Chapter 3: Create Template Dialog Window

Objectives:

- What is the purpose of the Template Library Organizer?

Exercise: Create Template Dialog Window

E3.1 How to Start "Open Create Template"

E3.2 How to Access "Template Library Organizer…"

E3.3 Template Library Organizer Features

E3.4 Setting Path to Access Master Roadway Template Library

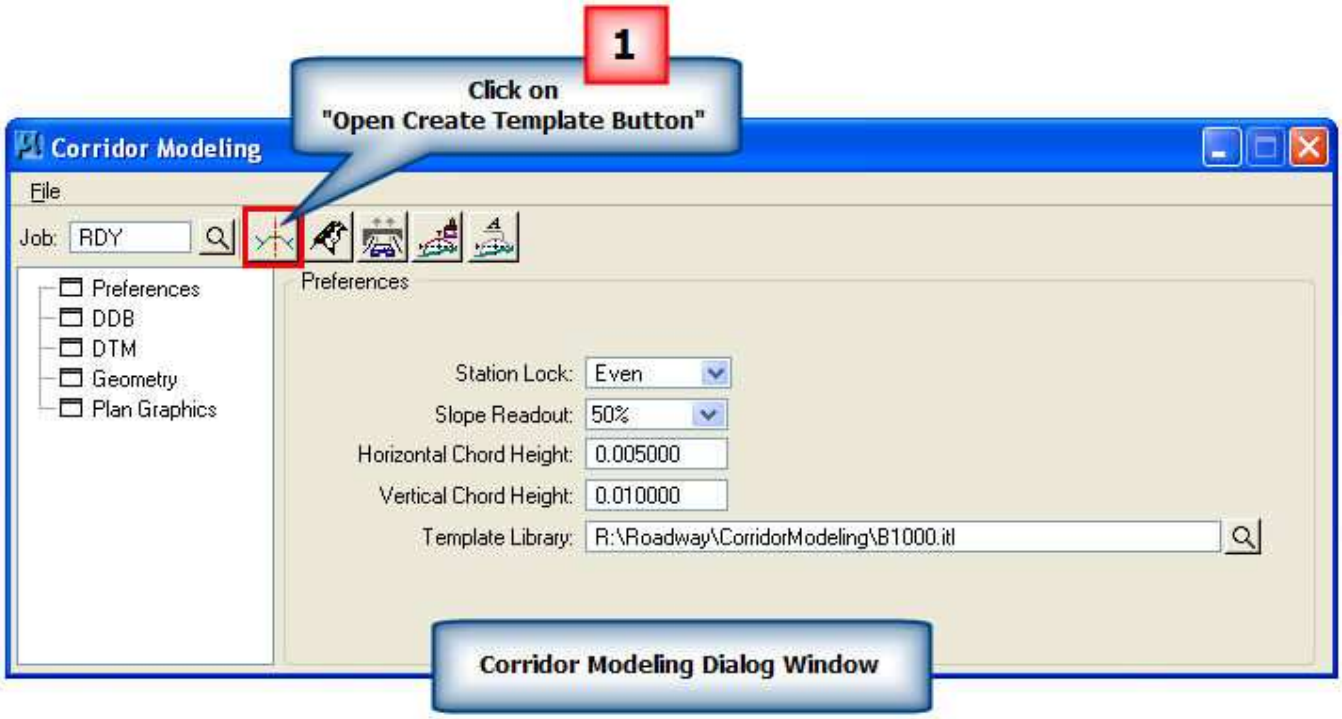
E3.5 Select and Drag "Master Templates" into "Project Specific Library"

Create Template Dialog Window

- **What is the purpose of the Template Library Organizer?**
    - Gives the **user a way** to **bring in predefined templates** from the **Master Roadway Template Library** (**Master_Roadway_TemplateLibrary.itl**) into the **Project specific Template Library** (Example: **B1000.itl**)

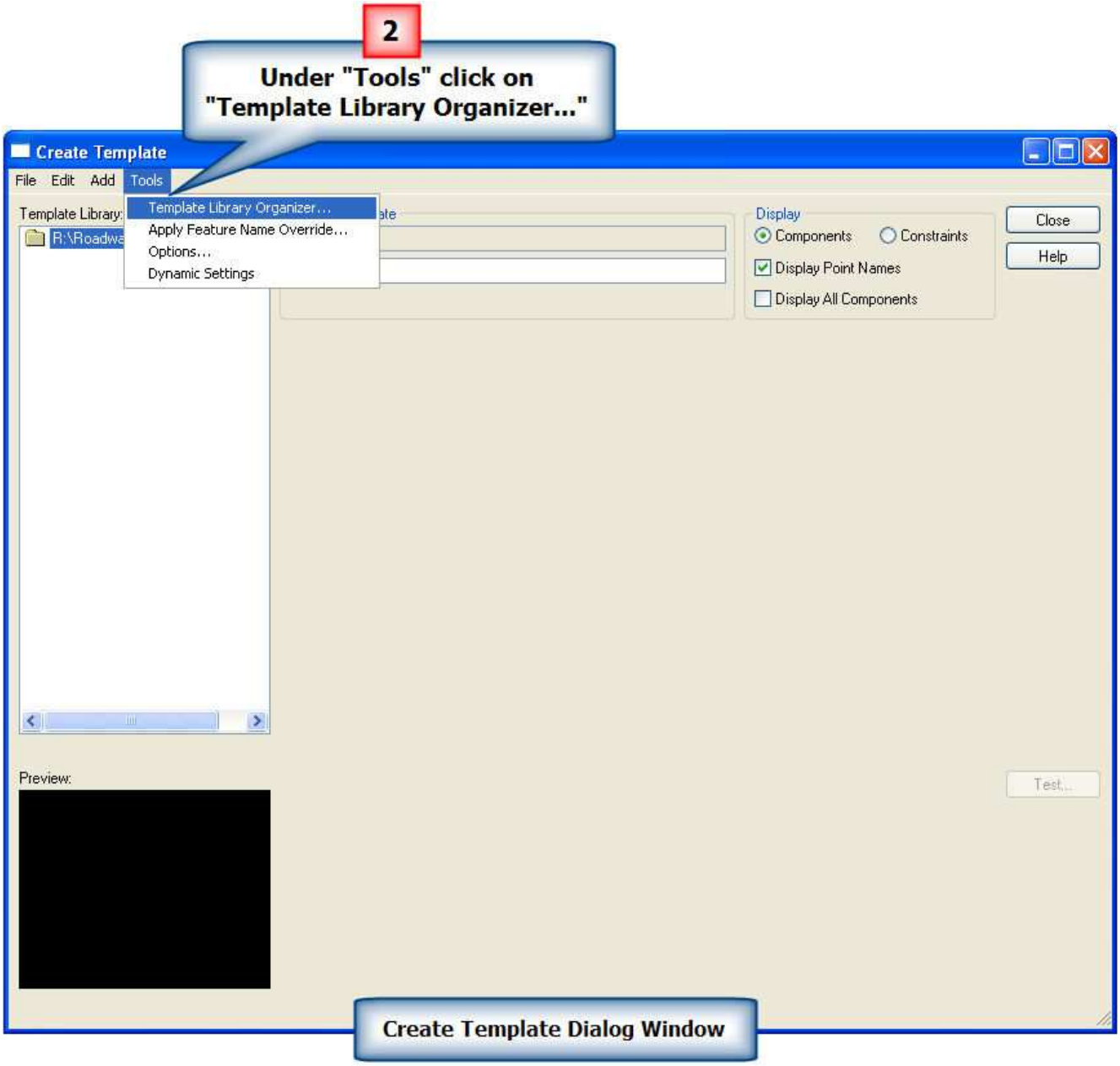
Exercise - Create Template Dialog Window

E3.1 How to Start "Open Create Template"



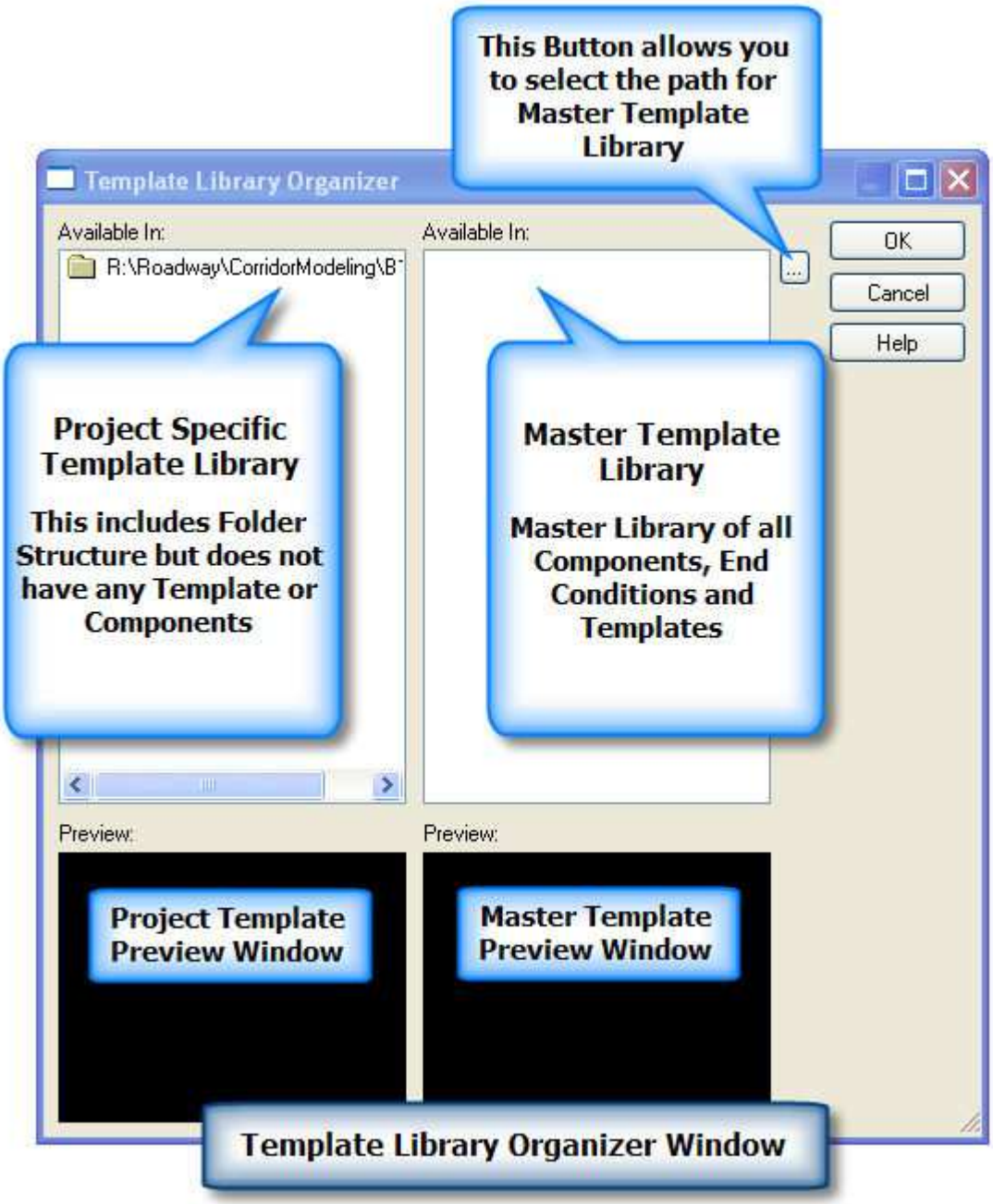
1.) Under "**Corridor Modeling Dialog Window**" click on "**Open Create Template Button**".

