Contents

Introduction to Typical Cross-Sections (X-Sections)

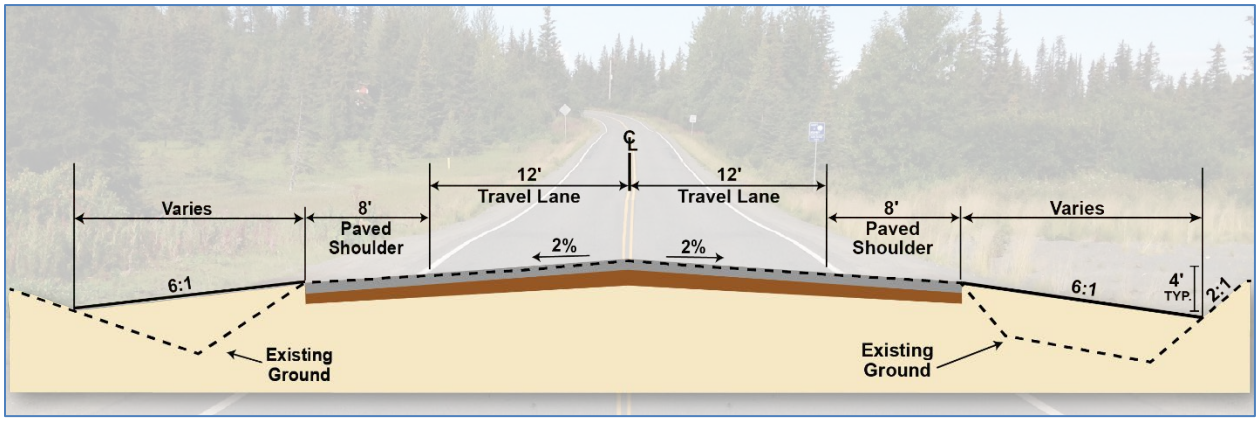


Figure 1 - Typical Cross-Section for a Rural Highway

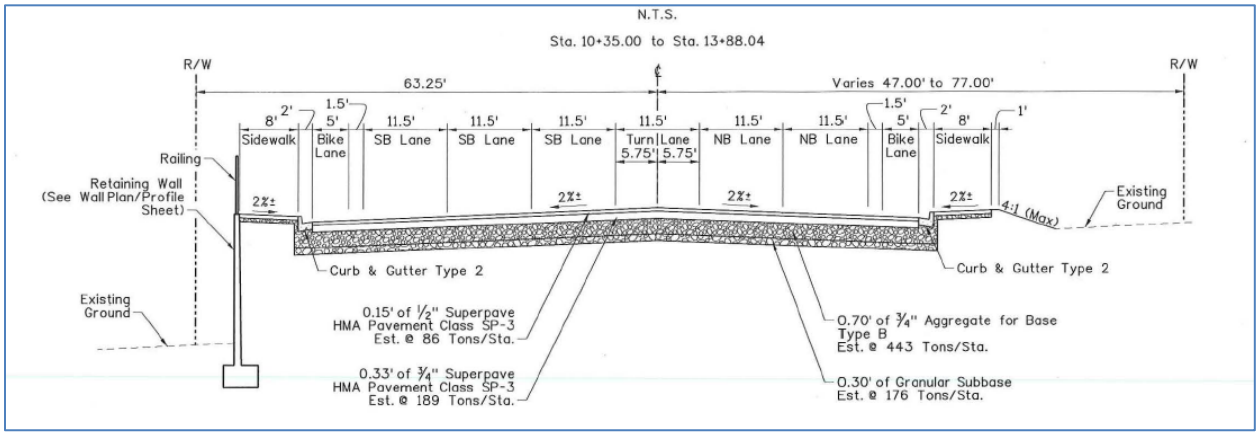


Figure 2 - Typical Cross-Section for an Urban Roadway

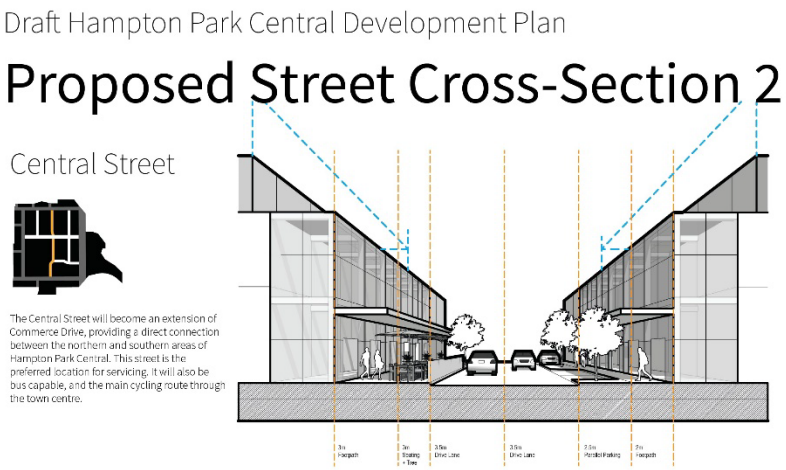


Figure 3. Cross-Section for an Urban Street with Walk Way

Autocad Civil 3D Tutorial Creating Sections and Section Views 13/16

https://youtu.be/ZcjDeReifMU

Corridor Assembly Tutorials

These tutorials will get you started working with the corridor assemblies, which create the primary structure of AutoCAD Civil 3D corridor models.

The tutorials in this section demonstrate common tasks for working with corridor assemblies for any application. You will learn how to build assemblies for specific types of corridors, including divided highways and corridors with transition lanes, in the Corridors Tutorials.

If you have not installed AutoCAD Civil 3D to the default location, you may receive messages in the Event Viewer indicating that subassembly macro paths are not found. To avoid these messages, it is recommended that you follow the exercises in the order presented.

Note:

All drawings used in these tutorials are available in the tutorials drawings folder. If you want to save your work from these tutorials, save the drawings to the My Tutorial Data folder so that you do not overwrite the original drawings.

Topics in this section

- **Tutorial: Working with Assemblies**
  This tutorial demonstrates the basic tasks you will use to use AutoCAD Civil 3D subassemblies to build corridor assemblies.
- **Tutorial: Creating an Assembly with Conditions**
  This tutorial demonstrates how to use the Conditional Cut Or Fill subassembly to build a corridor assembly that applies different subassemblies depending on the cut or fill condition at a given station.

Tutorial: Working with Assemblies

This tutorial demonstrates the basic tasks you will use to use AutoCAD Civil 3D subassemblies to build corridor assemblies.

This tutorial demonstrates common tasks that you can apply when working with corridor assemblies for any application. In the Corridors Tutorials, you will learn how to build assemblies for specific types of corridors, including:

- Assembly with a transition lane
- Divided highway assembly

Topics in this section

- **Exercise 1: Creating an Assembly**
  In this exercise, you will use some of the subassemblies that are shipped with AutoCAD Civil 3D to create an assembly for a basic crowned roadway with travel lanes, curbs, gutters, sidewalks, and slopes to an existing surface.
- **Exercise 2: Modifying the Subassembly Name Template**
  In this exercise, you will specify a meaningful naming convention to apply to subassemblies as they are created.
- **Exercise 3: Managing Assemblies and Subassemblies**
  In this exercise, you will apply some assembly and subassembly management best practices to a drawing that contains multiple corridor assemblies.

Exercise 1: Creating an Assembly

In this exercise, you will use some of the subassemblies that are shipped with AutoCAD Civil 3D to create an assembly for a basic crowned roadway with travel lanes, curbs, gutters, sidewalks, and slopes to an existing surface.

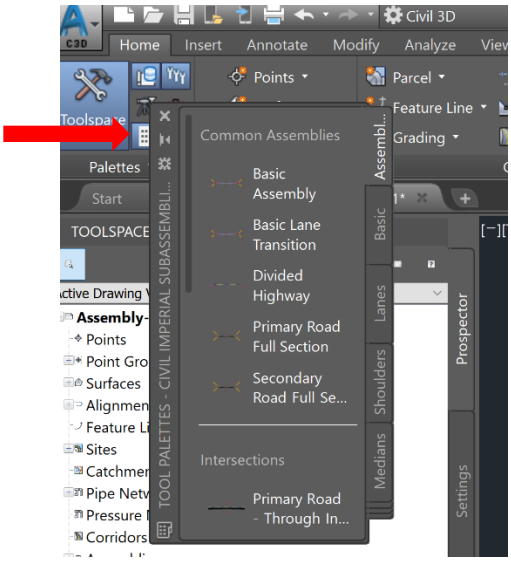
Create an assembly baseline

1. Open *Assembly-1a.dwg*, which is located in the tutorials drawings folder.
2. Home tab ➤ Create Design panel ➤ Assembly drop-down ➤ Create Assembly .
3. In the Create Assembly dialog box, for name, enter **Primary Road Full Section**. Click OK.
4. When the 'Specify assembly baseline location' prompt is displayed on the command line, click below the bottom rectangle of the two profile views.

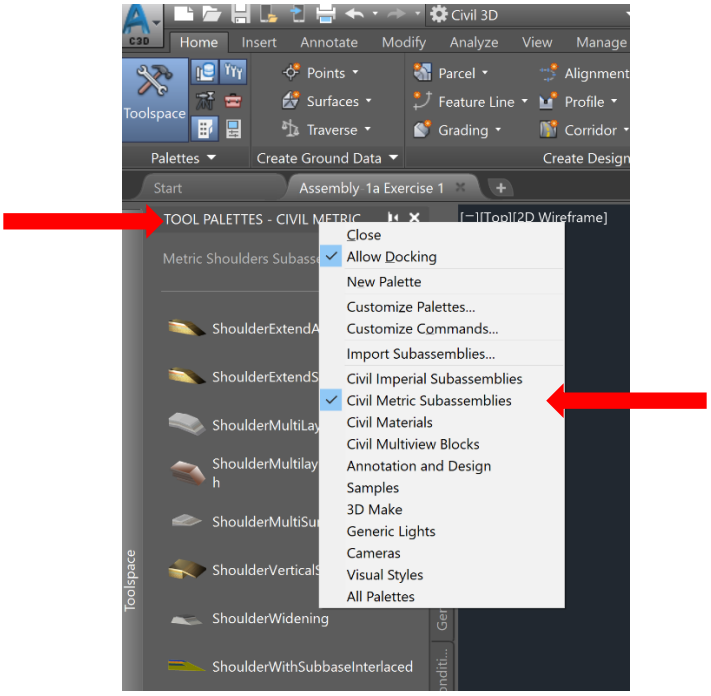
   The viewport zooms to the assembly baseline, which looks like this:

Add a lane subassembly

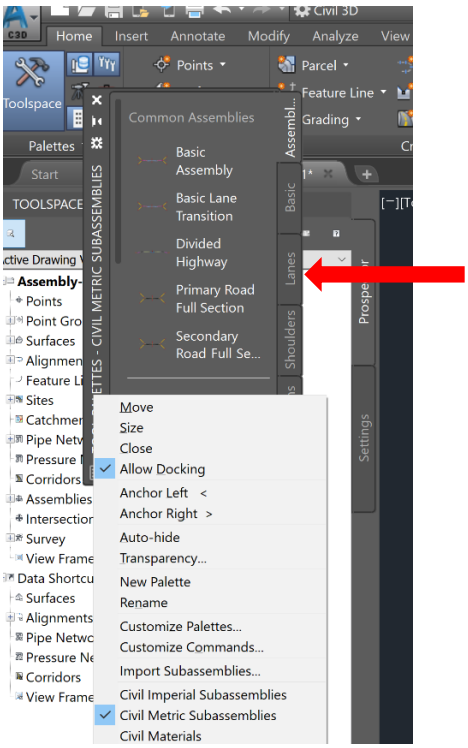
1. If the Tool Palette containing the subassemblies is not visible, click Home tab ➤ Palettes panel ➤ Tool Palettes .



2. In the tool palette, right-click the Tool Palettes control bar. Select Civil Metric Subassemblies.In the pop-up menu, select Civil Metric Subassemblies

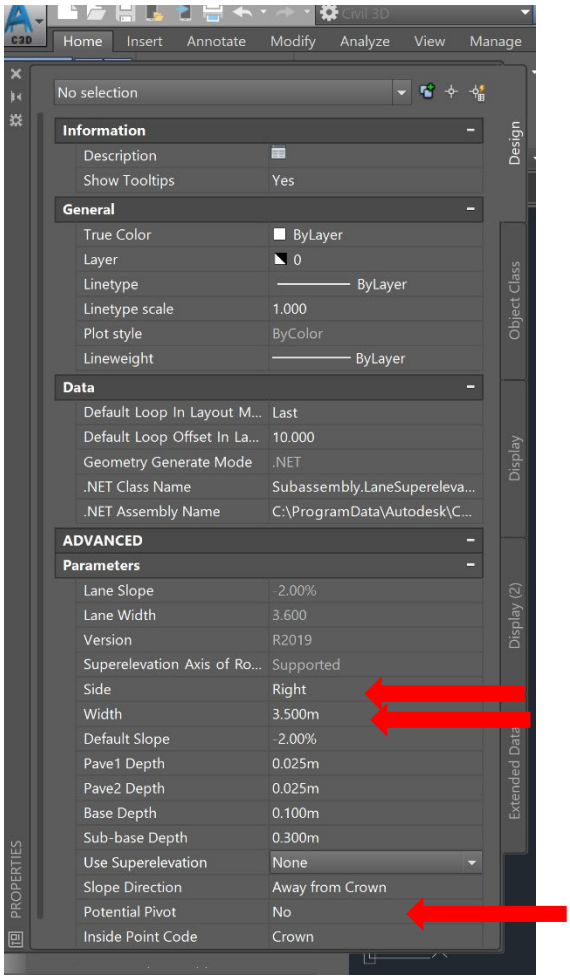


3. Click the Lanes tab.

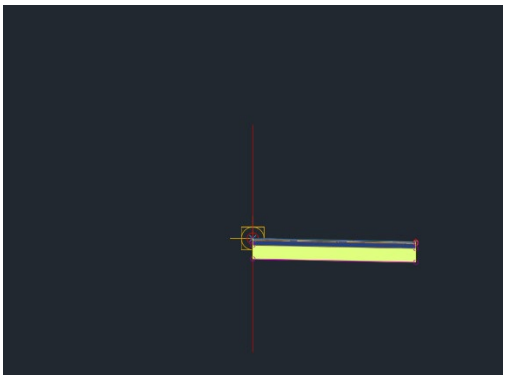


4. Click  LaneSuperelevationAOR.
5. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Width: **3.5** (you can use notepad to copy and paste into this field)
- Potential Pivot: **No**



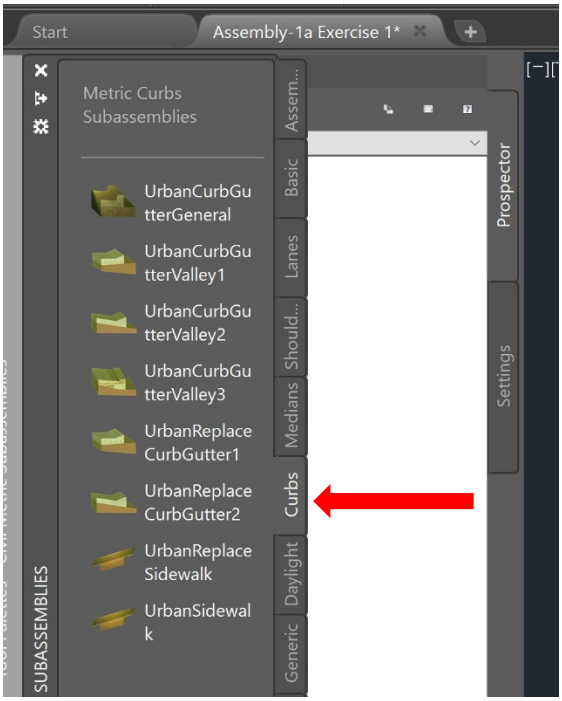
6. In the drawing space, click the marker point on the assembly baseline. The right lane subassembly is now attached to the assembly baseline.



