**Exercise 1: Corridor Modeling – Getting Started**

1. **Copying ITL File to “Working” Folder**
2. Copy **TIP\_rdy.itl** (**Blank Project File**) from:

**C:\NCDOT\_V8\_WORKSPACE\ROADWAY\_STDS\English\geopak\Corridor\_Modeling\TIP\_rdy.itl**

1. Into the following **Directory**:

“**C:\NCDOT Training\Roadway\CM\Chapter 1 – Intro to Corridor Modeling**”

**\*Actual Project (R:Drive):** Copy **TIP\_rdy.itl** into **R:\Roadway\CorridorModeling**

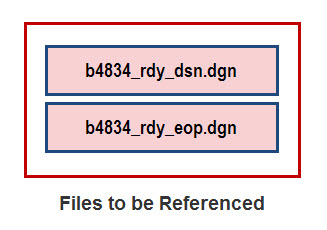
1. Rename **TIP\_rdy.itl** by adding your **TIP Project Number**:



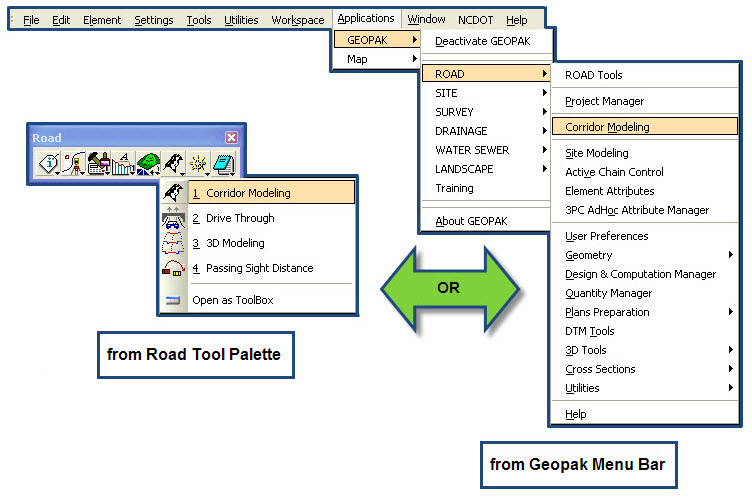
1. **Create & Open Corridor Modeling Design File**
2. Using “**Design File Generator**”, create a new **3D Corridor Modeling Design File.** Name this file “**b4834\_rdy\_cmd.dgn**"

(Saved in “**CorridorModeling**” folder).

1. Open “**b4834\_rdy\_cmd.dgn**” file.
2. **Attach Project Related Reference Files**
3. Under References (File / References) attach the following files:

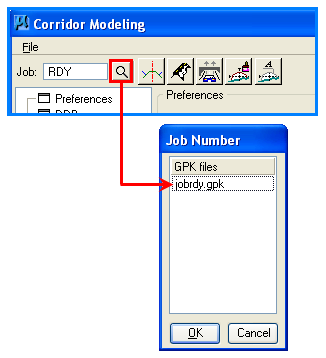


1. **Start Corridor Modeling**
2. “Corridor Modeling” can be opened in the two following ways:

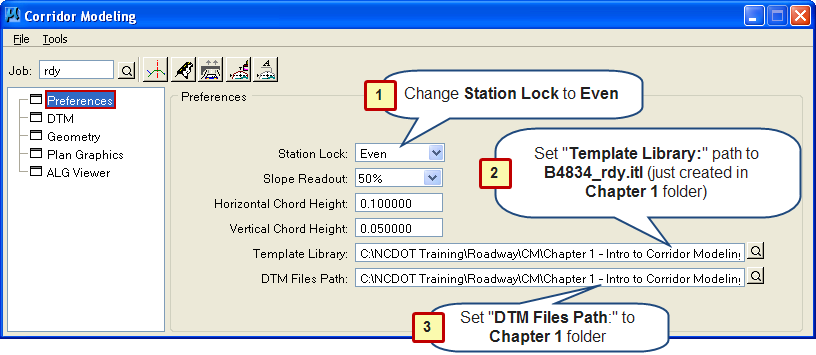


**Exercise 2: Setting Up Corridor Modeling Preferences**

1. **Geopak Job Number**
   * **Note:** Before getting started, use Geopak COGO Preferences to update “Job (GPK) Directory:”
   * Under Corridor Modeling Dialog, select next to . Choose project GPK file and select OK.



1. **Preferences**



* + Select and highlight **Preferences**.

1. Change **Station lock:** to **Even** (*This feature* ***controls cross section interval*** *in* ***Roadway Designer***)
2. **Template Library**: Set path to **Project ITL** just created in

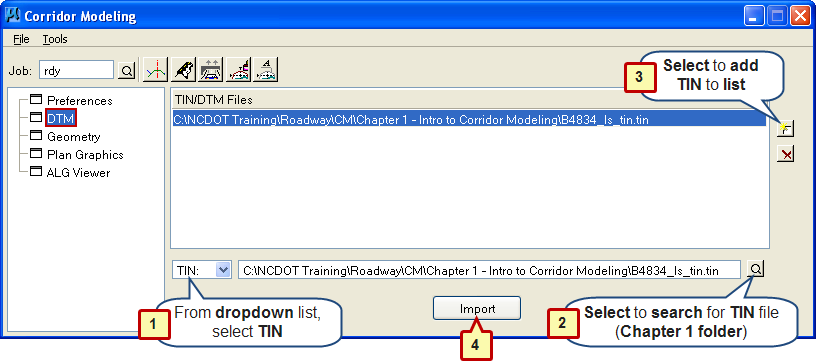
**Chapter 1** folder (**B4834\_rdy.itl**).

1. **DTM Files Path**: Set path to “**Chapter 1”** folder.

**\*Actual Project (R:Drive):**

**Template Library** / **DTM Files Path** should be set to: **CorridorModeling** folder

1. **DTM (Existing Ground DTM Conversion)**



* + Select and highlight **DTM** Section.

1. In the dropdown list, select **TIN**.
2. Select to search for (**B4834\_ls\_tin.tin**).
3. Click to add TIN to list.



1. Select to import **TIN** into **Corridor Modeling**. You should see an **Information** message stating that “**Tin file has been imported**”.

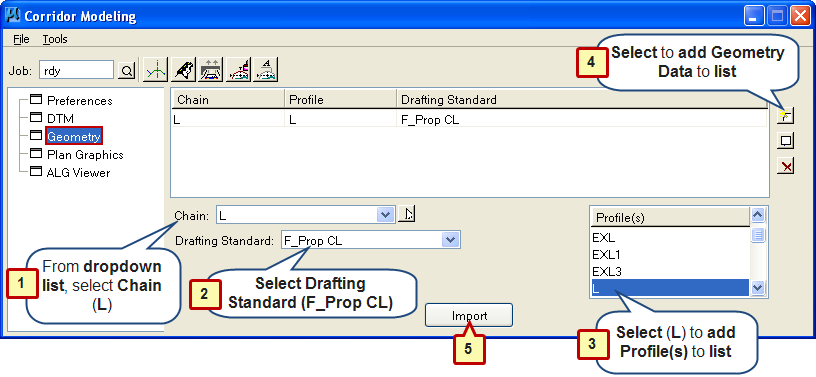


**\*Actual Project (R:Drive):**

**Step 2 / Search for TIN File: Path** should be **set to DTM Folder**

***Note:*** This process will also create an **InRoads DTM** file using the same name as the **Geopak TIN** file.

1. **Geometry (Conversion of GPK to ALG)**



* + Select and highlight **Geometry** Section.

1. In the dropdown list, select **Chain (L)**.
2. Next to **Drafting Standard:** dropdown, select “**F\_Prop CL”**.
3. Under **Profile(s)** select **L**.

**NOTE!:** If no **Profiles** are listed, **re-select** next to . Choose **RDY** and select **OK**.



1. Click to add **Geometry Data** to list.



***Note:*** Multiple “Profiles” can be added to list (such as Ditches, etc.)

1. Select to import **Geometry** into **Corridor Modeling**. You should see an **Information** message stating that “**Geometry has been imported**”.



***Note:*** This will also create a new **Corridor Modeling ALG** (**stored** in

**RDDBS folder**).

1. **Plan Graphics (Importing into Corridor Modeling)**

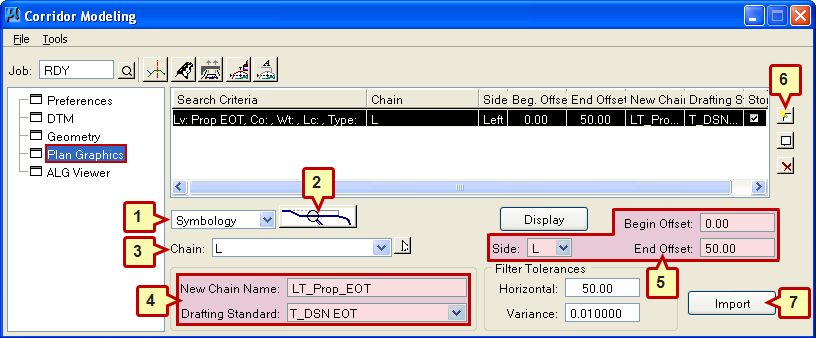
**For this exercise we will be importing the following Plan Graphics (Left & Right Sides):**

* Prop EOT
* Bridge
* Paved Shoulder
* Guardrail
* Exist EOP (EEOP)
* Shoulder Berm Gutter (SBG) – Left Side Only
* Shoulder Point

**Common Problems to look for when Adding Plan Graphics**

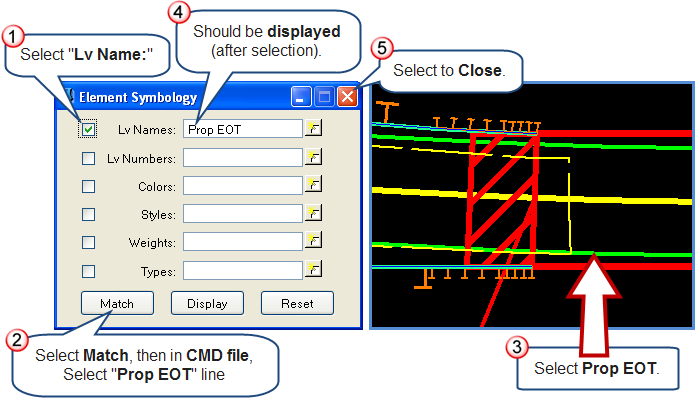
* If **two** (**or more**) **Plan Graphics are on top of one another**, **Corridor Modeling Templates will not be able to target properly** (such as **Guardrail**, **Guardrail Scratch Level** and **Paved Shoulder**).
* There could be times where **the location of Plan Graphics** (such as **Pavement Widths**, **Paved Shoulder Widths**) could **fall behind** the “**Pre-Set**” **widths that are set in the Default Templates**. This **will be covered** in the “**Display References Section** (**E4.6**)”.