E3.2 How to Access "Template Library Organizer…"

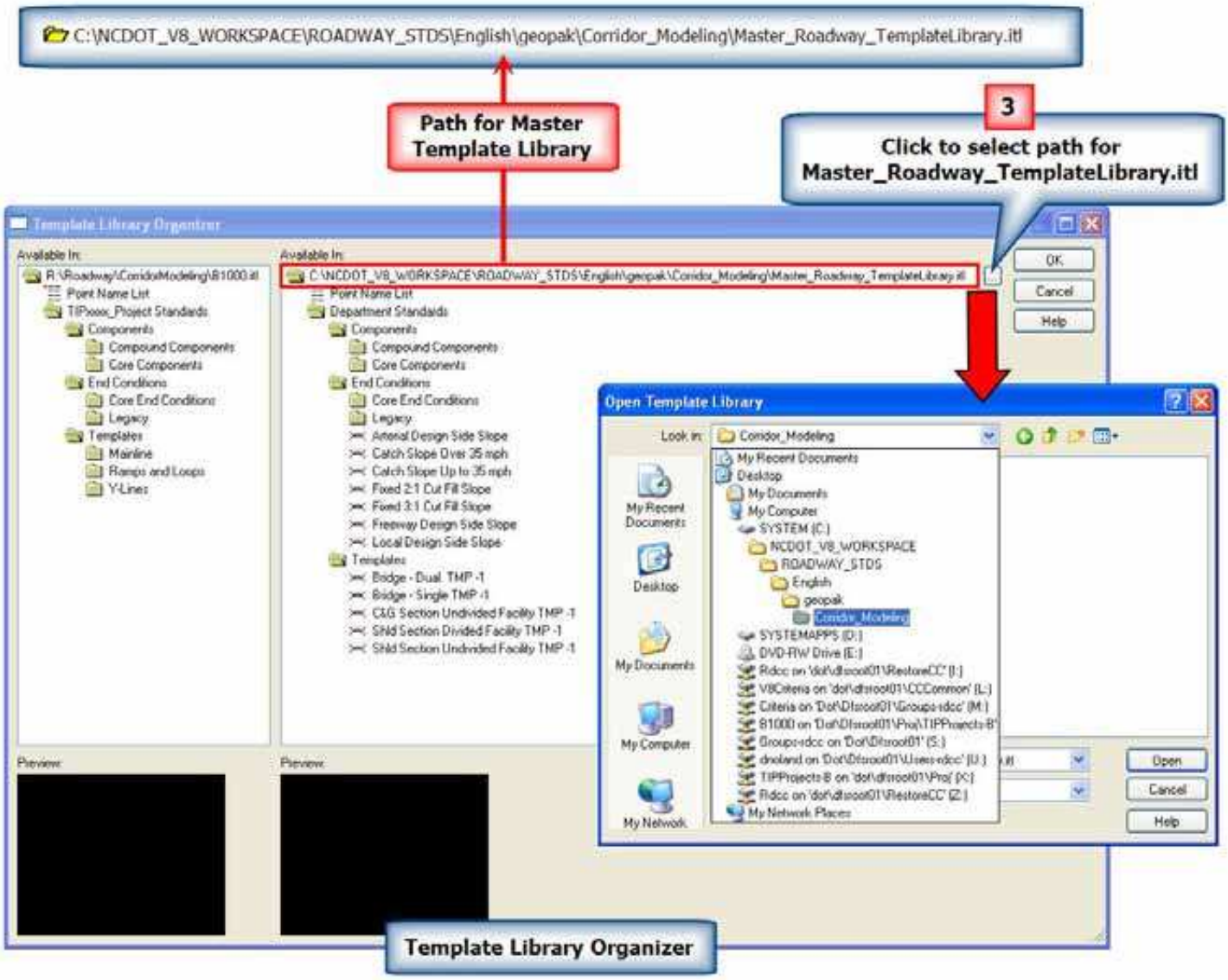


2.) Under "**Create Template**" select "**Tools**" then "**Template Library Organizer…**"

E3.3 Template Library Organizer Features

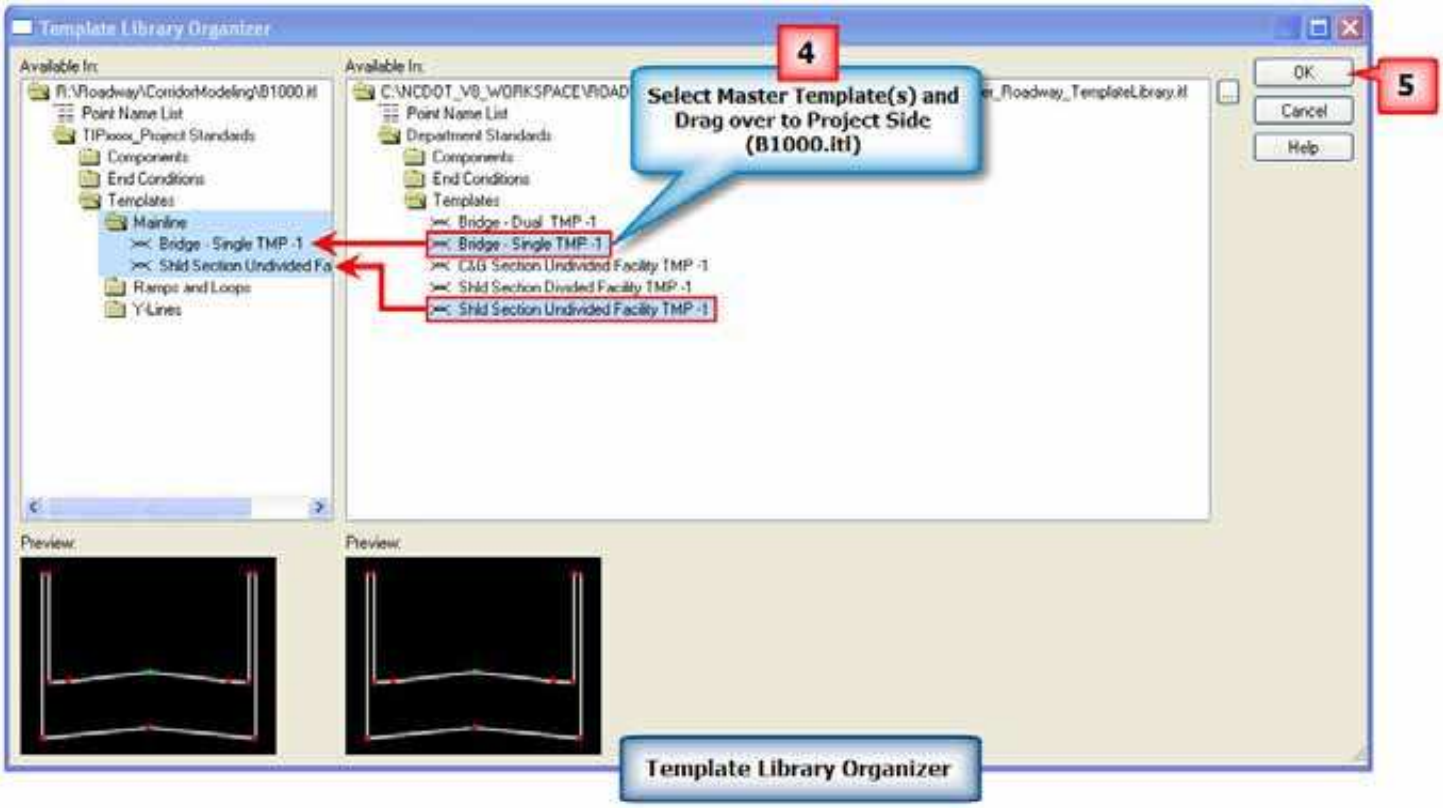


E3.4 Set Path to Access Master Roadway Template Library (ITL)



3.) In right window of "**Template Library Organizer**" click on ... to **set path for Master Template Library**.

E3.5 Select and Drag "Master Templates" into "Project Specific Library (B1000.itl)"



4.) Under "**Master Templates Folder**" select and drag "**Bridge – Single TMP-1**" and "**Shld Section Undivided Facility TMP-1**" over to **Mainline Folder** under **B1000.itl Template Library**.

5.) Select OK.

- Select Yes

Chapter 4: Roadway Designer Dialog Window

Objectives:

- What is the purpose of the Roadway Designer Dialog Window?
- Roadway Designer Dialog Window Overview
- Roadway Designer Toolbar
- Basic "Roadway Designer" Workflow

Exercise: Roadway Designer Process

E4.1 How to Start "Roadway Designer"

E4.2 Creating a Corridor

- What is a Corridor?
- Open "Manage Corridors"

E4.3 Template Drops

- What are Template Drops?
- Open "Template Drops"
- Add First "Template Drop" at Station 11+30.00
- Add Additional "Template Drops" through Station 15+00

E4.4 Using "Plan, Profile and Cross Section Views" in Roadway Designer Dialog Window

- Roadway Designer Dialog Window
- Plan View Window

E4.5 Saving Roadway Designer File (IRD)

- What is an .IRD File?
- How to Save IRD File

E4.6 Superelevation

- Methods for Applying Superelevation in Corridor Modeling
- Using "Import Superelevation from INP file…"
- Scan Through Templates to View Superelevation:

E4.7 Point Controls

- What are Point Controls?
- Open "Point Controls"
- Using Point Controls to "Control" Left Side Plan Graphic Alignment
- Using Point Controls to "Control" Right Side Plan Graphic Alignment

E4.8 Parametric Constraints

- What are Parametric Constraints?
- Open "Parametric Constraints"
- Using "Parametric Constraints" to Change "Pavement Depth"

E4.9 Create Surface

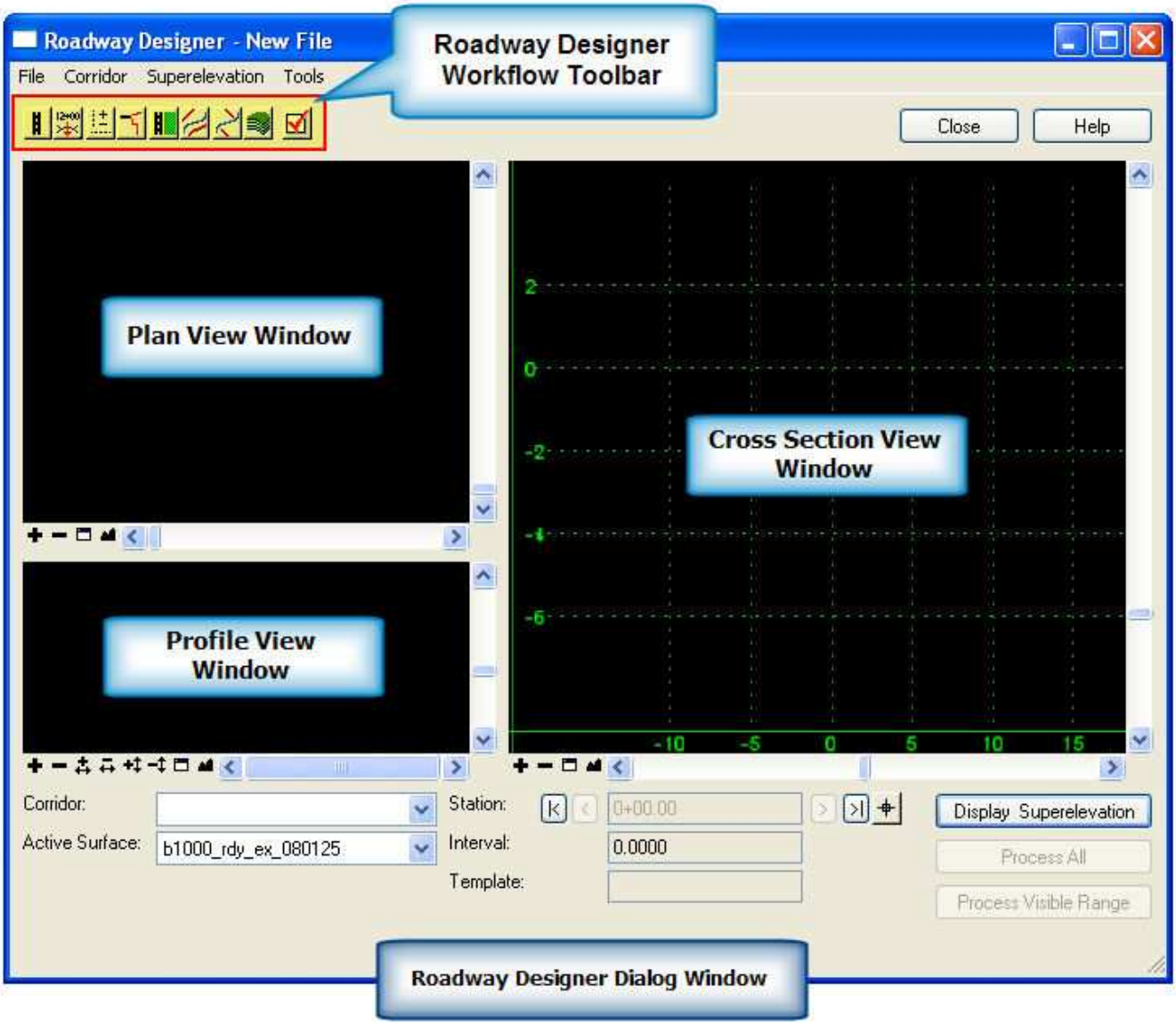
- What is a Surface?
- Open "Create Surface(s)…"
- Save IRD File
- Density Horizontal & Vertical Curves using Chord Height Tolerance
- "L.DTM" 3D Model

E4.10 Close "Roadway Designer"