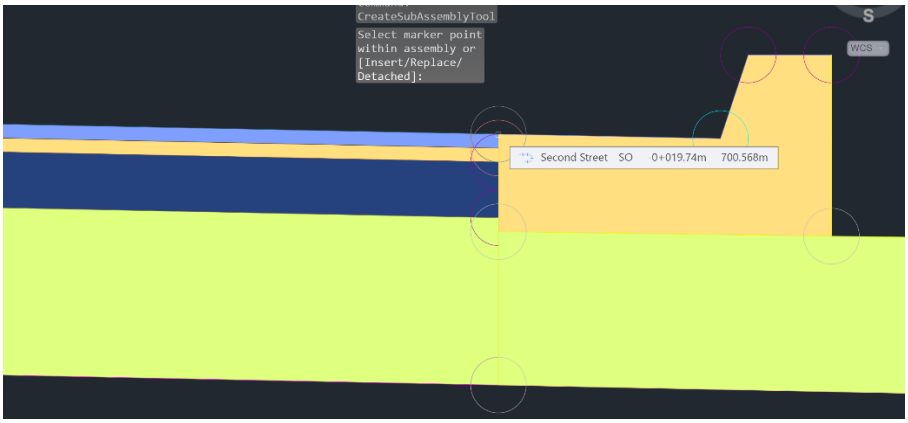
7. Strike Esc remove the remaining prompts from the command line

Add a curb subassembly

1. In the Tool Palettes window, on the Curbs tab, click  UrbanCurbGutterGeneral.



2. In the drawing space, click the marker point at the top-right edge of the travel lane.

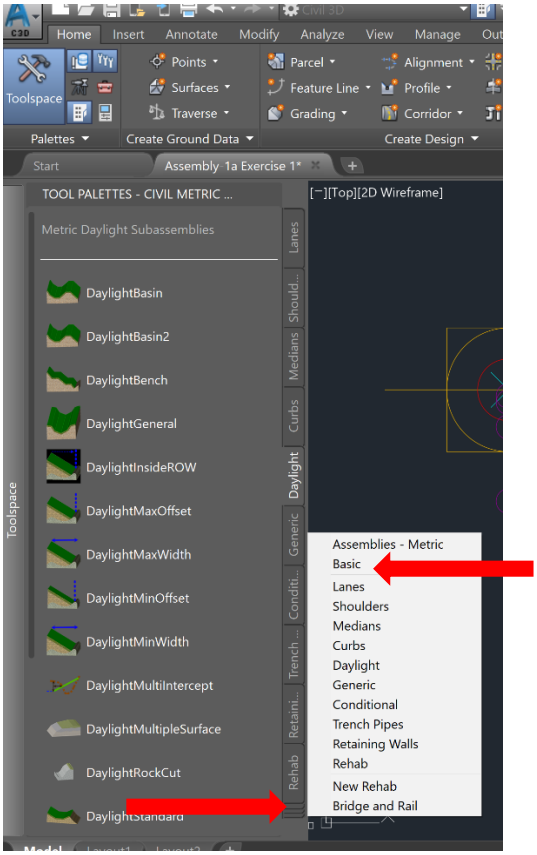


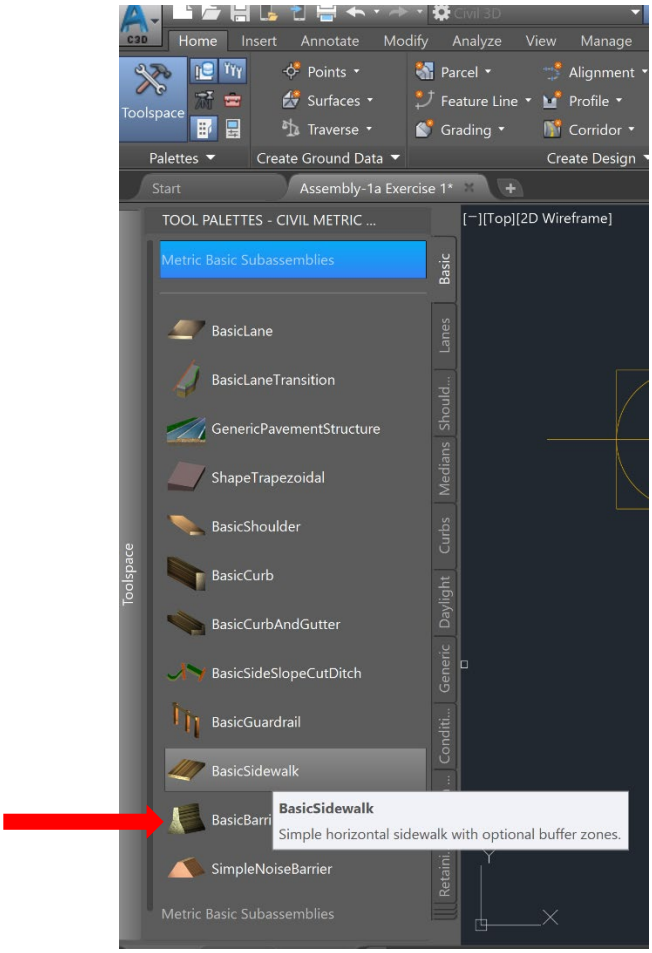
Note:

If you attach the subassembly to the wrong marker, you can move it to the correct location. Press Esc to exit subassembly placement mode. Select the subassembly you wish to move. A blue grip is displayed when the subassembly is selected. Select the grip, and then click the correct marker point.

Add a sidewalk subassembly

1. In the Tool Palettes window, on the Basic tab, click  Basic Sidewalk.

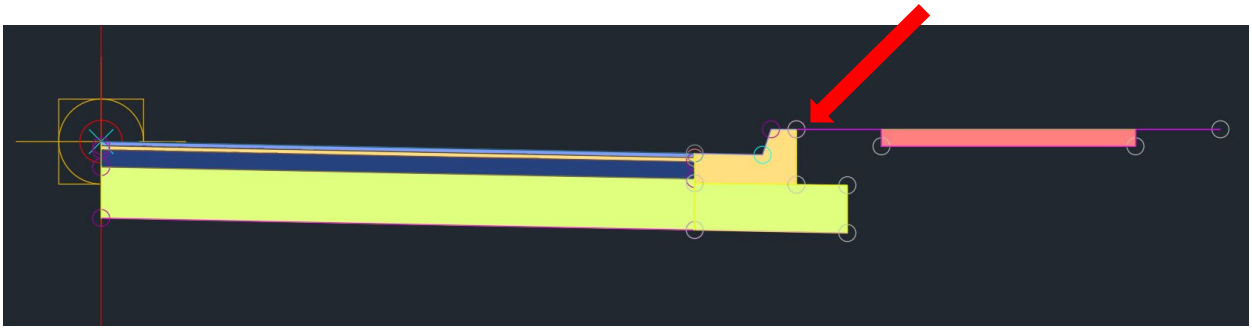




2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Width: **1.5**
- Buffer Width 1: **0.5**
- Buffer Width 2: **0.5**

3. In the drawing, click the marker point at the top, back of the curb.



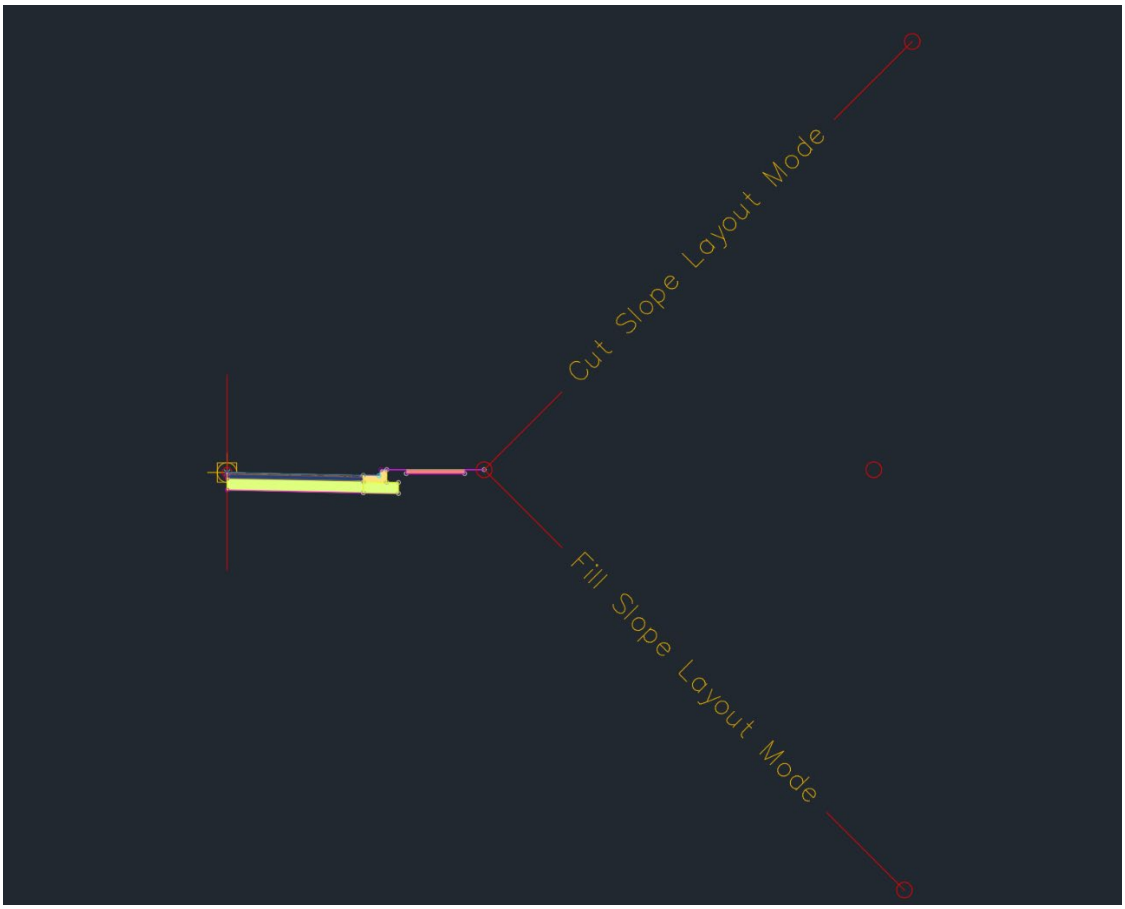
Add a daylight subassembly

1. In the Tool Palettes window, on the Basic tab, click  BasicSideSlopeCutDitch.
2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Cut Slope: **3.000:1**
- Fill Slope: **3.000:1**

3. In the drawing space, click the marker point at the outside edge of the sidewalk subassembly.
4. Press Esc.

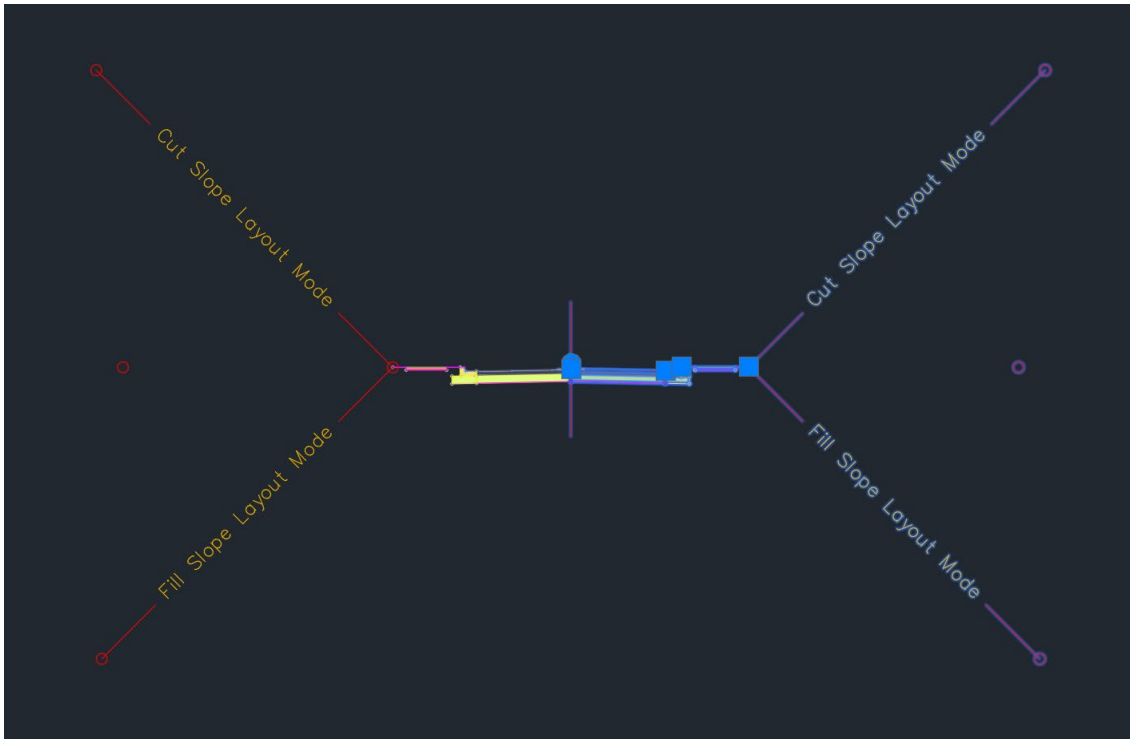
   This action ends the subassembly placement command.



Mirror the subassemblies to the left of the baseline

1. Select the home tab. In the drawing space, select the four subassemblies you added.
2. From the Modify Subassembly menu select Mirror
3. Click the upper left marker point on the assembly baseline.
4. When prompted are you sure you want to mirror the subassemblies to the same side? Click Ok

   The subassemblies are displayed on the left side of the assembly marker.
   The Mirror command creates a mirror image of the selected subassemblies. All the subassembly parameters, except for the Side parameter, are retained.



Note:
The parameters of the mirrored subassemblies are not dynamically linked. If you change a parameter value for a subassembly on one side of the assembly baseline, the change will not be applied to the opposite side.

Save this file as Assembly-1a Exercise 1.dwg and submit to Canvas

Exercise 2: Modifying the Subassembly Name Template

In this exercise, you will specify a meaningful naming convention to apply to subassemblies as they are created.

This default subassembly naming template specifies that subassemblies use the subassembly name on the tool palette followed by a sequential number. For example, if BasicLane subassemblies are placed on either side of the assembly, they are named BasicLane- (1) and BasicLane - (2).

In this exercise, you will change the naming template so that assemblies will include the side on which the subassembly is placed. For example, if BasicLane subassemblies are placed on either side of the assembly, they are named BasicLane- (Left) and BasicLane - (Right).

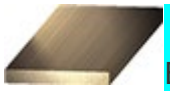
Performing this task makes it easy to manage assemblies and subassemblies in complex drawings.

For more information, see About Subassemblies.

Examine the default subassembly naming convention

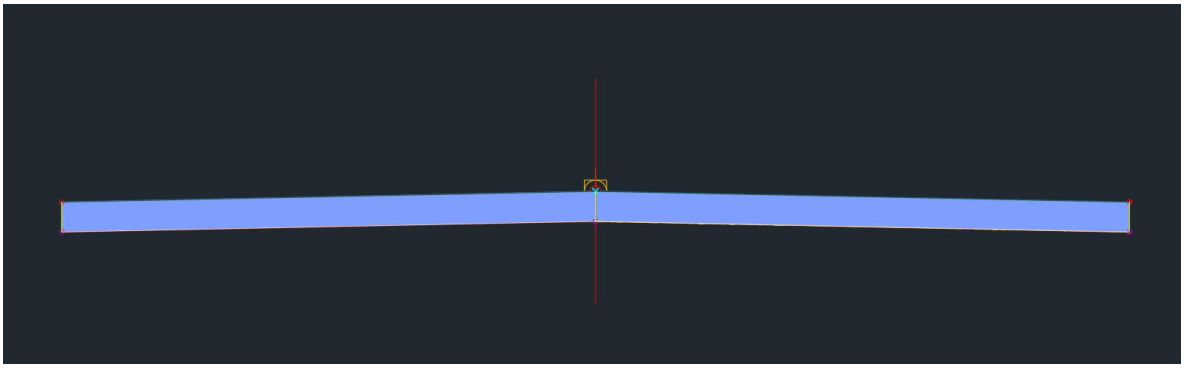
1. Open *Assembly-1b.dwg*, which is available in the tutorials drawings folder.

   This drawing contains an assembly baseline that does not have any subassemblies attached to it.

2. If the Tool Palette containing the subassemblies is not visible, click Home tab ➤ Palettes panel ➤ Tool Palettes .
3. In the tool palette, right-click the Tool Palettes control bar. Click Civil Imperial Subassemblies
4. Click the Basic tab.
5. Click  BasicLane.
6. In the Properties palette, under ADVANCED, set the Side to **Right**.
7. In the drawing, click the marker point on the assembly baseline.

   The right lane subassembly is now attached to the assembly baseline.

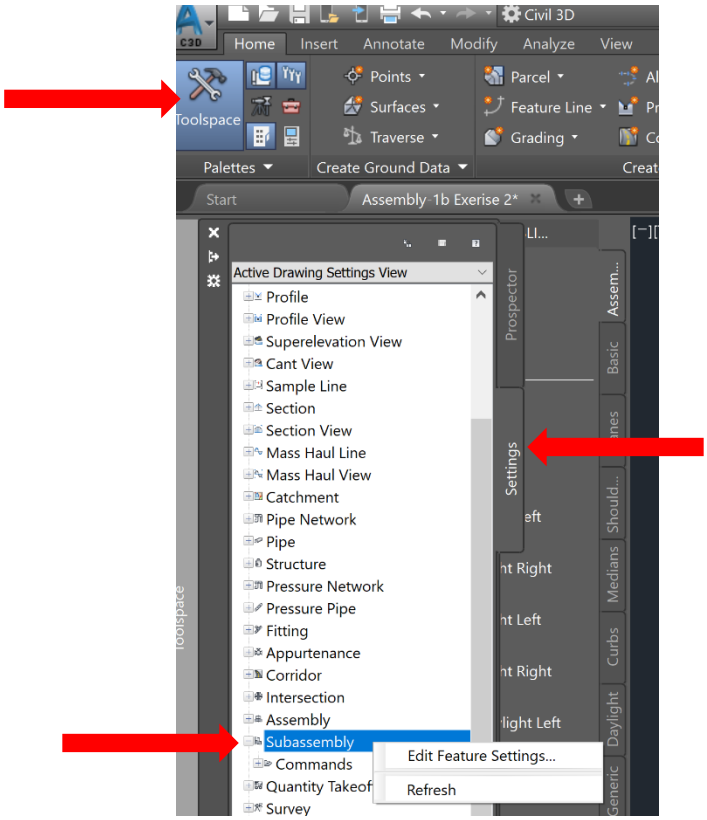
8. In the Properties palette, under ADVANCED, set the Side to **Left**.
9. In the drawing, click the marker point on the assembly baseline.
   The left lane subassembly is now attached to the assembly baseline.