**How to Add Left Side “Proposed EOT” Plan Graphics**



* + Select and highlight **Plan Graphics** Section.

1. In the dropdown list, select (**Symbology**).
2. Select (**Element Symbology**)



1. Next to **Chain:** dropdown, select (**L**).
2. Next to **New Chain Name:** type in (**LT\_Prop\_EOT**).

Select **Drafting Standard:** (**T\_DSN EOT**)

1. Select **Side:** (**L**)

Type in **Begin Offset:** (**0.00**)

Type in **End Offset:** (**50.00**)

1. Click to add **Plan Graphics** to list.



**How to Add Right Side “Prop EOT” Plan Graphics**

1. Next to **New Chain Name:** Change Name (**RT\_Prop\_EOT**).

Keep same **Drafting Standard:** (**T\_DSN EOT**)

1. Select **Side:** (**R**)

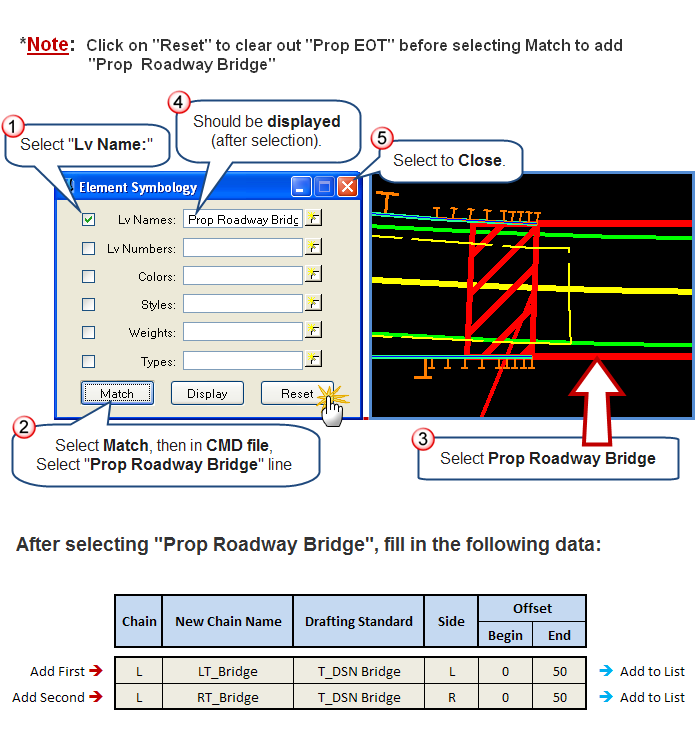
Type in **Begin Offset:** (**0.00**)

Type in **End Offset:** (**50.00**)

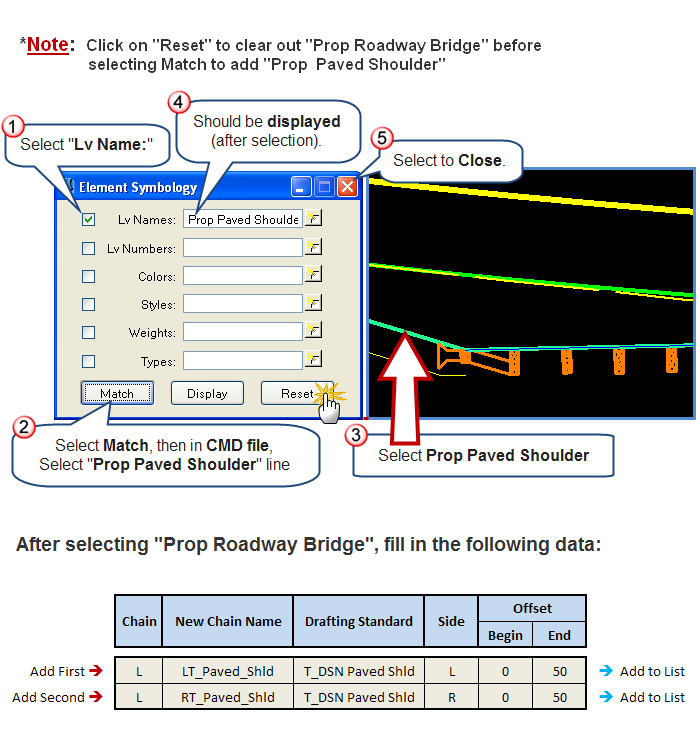
1. Click to add **Plan Graphics** to list.



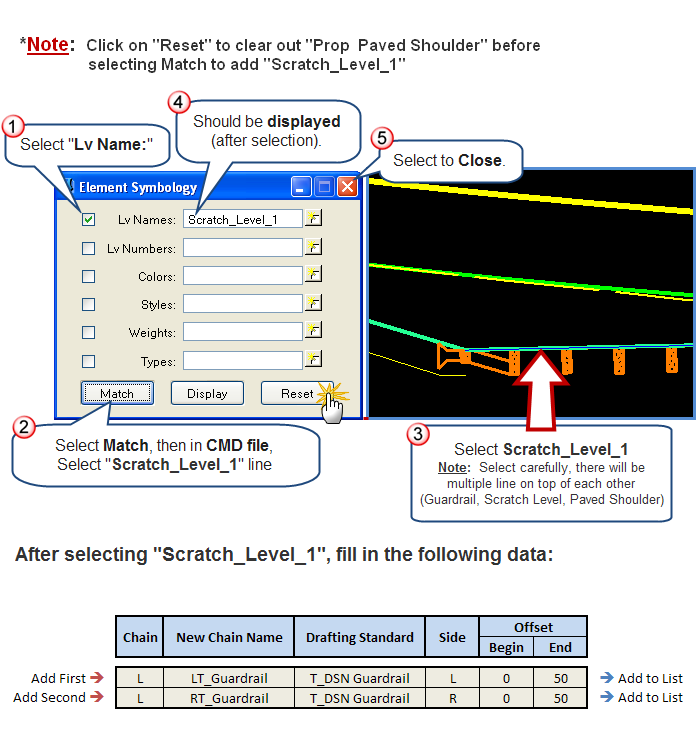
**Add “Prop Roadway Bridge” Plan Graphics**



**Add “Prop Paved Shoulder” Plan Graphics**



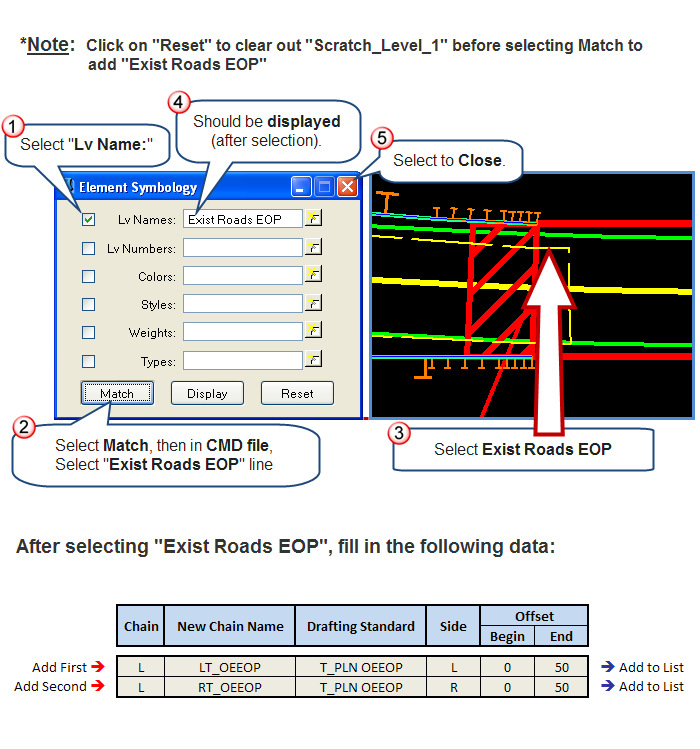
**Add “Prop Guardrail” Plan Graphics**



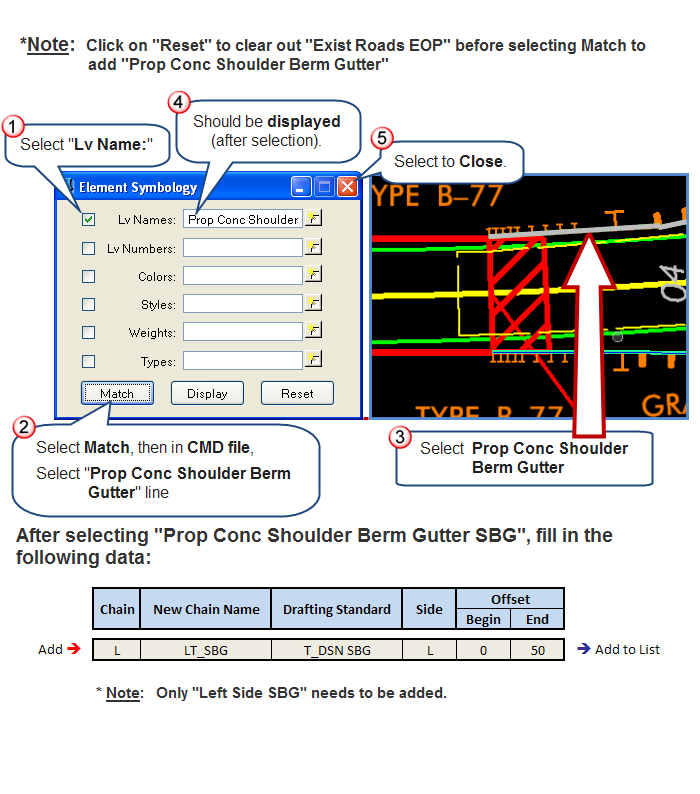
***Note:*** As an example, the New Chain Name for -Y- Lines could be named as:

**LT\_Y15\_Guardrail**

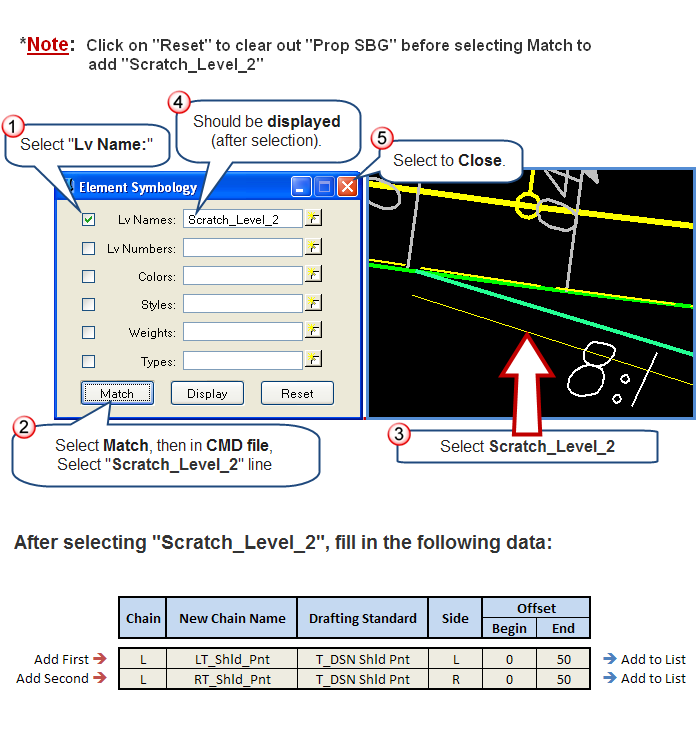
**Add “Existing Edge of Pavement (EEOP)” Plan Graphics**



**Add “Proposed Shoulder Berm Gutter (SBG)” Plan Graphics**



**Add “Shoulder Point” Plan Graphics**



**Importing Plan Graphics**

* All of **Plan Graphics** necessary for Roadway Designer should now be added.
* Click on “**Import**” to **import Plan Graphics**.
* You should see an **Information Message** stating that “13 Chain(s) successfully stored”.

