



CIVIL 3D 2018

Maryland Training Session #5  
*Profiles*

# Alignments

# Alignments

Alignment objects can represent road centerlines, pipe networks, and other construction baselines

Creating and defining a horizontal alignment is one of the first steps in showing your profiles

You can draw the alignment geometry as a polyline, and then create the named alignment from that geometry. For greater control, you can create an alignment object using the Alignment Layout Tools

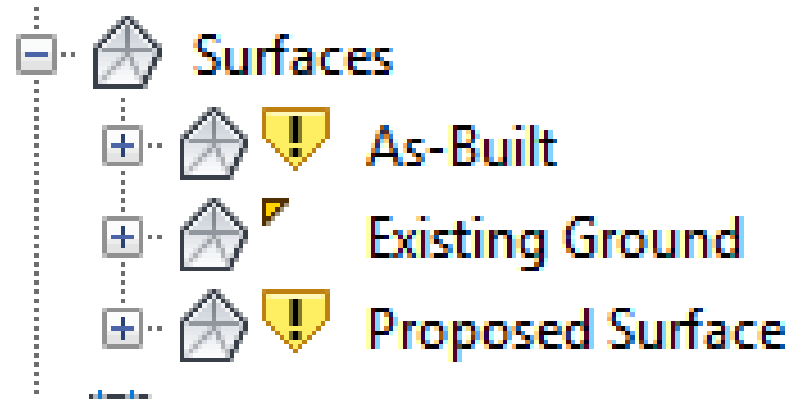
You can also make edits to alignments using grips, or the commands on the Alignment Layout Tools toolbar, while automatically maintaining tangency between the alignment components

You create alignments as a combination of lines, curves, and spirals that are viewed as one object

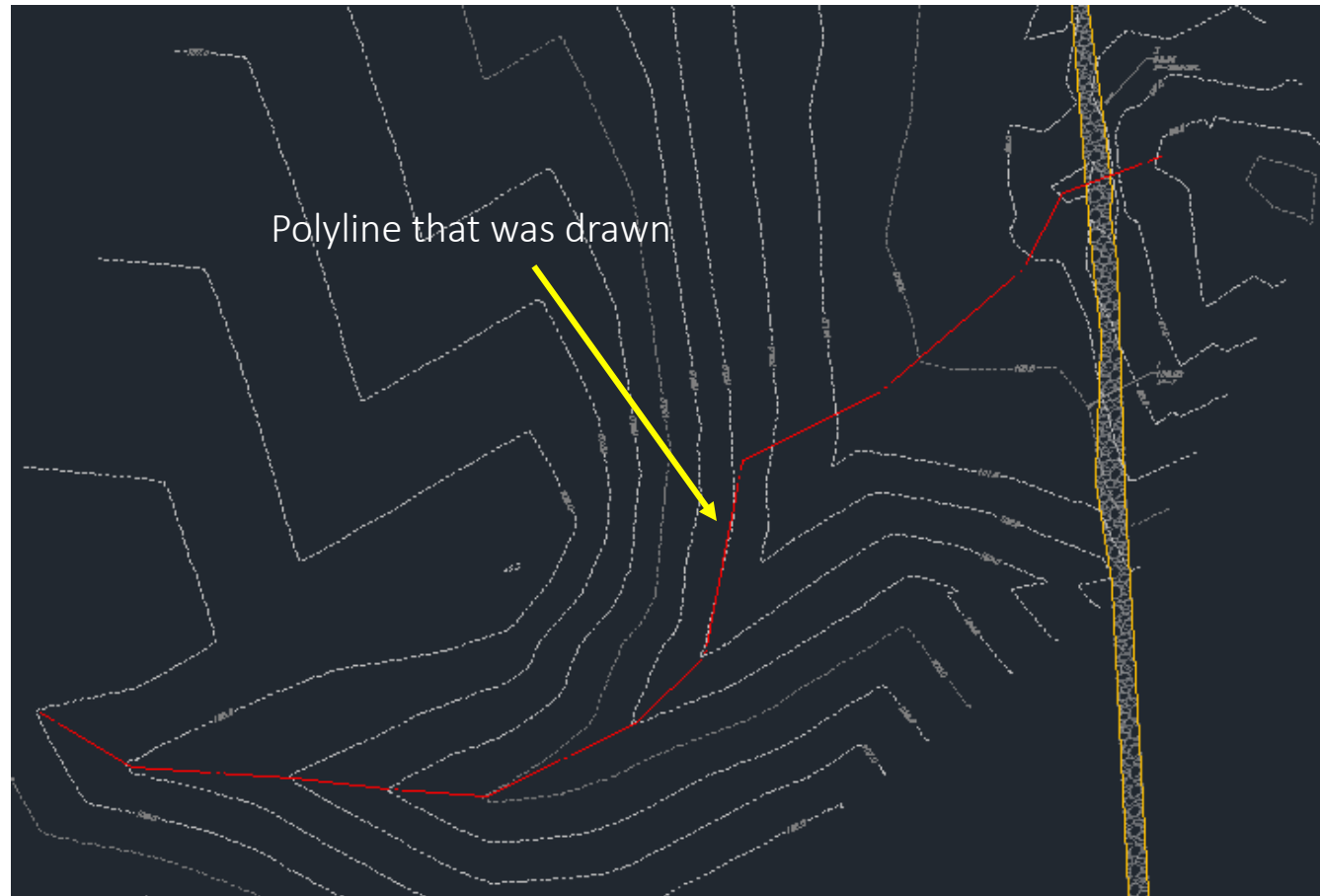
Alignments can be stand-alone objects or the parent object of profiles, sections, and corridors. If you edit an alignment, the changes are automatically reflected in any related objects