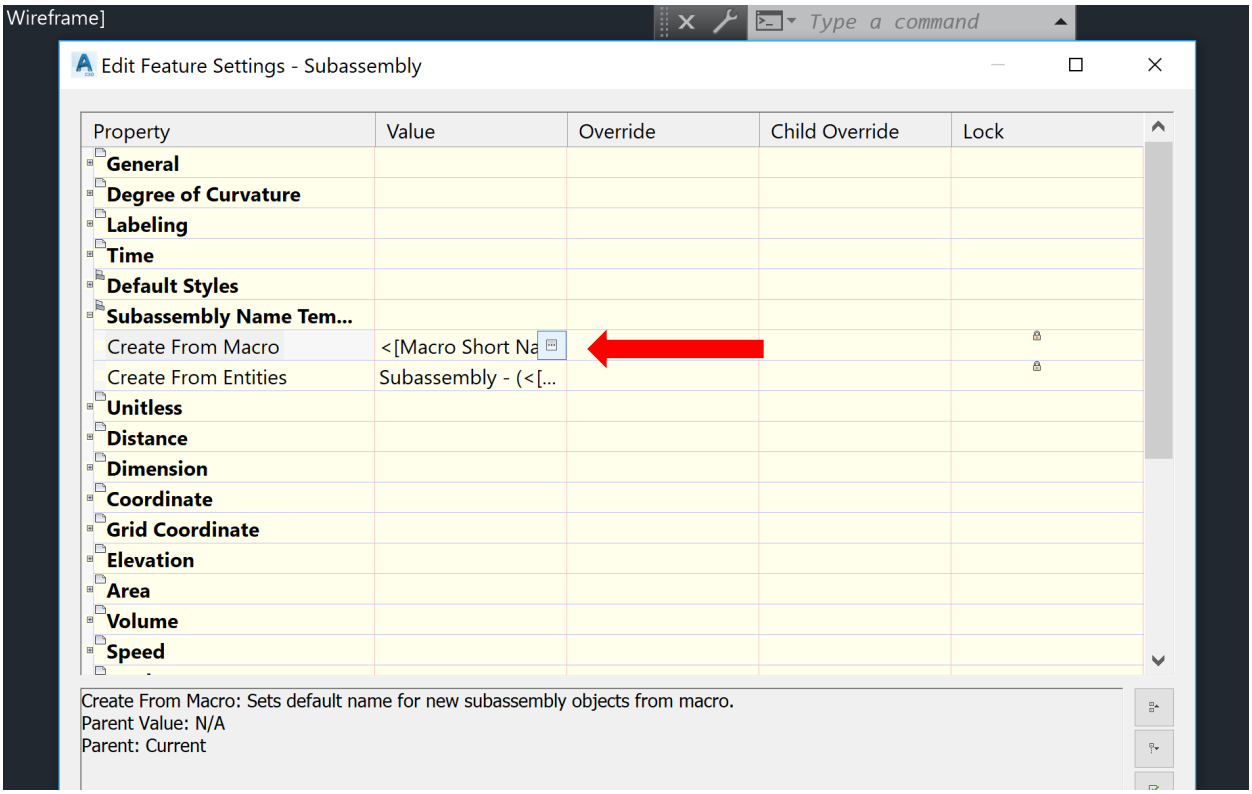
10. Press Esc.

Modify the subassembly name template

1. In Toolspace, on the Settings tab, right-click the Subassembly collection. Click Edit Feature Settings.

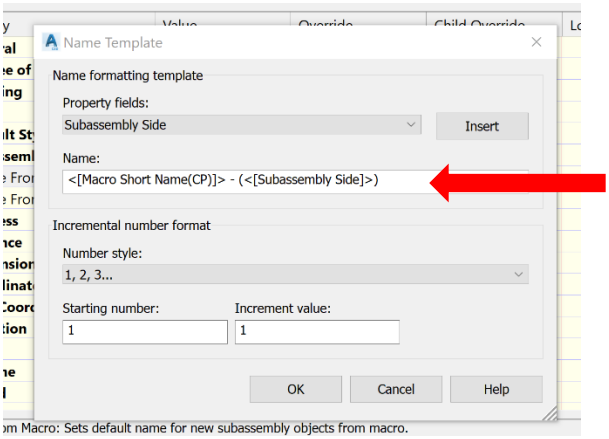


2. In the Edit Feature Settings dialog box, expand Subassembly Name Templates. In the Create From Macro row, click the Value cell. Click

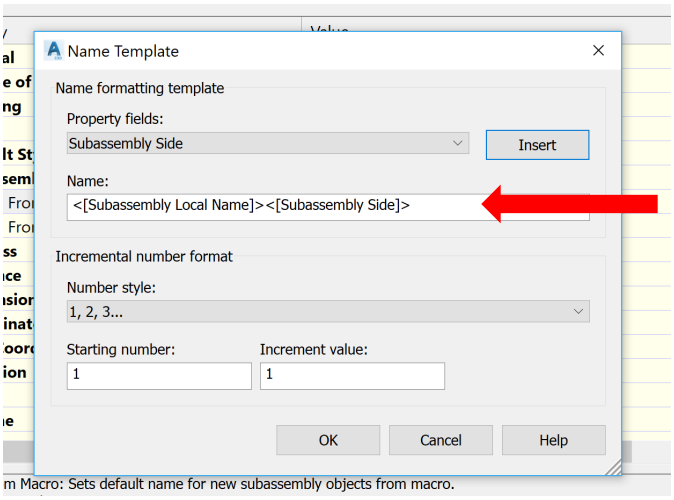


3. In the Name Template dialog box, in the Name field, highlight the <[Next Counter]> property.
4. In the Property Fields list, select Subassembly Side. Click Insert.

   The Name field should contain the following formula:
   <[Macro Short Name(CP)]> - (<[Subassembly Side]>)



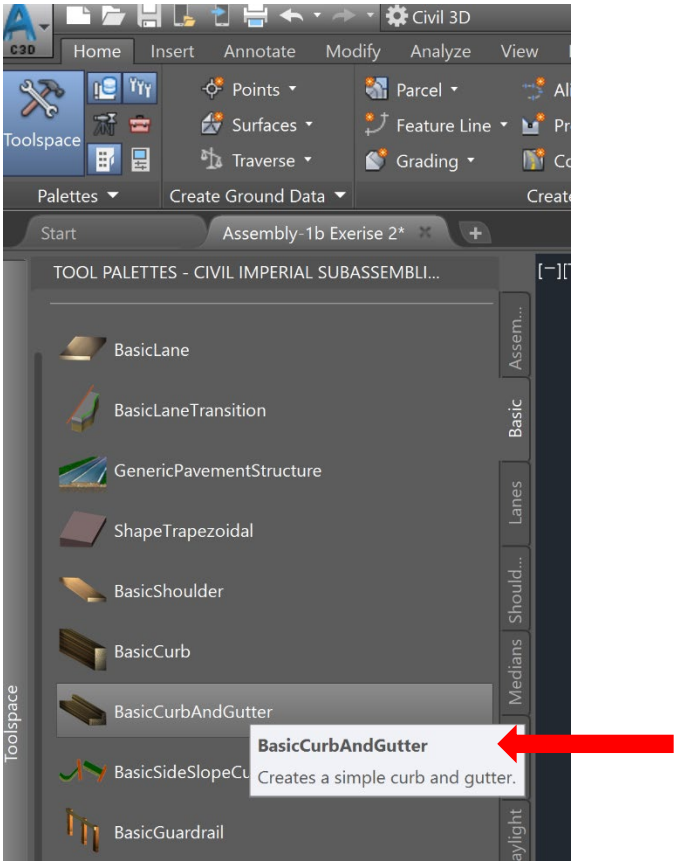
Tip:
To display the subassembly name in the local language, use the <[Subassembly Local Name]> property in place of the <[Macro Short Name(CP)]> property.



5. Click OK twice.

Examine the updated subassembly naming convention

1. In the Tool Palettes window, click  BasicCurbAndGutter.



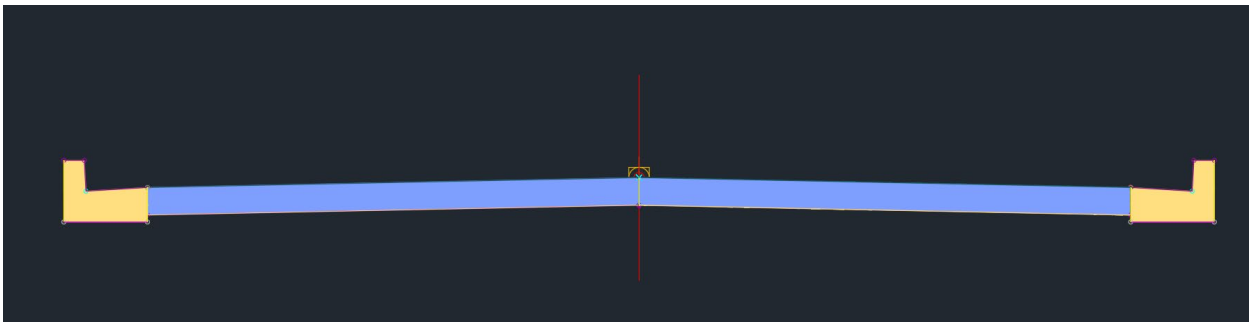
2. In the Properties palette, under ADVANCED, set the Side to **Right**.
3. In the drawing, click the marker point at the top-right edge of the travel lane.

Note:

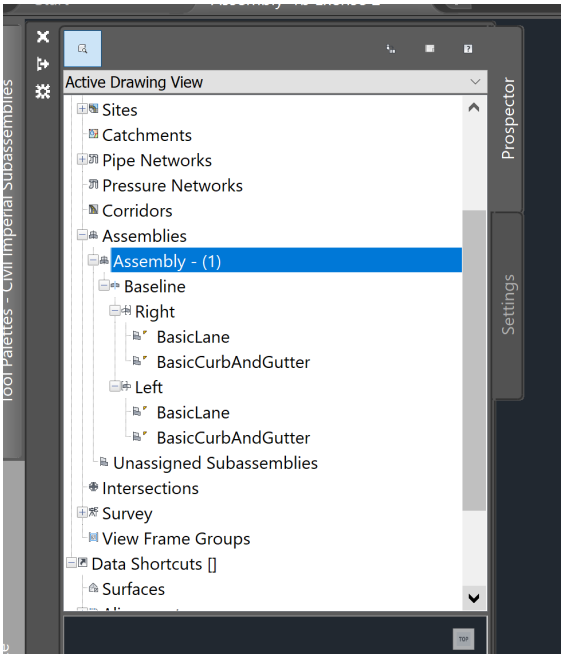
If you attach the subassembly to the wrong marker, you can move it to the correct location. Press Esc to exit subassembly placement mode. Select the subassembly you wish to move. A blue grip is displayed when the subassembly is selected. Select the grip, and then click the correct marker point.

4. In the Properties palette, under ADVANCED, set the Side to **Left**.
5. In the drawing, click the marker point at the top-left edge of the travel lane.

6. Press Esc.



7. In Toolspace, on the Prospector tab, select the Subassemblies collection.In the Toolspace list view, notice that there are two new subassemblies, BasicCurbAndGutter - (Left) and BasicCurbAndGutter - (Right). These names are more specific than those of the BasicLane subassemblies.



Note:
The next exercise demonstrates more best practices for assembly and subassembly naming in drawings that contain many corridor assemblies.

To continue this tutorial, go to Exercise 3: Managing Assemblies and Subassemblies.

Parent topic: Tutorial: Working with Assemblies

Save this file as Assembly-1b Exercise 2.dwg and submit to Canvas

Exercise 3: Managing Assemblies and Subassemblies

In this exercise, you will apply some assembly and subassembly management best practices to a drawing that contains multiple corridor assemblies.

The sample drawing contains several corridor assemblies. This exercise demonstrates how to name and label the assemblies so that they will be easy to manage.

In the sample drawing, several subassemblies are used in multiple assemblies. For example, the LaneSuperelevationAOR subassembly is used in several assemblies. When they were created, the LaneSuperelevationAOR subassemblies all used the same naming template and a sequential number was appended to each name.

Performing the tasks demonstrated in this exercise will make it easy to manage assemblies and subassemblies in complex drawings.

Examine the assemblies

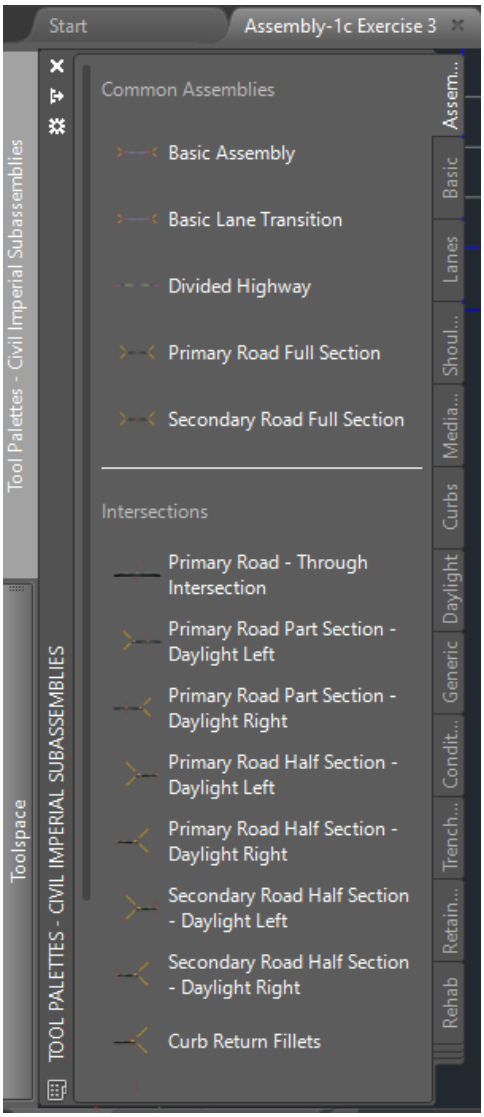
1. Open *Assembly-1c.dwg*, which is available in the tutorials drawings folder.

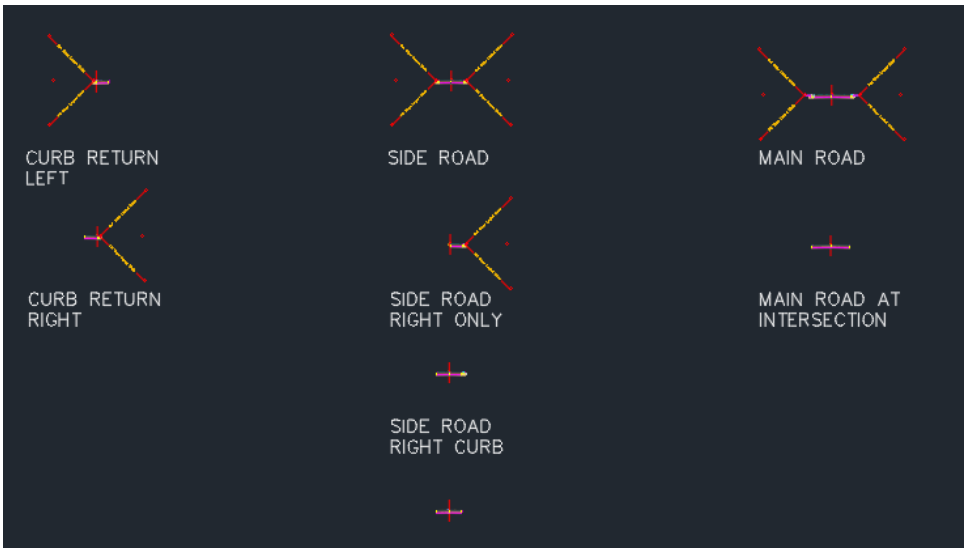
   This drawing contains several completed corridor assemblies. The assemblies are designed to create an intersecting main and side road.

2. In Toolspace, on the Prospector tab, select the Assemblies collection.

   In the Toolspace list view, notice that a specific name was assigned to the assemblies when they were created. The names describe the type of corridor, as well as the specific portion of the corridor to which they apply.

   In the drawing, notice that each assembly has a label that corresponds to the assembly name. The labels are a simple AutoCAD MText components that make it easy to see the construction of the available assemblies.


Start
Assembly-1c Exercise 3
Tool Palettes - Civil Imperial Subassemblies
Toolspace
TOOL PALETTES - CIVIL IMPERIAL SUBASSEMBLIES
Common Assemblies
Basic Assembly
Basic Lane Transition
Divided Highway
Primary Road Full Section
Secondary Road Full Section
Intersections
Primary Road - Through Intersection
Primary Road Part Section - Daylight Left
Primary Road Part Section - Daylight Right
Primary Road Half Section - Daylight Left
Primary Road Half Section - Daylight Right
Secondary Road Half Section - Daylight Left
Secondary Road Half Section - Daylight Right
Curb Return Fillets
Assem...
Basic
Lanes
Shoul...
Media...
Curbs
Daylight
Generic
Condit...
Trench...
Retain...
Rehab

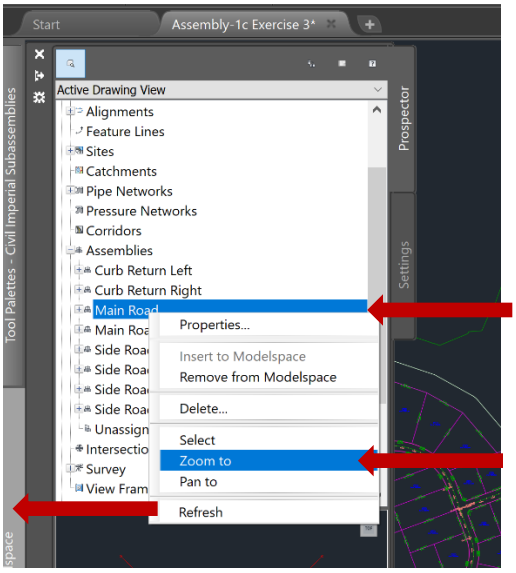

CURB RETURN LEFT
SIDE ROAD
MAIN ROAD
CURB RETURN RIGHT
SIDE ROAD RIGHT ONLY
MAIN ROAD AT INTERSECTION
SIDE ROAD RIGHT CURB

3. On the command line, enter **ZE**.

   The drawing zooms out to the drawing extents.