1. **Saving Roadway Designer Preference File (RDP)**

1. Under **Corridor Modeling Dialog** - **File Dropdown Menu**, select **Save As**.
2. Next to **Save in:** **Select path** to “**Chapter 1”** folder.
3. Next to **File name:** Type in **B4834.rdp**
4. Click on , to Save **RDP** File.



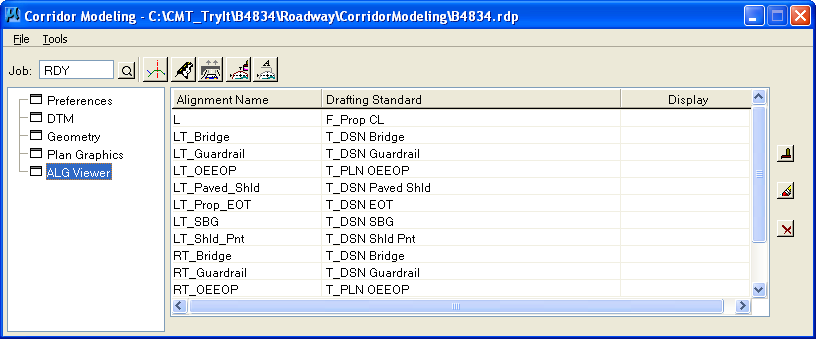
1. You should see an **Information Message** stating that:

**“C:\NCDOT Training\Roadway\CM\Chapter 1 – Intro to Corridor Modeling”\B4834.rdp Saved”**

**\*Actual Project (R:Drive):**

**RDP File** should be saved to: **CorridorModeling** folder

1. **ALG Viewer**



* The ALG Viewer accesses and manipulates data directly within the ALG file.
* Allows the designer to delete alignments from the ALG.
* Allows the designer to visualize alignments for review.

Click on the ALG Tab to list the alignments in the ALG file. For each alignment displayed, the associated drafting standard and display status are shown. The user can select single or multiple alignments.

   Click to **Display** all selected alignments



   Click to **Undisplay** all selected alignments

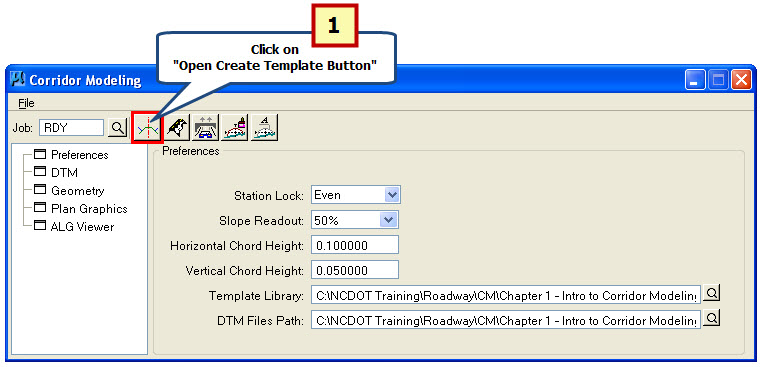


   Click to **Delete** all selected alignments from ALG file. As alignments are deleted from the ALG file, the software synchronizes the Geometry and Plan graphics portions of Corridor Modeling.



**Exercise 3: Create Template Dialog Window**

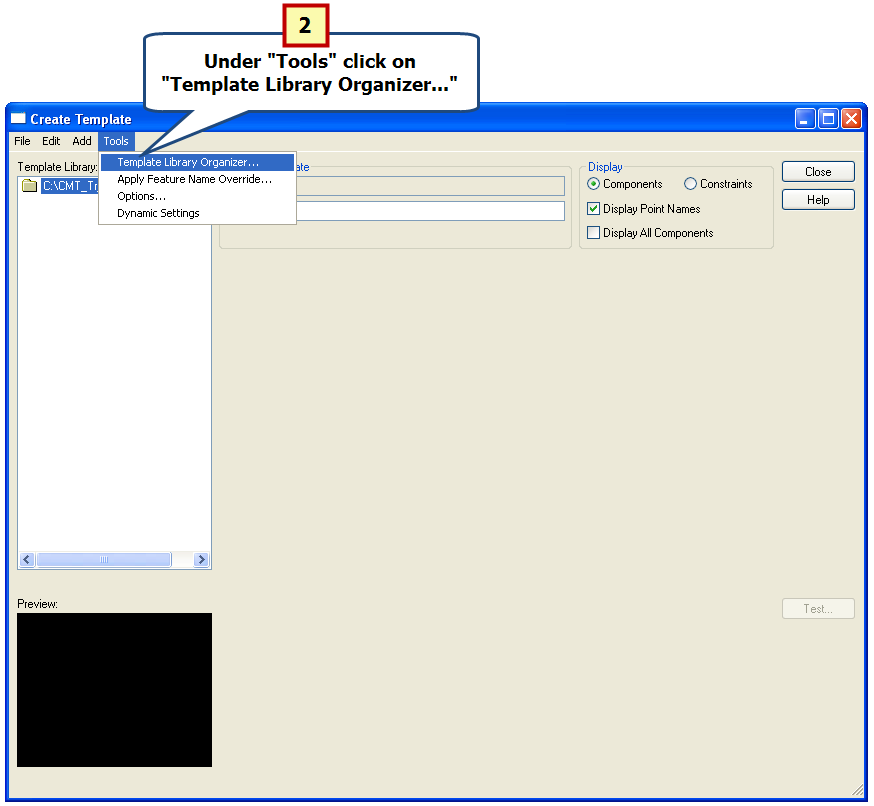
1. **How to Start “Open Create Template”**



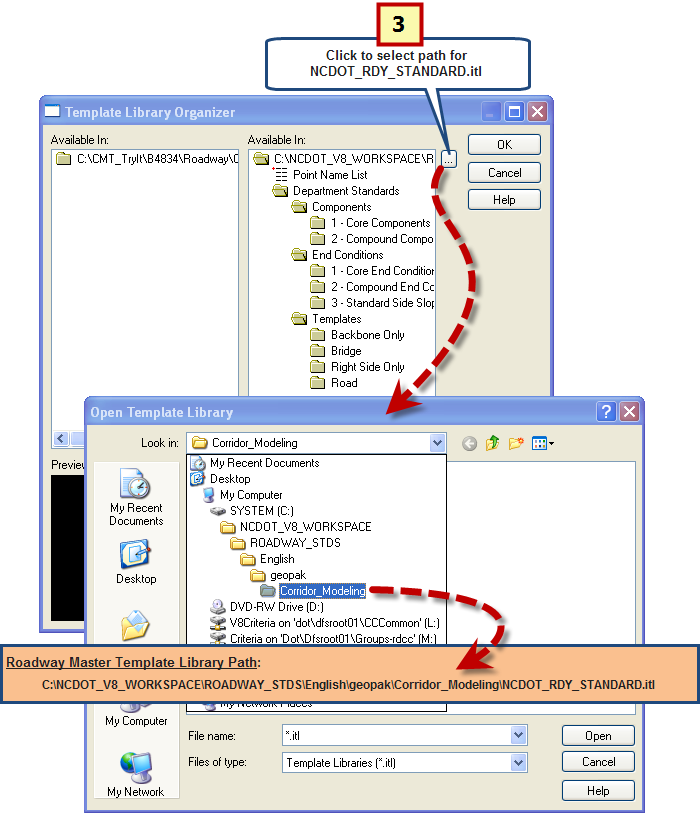
1. Under “**Corridor Modeling Dialog Window**” click on “**Open Create Template Button**”.



1. **Copying Standard Templates with “Template Library Organizer…”**



1. Under “**Create Template**” select “**Tools**” then “**Template Library Organizer…**”
2. **Set Path to Access NCDOT\_RDY\_STANDARD Library (ITL)**



1. In right window of “**Template Library Organizer**” click on to **set path for Master Template Library**.



1. **Select and Drag Templates into “Project Specific Library (B4834\_rdy.itl)”**



1. Under “**NCDOT\_RDY\_STANDARD.itl**” select and drag “**Bridge – Single TMP-1**” and “**Shld Section Undivided Facility TMP-1**” over to **Mainline Folder** under **B4834\_rdy.itl Template Library**.
2. Select .

