_CrossOver_Median Template** by lining the **PVT_BASE_TOP_IN** point of the **Base 12' 2%** component with the **RT_PVT_XOVER_BOT_OUT** point of the **US90_FLUG2010_CrossOver_Median Template**.
7. **Double click** the **LT_PVT_EOP_OUT** point to **configure** with the **Point Properties** dialog.
8. **Set** the **Constraint 1 Value** to **-28'** and tab out of the field. (The **value** will change to **-28.0**.)
9. **Change** the **Labels** to **EOP_WidthOutLt** and **EOP_SlopeOutLt**.
10. **Click** the **Apply** button to apply the changes to the point.
11. **Click** the **Next** button to select the **next point** to **configure** with the **Point Properties** dialog.
12. **Change** the **Label** to **EOP_PvtThickLt**.
13. **Click** the **Apply** button to apply the changes to the point.
14. **Click** the **Close** button to close the **Point Properties** dialog.
15. **Double click** the **LT_PVT_BASE_BOT_OUT** point to **configure** with the **Point Properties** dialog.
16. **Change** the **Label** to **EOP_BaseThickLt**.
17. **Click** the **Apply** button to apply the changes to the point.
18. **Click** the **Close** button to close the **Point Properties** dialog.
19. **Double click** the **RT_PVT_EOP_OUT** point to **configure** with the **Point Properties** dialog.
20. **Set** the **Constraint 1 Value** to **-28'** and tab out of the field. (The **value** will change to **-28.0**.)
21. **Click** the **Apply** button to apply the changes to the point.
22. **Click** the **Close** button to close the **Point Properties** dialog.
23. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Exercise 12c: ***(This will be based on station range 703+00.00 thru 703+27.58)***

Insert Left Outside and Right Outside Curb and Sidewalk Components:

1. In the **FLUG2010.itl** file, **navigate** to the **FDOT > Typical Section – Sub Sets > Undivided** folder.
2. **Right click** on the **Travel Lane w/ Base & Curb Base** component and **select Copy**.
3. **Right click** on the **FLUG2010** folder and **select Paste**.
4. **Double click** on the copied **Travel Lane w/ Base & Curb Base** component to make it the active template.
5. **Right click** in a blank area on the grid to bring up the **popup menu**.
6. **Select Delete Components**.
7. **Draw** a line through the **Pavement** and **Base** components.
8. **Right click** the **Curb Tie Point** (green point on the curb lip) and select **Change Template Origin**.
9. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.
10. **Double click** the **US90_FLUG2010_CrossOver_Median Template** to make it the active template.
11. **Leave** the **Apply Affixes** check box in the **Dynamic Settings** dialog.
12. **Drag** and **drop** the copied **Travel Lane w/ Base & Curb Base** component into the **US90_FLUG2010_CrossOver_Median Template** by lining the **Curb Tie Point** (green point on the curb lip) of the **Travel Lane w/ Base & Curb Base** component with the **RT_PVT_EOP_OUT** point of the **US90_FLUG2010_CrossOver_Median Template**.
13. Use the **mouse wheel to zoom** into the right **Type F Curb**.
14. **Double click** on the yellow **RT_CURB_FL_OUT** point to access the **Point Properties** dialog.
15. **Set** the **Constraint 2 Type** to **Vector Offset**.
16. **Click** the **Target button**  next to the **Parent 1** field and select the **RT_PVT_XOVER_OUT** point.
17. **Click** the **Target button**  next to the **Parent 2** field and select the **RT_PVT_EOP_OUT** point.
18. **Click** the **Apply** button to apply the changes to the point.
19. **Click** the **Close** button to close the **Point Properties** dialog.
20. Use the **mouse wheel to zoom** into the left **Type F Curb**.
21. **Double click** on the yellow **LT_CURB_FL_OUT** point to access the **Point Properties** dialog.
22. **Set** the **Constraint 2 Type** to **Vector Offset**.
23. **Click** the **Target button**  next to the **Parent 1** field and select the **LT_PVT_XOVER_OUT** point.

24. **Click** the **Target button**  next to the **Parent 2** field and select the **LT_PVT_EOP_OUT** point.
25. **Click** the **Apply** button to apply the changes to the point.
26. **Click** the **Close** button to close the **Point Properties** dialog.
27. Use the **mouse wheel to zoom** into the right **Sidewalk**.
28. **Double click** on the yellow **LT_SW_FRONT_TOP_OUT** point to access the **Point Properties** dialog.
29. **Set** the **Constraint 2 Type** to **Horizontal**.
30. **Click** the **Target button**  next to the **Parent 1** field and select the **RT_CURB_BACK_OUT** point.
31. **Set** the **Value** to **0.0**.
32. **Set** the **Range** to **-10.0**.
33. **Click** the **Apply** button to apply the changes to the point.
34. **Click** the **Close** button to close the **Point Properties** dialog.
35. Use the **mouse wheel to zoom** into the left **Sidewalk**.
36. **Double click** on the yellow **RT_SW_FRONT_TOP_OUT** point to access the **Point Properties** dialog.
37. **Set** the **Constraint 2 Type** to **Horizontal**.
38. **Click** the **Target button**  next to the **Parent 1** field and select the **LT_CURB_BACK_OUT** point.
39. **Set** the **Value** to **0.0**.
40. **Set** the **Range** to **10.0**.
41. **Click** the **Apply** button to apply the changes to the point.
42. **Click** the **Close** button to close the **Point Properties** dialog.
43. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Exercise 12d: ***(This will be based on station range 703+00.00 thru 703+27.58)***

Insert End Condition Components:

1. In the **FLUG2010.itl** file, **navigate** to the **FDOT > End Conditions > Cut & Fill** folder.
2. **Leave** the **Apply Affixes** check box in the **Dynamic Settings** dialog.
3. **Navigate** to the **US90 FDOT > End Conditions > Cut & Fill** folder.
4. **Drag** and **drop** the **FDOT Standard Cut & Fill** component into the **US90_FLUG2010_CrossOver_Median Template** by lining the **TP** point of the **FDOT Standard Cut & Fill** component with the **RT_BUFFER_OUT** point of the **US90_FLUG2010_CrossOver_Median Template**.
5. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.
6. **Click** the **Test** button to test the **End Condition**.
7. **Highlight** the **<Active > - Surface** in the **Available Targets** window.
8. **Click** the **Draw** button.
9. Move the cursor on the grid and test the **End Condition** by moving the Active Surface up and down on the template.
10. **Change** the **slope** in the **Use Surface Slope field** and **click** the **Draw** button again to test the **End Condition**.
11. **Click** the **Close** button on the **Test End Conditions** dialog.
12. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Exercise 12e: ***(This will be based on station range 703+27.65 thru 705+16.83)***

Remove Cross Over and Insert Traffic Separator Component:

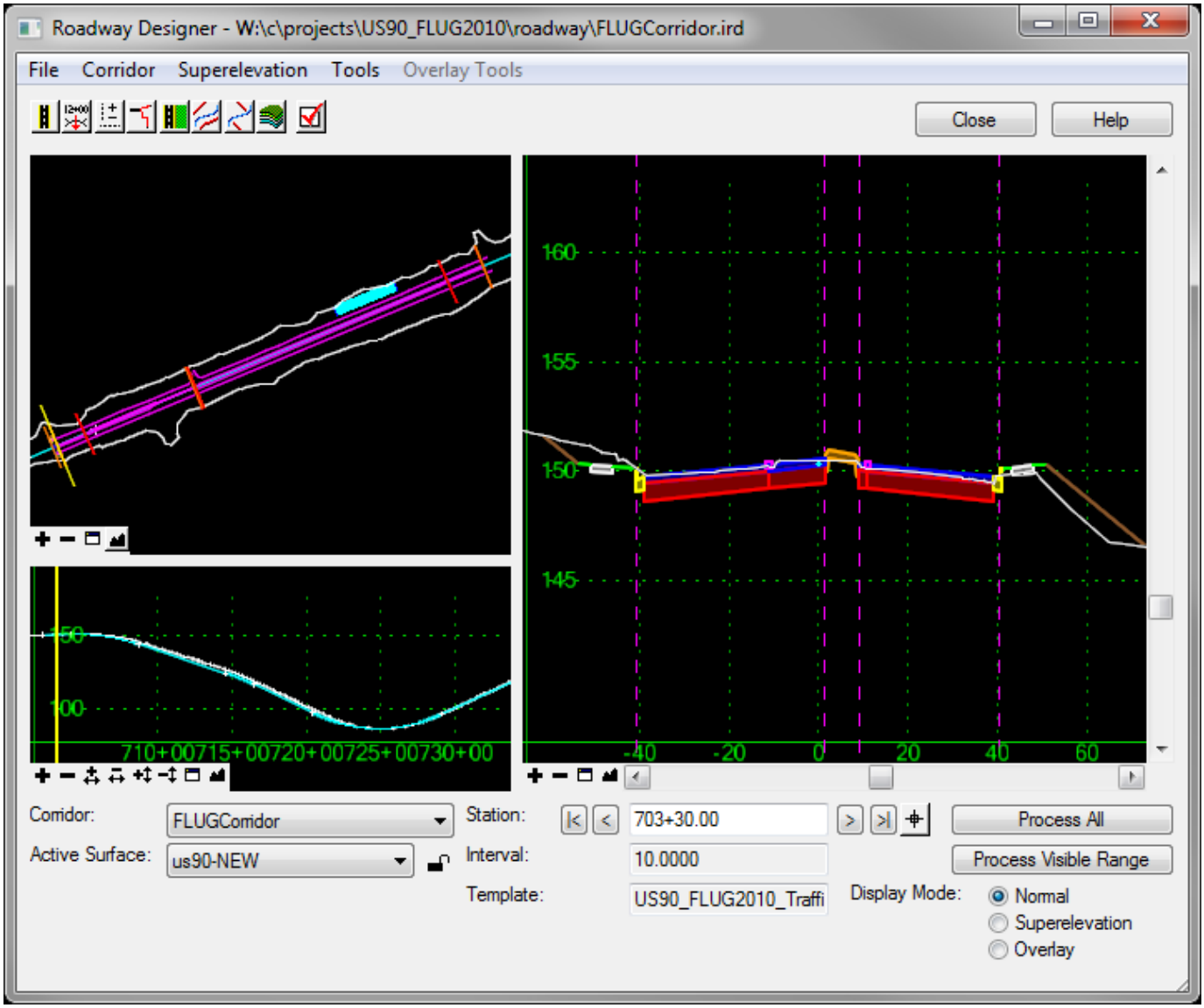
1. **Right click** on the **US90_FLUG2010_CrossOver_Median Template** and select **Copy.**
2. **Right click** on the **FLUG2010** folder and select **Paste**.
3. **Right click** on the **US90_FLUG2010_CrossOver_Median1 Template** and select **Rename.**
4. Type in **US90_FLUG2010_ TrafficSeparator _Median** and **double click** to make it active.
5. Use the **mouse wheel to zoom** into the **Cross Over** component.
6. **Right click** on a blank part of the grid anywhere and select **Delete Component.**
13. **Draw** a '**V**' through the left and right **CrossOver** components.
7. **Toggle** off **Apply Affixes** check box in the **Dynamic Settings** dialog.
8. **Navigate** to the **FDOT > Components > Medians** folder.
9. **Click** the **Top Outside Left Widening Pavement** point in the **Preview Window** to change the insertion point.
10. **Drag** and **drop** the **Traffic Separator** component into the **US90_FLUG2010_ TrafficSeparator _Median Template** by lining the **LT_PVT_EOP_IN** point of the **Traffic Separator** component with the **LT_PVT_XOVER_OUT** point of the **US90_FLUG2010_ TrafficSeparator _Median Template**.
11. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Exercise 12f: ***(This will be based on station range 705+16.84 thru 712+46.87)***