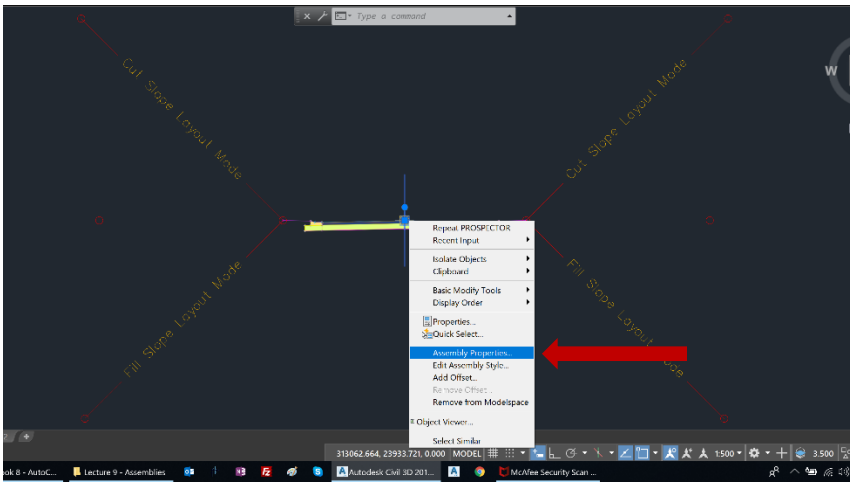
4. In Toolspace, on the Prospector tab, under Assemblies select the **Main Road** assembly. Right-click. Click Zoom To.

   The drawing zooms to the Main Road assembly.

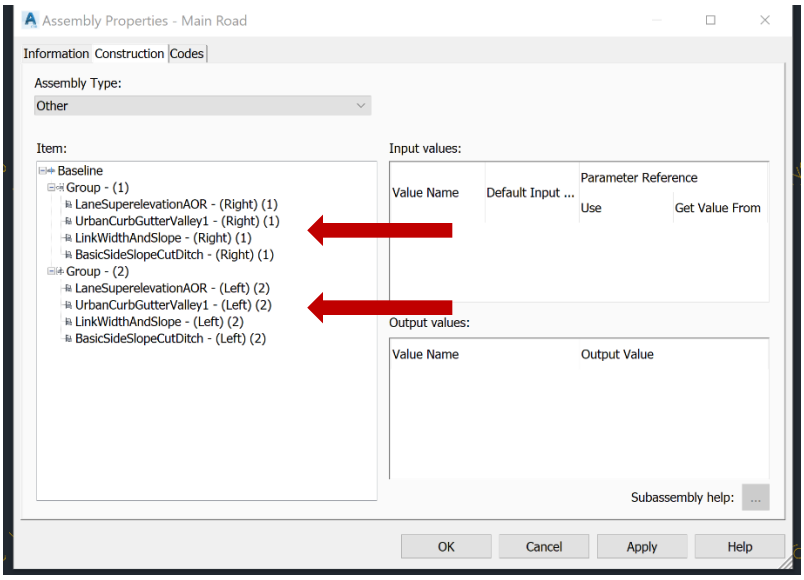


Assign specific names to subassemblies

1. In the drawing space, click the Main Road assembly baseline. Right-click. Click Assembly Properties.



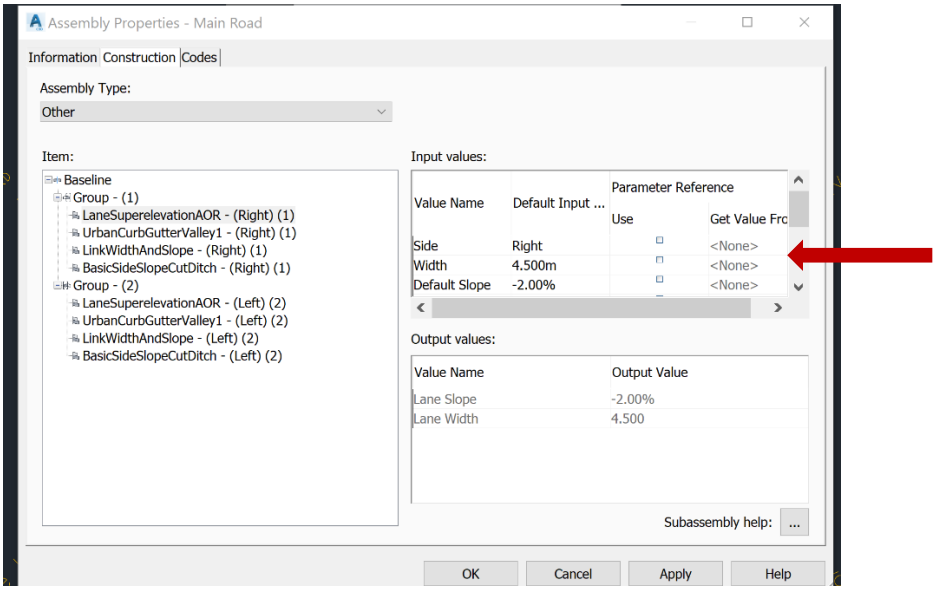
2. In the Assembly Properties dialog box, on the Construction tab, expand the collections in the Item tree.



The subassemblies that comprise the assembly are displayed in the Item tree. Notice that the subassemblies are categorized into groups. Subassembly groups manage the order in which subassemblies are processed during corridor modeling. The first time you add a subassembly to an assembly, the subassembly is added to the first group. When you add a second subassembly by attaching it to the first subassembly, the second subassembly also gets added to the first subassembly group. The next time you select an assembly baseline, a new subassembly group is automatically created and subsequent subassemblies added to the assembly are added that group.

3. In the Item tree, click the **LaneSuperelevationAOR - (Right) (1)** subassembly.

   The subassembly parameters are displayed in the Input Values panel. You can modify the parameters as necessary from this panel.



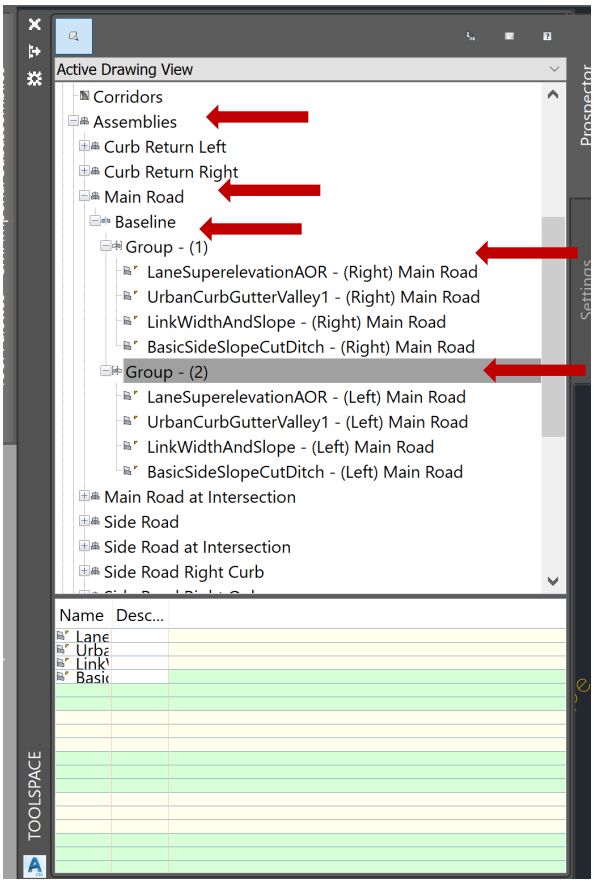
4. Click the **LaneSuperelevationAOR - (Right) (1)** subassembly again to highlight the text.
5. Rename the **LaneSuperelevationAOR - (Right) (1)** text with **LaneSuperelevationAOR - (Right) Main Road**. Press Enter.
6. Repeat Steps 4 through 6 to rename the other subassemblies:

- UrbanCurbGutterValley1 - (Right) (1):**UrbanCurbGutterValley1 - (Right) Main Road**
- LinkWidthAndSlope - (Right) (1): **LinkWidthAndSlope - (Right) Main Road**
- BasicSideSlopeCutDitch - (Right) (1): **BasicSideSlopeCutDitch - (Right) Main Road**
- **LaneSuperelevationAOR - (Left) (2)**: **LaneSuperelevationAOR - (Left) Main Road**
- UrbanCurbGutterValley1 - (Left) (2): **UrbanCurbGutterValley1 - (Left) Main Road**
- LinkWidthAndSlope - (Left) (2): **LinkWidthAndSlope - (Left) Main Road**
- BasicSideSlopeCutDitch - (Left) (2): **BasicSideSlopeCutDitch - (Left) Main Road**

7. Repeat Steps 4 through 6 to rename the subassembly groups:

- Group - (1): **Main Road Right**
- Group - (2): **Main Road Left**

8. Click OK.
9. In Toolspace, on the Prospector tab, select the Assemblies collection.
   Notice that the subassembly names you specified are displayed in the Prospector list view.



Further exploration: Practice what you learned by renaming the subassemblies in the remaining assemblies.

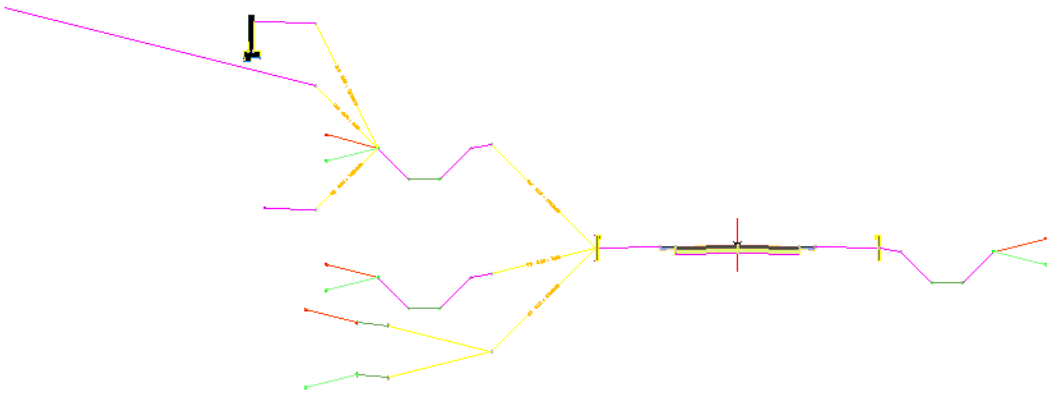
To continue to the next tutorial, go to Creating an Assembly with Conditions.

Save this file as Assembly-1c Exercise 3.dwg and submit to Canvas

Tutorial: Creating an Assembly with Conditions

This tutorial demonstrates how to use the ConditionalCutOrFill subassembly to build a corridor assembly that applies different subassemblies depending on the cut or fill condition at a given station.

Conditional subassemblies enable you to reduce the number of corridor regions and assemblies to maintain.



Topics in this section

- **Exercise 4: Examining the Existing Corridor in Section**
  In this exercise, you will examine how the daylight subassemblies are applied to the corridor model in section. You will notice stations at which the current daylighting parameters are inappropriate for the site conditions.
- **Exercise 5: Adding Conditional Subassemblies to a Corridor Assembly**
  In this exercise, you will add ConditionalCutOrFill subassemblies to an existing corridor assembly.
- **Exercise 6: Adjusting Conditional Subassembly Properties**
  In this exercise, you will adjust the properties of one of the subassemblies, and then assign descriptive names to each of the subassemblies in the Through Road assembly.
- **Exercise 7: Rebuilding the Corridor and Examining the Results**
  In this exercise, you will reset the corridor targets, rebuild the corridor, and then examine how the conditional subassembly affects the corridor model.

Exercise 4: Examining the Existing Corridor in Section

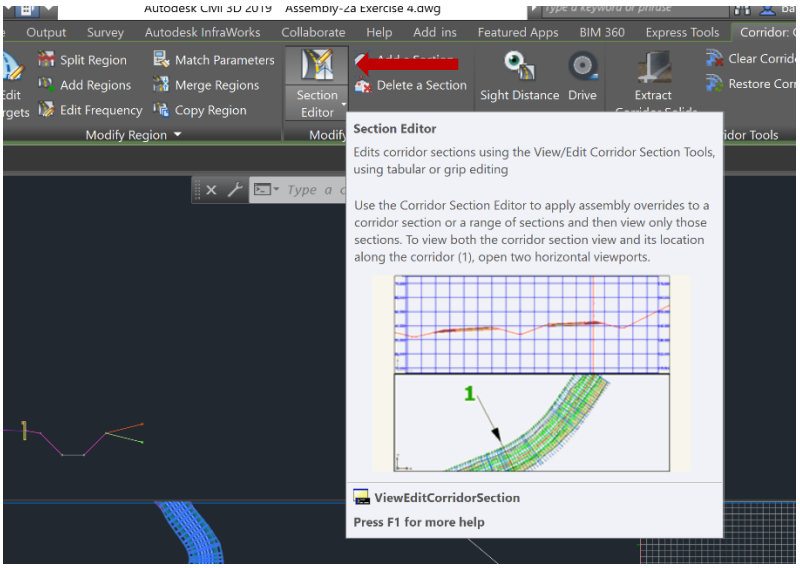
In this exercise, you will examine how the daylight subassemblies are applied to the corridor model in section. You will notice stations at which the current daylighting parameters are inappropriate for the site conditions.

Examine the existing corridor

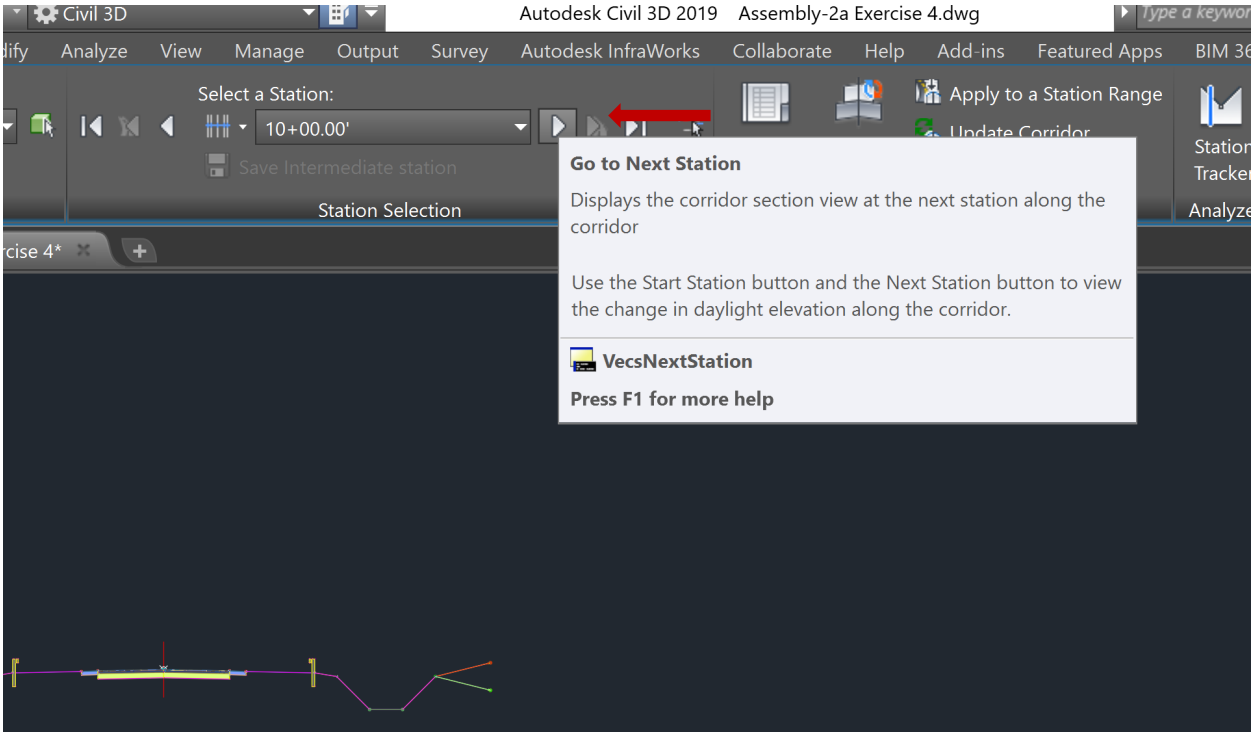
1. Open *Assembly-2a.dwg*, which is available in the tutorials drawings folder.

   The drawing contains two viewports. A completed corridor assembly is displayed in the top viewport. A surface, corridor, and profile view are displayed in the bottom viewport.

2. In the bottom viewport, select the corridor. ➤ Modify Corridor Sections panel ➤ Click on the upper part of the Section Editor.



