

This guide covers the process for creating an assembly object that represents an individual cross section along a corridor. In this example, a simple assembly will be created which represents a typical cross section for a terrace.

The terrace cross section consists of a 10 foot flat bottom channel. To the left of the channel the section ties in to the original ground surface at a 3:1 slope. To the right of the channel a terrace ridge will be created with a 4 foot top width and an elevation that is 3 feet above the channel grade. The foreslope and backslope of the terrace ridge is 4:1, and the backslope ties in to original ground.

Assembly groups are made up of individual subassembly components which represent distinct portions of the assembly group. The individual subassembly elements used to develop the assembly group to represent the terrace cross section are discussed in more detail below.

1. Subassembly Catalog

Subassemblies are stored in the Corridor Modeling Catalogs, which are located in the Autodesk Content Browser. The Content Browser icon is located on the Palettes pane on the View ribbon. Once in the catalog, select the *Corridor Modeling Catalogs (Imperial, .NET)*

The subassembly catalog is organized into several sections. Most of the subassemblies are geared toward typical highway design cross section elements such as pavement profiles and ditches. Most assemblies for NRCS practices can be built using the subassemblies in the *Generic Subassemblies Catalog*.

To access detailed information about an individual subassembly, right click on its icon in the catalog and select Help. The window that opens will contain a schematic diagram of the subassembly and a description of its parameters.

2. Organize Subassemblies on the Tool Palette

Subassemblies are inserted into the drawing using an add-on tool called i-Drop, which is disabled in the NRCS Civil 3D installation. Since subassemblies cannot be added to an assembly group directly from the Subassembly Catalog, they must first be copied onto the Tool Palette. If you are using the NRCS customized tool palettes, you may already have a separate tab specifically for subassemblies. If not, you can create one by placing the pointer over the tabs along the edge of the tool palette, right clicking, and selecting *New Palette*.

In this example, the following subassemblies will be used, and need to be placed on the tool palette before the assembly group can be created.

<i>LinkWidthAndSlope</i>	Used for the channel bottom
<i>LinkOffsetAndSlope</i>	Used for the top of the terrace ridge
<i>LinkSlopeAndVerticalDeflection</i>	Used for the foreslope of the terrace
<i>LinkSlopeToSurface</i>	Used to slope from the channel and ridge to original ground

To copy a subassembly to the tool palette, right click on its icon in the Subassembly Catalog and select *Copy*. Then, place the pointer over the tool palette, right click, and select *Paste*.

3. Create the Assembly

Once you have the subassemblies placed on the tool palette, you are ready to begin creating the assembly group. On the *Create Design* pane on the *Home* ribbon, click on *Assembly* and select *Create Assembly*.

In the Create Assembly window, you can accept the default name for the assembly or provide your own assembly name. A description can also be provided. Select the *Assembly* assembly style and code set.

You will be prompted to select a baseline location in the drawing. This location does not need to correspond to a point along an alignment, profile, or corridor object. The cross sections created based on the assembly group will automatically be placed horizontally along an alignment and vertically along a profile as dictated in the properties for the corridor that represents the finished terrace. When you select the baseline location in the drawing, the assembly will be created and will show up as a vertical line with a symbol at its midpoint. The vertical line is where the assembly will be placed along the horizontal alignment for the terrace, in this case the intersection of the terrace channel and the foreslope of the terrace ridge. The symbol on the baseline represents the point where the assembly will be placed on the finished grade profile for the corridor.

4. Add Subassembly Components to Build the Assembly

- a. To add the 10 foot flat terrace channel to the cross section, click on the *LinkWidthAndSlope* subassembly in the Tool Palette. The Properties window will automatically open. In the Properties window, in the Advanced Parameters section, set the *Side* to *Left*, the *Width* to 10' and the *Slope* to 0%, then click on the assembly baseline in the drawing. The terrace channel component should be added to the left of the baseline.
- b. Next, tie the channel to the original ground surface with a 3:1 slope. Click on the *LinkSlopeToSurface* subassembly in the Tool Palette. In the Properties window, set the *Side* to *Left* and the *Slope* to 33.33%. Note that if you type in 3:1 in the *Slope* cell, the value of 33.33% will automatically be calculated and entered into the cell in the Properties window. For this example, the *Add Link in* value should be set to *Cut Only*, assuming that the terrace channel will always be placed in cut. Click on the subassembly component that you added in step 4a to add the slope to the assembly.
- c. Add a 4:1 slope to connect the terrace channel to the ridge, located 3 feet above the channel elevation. Click on the *LinkSlopeAndVerticalDeflection* subassembly in the Tool Palette. The *Side* should be set to *Right*, the *Slope* to 25% (4:1) and the *Vertical Deflection* to 3'. Click on the assembly baseline in the drawing.
- d. Add the 4 foot top to the terrace ridge. Click on the *LinkOffsetAndSlope* subassembly in the Tool Palette. Set the *Offset from Baseline* value to 4' and the *Slope* to 0%. Note that with this subassembly type, unlike the *LinkWidthAndSlope* type, the direction that the line runs is determined by the value of the offset from baseline value rather than specifying a side. A positive offset value will extend the line to the right and a negative value will extend the line to the left. Click on the terrace ridge foreslope subassembly element in the drawing.
- e. Finish the section by tying in the terrace ridge to the original ground surface. Click on the *LinkSlopeToSurface* subassembly in the Tool Palette. In the Properties window, set the *Side* to *Right* and the *Slope* to 25% (4:1). For this example, the *Add Link in* value should be set to *Fill Only*, assuming the terrace ridge will always be constructed in fill. Click on the terrace ridge subassembly component to add the slope to the surface.

The assembly schematic in the drawing (shown below) may show the slope extending upward, but the slope in the corridor will actually be oriented either up or down depending on where the original ground line is located in relation to the terrace ridge elevation.