## Creating an alignment

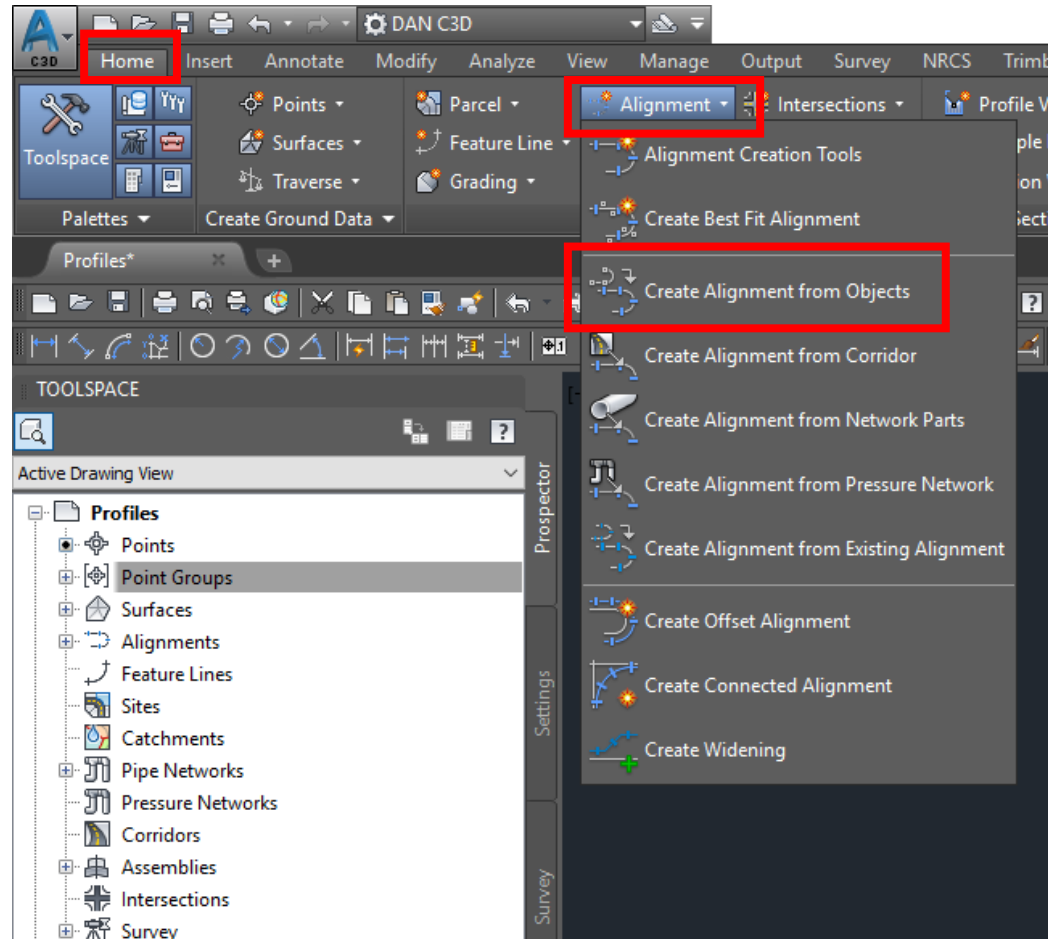
- When you create a surface, its name is displayed in the Surfaces collection in Toolspace on the Prospector tab. From this location, you can perform other operations, such as adding data and editing the surface. When first created, the surface is empty, so it is not visible in the drawing.
- The MD Templates have been setup with 3 Surfaces:
  - Existing Ground – this is the existing ground
  - Proposed – this is the proposed ground
  - As-Built – this is the finished ground
- After data has been added to a surface, it becomes visible in the drawing in accordance with the display settings specified in the referenced surface style
- Once your points have been added to the drawing, you will then see your contours displayed under the “Existing Ground” surface (if you don’t see the surface you might have to update your Point Groups)



