This guide covers the profile line styles that are provided with the Minnesota drawing template.

As-Built

Description: Use for as-built surface profiles
Linetype: HIDDEN2
Color: Red (plots in color when using black and white plot style)
Layer: 1-AS BUILT

Embankment

Description: Use for embankments and fill areas
Linetype: Continuous
Color: Green
Layer: XSPROF-EMBANKMENT

Excavation

Description: Use for excavations and cut areas
Linetype: HIDDEN2
Color: Red
Layer: XSPROF-EXCAVATION

FG

Description: Use for finished ground design profiles. Final for plotting
Linetype: Continuous
Color: Green
Layer: XSPROF-FG

Offset

Description: Use for offset profile lines, such as trench or shoring depth lines
Linetype: Continuous
Color: Green
Layer: XSPROF-OFFSET

Ognd

Description: Use for original ground surface profiles
Linetype: Continuous
Color: Green
Layer: XSPROF-OGND

Stripping

Description: Use for stripping surface profiles
Linetype: Continuous
Color: Orange
Layer: XSPROF-STRIPPING

Terrace Channel

Description: Use for terrace channel lines on terrace profiles
Linetype: Continuous
Color: Red
Layer: XSPROF-TERRACE CHANNEL

Terrace Ridge

Description: Use for terrace ridge lines on terrace profiles
Linetype: Continuous
Color: Green
Layer: XSPROF-TERRACE RIDGE

Tile

Description: Use for tile lines
Linetype: Tile_Line_Prof
Color: Purple
Layer: XSPROF-TILE

Water

Description: Use for water surface profiles
Linetype: Continuous
Color: Blue
Layer: XSPROF-WATER

Waterway Bank

Description: Use for average bank line on waterway profiles
Linetype: Continuous
Color: Green
Layer: XSPROF-WWAY BANK

Waterway Channel

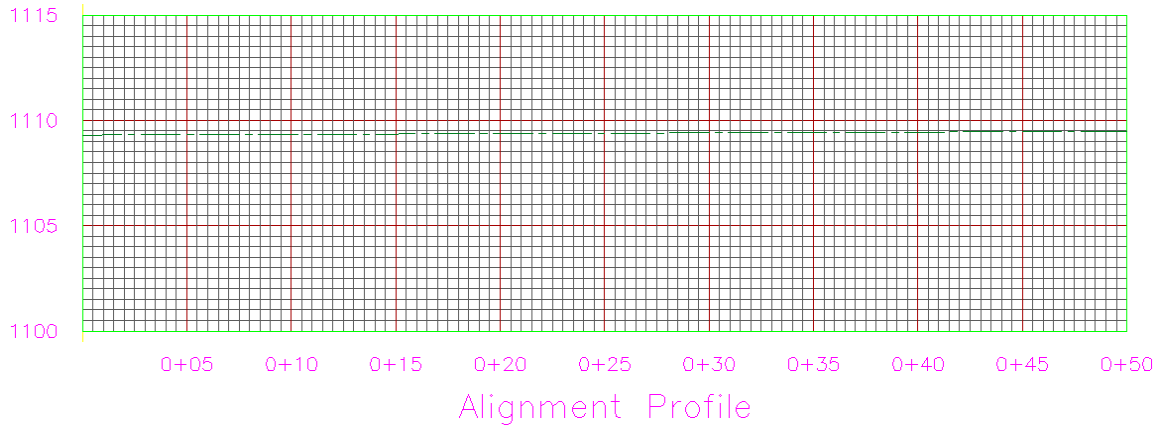
Description: Use for channel line on waterway profiles
Linetype: Continuous
Color: Green
Layer: XSPROF-WWAY CHANNEL
VPI Marker: Triangle

Profile view styles are used to control the display of a profile plotted in a drawing. Some of the settings controlled by the view style include the horizontal and vertical axis stationing, gridline intervals, and vertical exaggeration of the plot.

This guide covers the profile view styles that are provided with the Minnesota drawing template.

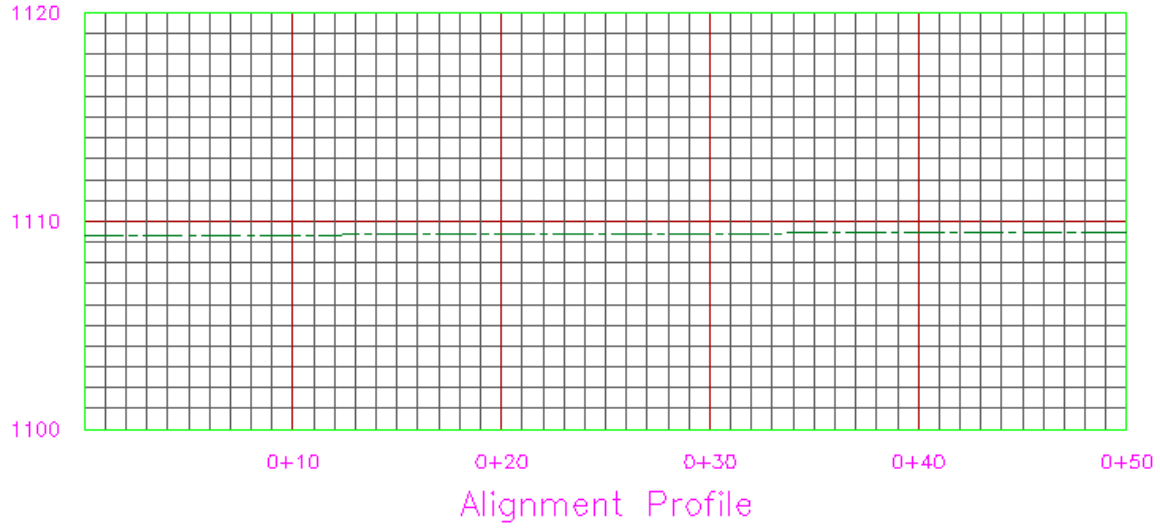
H5:V5 (VE 1:1)

Horizontal Axis :	5 feet (major) 0.5 foot (minor)
Vertical Axis:	5 feet (major) 0.5 foot (minor)
Vertical Exaggeration:	1:1 Horizontal and vertical axes are the same scale. 5 feet vertical on the profile measures 5 feet in the drawing



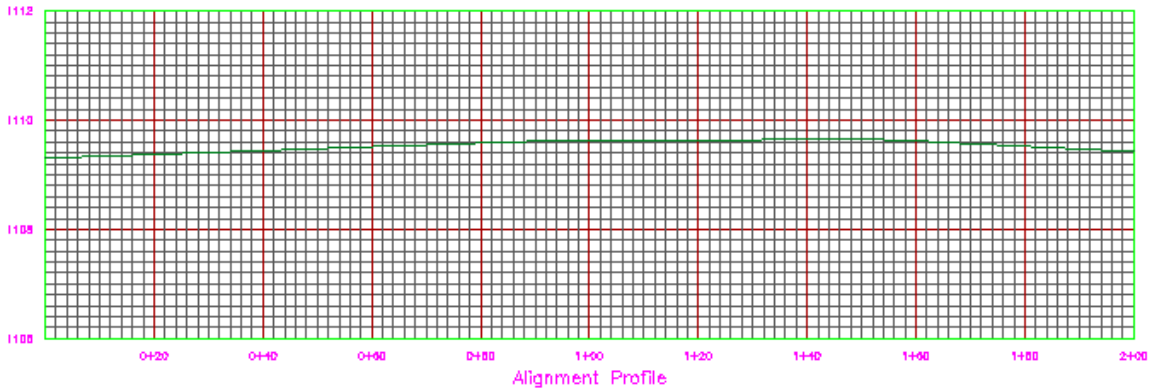
H10:V10 (VE 1:1)

Horizontal Axis :	10 feet (major) 1 foot (minor)
Vertical Axis:	10 feet (major) 1 foot (minor)
Vertical Exaggeration:	1:1 Horizontal and vertical axes are the same scale. 10 feet vertical on the profile measures 10 feet in the drawing



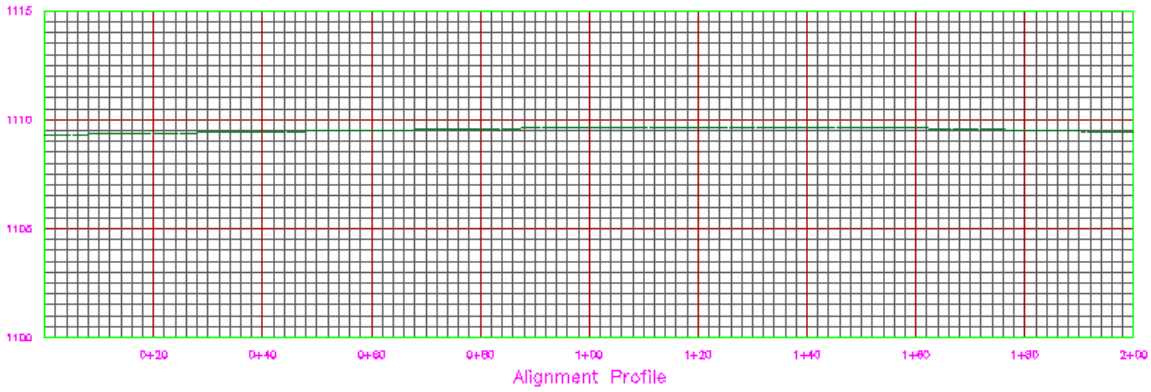
H20:V2 (VE 10:1)

Horizontal Axis :	20 feet (major) 2 feet (minor)
Vertical Axis:	2 feet (major) 0.2 foot (minor)
Vertical Exaggeration:	10:1 Vertical scale is exaggerated 10 times the horizontal scale 2 feet vertical on the profile measures 20 feet in the drawing