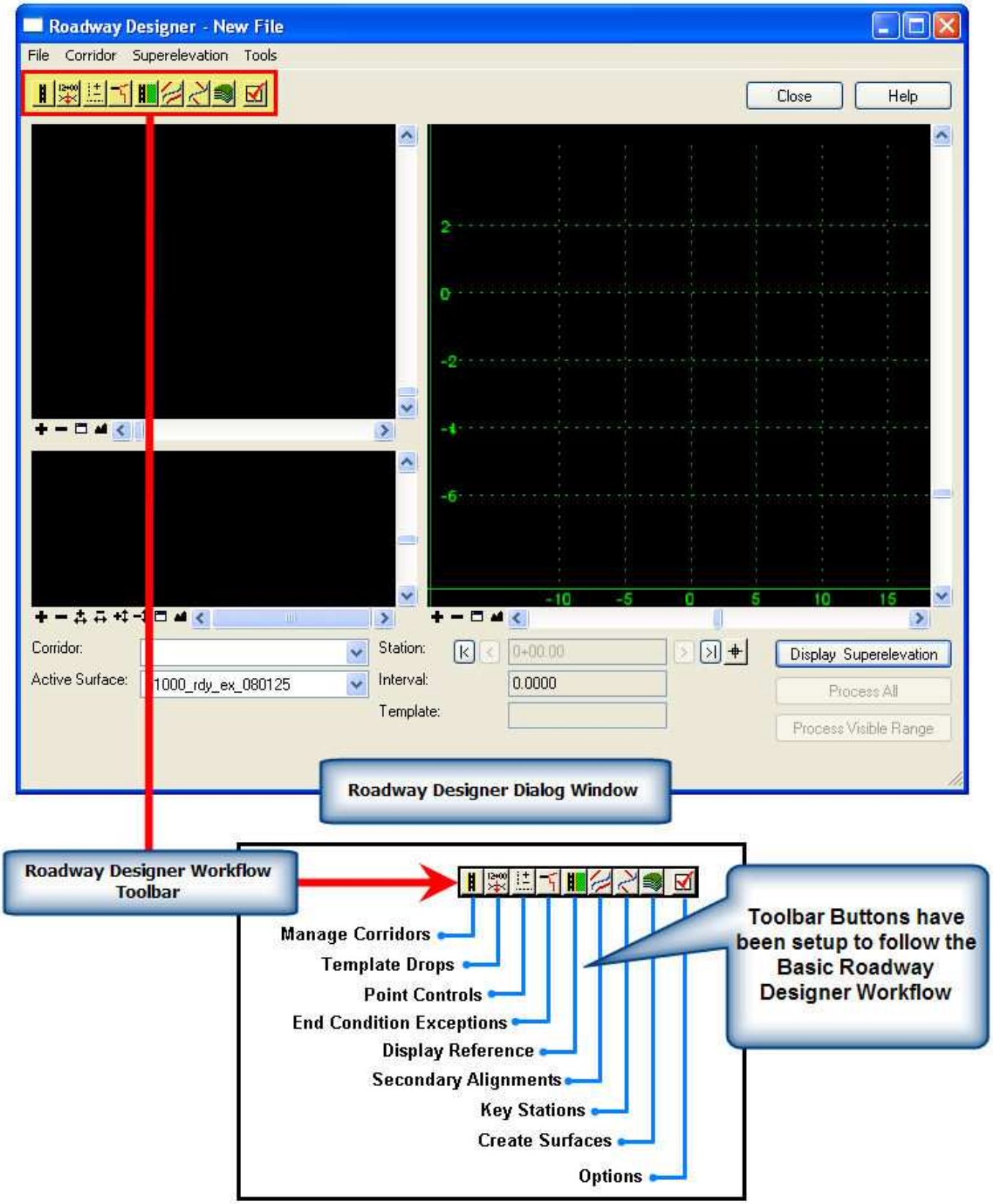
Roadway Designer

- **What is the purpose of the Roadway Designer Dialog Window?**
  - Combines **alignments**, **surfaces** and **templates** to create a **proposed roadway model**. In addition to this, it allows you to add **superelevation** to your **3D model**. **All data** created within the **Roadway Designer Dialog** is **saved to an IRD File**.

- **Roadway Designer Dialog Window Overview**



- **Roadway Designer Toolbar**

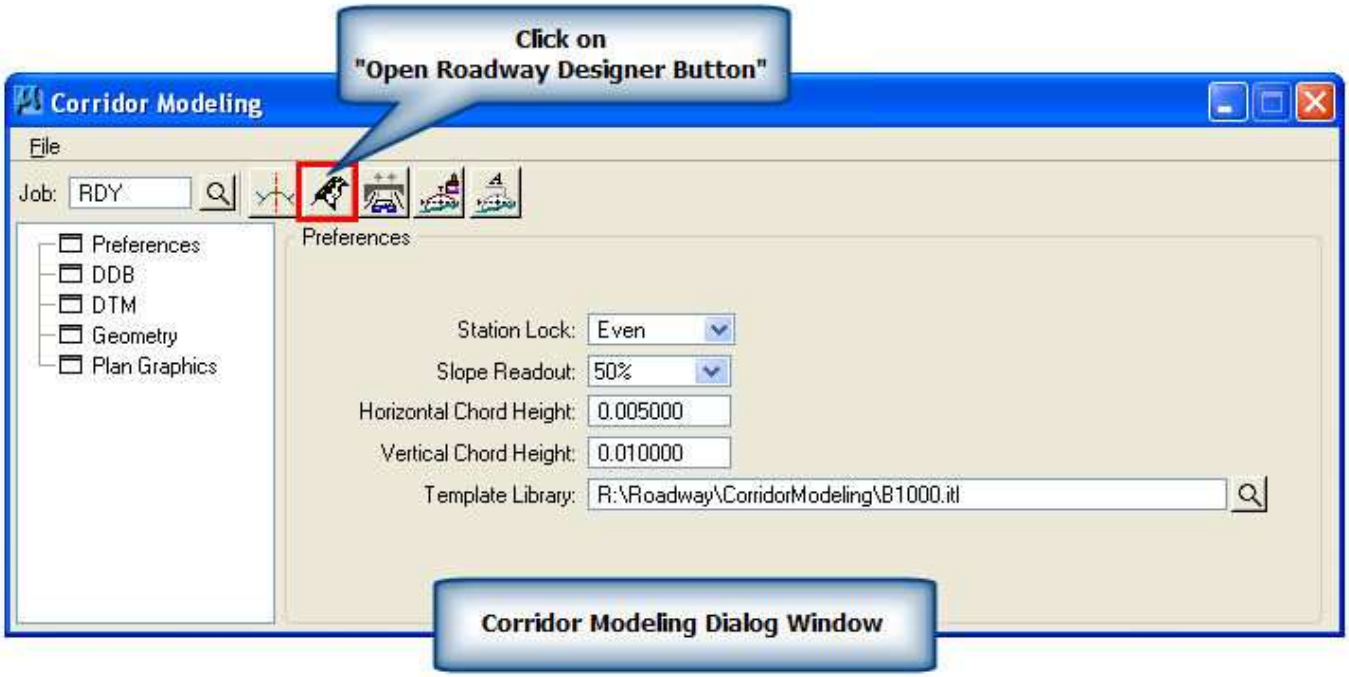


- **Basic "Roadway Designer" Workflow**

    1. Create Corridor
    2. Add Template Drops
    3. Apply Superelevation
    4. Apply Point Controls
    5. Apply Parametric Constraints
    6. Test / Refine Design
    7. Create 3D Surface

<u>Exercise:</u> Roadway Designer

E4.1 How to Start "Roadway Designer"



- Under "**Corridor Modeling Dialog Window**" click on "**Open Roadway Designer Button**".

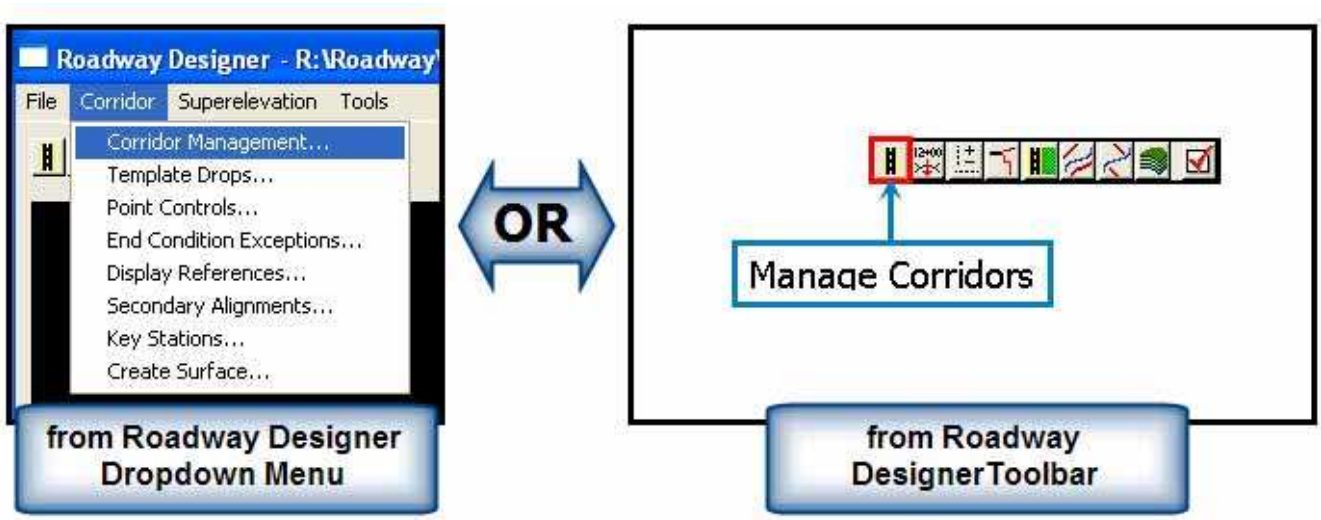
E4.2 Creating a Corridor

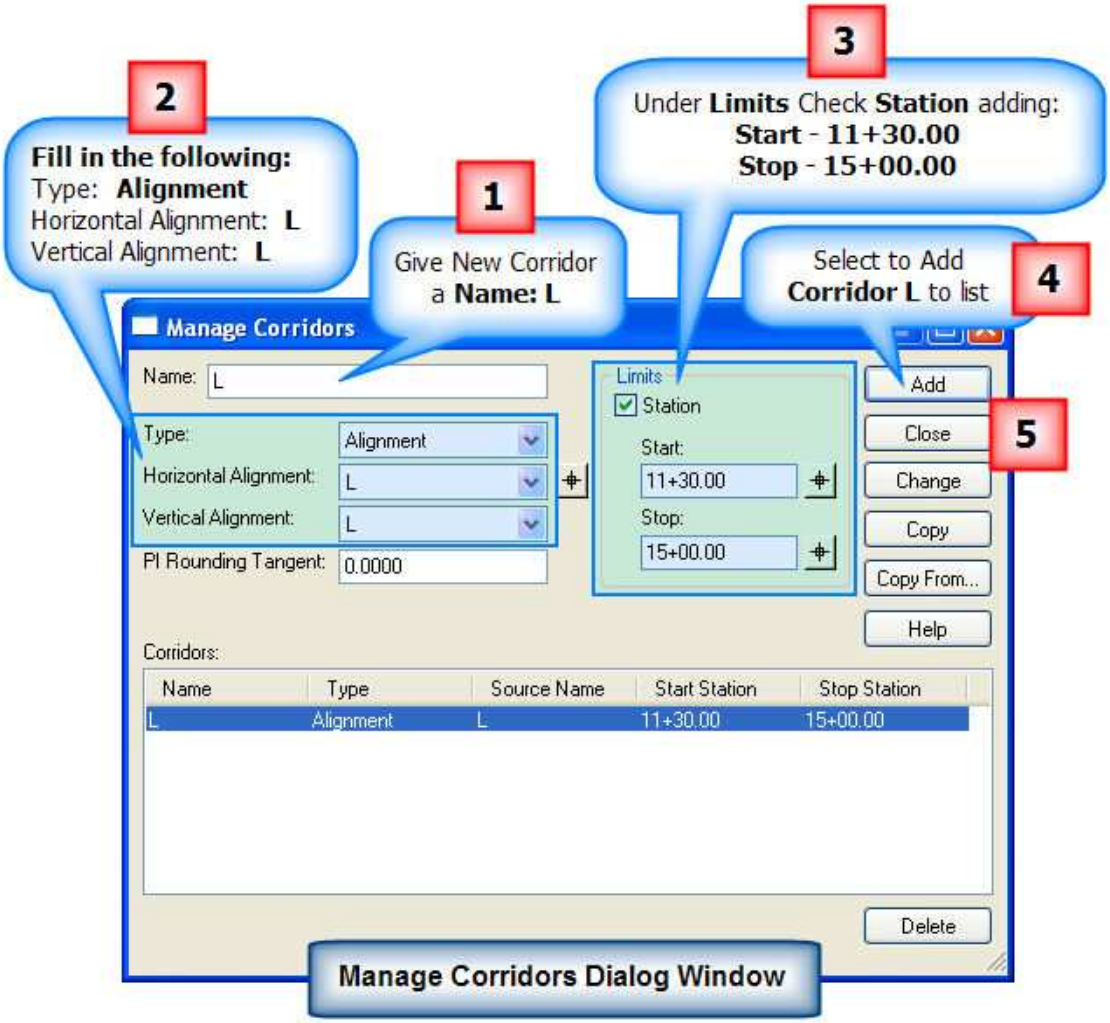
What is a Corridor?

- A **Corridor** is a **design section of roadway defined by the station limits of the mainline horizontal and vertical alignments**.
- A **Corridor** is created by using "**Manage Corridors**" dialog window

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**

3.) Under "**Limits**" select ☑ next to **Station**

Next to **Start:** type **11+30.00**

Next to **Stop:** type **15+00.00**

4.) Click [Add] to add **Corridor L** to list.

5.) Select [Close] to **Close Manage Corridors Dialog Window**.