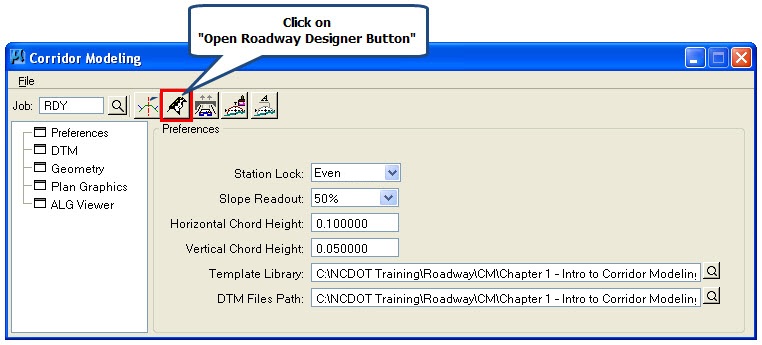


1. Rename “TIPxxxx\_Project Standards” by adding Project Number:

**B4834\_Project Standards**

**Exercise 4: Roadway Designer**

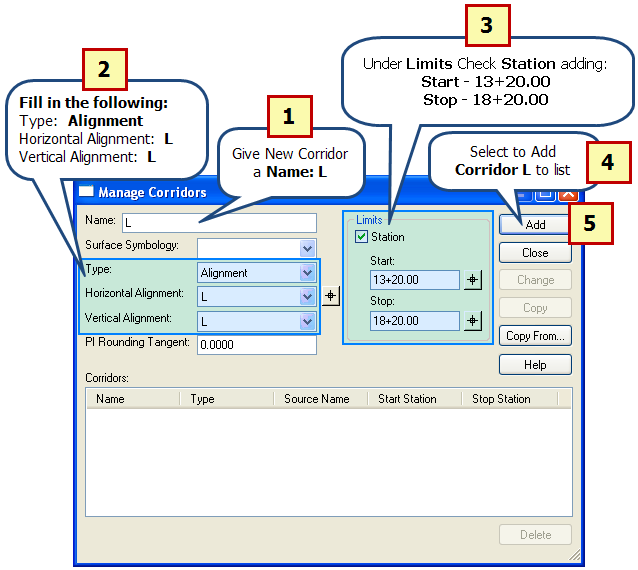
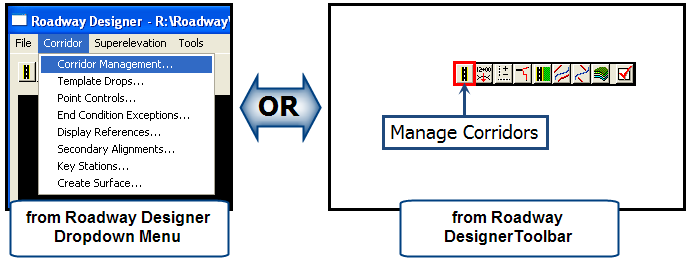
1. **How to Start “Roadway Designer”**



* + Under “**Corridor Modeling Dialog Window**” click on “**Open Roadway Designer Button**”.



1. **Open “Manage Corridors”**
   * By using the **Corridor Dropdown Menu** or by using the **Roadway Designer Toolbar**:



1. Next to **Name:** Type **L**
2. Next to **Type:** Choose **Alignment**

Next to **Horizontal Alignment:** Choose **L**

Next to **Vertical Alignment:** Choose **L**

1. Under “**Limits**” select next to **Station**



Next to **Start:** type **13+20.00**

Next to **Stop:** type **18+20.00**

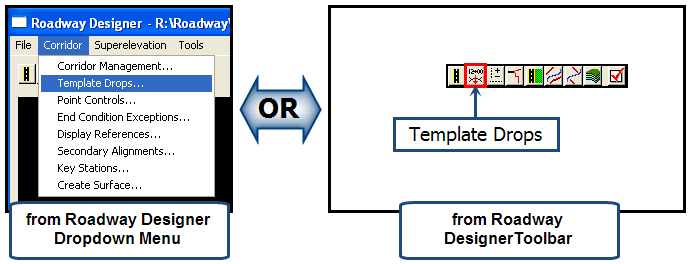
1. Click to add **Corridor L** to list.



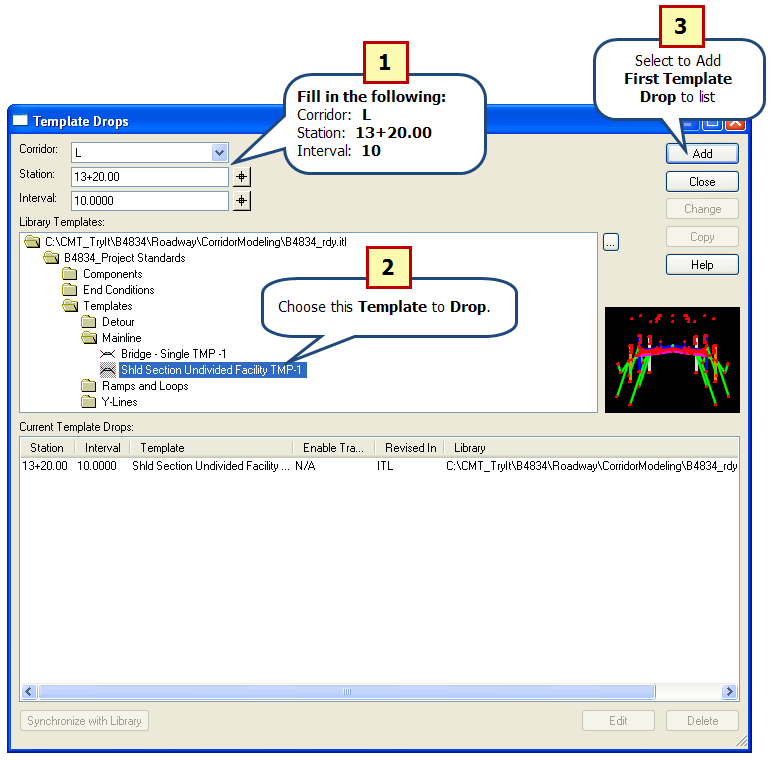
1. Select to **Close Manage Corridors Dialog Window**.



1. **Open “Template Drops”**
   * By using the **Corridor Dropdown Menu** or by using the **Roadway Designer Toolbar**:



**Add First “Template Drop” at Station 13+20.00**



1. Next to **Corridor:** Choose **L**

Next to **Station:** Type **13+20.00**

Next to **Interval:** Type **10**

1. Under “**Library Templates**” select **Template** (under **Mainline**)

Choose: **Shld Section Undivided Facility TMP-1**

1. Click to add **First Template Drop** to list.



1. **Repeat this process** for **adding additional Template Drops (shown on next page).**

**Repeating Previous “Template Drop” process, Add the following Template Drops:**

**2nd “Template Drop”:** Corridor: **L**

Station: **15+46.99**

Interval: **10**

Choose: **Shld Section Undivided Facility TMP-1**

Click to add 2nd Template Drop



**3rd “Template Drop”:** Corridor: **L**

Station: **15+47 (Begin Bridge)**

Interval: **10**

Choose: **Bridge – Single TMP-1**

Click to add 3rd Template Drop



**4th “Template Drop”:** Corridor: **L**

Station: **16+36 (End Bridge)**

Interval: **10**

Choose: **Bridge – Single TMP-1**

Click to add 4th Template Drop



**5th “Template Drop”:** Corridor: **L**

Station: **16+36.01**

Interval: **10**

Choose: **Shld Section Undivided Facility TMP-1**

Click to add 5th Template Drop



**Final “Template Drop”:** Corridor: **L**

Station: **18+20**

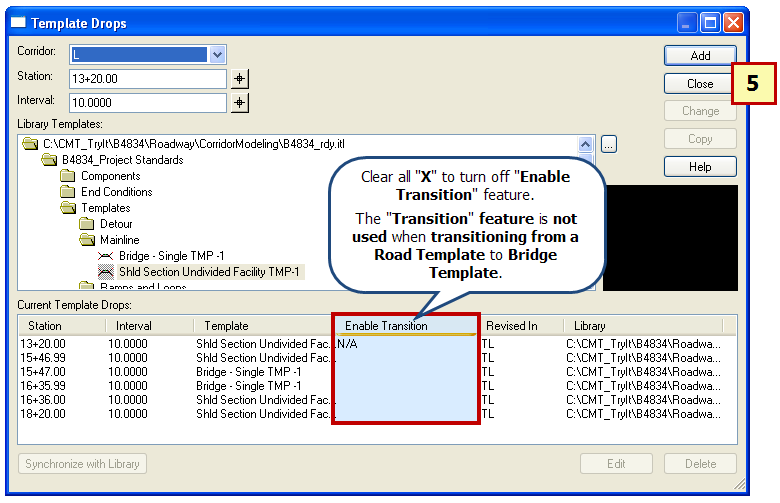
Interval: **10**

Choose: **Shld Section Undivided Facility TMP-1**

Click to add Final Template Drop



**After Adding All Template Drops the “Template Drop Dialog” should look like the following:**



1. Once all Template Drops have been added, select to **Close Template Drops Dialog Window**.



1. **Save IRD File**
2. Under File Dropdown Menu, select **Save.**
3. Next to **Save:** **Select path** to “**Chapter 1**” folder.
4. Next to **File name:** Type in **B4834.ird.**
5. Click on , to Save IRD File.



**\*Actual Project (R:Drive):**

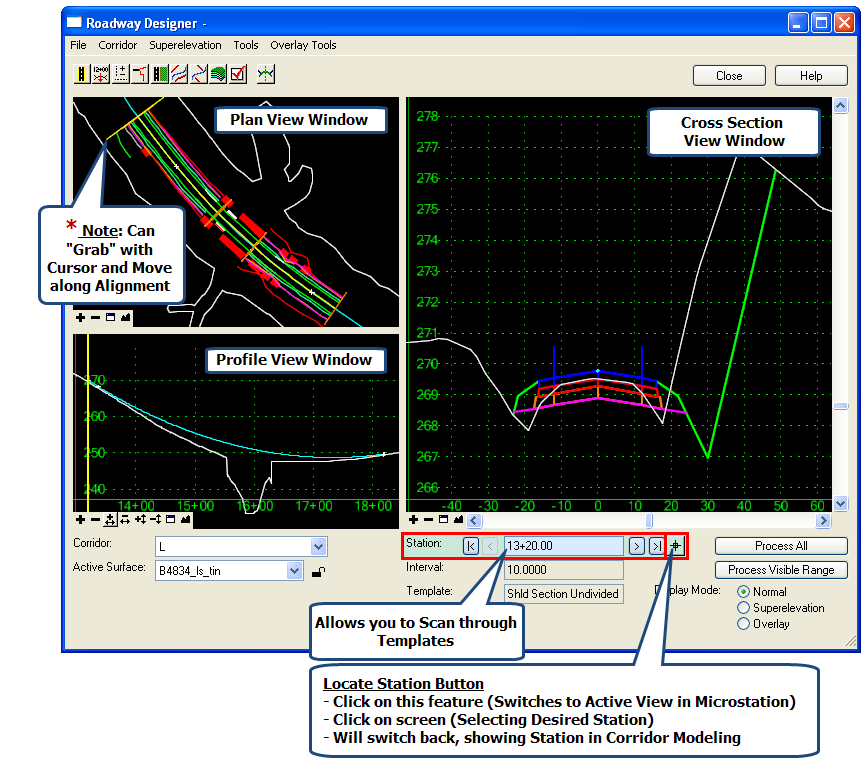
**IRD File**  should be saved to : **CorridorModeling** folder

***Note:***

* For **Bridge Projects save IRD using Project Number**.
* For **larger projects** (**with multiple alignments**) you will need to **save a IRD for each alignment** (**example: L.ird, Y1.ird**)

1. **Using “Plan, Profile and Cross Section Views” in Roadway Designer Dialog Window**
   * After adding all Template Drops the user should scan through the cross sections to check for errors.
   * Using “Display References…” (under “Corridor Dropdown Menu”) allows the user to show (in Cross Section View) Plan Graphics (shown as vertical lines).

