LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
- Build a corridor and use target aliasing to target multiple existing ground and rock layer surfaces along three segments of the project.
- View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly

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- C:\Projects\12345\Design\InRoads\Exist_Ground_1-Create End Condit Search Surf.dtm
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   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

2. Select **File> Open** from the InRoads menu bar.

3. Open the following files from ***C:\Projects\12345\Design\InRoads*** directory.

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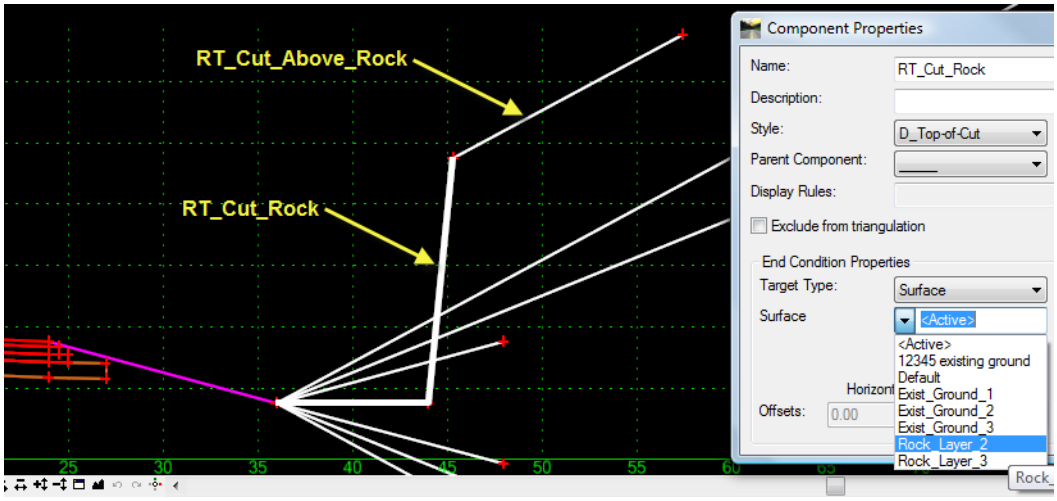
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

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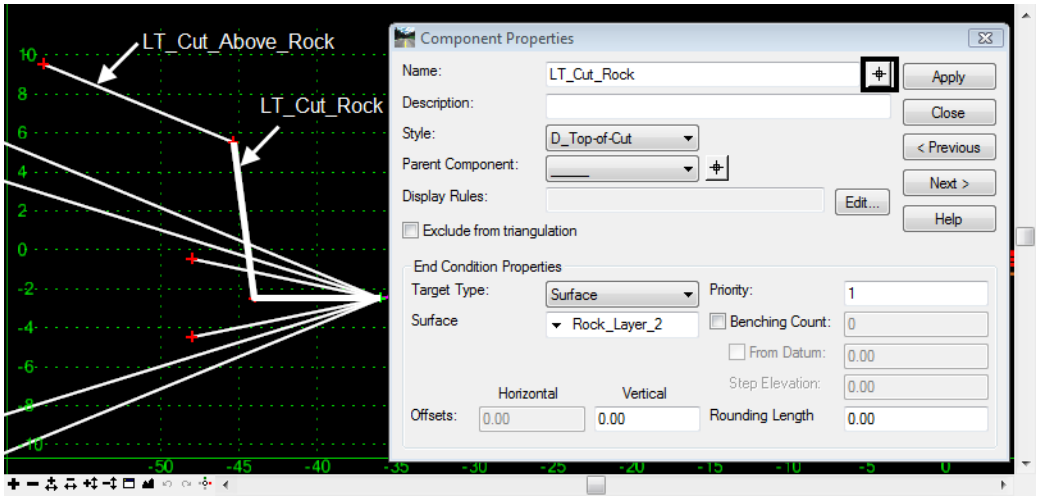
8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
- Select **Centerline** for the ***Horizontal Alignment***.
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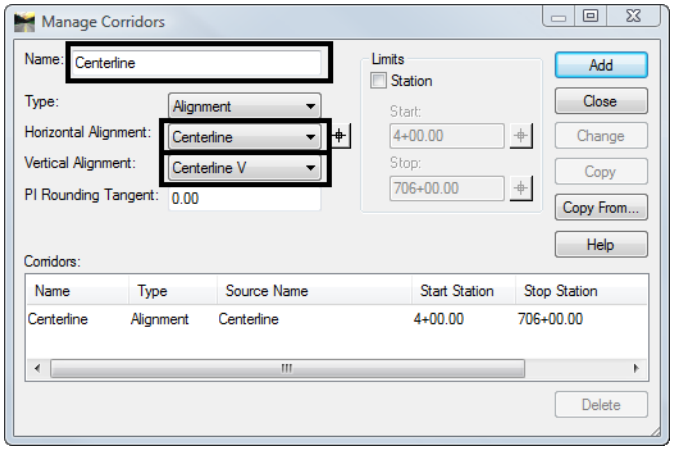
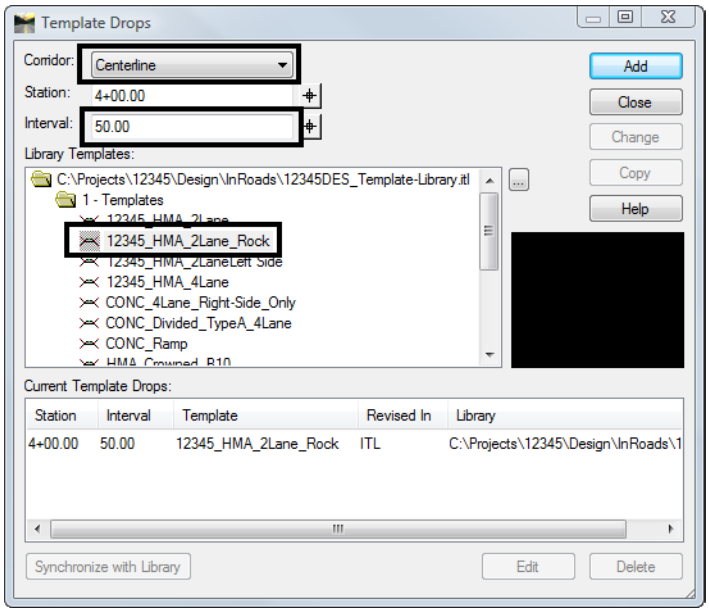
13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.



Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

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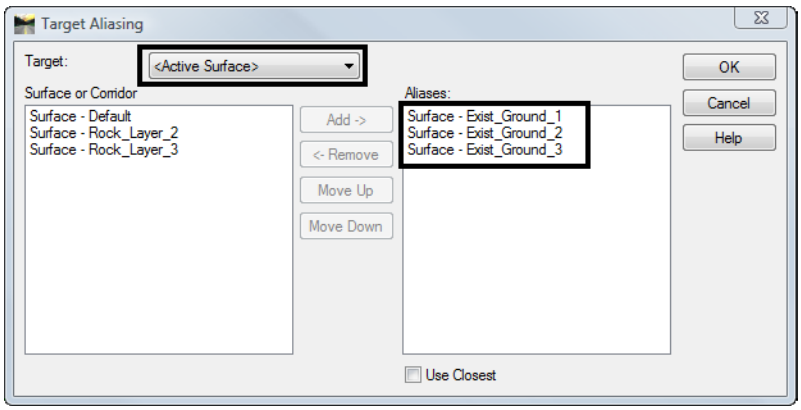
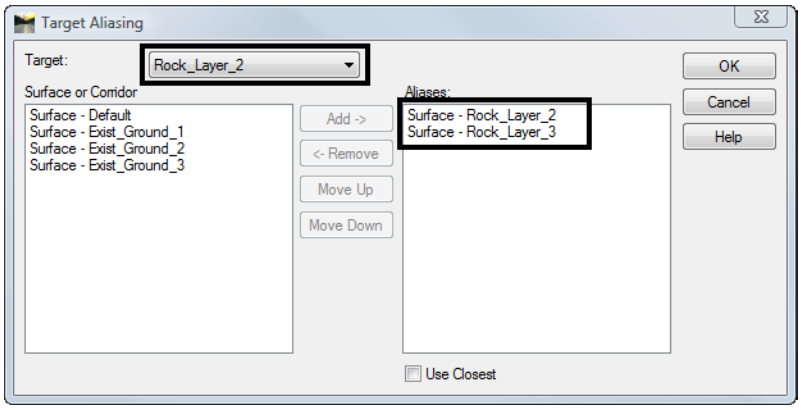


11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.

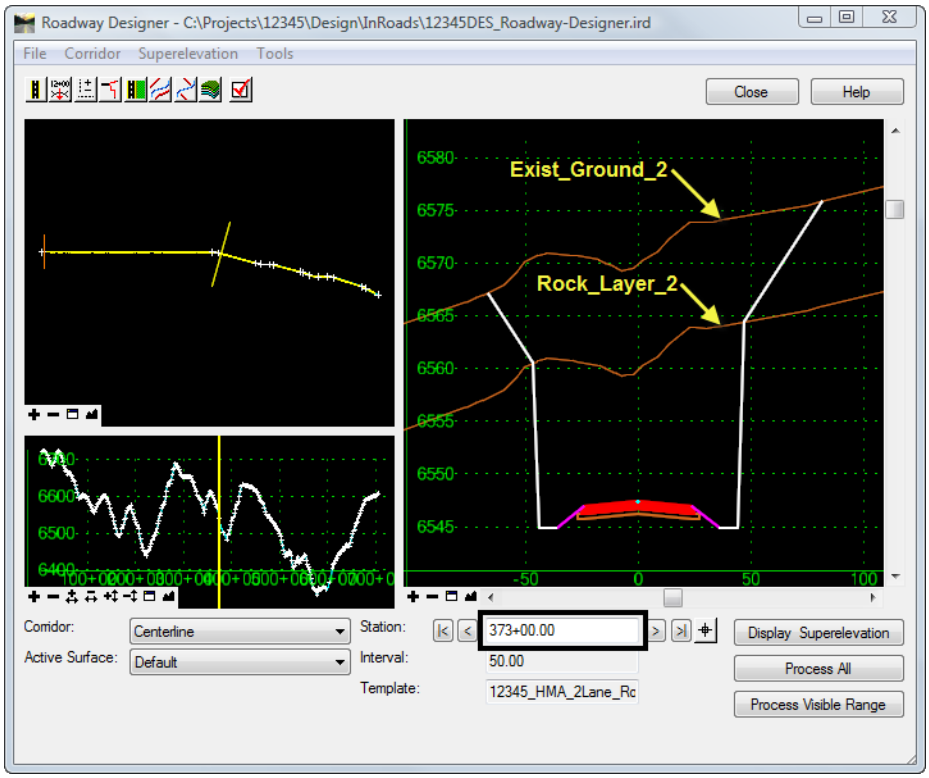


14. **<D> OK.**

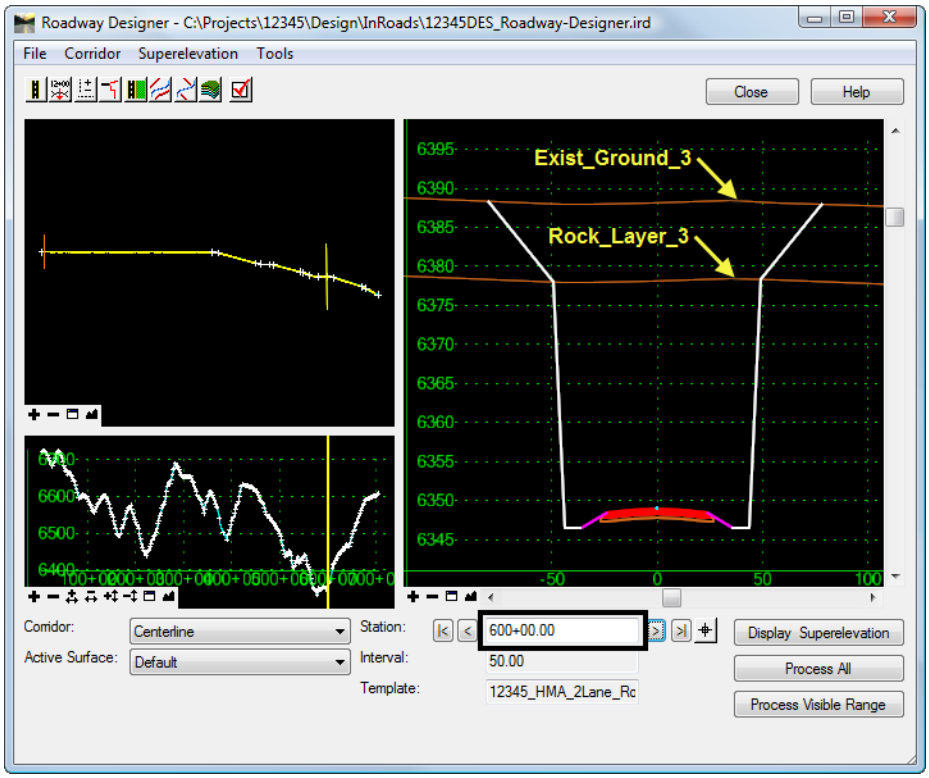
Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



2. Key in ***600+00*** for the ***Station***. Notice in the illustration below, that even though the surfaces are different, the end condition still solves. THis is because the Target Aliasing allows multiple surfaces to be specified for the end condition.



Chapter Summary:

- When end conditions are chained together (like the rock layer components used above), all parts of the chain must solve or the whole end condition fails.
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1. Select **Modeler> Create Template** from the InRoads menu bar.
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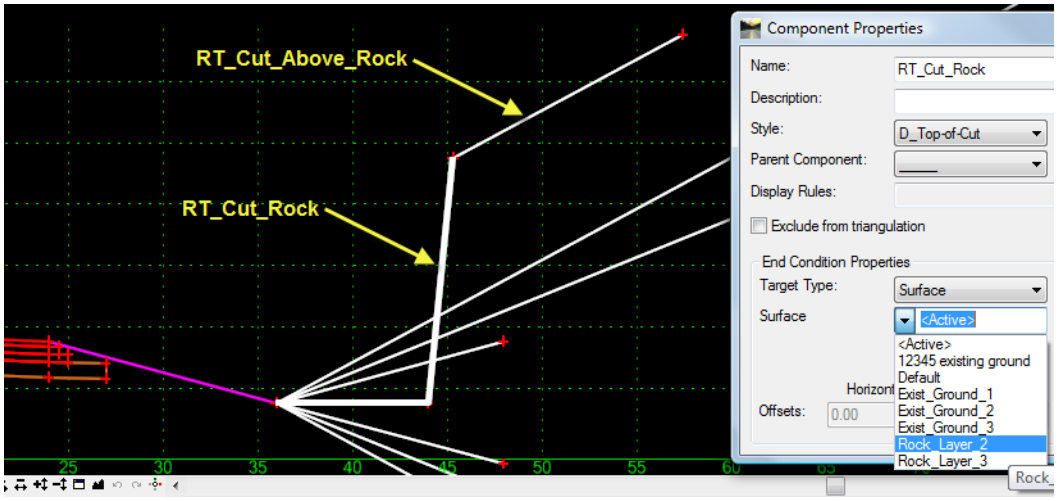

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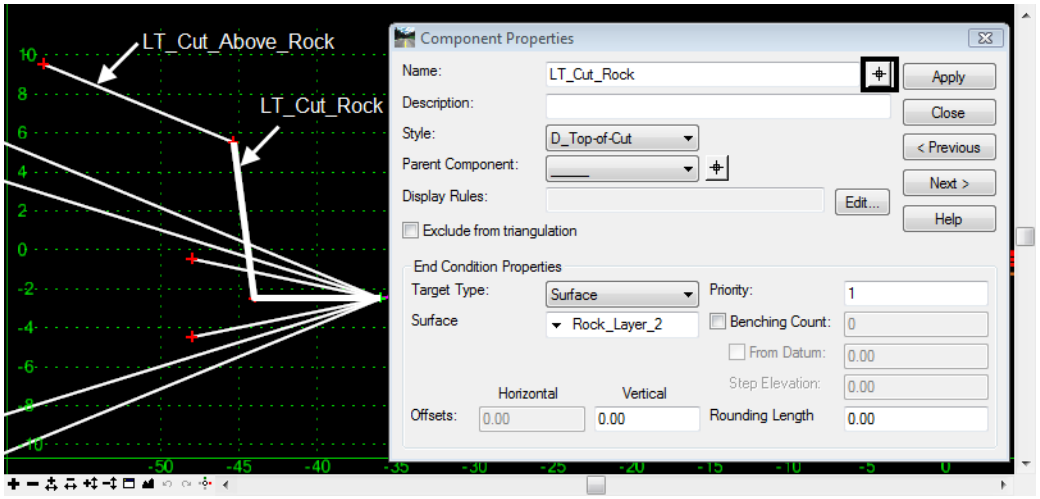

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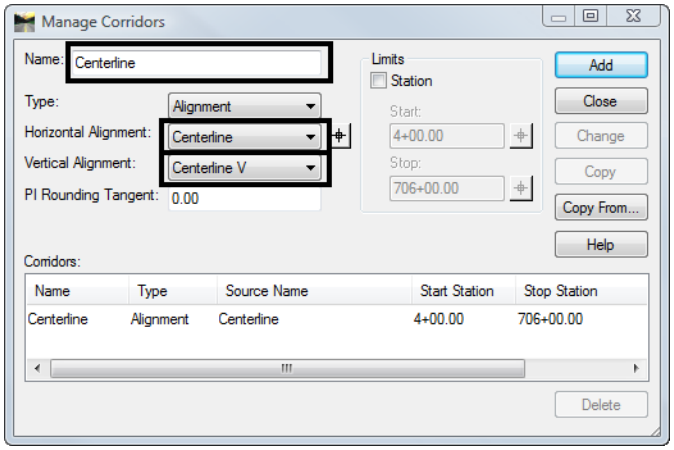

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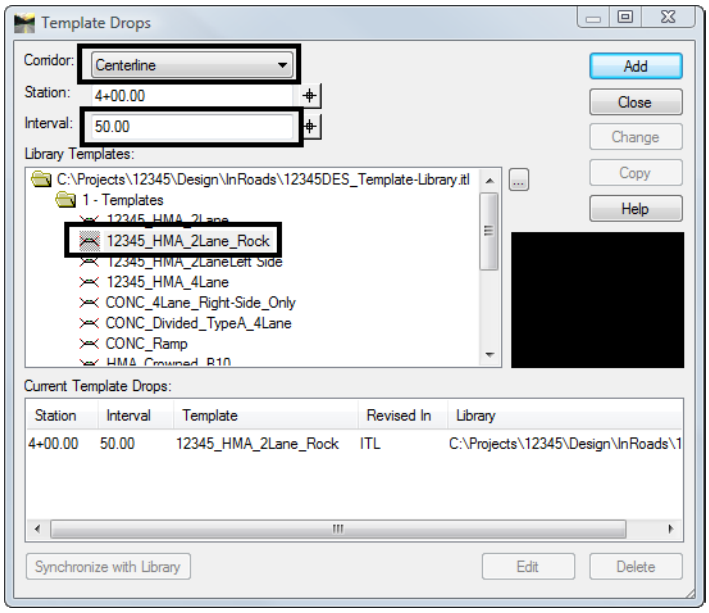

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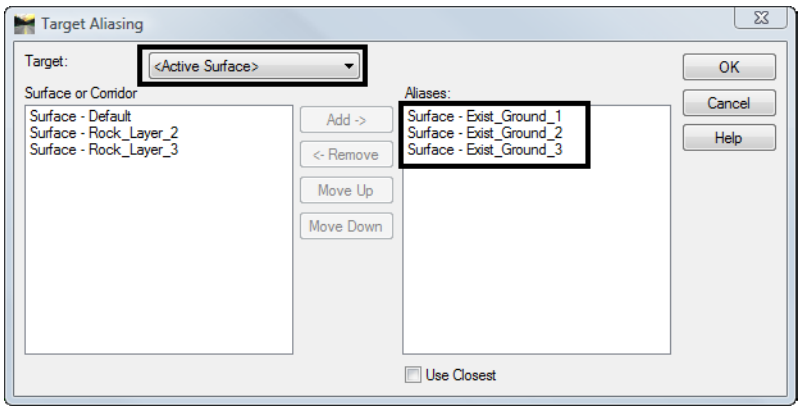