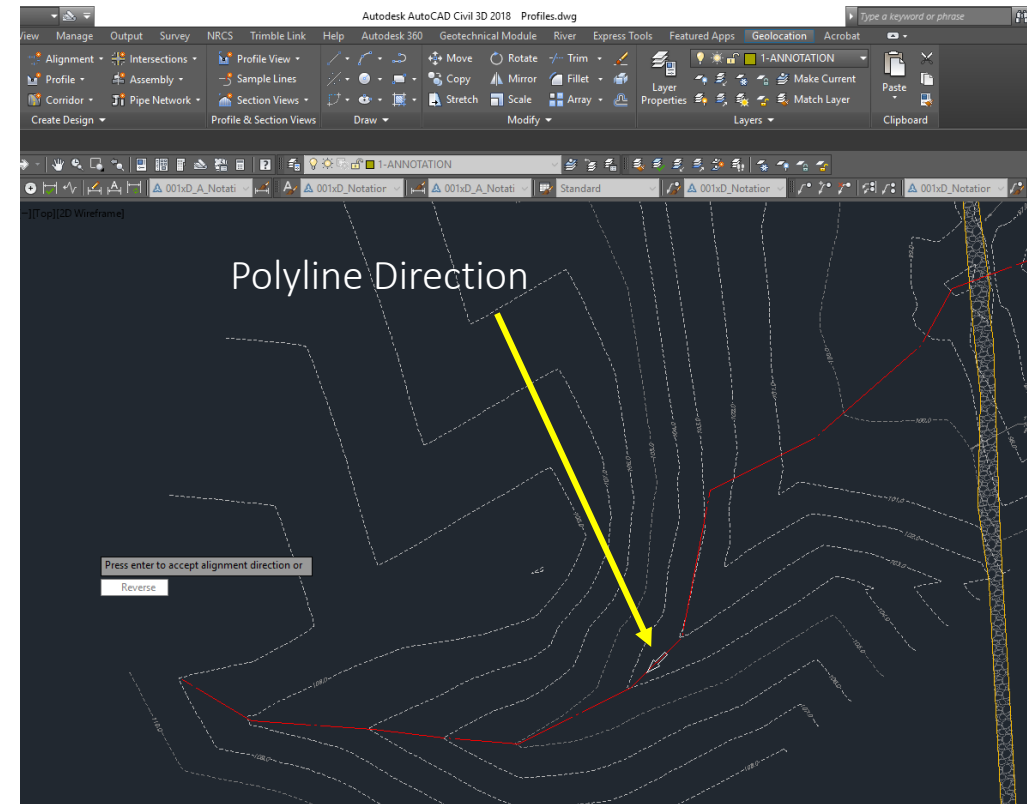
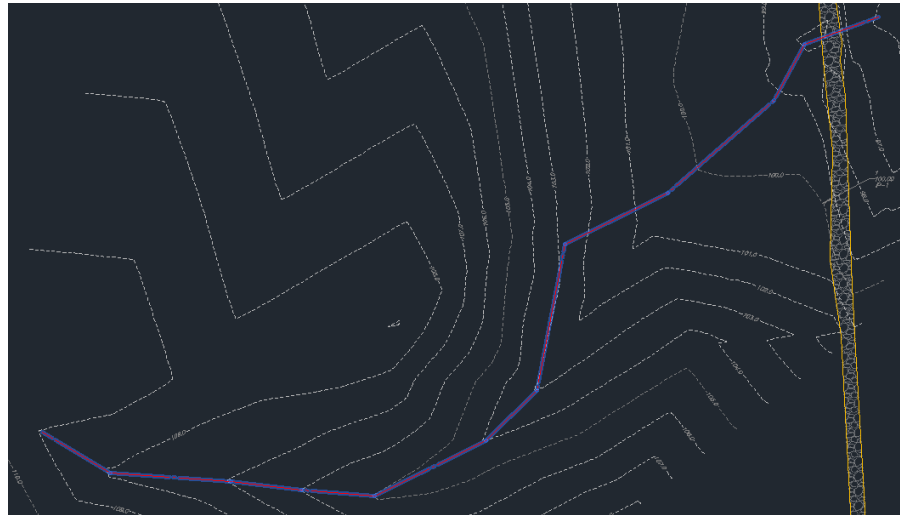
- ▶ Once your surface has been completed, you will now be able to create an alignment.
- ▶ To create an alignment, draw a Polyline (use EX-ALIGNMENT as the layer) that will represent your profile – keep in mind that the direction you draw your polyline will be the direction that your profile will be drawn (it will ask you if you want to reverse the line)