Remove Cross Over and Insert Curb & Gutter Median Component:

1. **Right click** on the **US90_FLUG2010_CrossOver_Median Template** and select **Copy.**
2. **Right click** on the **FLUG2010** folder and select **Paste**.
3. **Right click** on the **US90_FLUG2010_CrossOver_Median1 Template** and select **Rename.**
4. Type in **US90_FLUG2010_ Curb_Median** and **double click** to make it active.
5. Use the **mouse wheel to zoom** into the **Cross Over** component.
6. **Right click** on a blank part of the grid anywhere and select **Delete Component.**
7. **Draw** a '**V**' through the left and right **CrossOver** components.
8. **Toggle** off **Apply Affixes** check box in the **Dynamic Settings** dialog.
9. **Navigate** to the **FDOT > Components > Medians** folder.
10. **Highlight** the **Curb Median** component.
11. **Click** the **Top Outside Left Widening Pavement** point in the **Preview Window** to change the insertion point.
12. **Drag** and **drop** the **Curb Median** component into the **US90_FLUG2010_Curb_Median Template** by lining the **LT_PVT_EOP_IN** point of the **Curb Median w/ Widening** component with the **LT_PVT_XOVER_OUT** point of the **US90_FLUG2010_Curb_Median Template**.
13. Use the **mouse wheel to zoom** into the left side of the **Type E Curb Pavement Widening** component.
14. **Double click** on the green **LT_CURB_TP_IN** point to access the **Point Properties** dialog.
15. **Set** the **Constraint 1 Value** to **0.0**.
16. **Click** the **Apply** button and then **click** the **Close** button.
17. Use the **mouse wheel to zoom** into the right side of the **Type E Curb Pavement Widening** component.
18. **Double click** on the yellow **RT_CURB_TP_IN** point to access the **Point Properties** dialog.
19. **Set** the **Constraint 2 Type** to **Vertical**.
20. **Click** the **Target button**  next to the **Parent 1** field and select the **RT_PGL_HANDLE** point.
21. **Click** the **Apply** button and then **click** the **Close** button.
22. **Navigate** to **File > Save** to save the changes to the **FLUG2010.itl Template Library**.

Roadway Designer Overview - Applying Templates & Create Model



Templates are used to create a **proposed model** of the roadway using the **Roadway Designer** tool. **Templates** are assigned to **station ranges** along the alignment which are called **Template Drops**.

The **Roadway Designer** connects the points of the **Template Drops** to create a **model** and subsequently a **surface** from the model.

Templates - Surface Models

The **top points** in the **surface model** are **triangulated** and all **subsurface points** are "**Exclude from Triangulation**".

Roadway Designer

The **Roadway Designer** combines **alignments**, **surfaces**, and **templates** to create a **model** of the proposed roadway. It is also where **superelevation** is created and applied to the design.

Roadway Designer requires certain **preferences** be set prior to accessing the tool. These **preferences** (**DDB**, **Plan Graphics**, **Geometry**, **DTM**) are stored the **preference file**.

The data set in **Roadway Designer** dialogs is saved in the **Roadway Design** file, which has the extension **IRD**.

The **Roadway Designer** dialog has three different **window viewing** areas. They represent the **plan**, **profile**, and **cross section** views of the design.

The views show only what is related to the design, not what is displayed in the MicroStation design file.

Plan View Window

The **Plan View** window is located in the upper left corner of the **Roadway Designer** dialog.

The location of the templates is displayed with respect to the corridor alignment and original ground surface, which are shown as short brown lines. The **Plan window** is linked to the other windows in **Roadway Designer** via **station positioning** of the design. The **station position** is shown as the longer yellow line.

Other graphics in this window include the **corridor centerline**, **original ground surface perimeter**, and **cut-fill lines**.

Profile View Window

The **Profile View** window is located in the lower left hand corner of the **Roadway Designer** dialog.

It displays the **Original ground surface line** and the **corridor's vertical alignment**. It is also linked to the **station position** of the design and that location is shown as a heavy vertical yellow line.

Cross Section View Window

The **Cross Section View window** is located on the right side of the **Roadway Designer** dialog. It displays the **Active surface line**, (typically, existing ground) and the **templates** as they are applied to the design.

Located directly below the **Cross Section** view window is an area that displays the current station being displayed and several buttons that step through the design, based on stationing.

Exercise 13:

Create a Corridor:

1. Open the **Roadway Designer** tool by clicking **the Roadway Designer** tool  button on the **Corridor Modeling** dialog**.**
2. **Navigate** to **Corridor > Corridor Management** to open the **Manage Corridors** dialog or **click** the **Manage Corridors** button  .
3. Set the **Manage Corridors** dialog as follows:

   Name: **FLUG Corridor**
   Type: **Alignment**
   Horizontal Alignment: **CLCON**
   Vertical Alignment: **CLCON-T**
   Limits Station Start: **703+00.00**
   Limits Station Start: **732+29.55**
4. **Click** the **Add button** in the top right corner of the **Manage Corridors** dialog to add the corridor to the Corridors list box.
5. **Click** the **Close** button to close the **Manage Corridors** dialog.
6. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Template Library Synchronization

When a **template** is applied to a **station** using the **Template Drops** command, the template is copied from the **template library** to the roadway design. **Templates** can be revised in the **Roadway Designer** or in the **template library**. This allows the designer to make minor changes to a **template** without affecting the **template library**.

The **Synchronize** with **Library** button is used to update the **template** stored in the roadway design file with the **template** stored in the **template library**. This is normally done when a change is made to a **template** in the **template library** and that change is needed in a previously created roadway design. To **synchronize** a **template**, highlight a **template drop** and click the **Synchronize with Library** button.

Template Drop Indicators

If the **Template Name** is **red** in the **template drops** dialog stored in the **Roadway Designer** means it does not match the **template** stored in the **Template Library**. If the **Template Name** is **blue**, that **template** does not exist in the **template library**. If the **IRD** or **ITL** is **red** in the **Revised** column, the **template** has been edited in the **Roadway Designer** or the **template library** respectively, and is not the one originally used to add that **template drop**.

Template Revisions

If a modification is desired for an **individual station** along the **corridor**, **double-click** the **Cross Section View window** when that **station** is displayed. This displays the **Create Template** dialog. **Edit** the **template** in the **Create Template** dialog and click **OK**. All changes to the **template** are stored in the roadway design file and the **template library** is not changed. The **edited station** is listed in the **Template Drops** dialog as **single station**. The **modified station** is also displayed as a **green line** in the **Plan View** window. **Single station modifications** are normally done when the design is nearing completion and only minor refinements are desired.

Exercise 14a: ***(This will be based on station range 703+00.00 thru 703+27.58)***

Create Template Drops:

1. Navigate to **Corridor > Template Drops** to open the **Template Drops** dialog or click the **Template Drops** button  .
2. Set the **Template Drops** dialog as follows:

   Corridor: **FLUG Corridor**
   Station: **703+00.00**
   Interval: **10.00**
3. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
4. Highlight the **US90_FLUG 2010_CrossOver_Median Template**.
5. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_CrossOver_Median Template** to the **Current Template Drops** list box.
6. **Change** the **Station** to **703+27.58**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_CrossOver_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_CrossOver_Median Template** to the **Current Template Drops** list box.

Exercise 14b: ***(This will be based on station range 703+27.65 thru 705+16.83)***

Create Template Drops:

1. **Change** the **Station 703+27.65**.
2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_TrafficSeparator_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_TrafficSeparator_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_TrafficSeparator_Median Template** row to enable transitioning.
6. **Change** the **Station** to **705+16.83**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_TrafficSeparator_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_TrafficSeparator_Median** to the **Current Template Drops** list box.

Exercise 14c: ***(This will be based on station range 705+16.84 thru 712+46.87)***

Create Template Drops:

1. **Change** the **Station 705+16.84**.
2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_Curb_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_Curb_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_Curb_Median Template** row to enable transitioning.
6. **Change** the **Station** to **712+46.87**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_Curb_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_Curb_Median Template** to the **Current Template Drops** list box.

Exercise 14d: ***(This will be based on station range 712+49.08 thru 712+60.00)***

Create Template Drops:

1. **Change** the **Station 712+49.08**.
2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_CrossOver_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_CrossOver_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_ CrossOver_Median Template** row to enable transitioning.
6. **Change** the **Station** to **712+59.54**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_CrossOver_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_CrossOver_Median Template** to the **Current Template Drops** list box.