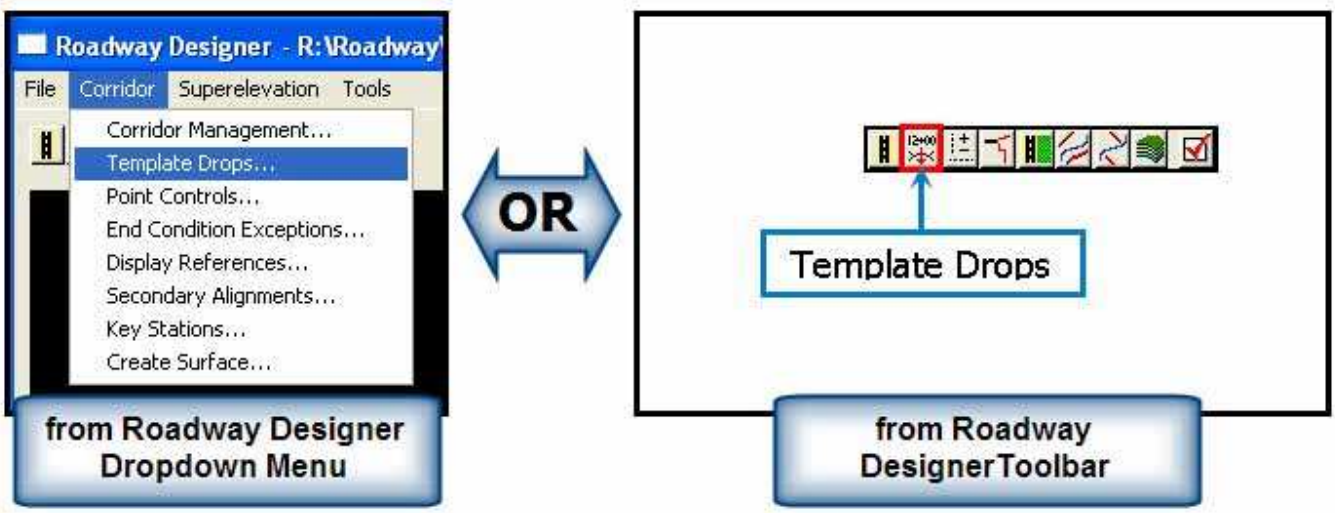
E4.3 Template Drops

What are Template Drops?

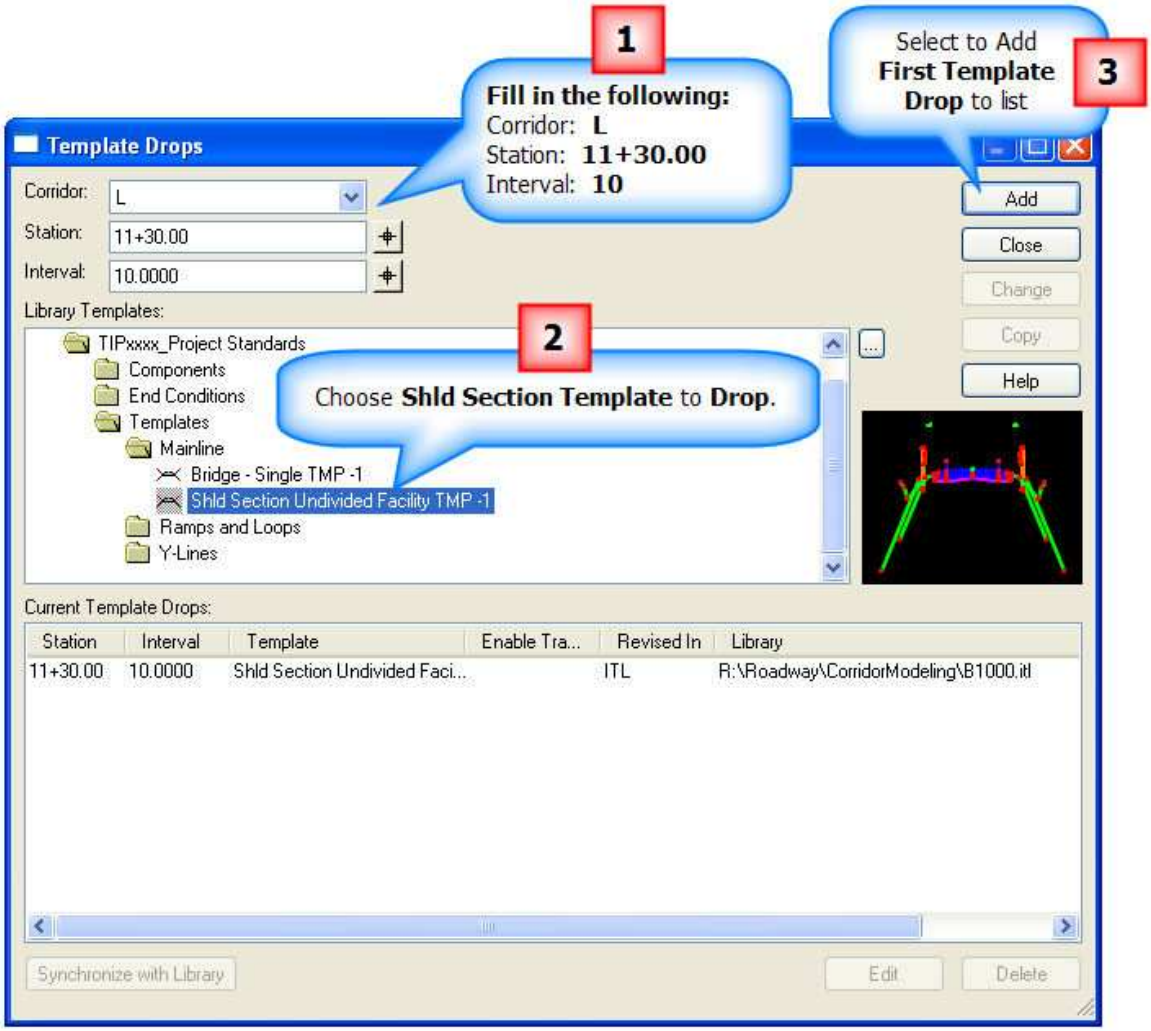
- **Template Drops** are used to **assign** previously created **Templates** to **specific stations** in a **Corridor**.

Open "Template Drops"

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



Add First "Template Drop" at Station 11+30.00



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

Next to **Station:** Type **11+30.00**

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

2.) Under "**Library Templates**" select **Template** (under **Mainline**)

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

3.) Click [Add] to add **First Template Drop** to list.

4.) **Repeat this process** for **adding additional Template Drops.**

Repeating Previous "Template Drop" process, Add the following Template Drops:

2nd "Template Drop": Corridor: **L**
Station: **12+75.72**
Interval: **10**
Choose: **Shld Section Undivided Facility TMP-1**
Click Add to add 2nd Template Drop

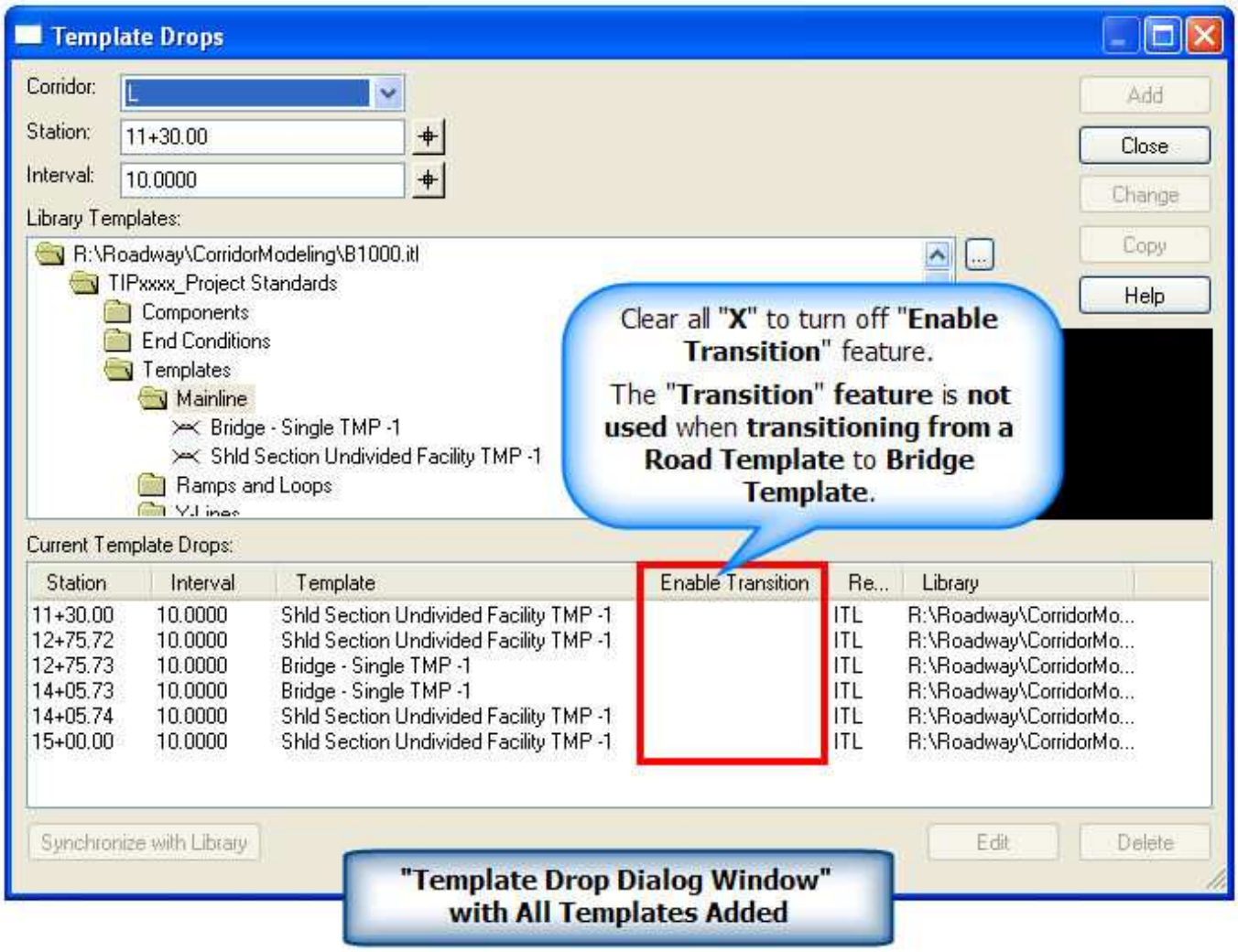
3rd "Template Drop": Corridor: **L**
Station: **12+75.73**
Interval: **10**
Choose: **Bridge – Single TMP-1**
Click Add to add 3rd Template Drop

4th "Template Drop": Corridor: **L**
Station: **14+05.73**
Interval: **10**
Choose: **Bridge – Single TMP-1**
Click Add to add 4th Template Drop

5th "Template Drop": Corridor: **L**
Station: **14+05.74**
Interval: **10**
Choose: **Shld Section Undivided Facility TMP-1**
Click Add to add 5th Template Drop

Final "Template Drop": Corridor: **L**
Station: **15+00**
Interval: **10**
Choose: **Shld Section Undivided Facility TMP-1**
Click Add to add Final Template Drop

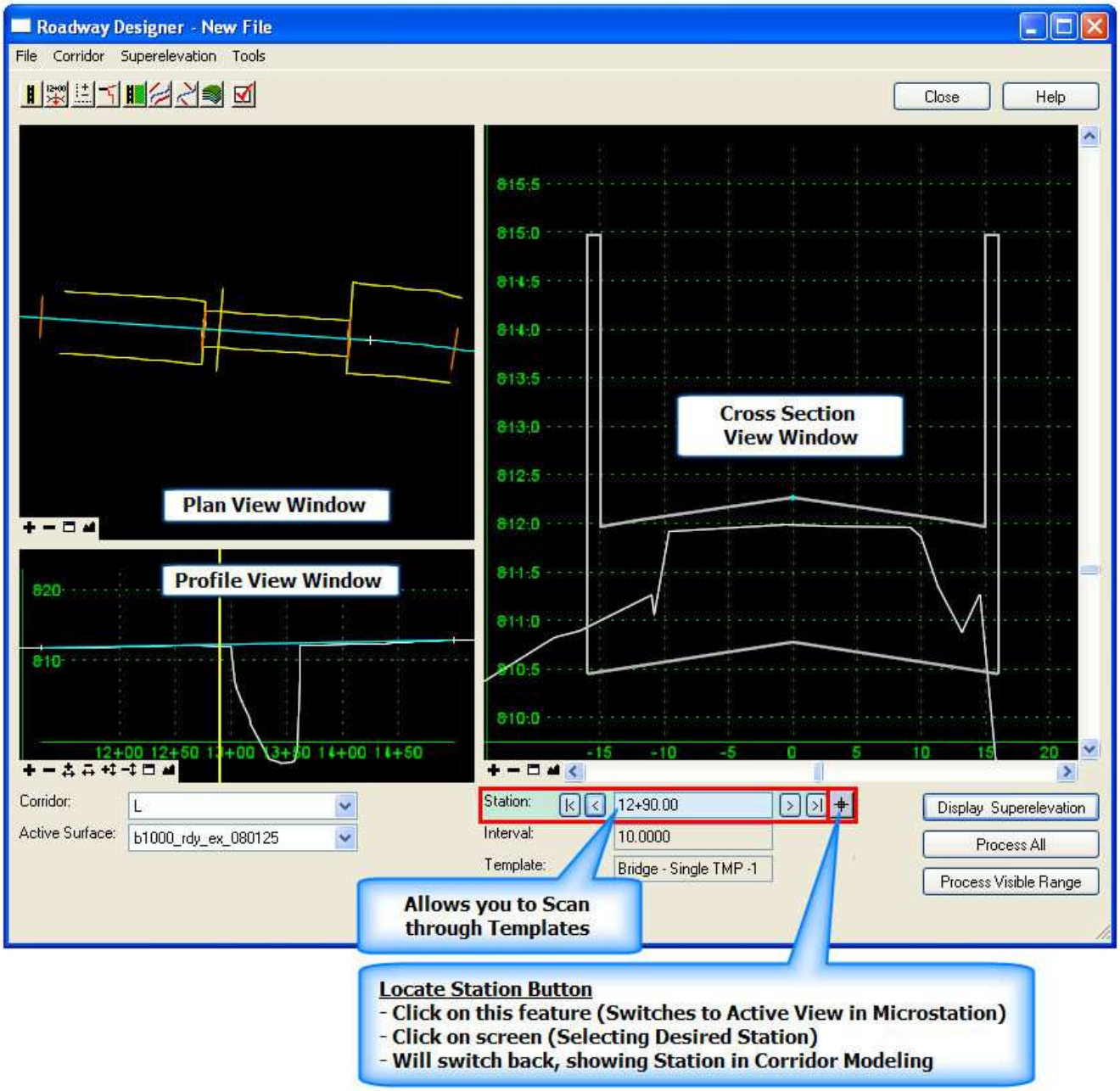
After Adding All Template Drops the "Template Drop Dialog" should look like the following:



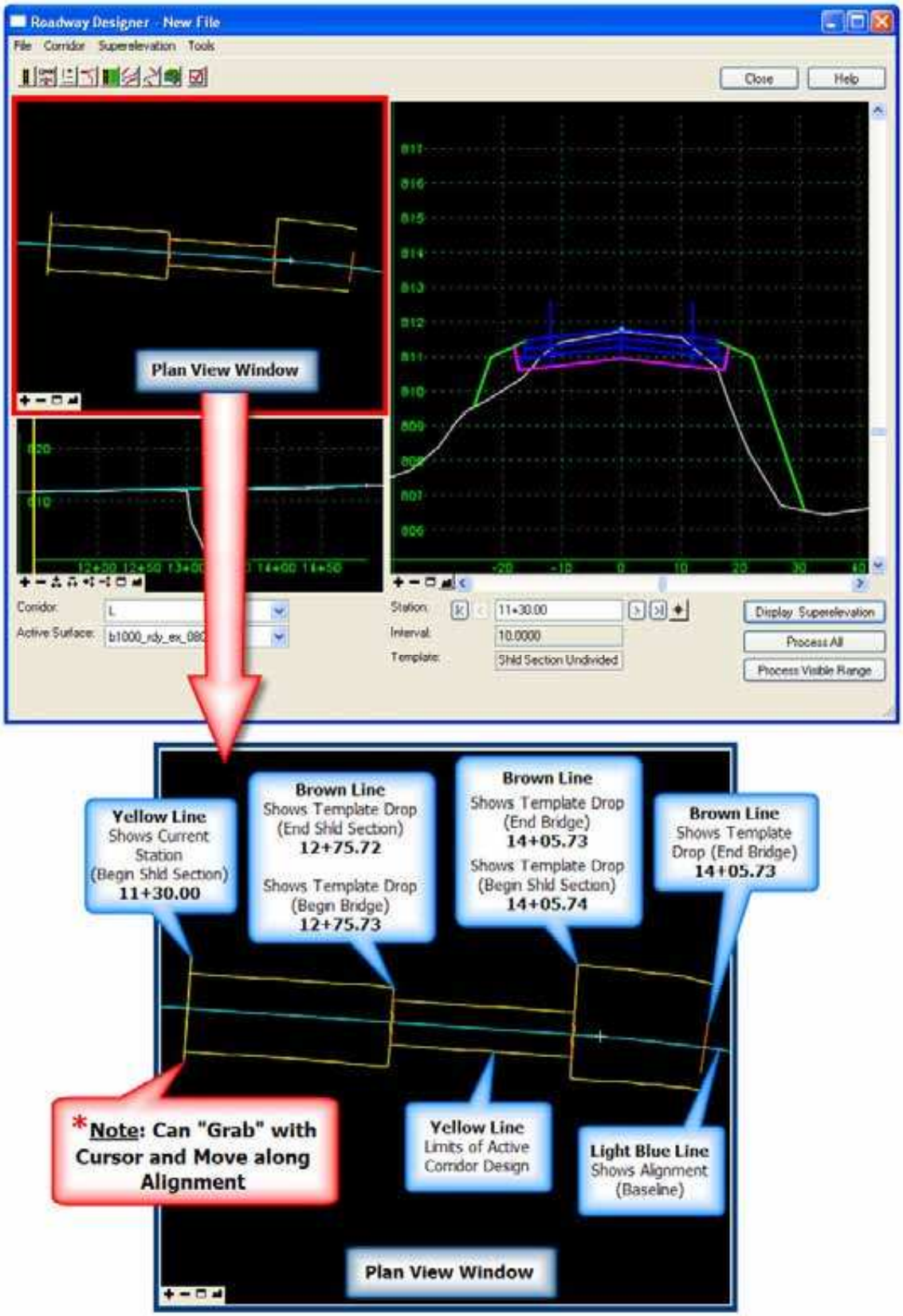
5.) Once all Template Drops have been added, select [Close] to **Close Template Drops Dialog Window**.

E4.4 Using "Plan, Profile and Cross Section Views" in Roadway Designer Dialog Window

Roadway Designer Dialog Window:



Plan View Window:



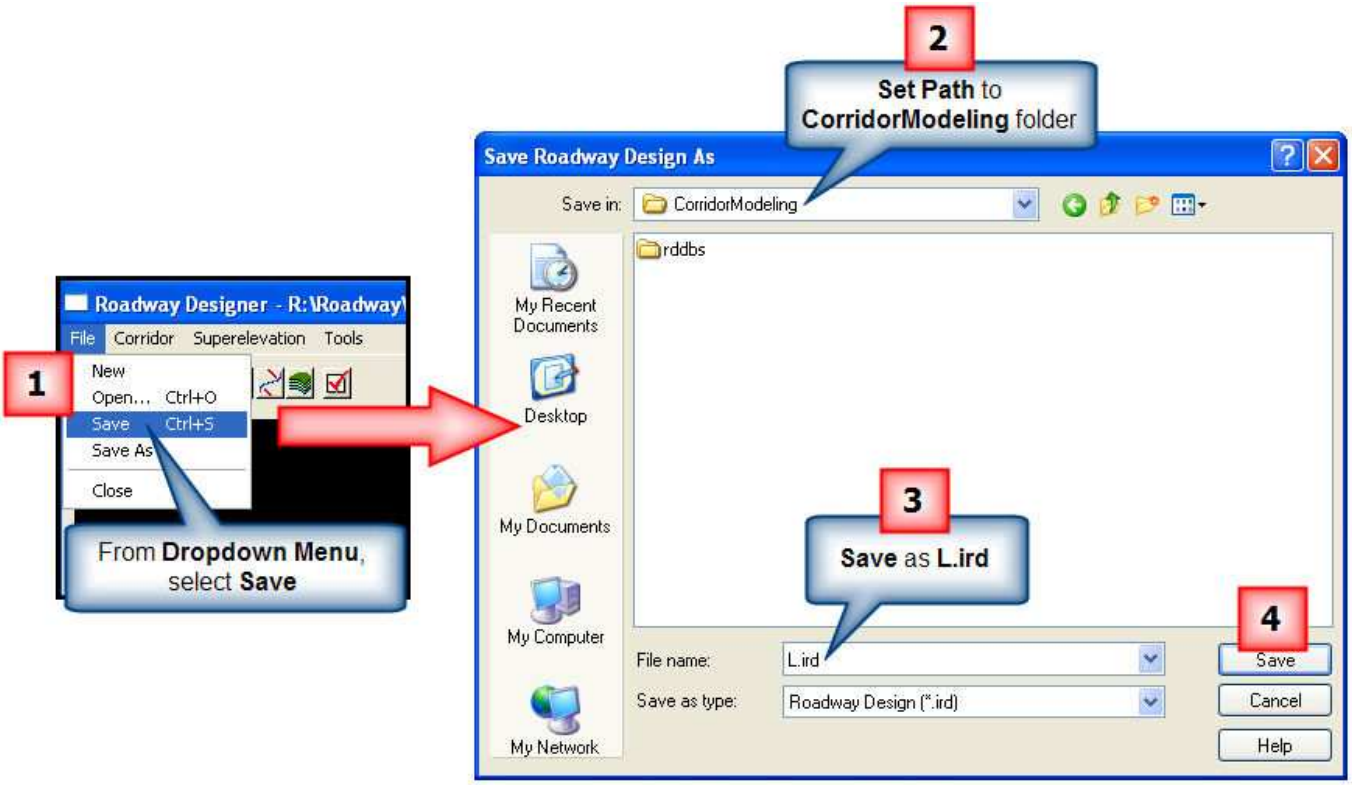
E4.5 Saving Roadway Designer File (IRD)

What is an .IRD File?

IRD – Stores the combination of alignments, surfaces and templates needed to create Proposed 3D Model.

* This file is stored in the **CorridorModeling Folder**:

How to Save IRD File



1.) Under File Dropdown Menu, select Save.

2.) Next to **Save in: Select path** to **CorridorModeling** folder.

3.) Next to **File name:** Type in **L.ird.**

4.) Click on [Save], to Save IRD File.

E4.6 Superelevation

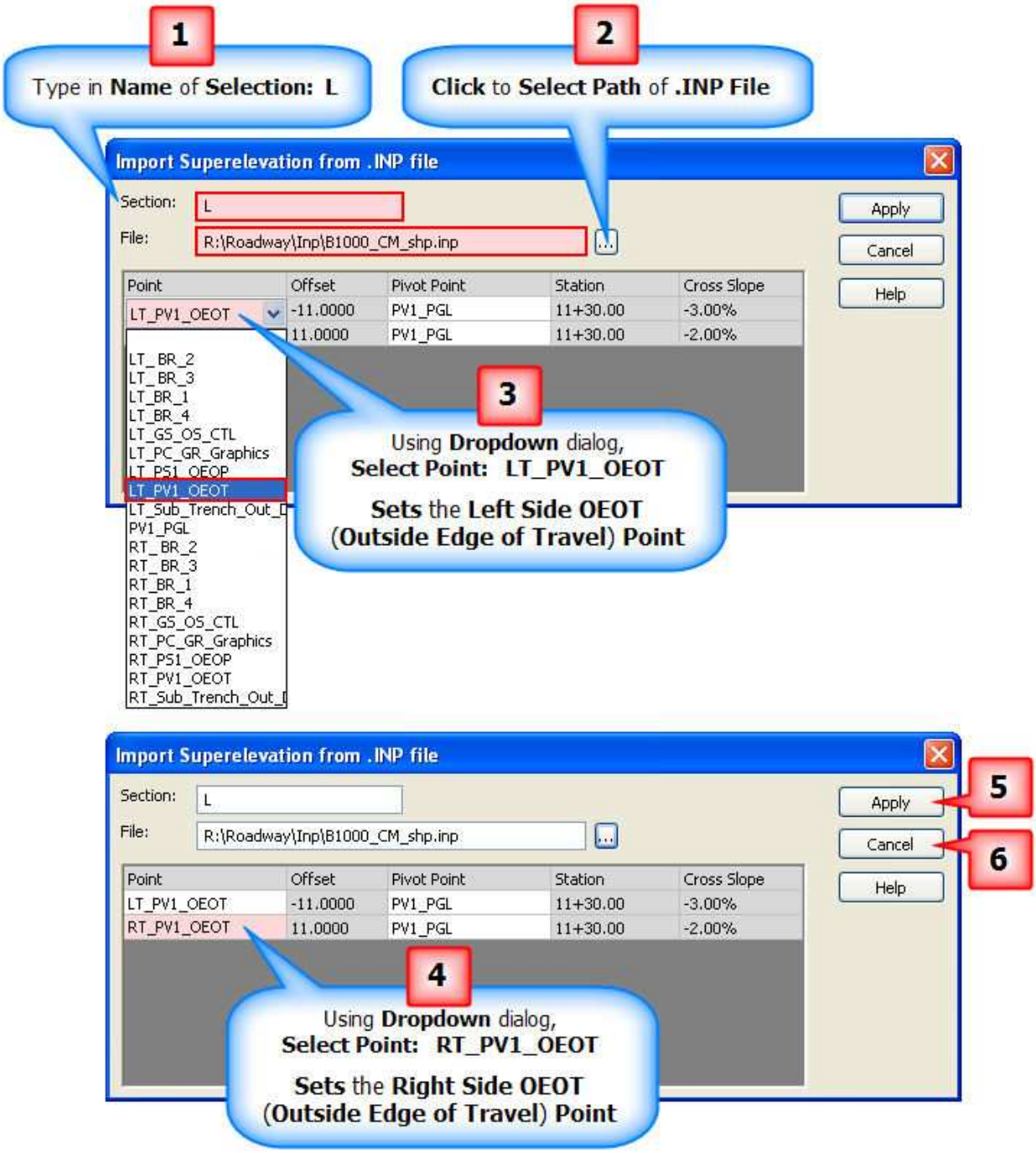
- Superelevation is created and applied using the Roadway Designer after the corridor is created and template drops are assigned.
- Superelevation is stored and saved in the Roadway Design File (IRD) and is applied to a corridor.