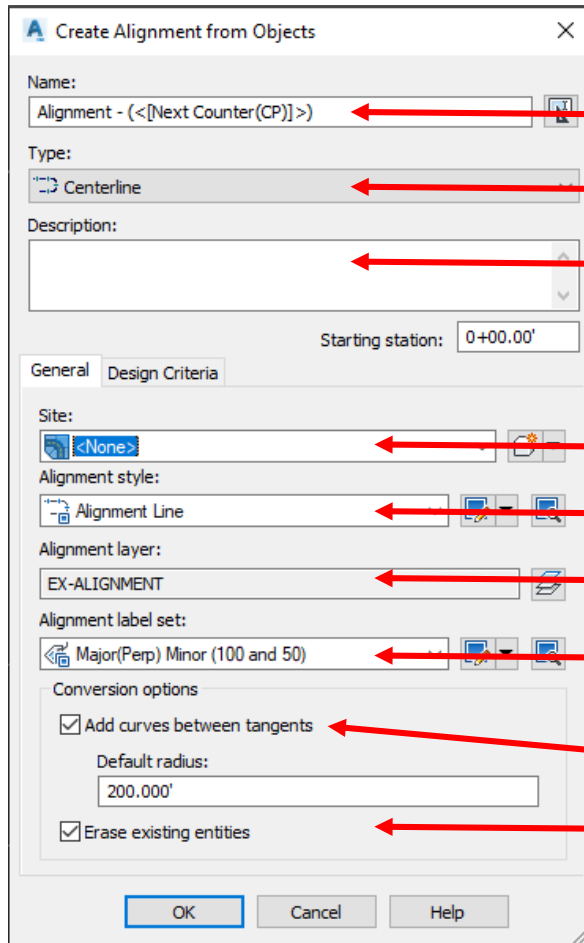
- ▶ Once you have drawn your polyline, you will need to make it an alignment  
Goto Home>Alignment>Create Alignment from Objects



- ▶ Select the polyline that you just created....Enter
- ▶ You will then be prompted to change the direction of the polyline...Enter to accept or R for Reverse



- ▶ The Create Alignment from Objects window will appear



Name your alignment (This will be Title for your profile)

Type is Centerline

Can give it a description if you want to

Site is NONE

Alignment Style = Alignment Line

Alignment Layer = EX-ALIGNMENT

Label Set – This is default and will label 100 and 50ft stations perpendicular to alignment

Uncheck if you don't want curves

Can leave this checked



▶ Click OK

**Create Alignment from Objects** [X]

Name:

Type:

Description:

Starting station:

Alignment style:

Alignment layer:

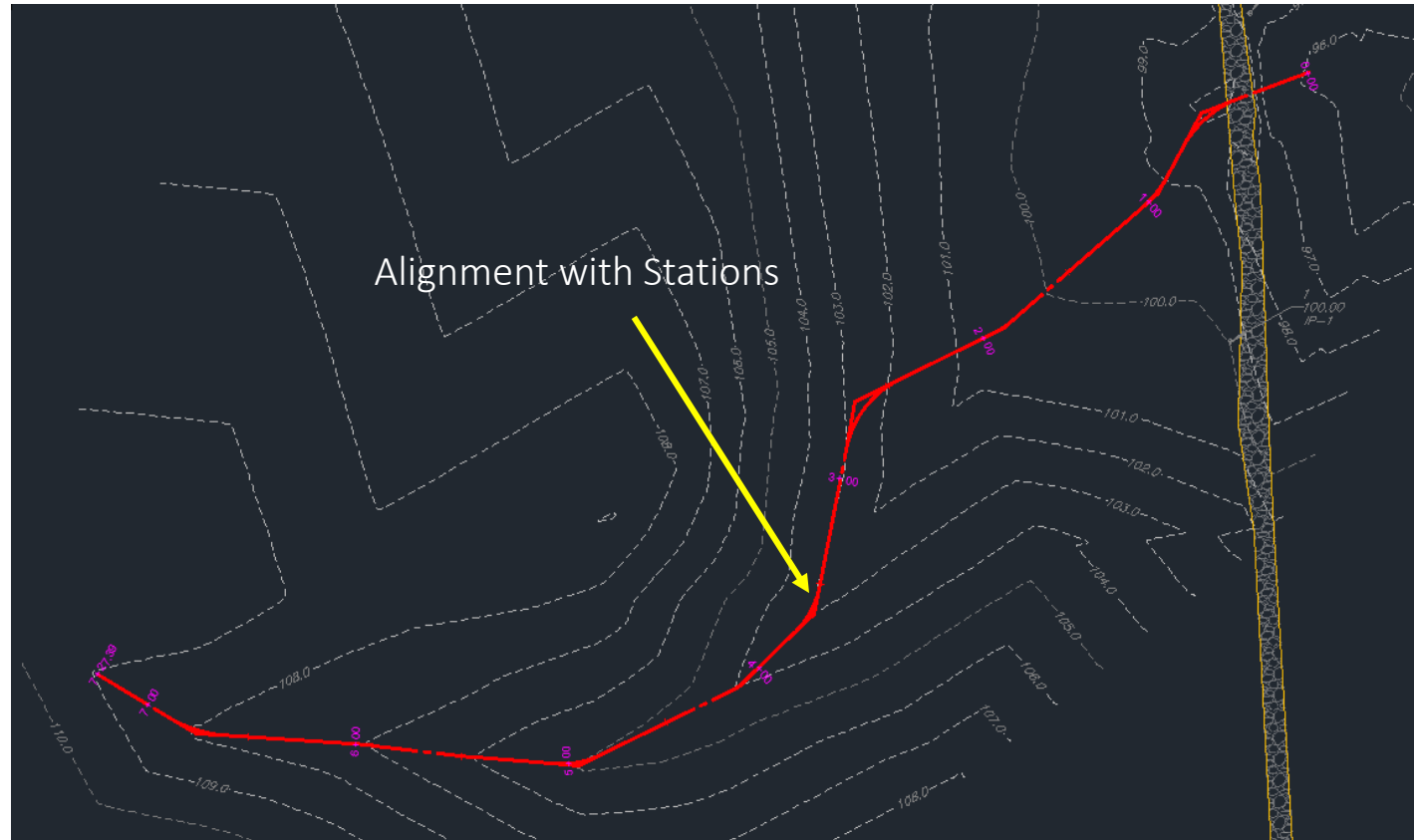
Alignment label set:

Conversion options

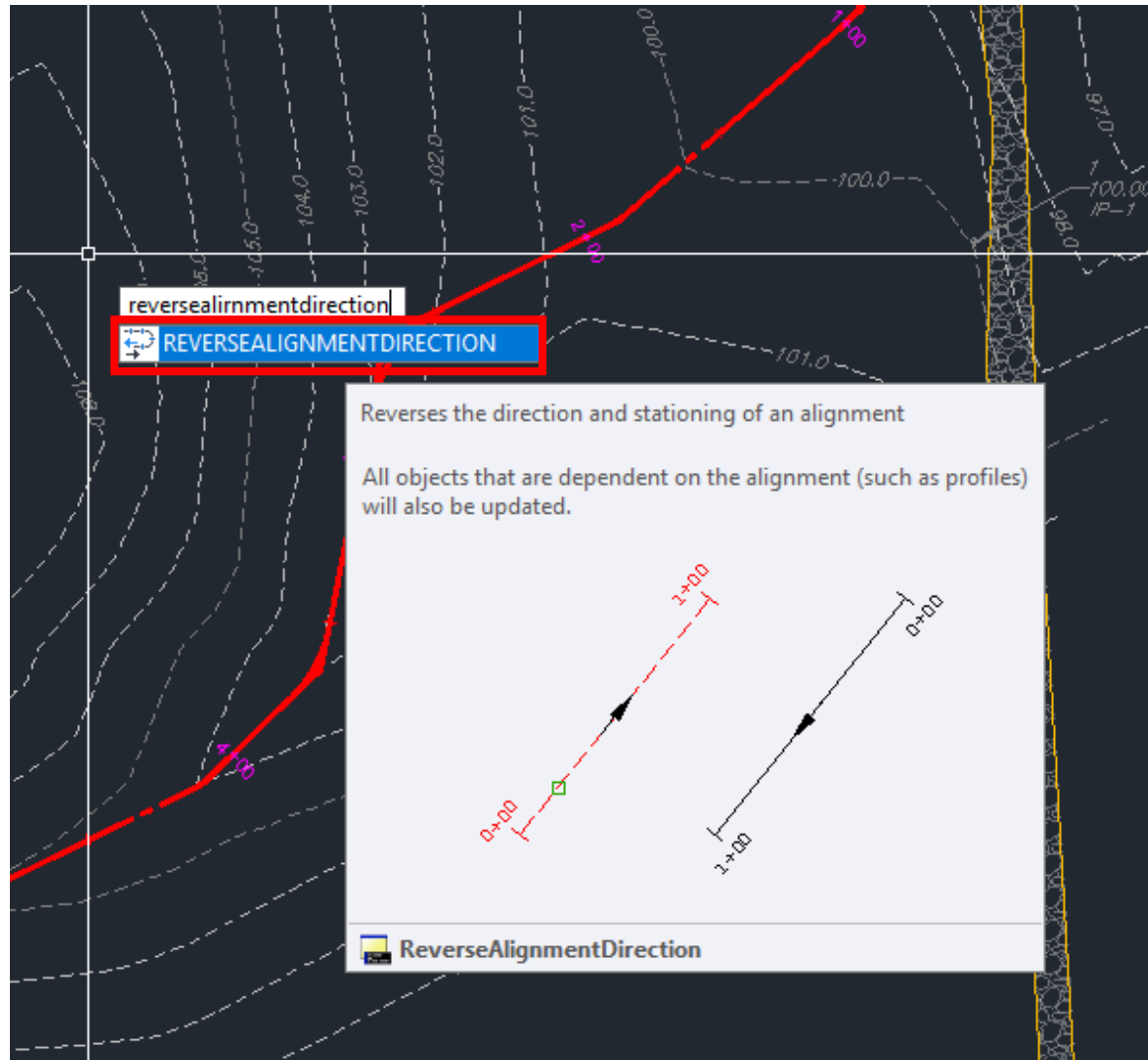
Add curves between tangents

Default radius:

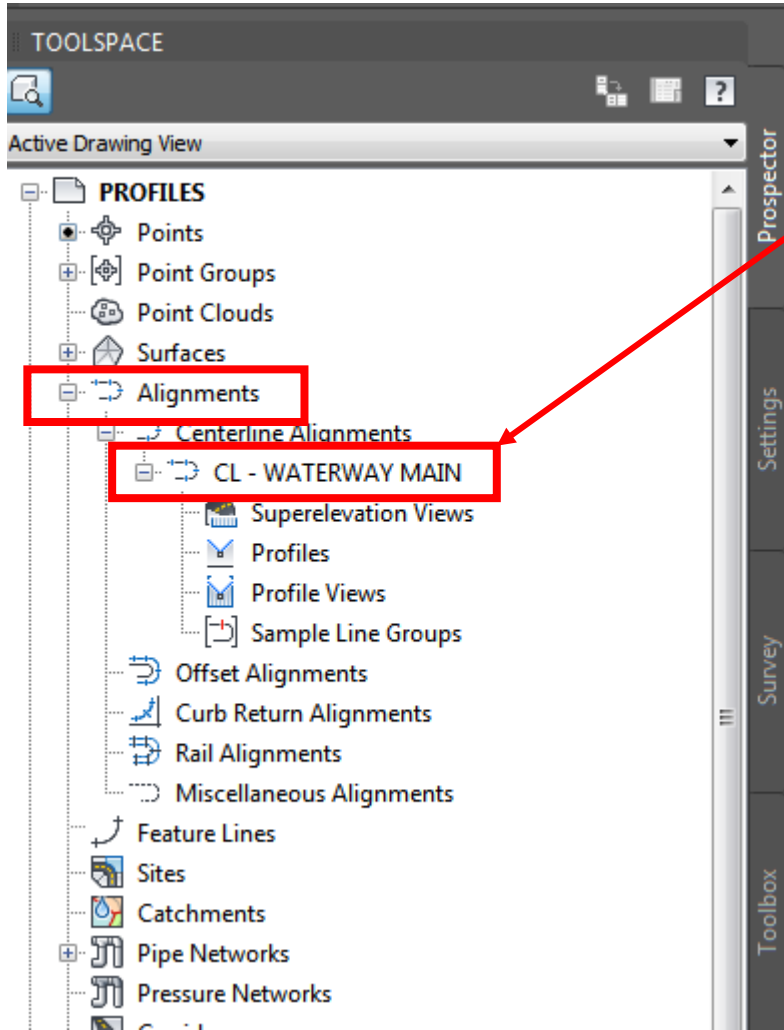
Erase existing entities



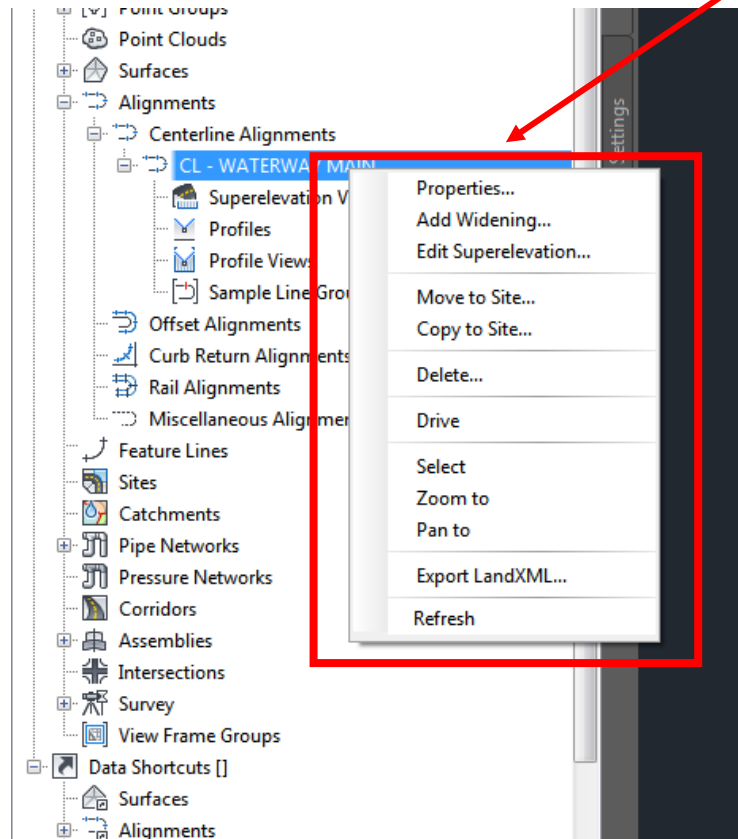
- ▶ If you still need to change the direction of the Alignment, Type in the Command Line....REVERSEALIGNMENTDIRECTION....Select the alignment to reverse



- ▶ You will now see in the **Prospector Tab** of tool space, the Alignment that you created



Alignment that was just made



Right click on Alignment to get more options as shown



Profiles

# Profiles

The main purpose of a profile is to show surface elevations along a horizontal alignment.

Use profiles to visualize the terrain along a route of interest or across a particular region. There are several types of profiles: surface profiles, layout profiles, superimposed profiles, quick profiles, and corridor profiles.

A surface profile—often called an existing ground (EG) profile—is extracted from a surface, showing the changes in elevation along a particular route.

A layout profile, by contrast, is a designed object that shows the proposed elevation changes to be constructed. The layout profile—often called a design profile or finished grade (FG) profile—is typically used for a roadway or other graded site. For a road, the layout profile can include slopes and curves that are designed for safe driving at a particular speed.