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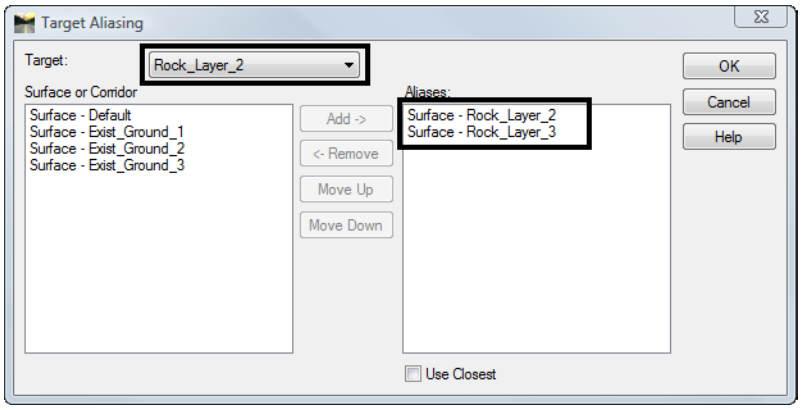

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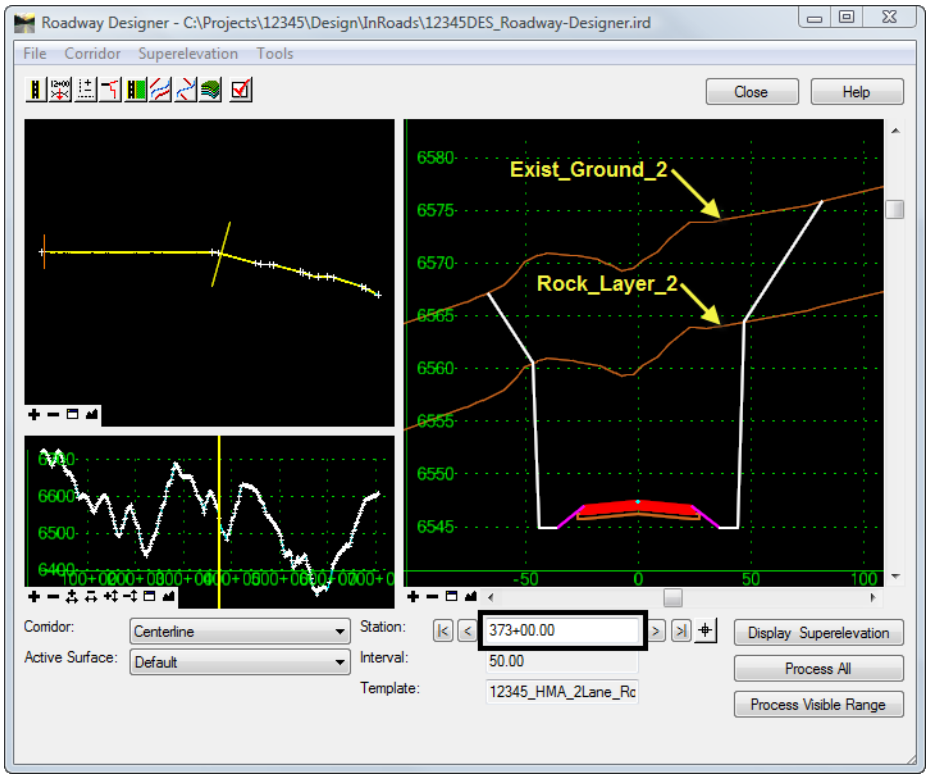

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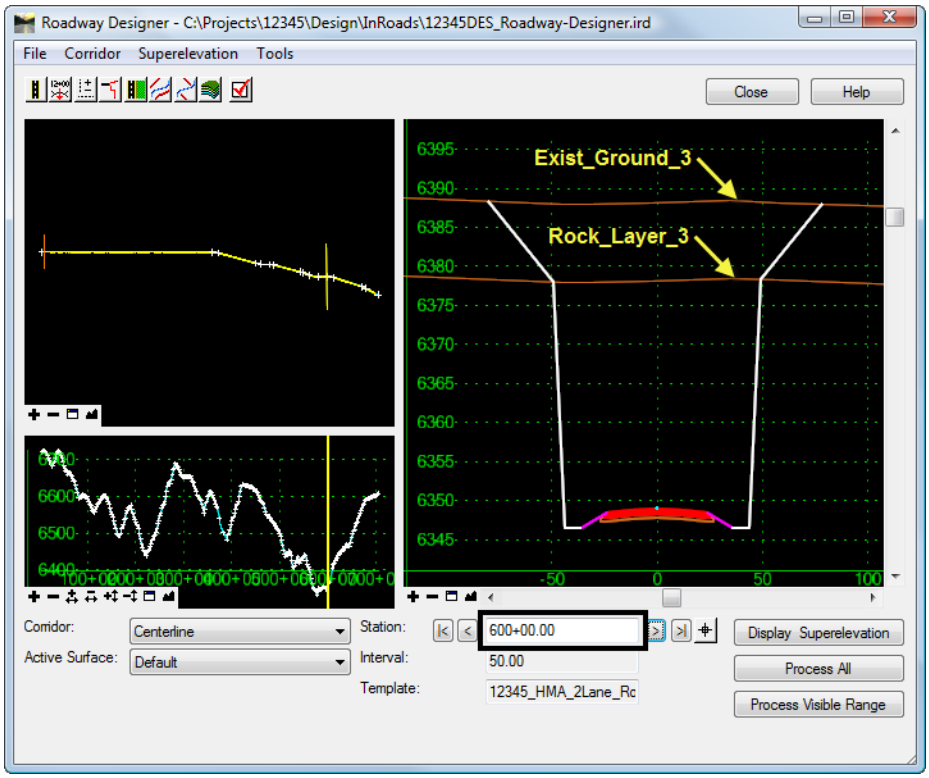

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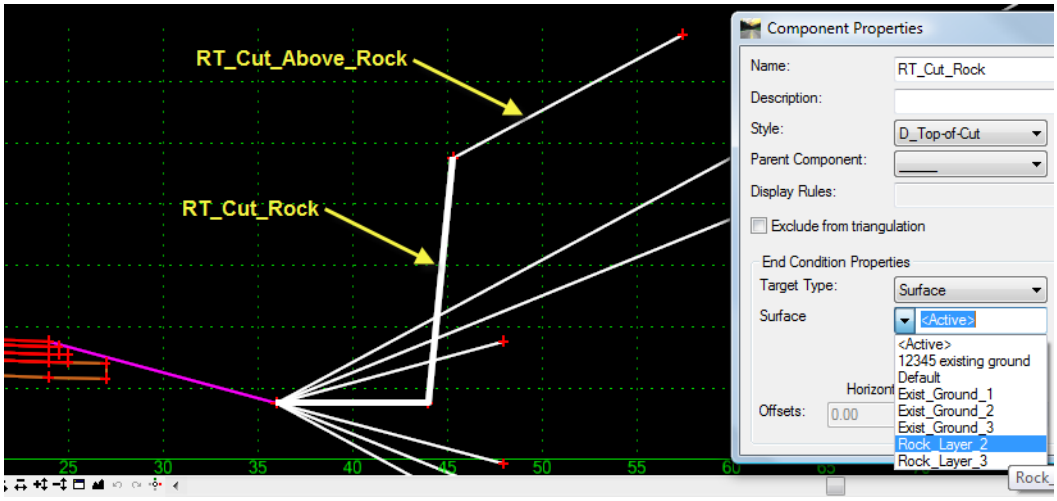

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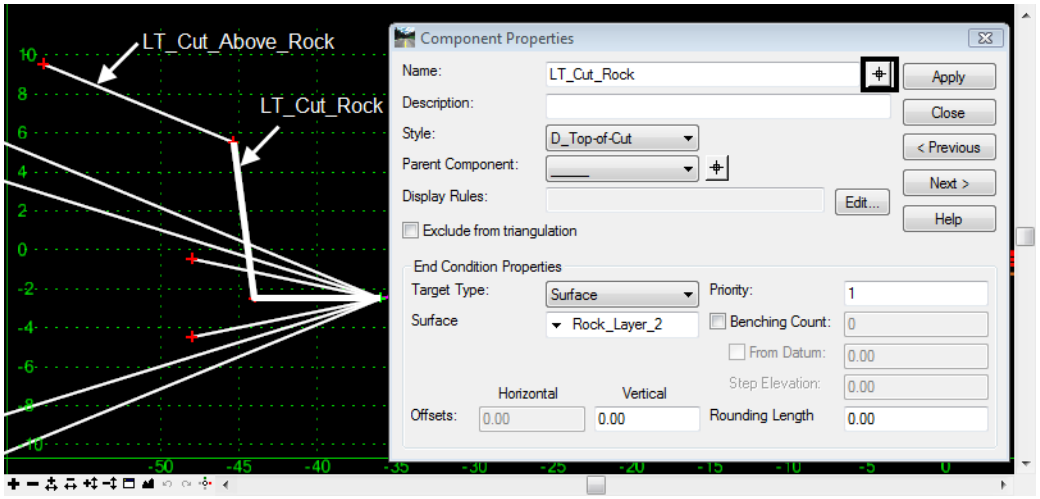

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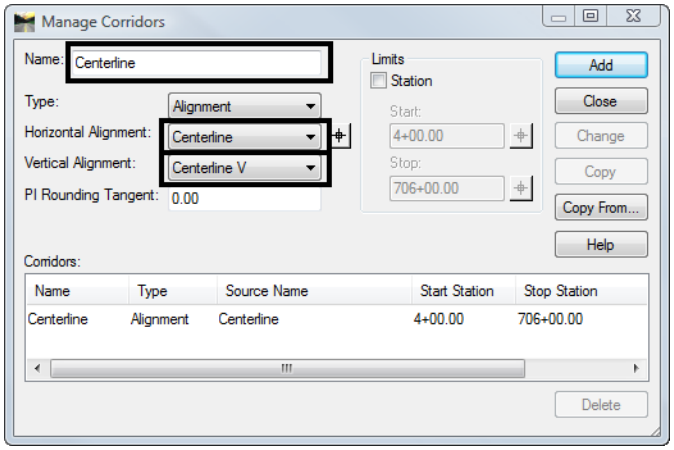

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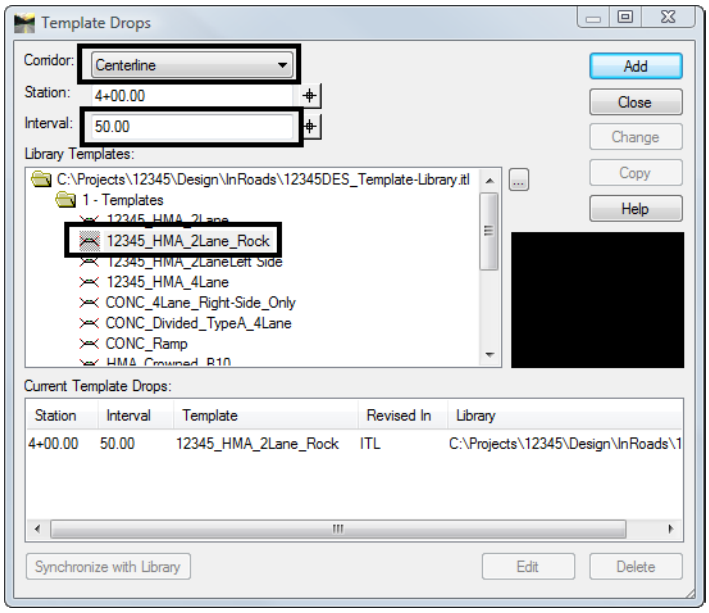

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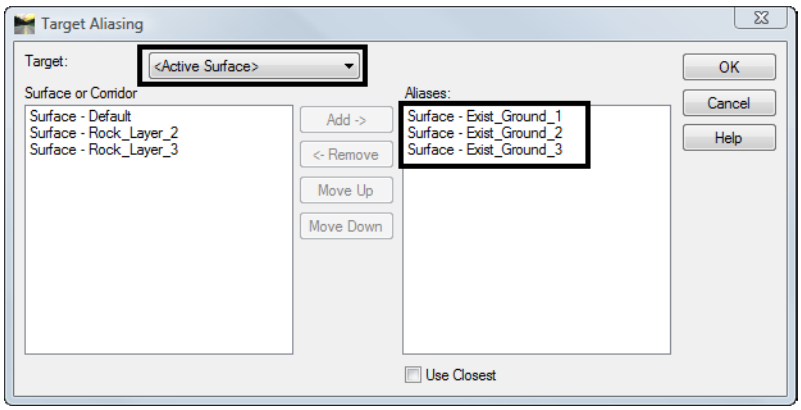

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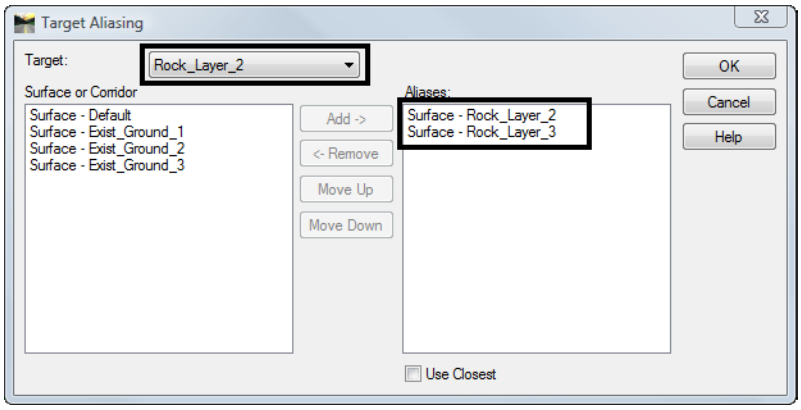
13. **<D> Add**.

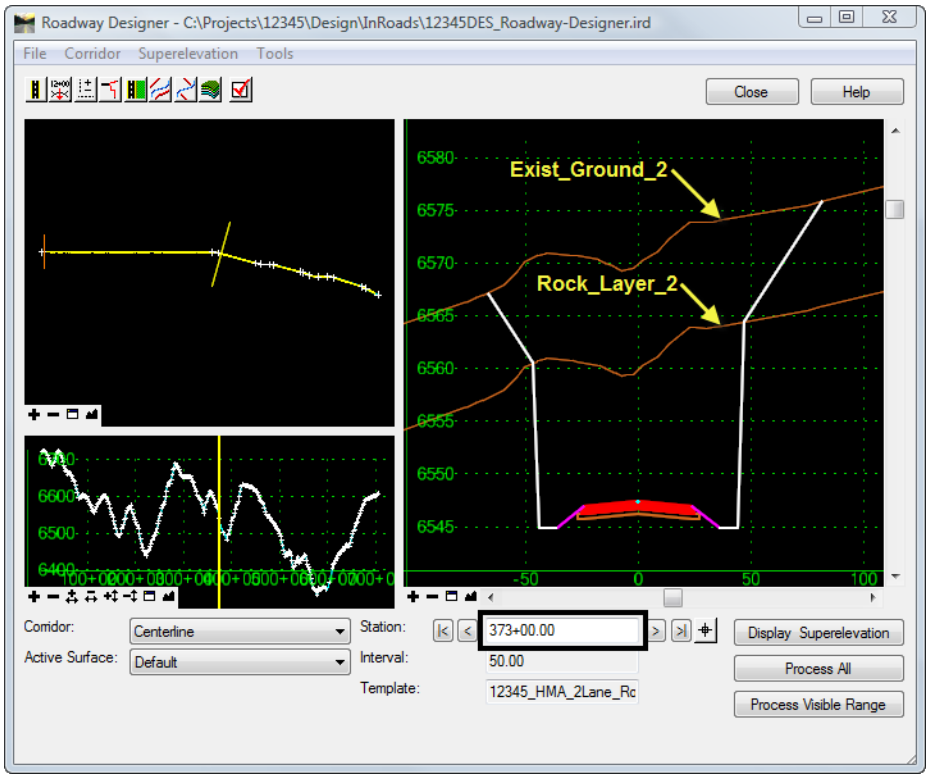


14. **<D> OK.**

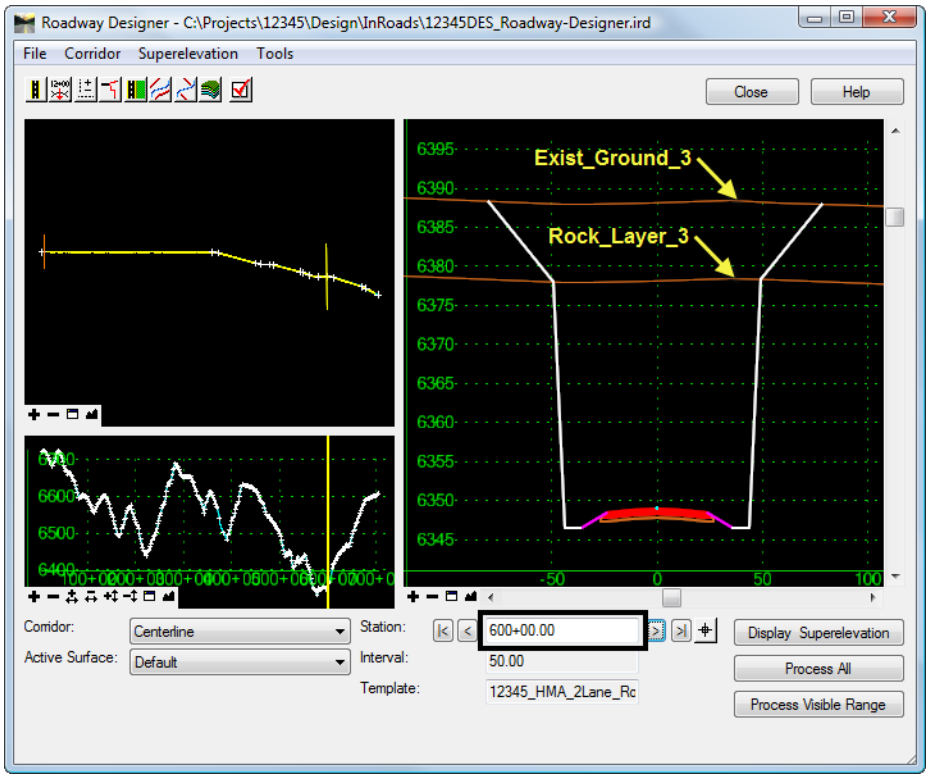
Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



2. Key in ***600+00*** for the ***Station***. Notice in the illustration below, that even though the surfaces are different, the end condition still solves. THis is because the Target Aliasing allows multiple surfaces to be specified for the end condition.



Chapter Summary:

- When end conditions are chained together (like the rock layer components used above), all parts of the chain must solve or the whole end condition fails.
- Use target aliasing to target multiple existing ground and rock layer surfaces.

LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
- Build a corridor and use target aliasing to target multiple existing ground and rock layer surfaces along three segments of the project.
- View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly

The following files are used in this lab:

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- C:\Projects\12345\Design\InRoads\12345DES_Template-Create End Condit Search Surf.itl
- C:\Projects\12345\Design\InRoads\12345DES_Roadway-Create End Condit Search Surf.ird
- C:\Projects\12345\Design\InRoads\Exist_Ground_1-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_3-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_3-Create End Condit Search Surf.dtm

Lab 31.1 - Create End Conditions to Search a Surface

1. Open MicroStation and InRoads using the ***12345DES_Create End Cond Search Surf.dgn*** file.

   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

2. Select **File> Open** from the InRoads menu bar.

3. Open the following files from ***C:\Projects\12345\Design\InRoads*** directory.

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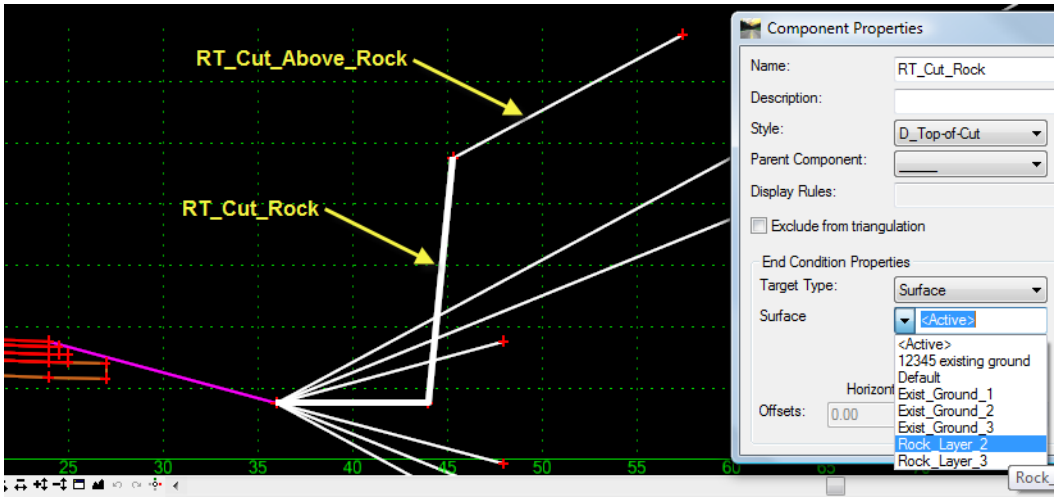
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

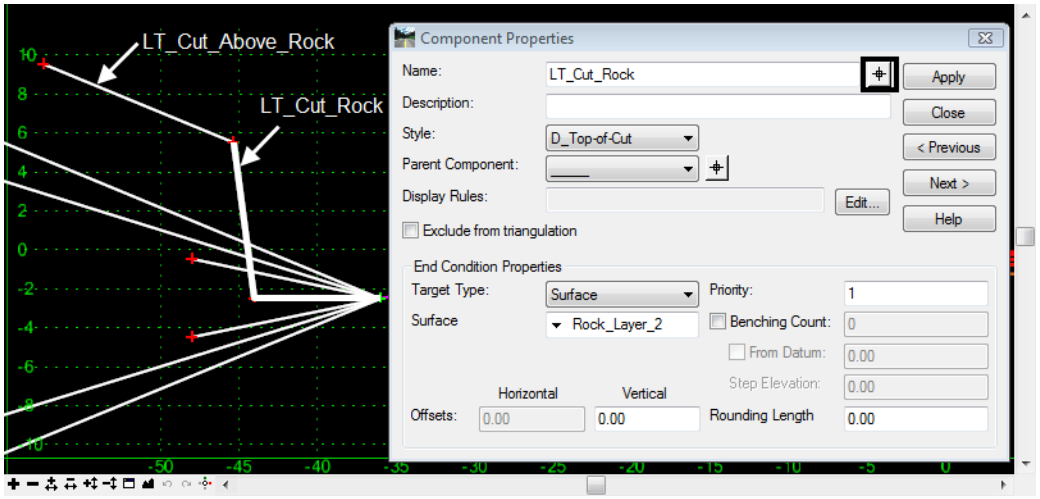
1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

7. **<D>** on the ***Locate Button*** next to ***Name*** in the ***Component Properties*** dialog box

8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

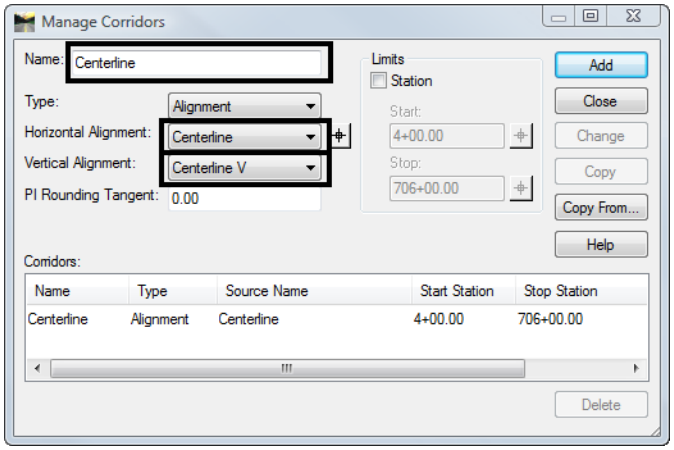
10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

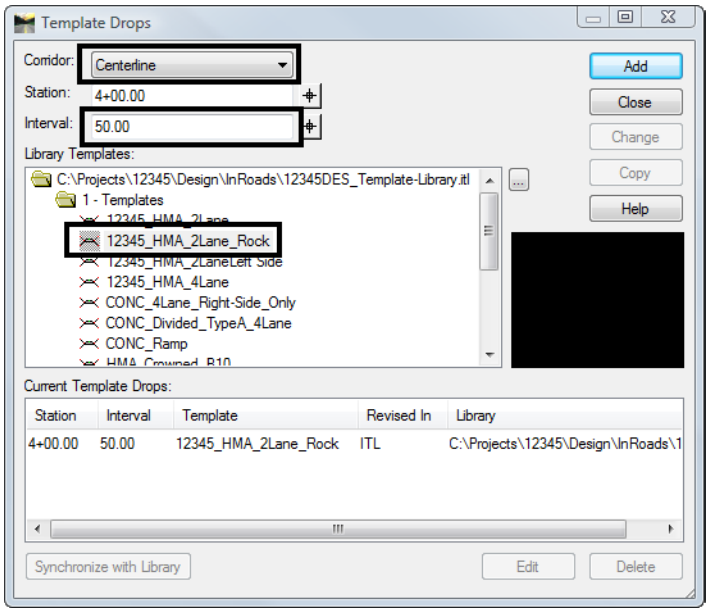
12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
- Select **Centerline** for the ***Horizontal Alignment***.
- Select **Centerline V** for the ***Vertical Alignment***.

13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.

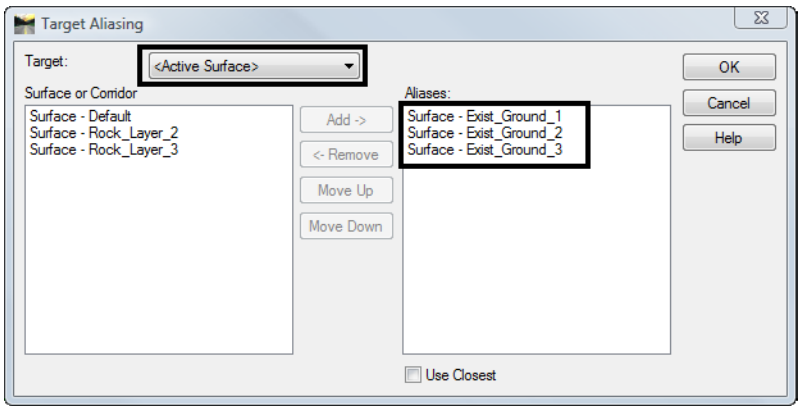


Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

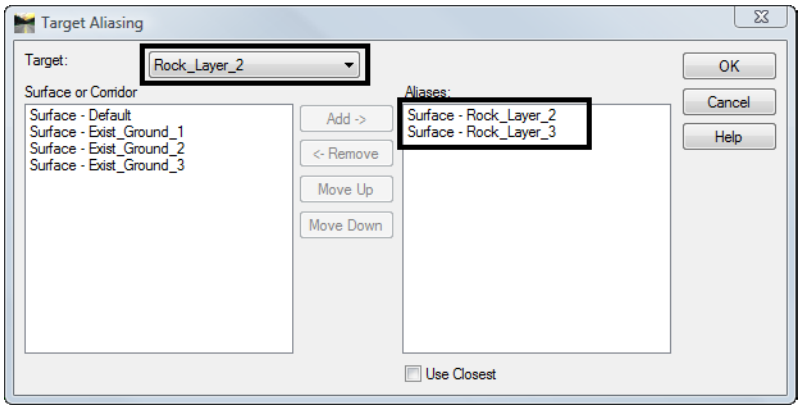
10. **<D> Add**.



11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.

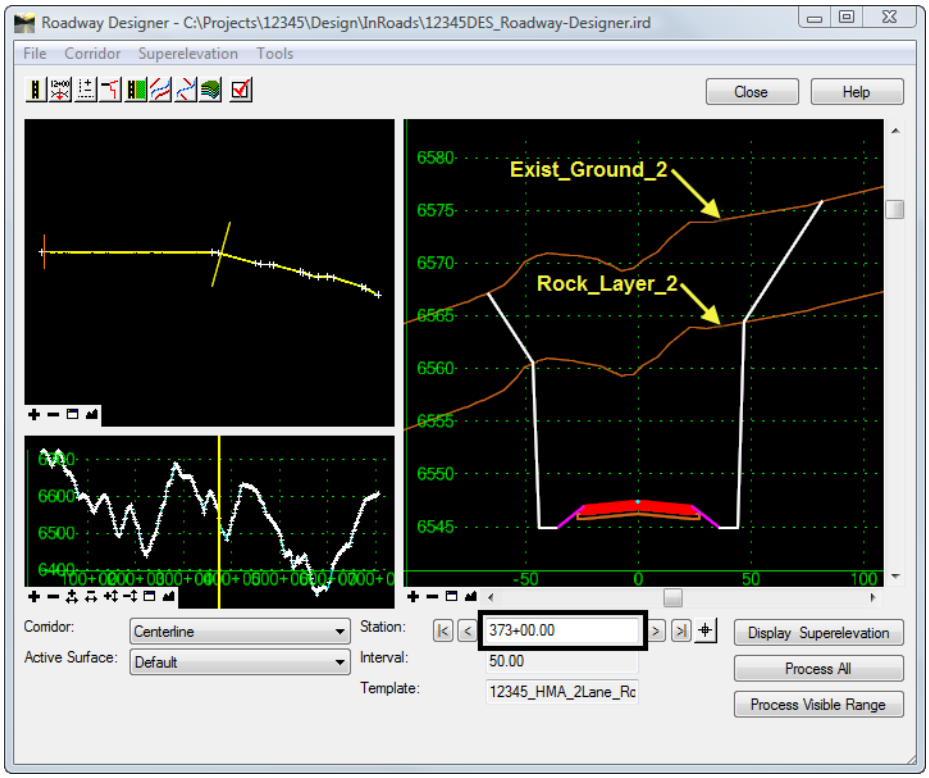


14. **<D> OK.**

Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



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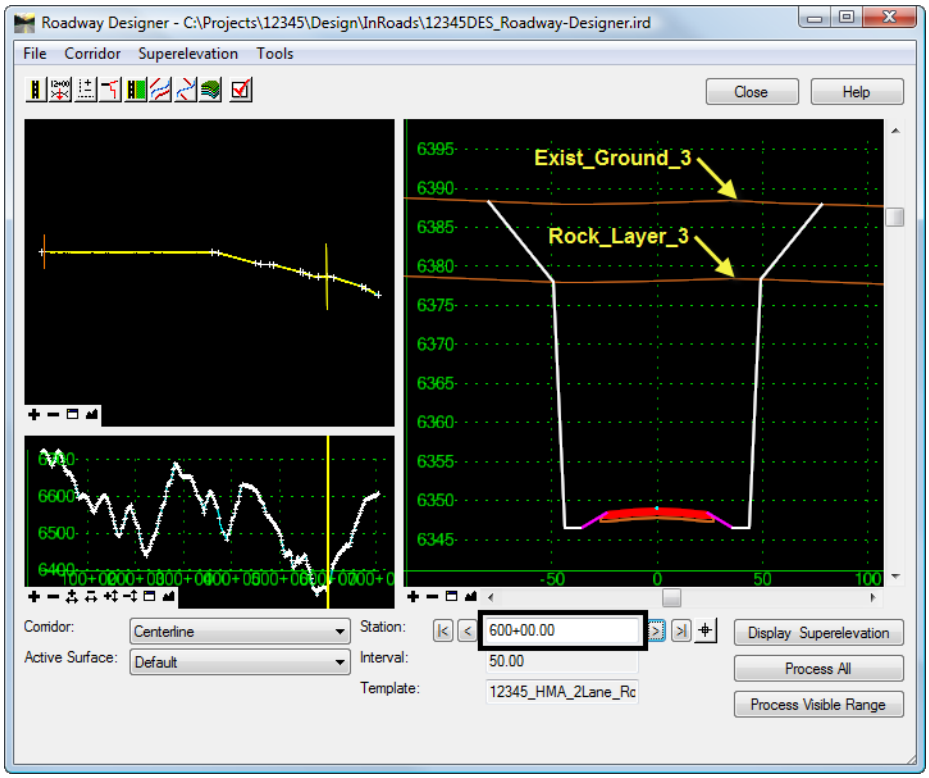

Chapter Summary:

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LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
- Build a corridor and use target aliasing to target multiple existing ground and rock layer surfaces along three segments of the project.
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The following files are used in this lab:

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- C:\Projects\12345\Design\InRoads\Exist_Ground_2-Create End Condit Search Surf.dtm
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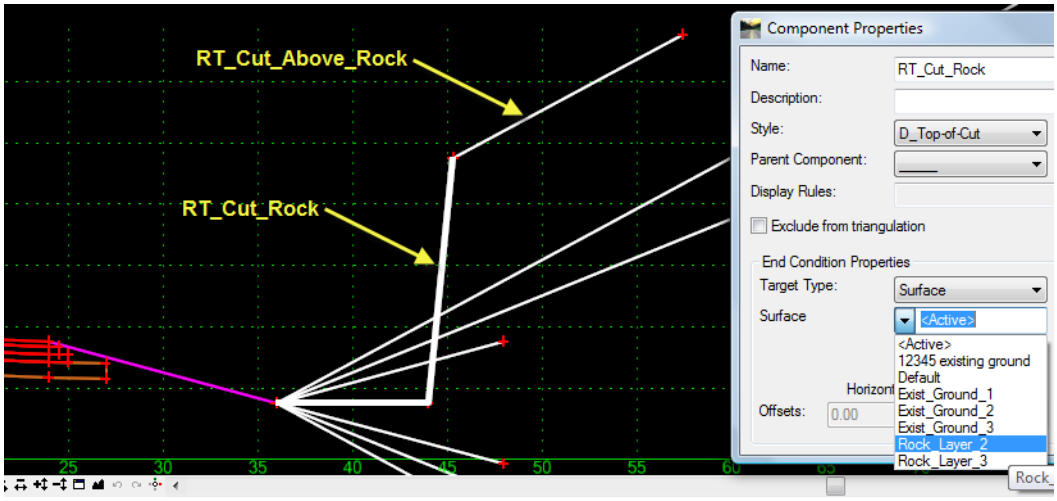
4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



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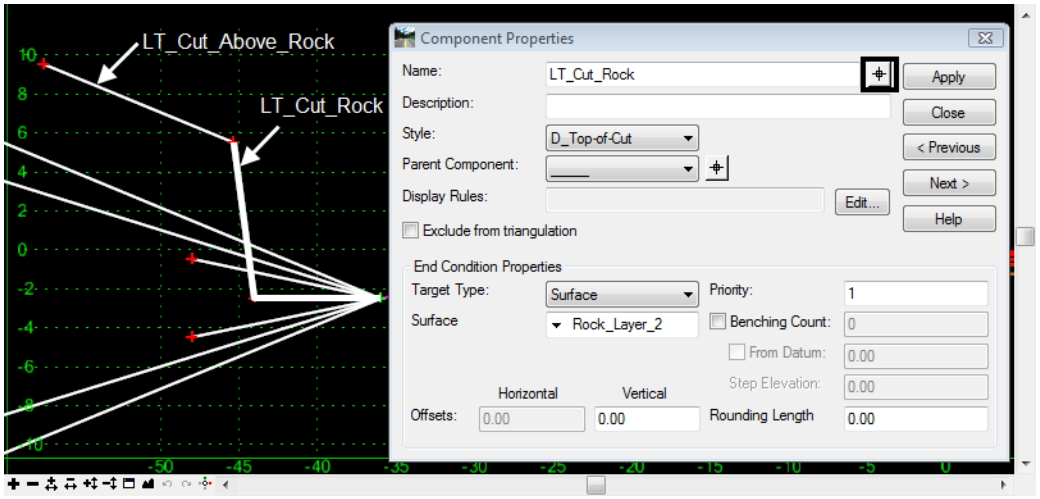

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Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

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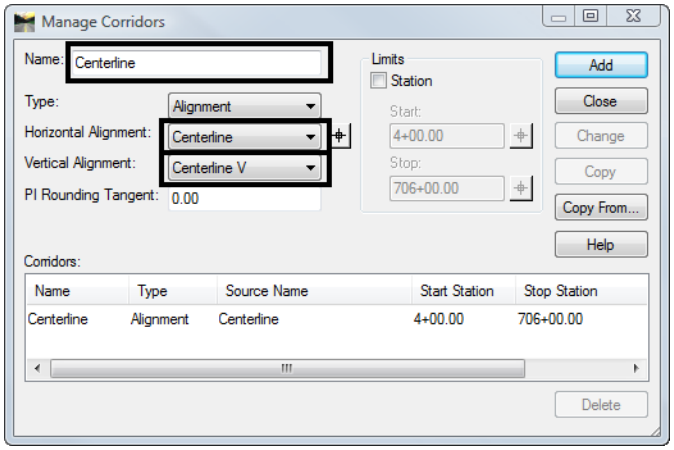

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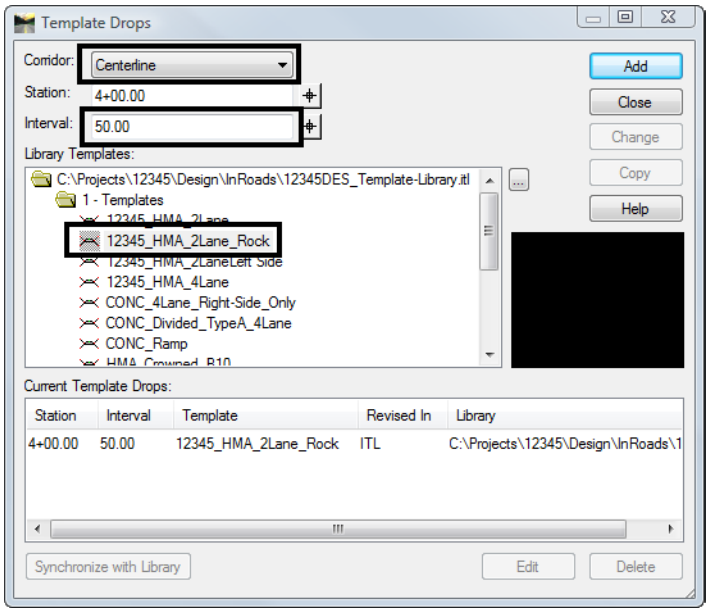

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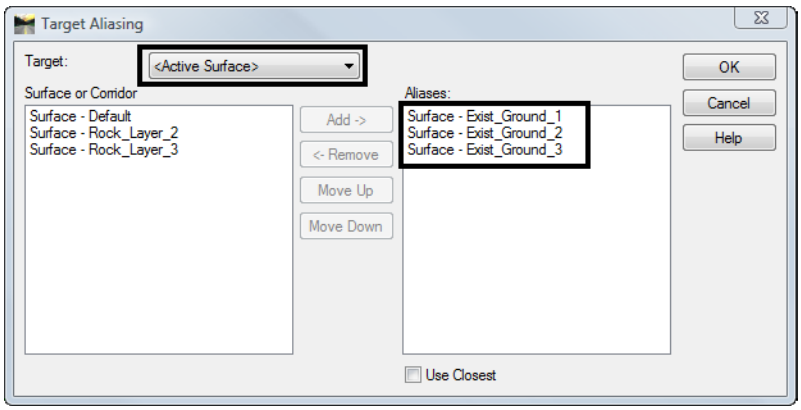
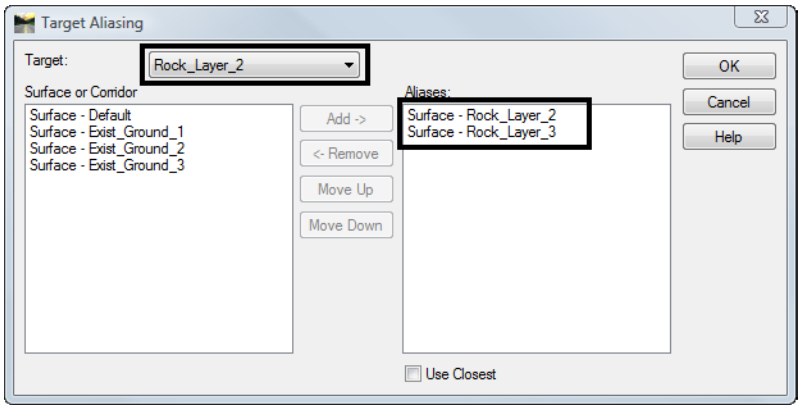


11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.