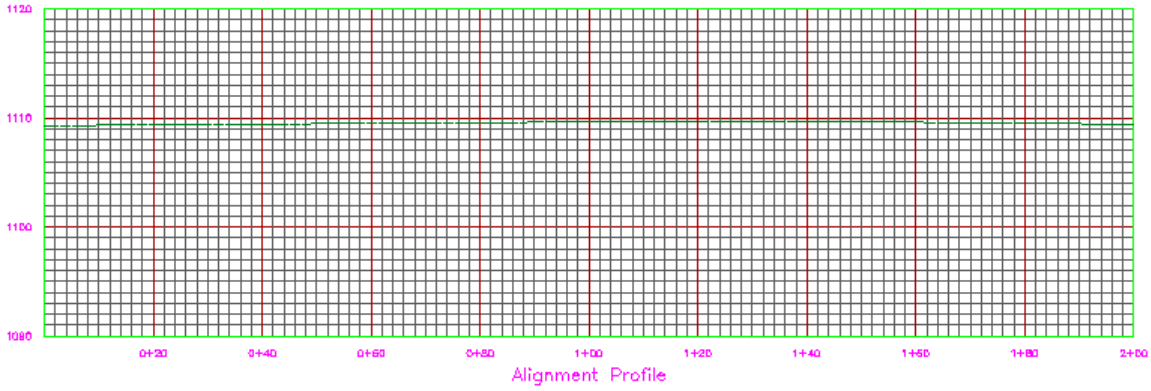
H20:V5 (VE 4:1)

Horizontal Axis :	20 feet (major) 2 feet (minor)
Vertical Axis:	5 feet (major) 0.5 foot (minor)
Vertical Exaggeration:	4:1 Vertical scale is exaggerated 4 times the horizontal scale 5 feet vertical on the profile measures 20 feet in the drawing



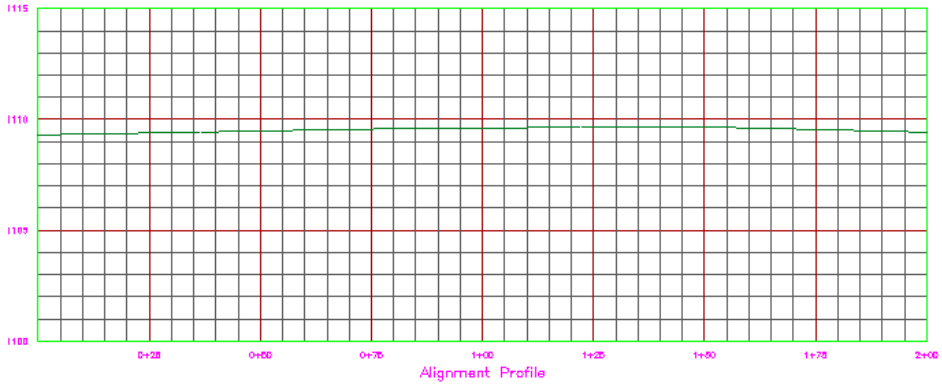
H20:V10 (VE 2:1)

Horizontal Axis :	20 feet (major) 2 feet (minor)
Vertical Axis:	10 feet (major) 1 foot (minor)
Vertical Exaggeration:	2:1 Vertical scale is exaggerated 2 times the horizontal scale 10 feet vertical on the profile measures 20 feet in the drawing



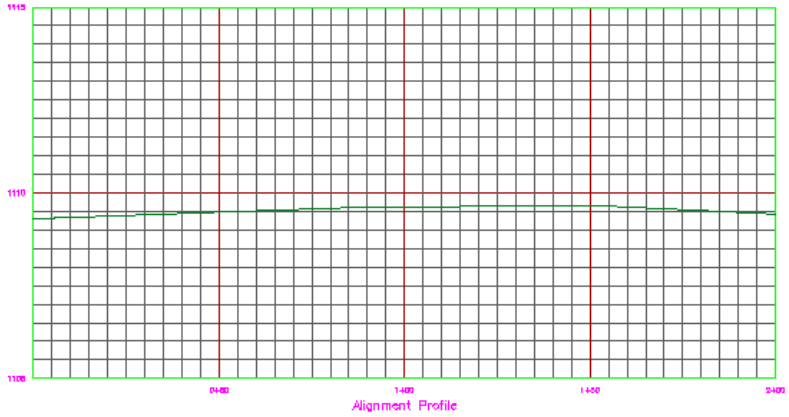
H25:V5 (VE 5:1)

Horizontal Axis :	25 feet (major) 5 feet (minor)
Vertical Axis:	5 feet (major) 1 foot (minor)
Vertical Exaggeration:	5:1 Vertical scale is exaggerated 5 times the horizontal scale 5 feet vertical on the profile measures 25 feet in the drawing



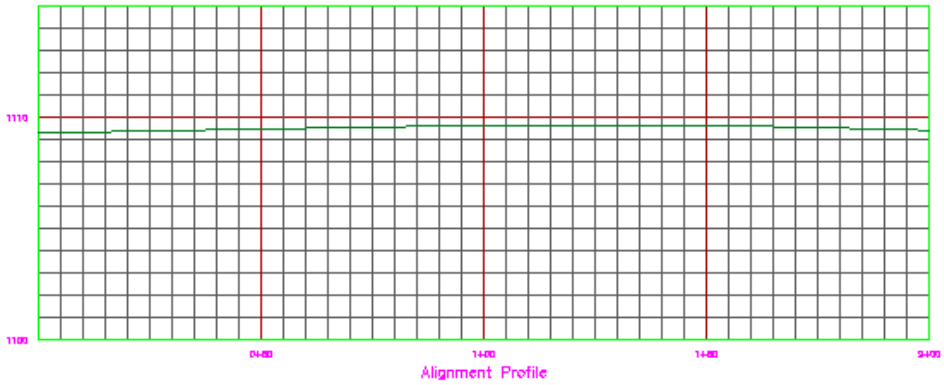
H50:V5 (VE 10:1)

Horizontal Axis :	50 feet (major) 5 feet (minor)
Vertical Axis:	5 feet (major) 0.5 foot (minor)
Vertical Exaggeration:	10:1 Vertical scale is exaggerated 10 times the horizontal scale 5 feet vertical on the profile measures 50 feet in the drawing



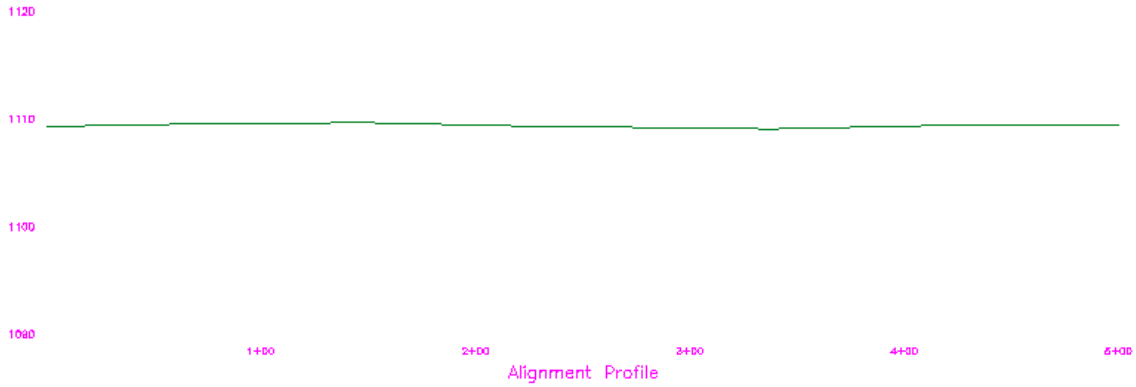
H50:V10 (VE 5:1)

Horizontal Axis :	50 feet (major) 5 feet (minor)
Vertical Axis:	10 feet (major) 1 foot (minor)
Vertical Exaggeration:	5:1 Vertical scale is exaggerated 5 times the horizontal scale 10 feet vertical on the profile measures 50 feet in the drawing



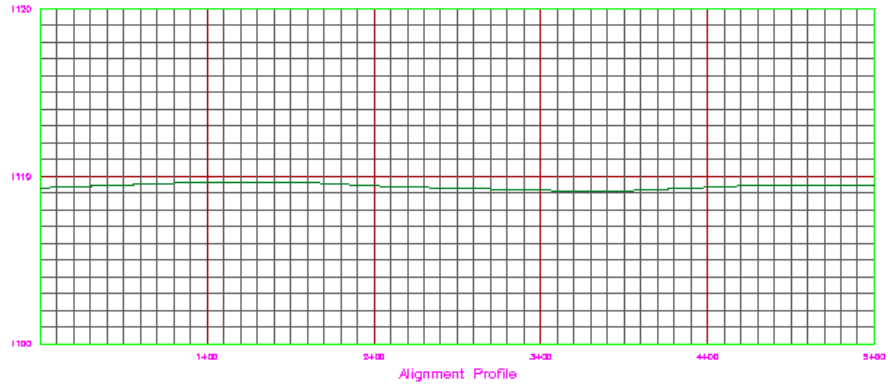
H100:V10 (VE 5:1 No Grid)

Horizontal Axis :	100 feet (major) – With no grid lines
Vertical Axis:	10 feet (major) – With no grid lines
Vertical Exaggeration:	5:1 Vertical scale is exaggerated 5 times the horizontal scale 5 feet vertical on the profile measures 50 feet in the drawing