**Roadway Designer Dialog Window:**



1. **Superelevation**
   * Superelevation is created and applied using the Roadway Designer after the corridor is created and template drops are assigned.
   * Superelevation is stored and saved in the Roadway Design File (IRD) and is applied to a corridor.

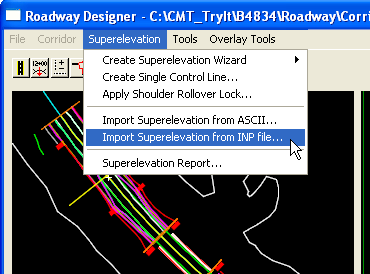
**\* Important:** It has been determined that “**Import Superelevation from INP…**” **will**

**work best** for **Roadway Design’s workflow** and **should be the**

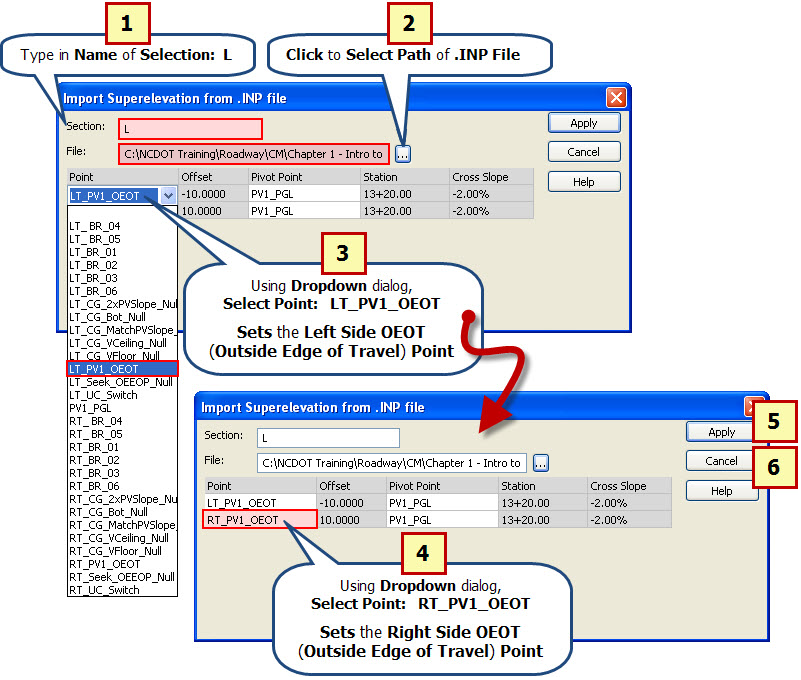
**Primary Method for applying Superelevation in Corridor Modeling**.

**How to “Import Superelevation from INP file…”**

* + By using the Tools Dropdown Menu:



**How to “Import Superelevation from INP file…”**



1. Type in Name of **Selection: L**
2. Click to **Select Path** of **.INP File (Chapter 1 folder)**:



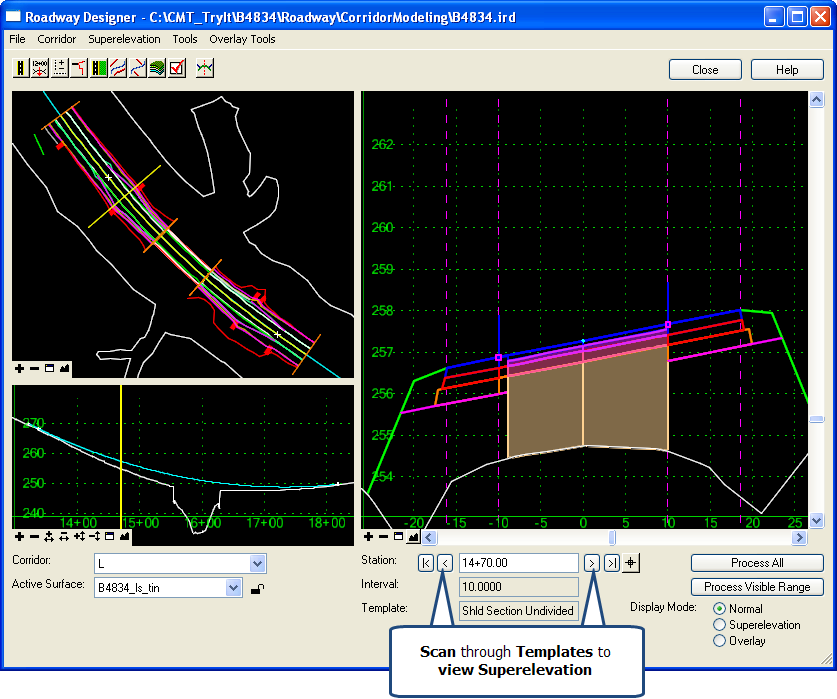
1. Using **Dropdown** dialog, select **Point: LT\_PV1\_OEOT**
2. Using **Dropdown** dialog, select **Point: RT\_PV1\_OEOT**
3. Click on to **add “Superelevation”** to the **Model**.



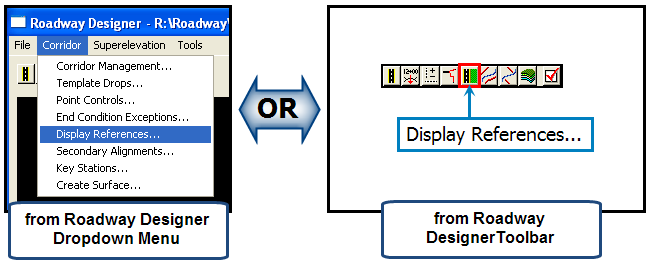
1. Click to **Close** “**Import Superelevation from .INP file**”



**Scan Through Templates to View Superelevation:**



1. **Display References…**

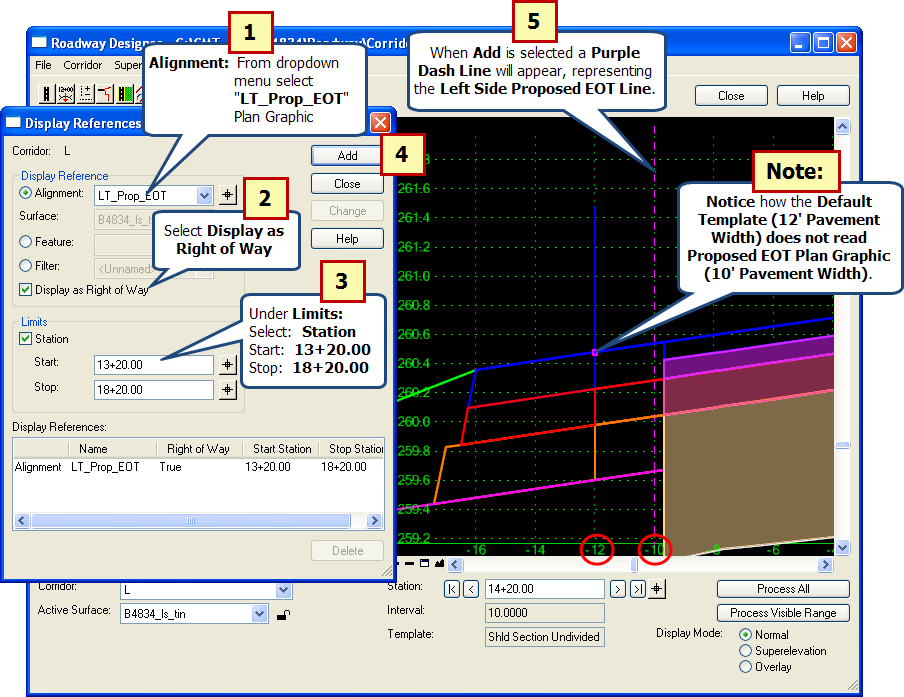


**Using “Display References…” to Check for Errors**

Listed below are **Two Common Problems** which “**Display References…**” **could help the user to visualize**:

* Default Template is designed to seek for “Proposed EOT” Plan Graphics from a default pavement width of 12’. If your project Plan Graphics is shown using a 10’ proposed pavement width then the default template will not be able to find Plan Graphics (because it falls behind the 12’ point).
* Default Template is designed to use a 4’ “Proposed Paved Shoulder”. If your project Plan Graphics shows the Proposed Paved Shoulder of less than 4’ then the default template will not be able to find the Plan Graphics (because it falls behind the 4’ point).

**Using “Display References…” to Add “Left Side Proposed EOT” Plan Graphic**



1. Under “**Display Reference**” select **Alignment** drop down**:**

Choose **LT\_Prop\_EOT**

1. Select next to “**Display as Right of Way**”



1. Under “**Limits**” select next to **Station**



Next to **Start:** type **13+20.00**

Next to **Stop:** type **18+20.00**

1. Click to add **LT\_Prop\_EOT** to list.

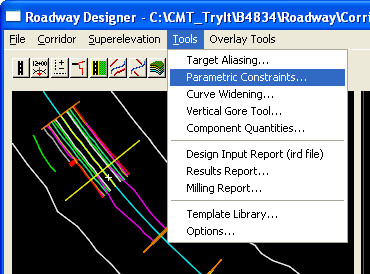


1. After **adding to list**, a **Purple Dashed Line will display in Cross Section View** (**representing the left Side Proposed EOT Line**).

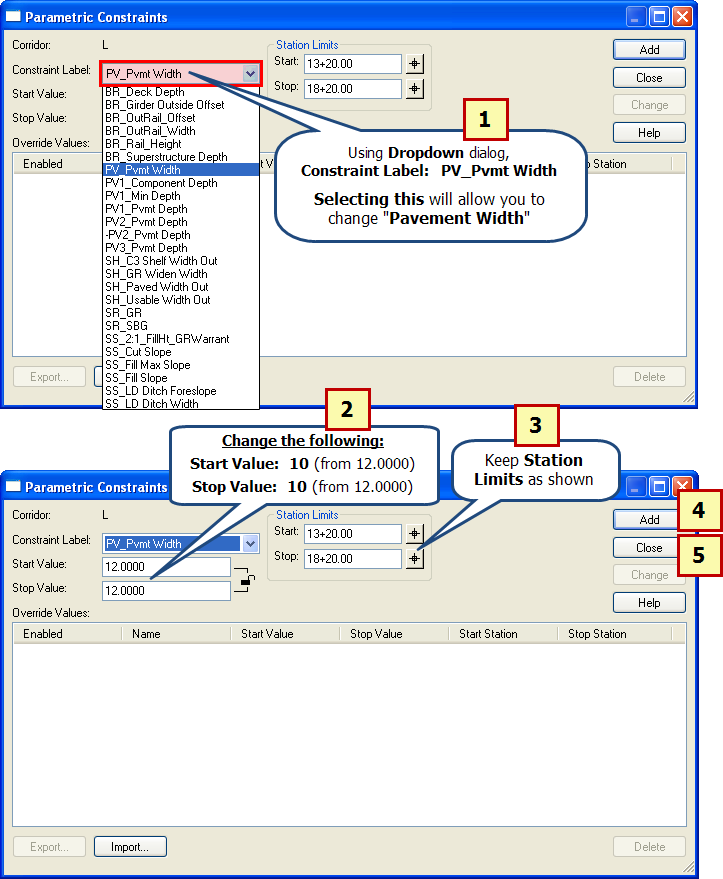
**Note: Repeat this process** to add **RT\_Prop\_EOT** to list.