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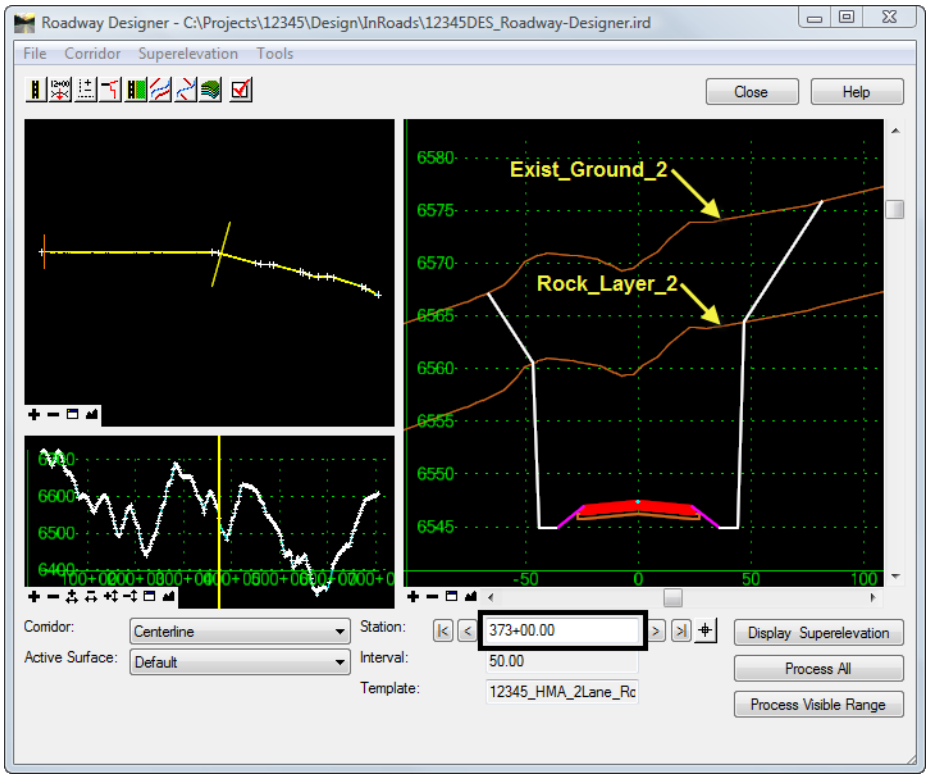

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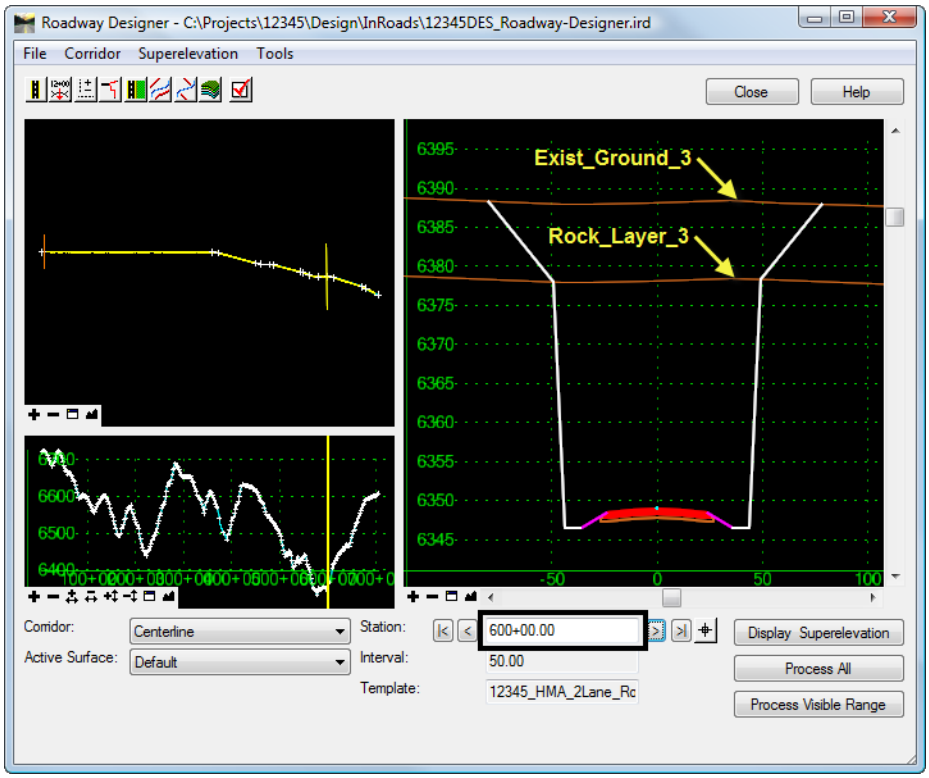

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Chapter Objectives:

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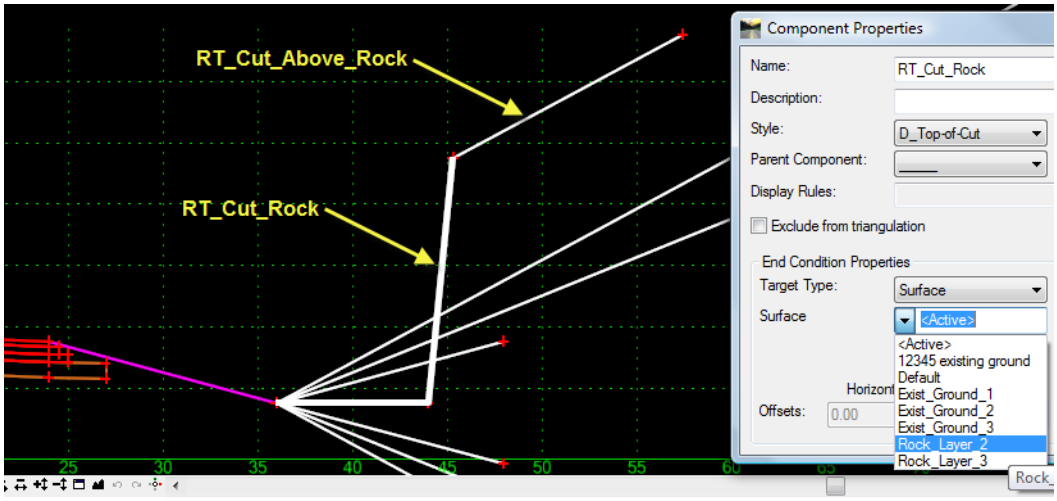

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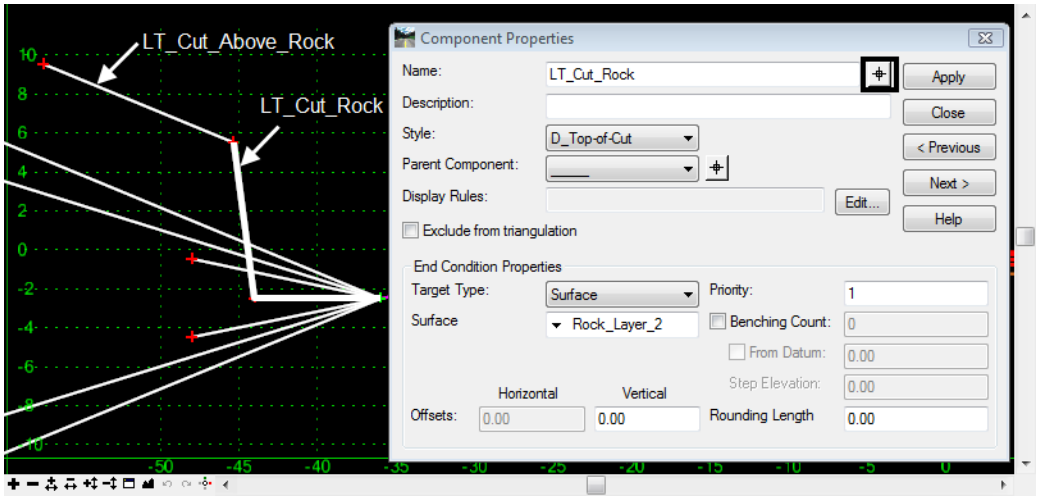

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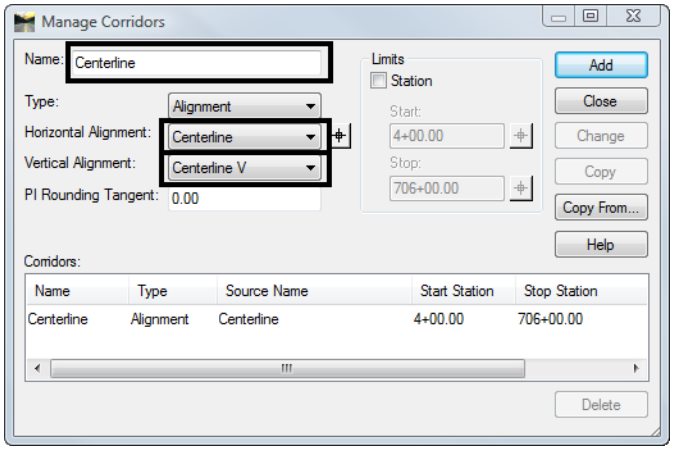

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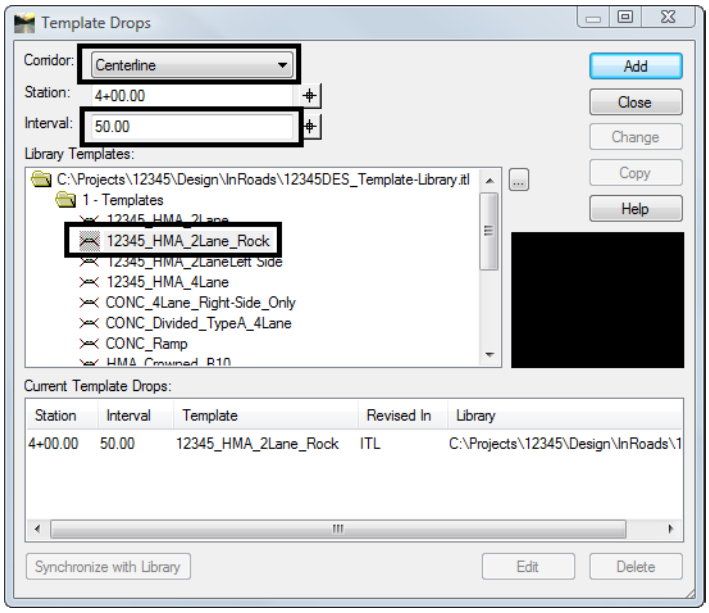
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.

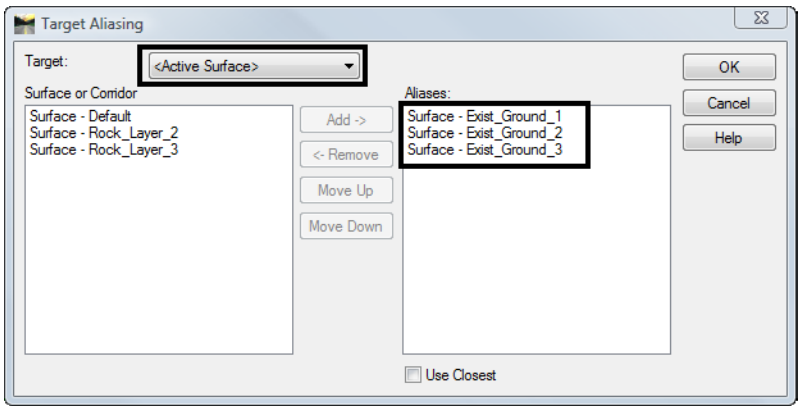


Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

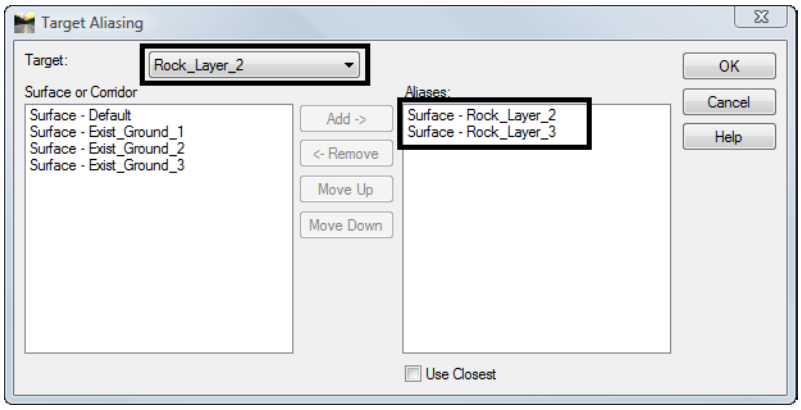
10. **<D> Add**.



11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.

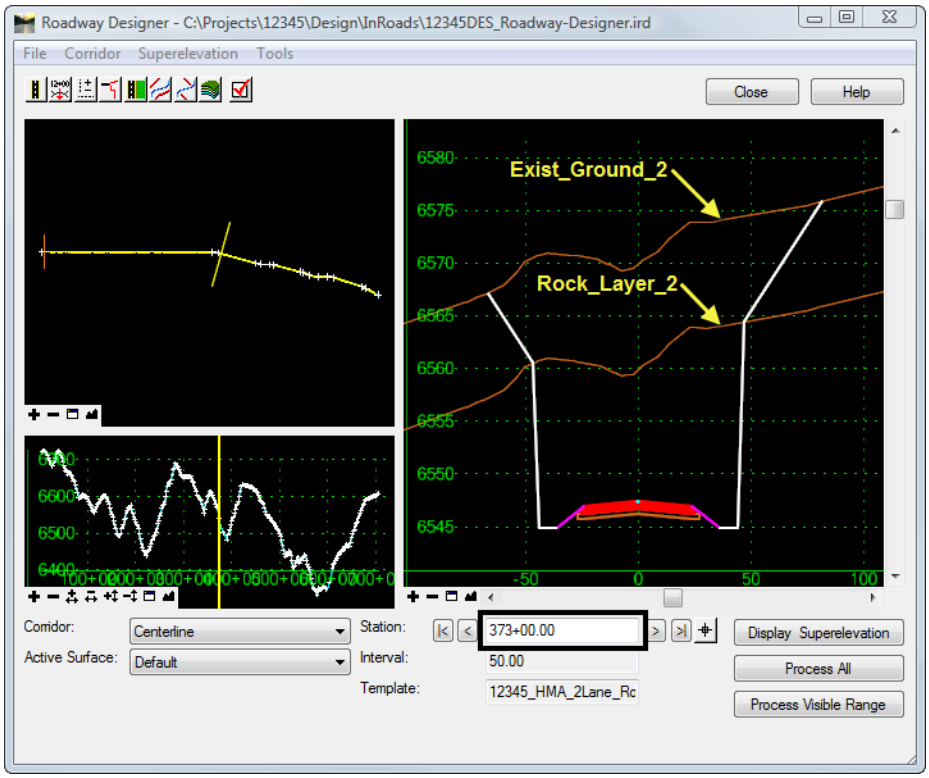


14. **<D> OK.**

Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



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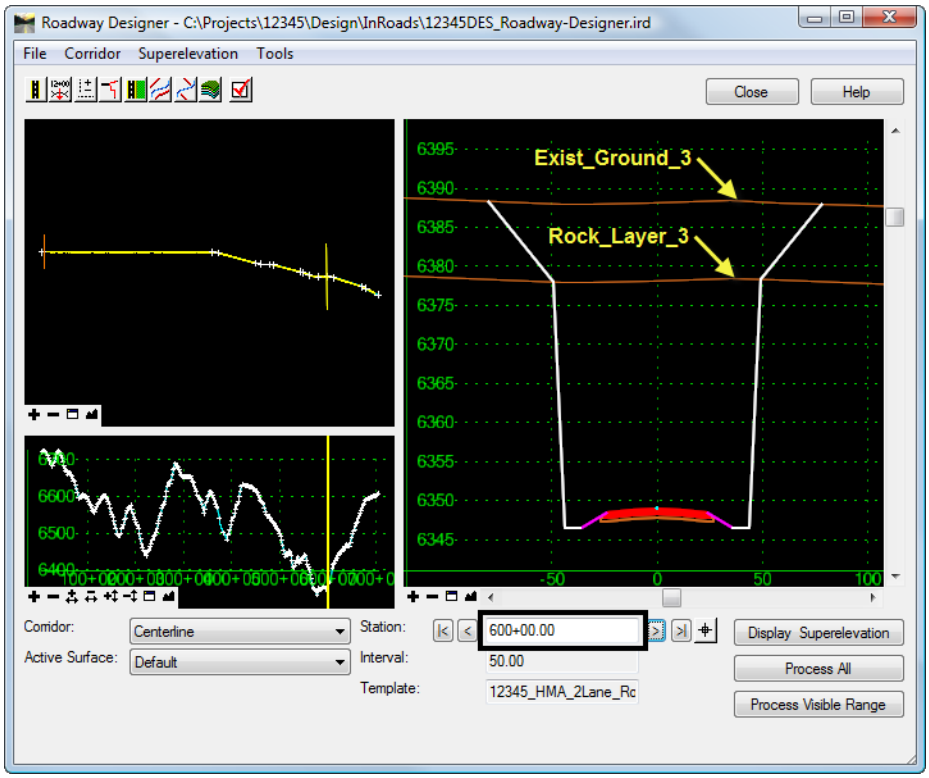

Chapter Summary:

- When end conditions are chained together (like the rock layer components used above), all parts of the chain must solve or the whole end condition fails.
- Use target aliasing to target multiple existing ground and rock layer surfaces.

LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
- Build a corridor and use target aliasing to target multiple existing ground and rock layer surfaces along three segments of the project.
- View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly

The following files are used in this lab:

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- C:\Projects\12345\Design\InRoads\12345DES_Template-Create End Condit Search Surf.itl
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Lab 31.1 - Create End Conditions to Search a Surface

1. Open MicroStation and InRoads using the ***12345DES_Create End Cond Search Surf.dgn*** file.

   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

2. Select **File> Open** from the InRoads menu bar.

3. Open the following files from ***C:\Projects\12345\Design\InRoads*** directory.

   - **CDOT_Civil.xin**
   - **12345DES_Geometry-Create End Condit Search Surf.alg**
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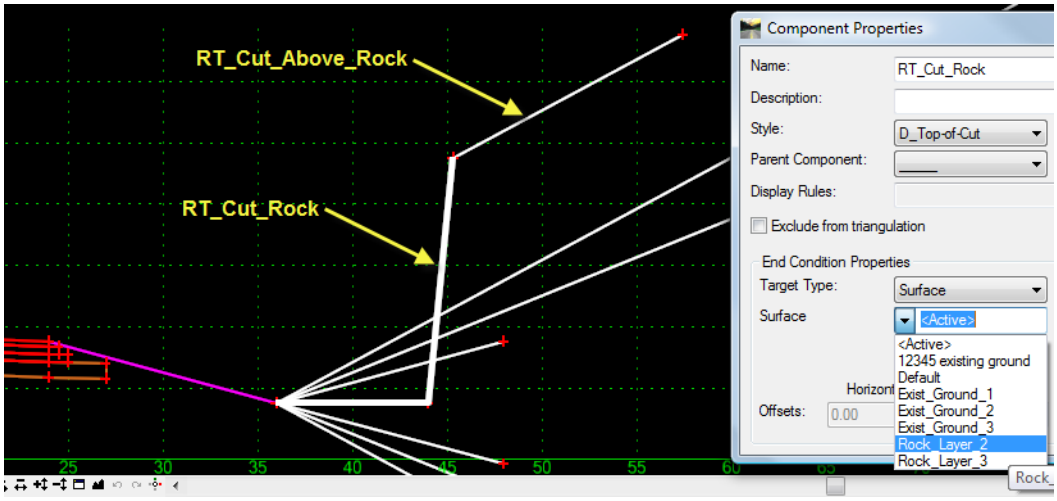
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