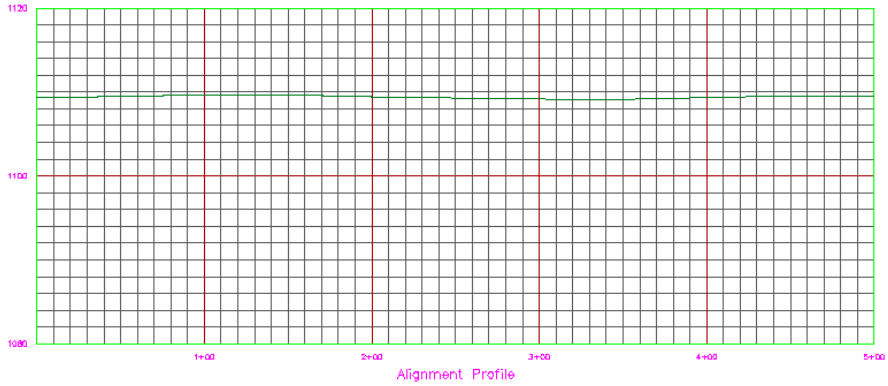
H100:V10 (VE 10:1)

Horizontal Axis :	100 feet (major) 10 feet (minor)
Vertical Axis:	10 feet (major) 1 foot (minor)
Vertical Exaggeration:	10:1 Vertical scale is exaggerated 10 times the horizontal scale 10 feet vertical on the profile measures 100 feet in the drawing



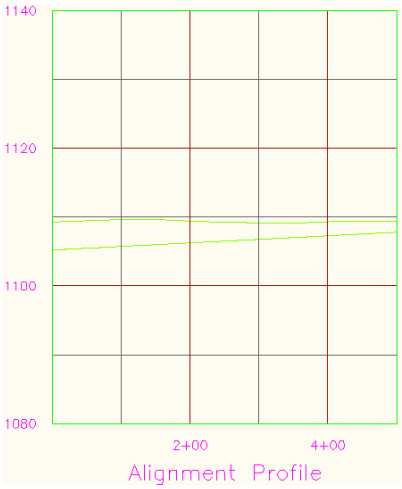
H100:V20 (VE 5:1)

Horizontal Axis :	100 feet (major) 10 feet (minor)
Vertical Axis:	20 feet (major) 2 foot (minor)
Vertical Exaggeration:	5:1 Vertical scale is exaggerated 5 times the horizontal scale 20 feet vertical on the profile measures 100 feet in the drawing



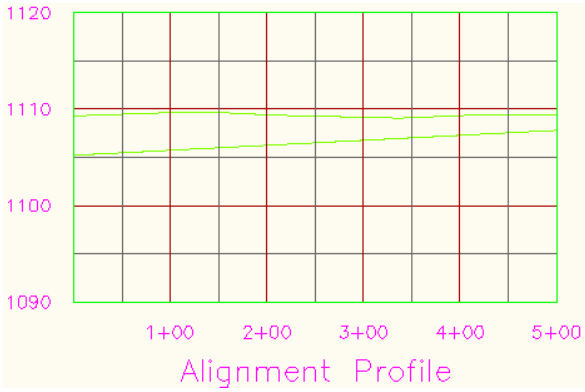
H200:V20 (VE 10:1)

Horizontal Axis :	200 feet (major) 100 feet (minor)
Vertical Axis:	20 feet (major) 10 foot (minor)
Vertical Exaggeration:	10:1 Vertical scale is exaggerated 10 times the horizontal scale 20 feet vertical on the profile measures 200 feet in the drawing



H100:V10 (VE 10:1) 0.5 minor interval

Horizontal Axis :	100 feet (major) 50 feet (minor)
Vertical Axis:	10 feet (major) 5 foot (minor)
Vertical Exaggeration:	10:1 Vertical scale is exaggerated 10 times the horizontal scale 10 feet vertical on the profile measures 100 feet in the drawing



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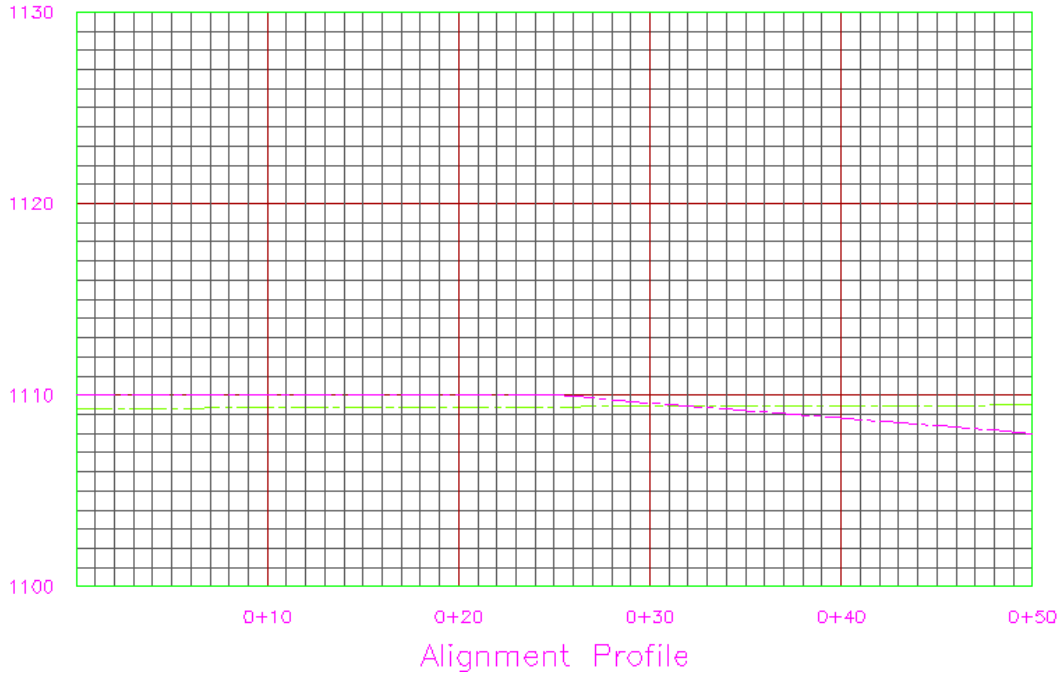
Profile label sets can be applied to profiles in a drawing. These label sets are used to automatically label features such as PVI stations and elevations and the grade between PVIs. This guide summarizes the profile label sets that are provided with the Minnesota Drawing Template.

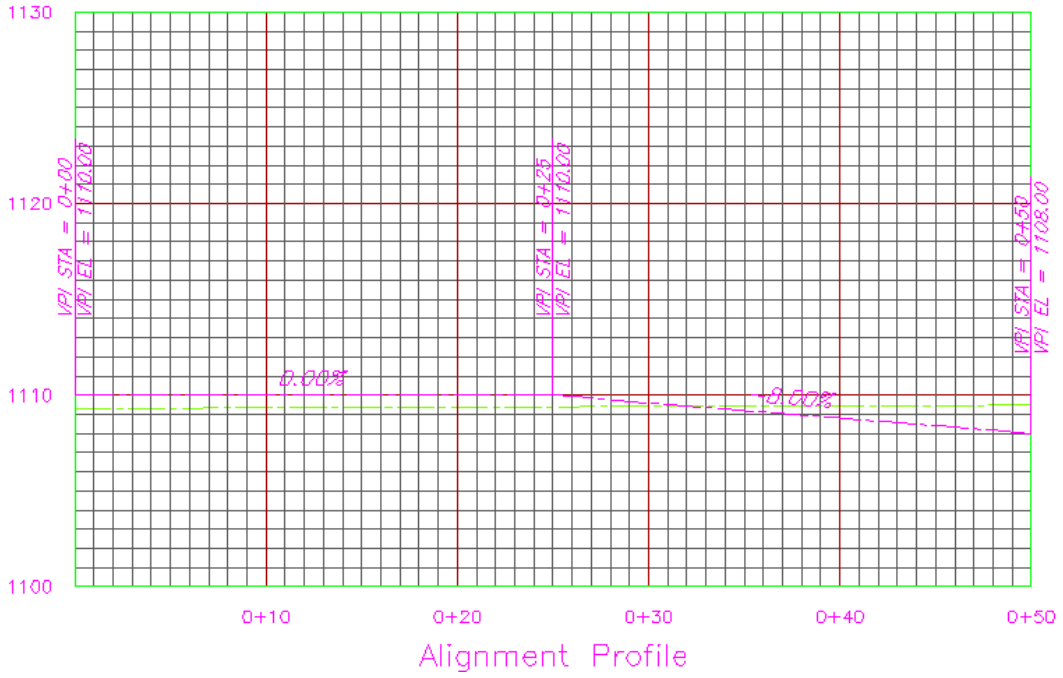
_No Display

Suppresses all labels along the alignment.



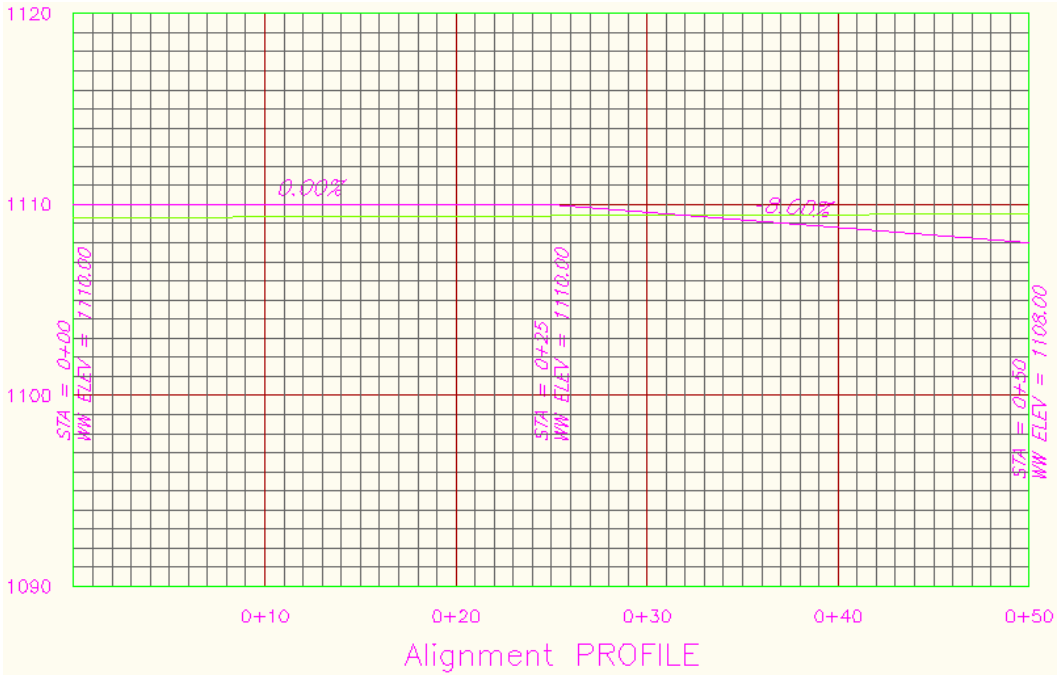
Finished

PVI stations and elevations and the grade between PVI locations are displayed in the profile view.