Exercise 14e: ***(This will be based on station range 712+60.20 thru 729+46.99)***

Create Template Drops:

1. **Change** the **Station 712+60.20**.
2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_Curb_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_Curb_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_Curb_Median Template** row to enable transitioning.
6. **Change** the **Station** to **729+46.99**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_Curb_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_Curb_Median Template** to the **Current Template Drops** list box.

Exercise 14f: ***(This will be based on station range 729+47.00 thru 731+86.15)***

Create Template Drops:

1. Set **Change** the **Station 729+47.00**.
2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_TrafficSeparator_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_TrafficSeparator_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_TrafficSeparator_Median Template** row to enable transitioning.
6. **Change** the **Station** to **731+86.15**.
7. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
8. Highlight the **US90_FLUG 2010_TrafficSeparator_Median Template**.
9. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_TrafficSeparator_Median** to the **Current Template Drops** list box.

Exercise 14g: ***(This will be based on station range 731+86.25 thru the end of the Corridor)***

Create Template Drops:

1. Set the **Template Drops** dialog as follows:

   Corridor: **FLUG Corridor**
   Station: **731+86.25**
   Interval: **10.00**

2. In the **Library Templates** section of the **Template Drops** dialog, navigate to **FLUG2010** folder.
3. Highlight the **US90_FLUG 2010_CrossOver_Median Template**.
4. **Click** the **Add button** in the top right corner of the **Template Drops** dialog to add the **US90_FLUG 2010_CrossOver_Median Template** to the **Current Template Drops** list box.
5. **Click** in the **Enable Transition** column on the **US90_FLUG 2010_CrossOver_Median Template** row to enable transitioning.
6. **Click** the **Close** button to close the **Manage Corridors** dialog.
7. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Multiple Template Drops

Template transitions occur between **templates** that have different names in the **Template Drops** dialog. To hold a **template cross section** through a **station range**, assign the **template** at its **starting station** and assign the same **template** again at the **station** where it starts its **transition**.

Template Transitioning

The design of the **surface model** will often call for **multiple templates** that vary throughout the **corridor**. Whenever two or more different **templates** are applied to a **single corridor**, **transitioning** between the **templates** occurs. **Templates** can be connected by their points. If the **template points** are constrained in a manner that prohibits the **template transition**, they can be **edited** to make a logical connect to allow **proper transitioning**.

Template Transition Areas

When adding more than one **template** using the **Template Drops** command, **template transition** areas are displayed in the **Roadway Designer's Plan View** window. They are shown as colored rectangles between the **template drops**. **Template drops** are shown as transverse brown colored lines.

Transition Area Colors

The color of the **transition areas** indicate the condition of the **transition** with respect to how the points are connected. **Template points** of two different **templates** are connected automatically if they have the same point names. This is the most desirable condition.

If the **point names** are different or if the number of **points** between the two **templates** are not the same, then the **point connection** must be manually specified for each **transition**. Regardless of the condition, each **transition area** must be verified prior to processing. **Template point constraints** greatly affect the **transitioning** results.

- A red color transition means that none of the template points are connected because the point names between the two templates are not similar.
- A yellow color transitions means that some of the points are connected by similar name, but connections still need to be made.
- A light blue color means that not all the points are connected, but the transition has been reviewed.
- A dark blue color means all the points are connected and reviewed.

Transition Verification

To review the **transition areas**, double-click on the **transition area** in the **Plan View** window to display the **Edit Transition** dialog which shows the **point connections** between the two **templates**. **Template points** which have similar names will be connected where as **Template points** that are not connected will show as bold colored **points**. **End condition** components are not shown or edited during this process.

Exercise 15a: ***(This will be based on station range 703+27.58 thru 703+27.65)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

1. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 703+27.58** and **703+27.65**.
2. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
3. Use the mouse wheel to zoom in to the left side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
4. **Click** the **Bold Red RT_TS_LT_TP point** and **click** the **Bold Red PVT_CROWN** in the **Template Drop** of the **US90_FLUG 2010_CrossOver_Median Template** to draw a **Connecting Line** between these points.
5. Use the mouse wheel to zoom in to the right side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
6. **Click** the **Bold Red RT_TS_RT_TP point** and **click** the **Red PVT_CROWN** in the **Template Drop** of the **US90_FLUG 2010_CrossOver_Median Template** to draw a **Connecting Line** between these points.
7. **Repeat** steps **3 thru 6** for the following **points**:

Template from	Point from	Template to	Point to
TrafficSeparator	**LT_TS_PVT_BOT_IN**	**CrossOver**	**PVT_BOT_CNTR**
TrafficSeparator	**LT_TS_BASE_BOT_IN**	**CrossOver**	**PVT_BOT_CNTR**
TrafficSeparator	**RT_TS_PVT_BOT_IN**	**CrossOver**	**PVT_BASE_BOT_CNTR**
TrafficSeparator	**RT_TS_BASE_BOT_IN**	**CrossOver**	**PVT_BASE_BOT_CNTR**

8. **Click** the **OK** button.
9. **Read** and then **click** the **OK** button on the **Reminder** dialog.
10. **Click** the **OK** button.
11. **Click** the **Close** button to close the **Manage Corridors** dialog.
12. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 15b: ***(This will be based on station range 705+16.83 thru 705+16.84)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

1. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 705+16.83** and **705+16.84**.
2. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
3. Use the mouse wheel to zoom in to the left side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
4. **Click** the **Bold Red RT_TS_LT_TP point** and **click** the **Bold Red LT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
5. Use the mouse wheel to zoom in to the right side of the **Template Drop** of the **US90_FLUG 2010_ TrafficSeparator _Median Template**.
6. **Click** the **Bold Red RT_TS_RT_TP point** and **click** the **Red RT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
7. **Repeat** steps **3 thru 6** for the following **points**:

Template from	Point from	Template to	Point to
TrafficSeparator	**LT_TS_PVT_BOT_IN**	**Curb_Median**	**LT_PVT_PGL_BOT_IN**
TrafficSeparator	**LT_TS_BASE_BOT_IN**	**Curb_Median**	**LT_ PVT_PGL_BASE_BOT_IN**
TrafficSeparator	**RT_TS_PVT_BOT_IN**	**Curb_Median**	**RT_PVT_PGL_BOT_IN**
TrafficSeparator	**RT_TS_BASE_BOT_IN**	**Curb_Median**	**RT_ PVT_PGL_BASE_BOT_IN**

8. **Click** the **OK** button.
9. **Read** and then **click** the **OK** button on the **Reminder** dialog.
10. **Click** the **OK** button.
11. **Click** the **Close** button to close the **Manage Corridors** dialog.
12. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 15c: ***(This will be based on station range 712+46.87 thru 712+49.08)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

1. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 712+46.87** and **712+49.08**.
2. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
3. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
4. **Click** the **Bold Red PVT CROWN point** and **click** the **Bold Red LT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
5. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
6. **Click** the **Bold Red PVT_BOT_CNTR point** and **click** the **Red LT_PVT_PGL_BOT_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
7. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
8. **Click** the **Bold Red PVT_BASE_BOT_CNTR point** and **click** the **Red LT_ PVT_PGL_BASE_BOT_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
9. **Click** the **OK** button.
10. **Read** and then **click** the **OK** button on the **Reminder** dialog.
11. **Click** the **OK** button.
12. **Click** the **Close** button to close the **Manage Corridors** dialog.
13. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 15d: ***(This will be based on station range 712+60.00 thru 712+60.20)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

14. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 712+60.00** and **712+60.20**.
15. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
16. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
17. **Click** the **Bold Red PVT CROWN point** and **click** the **Bold Red RT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
18. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
19. **Click** the **Bold Red PVT_BOT_CNTR point** and **click** the **Red RT_PVT_PGL_BOT_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
20. Use the mouse wheel to zoom in to the center of the **Template Drop** of the **US90_FLUG 2010_ CrossOver_Median Template**.
21. **Click** the **Bold Red PVT_BASE_BOT_CNTR point** and **click** the **Red RT_ PVT_PGL_BASE_BOT_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
22. **Click** the **OK** button.
23. **Read** and then **click** the **OK** button on the **Reminder** dialog.
24. **Click** the **OK** button.
25. **Click** the **Close** button to close the **Manage Corridors** dialog.
26. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 15e: ***(This will be based on station range 729+46.99 thru 729+47.00)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

13. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 729+46.99** and **729+47.00**.
14. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
15. Use the mouse wheel to zoom in to the left side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
16. **Click** the **Bold Red RT_TS_LT_TP point** and **click** the **Bold Red LT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
17. Use the mouse wheel to zoom in to the right side of the **Template Drop** of the **US90_FLUG 2010_ TrafficSeparator _Median Template**.
18. **Click** the **Bold Red RT_TS_RT_TP point** and **click** the **Red RT_CURB_TP_IN** in the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** to draw a **Connecting Line** between these points.
19. **Repeat** steps **3 thru 6** for the following **points**:

Template from	Point from	Template to	Point to
TrafficSeparator	**LT_TS_PVT_BOT_IN**	**Curb_Median**	**LT_PVT_PGL_BOT_IN**
TrafficSeparator	**LT_TS_BASE_BOT_IN**	**Curb_Median**	**LT_ PVT_PGL_BASE_BOT_IN**
TrafficSeparator	**RT_TS_PVT_BOT_IN**	**Curb_Median**	**RT_PVT_PGL_BOT_IN**
TrafficSeparator	**RT_TS_BASE_BOT_IN**	**Curb_Median**	**RT_ PVT_PGL_BASE_BOT_IN**

20. **Click** the **OK** button.
21. **Read** and then **click** the **OK** button on the **Reminder** dialog.
22. **Click** the **OK** button.
23. **Click** the **Close** button to close the **Manage Corridors** dialog.
24. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 15f: ***(This will be based on station range 731+86.15 thru 731+86.25)***

Transitioning between Template Drops:

(Maintain the FLUG corridor)