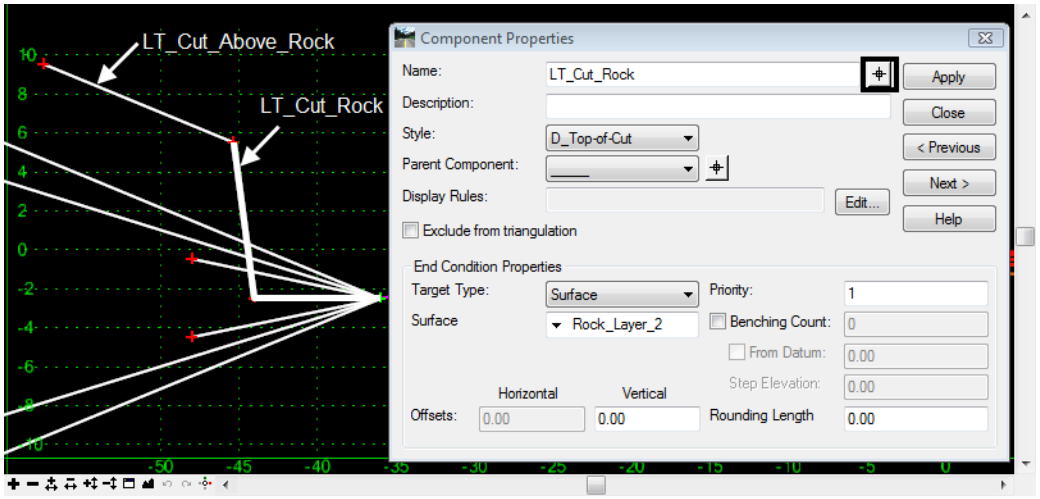
1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

7. **<D>** on the ***Locate Button*** next to ***Name*** in the ***Component Properties*** dialog box

8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

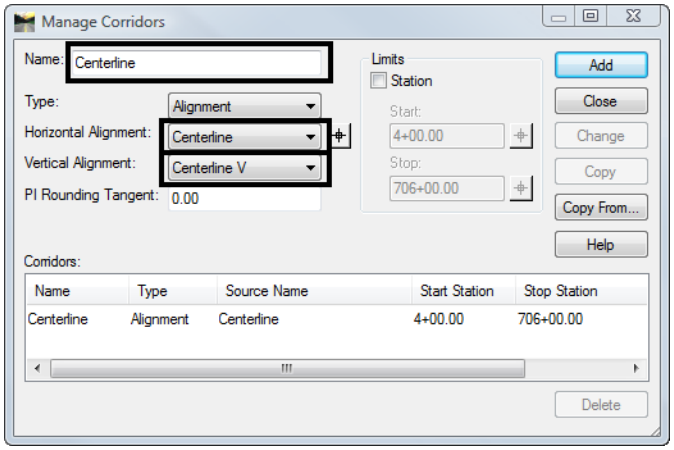
10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

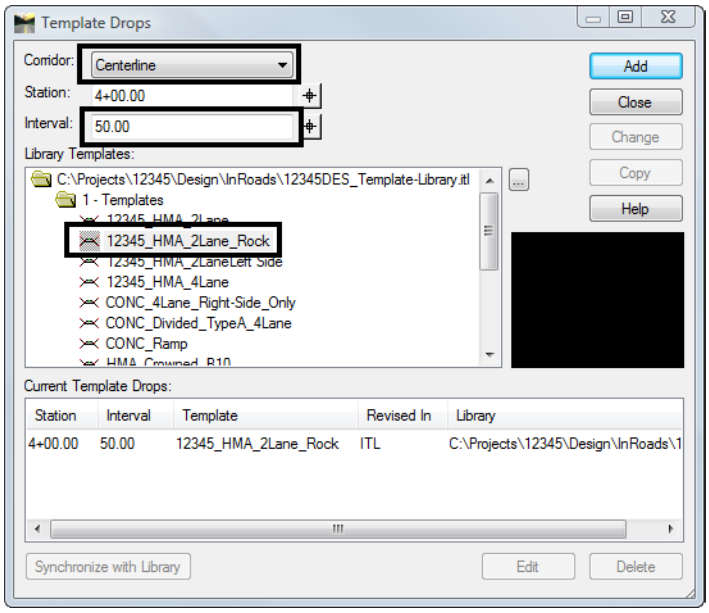
12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
- Select **Centerline** for the ***Horizontal Alignment***.
- Select **Centerline V** for the ***Vertical Alignment***.

13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.



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Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

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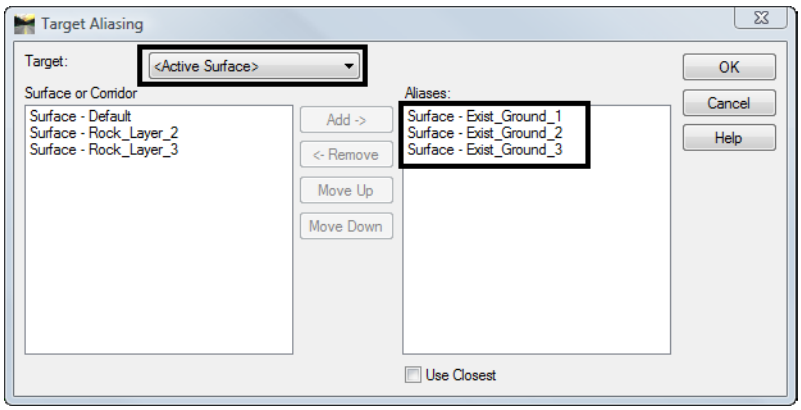

11. Select **Rock_Layer_2** for the ***Target***.

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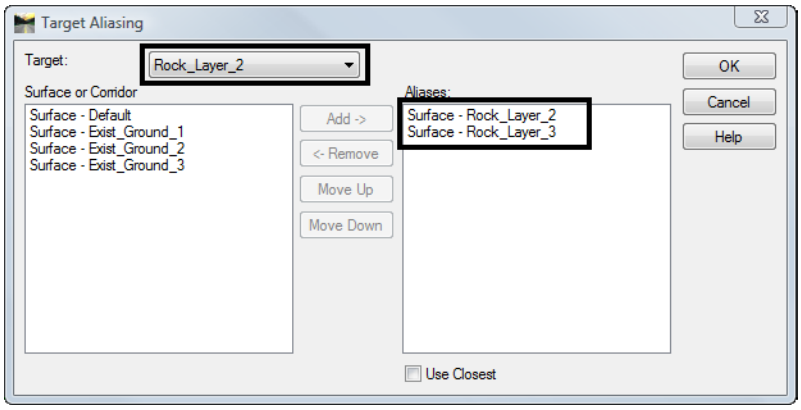
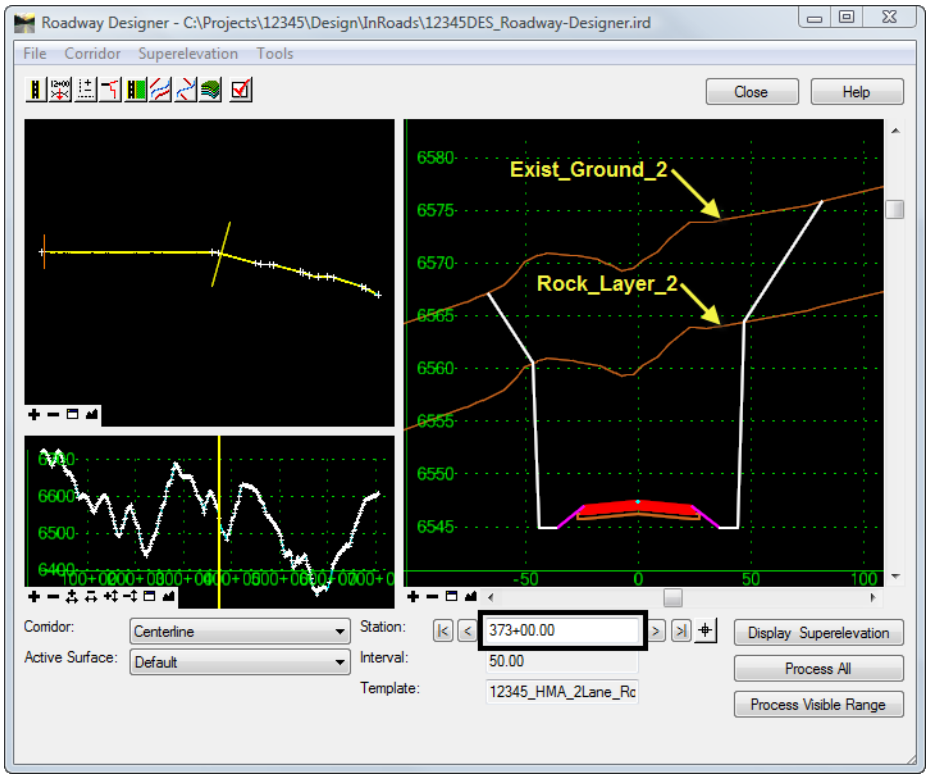


14. **<D> OK.**

Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



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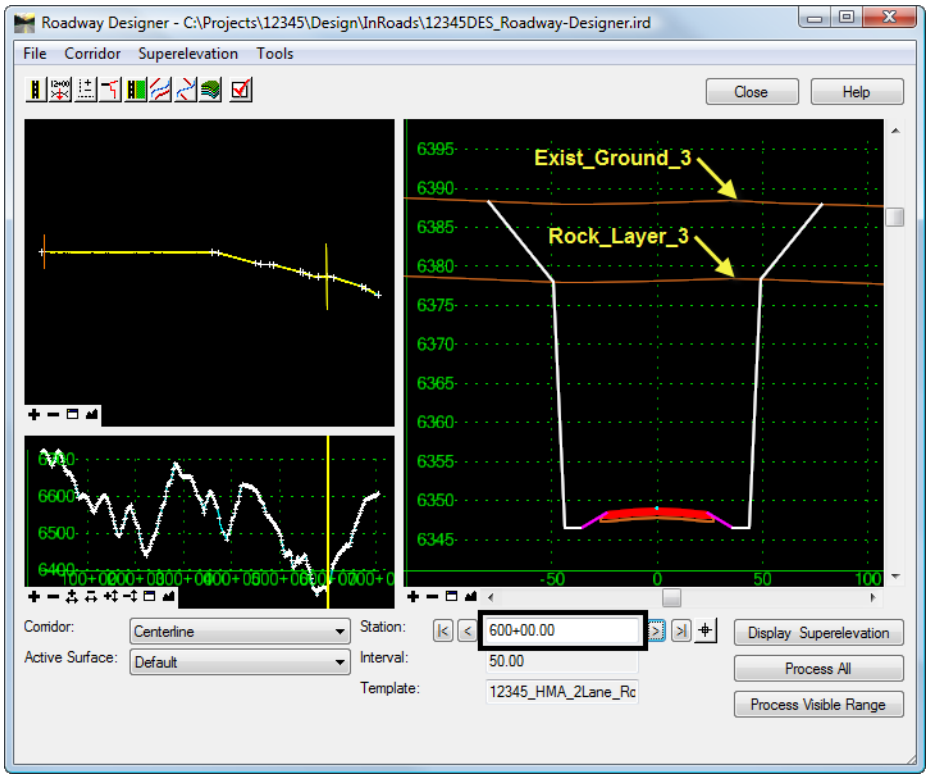

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LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
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- C:\Projects\12345\Design\InRoads\Exist_Ground_1-Create End Condit Search Surf.dtm
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Lab 31.1 - Create End Conditions to Search a Surface

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   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

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4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
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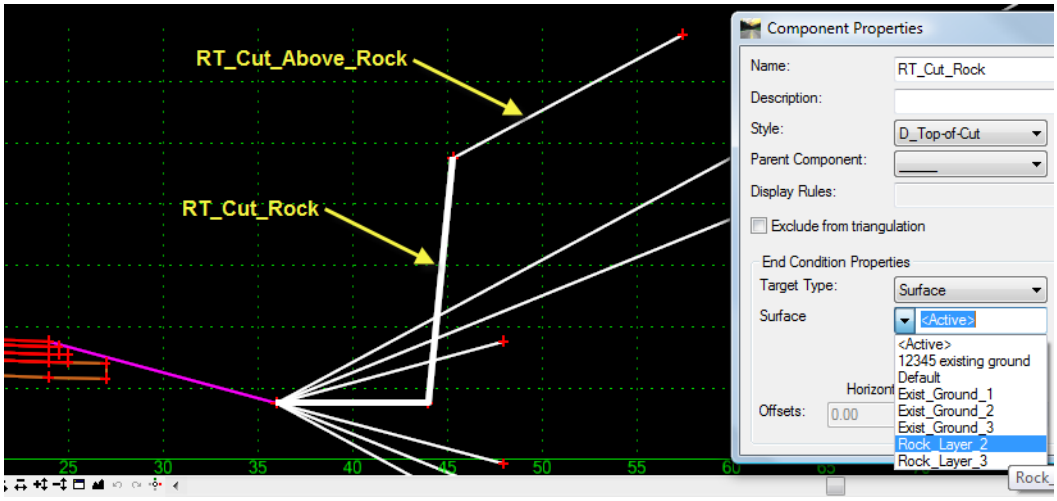
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



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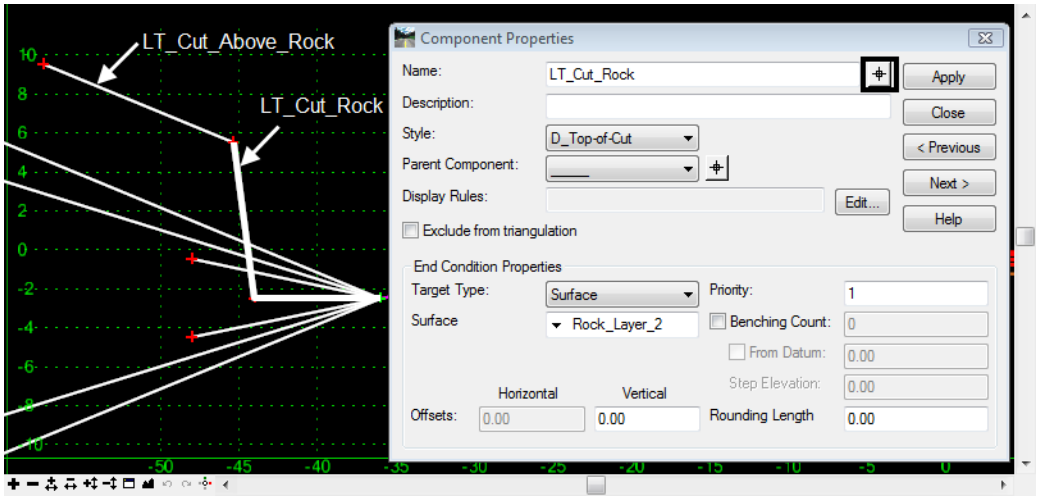

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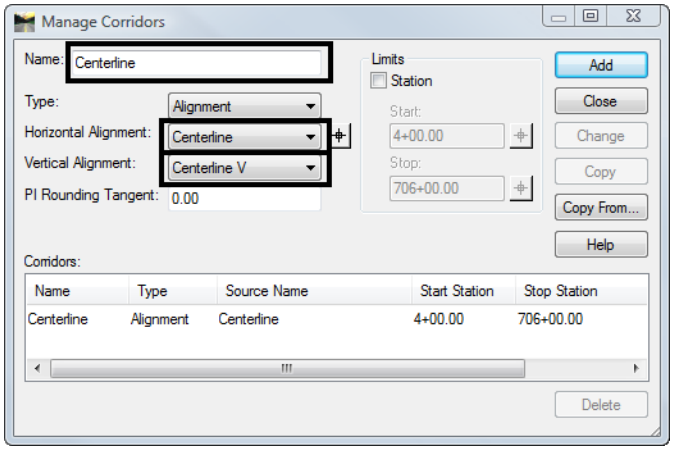

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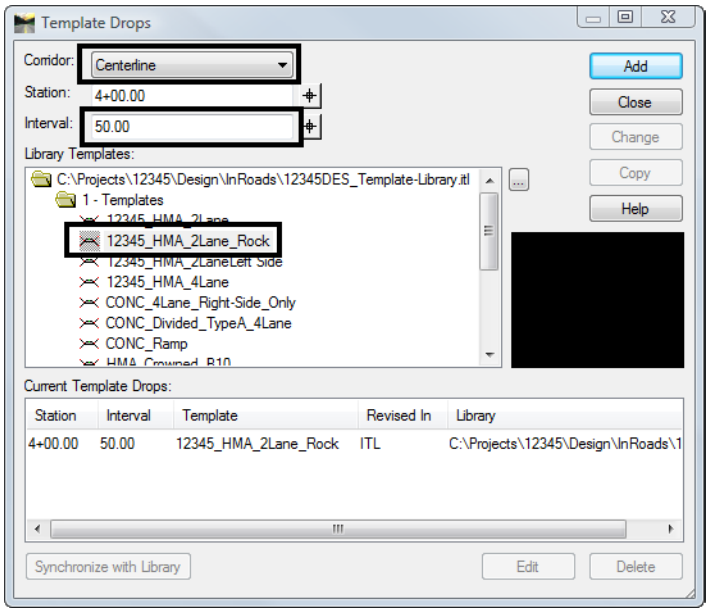

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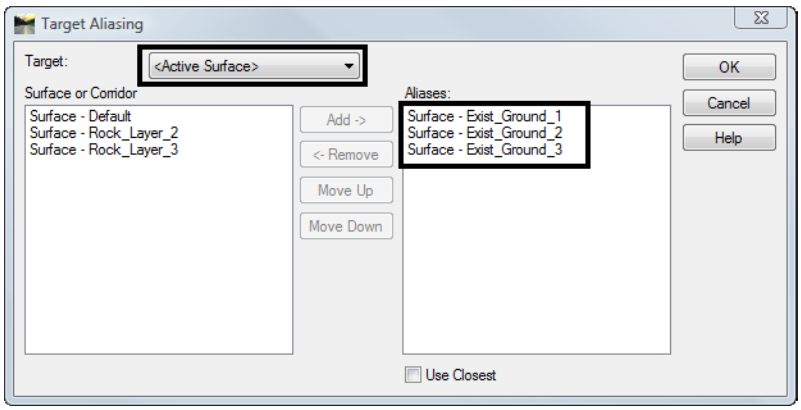

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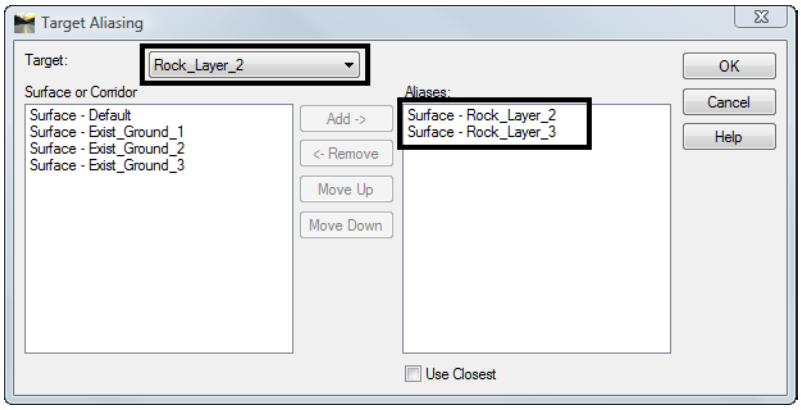

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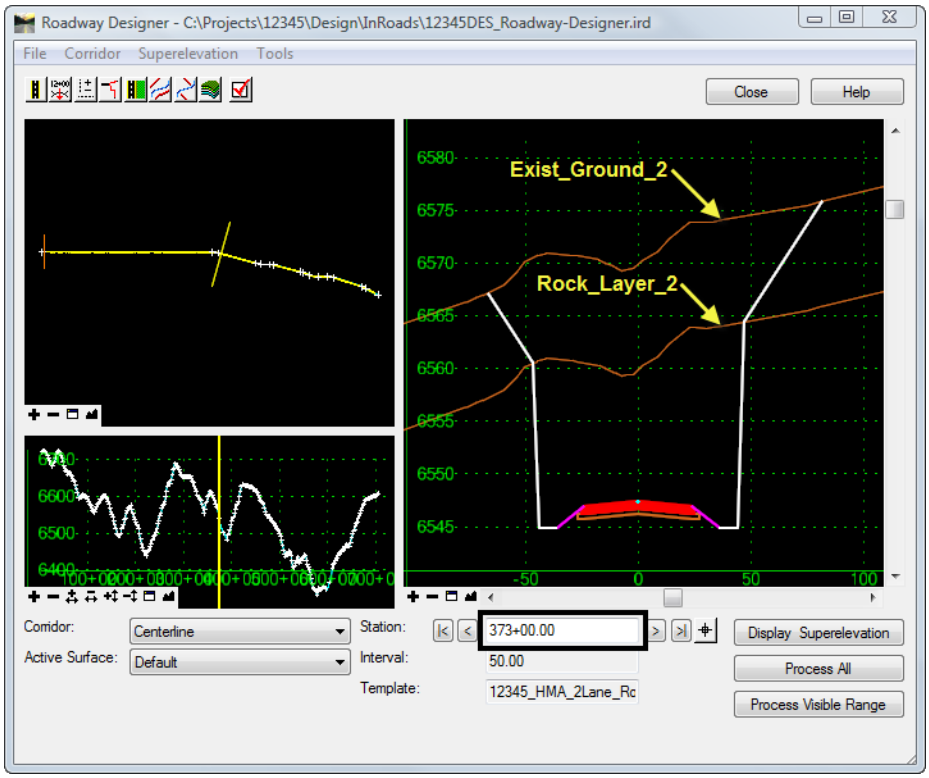