Waterway

Waterway grade break stations and elevations and the grade between grade break locations are displayed in the profile view.



To change the profile label set assigned to a profile, select the profile in the drawing and select *Edit Profile Labels* from the Contextual Ribbon for the profile that appears, or right click and select *Edit Labels*… The *Profile Labels* window will open. Click on the *Import label set*… button and select the label set that you want to apply to the profile.

This guide covers the procedure for developing profiles for a terrain surface along an alignment.

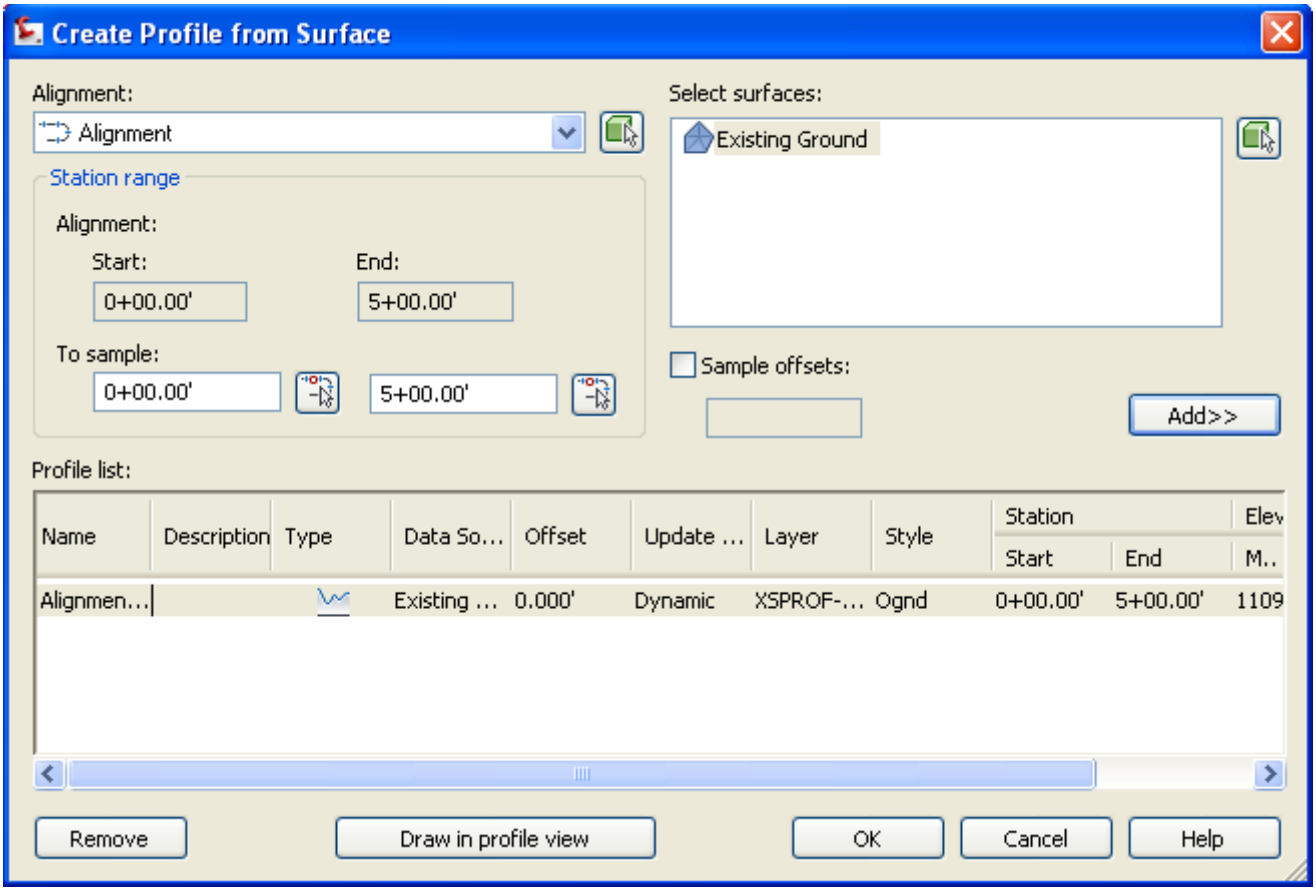
1. Go to the *Create Design* panel on the *Home* ribbon.
2. Click on the down arrow next to *Profile* and select *Create Surface Profile*
3. The *Create Profile from Surface* window will appear.

   Select the alignment(s) that you want to create the profile along and the surface(s) that you want to sample along that alignment.

   The starting and ending stations of the alignment will be displayed, and you can manually select a starting and ending station that lies within that range.

   If you want to sample an offset, check the box next to *Sample offsets:* and provide a distance.

   Once you have established the settings for the profile, click on the *Add>>* button.



   If more than one surface was selected, a separate row will appear in the table at the bottom of the window for each surface chosen. Click on a cell in the table if you want to change a setting, such as the style of a finished surface profile. You can also remove a profile from the list by selecting its row in the table and clicking on the *Remove* button.

4. Once you have the profile settings in the window established, you can either click on the *Draw in profile view* button to create the profile and develop a profile plot or you can click on the *OK* button to create the profile without plotting. The process for developing a profile plot is covered in Quick Reference Guide *620.0 Profile Views*

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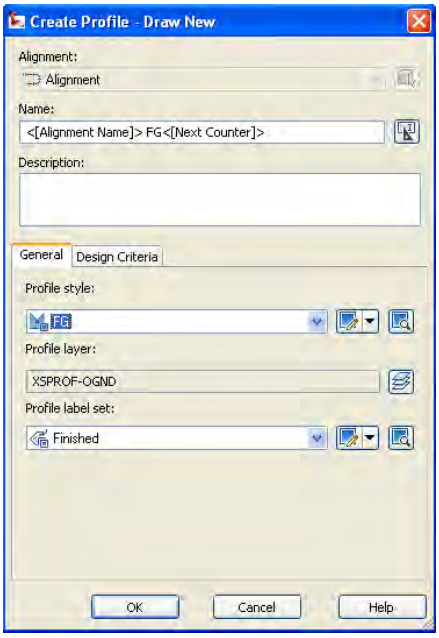
This guide covers the procedure for manually developing a finished ground profile. The drawing must already contain an alignment, profile and profile view. For more information on creating these features, refer to the following Quick Reference Guides:

510.0 Creating an Alignment from Objects
511.0 Creating an Alignment Using Alignment Creation Tools
610.0 Profile from a Terrain Surface
620.0 Profile Views

Manually Create a Finished Ground Profile



1. On the *Create Design* panel on the *Home* ribbon, click on *Profile* and select *Profile Creation Tools.*

2. Select the profile view in the drawing that you want to add the finished ground profile to.

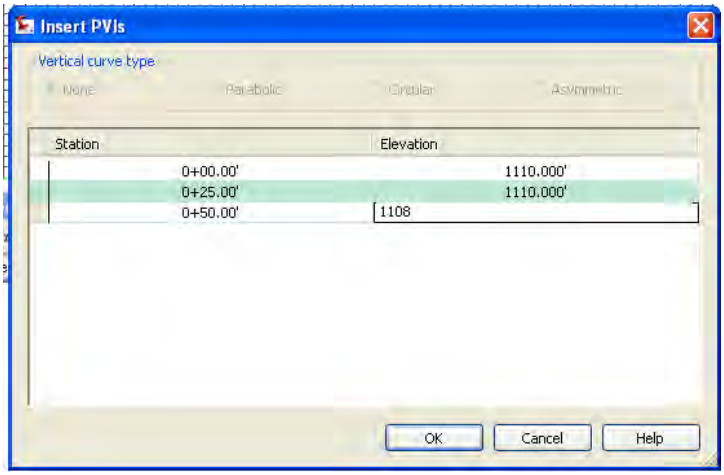
3. The *Create Profile – Draw New* window will appear where you will choose the profile style and label set.

   The Minnesota drawing template will automatically provide a name that includes the alignment name along with a numeric counter. You can also provide you own name for the profile in the *Name*: field in the window.