**How to Open Parametric Constraints**

* + By using the Tools Dropdown Menu:



**Using “Parametric Constraints” to Correct Pavement Width**



1. Using **Dropdown** dialog, **Constraint Label: PV\_Pvmt\_Width**
2. Change **Start & Stop Value: 10 (**from12.0000**)**
3. Keep **Station Limits** as shown:

**Start:** **13+20.00**

**Stop: 18+20.00**

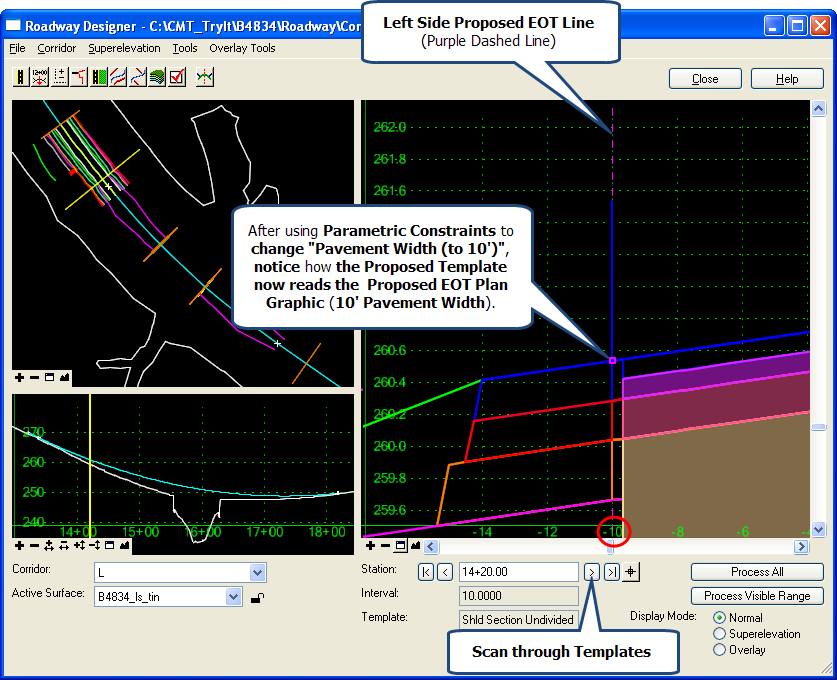
1. Click on to **Change “Pavement Width”** in **Model**.



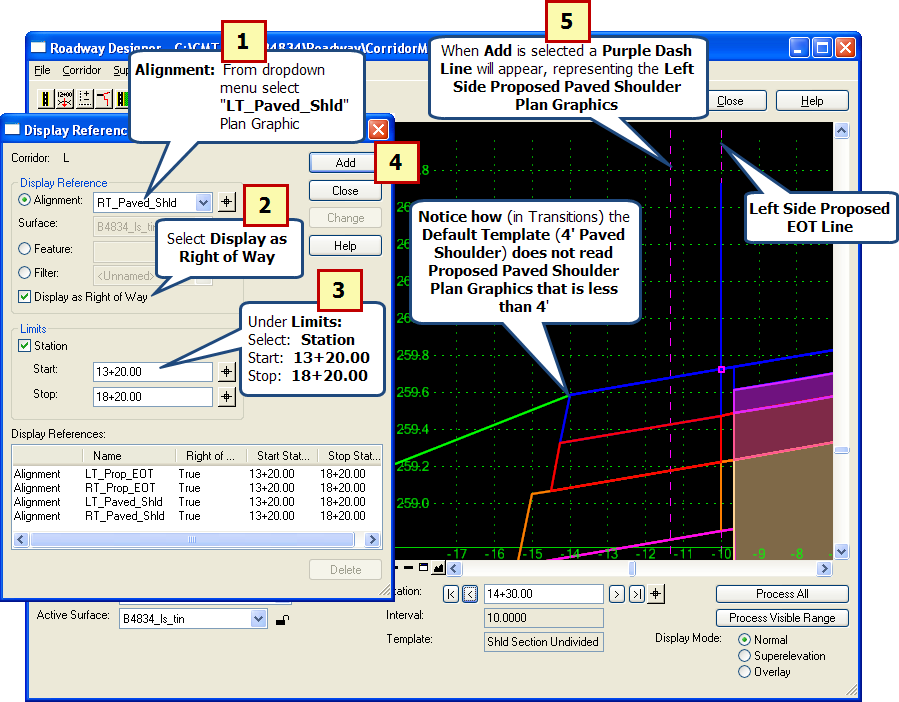
1. Click to **Close** “**Parametric Constraints**”



**Scanning through Cross Sections to Verify “Pavement Width” Change**



**Using “Display References…” to Add “Left Side Proposed Paved Shoulder” Plan Graphic**



1. Under “**Display Reference**” select **Alignment** drop down**:**

Choose **LT\_Paved\_Shld**

1. Select next to “**Display as Right of Way**”



1. Under “**Limits**” select next to **Station**



Next to **Start:** type **13+20.00**

Next to **Stop:** type **18+20.00**

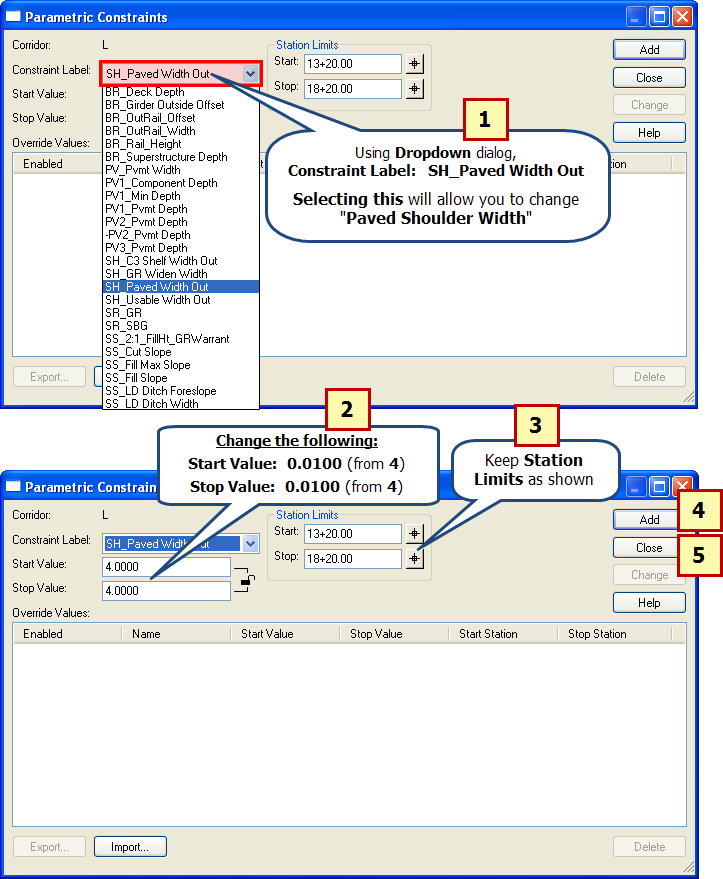
1. Click to add **LT\_Paved\_Shld** to list.



1. After **adding to list**, a **Purple Dashed Line will display in Cross Section View** (**representing the Left Side Paved Shoulder**).

**Note: Repeat this process** to add **RT\_Paved\_Shld** to list.

**Using “Parametric Constraints” to Change “Paved Shoulder Width”**



1. Using **Dropdown** dialog, **Constraint Label: SH\_Paved Width Out**
2. Change **Start & Stop Value: 0.0100 (**from **4.0000)**
3. Keep **Station Limits** as shown:

**Start:** **13+20.00**

**Stop: 18+20.00**

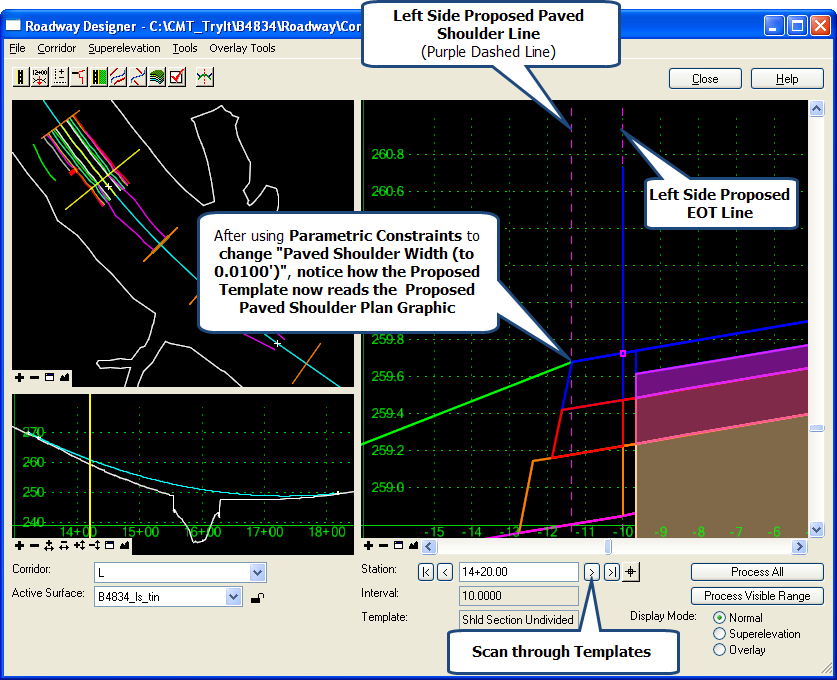
1. Click on to **Change “Paved Shoulder Width”** in **Model**.