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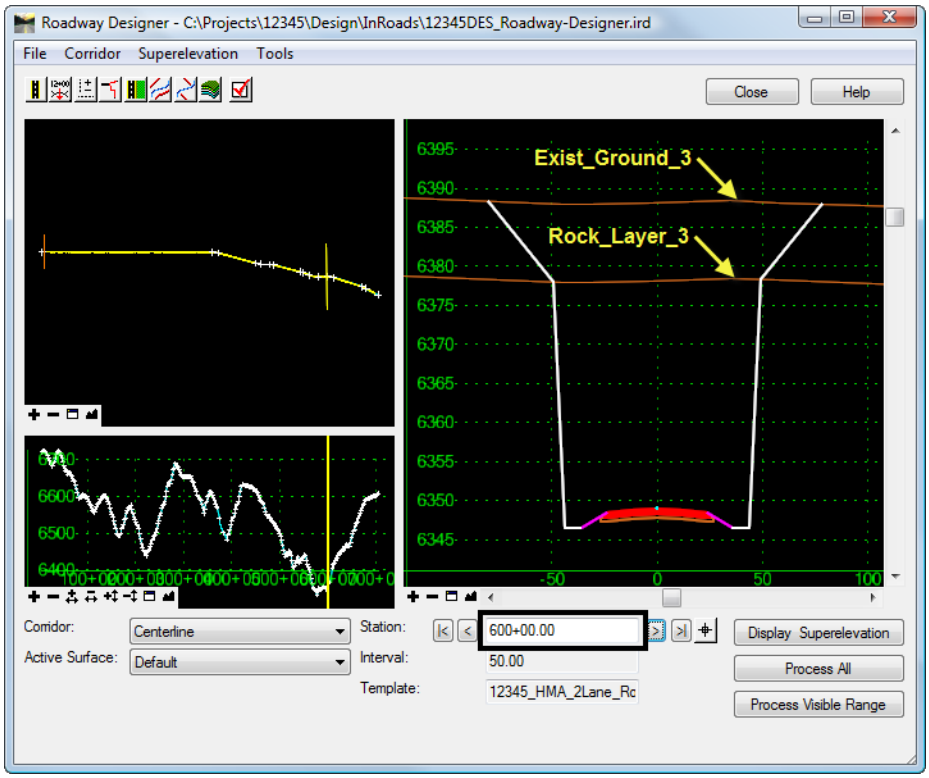

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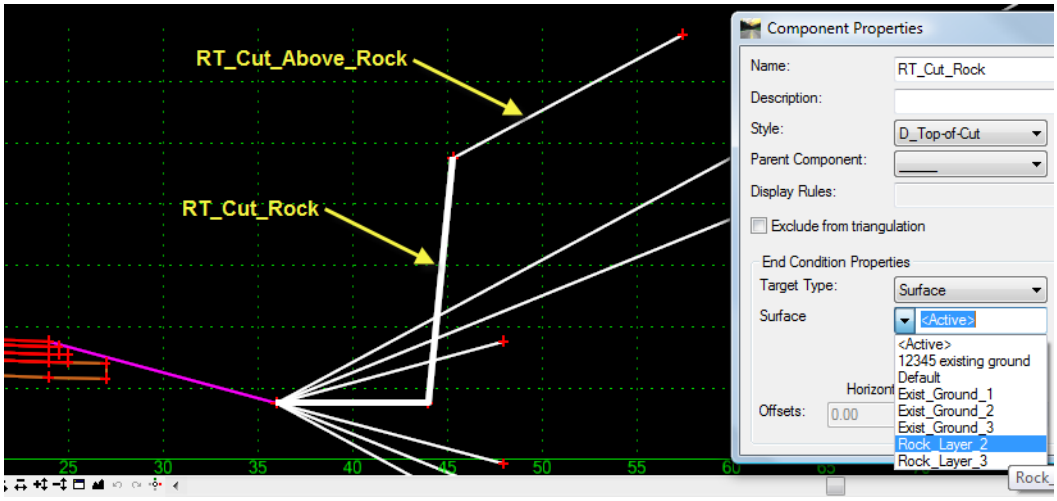
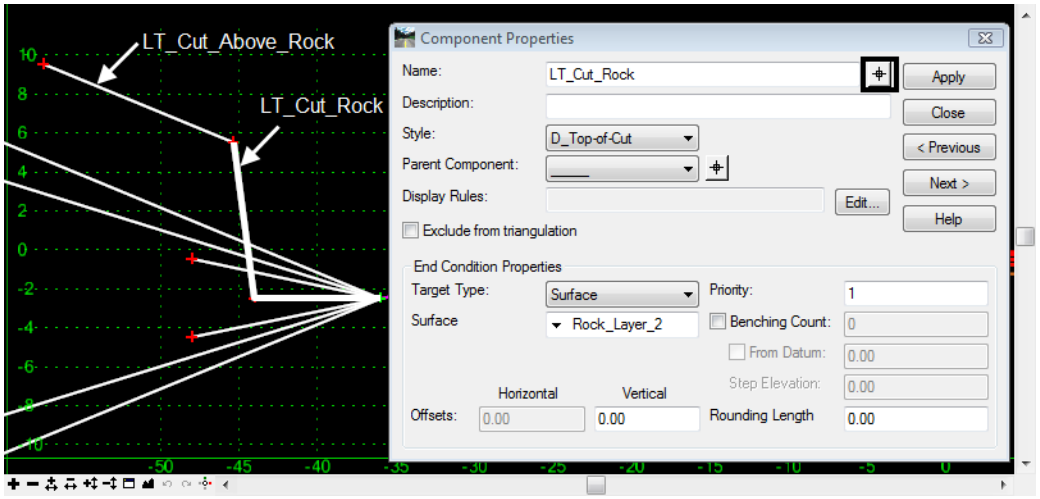
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

7. **<D>** on the ***Locate Button*** next to ***Name*** in the ***Component Properties*** dialog box

8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

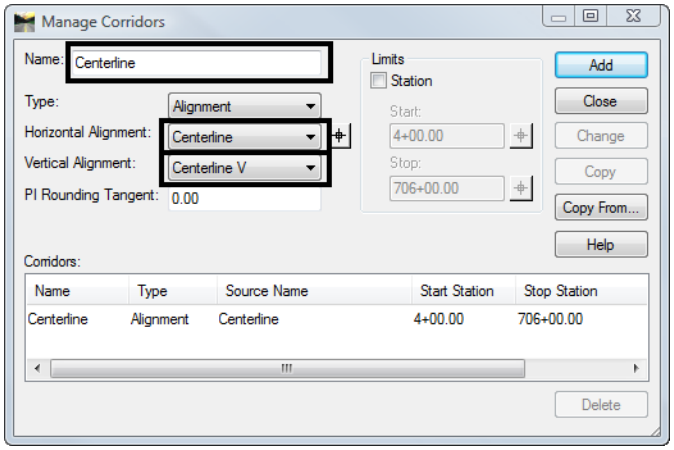
10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

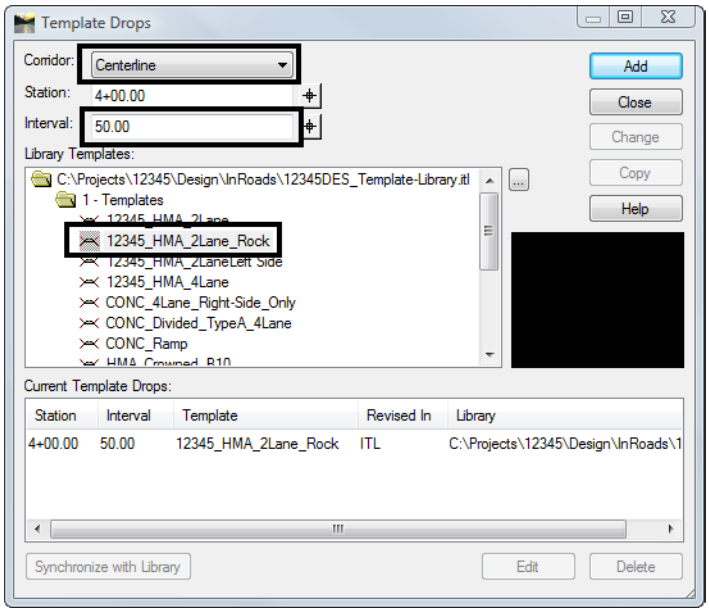
12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
- Select **Centerline** for the ***Horizontal Alignment***.
- Select **Centerline V** for the ***Vertical Alignment***.

13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.

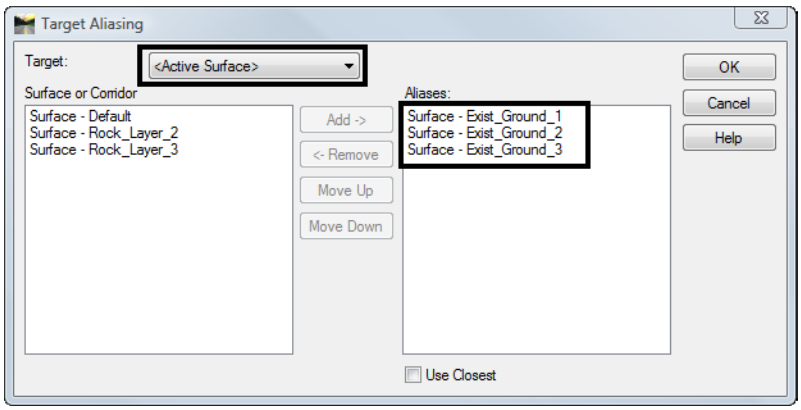


Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

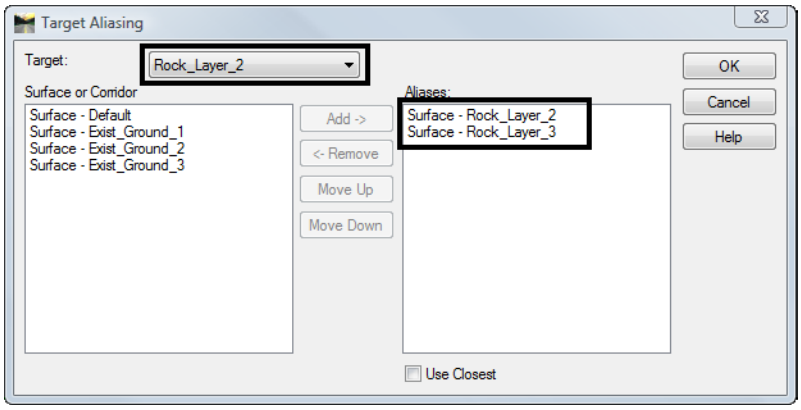
10. **<D> Add**.



11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.

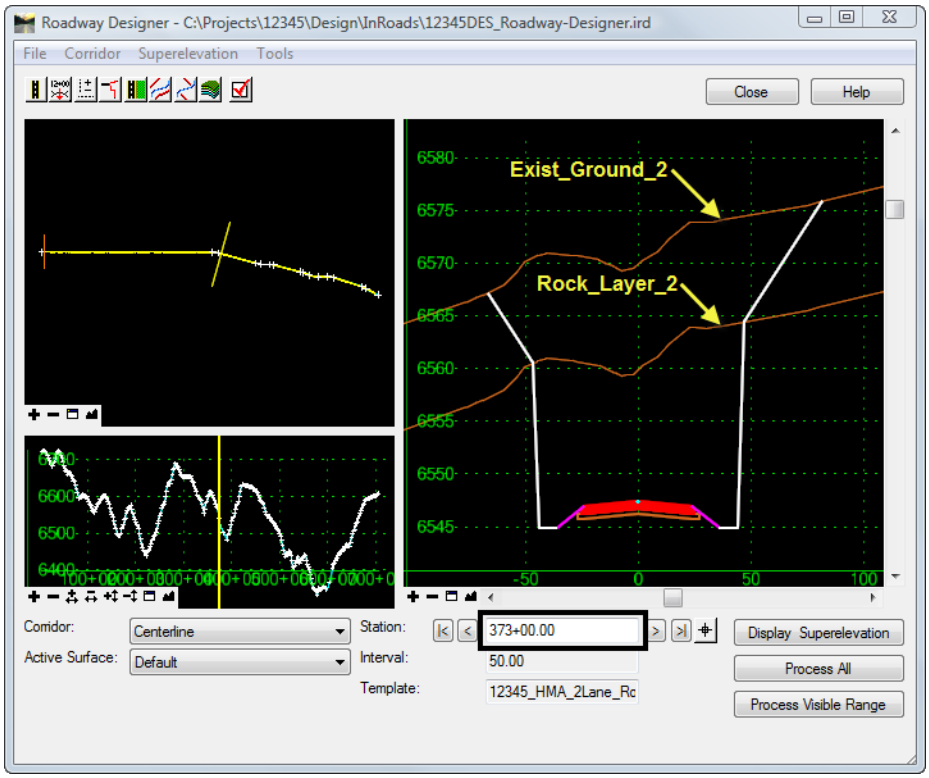


14. **<D> OK.**

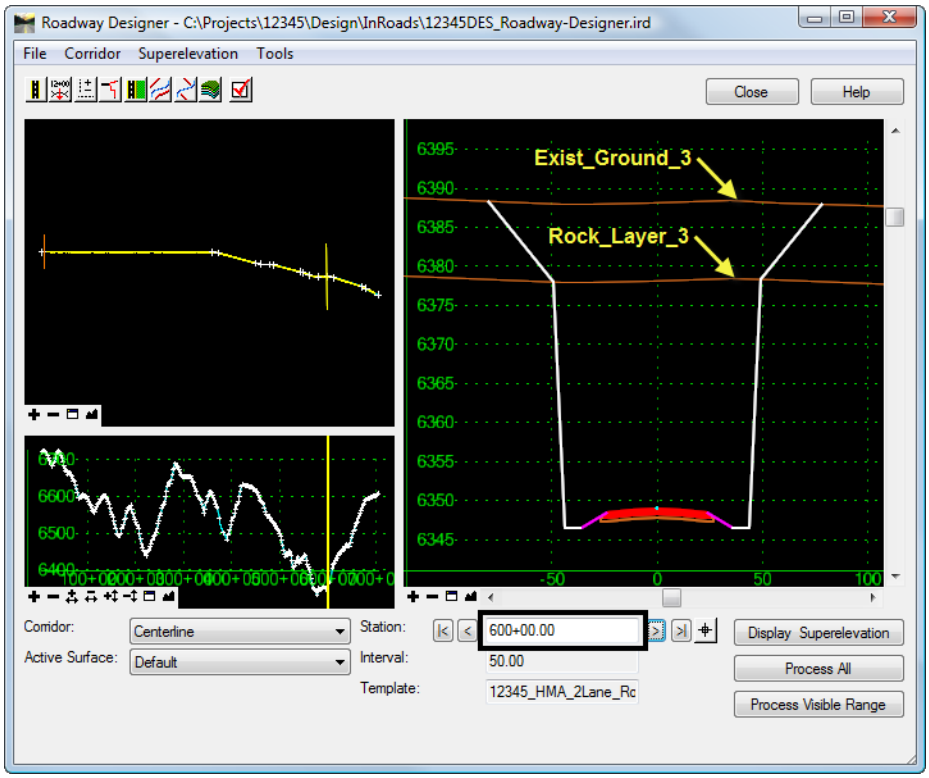
Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



2. Key in ***600+00*** for the ***Station***. Notice in the illustration below, that even though the surfaces are different, the end condition still solves. THis is because the Target Aliasing allows multiple surfaces to be specified for the end condition.



Chapter Summary:

- When end conditions are chained together (like the rock layer components used above), all parts of the chain must solve or the whole end condition fails.
- Use target aliasing to target multiple existing ground and rock layer surfaces.

LAB 31 - Create End Conditions to Search a Surface

This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
- Build a corridor and use target aliasing to target multiple existing ground and rock layer surfaces along three segments of the project.
- View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly

The following files are used in this lab:

- C:\Projects\12345\Design\InRoads\12345DES_Geometry-Create End Condit Search Surf.alg
- C:\Projects\12345\Design\InRoads\12345DES_Template-Create End Condit Search Surf.itl
- C:\Projects\12345\Design\InRoads\12345DES_Roadway-Create End Condit Search Surf.ird
- C:\Projects\12345\Design\InRoads\Exist_Ground_1-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_3-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_3-Create End Condit Search Surf.dtm

Lab 31.1 - Create End Conditions to Search a Surface

1. Open MicroStation and InRoads using the ***12345DES_Create End Cond Search Surf.dgn*** file.

   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

2. Select **File> Open** from the InRoads menu bar.

3. Open the following files from ***C:\Projects\12345\Design\InRoads*** directory.

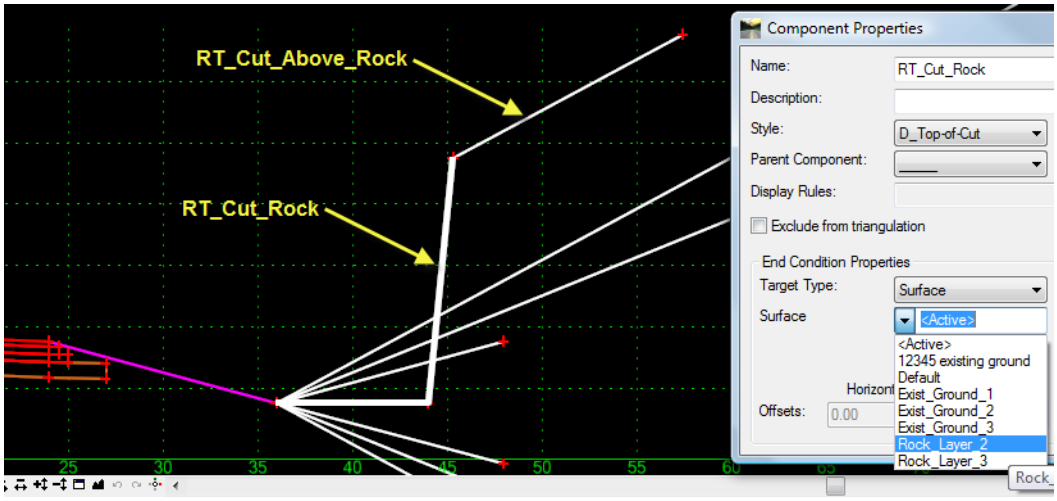
   - **CDOT_Civil.xin**
   - **12345DES_Geometry-Create End Condit Search Surf.alg**
   - **12345DES_Template-Create End Condit Search Surf.itl**

- **12345DES_Roadway-Create End Condit Search Surf.ird**
- **Exist_Ground_1-Create End Condit Search Surf.dtm**
- **Exist_Ground_2-Create End Condit Search Surf.dtm**
- **Exist_Ground_3-Create End Condit Search Surf.dtm**
- **Rock_Layer_2-Create End Condit Search Surf.dtm**
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

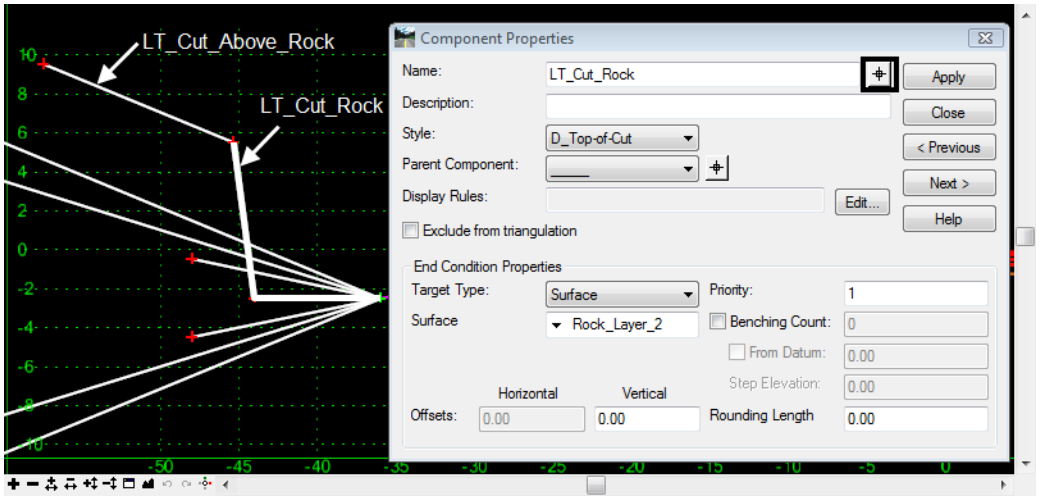
1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