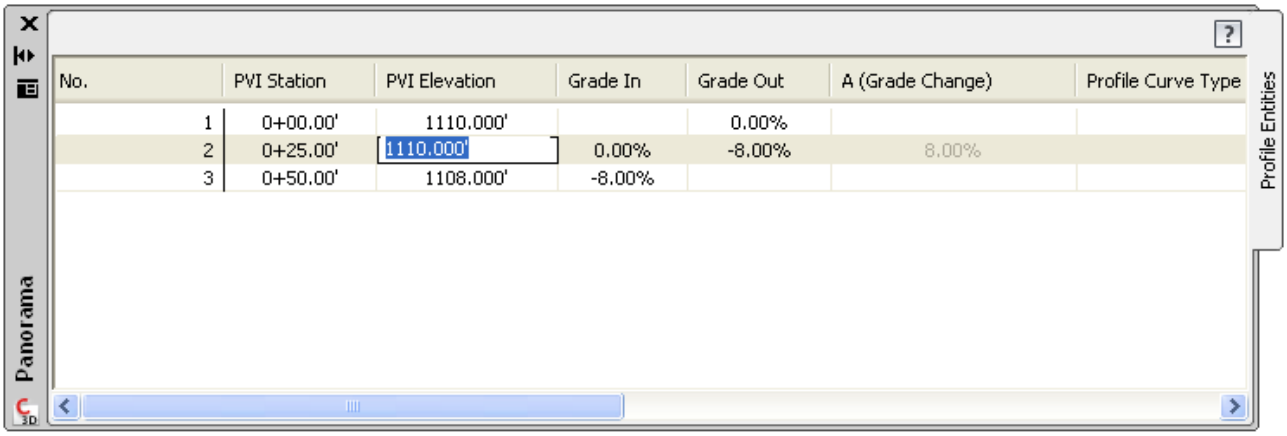
   Click on the *OK* button when you are finished making selections in this window.

4. The *Profile Layout Tools* toolbar will appear which contains commands that you can use to manually define a new profile in the profile view that you selected in Step 2.

5. A useful command on the toolbar for creating a finished ground profile is the *Insert PVIs – Tabular* command located near the center of the toolbar. This command will open the *Insert PVIs* window where you can specify individual stations and elevations for the proposed profile.

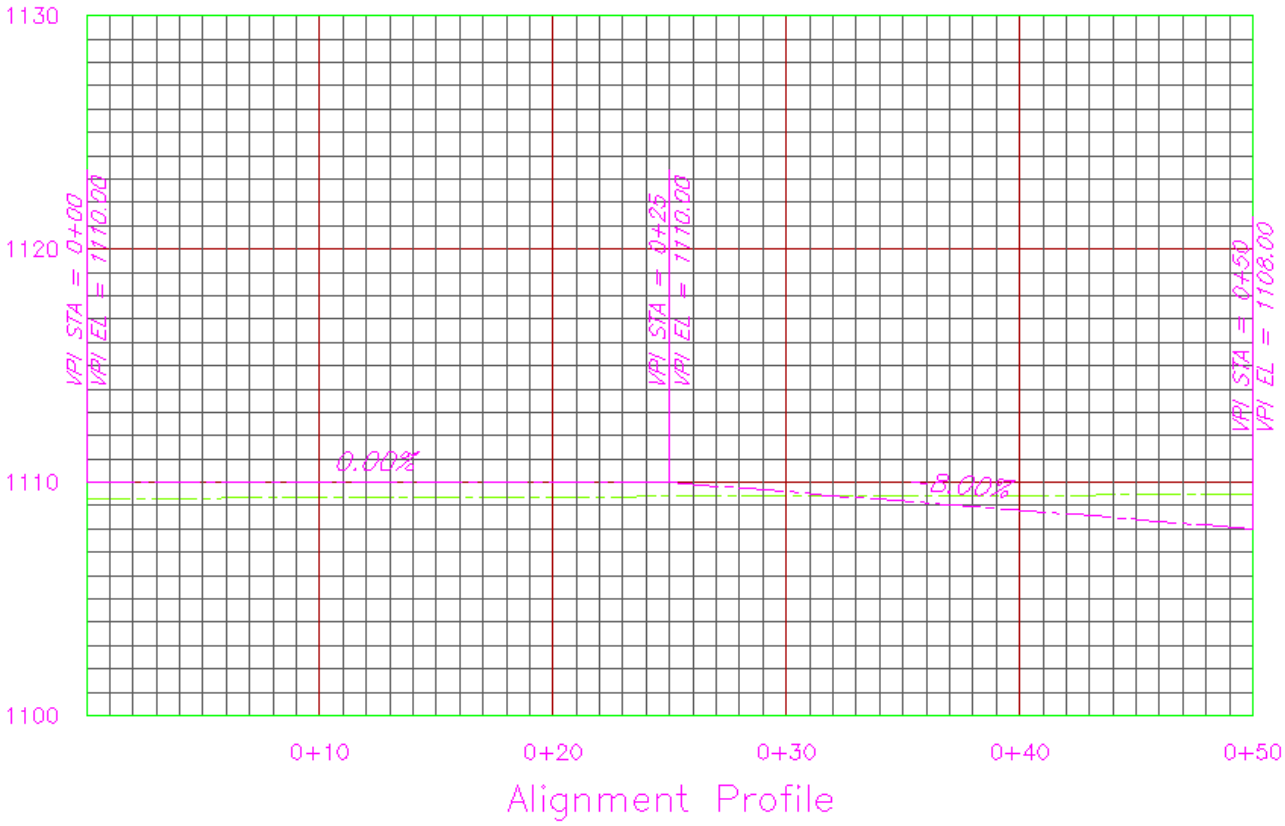


6. The *Profile Grid View* button on the *Profile Layout Tools* toolbar opens a window where the data for all of the elements on the profile is summarized. If the text in a cell in the table is black, it is a cell whose value can be manually changed by double clicking on the cell and entering the new value. Making changes to the values in this table will dynamically update the other values in the table and the plot in the drawing.



No.	PVI Station	PVI Elevation	Grade In	Grade Out	A (Grade Change)	Profile Curve Type
1	0+00.00'	1110.000'		0.00%		
2	0+25.00'	1110.000'	0.00%	-8.00%	8.00%	
3	0+50.00'	1108.000'	-8.00%			

After you use the commands on the Profile Layout Tools toolbar to define the finished ground profile, the profile will be plotted in the profile view in the drawing.



Profile plots that are inserted into a drawing are referred to as profile views. The display of these plots are controlled through the profile view styles, which are described in greater detail in Quick Reference Guide *601.0 Styles – Profile View Styles.*

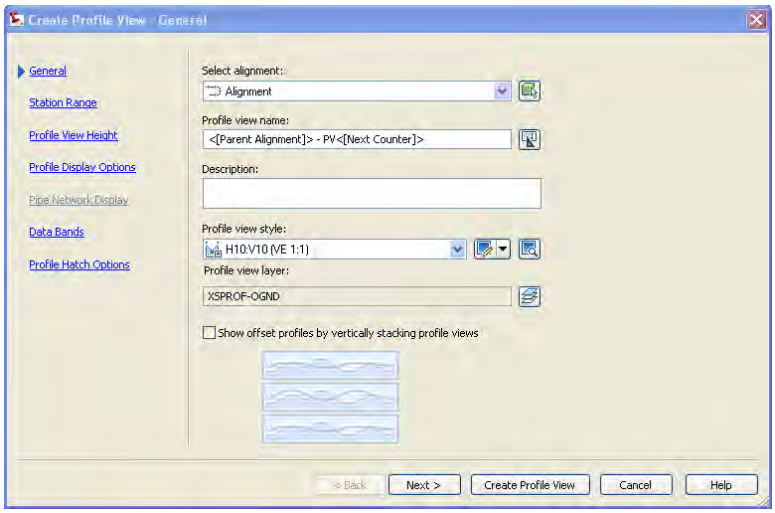
1. To create a profile plot , click on *Profile View* on the *Profile & Section Views* panel on the *Home* ribbon, and click on *Create Profile View*.

2. A series of windows will appear with options that you can choose from when creating the profile plot. You can move between individual windows by clicking on the *< Back* or *Next >* buttons at the bottom of the window or on the window name in the list at the left hand side of the window. You can click on the *Create Profile View* button at any time to go ahead and create the profile view.

   The settings on these windows are summarized below:

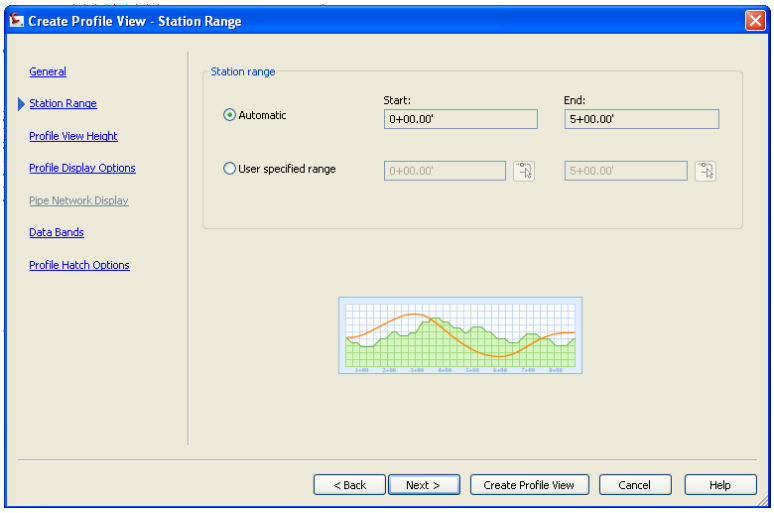
   Create Profile View – General

   In this window, you will choose the alignment used and provide a profile view name. The Minnesota drawing template is set up to automatically include the alignment name in the profile view name along with a numeric counter. Select a profile view style and the layer that it will be placed on. Related profiles, such as centerline and offset plots, can be plotted in a stacked vertical profile.