# Profiles cont'd

A corridor profile is created from a corridor feature line, such as an edge of pavement. This profile is displayed on the profile view of the baseline alignment from which it is derived.

Layout profiles use two types of curves: crest curves and sag curves. Crest curves are placed on hilltops or wherever the grade changes to a lesser value. There are three types of crest curves: a positive to negative grade transition, positive to positive, and negative to negative:

A superimposed profile is a profile of an alignment superimposed onto profile views of different alignments. These profiles are always dynamic and update when changes are made in the originating profile/alignment.

A quick profile is a temporary object that shows the elevations along any existing line or series of selected points.

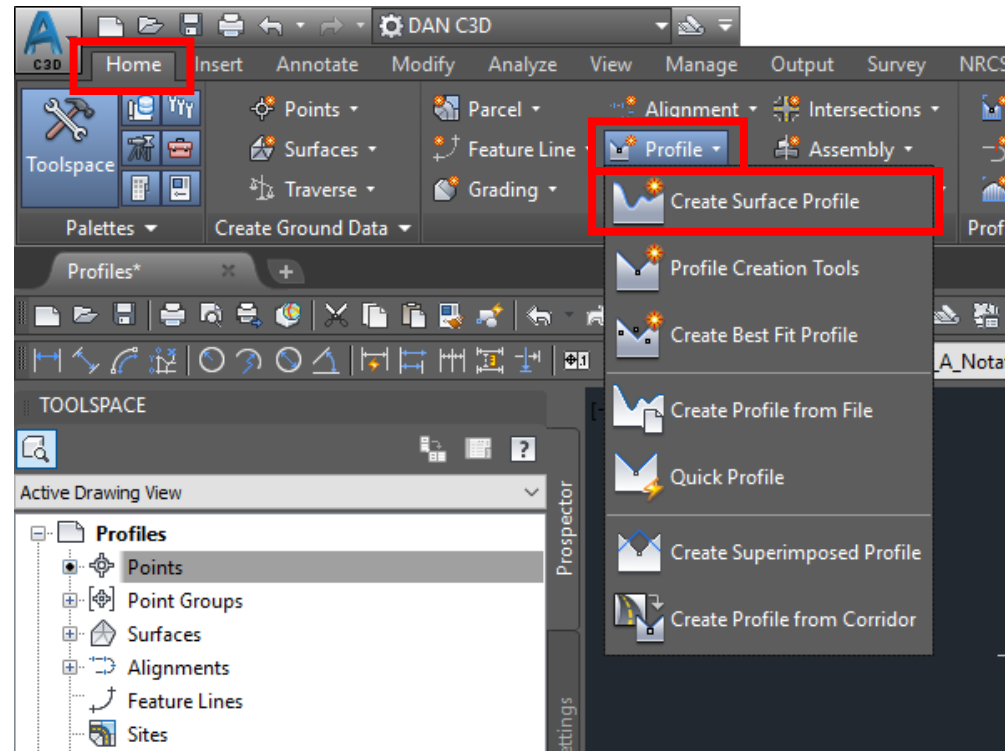
# Profile Object Relationships

- A profile object is the child of a horizontal alignment. The horizontal alignment must exist to define the route of a profile across the terrain. If you edit a horizontal alignment after creating dynamic surface profiles along its length, the profiles automatically change.
- A profile view object is also dependent on a horizontal alignment. The length of the alignment can control the horizontal extents of the profile view grid, and the alignment stationing controls the annotation of horizontal axes. The vertical extents of the profile view have an optional relationship with one of the profiles in the profile view. You can set the vertical extents to a fixed value, but normally they are dynamically linked to one of the profiles. The dynamic link ensures that the profile view always has several grid lines above and below the profiles.
- A profile view can contain projected objects such as points, feature lines, or AutoCAD blocks. These objects exist in plan view and are projected into a profile view so that you can visualize them in relation to a profile.