7. **<D>** on the ***Locate Button*** next to ***Name*** in the ***Component Properties*** dialog box

8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
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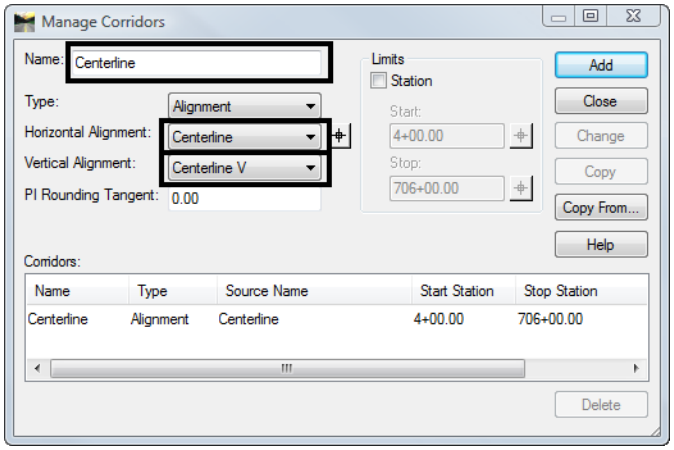
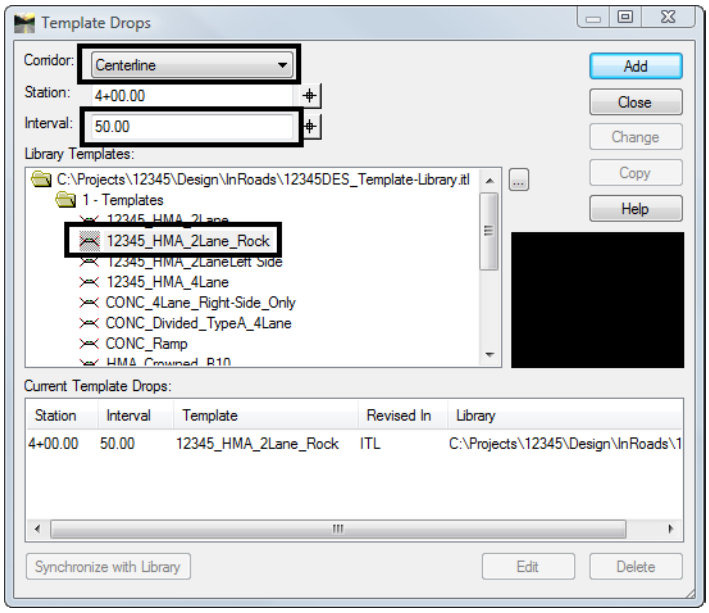
- Select **Centerline V** for the ***Vertical Alignment***.

13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.

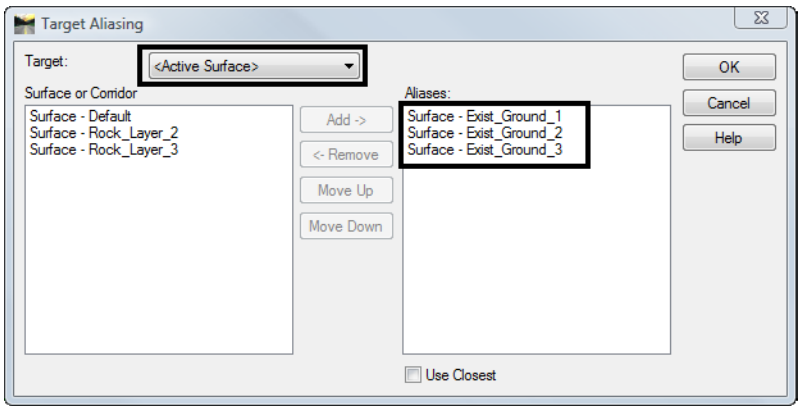


Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

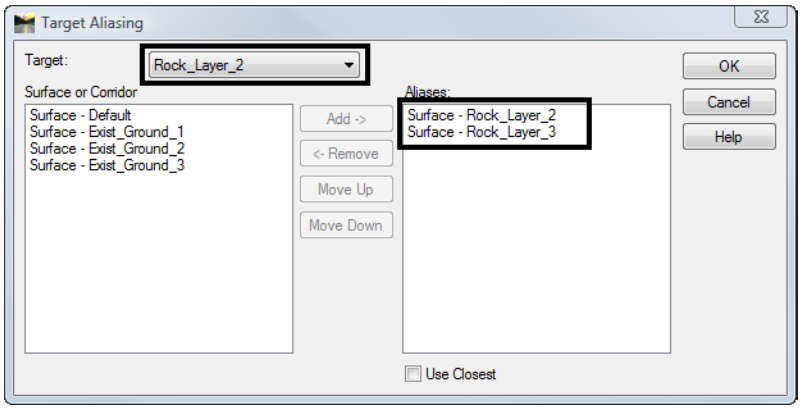
10. **<D> Add**.



11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.



14. **<D> OK.**

Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

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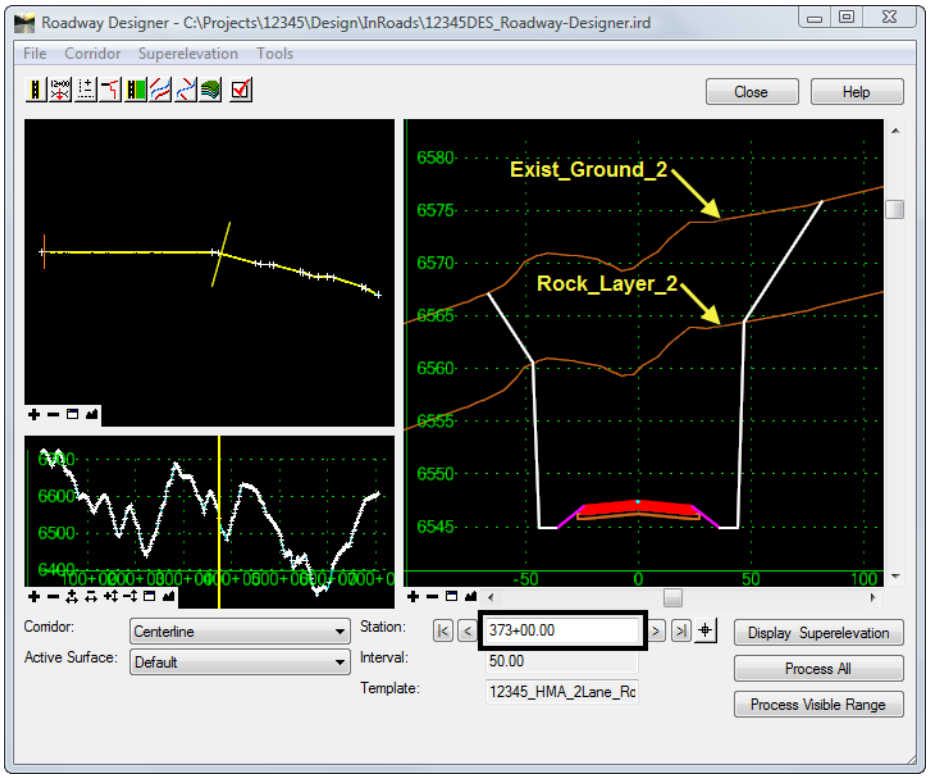

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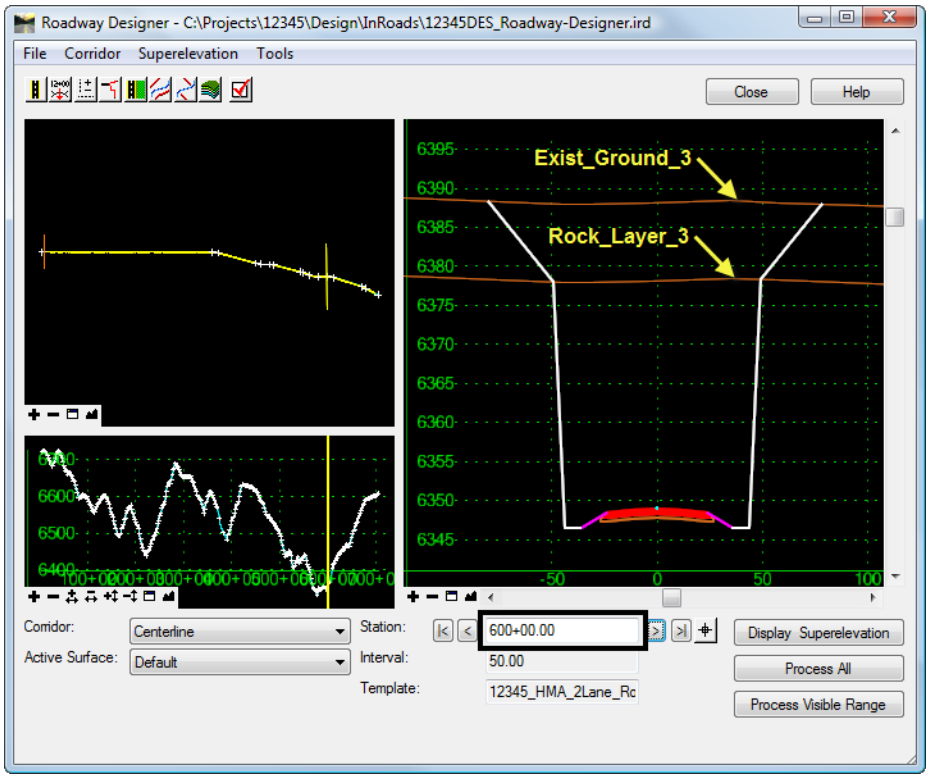

Chapter Summary:

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This lab demonstrates the ability of an end condition to target multiple surfaces, using target aliasing. In this exercise, a template is edited and new corridor is defined to target multiple surfaces. The existing ground surface was divided into three separate segments along the length of the project. There is also a rock layer surface 10-feet below the existing ground, for the second and third segments, where there is a deep cut section in the profile. The template end conditions target the rock and active surfaces, so target aliasing is required to target all the existing ground and rock surfaces as the corridor extends along the three segments of the project.

Chapter Objectives:

- Modify a template end condition to target a rock layer when that surface is present.
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Lab 31.1 - Create End Conditions to Search a Surface

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- **Exist_Ground_3-Create End Condit Search Surf.dtm**
- **Rock_Layer_2-Create End Condit Search Surf.dtm**
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
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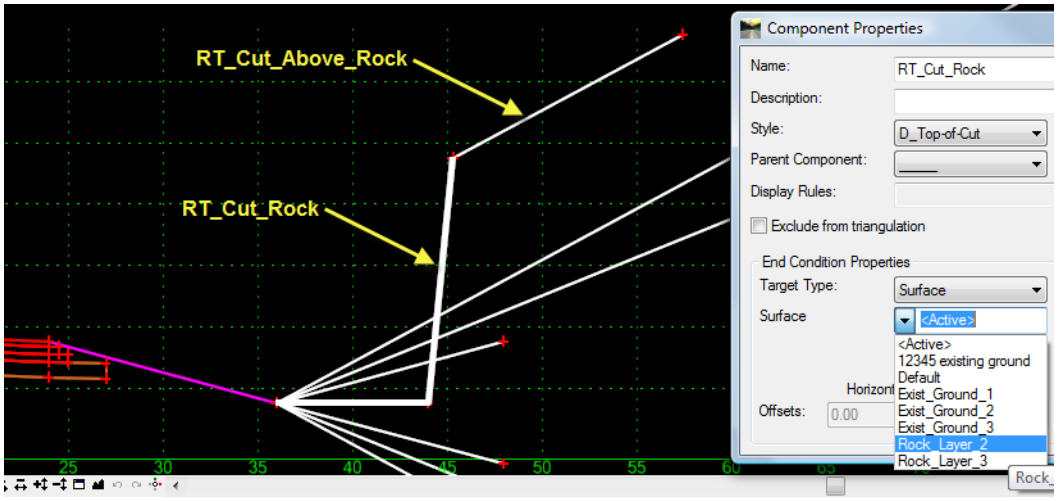
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



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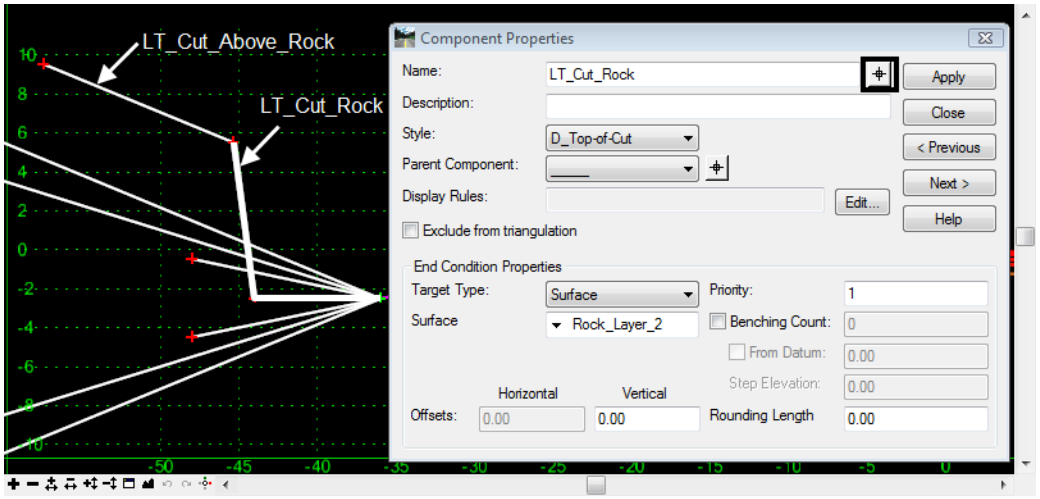

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Lab 31.3 - Create a Corridor and Template Drop

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10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

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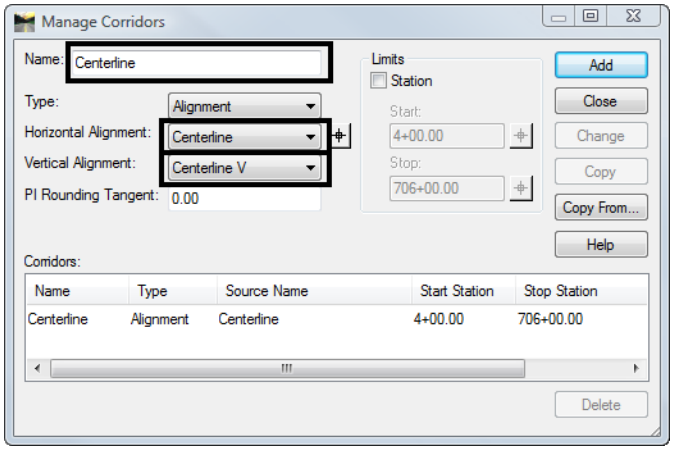

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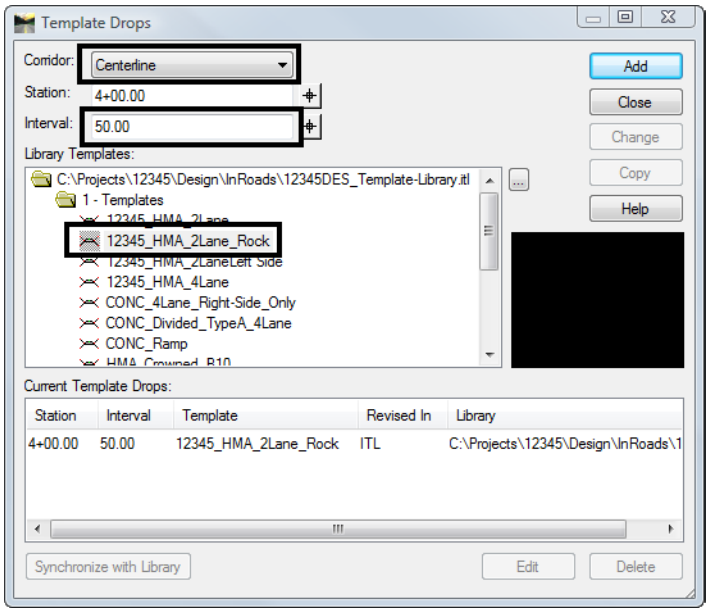

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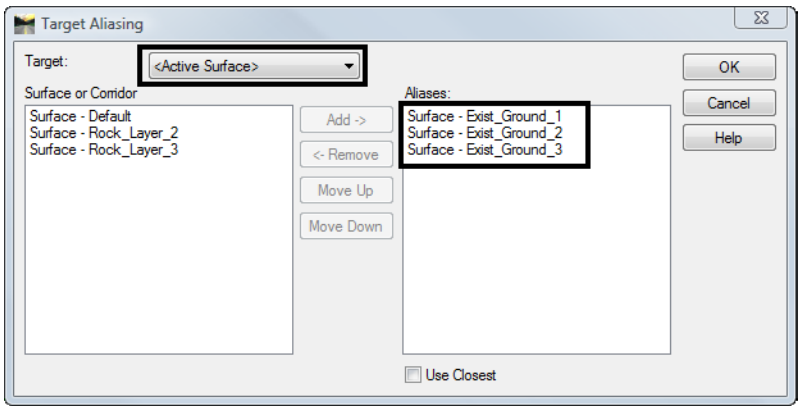

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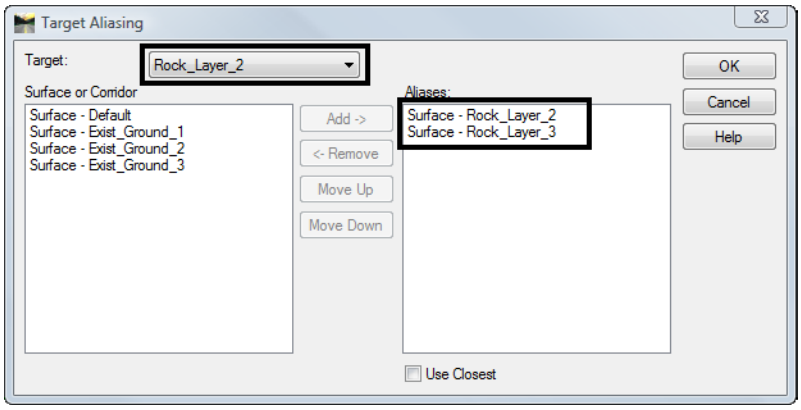

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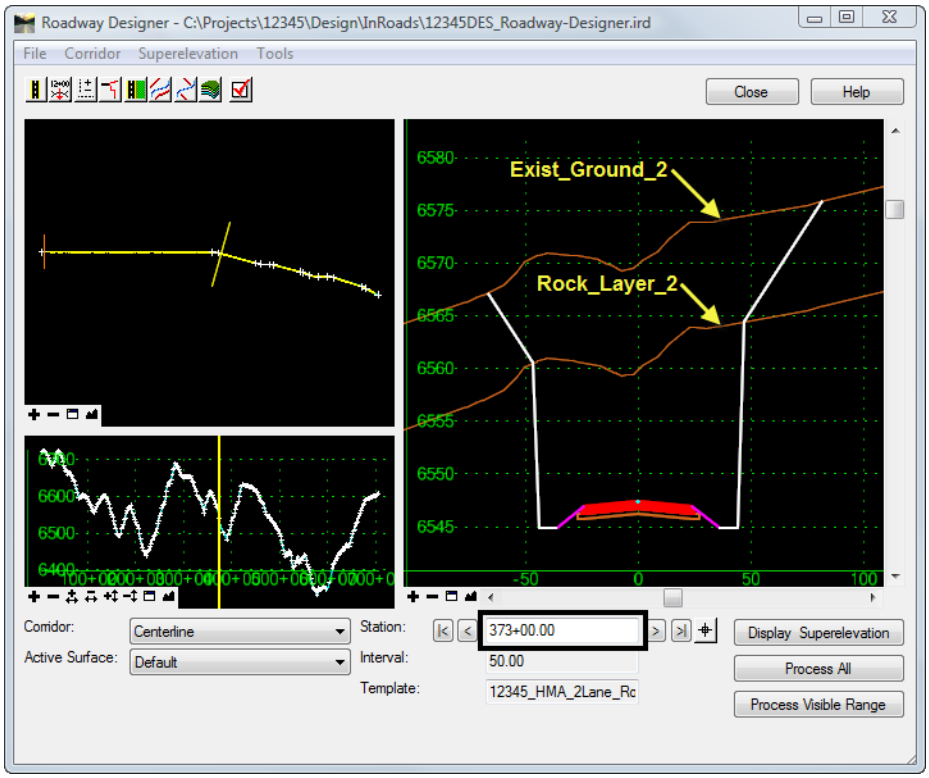