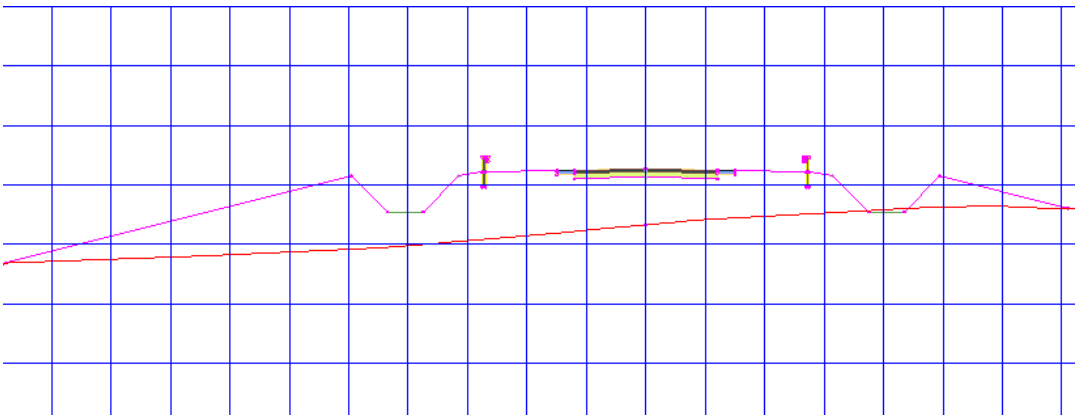
3. On the Station Selection tab, Use the Select a Station arrows ⏮ ◀ ▶ ⏭ to examine how the Through Road assembly is applied to at the corridor stations.



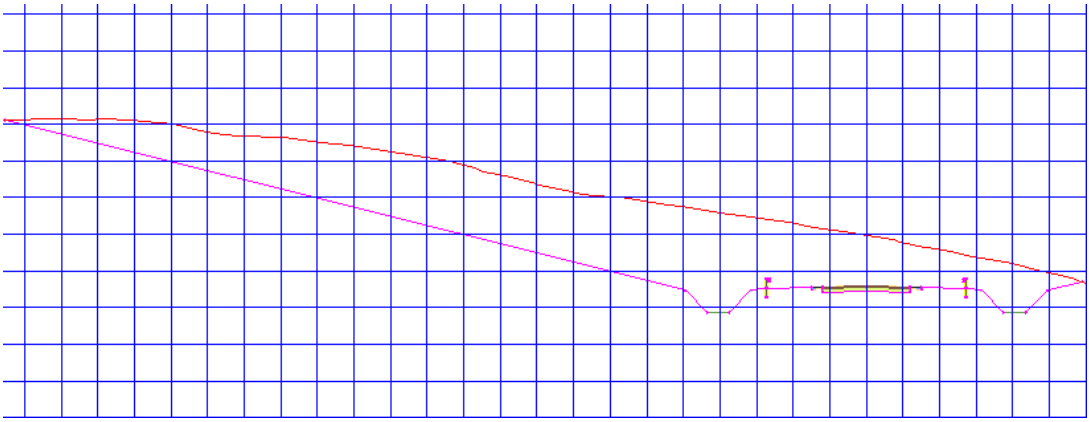
This assembly creates a ditch on either side of the road. At the beginning and end of the corridor, the cut and fill is relatively consistent on both sides.

In the following exercises, you will address two conditions:

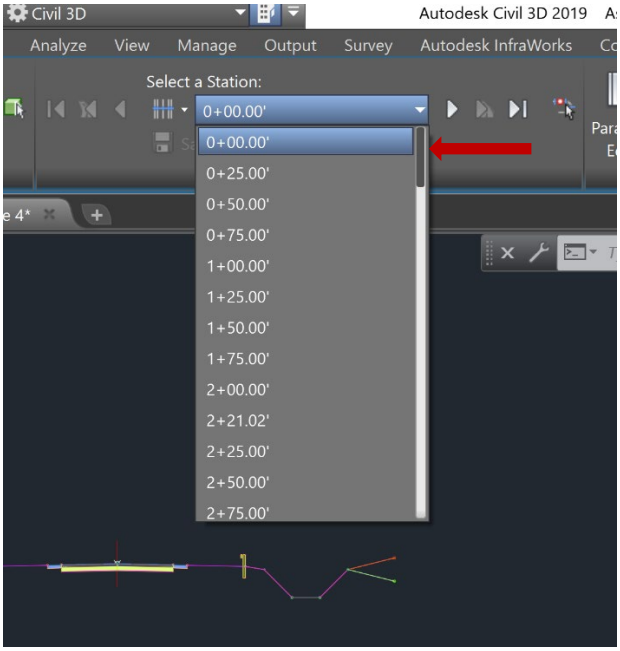
- First, the fill condition from stations 0+00 through 1+00 produces a relatively deep fill on the left side. While the corridor assembly is constructed appropriately for other regions of the corridor, you will modify the design to use a different approach in this region.



- Second, from stations 5+00 through 8+00, a much greater amount of material must be cut from the left side of the corridor. While the Through Road assembly is appropriate for most the corridor, it is not ideal for these stations.



4. In the View/Edit Corridor Section Tools toolbar, use the Select a Station: drop down menu to return to station 0+00.



To continue this tutorial, go to Exercise 2: Adding Conditional Subassemblies to a Corridor Assembly.

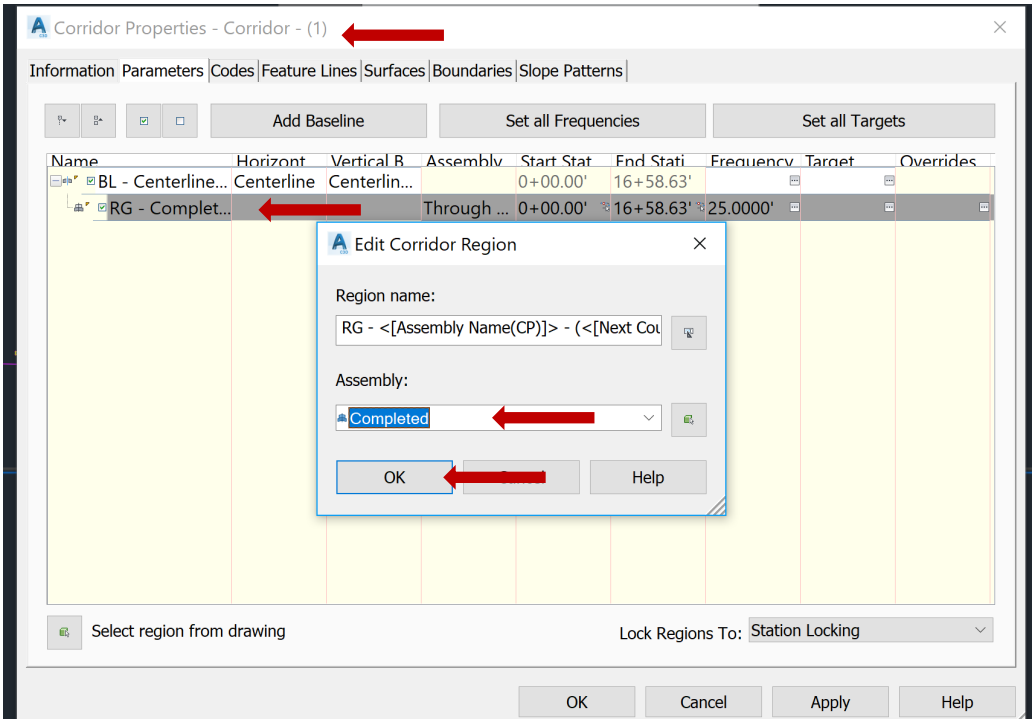
Exercise 5: Rebuilding the Corridor and Examining the Results

In this exercise, you will reset the corridor targets, rebuild the corridor, and then examine how the conditional subassembly affects the corridor model.

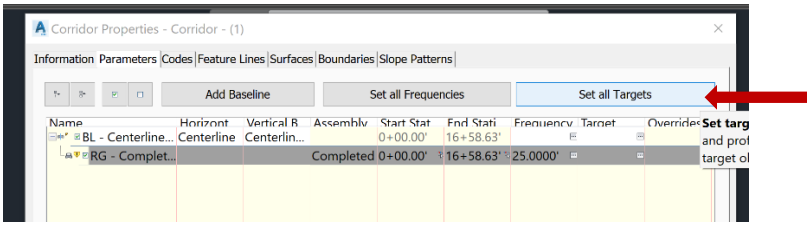
Set targets and rebuild the corridor

This exercise continues with *Assembly-2a.dwg*.

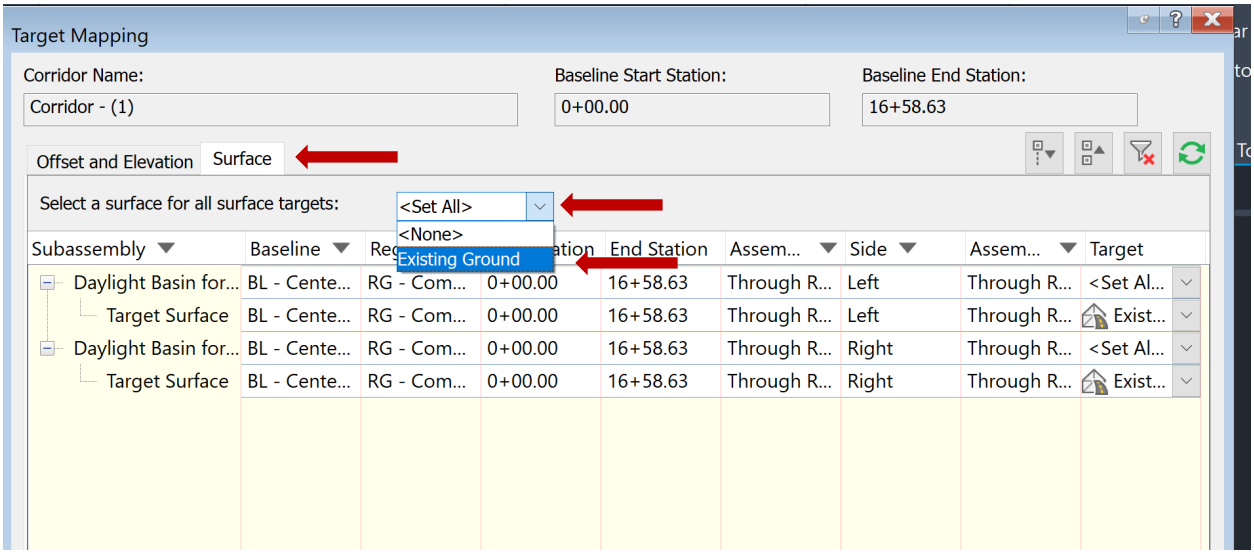
1. In the drawing space, click the **Corridor - (1)** corridor.
2. Select ➤ Modify Corridor panel ➤ Corridor Properties drop-down ➤ Corridor Properties.
3. In the Corridor Properties dialog box, on the Parameters tab, Under the BL-Centerline – (1), in the RG-Completed – (1) section, change the Assembly from **Through Road** to **Completed**, click OK to apply the change.



4. In the Corridor Properties dialog box, on the Parameters tab, click Set All Targets.



5. On the surface tab in the Target Mapping dialog box, in the Select a surface for all surface target: click <Click Here To Set All>.
6. In the drop down dialog box, click **Existing Ground**.



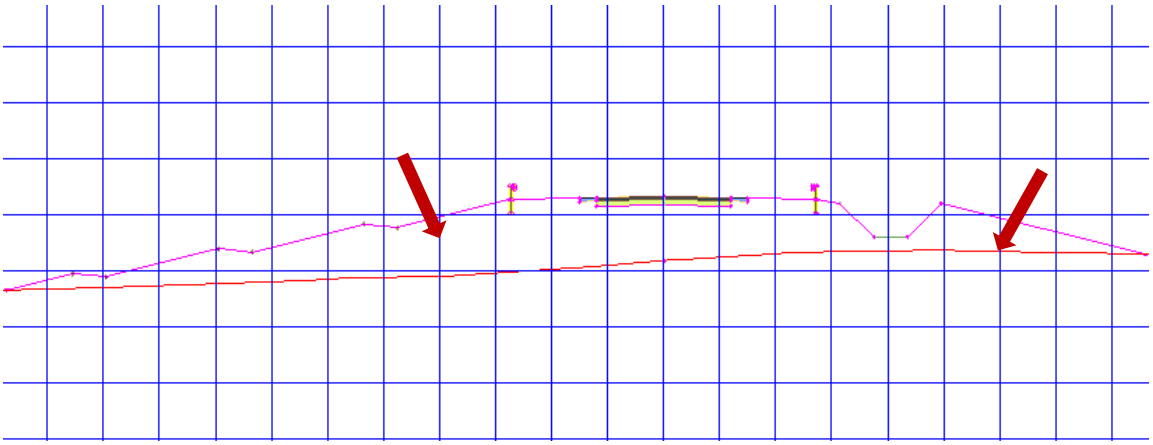
7. Click OK APPLY OK to close the dialog boxes and rebuild the corridor.
8. When prompted, select Rebuild the Corridor

Examine the rebuilt corridor

1. In the click on the Section Editor (top-half) down menu toolbar, use the Select a Section to go to station 0+00.

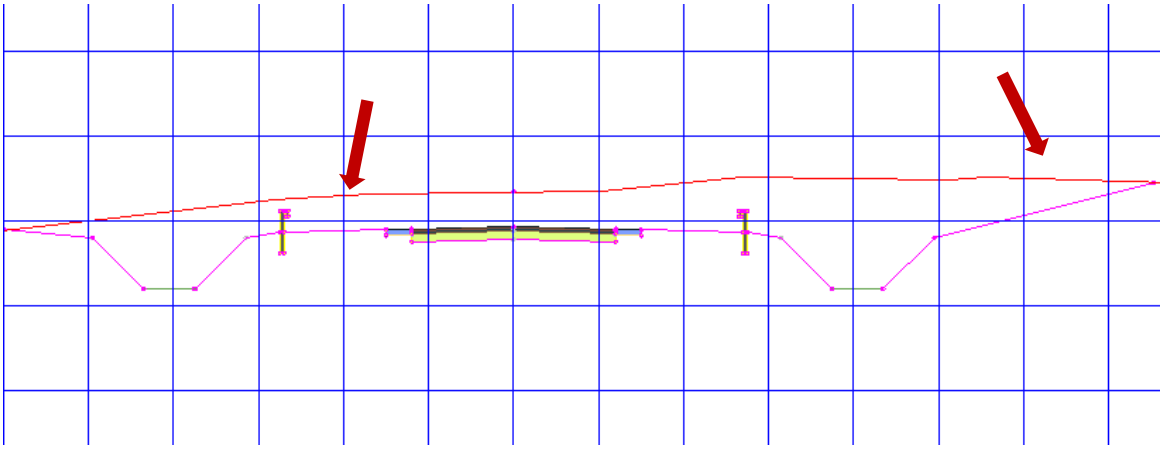
   At the first few stations, the corridor is in a relatively deep fill condition. In Exercise 2: Adding Conditional Subassemblies to a Corridor Assembly, you attached the DaylightBench subassembly to the Fill 5.00: 10000.00 conditional subassembly.

   The fill condition at this station is greater than 5.0001', so the DaylightBench subassembly is applied.



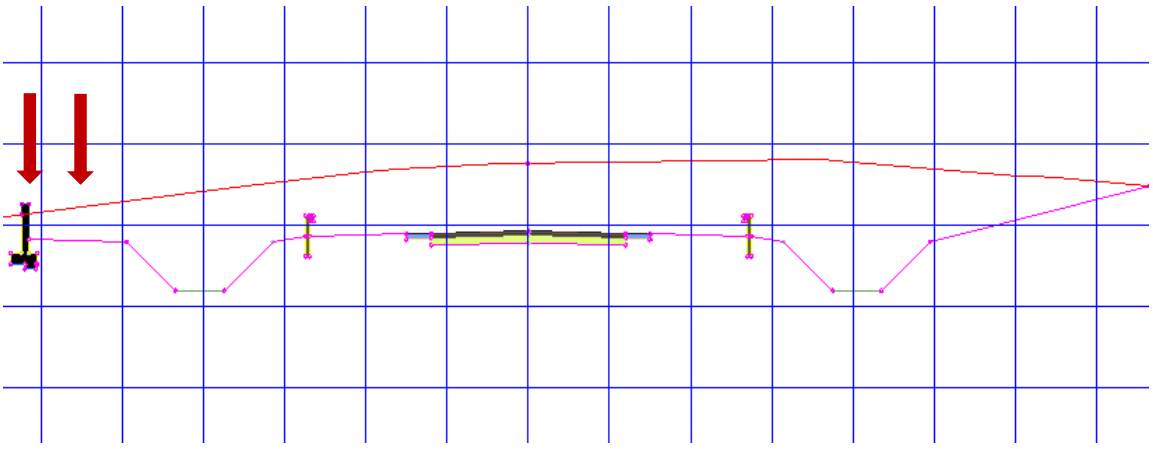
2. Click advance to station 2+00.

   Starting at station 2+00, the corridor enters a cut condition. At this station, the cut is less than 5.0000', so the DaylightOffsetToSurface subassembly is applied after the ditch.



3. Click to advance to Sta 2+25.

   Starting at station 2+25, the cut condition is greater than 5.0001'. As you specified, the DaylightWidthSlope and RetainWallVertical subassemblies are applied after the ditch.



4. Continue s to examine the cut and fill conditions along the corridor.

   Further exploration: Apply what you learned to the right-hand side of the corridor assembly. Use different combinations of daylight subassemblies with the ConditionalCutOrFill subassembly and examine the results.

   To continue to the next tutorial, go to Saving and Sharing Corridor Assemblies.

   Parent topic: Tutorial: Creating an Assembly with Conditions

   Save this file as Assembly-2a Exercise 5.dwg and submit to Canvas

Corridors Tutorials

These tutorials will get you started working with the corridor modeling tools, which are used to design and generate complex roadway corridor models.

If you have not installed AutoCAD Civil 3D to the default location, you may receive messages in the Event Viewer indicating that subassembly macro paths are not found. To avoid these messages, it is recommended that you follow the exercises in the order presented.