Methods for Applying Superelevation in Corridor Modeling

- Corridor Modeling offers five methods for applying Superelevation:
  - **AASHTO Wizard**
  - **Fixed Length Wizard**
  - **Table Wizard**
  - **Import Superelevation from ASCII…**
  - **Import Superelevation from INP…**

* **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**.

Using "Import Superelevation from INP file…"



1.) Type in Name of **Selection: L**

2.) Click [...] to **Select Path** of **.INP File**.

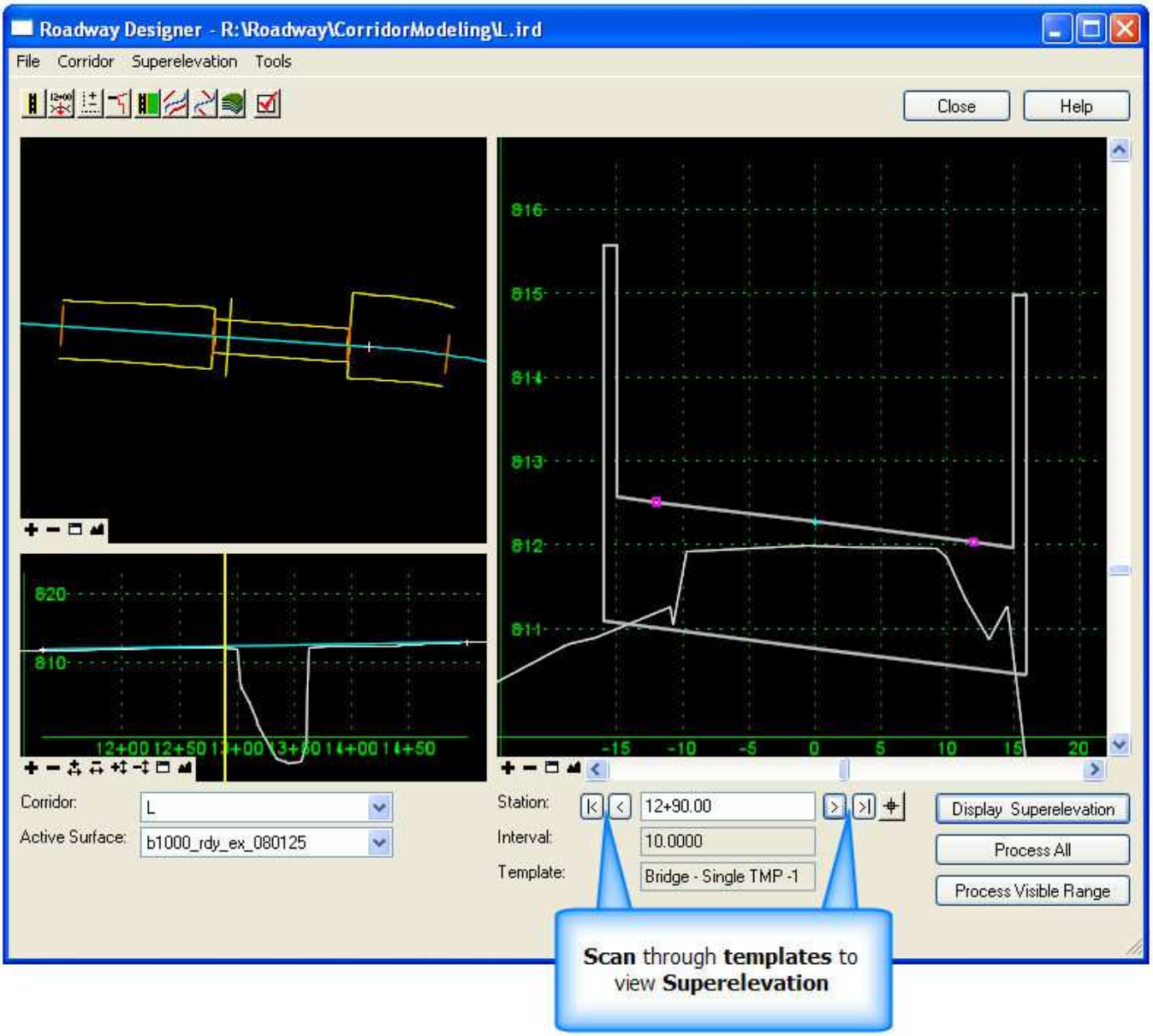
3.) Using **Dropdown** dialog, select **Point: LT_PV1_OEOT**

4.) Using **Dropdown** dialog, select **Point: RT_PV1_OEOT**

5.) Click on [Apply] to **add "Superelevation"** to the **Model**.

6.) Click [Cancel] to **Close "Import Superelevation from .INP file"**

Scan Through Templates to View Superelevation:



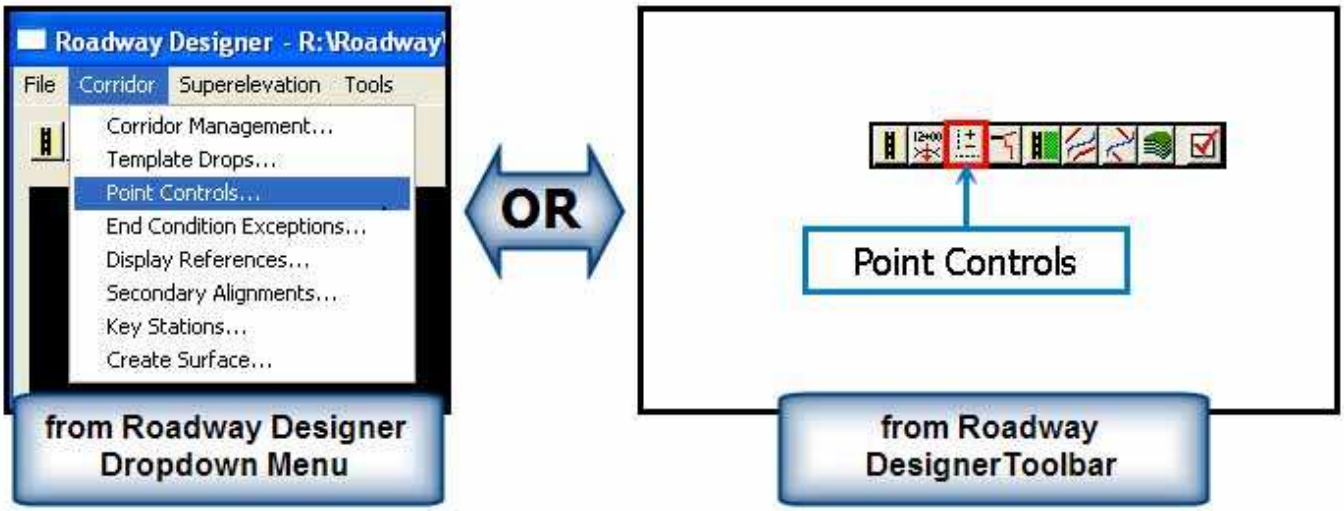
E4.7 Point Controls

What are Point Controls?

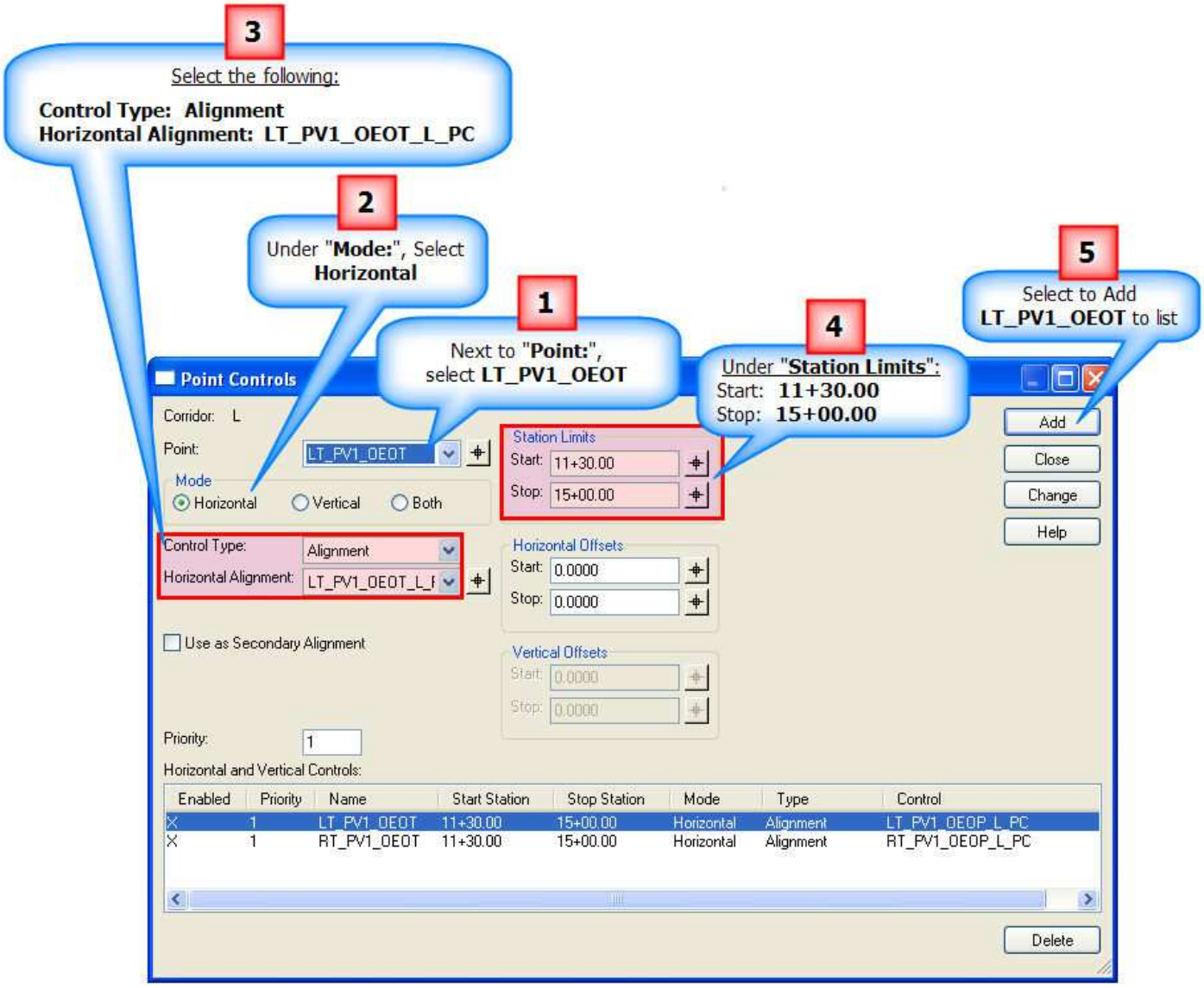
- Point Controls are used to modify the behavior of points in a template. These controls take precedence (they override) over existing constraints on the point.
- Design examples include Lane Widening, Ramp and Intersection Design, Superelevation and Divided Highways with separate Grade Lines.
- These overrides are accomplished by assigning template point names to alignments. The assigned template points will follow the alignments using horizontal and or/ vertical controls within a specified station range.

Open "Point Controls"

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



Using Point Controls to "Control" Left Side Plan Graphic Alignment



1.) Next to **Point:**, select "**LT_PV1_OEOT**".