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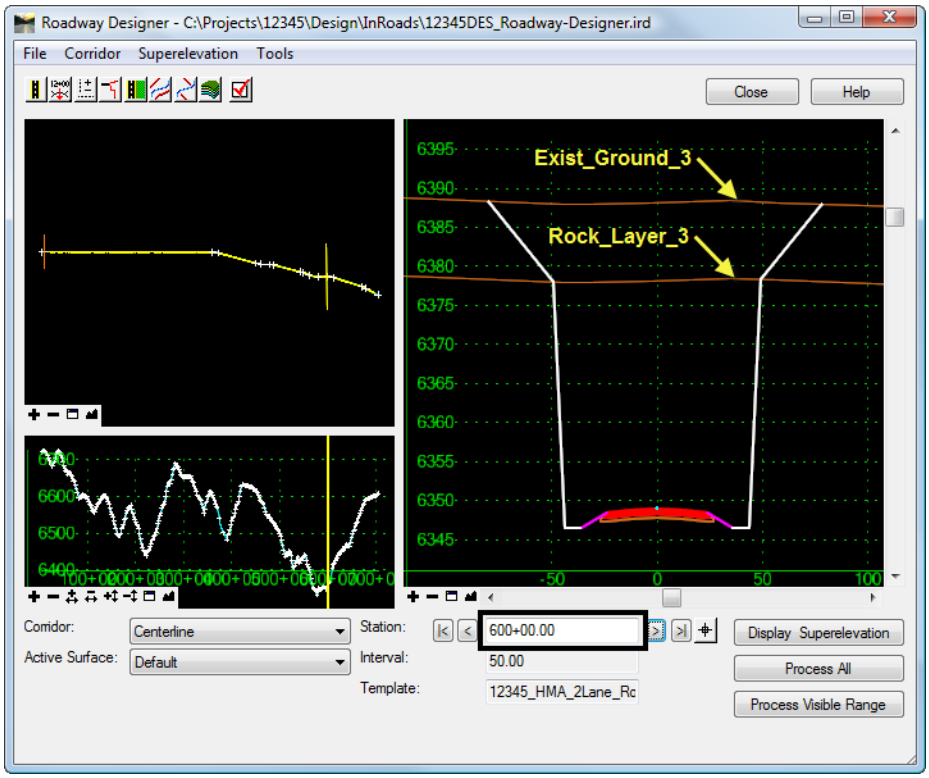

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- C:\Projects\12345\Design\InRoads\Exist_Ground_1-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Exist_Ground_3-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_2-Create End Condit Search Surf.dtm
- C:\Projects\12345\Design\InRoads\Rock_Layer_3-Create End Condit Search Surf.dtm

Lab 31.1 - Create End Conditions to Search a Surface

1. Open MicroStation and InRoads using the ***12345DES_Create End Cond Search Surf.dgn*** file.

   In the MicroStation drawing, notice the three perimeters displayed for each existing ground surface

2. Select **File> Open** from the InRoads menu bar.

3. Open the following files from ***C:\Projects\12345\Design\InRoads*** directory.

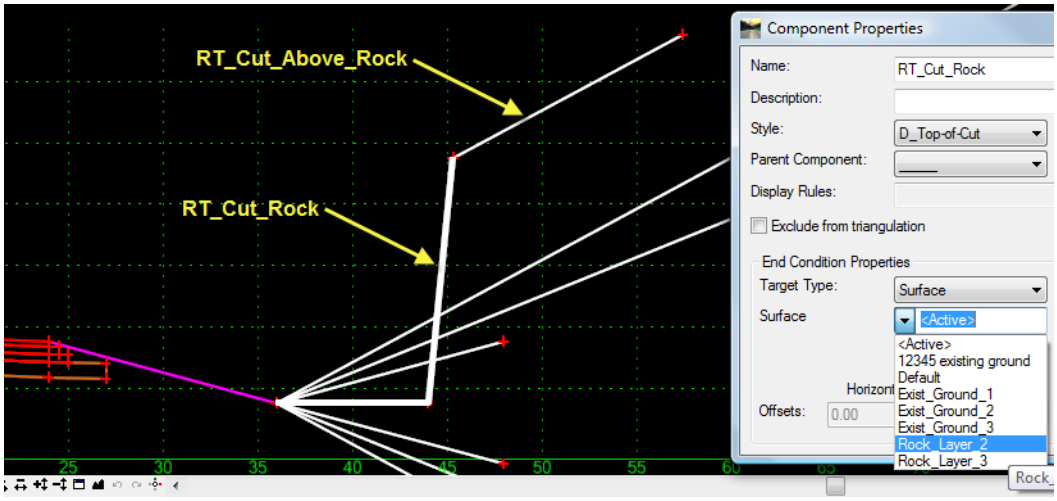
   - **CDOT_Civil.xin**
   - **12345DES_Geometry-Create End Condit Search Surf.alg**
   - **12345DES_Template-Create End Condit Search Surf.itl**

- **12345DES_Roadway-Create End Condit Search Surf.ird**
- **Exist_Ground_1-Create End Condit Search Surf.dtm**
- **Exist_Ground_2-Create End Condit Search Surf.dtm**
- **Exist_Ground_3-Create End Condit Search Surf.dtm**
- **Rock_Layer_2-Create End Condit Search Surf.dtm**
- **Rock_Layer_3-Create End Condit Search Surf.dtm**

4. **<D> Cancel** the to dismiss the ***Open*** dialog box.

Lab 31.2 - Edit template end condition components to target rock layer.

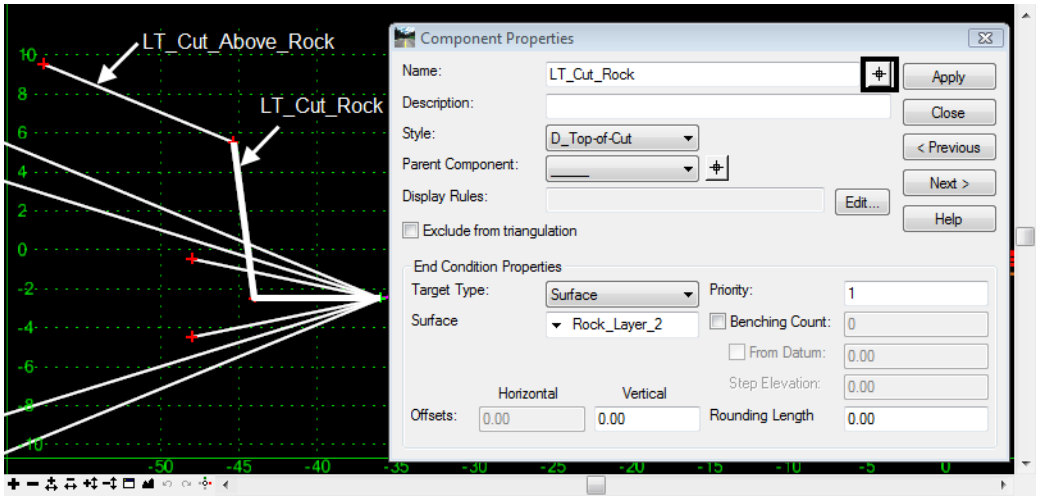
1. Select **Modeler> Create Template** from the InRoads menu bar.
2. **<D> <D>** on the root folder in the Template Library pane to expand the folder structure.
3. Expand the ***1 - Templates*** folder.
4. **<D> <D>** on the ***12345_HMA_2Lane_Rock*** template to open it for editing.
5. **<D> <D>** on the ***RT_Cut_Rock*** component.
6. In the ***Component Properties*** dialog box, change the **Surface** to ***Rock_Layer_2*** and **<D> Apply**



Note: This end condition has two components and is only placed when there is a rock surface above the ditch bottom. The first component, ***RT_Cut_Rock***, extends to intersect the rock layer surface. The second, ***RT_Cut_Above_Rock***, is a child of the first and extends to intersect the active surface (existing ground). All other end condition components in this template target the active surface (existing ground).

7. **<D>** on the ***Locate Button*** next to ***Name*** in the ***Component Properties*** dialog box

8. On the left side of the template, **<D>** on the ***LT_Cut_Rock*** component.



9. In the ***Component Properties*** dialog box, Change the **Surface** to ***Rock_Layer_2,*** then **<D> Apply** and **<D> Close**.

Lab 31.3 - Create a Corridor and Template Drop

Build a corridor that follows the centerline alignment and extends along all three segments of the project.

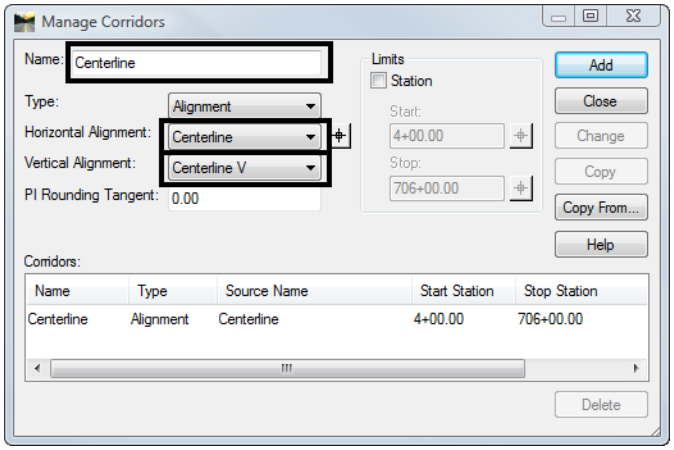
10. Select **Modeler> Roadway Designer** from the InRoads menu bar.

11. Select **Corridor> Corridor Management** from the Roadway Designer menu bar.

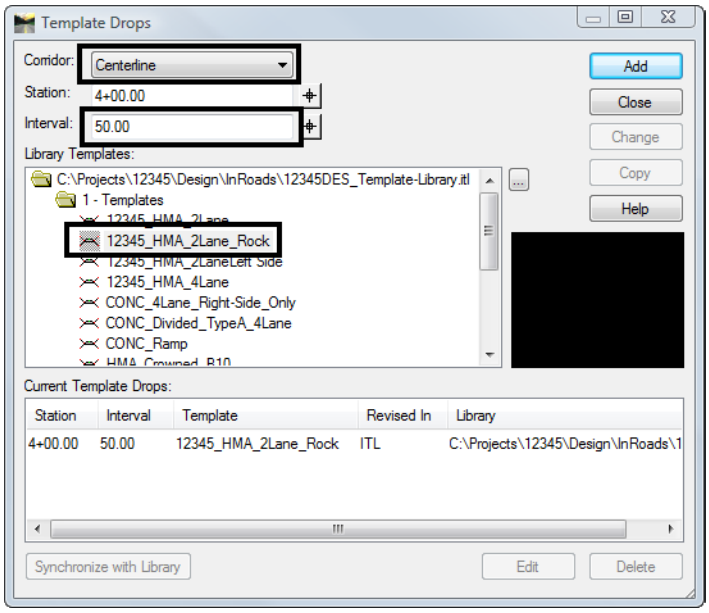
12. In the ***Manage Corridors*** dialog box:

- Key in ***Centerline*** in the ***Name*** field.
- Select **Centerline** for the ***Horizontal Alignment***.
- Select **Centerline V** for the ***Vertical Alignment***.

13. **<D> Add** then **<D> Close**.



1. Select **Corridor> Template Drops** from the Roadway Designer menu bar.
2. In the ***Template Drops*** dialog box, select **Centerline** for the ***Corridor*** name.
3. Key in ***50*** for the ***Interval***.
4. Expand **1 - Templates** folder in ***Library Templates*** area.
5. **<D>** on the **12345_HMA_2Lane_Rock** template.
6. **<D> Add** then **Close**.

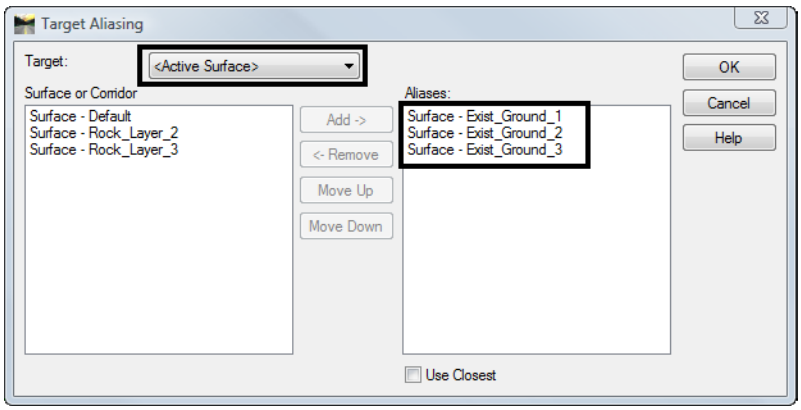


Lab 31.4 - Define target aliasing

Target aliasing allows multiple targets to be specified for a single end condition. In this example, the existing ground for the project was contained in three separate dtms.

7. Select **Tools> Target Aliasing** from the Roadway Designer menu bar.
8. In the ***Target Aliasing*** dialog box, select **<Active Surface>** for the ***Target***.
9. Highlight **Surface - Exist_Ground_1**, **Surface - Exist_Ground_2** and **Surface - Exist_Ground_3** in the ***Surface or Corridor*** area.

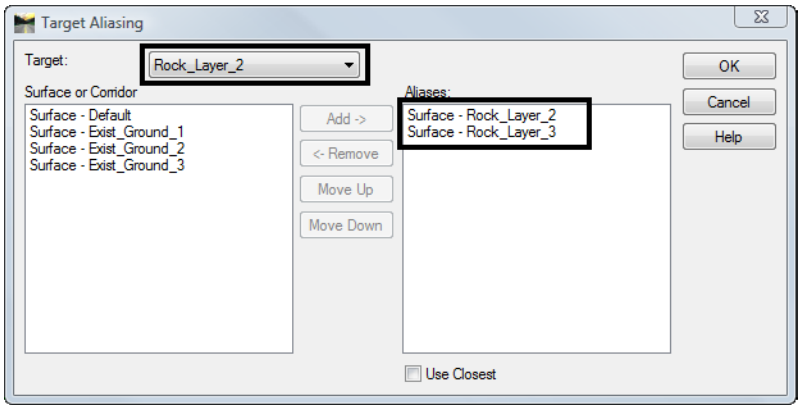
10. **<D> Add**.



11. Select **Rock_Layer_2** for the ***Target***.

12. Highlight **Surface - Rock_Layer_2** and **Surface - Rock_Layer_3** in the ***Surface or Corridor*** area.

13. **<D> Add**.

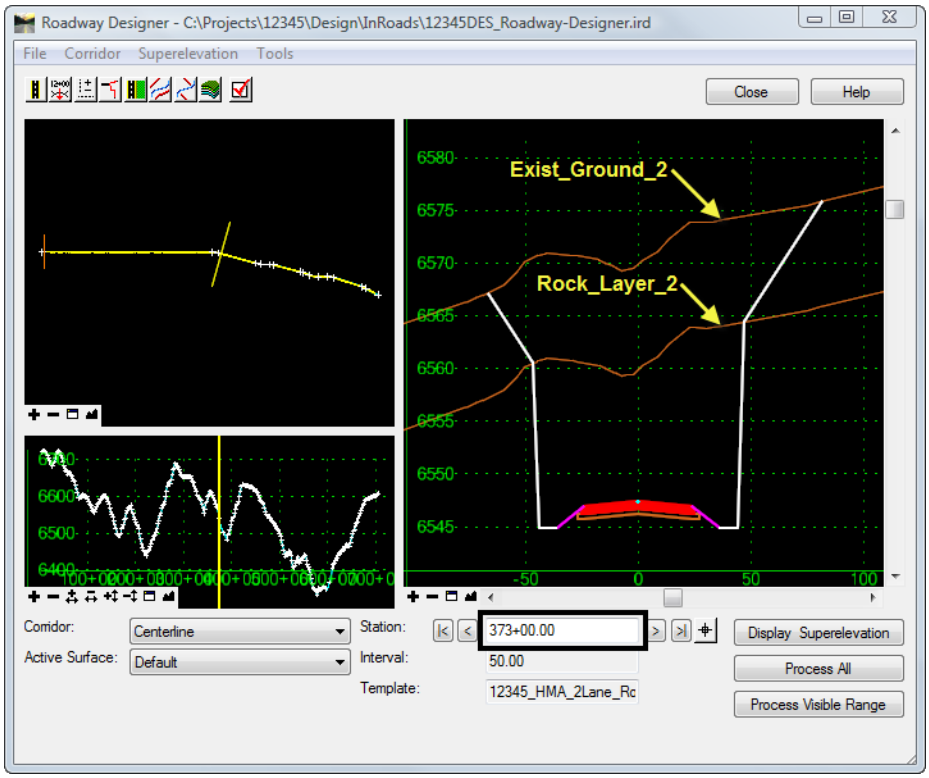


14. **<D> OK.**

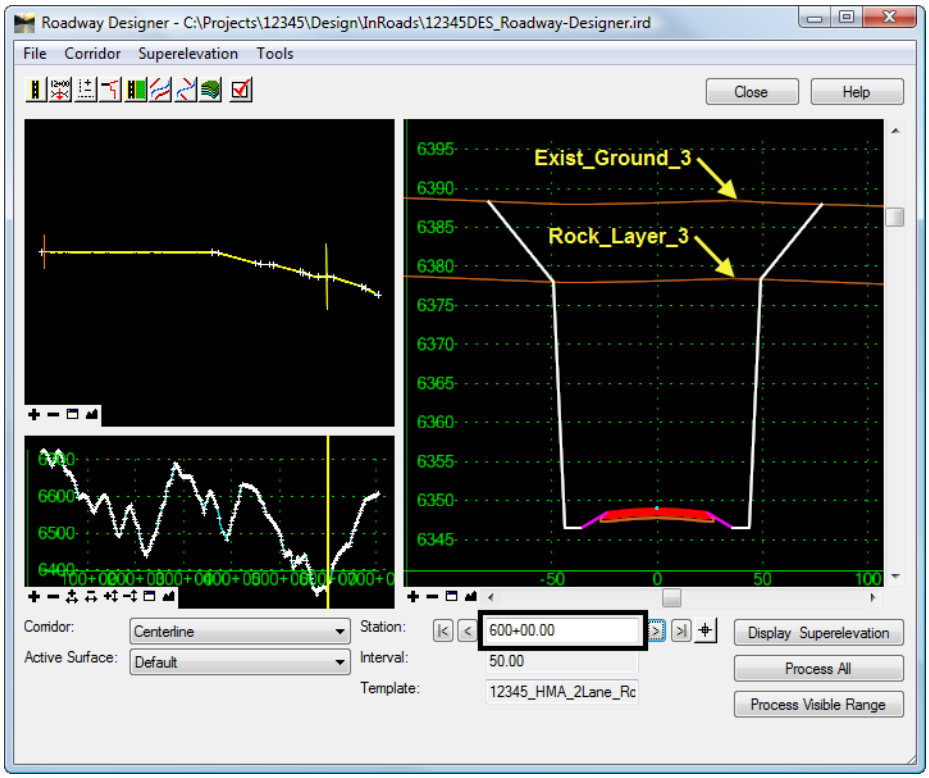
Lab 31.5 - Review Design Model

View the corridor to examine the end condition's behavior and determine if templates and target aliasing are working properly.

1. In the ***Roadway Designer*** dialog box, key in ***373+00*** for the ***Station***. Notice the end conditions target the existing ground and rock layer surfaces in Roadway Designer dialog's cross- section viewer.



2. Key in ***600+00*** for the ***Station***. Notice in the illustration below, that even though the surfaces are different, the end condition still solves. THis is because the Target Aliasing allows multiple surfaces to be specified for the end condition.



Chapter Summary:

- When end conditions are chained together (like the rock layer components used above), all parts of the chain must solve or the whole end condition fails.
- Use target aliasing to target multiple existing ground and rock layer surfaces.