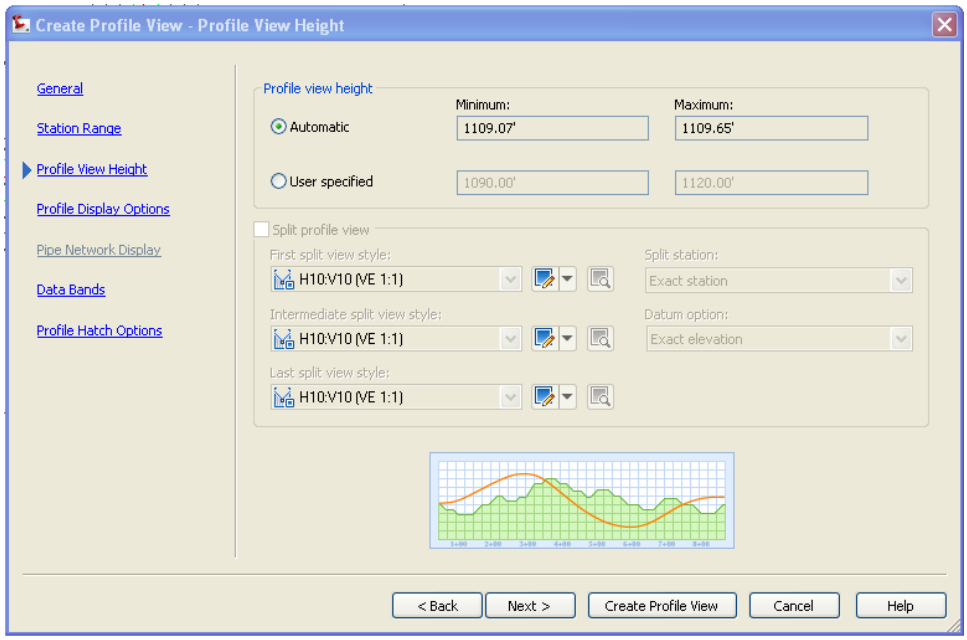
   Create Profile View – Station Range

   You can either accept the default starting and ending stations or provide your own values. If you enter stations that lie outside of the default starting and ending stations, the graph will be generated using those stations, but the profile line will only be plotted within its starting and ending limits.



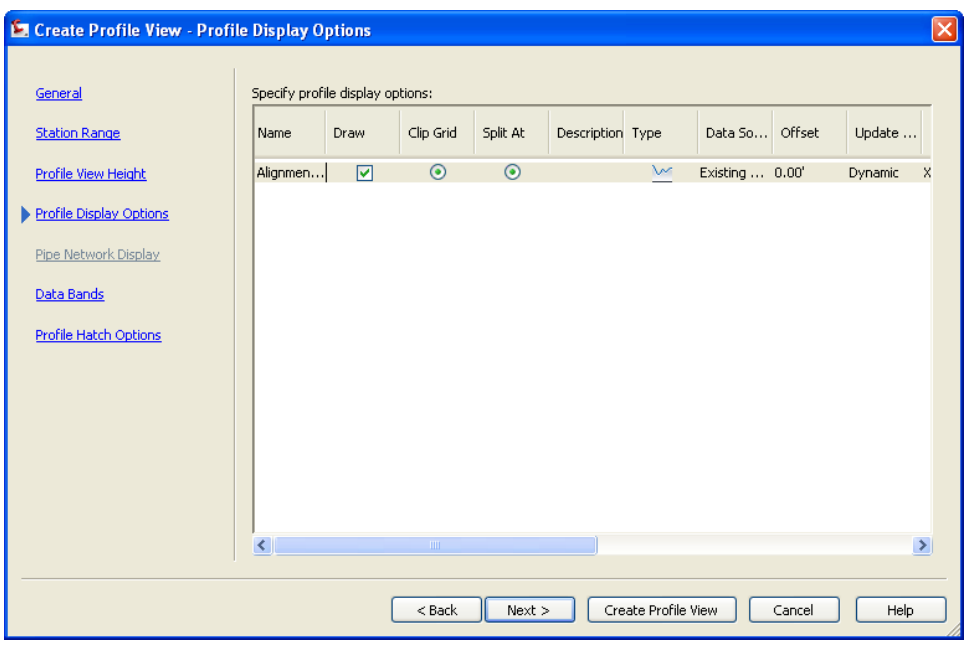
Create Profile View – Profile View Height

You can either accept the default minimum and maximum elevations or provide elevation values. If you provide a user specified height, you will also be given the option to allow a split profile view. A split profile is used when the profile elevations fall outside of the minimum or maximum elevations that you provide for the plot, and can be used to adjust the plot elevations up or down to include the profile line.



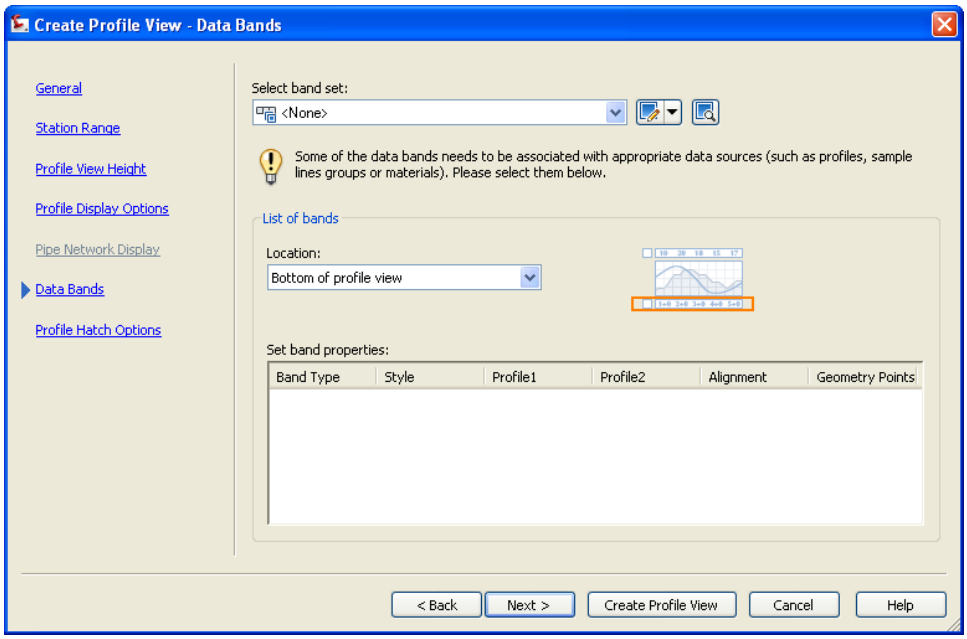
Create Profile View – Profile Display Options

The profile display options are summarized in a table, and you can make changes or override values by clicking on cells in the table.



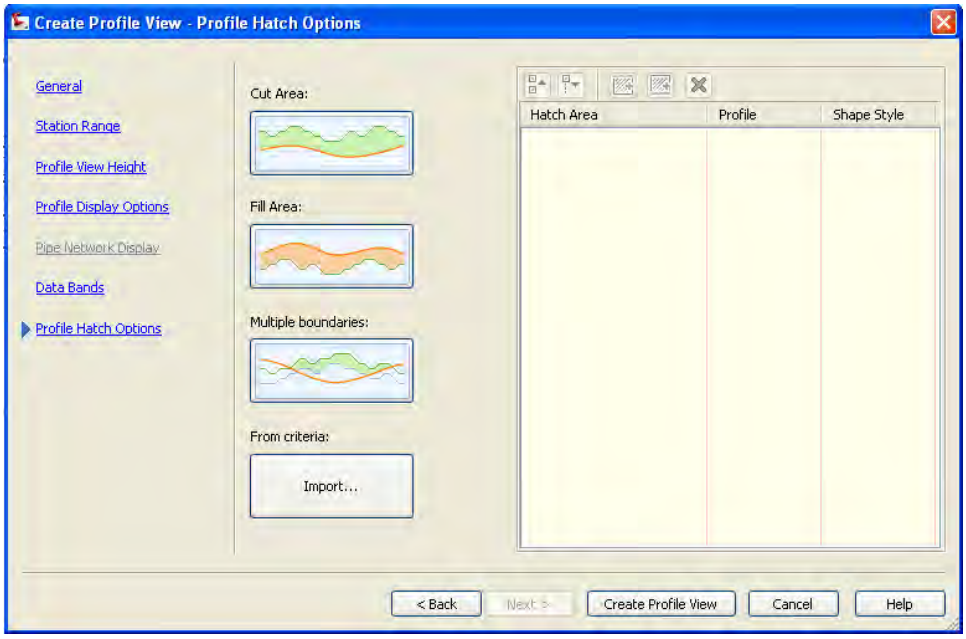
Create Profile View – Data Bands

Data bands contain annotations for the profile or section view, as well as for the parent horizontal alignment. Some common annotations include elevation data, stations, and cut/fill depths. For more information on data bands, refer to Quick Reference Guide *622.0 Profile Bands.*



Create Profile View – Profile Hatch Options

In this window, you can apply hatch patterns in cut or fill areas or between multiple boundaries.



Once you finish making changes to the settings in the Create Profile View window, click on the Create Profile View button. You will be returned to the drawing and you will be prompted to select the base point where the profile view will be inserted into the drawing.