2.) Under "**Mode**", select "**Horizontal**"

3.) Select the following:

Control Type**: Alignment**

Horizontal Alignment**: LT_PV1_OEOT_PC**

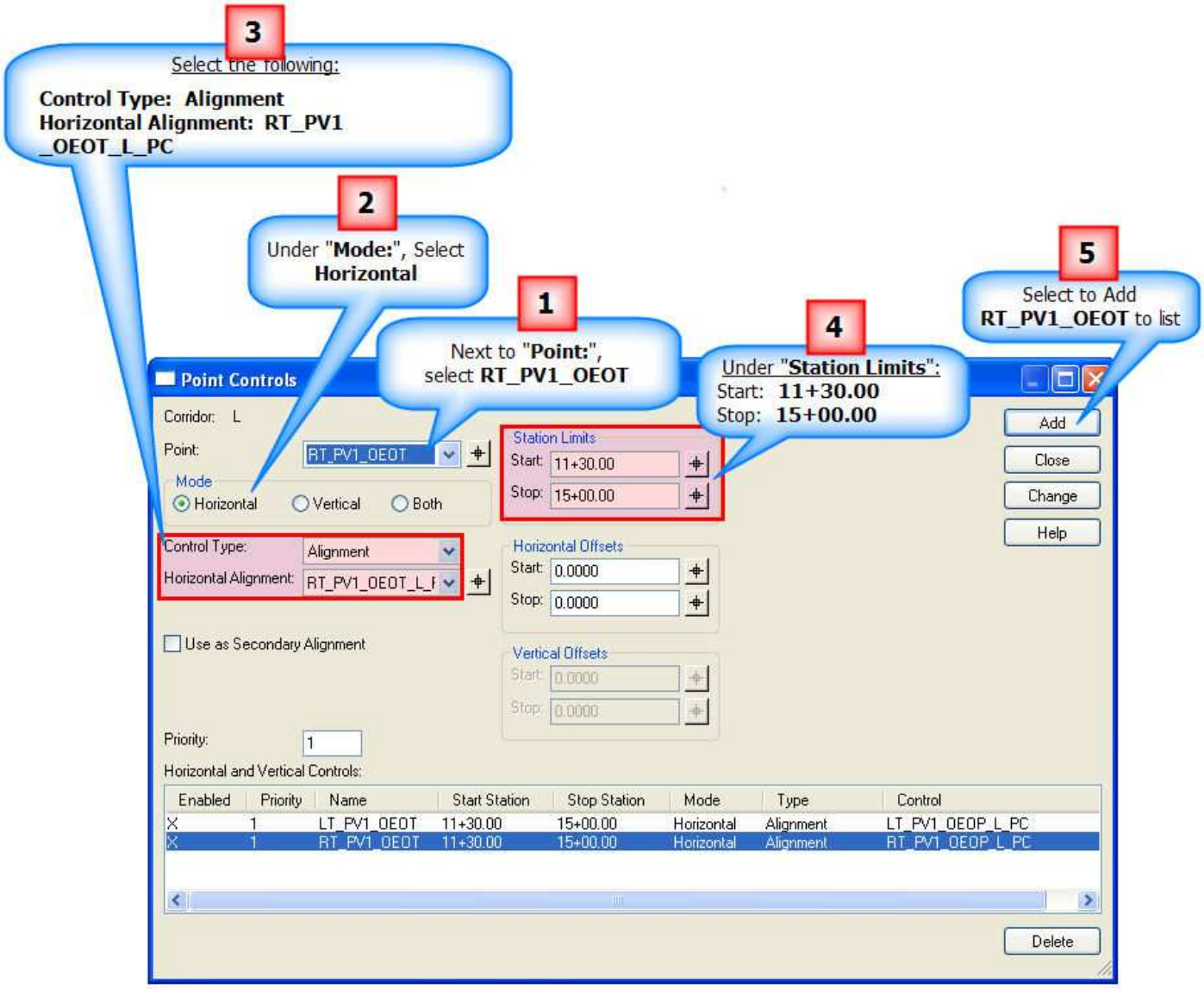
4.) Under "**Station Limits**:" Select the following::

Start: 11+30.00

Stop: 15+00.00

5.) Click on Add to add **LT_PV1_OEOT** to list.

Using Point Controls to "Control" Right Side Plan Graphic Alignment



1.) Next to **Point:**, select "**RT_PV1_OEOT**".

2.) Under "**Mode**", select "**Horizontal**"

3.) Select the following:

Control Type**: Alignment**

Horizontal Alignment**: RT_PV1_OEOT_PC**

4.) Under "**Station Limits**:" Select the following::

Start: 11+30.00

Stop: 15+00.00

5.) Click on Add to add **RT_PV1_OEOT** to list.

E4.8 Parametric Constraints

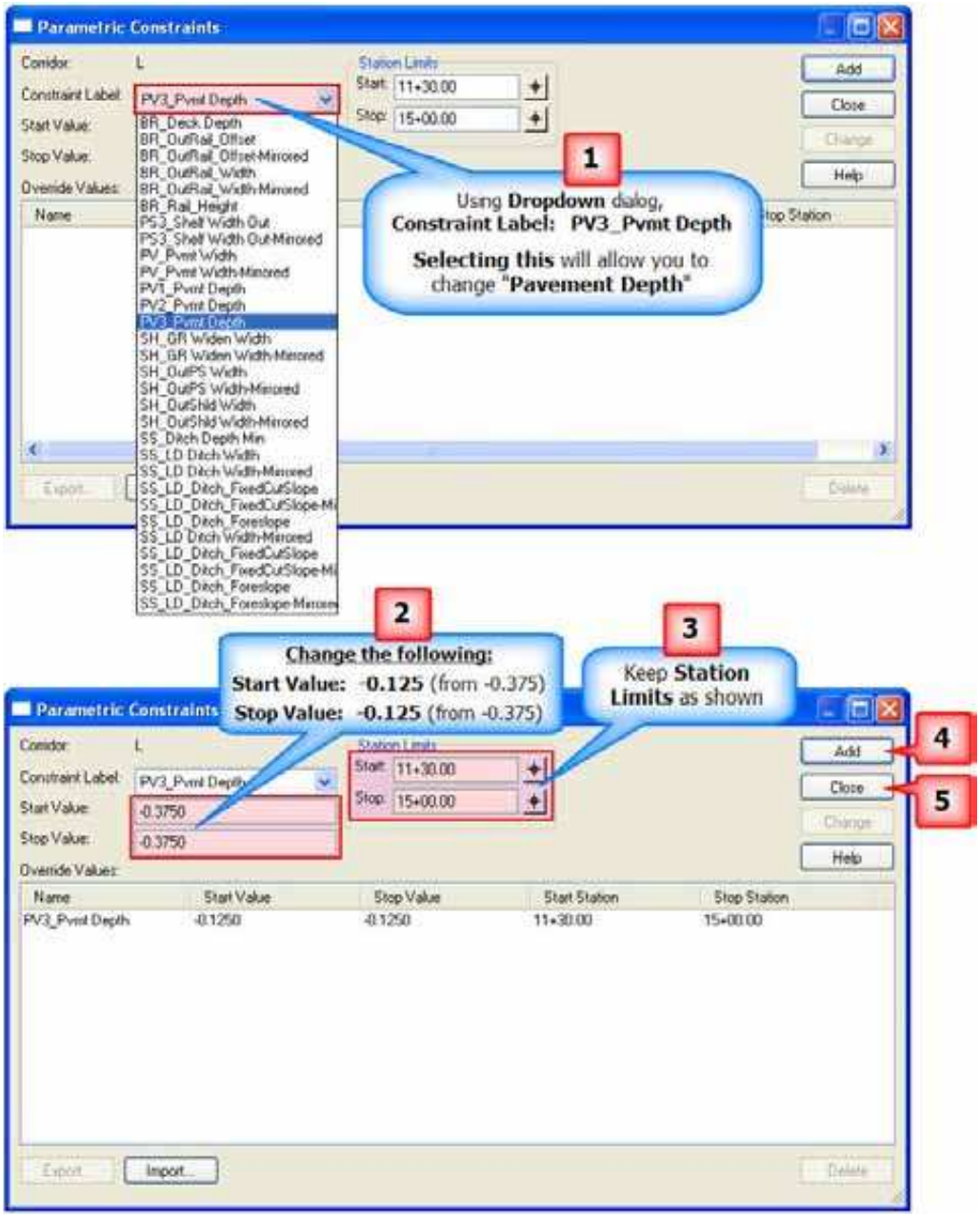
What are Parametric Constraints?

- Used to override Constraint Values for specified station ranges
- Named as Labels in the Point Properties dialog
- One example of Parametric Constraint would be adjusting Pavement Depths

Open "Parametric Constraints"

- By using the Tools Dropdown Menu:

Using "Parametric Constraints" to Change "Pavement Depth"



1.) Using **Dropdown** dialog, **Constraint Label: PV3_Pvmt Depth**

2.) Change **Start & Stop Value: -0.125 (**from -0.3750**)**

3.) Keep **Station Limits** as shown:

Start: 11+30.00

Stop: 15+00.00

4.) Click on Add to **Change Pavement Depth** in **Model**.

5.) Click Close to **Close** "**Parametric Constraints**"

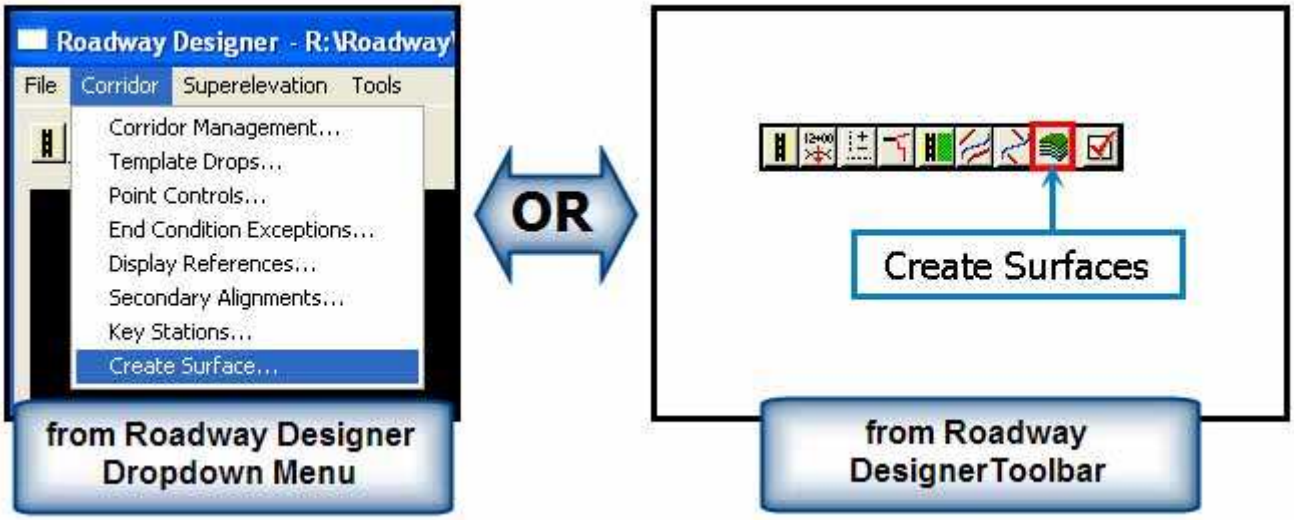
E4.9 Create Surface

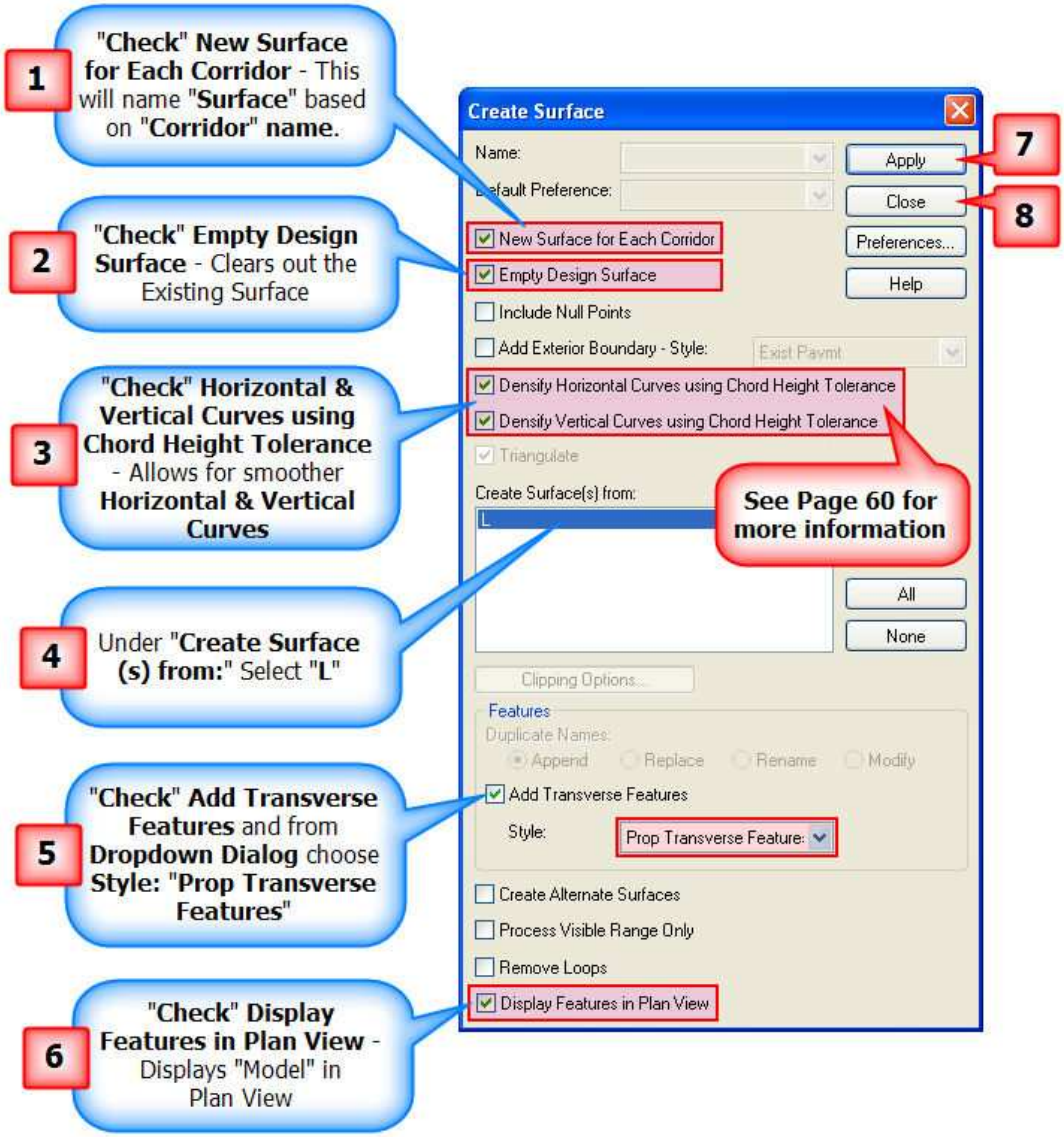
What is a Surface?