Note:

All drawings used in these tutorials are available in the tutorials drawings folder. If you want to save your work from these tutorials, save the drawings to the My Tutorial Data folder so that you do not overwrite the original drawings.

Topics in this section

- **Tutorial: Creating a Basic Corridor Model**
  This tutorial demonstrates how to use AutoCAD Civil 3D objects to build a basic corridor model.
- **Tutorial: Creating a Corridor with a Transition Lane**
  This tutorial demonstrates how to create a corridor with a transition lane. The tutorial uses some of the subassemblies that are shipped with AutoCAD Civil 3D to create an assembly. Then, you create a roadway where the travel lane widths and slopes are controlled by offset alignments, profiles, polylines, and feature lines.
- **Tutorial: Creating a Divided Highway Corridor**
  This tutorial demonstrates how to create a divided highway corridor. The tutorial uses some of the subassemblies that are shipped with AutoCAD Civil 3D to create a more complex and realistic highway model.
- **Tutorial: Viewing and Editing Corridor Sections**
  This tutorial demonstrates how to edit a corridor in section.
- **Tutorial: Viewing and Rendering a Corridor**
  This tutorial demonstrates how to add surfaces to a corridor, create boundaries on the surfaces, and then visualize the corridor using the AutoCAD rendering tools.

Tutorial: Creating a Basic Corridor Model

Exercise 6: Creating a Basic Corridor Model

This tutorial demonstrates how to use AutoCAD Civil 3D objects to build a basic corridor model.

Note:

This tutorial uses the corridor assembly that you built in the Creating an Assembly exercise.

A corridor can be used to model a variety of features, such as highways, channels, and runways. In this tutorial, you will model a residential road.

A corridor model builds on and uses various AutoCAD Civil 3D objects and data, including subassemblies, assemblies, alignments, feature lines, surfaces, and profiles.

Corridor objects are created along one or more horizontal baselines by placing a 2D section (assembly) (often called typical section) at incremental locations and creating matching slopes that reach a surface model at each incremental location.

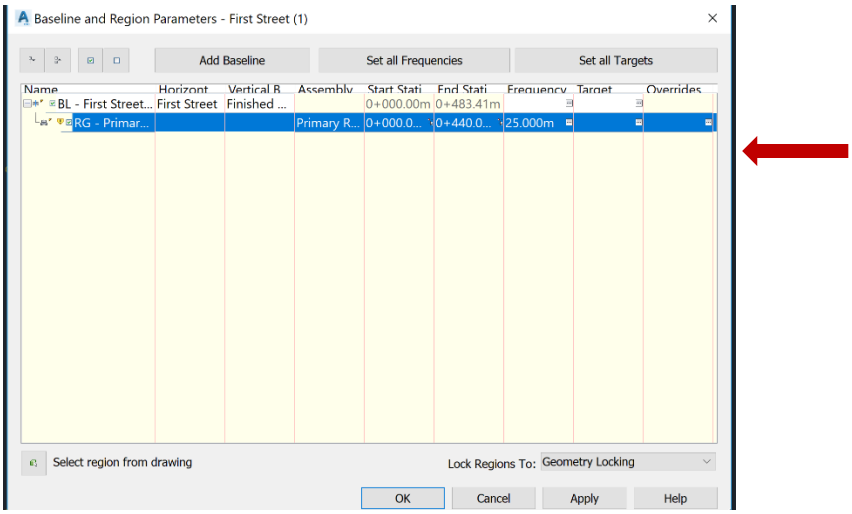
Specify the basic corridor information

1. Open *Corridor-1a.dwg*, which is located in the tutorials drawings folder.
2. Click Home tab ➤ Create Design panel ➤ Corridor ➤ Corridor .
3. In the Create Corridor dialog box, specify the following parameters. Alternatively, you can use the buttons to pick the objects from the drawing.

- Name: **First Street**
- Corridor Style: Basic
- Corridor Layer: C-ROAD-CORR
- Baseline Type: Alignment and Profile
- Alignment: First Street
- Profile: Finished Grade Centerline - First Street
- Assembly: Primary Road Full Section
- Target Surface: EG
- Set Baseline and Region Parameters: Selected

Specify the baseline and region parameters

1. In the Baseline and Region Parameters dialog box, in the RG-Primary Road Full Section - (1) row, in the End Station cell, enter **0+440.00**. (Note, if this box is not present, you will have to redo step 3 above.



2. In the Frequency cell, click ⋯.
3. In the Frequency To Apply Assemblies dialog box, under Apply Assembly, for Along Curves, verify that At An Increment is selected.
4. For Curve Increment, enter **3.000**. Click OK.
5. Click OK.
6. In the Corridor Properties - Rebuild task dialog box, click Rebuild the Corridor.

Note: If the task dialog box is not displayed, the corridor is still built.

The corridor model is built and looks like this:

Save the file from this exercise as Corridor-1a.*dwg Exercise 6 lastname first name.dwg*. Upload this file to Canvas

To continue to the next tutorial, go to Creating a Corridor with a Transition Lane.

Tutorial: Creating a Corridor with a Transition Lane

This tutorial demonstrates how to create a corridor with a transition lane. The tutorial uses some of the subassemblies that are shipped with AutoCAD Civil 3D to create an assembly. Then, you create a roadway where the travel lane widths and slopes are controlled by offset alignments, profiles, polylines, and feature lines.

Topics in this section

- **Exercise 7: Creating an Assembly with a Transition Lane**
  In this exercise, you will create a corridor assembly with transitions.
- **Exercise 8: Creating a Corridor with a Transition Lane**
  In this exercise, you will create a corridor using the assembly created in the last exercise. You will target the width and elevation of the right lane edge to a right alignment and profile, and the left lane edge to a polyline and a feature line.

Exercise 7: Creating an Assembly with a Transition Lane

In this exercise, you will create a corridor assembly with transitions.

Create an assembly baseline

1. Open *Corridor-2a.dwg*, which is available in the tutorials drawings folder.
2. Click Home tab ➤ Create Design panel ➤ Assembly drop-down ➤ Create Assembly .
3. In the Create Assembly dialog box, for Name, enter **Transition**. Click OK.
4. When the 'Specify assembly baseline location' prompt is displayed on the command line, click a point in the drawing to place the assembly.

   The viewport zooms to the assembly baseline, which looks like this:

Add a lane subassembly

1. If the Tool Palette containing the subassemblies is not visible, click Home tab ➤ Palettes panel ➤ Tool Palettes .
2. In the tool palette, right-click the Tool Palettes control bar. Click Civil Imperial Subassemblies.
3. Click the Basic tab.
4. Click  BasicLaneTransition.
5. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Default Width: **14.0000**
- Depth: **1.0000**
- Transition: **Change Offset And Elevation**

6. In the drawing, click the marker point on the assembly baseline.

A lane is drawn, extending 14 feet to the right, with a slope of -2% and a depth of 1 foot.

Add a curb and gutter subassembly

1. In the tool palette, click  BasicCurbAndGutter.
2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Gutter Width: **1.2500**

3. In the drawing, click the marker point at the top-right edge of the lane to draw the curb and gutter.

Add a sidewalk subassembly

1. In the tool palette, click  BasicSidewalk.
2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Buffer Width 1: **2.0000**
- Buffer Width 2: **3.0000**

3. In the drawing, click the marker point at the top back-side of the curb to add the sidewalk and its buffer zones.

Add a ditch subassembly

1. In the tool palette, click  BasicSideSlopeCutDitch.
2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Right**
- Cut Slope: **3.000:1**

3. In the drawing, click the marker point at the outside edge of the outer sidewalk buffer zone to add the cut-and-fill slope.

Add a transition lane subassembly

1. In the tool palette, click  BasicLaneTransition.
2. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Left**
- Default Width: **12.0000**
- Depth: **1.0000**

- Transition: **Hold Grade, Change Offset**

3. In the drawing, click the marker point on the assembly baseline. A lane is drawn, extending 12 feet to the left, with a slope of -2% and a depth of 1 foot.

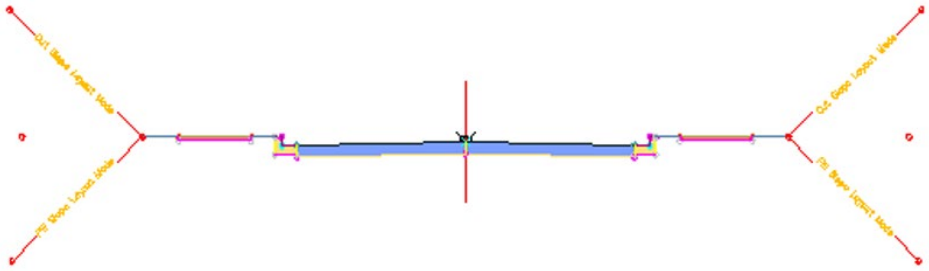
Mirror the subassemblies outside the right lane

1. Press Esc to exit subassembly placement mode.
2. In the drawing, on the right-hand side of the assembly, select the curb, sidewalk, and daylight subassemblies. Right click. Click Mirror.
3. Click the marker point at the top-left edge of the transition lane to draw a mirror of the curb, sidewalk, and daylight subassemblies.

   The subassemblies are displayed on the left side of the assembly marker.
   The Mirror command creates a mirror image of the selected subassemblies. All the subassembly parameters, except for the Side parameter, are retained.

Note:
The parameters of the mirrored subassemblies are not dynamically linked. If you change a parameter value for a subassembly on one side of the assembly baseline, the change will not be applied to the opposite side.

The finished assembly looks like this:



Save the file from this exercise as Corridor-2a.*dwg Exercise 7 lastname first name.dwg*. Upload this file to Canvas

Exercise 8: Creating a Corridor with a Transition Lane

In this exercise, you will create a corridor using the assembly created in the last exercise. You will target the width and elevation of the right lane edge to a right alignment and profile, and the left lane edge to a polyline and a feature line.

This exercise continues from Exercise 7: Creating an Assembly with a Transition Lane.

Specify the basic corridor information

Note:

This exercise uses *Corridor-2a.dwg* from the previous exercise, or you can open *Corridor-2b.dwg* from the Tutorial Folder Locations.

1. Click Home tab ➤ Create Design panel ➤ Corridor  .
2. In the Create Corridor dialog box, specify the following parameters:

- Name: **Corridor - Transition Lanes**
- Baseline Type: Alignment and Profile
- Alignment: Centerline (1)
- Profile: Layout (1)
- Assembly: Transition

  The Transition assembly includes the BasicLaneTransition subassembly, which uses the Transition parameter to specify that both the offset and elevation can change on the right side of the corridor. The offset can change on the left side of the corridor but the grade is held at -2%.

- Target Surface: EG
- Set Baseline and Region Parameters: Selected

3. Click OK.

Specify the fixed lane horizontal target

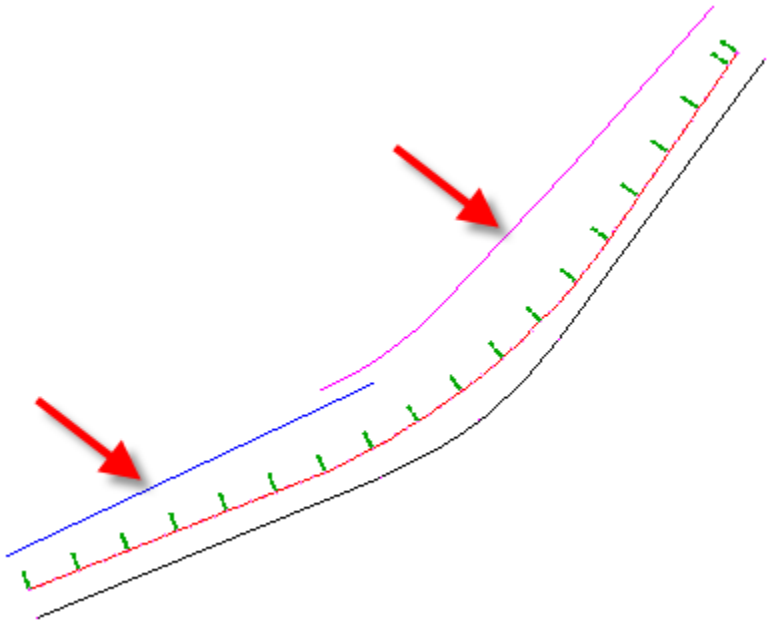
1. In the Baseline and Region Parameters dialog box, click Set All Targets.
2. In the Target Mapping dialog box, in the Transition Alignment row for BasicLaneTransition - (Right), click the Object Name field.
3. In the Set Width Or Offset Target dialog box, specify the following parameters:

- Select Object Type To Target: Alignments
- Select Alignments: **Right (1)**

4. Click Add. Click OK.

Specify the transition lane horizontal target

1. In the Transition Alignment row for BasicLaneTransition - (Left), click the Object Name field.
2. In the Set Width Or Offset Target dialog box, in the Select Object Type To Target list, select Feature Lines, Survey Figures And Polylines.
3. Click Select From Drawing.
4. In the drawing, on the left side of the alignment, select the blue polyline and magenta feature line. Press Enter.



   The entities are added to the table at the bottom of the Set Width Or Offset Target dialog box.

5. Click OK.

   Notice that because the subassembly names contain the assembly side, it is easy to determine which assembly must target which offset object. This naming convention is even more useful in road designs that contain many alignments and subassemblies. For information on updating the subassembly naming template, see the Modifying the Subassembly Name Template exercise.

Specify the fixed lane elevation targets

1. In the Transition Profile row for BasicLaneTransition - (Right), click the Object Name field.
2. In the Set Slope Or Elevation Target dialog box, specify the following parameters:

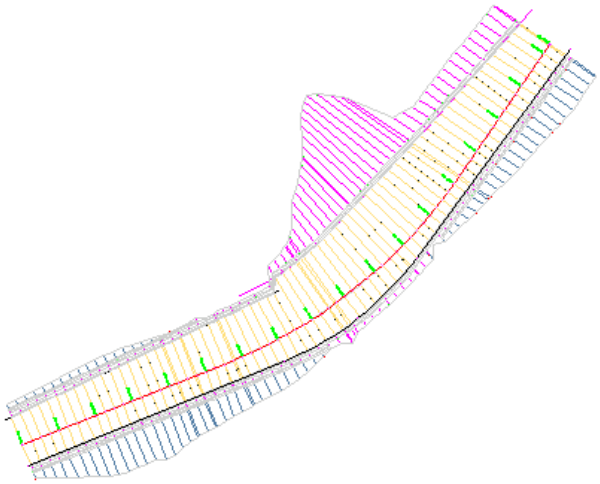
- Select Object Type To Target: Profiles
- Select An Alignment: **Right (1)**
- Select Profiles: **Layout (1)**

3. Click Add. Click OK.

The right-side edge-of-pavement elevation is set to the **Layout (1)** profile. The left-side edge-of-pavement elevation does not need to be set since its elevation is determined by the grade setting.

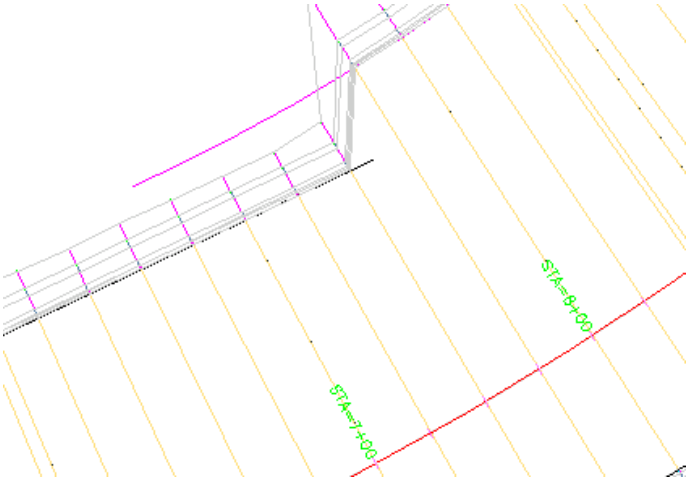
4. Click OK twice.

   The corridor model is built, and looks like this:



Note:

Notice that at station 7+50, the lane uses the polyline as a target, and not the feature line. When more than one target object is found at a station, the object that is closest to the corridor baseline is used as the target.
A detail of the overlapping objects



Save the file from this exercise as Corridor-2b.*dwg Exercise 8 lastname first name.dwg*. Upload this file to Canvas.

Tutorial: Creating a Divided Highway Corridor

This tutorial demonstrates how to create a divided highway corridor. The tutorial uses some of the subassemblies that are shipped with AutoCAD Civil 3D to create a more complex and realistic highway model.

This highway has a depressed median with a flat bottom ditch and inside paved shoulders, two travel lanes on each side of the median, and paved outside shoulders. The total median width between inside edges-of-traveled-ways is 44 feet. The highway may have at-grade intersections, so the superelevation rotation point is set to be located at the design profile grade above the centerline of the median ditch. This creates a single consistent cross slope across the entire roadway in superelevated areas.

Topics in this section

- **Exercise 9: Creating a Divided Highway Assembly**
  In this exercise, you will create a fairly complex assembly with a depressed median and separated lanes.
- **Exercise 10: Creating a Divided Highway Corridor**
  In this exercise, you will create a divided highway corridor.

Parent topic: Corridors Tutorials

Exercise 9: Creating a Divided Highway Assembly

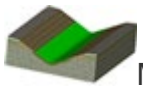
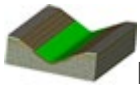
In this exercise, you will create a fairly complex assembly with a depressed median and separated lanes.