1. Click to **Close** “**Parametric Constraints**”



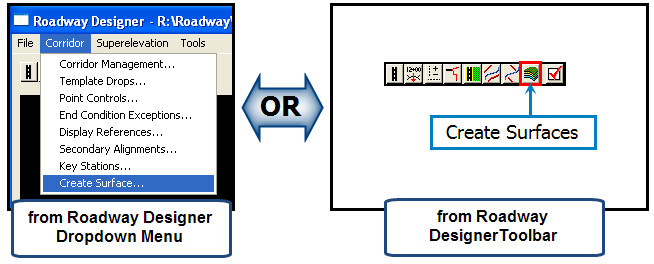
**Scanning through Cross Sections to Verify “Paved Shoulder Width” Change**



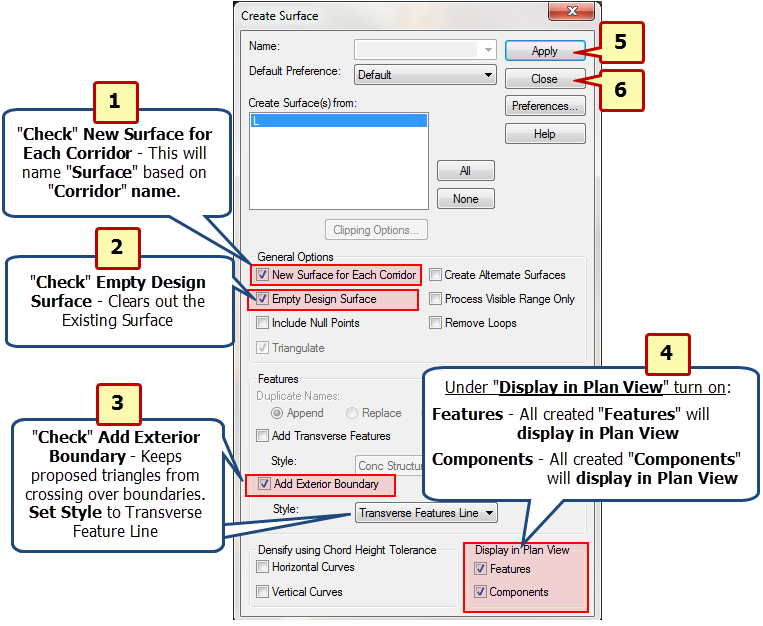
1. **Create Surface**

**Open “Create Surface(s)…”**

* + By using the Corridor Dropdown Menu or by using the Roadway Designer Toolbar:



**How to Create Surface**



1. Click **New Surface for Each Corridor**.



1. Click **Empty Design Surface**.



1. Click **Features**.



Click **Components**.



1. Click on to **create “Surface L”.**



1. Click to **Close** “**Create Surface”**.



1. Save **IRD File**.

**Files Created during “Create Surface” Process**

The **Create Surface Process** creates the following files (stored in the

**CorridorModeling Folder**):

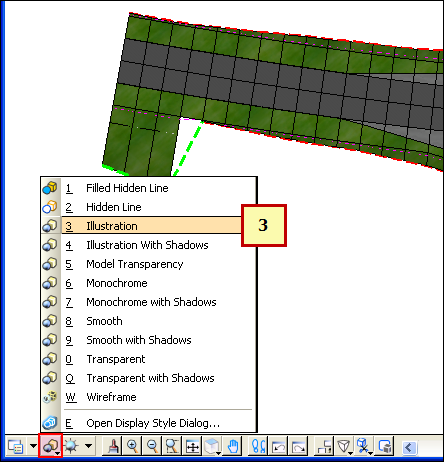
**L.DTM – Proposed 3D Model DTM**

**L.TIN – Geopak Tin File**

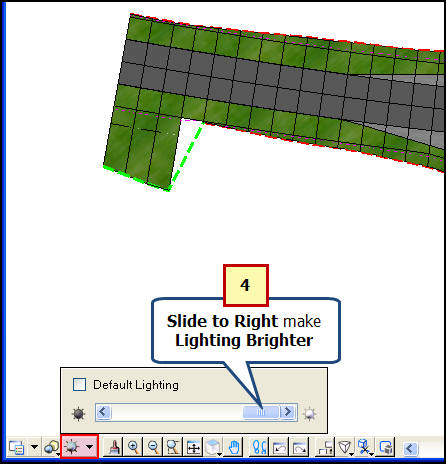
1. **Basic Rendering of 3D Model**

**Use “View Display Mode” to View Basic Rendering of Model**

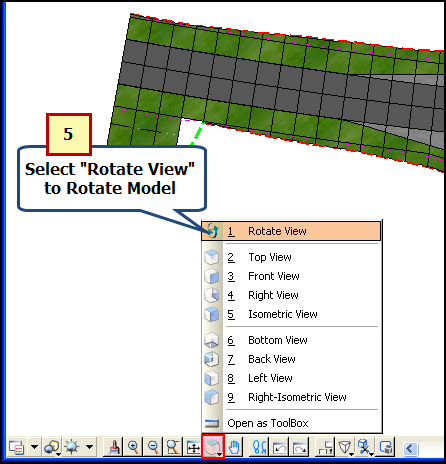
1. **Turn off** both **Reference Files**.
2. “**Fit View**” to **center Model**.
3. In **Lower Left Corner** of “**View 1**” click on “**View Display Mode**” scrolling up to **select** “**Illustration**”.



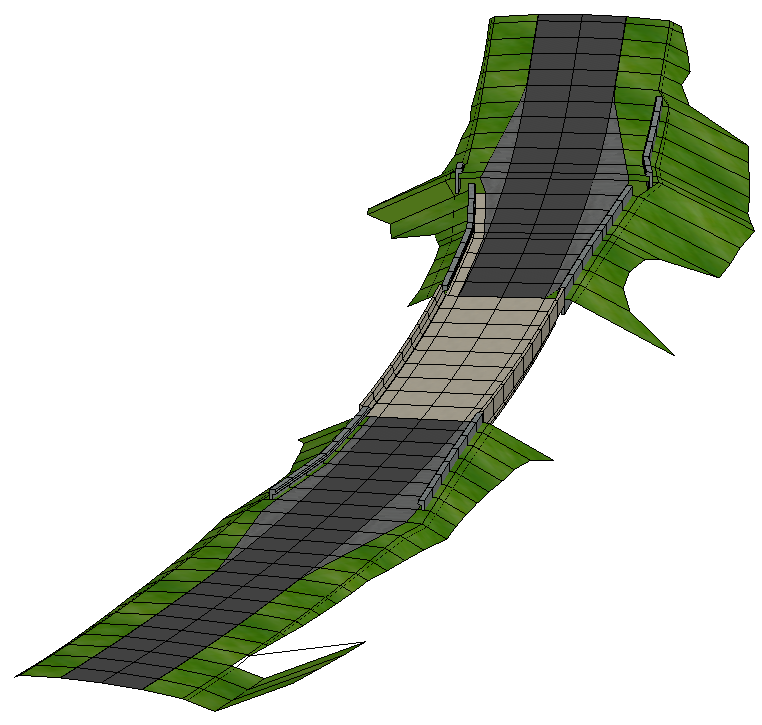
1. Select “**Adjust View Brightness**” and **Slide “Bar” to the Right** to make **Lighting Brighter**.



1. Under ”**View Rotation”, Select “Rotate View”**. **Select and Hold Down “Left” Mouse Button (while moving mouse) to Rotate Model (in 3D)**.



**Picture of Rotated Rendered 3D Model**

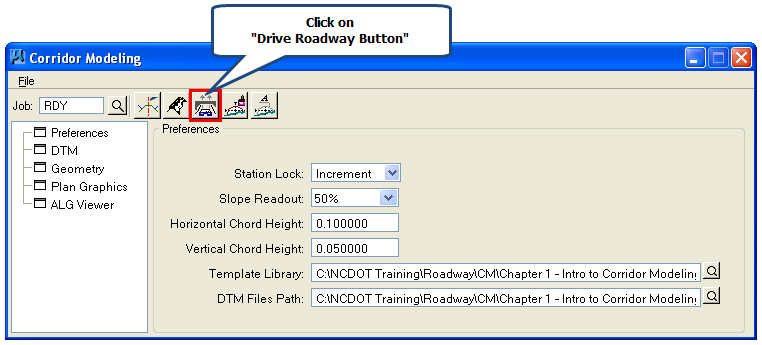


1. **Close “Roadway Designer”**

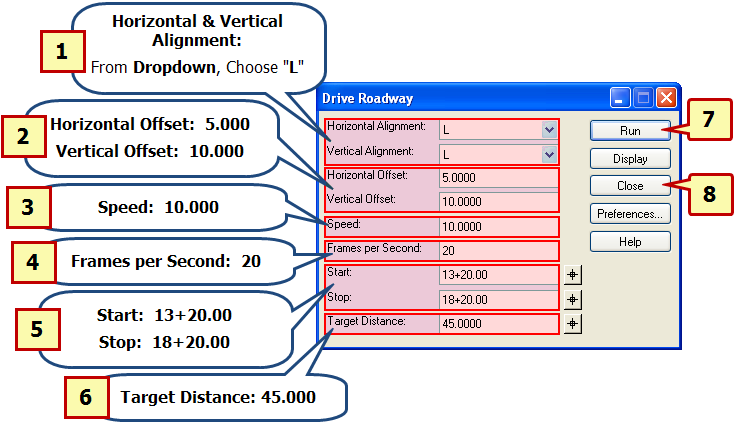
* Click on “Close” to End “Roadway Designer” Session.

**Exercise 5: Drive Roadway**

1. **How to Start “Drive Roadway”**



* + Under “Corridor Modeling Dialog Window” click on “Drive Roadway Button”.



1. Horizontal Alignment: Choose **L**

Vertical Alignment: Choose **L**

1. Horizontal Offset: **5.000**

Vertical Offset: **10.000**

1. Speed: **10.000**
2. Frames per Second: **20**
3. Next to **Start:** **13+20.00**

Next to **Stop:** **18+20.00**

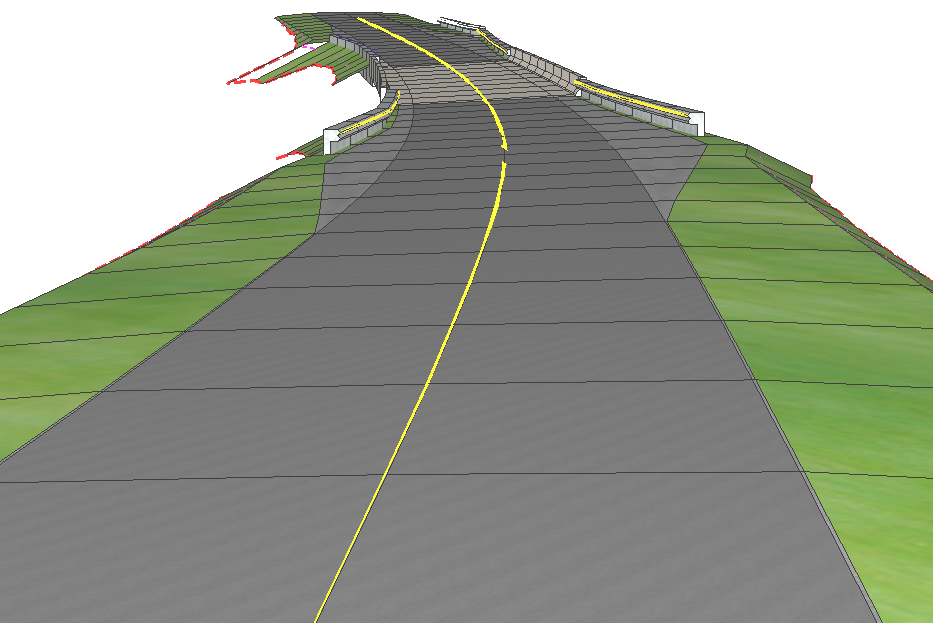
1. Target Distance: **45.000**
2. Click to Start **Drive Roadway**.