13. In the **Plan View Window**, use the mouse wheel to zoom in to the **Template Drop Transition** at **Stations 731+86.15** and **731+86.25**.
14. **Double click** on the **yellow transition area** between the stations to access the **Edit Transition** dialog.
15. Use the mouse wheel to zoom in to the left side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
16. **Click** the **Bold Red RT_TS_LT_TP point** and **click** the **Bold Red PVT_CROWN** in the **Template Drop** of the **US90_FLUG 2010_CrossOver_Median Template** to draw a **Connecting Line** between these points.
17. Use the mouse wheel to zoom in to the right side of the **Template Drop** of the **US90_FLUG 2010_TrafficSeparator_Median Template**.
18. **Click** the **Bold Red RT_TS_RT_TP point** and **click** the **Red PVT_CROWN** in the **Template Drop** of the **US90_FLUG 2010_CrossOver_Median Template** to draw a **Connecting Line** between these points.
19. **Repeat** steps **3 thru 6** for the following **points**:

Template from	Point from	Template to	Point to
TrafficSeparator	**LT_TS_PVT_BOT_IN**	**CrossOver**	**PVT_BOT_CNTR**
TrafficSeparator	**LT_TS_BASE_BOT_IN**	**CrossOver**	**PVT_BOT_CNTR**
TrafficSeparator	**RT_TS_PVT_BOT_IN**	**CrossOver**	**PVT_BASE_BOT_CNTR**
TrafficSeparator	**RT_TS_BASE_BOT_IN**	**CrossOver**	**PVT_BASE_BOT_CNTR**

20. **Click** the **OK** button.
21. **Read** and then **click** the **OK** button on the **Reminder** dialog.
22. **Click** the **OK** button.
23. **Click** the **Close** button to close the **Manage Corridors** dialog.
24. Navigate to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Parametric Constraints

Parametric Constraints are used to **override constraint values**. To create **Parametric Constraints**, first **Edit** the **Template Points** and **key-in** a name in the **Labels** field to assign to a specific constraint value. To assign a **Parametric Constraint** to a **station range**, select **Tools > Parametric Constraints** from the **Roadway Designer** dialog and modify the **start** and **end values**.

Creating Superelevation

The **Create Superelevation** wizard steps through the steps necessary to create and apply **superelevation** to the **corridor**. The **Table Wizard** dialog is used to input the general **superelevation** data. The **rate table** is an **ASCII** file that contains **superelevation** rates and **transition** lengths based on design speed.

The **FDOT** recommended method for **creating superelevation** is to use the **Table Wizard** and utilize the **FDOT** configured **ASCII rate tables**. To access the tool select **Create Superelevation Wizard > Table**... on the **Roadway Designer** dialog.

Template Point Controls

Template point controls are used to override the normal **horizontal** and **vertical** locations of **template points** during the **modeling** process. These **overrides** are accomplished by assigning **template point** names to **alignments**. **Surface features** can also be used to **control template points**.

Point Controls are used to assign **horizontal** and/or **vertical controls** to any **template point**. **Point controls** automatically **override** all **template point constraints** on the **point** being controlled.

End Condition Exceptions

End Condition Exceptions are used to **override end conditions** along a **range** of **corridor stations**. Select **Corridor > End Condition Exceptions**. This brings up the **End Condition Exceptions** dialog. **Enter** the **station range** and specify which **side of the road** is being **overridden**. **Click** the **Edit** button to edit the **end condition**. This brings up a dialog box similar to the **Create Template** dialog. However, the dialog shows only the **end conditions** on the specified override side. All other non-end condition components are shown as dashed lines.

Sometimes the **end conditions** are not desired in the design. For example, when the **corridor** passes through an intersection or crosses a bridge. To eliminate **end conditions** for a range of stations, create an **end condition exception** and enable the **Backbone Only** option.

End Condition Exceptions are displayed in the **Plan View** window as a cyan colored shape. **Double-click** the shape to access the **End Condition Exceptions** dialog.

Exercise 15:

Implement Point Controls:

1. Navigate to **Corridor > Point Controls** to open the **Point Controls** dialog or click the **Point Controls** button  .
2. Set the **Point Controls** dialog as follows:

   Point: **LT_PVT_XOVER_OUT**
   Mode: **Vertical**
   Control Type: **Alignment**
   Horizontal Alignment: **CLCON**
   Vertical Alignment: **CLCON-T**
   Station Limits Start: **703+00.00**
   Station Limits Start: **732+29.55**
3. **Click** the **Add button** in the top right corner of the **Point Controls** dialog to add the **LT_PVT_XOVER_OUT Point Control** to the **Horizontal and Vertical Controls** list box.
4. Set the **Point Controls** dialog as follows:

   Point: **RT_PVT_XOVER_OUT**
   Mode: **Vertical**
   Control Type: **Alignment**
   Horizontal Alignment: **CLCON**
   Vertical Alignment: **CLCON-T**
   Station Limits Start: **703+00.00**
   Station Limits Start: **732+29.55**
5. **Click** the **Add button** in the top right corner of the **Point Controls** dialog to add the **RT_PVT_XOVER_OUT Point Control** to the **Horizontal and Vertical Controls** list box.
6. **Click** the **Close** button to close the **Point Controls** dialog.
7. **Navigate** to **File**, and select **Save** to save the changes to the **FLUG Corridor.ird** file.

Exercise 16: ***(This will be based on station range 722+20.00 thru 726+45.00)***

Applying End Condition Exception:

1. **Navigate** to **Corridor > End Condition Exceptions** to access the **End Condition Exceptions** dialog or click the **End Condition Exceptions** button  .
2. In the **Description** field, type **Left Retaining Wall**.
3. **Set** the **Station Range Start** to **722+40.00** and **Stop 726+35.00**.
4. **Set** the **Apply To** radio button to **Left Override**.
5. **Click** the **Add** button to add the **End Condition Exception** to the **End Condition Exceptions** list.
6. **Click** the **Edit** button to edit the left side of the **Template Drop** of the **US90_FLUG 2010_Curb_Median Template** through the assigned **Station Range**.
7. **Right click** the **LT_4:1Fill** component and **select Delete Component** to delete the existing **End Condition**.
8. **Navigate** to the **FDOT > Component > Barriers & Retaining Walls**.
9. **Drag** and **drop** the **RW Permanent (5300 – 4 of 19) - Vertical** component and attach the green insertion point to the **LT_BUFFER_OUT** point of the **US90_FLUG 2010_Curb_Median Template**.
10. **Click** the **OK** button.
11. **Click** the **Close** button to close the **End Condition Exceptions** dialog.
12. **Double click** on the **Red Transition** area between stations **722+20.00** and **722+30.00**.
13. On the **End Condition Exceptions** dialog, type **Transition to Wall** in the **Description** field.
14. **Set** the **Station Range Start** to **722+20.00** and **Stop 722+30.00**.
15. **Set** the **Apply To** radio button to **Left Transition**.
16. **Click** the **Add** button to add the **End Condition Exception** to the **End Condition Exceptions** list.
17. **Click** the **Close** button to close the **End Condition Exceptions** dialog.
18. **Double click** on the **Red Transition** area between stations **726+45.00** and **726+50.00**.
19. On the **End Condition Exceptions** dialog, type **Transition from Wall** in the **Description** field.
20. **Set** the **Station Range Start** to **726+45.00** and **Stop 726+50.00**.
21. **Set** the **Apply To** radio button to **Left Transition**.
22. **Click** the **Add** button to add the **End Condition Exception** to the **End Condition Exceptions** list.
23. **Click** the **Close** button to close the **End Condition Exceptions** dialog.
24. **Navigate** to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 17: *(Optional Exercise)*

Display References:

1. Navigate to **Corridor > Display References** to open the **Display References** dialog or click the **Display References** button  .
2. Set the **Display References** dialog as follows:

   Display References Alignment: **EOP**
   Display as Right of Way: **Check ON**
3. **Click** the **Add button** in the top right corner of the **Display References** dialog to add the **EOP Alignment** to the **Display References** list box.
4. Set the **Display References** dialog as follows:

   Display References Alignment: **CGB**
   Display as Right of Way: **Check ON**
5. **Click** the **Add button** in the top right corner of the **Display References** dialog to add the **CGB Alignment** to the **Display References** list box.
6. Set the **Display References** dialog as follows:

   Display References Alignment: **CLCON**
   Display as Right of Way: **Check ON**
7. **Click** the **Add button** in the top right corner of the **Display References** dialog to add the **CLCON Alignment** to the **Display References** list box.
8. **Click** the **Close** button to close the **Display References** dialog.
9. **Double click** on the **Cross View grid** anywhere to open the **Editing Template** dialog to review the **Display References.**
10. **Click** the **Cancel** button to close the **Editing Template** dialog.
11. **Navigate** to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.

Exercise 18:

Create Surface:

1. Open the 3D **AMGMRD01.dgn** file to plot the 3D corridor in.
2. In the **Roadway Design** dialog, bottom right**, click** the **Process All** and review the design.
3. Navigate to **Corridor > Create Surface** to open the **Create Surface** dialog or click the **Create Surface** button  .
4. Set the **Create Surface** dialog as follows:

   Name: **FLUGSurface**
   General Options: **Check ON Empty Design Surface**
   Add Traverse Features: **Check ON**
   Add Traverse Features Style: **XS – Stabilization**
   Densify using Chord Height Tolereance: **Check ON both Horizontal and Vertical**
   Display Features in Plan View: **Check ON Components**
5. **Click** the **Apply button** in the top right corner of the **Create Surface** dialog to process the corridor and plot the **3D corridor** to the **AMGMRD01.dgn** file.
6. **Click** the **Close** button to close the **Results** dialog.
7. **Click** the **Close** button to close the **Create Surface** dialog.
8. **Navigate** to **File** > **Save** to save the **corridor** and create the **FLUG Corridor.ird** file.
9. **Click** the **Close** button to close the **Roadway Designer** dialog.