- A "Surface" is the same thing as a DTM. A DTM is the digital representation of a "Surface" topography or terrain composed of triangles calculated from points and break-lines.
- When "Templates" are paired with Horizontal and Vertical Alignments (and Superelevation), they define the "Surface" of a Corridor.

Open "Create Surface(s)…"

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





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

2.) Click ☑ **Empty Design Surface**.

3.) Click ☑ **Densify Horizontal Curves using Chord Height Tolerance**.

Click ☑ **Densify Vertical Curves using Chord Height Tolerance**.

4.) Under "**Create Surface(s) from:**" Select "**L**".

5.) Click ☑ **Add Transverse Features** along with using **Dropdown Dialog** to Select "**Style: Prop Transverse Features**".

6.) Click ☑ **Display Features in Plan View**.

7.) Click on Apply to **create "Surface L".**

8.) Click Close to **Close** "**Create Surface"**.

9.) Click on Close to **Close** out of "**Roadway Designer Results**" Dialog Window.

Note: The **Create Surface Process** creates the following files:

L.DTM – Proposed 3D Model DTM

L.XML – Web based, text format, used in **Construction** for "**Machine Control (GPS Grading)**"

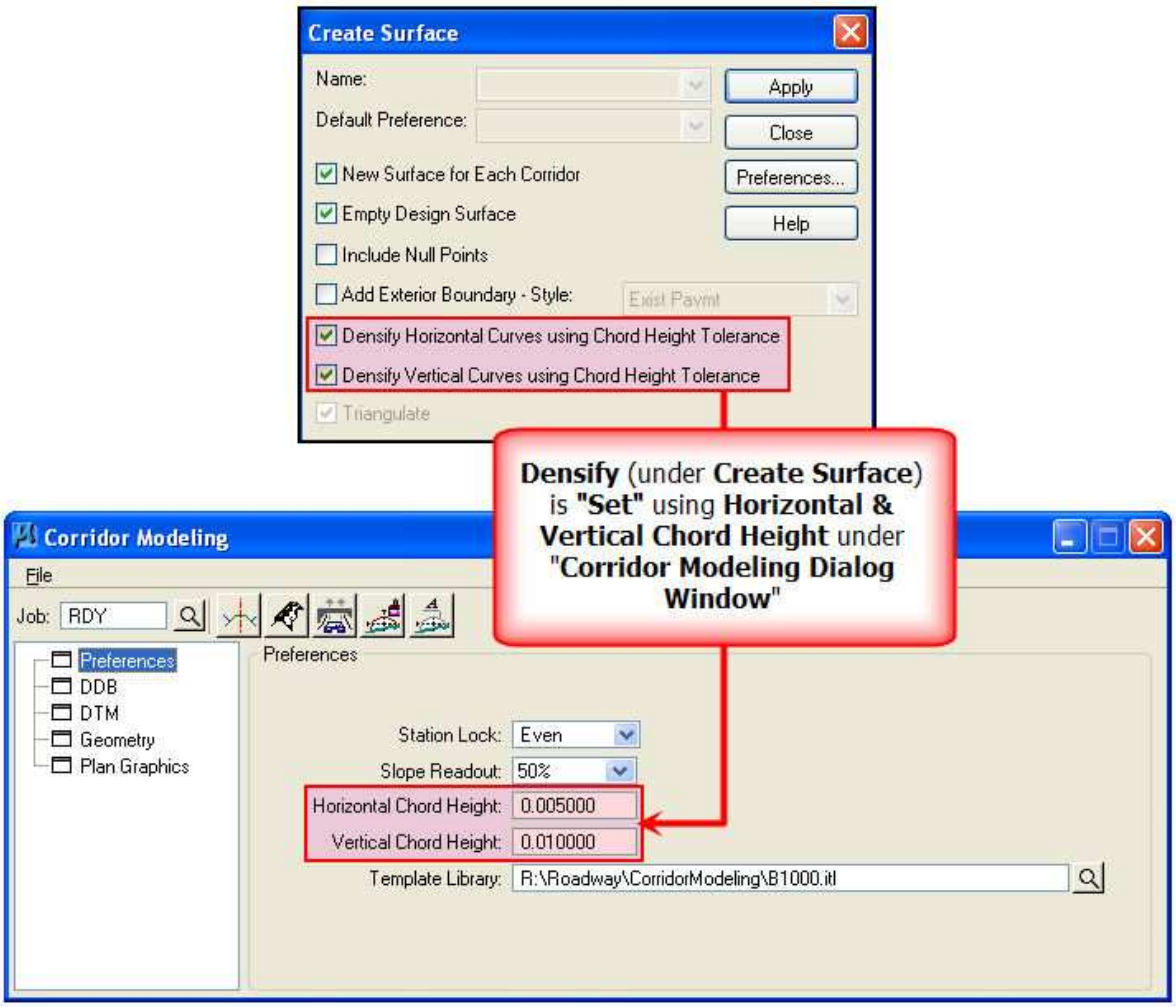
The **L.DTM & L.XML files** are **stored** in the **CorridorModeling** folder.

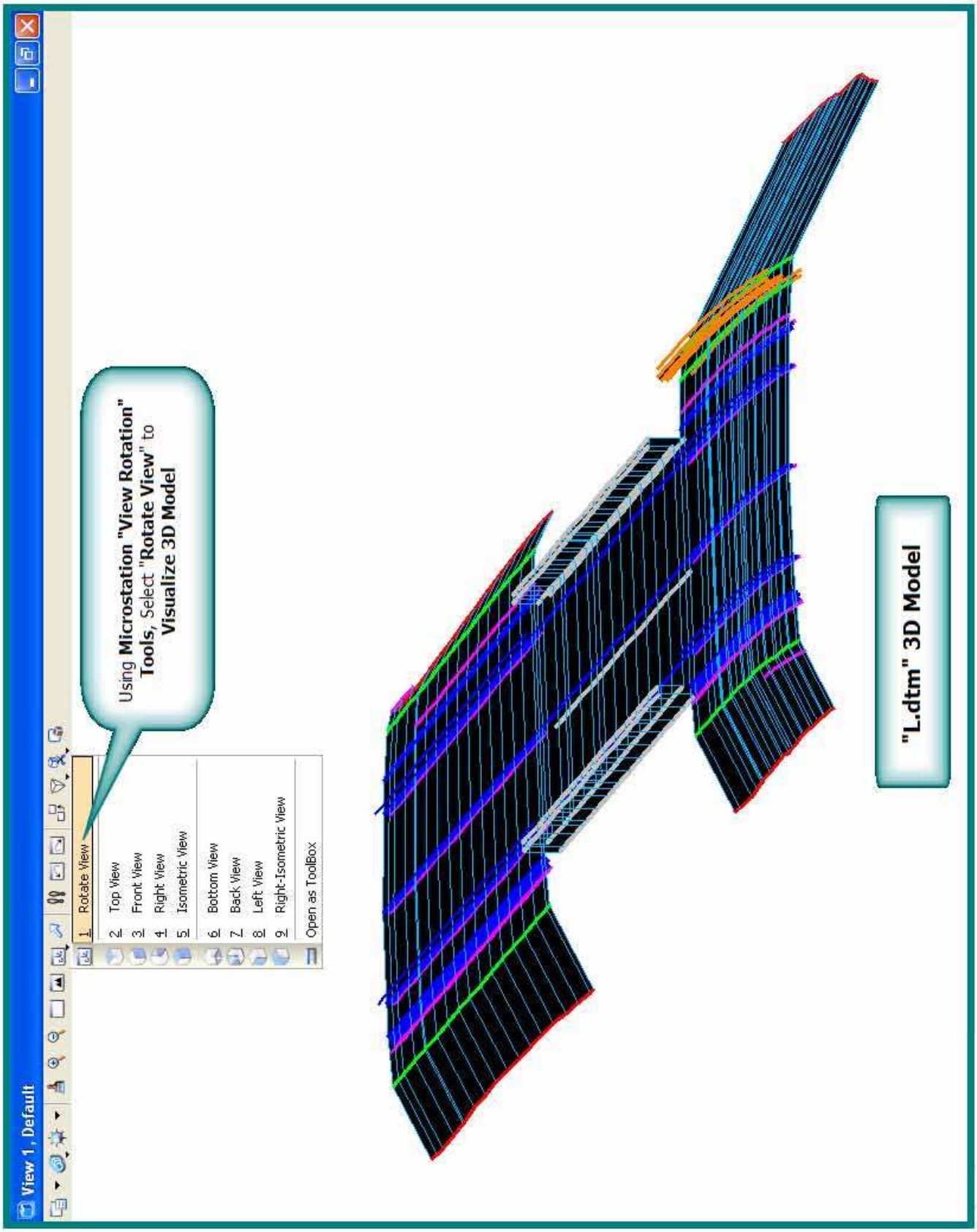
Save IRD File

- **Don't forget** to **Save** your **IRD File before closing** out the "**Roadway Designer Dialog Window**"

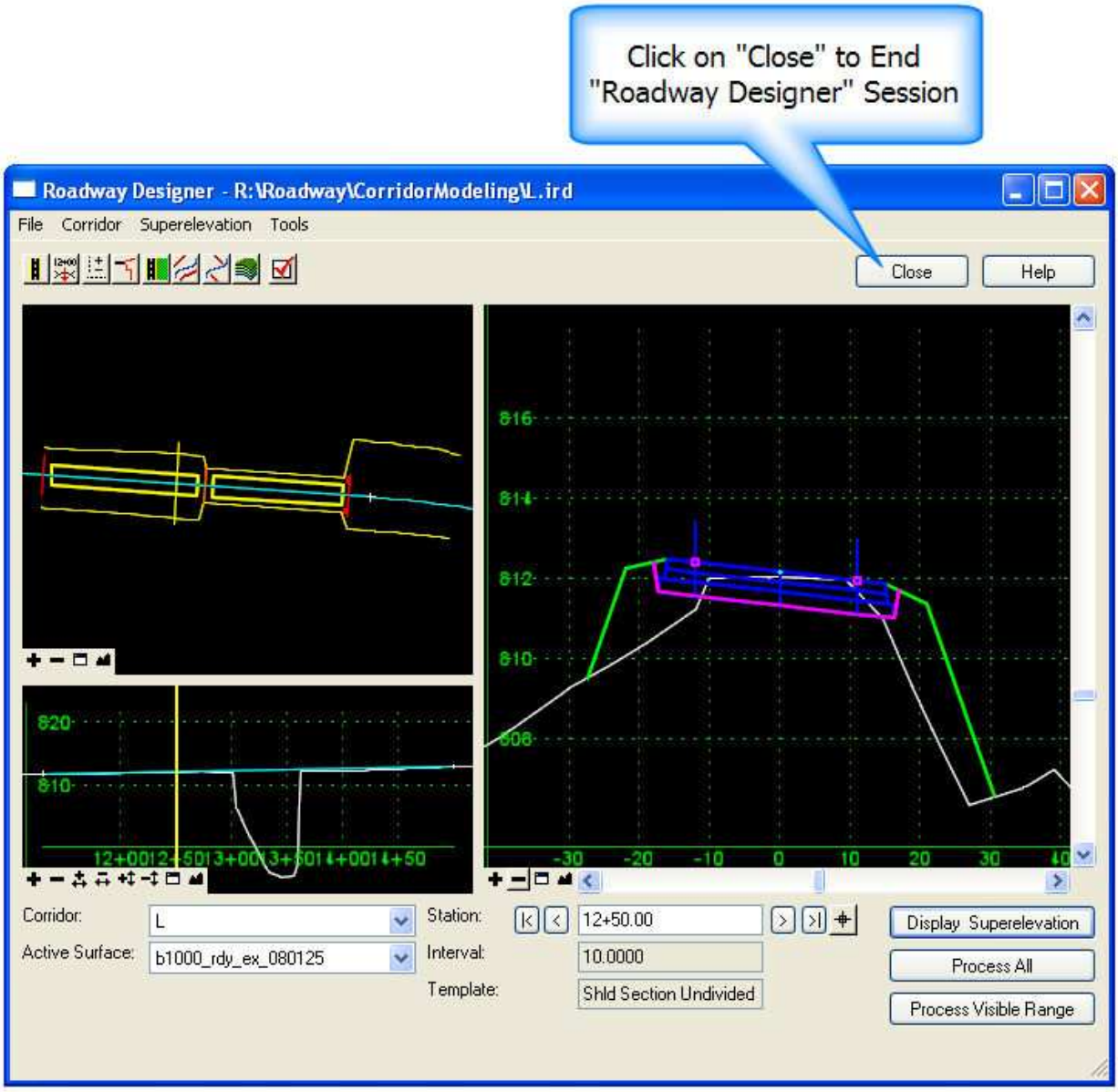
Densify Horizontal & Vertical Curves using Chord Height Tolerance

- Drops additional Templates (using Chord Height Tolerance under Corridor Modeling Dialog Window) for smoother Horizontal & Vertical Curves.




View 1, Default
1 Rotate View
2 Top View
3 Front View
4 Right View
5 Isometric View
6 Bottom View
7 Back View
8 Left View
9 Right-Isometric View
Open as ToolBox
Using Microstation "View Rotation" Tools, Select "Rotate View" to Visualize 3D Model
"L.dtm" 3D Model

E4.10 Close "Roadway Designer"



- Click Close to **End "Roadway Designer"** Session.