1. Select to **Drive Roadway.**



**Drive Roadway Example**



**Exercise 6: Draw Cross Sections from Surfaces**

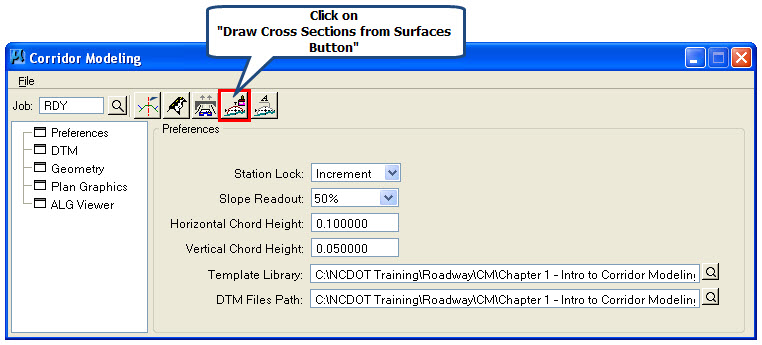
**Draw Cross Sections from Surfaces Overview**

* + Draws **Cross Sections** based on “**Existing Ground**” and “**Proposed Model DTM**” DTM files.
  + Even though “**Draw Cross Sections from Surfaces**” is accessed from “**Corridor Modeling Dialog Window**” it is the **same** “**dialog**” **used in Geopak**.
  + **Allows** **user** to **draw** “**Existing Ground & Proposed**” **cross sections at the same time**.

1. **How to Start “Draw Cross Sections from Surfaces”**

**Note: Before Getting Started….**

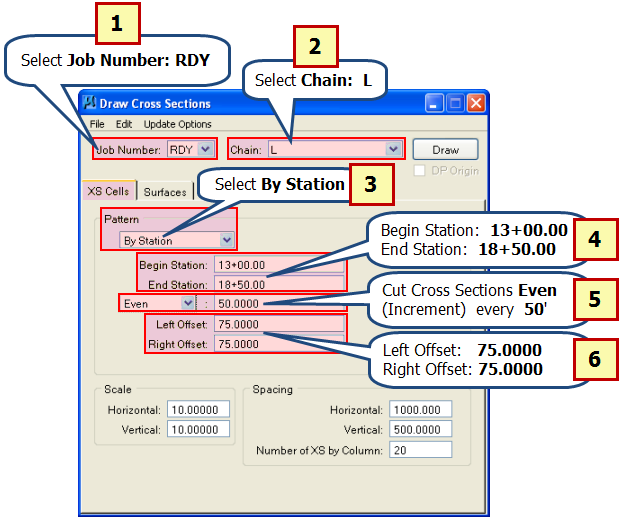
You will need to **Move** and **Open** the “**b4834\_rdy\_xsc\_cm.dgn** (**located in Roadway\XSC folder**) into the “**CorridorModeling**” folder.



* + Under “Corridor Modeling Dialog Window” click on “Drive Roadway Button”.



1. **“XS Cells” Tab**



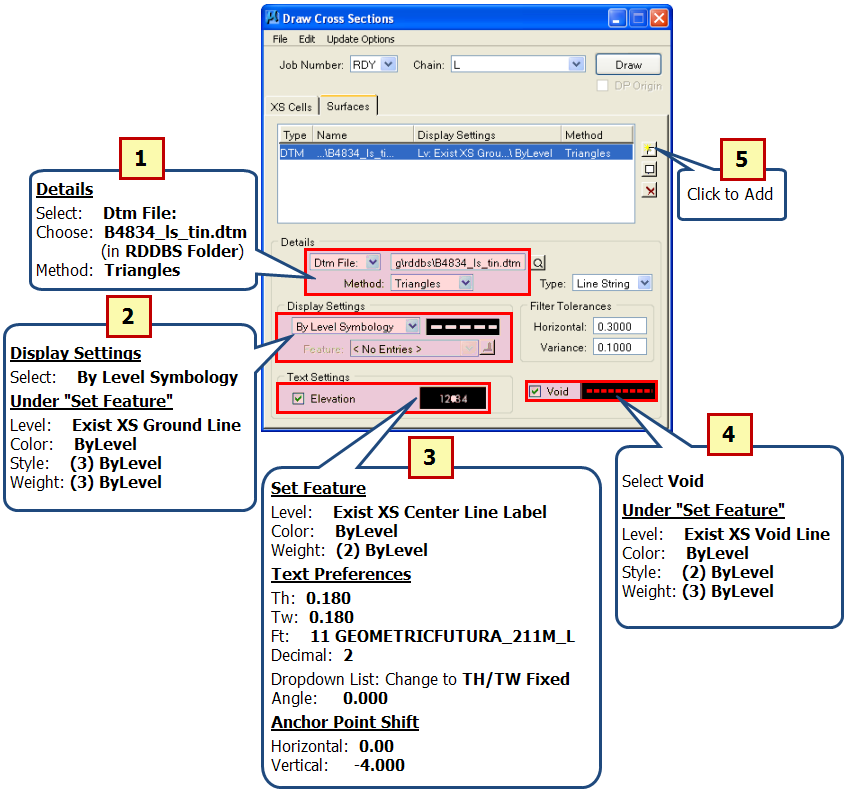
1. Select Geopak **Job Number: RDY**
2. Select Geopak Chain: **L**
3. Under **Pattern**, Select **By Station**
4. **Begin Station:** type **13+00.00**

**End Station:** type **18+50.00**

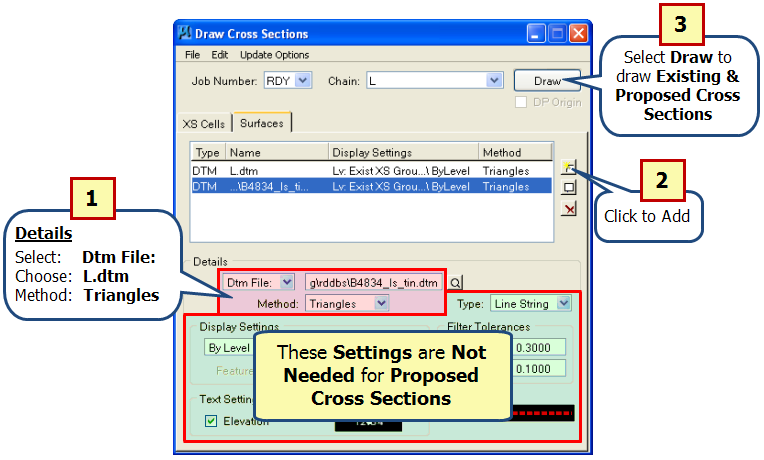
1. Choose **Even** increment cut every **50** feet.
2. **Left Offset:** type **75.0000**

**Right Offset:** type **75.0000**

1. **“Surfaces” Tab – Adding Existing Ground Cross Section Data**
   * **Add** “**Existing Ground Cross Section Data**” as **shown below**:

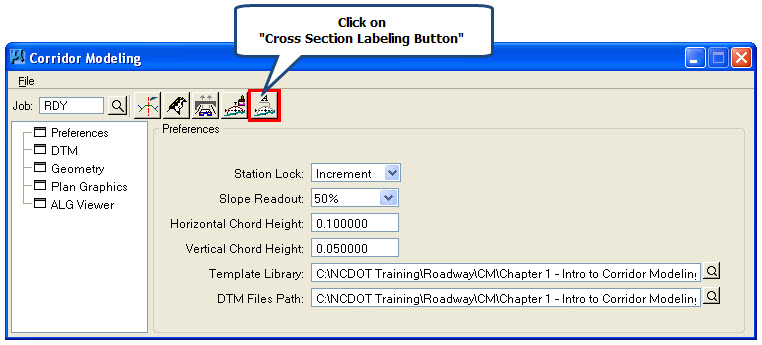


1. **“Surfaces” Tab – Adding Proposed Cross Section Data**
   * **Add** “**Proposed Cross Section Data**” as **shown below**:

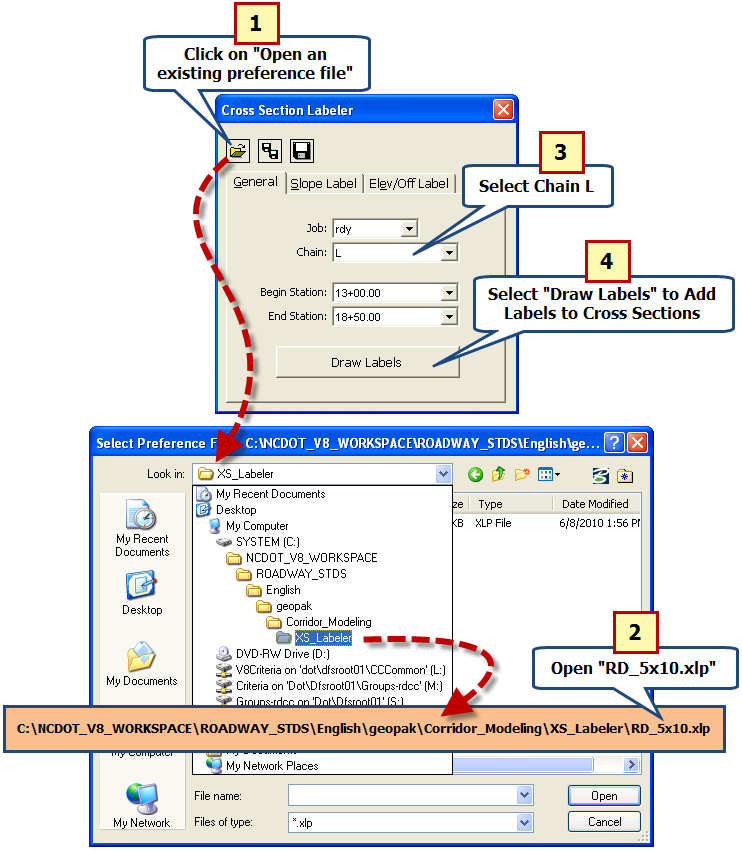


**Exercise 7: Cross Section Labeling**

1. **Starting “Cross Section Labeling”**



1. **Using “Cross Section Labeling”**



1. Click on “**Open an existing preference file”**
2. Using path shown above, Open: **RD\_5x10.xlp**
3. Select Chain: **L**
4. Select **Draw Labels** to **Add Labels to Cross Sections**.