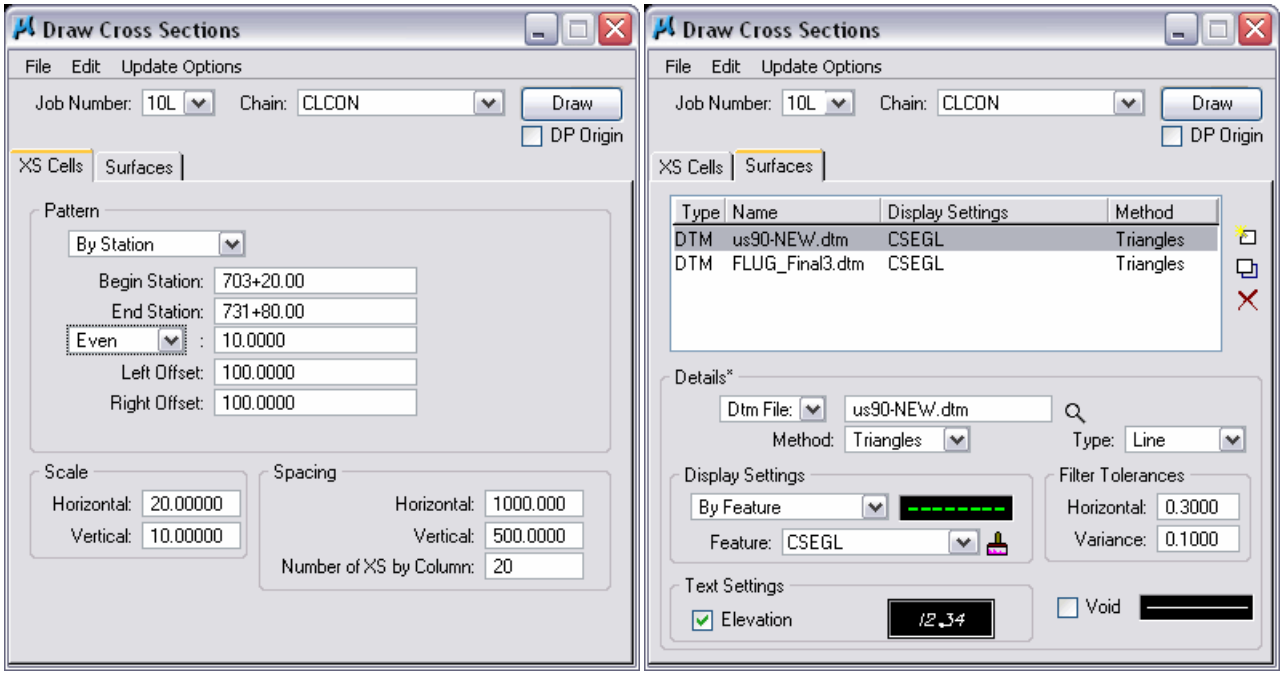
Exercise 19:

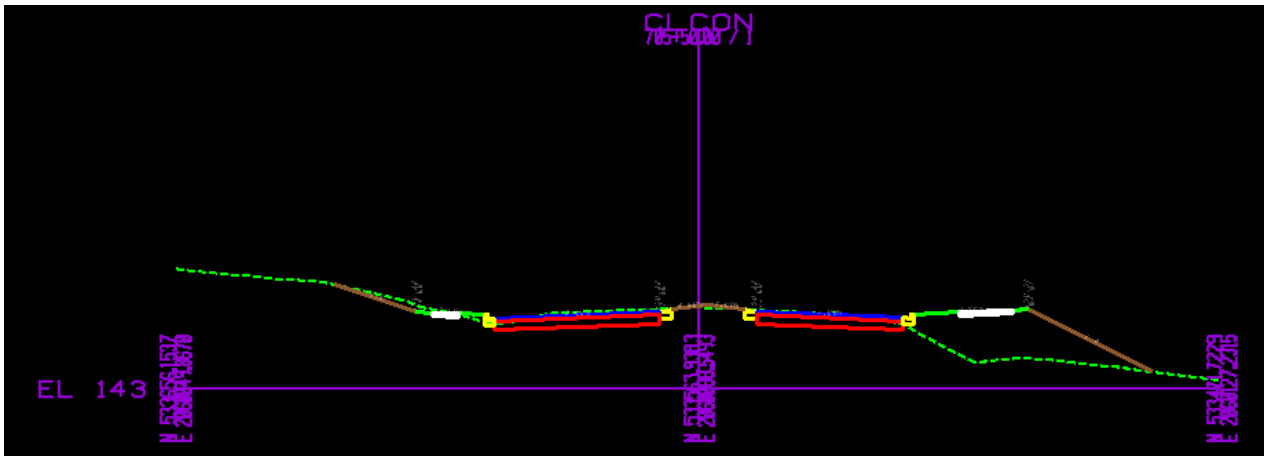
Drive Roadway:

1. Leave the **AMGMRD01.dgn** file open which is a 3d file to plot the 3D corridor in.
2. **Click** the **Fit View** button for the **Microstation Window view**.
3. **Rotate** the corridor to view in different perspectives.
4. On the **Corridor Modeling** dialog, click the **Drive Roadway** button  .
5. Set the **Drive Roadway** dialog as follows:

   Horizontal Alignment: **CLCON**
   Vertical Alignment: **CLCON-T**
   Horizontal Offset: **17.00**
   Vertical Offset: **7.0**
   Speed: **45**
   Frames per Second: **8**
   Start: **703+00.00**
   Stop: **732+29.55**
6. Move the **Corridor Modeling** dialog out of the way.
7. **Click** the **Run button** in the top right corner of the **Drive Roadway** dialog to ‘drive’ the section of the 3D model in the **AMGMRD01.dgn** file.
8. **Click** the **Close** button to close the **Drive Roadway** dialog.

Cross Section and Cross Sections Labeling Overview





Proposed Cross Sections

Generally, proposed cross sections were created using **criteria** after the existing ground sections were cut. The **Draw Cross Sections from Surfaces** tool is used to draw both the existing ground surface and proposed cross sections into a **MicroStation DGN** file.

Draw Cross Sections from Surfaces tool supports a **DTM** created by **Roadway Designer**.

Cutting Cross Sections

Accessing the Dialog

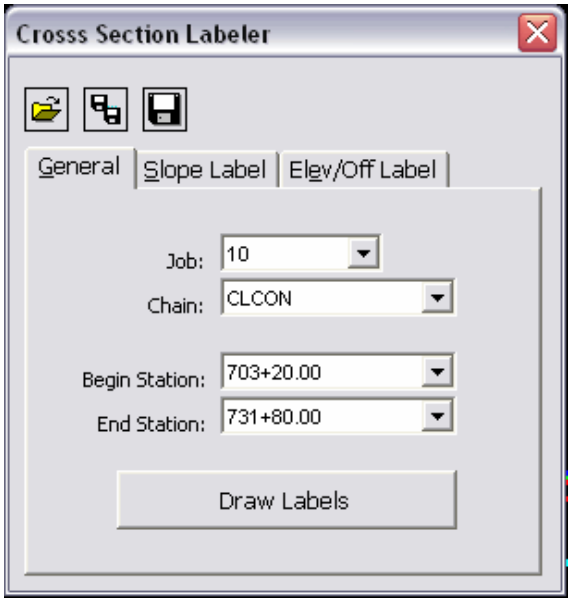
The dialog can be accessed from the **GEOPAK Road** tools or menus and also by clicking the **Draw Cross Sections from Surfaces** icon on the **Corridor Modeling** dialog. Each surface to be drawn must be added to the list box. The existing ground cross sections must be run in the **MicroStation DGN** file where the sections are to be drawn.

Cross Section Symbology

Proposed cross section symbology is controlled by **Roadway Designer** and is the same symbology that is used in **Roadway Designer** to display the design template. This symbology will also be used to draw the proposed cross sections. **Cross Section** point symbology is controlled by the active **MicroStation** settings when the cross sections are processed.

The settings for cutting cross sections needs to match the settings set for the **Template Drops** in **Roadway Designer**. If these settings do not match the cross sections that are cut will be an interpolation and could affect the earthwork.

Cross section labeling



A **cross section labeling tool** is provided for labeling the different **components** of the **template**. This was accomplished with **criteria**. The **cross section point labels** that are plotted from **Roadway Designer** when the **cross sections** are cut are used in the **labeling** process.

To **label** the **slope** of a **component** identify the two pieces of text that represent each **end** of the **component**. If a negative sign is desired in the label, identify the text point with the highest elevation first. To label an elevation and/or offset, only one text point needs to be selected.

Cross Section Labeling automates the **composition** and **placement** of **plan labels** onto **cross sections**. The **Cross Section Labeler** dialog is used to define where to **place labels**, **slope labels**, and **elevation/offset** of labels.

When the designer has defined the labels and clicks the **Draw Labels** button the software draws the labels for all selected points on the **cross sections** starting from the station defined as **Begin Station** to the station defined as the **End Station**.

If a **gpk file** exists in the **working directory**, the number of the **gpk job** is displayed, all the **chain names** in the **gpk** are listed, and the first chain having **cross section cells** is displayed. All the station region numbers are listed in the **Begin Station** and **End Station** combo boxes.

The dialog is accessed by clicking the **Cross Section Labeling** icon on the **Corridor Modeling** dialog.

General Tab: This is where the **Job Number**, **Chain Name**, and **Station range** are entered. There is also a "**Draw Labels**" button that is used to draw the labels after the remainder of the dialog is populated with the desired labels.

Slope Label Tab: A "**Start Point**" and "**End Point**" is selected by clicking the **ID** button next to the respective field then **identifying the desired piece of text**. Then set the **attributes** for the label by clicking **Symbology**. Once the information is entered **it must be added** to the list box.

Elev/Off Label Tab: This is where the designer can set the **elevation** and/or **offset** and the **symbology**. To **label** a point with **elevation** or **offset**, select by **clicking** the **ID** button next to the respective field then **identifying the desired piece of text**. Once the information is entered **it must be added** to the list box.

Draw Labels: To **Draw** the **labels** on **cross sections**, select the "**General**" tab and **click** the "**Draw Labels**" button. The **labels** are drawn on each **cross section**.

Preference File

The **dialog settings** can be saved in a **preference file** with a **XPL** that can be recalled for use on other **cross section files**.