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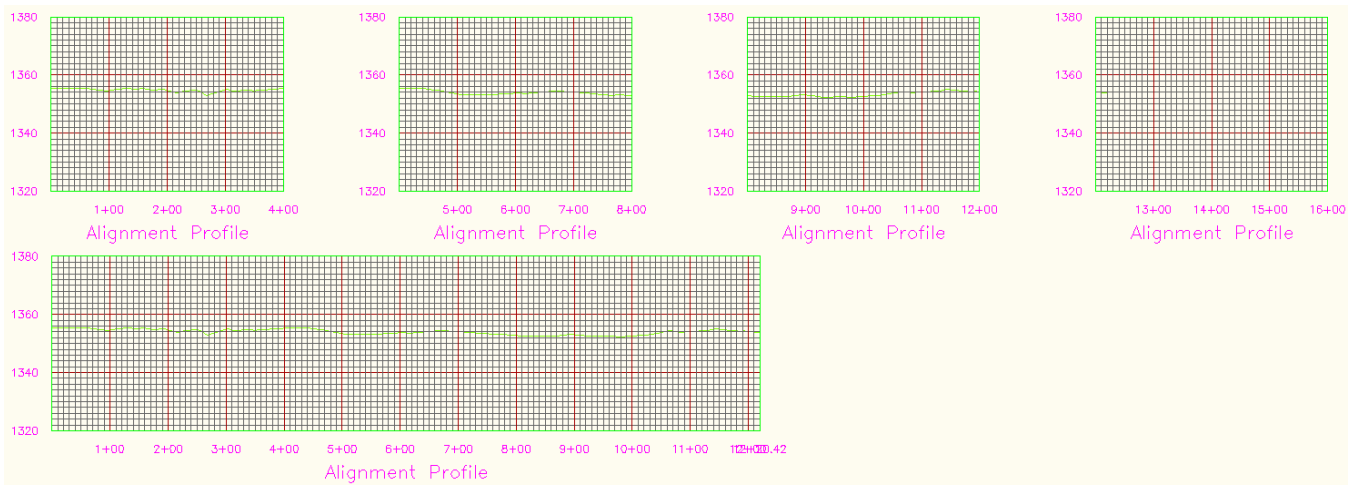
When working with a very long profile, you can choose to break up the profile into separate sections of a given length to make the full profile easier to plot. Each individual segment of the profile can then be plotted on a separate sheet or viewport in a layout. An example of multiple profiles is shown below. In this figure the full profile is plotted on the bottom, and the four segments on the top row is the same profile broken into segments with a length of 400 feet.



Profile plots that are inserted into a drawing are referred to as profile views. The display of these plots are controlled through the profile view styles, which are described in greater detail in Quick Reference Guide *601.0 Styles – Profile View Styles.*

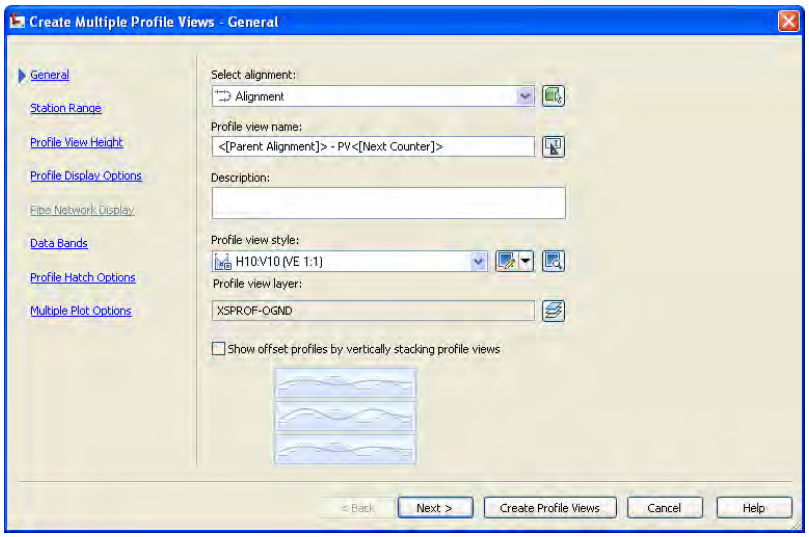
1. To create a profile plot that includes more than one profile , click on *Profile View* on the *Profile & Section Views* panel on the *Home* ribbon, and click on *Create Multiple Profile Views*.

2. A series of windows will appear with options that you can choose from when creating the profile plot. You can move between individual windows by clicking on the < Back or Next > buttons at the bottom of the window or on the window name in the list at the left hand side of the window. You can click on the Create Profile View button at any time to go ahead and create the profile view.

   The settings on these windows are summarized below:

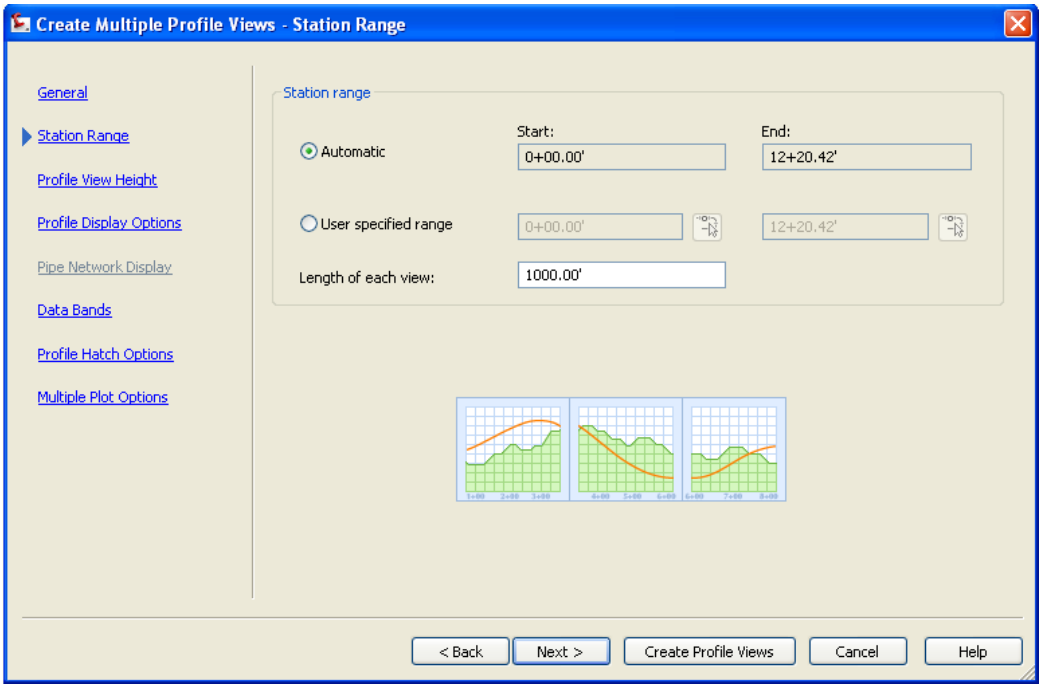
   Create Multiple Profile Views – General

   In this window, you will choose the alignment used and provide a profile view name. The Minnesota drawing template is set up to automatically include the alignment name in the profile view name along with a numeric counter. Select a profile view style and the layer that it will be placed on. Related profiles, such as centerline and offset plots, can be plotted in a stacked vertical profile.



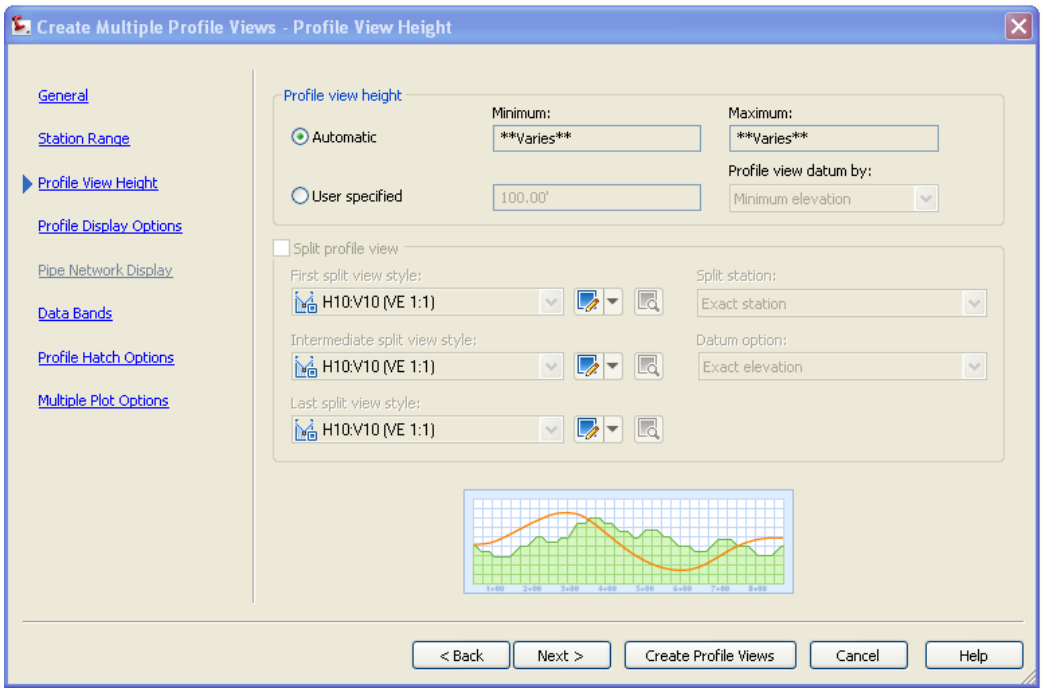
Create Multiple Profile Views – Station Range

You can either accept the default starting and ending stations or provide your own values. If you enter stations that lie outside of the default starting and ending stations, the graph will be generated using those stations, but the profile line will only be plotted within its starting and ending limits.