Create an assembly baseline

1. Open *Corridor-3a.dwg*, which is available in the tutorials drawings folder.
2. Click Home tab ➤ Create Design panel ➤ Assembly drop-down ➤ Create Assembly .
3. In the Create Assembly dialog box, for Name, enter **Divided Highway**. Click OK.
4. When the 'Specify assembly baseline location' prompt is displayed on the command line, click a point in the drawing to build the assembly.

   The viewport zooms to the assembly baseline, which looks like this:

Add a median subassembly

1. If the Tool Palette containing the subassemblies is not visible, click Home tab ➤ Palettes panel ➤ Tool Palettes .
2. In the tool palette, right-click the Tool Palettes control bar. Click Civil Imperial Subassemblies.
3. Click the Medians tab.
4. Right-click  MedianDepressedShoulderExt. Click Help. Review the diagram to better understand the subassembly.
5. Click  MedianDepressedShoulderExt.
6. In the Properties palette, under ADVANCED, specify the following parameters:

- Centerline Pivot: **Pivot about centerline**
- Left Median Width: **22.0000**

- Right Median Width: **22.0000**

7. In the drawing, click the marker point on the assembly baseline. A depressed median and inside shoulders are drawn.

Add a lane subassembly

1. In the drawing, pan to the left edge of the MedianDepressedShoulderExt subassembly. Zoom in so that each marker point can be seen distinctly.
2. In the tool palette, click the Lanes tab.
3. Click  LaneSuperelevationAOR.

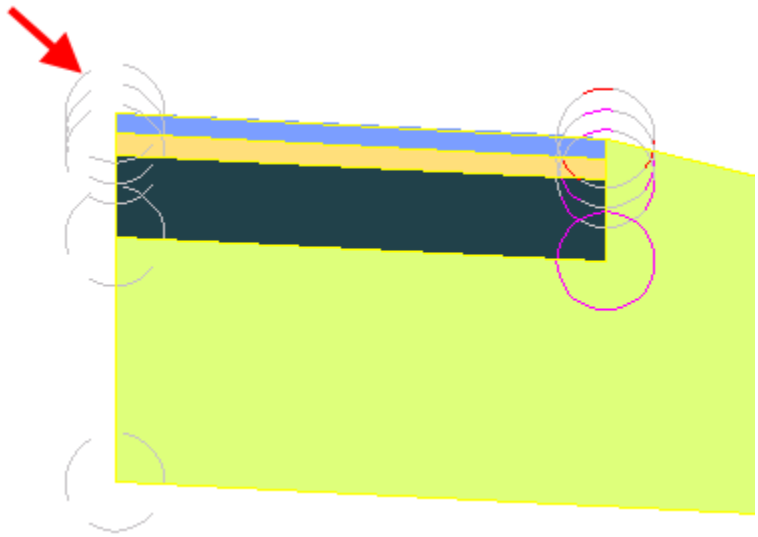
   This subassembly inserts a travel lane that follows the slope for the superelevation properties of the alignment.

   Note:
   For more information about superelevation, see the Applying Superelevation to an Alignment tutorial.

4. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Left**
- Width: **24.0000**

5. In the drawing, click the marker that is at the top left edge of the median to insert the lane:



Add a shoulder subassembly

1. In the drawing, pan to the left side of the LaneSuperelevationAOR subassembly.
2. In the tool palette, click the Shoulders tab.

3. Click  ShoulderExtendSubbase.
4. In the Properties palette, under ADVANCED, specify the following parameters:

- Side: **Left**
- Use Superelevation Slope: **Outside Shoulder Slope**
- Subbase - Use Superelevation: **Outside Shoulder Slope**

  This sets these slopes to the outside shoulder superelevation slope. For more information, see the subassembly help.

5. In the drawing, click the marker point at the top outside edge-of-lane on finish grade to add the paved shoulder.

Add a daylight subassembly

1. In the drawing, pan to the left side of the ShoulderExtendSubbase.
2. In the tool palette, click the Daylight tab.
3. Right-click  DaylightStandard. Click Help. Review the diagram and Behavior section to better understand the cut and fill daylighting behaviors.
4. In the tool palette, click  DaylightStandard.
5. In the drawing, click the marker point at the outside edge of the ShoulderExtendSubbase subassembly to add the daylight slopes for cut and fill.

Mirror the subassemblies to the right side of the baseline

1. Press Esc to exit subassembly placement mode.
2. In the drawing, zoom out until you see the entire assembly. On the left-hand side of the assembly, select the daylight, shoulder, and lane subassemblies. Right click. Click Mirror.
3. Click the marker point at the top-right edge of the median subassembly to draw a mirror of the daylight, shoulder, and lane subassemblies.

   The Mirror command creates a mirror image of the selected subassemblies. All the subassembly parameters, except for the Side parameter, are retained.

Note:
The parameters of the mirrored subassemblies are not dynamically linked. If you change a parameter value for a subassembly on one side of the assembly baseline, the change will not be applied to the opposite side.

The finished assembly looks like this:

To continue this tutorial, go to Exercise 3: Creating a Divided Highway Corridor.

Save the file from this exercise as Corridor-3a.*dwg Exercise 9 lastname first name.dwg.* Upload this file to Canvas.

Exercise 10: Creating a Divided Highway Corridor

In this exercise, you will create a divided highway corridor.

This exercise continues from Exercise 2: Creating a Divided Highway Assembly.

Create a divided highway corridor

Note:

This exercise uses *Corridor-3a.dwg* from the previous exercise, or you can open *Corridor-3b.dwg* from the tutorials drawings folder.

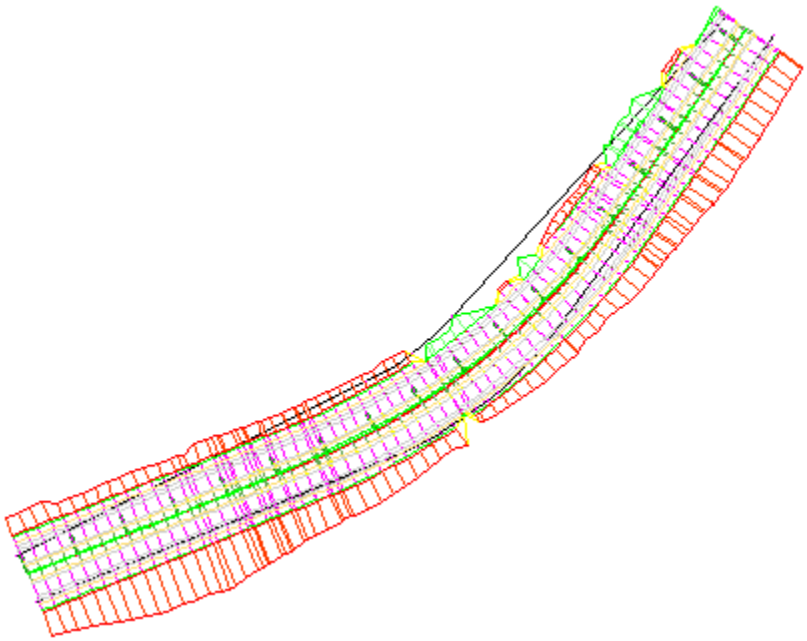
1. Click Home tab ➤ Create Design panel ➤ Corridor .
2. In the Create Corridor dialog box, specify the following parameters:

- Name: **Divided Highway**
- Baseline Type: Alignment and Profile
- Alignment: Centerline (1)
- Profile: Layout (1)
- Assembly: Divided Highway
- Target Surface: EG
- Set Baseline and Region Parameters: Cleared

  When the Set Baseline and Region Parameters box is cleared, the default corridor creation settings are applied to the corridor.

3. Click OK.

   The corridor model is built, and looks like this:



To continue to the next tutorial, go to Viewing and Editing Corridor Sections.

Parent topic: Tutorial: Creating a Divided Highway Corridor

Save the file from this exercise as Corridor-3a.*dwg Exercise 10 lastname first name.dwg*. Upload this file to Canvas.

Optional Tutorial: Viewing and Editing Corridor Sections

This tutorial demonstrates how to edit a corridor in section.

You use the tools that are demonstrated in this exercise to edit the corridor model. To plot corridor sections, you must create section views. See the Sections Tutorials for more information.

Topics in this section

- **Exercise 11: Viewing Corridor Sections**
  In this exercise, you will view how a corridor assembly is applied at various stations along a baseline alignment.
- **Exercise 12: Editing Corridor Sections**
  In this exercise, you will edit the parameters at several corridor sections.

Optional Exercise 11: Viewing Corridor Sections

In this exercise, you will view how a corridor assembly is applied at various stations along a baseline alignment.

The view/edit corridor section tools are useful for inspecting how the corridor assemblies interact with other objects in the corridor model.

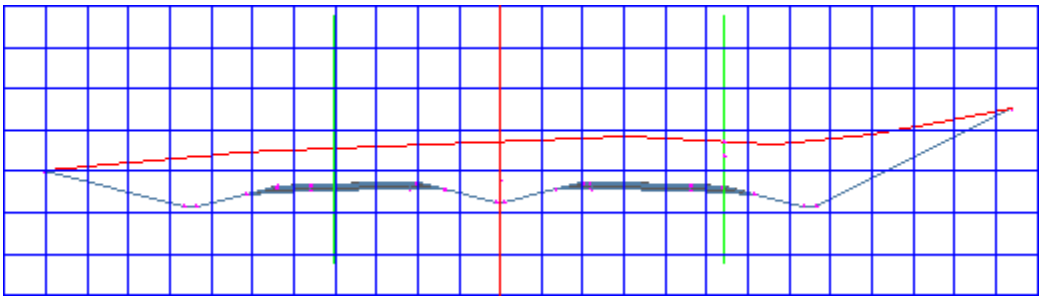
View a corridor in section

1. Open *Corridor-4a.dwg*, which is available in the tutorials drawings folder.

   The drawing contains an assembly, profile view, and corridor model. Each object is displayed in a separate viewport. The viewport that contains the assembly is active.

2. Click Modify tab ➤ Design panel ➤ Corridor .
3. Click Corridor tab ➤ Modify Corridor Sections panel ➤ Section Editor.
4. On the Section Editor tab, on the Station Selection panel, in the Select A Station list, select **0+00.00**.

   A cross-section of the corridor at the starting station is displayed. The elevations and offsets are displayed on the grid axes. The cross section view contains the assembly, as well as the other adjacent objects.
   At the current station, the offset alignments are represented by vertical green lines, and the existing ground surface is represented by the horizontal red line. The vertical red line in the center of the grid represents the assembly baseline. Profile intersections with the baseline are indicated by markers.



5. Use the tools on the Section Editor tab to view the corridor sections at each corridor station. Click Go To Previous Station and Go To Next Station , or select stations from the Select A Station list.

   Notice that as each station is displayed on the grid, its location in the plan and profile viewports is identified by a perpendicular line.

Experiment with the zoom modes

1. Zoom in to the lane on the right-hand side of the assembly. Click Go To Next Station .

Notice that the view zooms back out to the grid extents. There are three zoom modes in the view/edit corridor section tools. These modes control the behavior of the grid when you navigate to another station:

- **Zoom To Extents** —View zooms out to the extents of the assembly, plus the view scale factor. This is the default zoom mode.
- **Zoom To An Offset And Elevation** —View remains zoomed in on the current offset and elevation. As you navigate to other sections, the current offset and elevation remains at the center of the viewport.
- **Zoom To A Subassembly** —View remains zoomed in on a selected subassembly. As you navigate to other sections, the selected subassembly remains at the center of the viewport.

2. In the Select A Station list, select **3+00.00**.
3. On the View Tools panel, click Zoom To Subassembly .
4. In the Pick Subassembly dialog box, select **Daylight (Right)**. Click OK.

   The view zooms in to the Daylight (Right) subassembly at station 3+00.00. Notice the shape, elevation, and offset of the subassembly.

5. In the Select A Station list, select **9+00.00**.

   The view zooms in to the Daylight (Right) subassembly at station 9+00.00. Notice that the shape, elevation, and offset of the subassembly is quite different from station 3+00.00. The subassembly remains at the center of the grid and at the same zoom factor as you navigate to other stations.

6. On the View Tools panel, click Zoom To An Offset And Elevation .
7. Click Go To Next Station several times.

   Notice that the offset and elevation values that are displayed on the grid axes do not change. The shape of the Daylight (Right) subassembly changes to reflect how it ties in to the existing ground surface.

8. On the View Tools panel, click Zoom To Extents .
9. Click Go To Next Station .

   The view zooms back out to the extents of the assembly.

   To continue this tutorial, go to Exercise 2: Editing Corridor Subassemblies.

   Parent topic: Tutorial: Viewing and Editing Corridor Sections

Optional Exercise 12: Editing Corridor Sections

In this exercise, you will edit the parameters at several corridor sections.

You will edit a section in two ways. First, you will modify a subassembly parameter at a single station, which will override the subassembly settings for that station only. Second, you will modify a subassembly parameter, and then apply the modification to a range of stations.

This exercise continues from Exercise 1: Viewing Corridor Sections.

Modify subassembly properties for a single station

Note:

This exercise uses *Corridor-4a.dwg* from the previous exercise.

1. On the Station Selection panel, in the Select A Station list, select **7+75.00**.
2. On the View Tools panel, click Zoom To Subassembly  .
3. In the Pick Subassembly dialog box, select **Lane (Right)**. Click OK.
4. On the Corridor Edit Tools panel, toolbar, click Parameter Editor  .
5. In the Corridor Parameters dialog box, in the Assembly - (1) tree, under Group - (1), expand **Lane (Right)**.

   Notice that identical values are displayed in the Design Value and Value columns. The Design Value column displays the value that was specified when the subassembly was added to the assembly. The Value column displays the actual value of the subassembly at the current station. In the following steps, you will override the Design Value at the current station, and then examine the results.

6. Change the Width Value to **36.0000'**.

   Notice that the Override check box is automatically selected, which indicates that the Design Value has been overridden at this station.

7. Click Go To Next Station  several times.

   Notice that for the other stations, the WidthValue is 12.000'. The lane subassembly that is displayed in the section view updates in width to reflect the width at the current station.

8. On the Station Selection panel, in the Select A Station list, select **7+75.00**.
9. In the Corridor Parameters dialog box, in the Assembly - (1) tree, under Group - (1), under **Lane (Right)**, in the Width row, clear the Override check box.

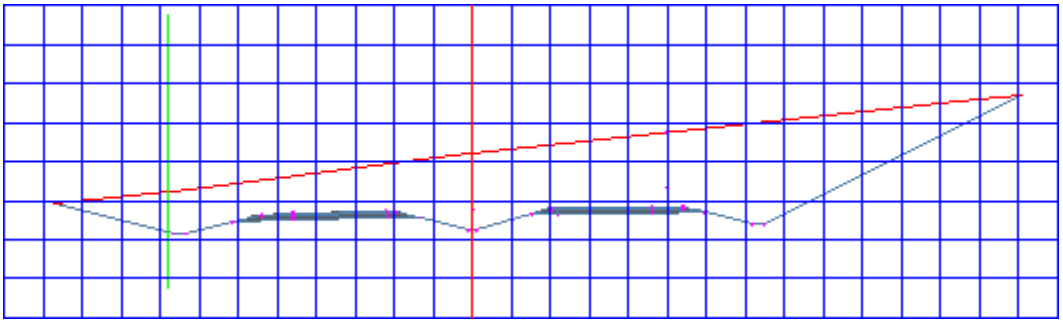
   The Value column displays the same value as the Design Value column.

Modify subassembly properties for a range of stations

1. On the View Tools panel, click Zoom To Extents .
2. On the Station Selection panel, in the Select A Station list, select **4+50.00**.

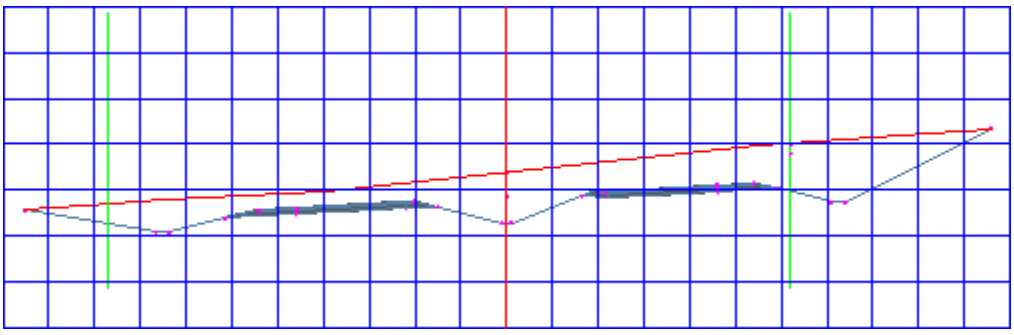
   Notice that the road is in a shallow cut on one side and deep cut on the other. The criteria set for the daylight subassembly caused it to use a 6:1 slope on the left side, and a 4:1 slope on the right side. Also notice the superelevation transition of the road. At station 4+50.00, the lanes are relatively flat.

   Note:
   For more information about superelevation, see the Applying Superelevation to an Alignment tutorial.



3. On the Station Selection panel, in the Select A Station list, select **7+75.00**.

   Notice the superelevation transition at this station. Using the Centerline Pivot option on the depressed median subassembly causes the lanes and shoulders to superelevate about a point above the centerline ditch. A straight edge laid against the lane surfaces would pass through the profile grade point.