Exercise 20:

Setup and Cut Cross Sections:

1. In **Microstation,** open the **RDXSRD01.dgn** file and ensure the **RDXSRD model** is the active model.
2. Open the **Draw Cross Section** tool by clicking the **Draw Cross Section from Surface**  button on the **Corridor Modeling** dialog**.**
3. **Set** the **Job Number** to **job10.gpk**.
4. **Set** the **Chain** to **CLCON**.
5. Set the **XSCells** tab as listed below:

Pattern:	**By Station**
	Begin Station: **703+00.00**
	End Station: **732+29.55**
	Even – 50.00
	Left Offset: **100.00**
	Right Offset: **100.00**
Scale:	Horizontal: **20.00**
	Vertical: **10.00**
Spacing:	Horizontal: **1000.00**
	Vertical: **500.00**
	Number of XS by Column: **20**

6. Set the **Surfaces** tab as listed below and **click** the **Add Surface**:

Details:	**DTM File: us90-NEW.dtm**
	Method: **Triangles**
	Type: **Line String**
Display Settings:	**By Feature**
	Feature: **CSEGL (Roadway Design > Cross Section Features > Cross Section > CSEGL Cross Section – Existing Ground Line)**
Filter Tolerances:	Horizontal: **0.3**
	Variance: **0.1**
Text Settings:	Elevation: **Check On**
	Symbology: Level - **TextXSElev_ex/ByLevel**
	Text Preferences: TH/TW**:** 0.009
	FT**: FDOT**
	Set Justification: **Center Bottom**
	Decimal**: 2**

7. Set the **Surfaces** tab as listed below and **click** the **Add Surface**:

Details:	**DTM File: us90-NEW.dtm**

8. **Navigate** to **File > Save As** and save the **Draw Cross Sections Settings** as **FlugXSections**.
9. **Click** the **Draw button** in the top right corner of the **Draw Cross Sections** dialog to draw the **cross section cell**, **existing ground** and the **proposed cross section features**.
10. **Click** the **Red 'X'** in the top right corner to close the **Draw Cross Sections** dialog.

Exercise 21:

Label Cross Sections:

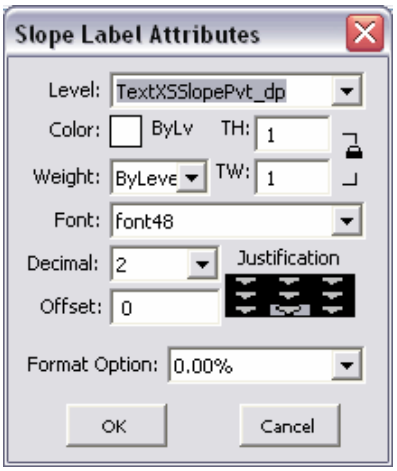
1. Select the **cross section cell** representing **703+00.00** in the **RDXSRD01.dgn** file.
2. Open the **Cross Section Labeling** tool by clicking the **Cross Section Labeling**  button on the **Corridor Modeling** dialog**.**

General Tab: (The tab should be set up if the 703+00.00 XSCELL was selected in the RDXSRD01.dgn.)

3. Select **Job Number job10.gpk**.
4. Select **Chain CLCON**.
5. **Click** the **Down Arrow button** next to the **Begin Station** field and select **703+00.00**.
6. **Click** the **Down Arrow button** next to the **End Station** field and select **732+00.00**.

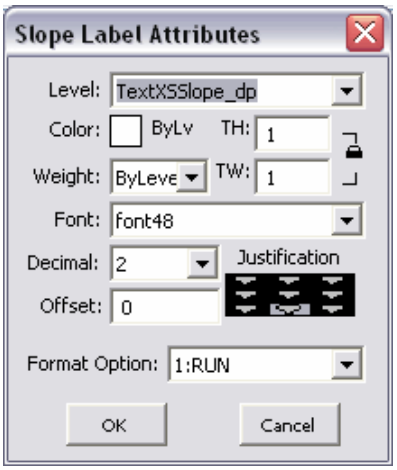
Pavement Slopes Label Tab:

7. Select the **Slope Label Tab**.
8. **Click** the **ID button** for the **Start Point**.
9. For the **Start Point double click** on the **FLUG Corridor-PVT_CROWN text**.
10. **Click** the **ID button** for the **End Point**.
11. For the **Start Point double click** on the **FLUG Corridor-LT_PVT_XOVER_OUT text**.
12. **Click** the **Symbology button** to set the symbology as follows:



13. **Click** the **OK** button to close the **Slope Label Attributes** dialog.
14. **Click** the **Add** button  to add the **Slope Label** to the **Start/End list box**.
15. **Repeat steps 7-14** for all **pavement segments**.
16. **Click** the **Save Settings to New Preference File** and name the file **FLUGLabels**.
17. **Click** the **ID button** for the **Start Point**.

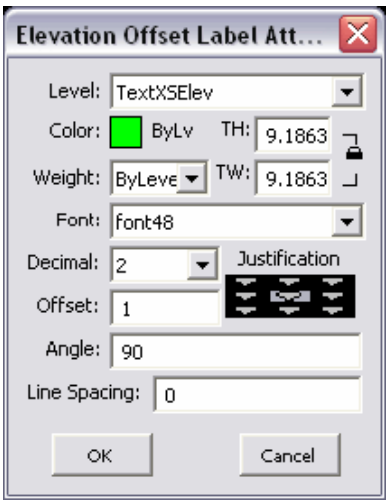
18. For the **Start Point double click** on the **FLUG Corridor-RT_BUFFER_OUT text**.
19. **Click** the **ID button** for the **End Point**.
20. For the **Start Point double click** on the **FLUG Corridor-RT_Fill text**.
21. **Click** the **Symbology button** to set the symbology as follows:



22. **Click** the **OK** button to close the **Slope Label Attributes** dialog.
23. **Click** the **Add** button  to add the **Slope Label** to the **Start/End list box**.
24. **Repeat steps 17-23** for all **End Conditions** (**Cut/Fill) slopes**.
25. **Click** the **Save Settings to an Open Preference File** to save the **Slope Settings**.

Elev/Off Label Tab:

26. Select the **Elev/Off Label Tab**.
27. Set the **Elevation** check box.
28. **Click** the **ID button** and select **Text** that represents the **Left PGL**.
    (FLUGCorridor - LT_PVT_XOVER_OUT).
29. **Toggle** on the **Offset** check box and **click** the **Symbology button** to set as follows:



30. **Click OK to close** the **Elevation Offset Label Attributes** dialog.
31. **Click** the **Add to list** button  .
32. Set the **Elevation** check box.
33. **Click** the **ID button** and select **Text** that represents the **Right PGL**. **(FLUGCorridor - RT_ PVT_XOVER_OUT)**.
34. **Toggle** on the **Offset** check box and **click** the **Symbology button** to set same as **step 29**.
35. **Click OK to close** the **Elevation Offset Label Attributes** dialog.
36. **Click** the **Add to list** button  .
37. **Click** the **Save Settings to an Open Preference File** to save the **Elevation/Offset Settings**.

General Tab:

38. Select the **General Tab**.
39. **Click** the **Draw Labels** to draw the labels on the cross sections.
40. **Review** the **Labels**.

    Note: *All Cross Sections will need to be reviewed and labels added where missing.*

41. **Exit MicroStation and Geopak**.

Introduction to Rendering

Rendering is the process of depicting a **3D model** through the display of **shaded surfaces**. How to approach **rendering** will depend largely on what is required as the finished result.

Changing the view display mode

The options can be set from the **View Attributes** dialog. Setting a view to a shaded mode lets you work in a **"rendered"** view.

> **Note:** *It can be difficult to determine the orientation of a model when viewed in wireframe display.*

Exercise 22:

Component Display – Filled Hidden Line:

1. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.
2. Under the **Presentation 'tab',** turn on the **Fill Attribute**.
3. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.
4. **Select** the **Filled Hidden Line** display style.
5. Review the **3D Model**.
6. **Repeat steps 3-5** for the following:

   Monochrome
   Smooth
   Transparent
   Illustration

Materials and Rendering

The **Material Editor** is used to **create materials** or **modify** a **material palette**. Select the **Define Materials** tool from the **Materials toolbox** to access the **Material Editor** or by double-clicking the **material preview** window in the **Apply Material** tool dialog, or when you select **Edit Material** in the **right-click menu** of the **material preview** window.

The **Materials** toolbox contains tools to define and apply materials to a **3D model**.

> **Note:** *Tools in a toolbox may not be visible by default. To see all tools, right-click in the toolbox and select Show All from the menu.*

Exercise 23:

Materials and Rendering:

1. Open the **amgmrd01.dgn** file.

Automatic Rendering:

2. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.
3. Under the **Presentation 'tab',** turn on the **Fill Attribute**.
4. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.
5. **Select** the **Smooth** display style.

> **Note:** ***FDOT*** *has already* ***configured materials*** *to be* ***assigned*** *to some* ***_px levels*** *in the* ***fdot_v8_levels.dgnlib****. In the* ***Manual Rendering*** *portion of this exercise,* ***overrides*** *will be set to those levels to change the* ***material assignments*** *in case the* ***configured materials*** *are undesirable.*

6. Review the **3D Model**.

Manual Rendering:

7. **Click** the **Rotate View** button  on the top of the **view window**.
8. **Click** and **drag** the **large white cross hair** and **snap** it to the **traffic separator** at the **beginning of the project**.
9. **Rotate** the **view** around the **beginning** of the **project**.
10. **Zoom** into the **right side** of the **roadway**.
11. From the **Tasks** tool palette, scroll to find the **Visualization Task**.

> **Note:** *If the* ***Tasks*** *tool palette is not visible, navigate to* ***Tools > Tasks*** *on the* ***MicroStation Menu Bar*** *and check on the* ***Tasks*** *tool palette.*

12. **Click** the **down arrow** on the **Visualization Title Bar**.