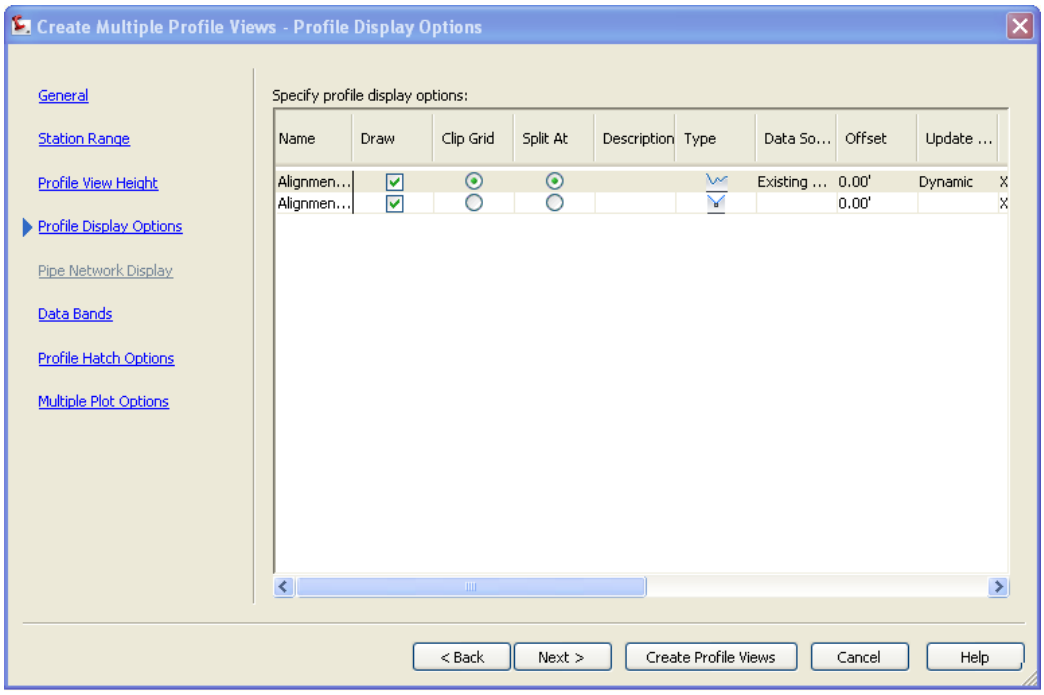
Create Multiple Profile Views – Profile View Height

You can either accept the default minimum and maximum elevations or provide elevation values. If you provide a user specified height, you will also be given the option to allow a split profile view. A split profile is used when the profile elevations fall outside of the minimum or maximum elevations that you provide for the plot, and can be used to adjust the plot elevations up or down to include the profile line.



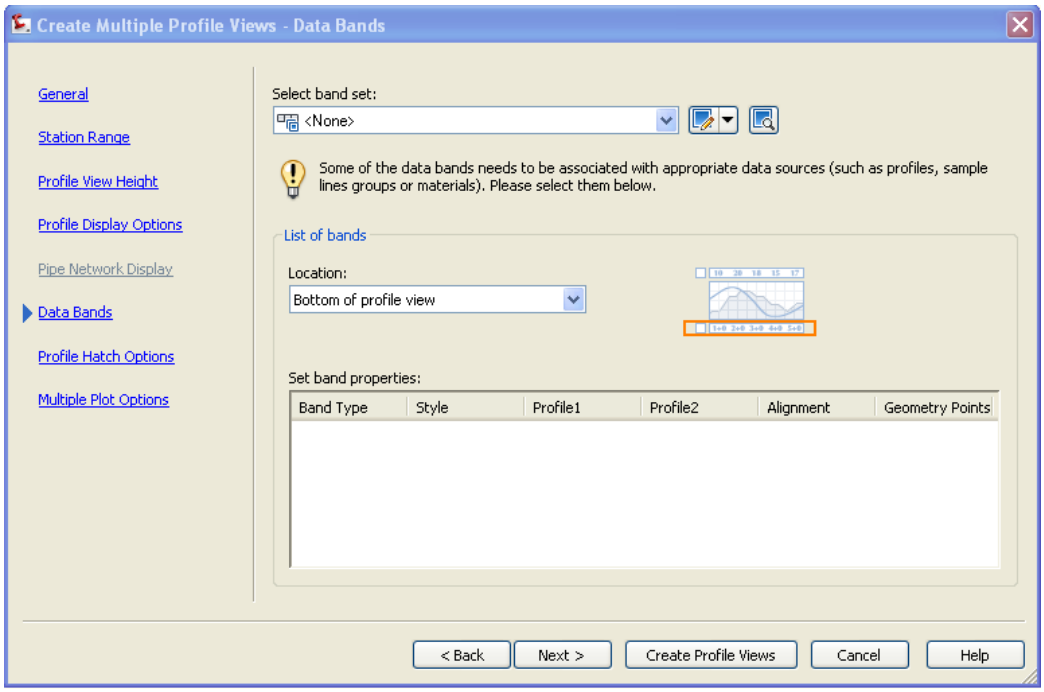
Create Multiple Profile Views – Profile Display Options

The profile display options are summarized in a table, and you can select profiles to include in the plot, make changes or override values by clicking on cells in the table.



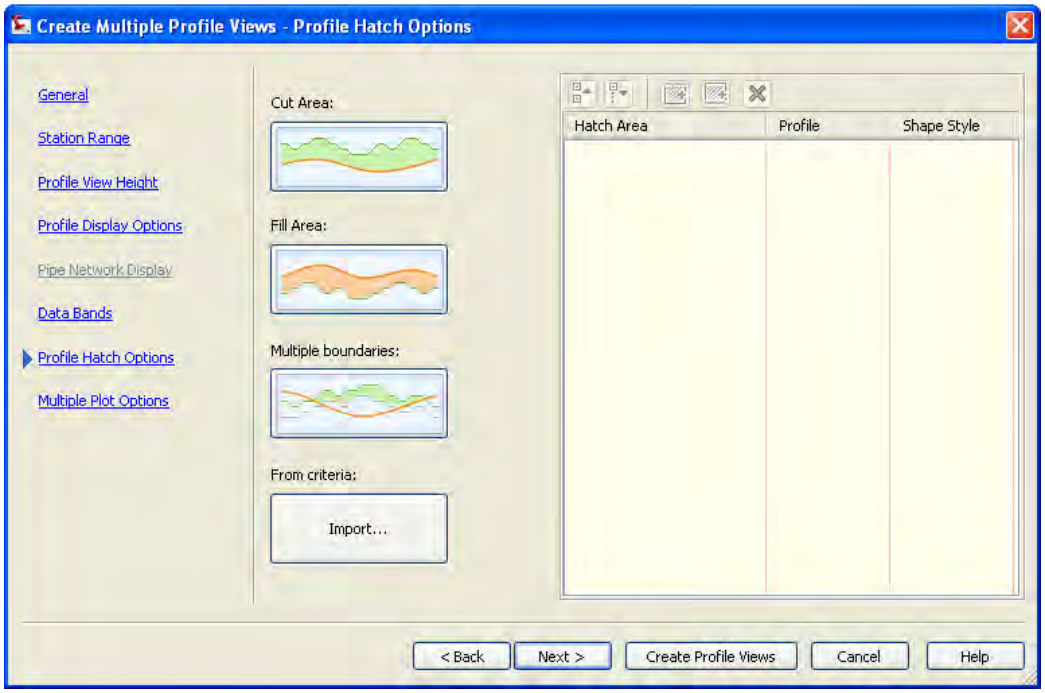
Create Multiple Profile Views – Data Bands

Data bands contain annotations for the profile or section view, as well as for the parent horizontal alignment. Some common annotations include elevation data, stations, and cut/fill depths. For more information on data bands, refer to Quick Reference Guide 622.0 Profile Bands.



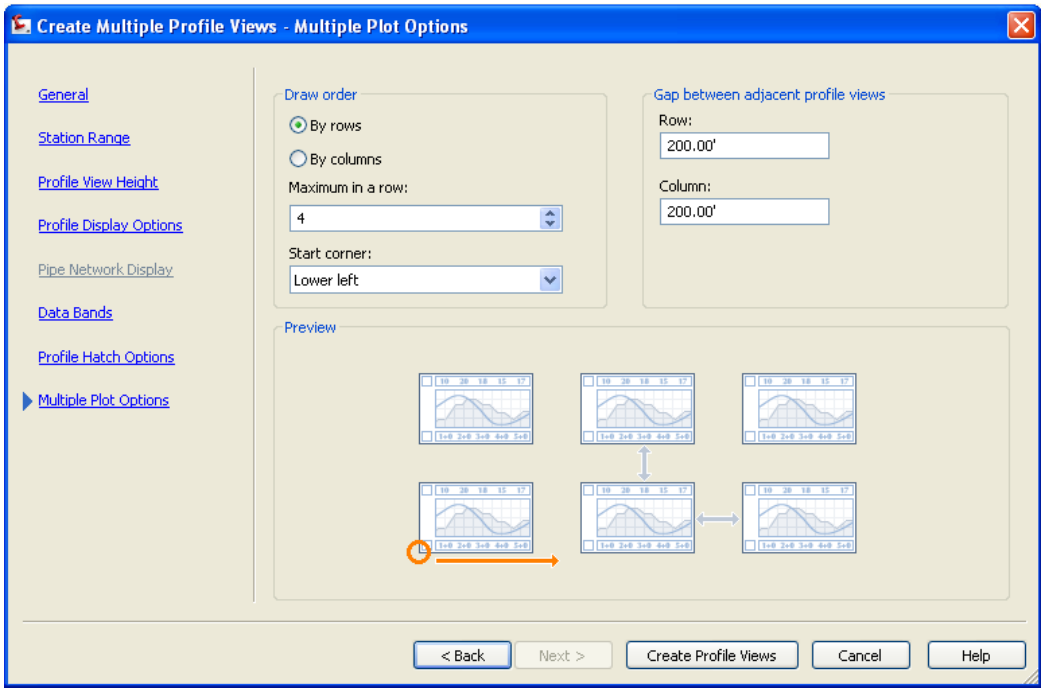
Create Multiple Profile Views – Profile Hatch Options

In this window, you can apply hatch patterns in cut or fill areas or between multiple boundaries.



Create Multiple Profile Views – Multiple Plot Options

In this window, you can specify whether the individual profile plots will be arranged by rows or columns, and you can specify the gap between adjacent rows and columns.



Once you finish making changes to the settings in the Create Multiple Profile Views windows, click on the Create Profile Views button. You will be returned to the drawing and you will be prompted to select the base point where the profile view will be inserted into the drawing.