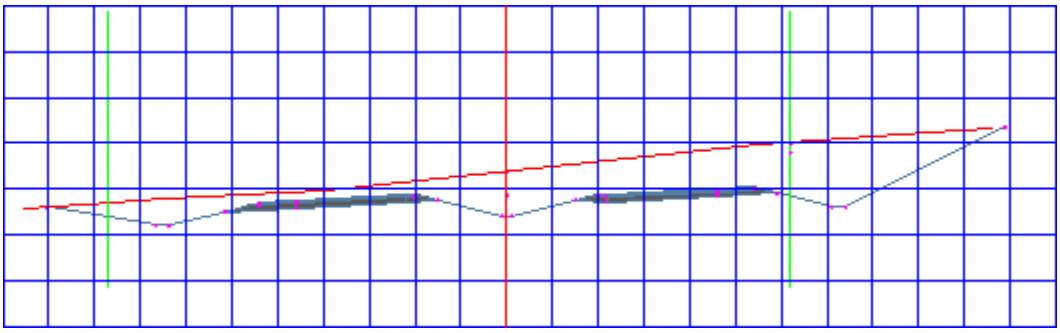
4. In the Corridor Parameters dialog box, in the Assembly - (1) tree, under Group - (1), expand **Median**.

   Notice that the Centerline PivotDesign Value is set to Pivot About Centerline.

5. In the Centerline Pivot? row, click the Value cell. Select **Pivot About Inside Edge-Of-Traveled-Way** .
6. On the Corridor Edit Tools panel, click Apply To A Station Range .
7. In the Apply To A Range Of Stations dialog box, notice that Start Station is **7+75.00**, which is the current station. For End Station, enter **11+00.00**. Click OK.

8. On the Corridor Edit Tools panel, click Update Corridor to update the corridor model.
9. View the corridor section at station 7+75.00.

   Notice that the profile grade is held at the inside edges-of-traveled-ways and the lanes and shoulders pivot about this point.



10. To view the grade at subsequent stations, click Go To Next Station .

    Notice that the change you made is visible through station 11+00.00. At station 11+25.00, the Centerline Pivot?Value returns to Pivot About Centerline.

    To continue to the next tutorial, go to Viewing and Rendering a Corridor.

    Parent topic: Tutorial: Viewing and Editing Corridor Sections

Optional Tutorial: Viewing and Rendering a Corridor

This tutorial demonstrates how to add surfaces to a corridor, create boundaries on the surfaces, and then visualize the corridor using the AutoCAD rendering tools.

Topics in this section

- **Exercise 13: Creating Corridor Surfaces**
  In this exercise, you will create Top, Datum, Pave, and Median surfaces from the corridor.
- **Exercise 14: Creating Corridor Surface Boundaries**
  In this exercise, you will use two different methods to define surface boundaries for your corridor design.
- **Exercise 15: Visualizing a Corridor**
  In this exercise, you will visualize the corridor using the rendering and hatching features in AutoCAD Civil 3D.

Optional Exercise 13: Creating Corridor Surfaces

In this exercise, you will create Top, Datum, Pave, and Median surfaces from the corridor.

The Top surface tracks the finish grade of the roadway from the left daylight point to the right daylight point on both paved and unpaved portions. This surface is used for finish grade modeling.

The Datum surface tracks the finish grade on unpaved portions, and also the subbase on paved portions, going from the left daylight point to the right daylight point. This surface represents the grading elevations before pavement materials are applied. This surface is used for calculating cut and fill quantities.

The Pave surface defines the finished pavement on both travel lanes in the divided highway.

The Median surface defines the area between the travel lanes.

Create a top corridor surface

1. Open *Corridor-5a.dwg*, which is available in the tutorials drawings folder.
2. In the drawing, select the corridor.
3. Click Corridor tab ➤ Modify Corridor panel ➤ Corridor Surfaces .
4. In the Corridor Surfaces dialog box, click Create A Corridor Surface to create an entry in the surfaces table.
5. Change the surface name to **Corridor - (1) Top**.
6. Click the Surface Style cell for the **Corridor - (1) Top** surface.
7. In the Pick Corridor Surface Style dialog box, select **Border & Contours**. Click OK.
8. Click the Render Material cell for the **Corridor - (1) Top** surface.
9. In the Pick Render Material dialog box, select **Sitework.Paving - Surfacing. Asphalt**. Click OK.
10. Select the **Corridor - (1) Top** surface by clicking the icon next to its name.
11. Change the Overhang Correction setting to Top Links.

    This setting specifies that the surface will be built using the links along the top of the assembly. This setting is especially critical when an assembly has overlapping subassembly links that, if connected, would result in errors in surface triangulation.

12. For Specify Code, select Top. Click Add Surface Item.

    This action adds the corridor links with the Top code to this surface.

Create a datum corridor surface

- Repeat the previous procedure to create a Datum surface, using these parameters:

- Name: **Corridor - (1) Datum**
- Surface Style: **Hide Surface**
- Render Material: **Sitework.Planting.Soil**
- Overhang Correction: **Bottom Links**
- Link Code: **Datum**

Create a pave corridor surface

- Create a Pave surface, using these parameters:
- Name: **Corridor - (1) Pave**
- Surface Style: **Border & Contours**
- Render Material: **Sitework.Paving - Surfacing Asphalt**
- Overhang Correction: **Top Links**
- Link Code: **Pave**

Generate the surfaces and examine the results

1. Click OK to create the surfaces and close the Corridor Surfaces dialog box.
2. In Toolspace, on the Prospector tab, expand the Surfaces collection.

   Notice that the corridor surfaces you created have been added to the Surfaces collection. You can work with a corridor surface the same way you do with any surface in the Surfaces collection, including changing its style, adding labels to it, and using it for surface analysis. The following features and behaviors are unique to corridor surfaces:

- When you select a corridor surface, only the surface is selected. The corridor it is based on is not selected.
- When you change the surface style of a corridor surface using its surface properties, the style is also changed in the Corridor Properties dialog box on the Surfaces tab.
- When a corridor is rebuilt, corridor surfaces are updated to reflect any changes in the corridor, and then any edits are applied to the corridor model.
- The corridor from which the surface was taken is listed in the surface properties definition.

To continue this tutorial, go to Exercise 2: Creating Corridor Surface Boundaries.

Optional Exercise 14: Creating Corridor Surface Boundaries

In this exercise, you will use two different methods to define surface boundaries for your corridor design.

Use corridor surface boundaries to prevent triangulation outside of the daylight lines of a corridor surface. You may also use boundaries to either prevent an area of a surface from being displayed or to render an area of the corridor surface using a render material.

Corridor surfaces support the following types of boundaries:

- **Outside Boundary** — Used to define the outer boundary of the corridor surface.
- **Hide Boundary** — Used as a mask to create void areas or punch holes in the corridor surface. For example, a corridor might use a link code Paved either side of the corridor with another surface (a median), separating them. When you create a corridor surface using Paved as the data, AutoCAD Civil 3D tries to connect the gap in between two link codes. To create voids, you define boundaries to represent the surface appropriately.
- **Render Only** — Used to represent different parts of corridor surface with different materials (when rendering), for example, asphalt and grass.

Note:

A Corridor Extents As Outer Boundary command is available for corridors that have multiple baselines, such as a corridor at an intersection.

This exercise continues from Exercise 1: Creating Corridor Surfaces.

Create outside boundaries automatically

1. Open *Corridor-5b.dwg*, which is available in the tutorials drawings folder.
2. In the drawing, select the corridor.

Tip:

If you have difficulty selecting the corridor in the drawing, go to Toolspace on the Prospector tab. Expand the Corridors collection. Right-click the corridor name and click Select.

3. Click Corridor tab ➤ Modify Corridor panel ➤ Corridor Surfaces .
4. In the Corridor Surfaces dialog box, click the Boundaries tab.

   Four corridor surfaces are displayed in the boundary table.

5. Select the **Corridor - (1) Top** surface. Right-click. Click Add Automatically ➤ Daylight.

   This creates a boundary from the daylight lines that are generated from the daylight point codes in the subassembly.

Note:

A Corridor Extents As Outer Boundary command is available for corridors that have multiple baselines, such as a corridor at an intersection.

6. Select the **Corridor - (1) Datum** surface. Right-click. Click Add Automatically ▶ Daylight.
7. For both boundaries, make sure the Use Type is set to **Outside Boundary** .

   The daylight line in the corridor model is created at the points where the design surface matches the existing ground on each side. By selecting Outside Boundary, the surface will be clipped outside the boundary formed by the left and right daylight lines.

8. Click OK.

   The new boundaries are added to the Corridor - (1) Top and Corridor- (1) Datum surfaces. The corridor model is regenerated and the surfaces are rebuilt.
   These surface boundaries are defined by a pair of feature lines. When there are more than two of a given type of feature lines, then you must use the interactive method to use them to define a boundary.
   For example, you were able to automatically create a surface boundary for the daylight region because there is a single pair of Daylight feature lines that define the daylight edges of the corridor assembly.
   By contrast, the assembly has two lanes, each of which are defined by its own pair of EPS feature lines. In this case, you must define the boundary interactively.

Create a pave outside boundary interactively

This boundary will define the outside edges of both lanes by using the lanes' outer EPS feature lines. This will be an outside boundary to define the outside edges of the Corridor - (1) Pave surface.

1. Click View tab ▶ Views panel ▶ Named Views list ▶ Corridor_Begin.

   The drawing is redrawn to a zoomed-in view of the starting area of Corridor (1).

2. In the drawing, select the corridor.
3. Click Corridor tab ▶ Modify Corridor panel ▶ Corridor Surfaces .
4. In the Corridor Surfaces dialog box, on the Boundaries tab, select the **Corridor - (1) Pave** surface. Right-click. Click Add Interactively.
5. In the drawing, select the feature line along the left-inside edge of the paved shoulder within circle 3.
6. Since there are multiple feature lines at this location, the Select A Feature Line dialog box is displayed. Select **EPS**. Click OK.
7. Pan to the other end of the corridor. Notice that a red line appears along the first feature line you selected.
8. Select the feature line in circle 10.
9. In the Select A Feature Line dialog box, select **EPS**. Click OK.
10. Pan to the beginning of the corridor, and select the feature line along right-inside edge of paved shoulder within circle 4.

11. On the command line, enter **C** to close the boundary.
12. In the Corridor Surfaces dialog box, expand the **Corridor (1) – Pave** surface collection item to see the boundary item. Change the corridor boundary name to **Pave Outside** and set its Use Type to Outside Boundary.

Create a hide boundary interactively

This boundary will define the inside edges of both lanes by using the lanes' inner EPS feature lines. This will be a *hide boundary* and will act as a mask over the median area of the Corridor - (1) Pave surface.

1. In the Corridor Surfaces dialog box, on the Boundaries tab, select the **Corridor - (1) Pave** surface. Right-click. Click Add Interactively
2. Repeat the previous procedure to define the inside boundary of the paved region:

- Click in circle 1 and select **EPS** to define the left-outside edge of the paved shoulder.
- Click in circle 8 and select **EPS** to define the left-outside edge of the paved shoulder.
- Click in circle 2.
- On the command line, enter **C** to close the boundary.
- Change the name of the boundary to **Pave Inside** .
- Change the **Use Type** to **Hide Boundary** .

Optional Exercise 15: Visualizing a Corridor

In this exercise, you will visualize the corridor using the rendering and hatching features in AutoCAD Civil 3D.

Rendering a corridor requires that you assign an AutoCAD *render material* to each of the appropriate subassembly links. Rendering produces a realistic image of the corridor that is useful for on-screen presentations.

Applying *hatching* to a corridor requires that you apply a *material area fill style* to each of the appropriate subassembly links. Hatching produces a less realistic image of the surface than rendering, but hatching prints easily through AutoCAD.

This exercise continues from Exercise 2: Creating Corridor Surface Boundaries.

Apply 3D render materials to a corridor

1. Open *Corridor-5c.dwg*, which is available in the tutorials drawings folder.
2. In the drawing, select the corridor.

Tip:

If you have difficulty selecting the corridor in the drawing, go to the ToolspaceProspector tab. Expand the Corridors collection. Right-click the corridor name and click Select.

First, you will apply render materials to the corridor link codes.

3. Click Corridor tab ➤ Modify Corridor panel drop-down ➤ Edit Code Set Styles .
4. On the Edit Code Sets dialog box, under Code Set Style, make sure that All Codes is selected.

   In the Render Material column, examine the materials that are set for the links that are included in the subassemblies for the current corridor. These materials will be displayed on each link when you render the corridor model:

- Daylight_Cut: **Sitework.Planting.Grass.Short**
- Daylight_Fill: **Sitework.Planting.Grass.Short**
- Ditch: **Sitework.Planting.Grass.Thick**
- Gravel: **Sitework.Planting.Gravel.Mixed**
- Median: **Sitework.Planting.Grass.Short**
- Pave: **Sitework.Paving - Surfacing.Asphalt**
- Slope_Link: **Sitework.Planting.Grass.Short**

5. Click OK.

Hide and render corridor surfaces

1. Click View tab ➤ Views panel ➤ Named Views list ➤ Corridor_3D View.

   The drawing is redrawn to a three-dimensional view of the corridor.

2. In Toolspace, on the Prospector tab, expand the Surfaces collection.
3. Right-click the **Corridor - (1) Median** surface. Click Surface Properties.
4. In the Surface Properties dialog box, on the Information tab, change the Surface Style to **Hide Surface**. Click OK.

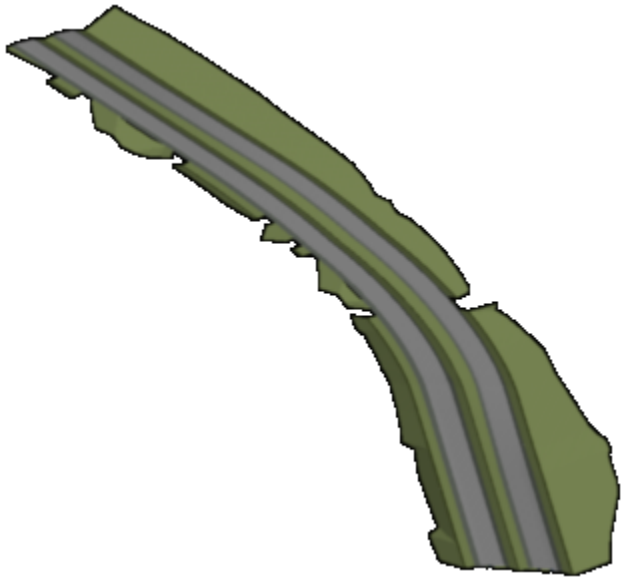
   The Hide Surface style has all of its components turned off, which allows the surface's render material to be effectively ignored. The rendering method used in this exercise applies render materials that are assigned to the subassembly link codes, and not the surface itself.

5. Follow steps 2 and 3 to apply the **Hide Surface** style to the **Corridor - (1) Pave** and **Corridor - (1) Top** surfaces.

   Note:

   The Corridor - (1) Datum surface already uses the Hide Surface style.

6. On the command line, enter **RENDER** to render the corridor in 3D using the render materials that are applied to the subassembly links.



Next, you will view 2D hatch patterns on the corridor by applying shape styles to the appropriate subassembly links.

Apply 2D hatching to the corridor model

1. Click View tab ➤ Views panel ➤ Named Views list ➤ Corridor_All.

   The drawing is redrawn to plan view.

2. In the drawing, select the corridor.
3. Click Corridor tab ➤ Modify Corridor panel drop-down ➤ Edit Code Set Styles .
4. On the Edit Code Sets dialog box, under Code Set Style, select **All Codes With Hatching**.

   In the Material Area Fill Style column, notice that a fill has been applied to each of the subassembly links that you examined in the previous procedure. However, notice that Slope_Link does not have a Material Area Fill Style associated with it. In the next few steps, you will apply a style by modifying the code set style.

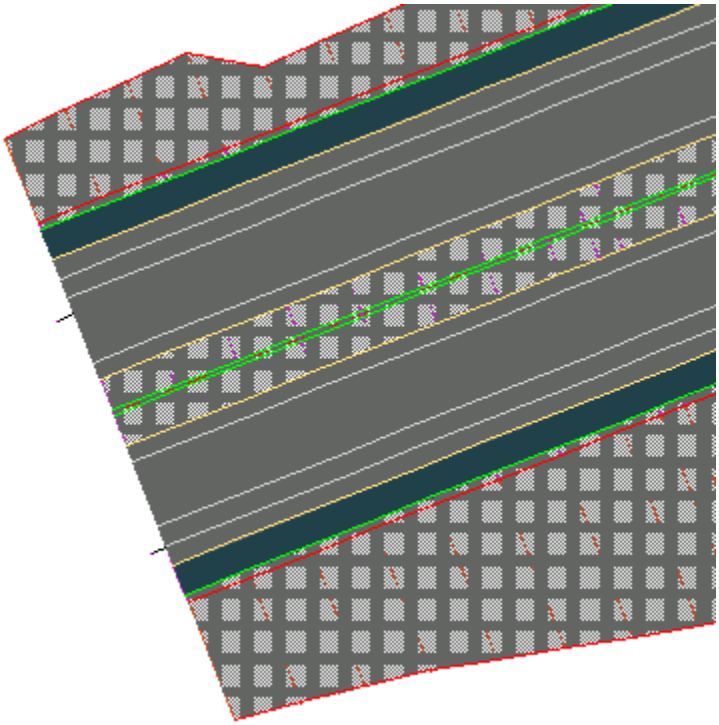
5. Click Edit Current Selection.

   Note:

   You can also open the Code Set Style dialog box from Toolspace on the Settings tab. Expand General ➤ Multipurpose Styles ➤ Code Set Styles. Right-click the appropriate code set style and click Edit.

6. In the Code Set Style dialog box, on the Codes tab, under Link, in the Slope_Link row, set the Material Area Fill Style to **Strip Hatch** .
7. Click OK twice.

   The material area fill styles are applied to the 2D corridor model. Zoom in on the beginning of the corridor to examine the hatch patterns.



Parent topic: Tutorial: Viewing and Rendering a Corridor