13. On the **Visualization** tool palette, right on the **Materials** tool palette. (Sixth (6th) tool palette down denoted by the letter '**A**'.)
14. From the **Materials** tool palette, select the **Define Materials** icon  to open the **Materials Editor** dialog. (First icon.)
15. **Select** the **Open Palette** icon to open the **Open Palette** dialog.
16. **Navigate** to the **c:\e\projects\US90_FLUG2010\symb** folder by **clicking** the **magnifying glass** next to the **Current Workspace** field.
17. **Select** the **FLUG2010.pal** file from the list and c**lick** the **OK** button.
18. **Expand** the **FLUG2010** palette in the **Palette tree** on the **left** of the **dialog**.
19. **Select** the **grass field material** in the **Palette tree**.
20. **Click** the **Assign Material** button on the **Material Editor Button Bar**.
21. **Click** the **Slopes** (Slopes_px level) in the **DGN/3D Model**.
22. **Review** the **DGN/3D Model**.
23. **Repeat steps 10-13** for the following:

Material	Component/3D Model	Level of Component
Concrete Sidewalk	**Sidewalk**	**Sidewalk_px**
Grass Median	**Utility Strip**	**ShldrUnpaved_px**
Curbing Rough	**Curb and Gutter**	**CandG_px**
Pavement New	**Pavement**	**XSGrdLine_px**
Concrete New	**Traffic Separator**	**TrafSeparator_px**
Gravel lt river Rock	**Pavement Base**	**Base_px**

Drape Elements

Referencing **2D** elements, the **Drape Elements** tool draws into a **3D** file maintaining their **X, Y coordinate** values, while modifying the **Z coordinate** coincident with a **TIN** model (plus optional offset).

> **Note:** *The tool must be invoked while in a **3D** file.*

Exercise 24:

Drape Elements – Pavement Markings:

1. Open the **amgmrd01.dgn** file.
2. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.
3. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.
4. **Select**the **Wireframe** display style.

Reference the dsgnsp01.dgn:

5. **Click** the **References** button  on the **Primary Tools** toolbar.
6. **Select Tools > Attach** from the **References** dialog.
7. **Navigate** to the local c**:\e\projects\US90_FLUG2010\signing** folder.
8. **Select** the **dsgnsp01.dgn** file and **click** the **Open** button.
9. **Close** the **References** dialog.

Drape Elements:

10. On the **Road Tools** toolbar, click the **DTM: DTM Tools** button  to load the **DTM Toolbar**.
11. **Click** and hold the **Drape Vertices** button  on the **DTM Toolbar**.
12. **Select** the **Drape Elements** from the menu to open the **Drape Elements** tool.
13. **Click** the **magnifying glass** next the **Element DGN** field.
14. **Navigate** to the local c**:\e\projects\US90_FLUG2010\signing** folder.
15. **Select** the **dsgnsp01.dgn** file and **click** the **Open** button.
16. **Click** the **magnifying glass** next the **TIN File** field.
17. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
18. **Select** the **FLUGSurface.tin** file and **click** the **Open** button.
19. **Select Line String** from the **Curvilinear Element As** drop down list.
20. **Set** the **Elevation Offset** to **0.20**.

21. **Set** the **Stroke Tolerances Linear** and **Curve** to **0.10**.

21. **Toggle** on the **Lv Names, Colors, Styles and Weights** check boxes in the Search Criteria portion of the dialog.

22. **Click** the **Select Levels** button  next to the **Lv Names** field and select the following **Levels**.

    Levels

    DirArrowsPavt
    PavtMessage
    PMStripe6W
    PMStripe6W(2-4)
    PMStripe6W(6-10)
    PMStripe6W(10-30)
    PMStripe6Y
    PMStripe6Y(2-4)
    PMStripe8W
    PMStripe12W
    PMStripe18W
    PMStripe18Y
    PMStripe24W
    RefPaintYel
    RPM2
    RPM4

23. For the **Colors, Styles and Weights**, click the **Select** button  next the appropriate fields and set to **ByLevel**.

24. **Click** the **Display** button to highlight the **DGN** elements and verify the pavement markings have been selected.

25. **Click** the **Undisplay** button to stop highlighting the selected elements.

26. **Click** the **Apply** button to **import** and **drape** the pavement markings on the **3D corridor**.

27. **Close** the **Drape Elements** tool.

28. **Click** the **References** button  on the **Primary Tools** toolbar.

29. **Toggle off** the display of the **dsgnsp01.dgn** file listed.

30. **Close** the **References** dialog.

31. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.

32. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.

33. **Select** the **Smooth** display style.

34. **Review** the **3D Model**.

Exercise 25:

Drainage – Prepare 3D Drainage File:

1. From the **Microstation Menu Bar**, select **File > Open**.
2. **Navigate** to the local c**:\e\projects\US90_FLUG2010\drainage** folder.
3. **Select** the **drprrd01_3D.dgn** file and **click** the **Open** button.
4. From the **Microstation Menu Bar**, select **Applications > GEOPAK > DRAINAGE > Drainage** to load the **Drainage Toolbar**.
5. **Select Project > Open** and n**avigate** to the local c**:\e\projects\US90_FLUG2010\drainage** folder.
6. **Select** the **US90_FLUG2010-drainage.gdf** file and **click** the **Open** button.

   Note: *The **Preferences > Project Components** may need to be set up prior to continuing.*
7. From the **Drainage Toolbar**, select **Networks > Active Network**.
8. **Select RDWY Network 1** from the **Select Active Network** dialog and **click** the **OK** button.
9. From the **Drainage Toolbar**, select **Components > Nodes > Update All**.
10. From the **Drainage Toolbar**, select **Components > Links > Update All**.
11. From the **Drainage Toolbar**, select **Components > Links > Update All**.
12. Put all the **drainage nodes** in a **Microstation Selection Set**.
13. From the **FDOT Menu Bar**, select **Actions > FDOT Adhoc Manger**.
14. **Click** the **OK** button on the **Information** dialog stating the number of selected elements with adhocs.
15. **Click** the **Add New** button and **Add** the following:

    Name: **Structure**
    Type: **String**
    Value: **Yes**
16. **Click** the **Set** button and **click the OK button** on the **confirmation** dialog.
17. **Click** the **Exit** button to close the **FDOT Adhoc Manager.**
18. From the **Drainage Toolbar**, select **Utilities > Display 3D**.
19. **Rotate the view** and delete the **2D drainage Links** and **Nodes**.

Reference the drprrd01.dgn:

20. Open the **amgmrd01.dgn** file.
21. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.

22. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.
23. **Select** the **Smooth** display style.
24. **Click** the **References** button  on the **Primary Tools** toolbar.
25. **Select Tools > Attach** from the **References** dialog.
26. **Navigate** to the local c**:\e\projects\US90_FLUG2010\drainage** folder.
27. **Select** the **drprrd01_3D.dgn** file and **click** the **Open** button.
28. **Close** the **References** dialog.
29. **Review** the **Corridor** and the **3D Drainage** components.

Exercise 26:

Clip Volume/Section Clipping:

1. **Click** the **References** button  on the **Primary Tools** toolbar.
2. **Select Tools > Attach** from the **References** dialog.
3. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
4. **Select** the **utexrd01.dgn** file and **click** the **Open** button.
5. **Close** the **References** dialog.
6. From the **Microstation Menu Bar**, select **Tools > View > Apply or Modify Clip Volume**.
7. **Click** the **Section Clip Tools** button  on the **Create Clip Volume** dialog.
8. **Click** the **Apply Clip By Section Plane** button  on the **Create Clip Volume** dialog.
9. **Click** and drag the **clip element** across the roadway around **Station 708+60.00**.
10. **Click** the **Rotate View** button  on the top of the **view window**.
11. **Click** and **drag** the **large white cross hair** and **snap** it to the **clip section** at the **beginning of the project**.
12. **Rotate** the **view** around the **beginning** of the **project** and **zoom** in.

Exercise 27:

Analysis – Height / Slope:

1. On the top of the **MicroStation View Window**, **click** the **View Attributes** button  to access the **View Attributes** dialog.
2. Under the **Presentation 'tab'**, click the down arrow on the **Display Style** field.
3. **Select** the **Wireframe** display style.
4. On the **Road Tools** toolbar, click the **DTM: DTM Tools** button  to load the **DTM Toolbar**.
5. **Click** and hold the **Analysis: Height/Slope** button  on the **DTM Toolbar**.
6. **Select** the **Open Toolbar** to open the **Analysis** toolbar.
7. From the **Analysis** toolbar, click the **Height/Slope** button  to access the open the **Height/Slope** tool.
8. **Click** the **magnifying glass** next the **TIN File** field.
9. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
10. **Select** the **FLUGSurface.tin** file and **click** the **Open** button.
11. **Toggle** on the **Show Contour** check box and set the color to **Red**.
12. **Toggle** on the **Show Flow Arrow** check box and set the color to **Yellow**.
13. **Click** the **Start** button and slide the cursor along the **FLUGCorridor**.
14. **Click** the **Red 'X'** to close the **Height / Slope** dialog.

Analysis – Profiles:

15. From the **Analysis** toolbar, click the **Profile** button  to access the open the **Profile** tool.
16. **Click** the **magnifying glass** next the **TIN File** field.
17. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
18. **Select** the **FLUGSurface.tin** file and **click** the **Open** button.
19. **Click** the **Add** button  to add the **FLUGSurface TIN** to the **Profile** list.
20. From the **Profile** toolbar, click the **Create Profile** button  .
21. From the **Profile** toolbar, click the **Place Profile Element** button  and draw the **element** across the roadway.
22. **Click** the **Red 'X'** to close the **Profile** dialog.

Analysis – Volumes:

23. From the **Analysis** toolbar, click the **Volumes** button  to access the open the **Volume Calculations** tool.
24. **Click** the **magnifying glass** next the **From TIN** field.
25. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
26. **Select** the **FLUGSurface.tin** file and **click** the **Open** button.
27. **Click** the **magnifying glass** next the **To TIN** field.
28. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
29. **Select** the **US90_NEW.tin** file and **click** the **Open** button.
30. **Click** the **Process** button and **Review** the **Volume Calculations**.
31. **Click** the **Red 'X'** to close the **Volume Calculations** dialog.

Analysis – Drainage Tools:

1. From the **Analysis** toolbar, click the **Drainage Tools** button  and select the **Flow Arrows Option**.
2. **Click** the **magnifying glass** next the **TIN File** field.
3. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
4. **Select** the **FLUGSurface.tin** file and **click** the **Open** button.
5. **Select** the **Fence** tool and **place** a **Fence** from **Station 711+00.00 thru 715+00.00**.
6. **Toggle** on the **Display Only** check box and set the **Level** to **FlowArrow_dp**.
7. **Toggle** on the **Load Within Fence** check box.
8. Set the **Arrow Size** to **3.0**.
9. **Click** the **Apply** button and **Review** the **Flow Arrows** on the **FLUGCorridor**.
10. **Click** the **Red 'X'** to close the **Drainage Tool – Flow Arrows Option** dialog.

Exercise 28:

Items Utility:

1. **Right click** on the **Primary Tools Palette** and select **Items** to gain access the **Items** button.
2. On the **Items** dialog, collapse **Geometry** and select **Active**, **expand** the **Component Tree**, highlight both the **FLUGCorridor – LT_Pavement** and **FLUGCorridor – RT_Pavement** by clicking on the **FLUGCorridor – LT_Pavement** and holding the Ctrl key on the keyboard and selecting the **FLUGCorridor – RT_Pavement**.
3. **Click** the **Highlight** button on the **Items Toolbar** to highlight the select components.
4. **Click** the **Isolate** button on the **Items Toolbar** to isolate the pavement and **Review**.
5. **Click** the **Details** button on the **Items Toolbar** and expand **Faces** and **Review**.
6. Select other components following the previous steps.

Exercise 29:

3D Warehouse:

1. Leave the **AMGMRD01.dgn** file open.
2. From the **Microstation Menu Bar**, select **Utilities > 3D Warehouse > Place as Cell** to access the **3D Google Warehouse**.
3. In the **Search** field, type in **trees**.
4. **Click** the **Download Model** link for the first tree in on the **3D Warehouse** window.
5. **Place** the tree along the center of the **corridor** between stations **713+00.00** and **729+00.00**.
6. **Review** the **3D Model**.

Exercise 30:

Drive Roadway:

1. Leave the **AMGMRD01.dgn** file open which is a 3d file to plot the 3D corridor in.
2. **Click** the **Fit View** button for the **Microstation Window view**.
3. **Rotate** the corridor to view in different perspectives.
4. On the **Corridor Modeling** dialog, click the **Drive Roadway** button  .
5. Set the **Drive Roadway** dialog as follows:

   Horizontal Alignment: **CLCON**
   Vertical Alignment: **CLCON-T**
   Horizontal Offset: **17.00**
   Vertical Offset: **7.0**
   Speed: **45**
   Frames per Second: **8**

Start: **703+00.00**
Stop: **732+29.55**

6. Move the **Corridor Modeling** dialog out of the way.
7. **Click** the **Run button** in the top right corner of the **Drive Roadway** dialog to 'drive' the section of the 3D model in the **AMGMRD01.dgn** file.
8. **Click** the **Close** button to close the **Drive Roadway** dialog.

Exercise 31:

Walk Roadway:

1. **Click** the **References** button  on the **Primary Tools** toolbar.
2. **Select Tools > Attach** from the **References** dialog.
3. **Navigate** to the local c**:\e\projects\US90_FLUG2010\roadway** folder.
4. **Select** the **algnrd01.dgn** file and **click** the **Open** button.
5. **Close** the **References** dialog.
9. On the top of **View 1**, click the **Walk** button.
10. On the **Walk** dialog, **click** the **Select element to lock camera motion to button**.
11. **Select** the longest section of the **Alignment**.
12. **Set** the **Walk Speed** to **15mph**.
13. **Check on Accelerate and Decelerate with mouse** toggle.
14. **Check** on **Use Path Offset** and set the **Y** value to **158.00**.
15. **Click** in the **DGN** and while holding down the left mouse button, push the mouse forward**.**
16. **Move** the **mouse side to side** and all around to see the **flexibility** and **directional capabilities** of the **Walk** tool.
17. **Click** the **Red 'X'** to close the **Walk** dialog.

Quick Reference

Data File Extensions

Extension	Definition
.gpk	Geometry Project File
.tin	Triangulated Irregular Network, Surface or Digital Terrain Model
.ird	Roadway Design File
.itl	Template Library
.rdp	Roadway Design Preference
.prj	Project File
.ddb	Geopak Database File
.xin	Drafting Standards (Imported from Geopak Database File)

Template Precision Key-ins

Key-in	Definition
XY =	Absolute coordinates
DL =	Delta coordinates from last point placed
HS =	Horizontal delta distance and slope from last point placed
VS =	Vertical delta distance and slope from last point placed
OL =	Delta coordinates from dynamic origin
OS =	Horizontal delta distance from dynamic origin

Manage Corridor Dialog Colors

Item	Color	Definition
Start Station or Stop Station	Red	Indicates the alignment has been edited/station is no longer valid

Template Drops Dialog Colors

Item	Color	Definition
Station	Red	Indicates the alignment has been edited/station is no longer valid
Template Name	Blue	Indicates the template does not exist in the template library
Template Name	Red	Indicates the template is modified/differs is stored template library
Revised In – ITL	Red	Indicates the template library is not the loaded template library
Revised In – IRD	Red	Indicates the template in the roadway designer has been edited

Template Transition Colors

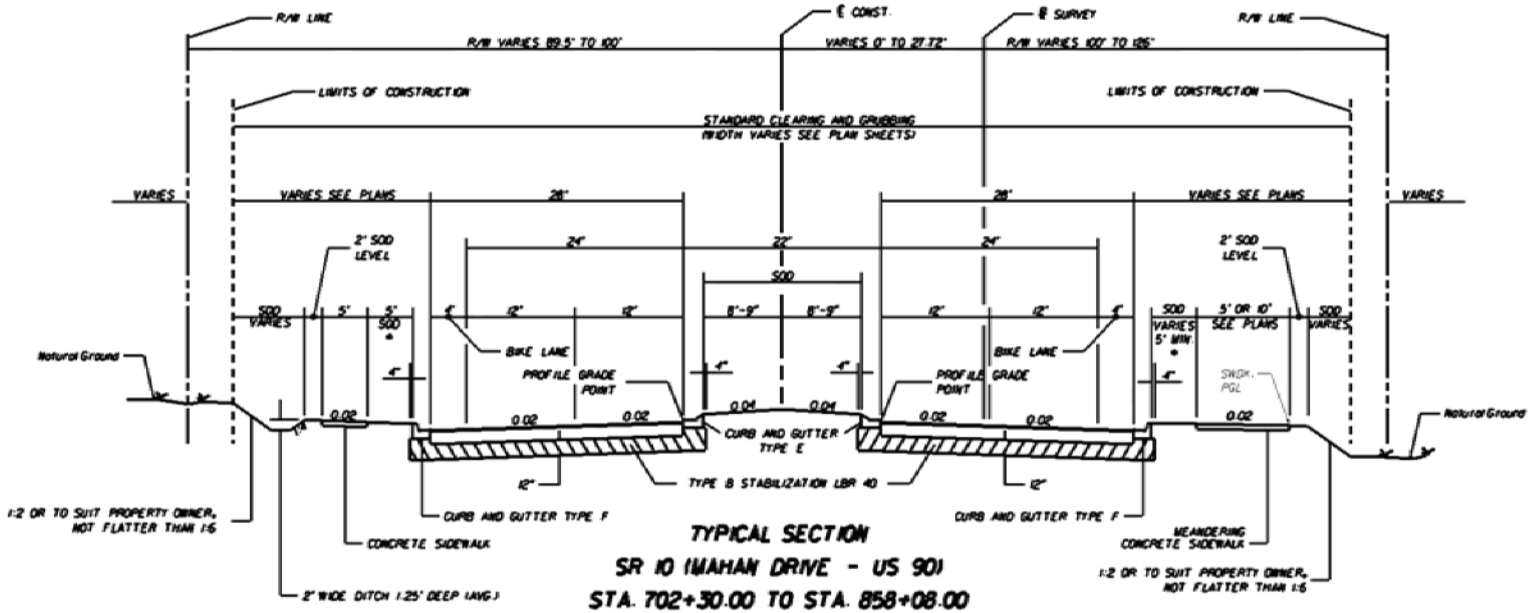
Color	Definition
Red	No template points are connected because the point names are not similar.
Yellow	Some template points are connected by similar names.
Light Blue	Not all points connect, but the transition has been reviewed.
Dark Blue	All points are connected and the transition has been reviewed.

Point Controls Dialog Colors

Item	Color	Definition
Station	Orange	Conflict between two or more point control stations.
Station	Red	Alignment has been edited and station value is no longer valid.

Superelevation Slope Colors

	Slope Direction	Slope	Color
	To Left	> 10%	Dark Red
	To Left	0.5% to 10%	Yellow to Red
	Right or Left	< 0.5%	White
	To Right	0.5% to 10%	Green to Blue
	To Right	> 10%	Dark Blue



TYPICAL SECTION

SR 10 (MAHAN DRIVE - US 90)

STA. 702+30.00 TO STA. 858+08.00

STA. 859+73.00 TO STA. 863+18.00

* NO ABOVE GROUND OBSTACLES SHALL BE ALLOWED IN THE CLEAR AREA

NEW CONSTRUCTION

OPTIONAL BASE GROUP 9 WITH
TYPE SP STRUCTURAL COURSE (TRAFFIC C) (12½") (PG 76-22)
AND FRICTION COURSE FC-9.5 (TRAFFIC C) (1") (PG 76-22)

MILLING AND RESURFACING

STA. 685+50.00 TO STA. 702+30.00 RT
STA. 698+00.00 TO STA. 702+30.00 LT

MILLING

MILL 1" AVG DEPTH

RESURFACING

FRICTION COURSE FC-9.5 (TRAFFIC C) (1") (PG 76-22)

MILLING AND RESURFACING IS FOR THE PURPOSE OF REMOVING PAVEMENT MARKING CONFLICTS AT THE BEGINNING OF PROJECT. SEE PLANS FOR DIMENSIONS

TRAFFIC DATA

CURRENT YEAR = 2007 AADT = 20,200
ESTIMATED OPENING YEAR = 2008 AADT = 20,600
ESTIMATED DESIGN YEAR = 2028 AADT = 34,200
K = 8% D = 64% T = 5 % (24 HOUR)
DESIGN HOUR T = 2.5 %
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH
CLEAR ZONE = 24 FT

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
10	LEON	219843-1-52-01

TYPICAL SECTION

SHEET NO. 28

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