# To create a Profile from your Alignment

- ▶ Once you have your Alignment(s) created, you can now view them as a profile

Goto..Home>PROFILE>Create Surface Profile

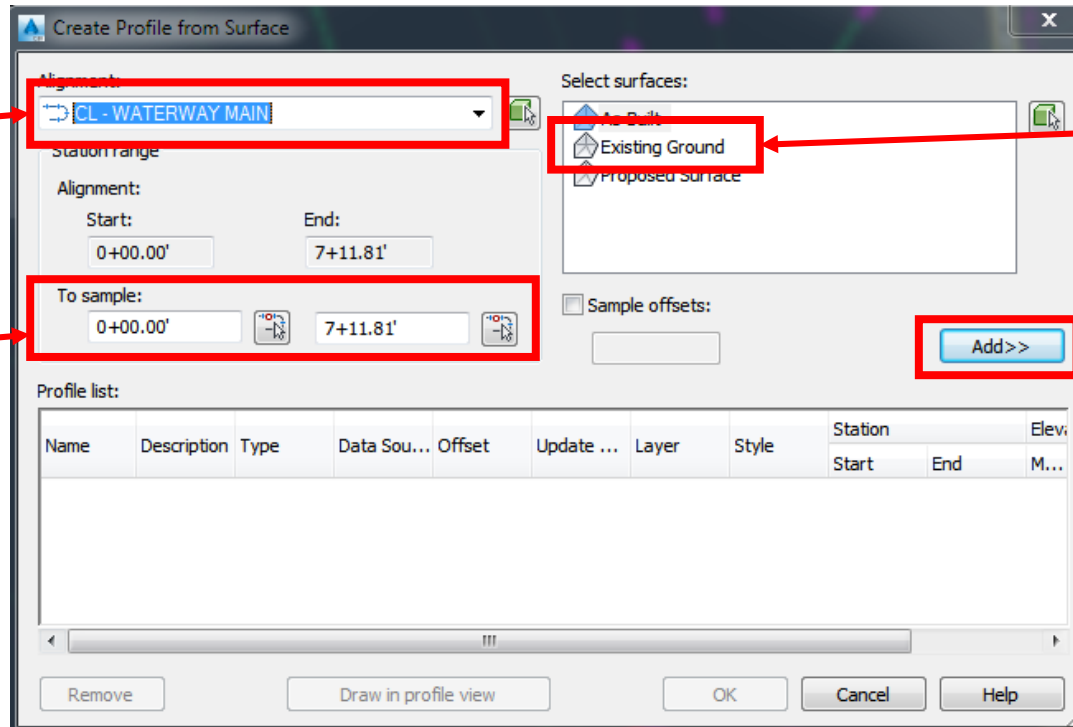




# To create a Profile from your Alignment

- ▶ Once you have your Alignment(s) created, you can now view them as a profile

Goto..Home>PROFILE>Create Surface Profile

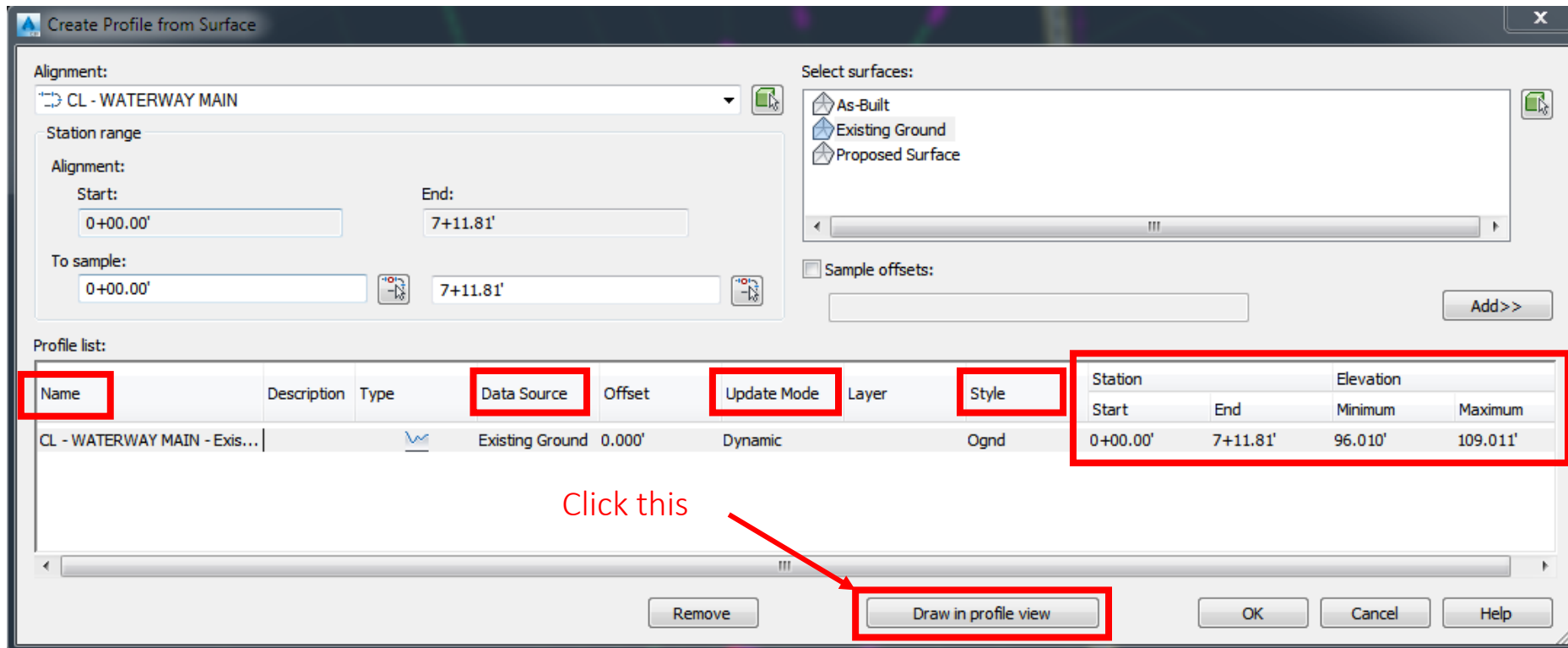


Select your alignment you want to profile

Shows the total length this can be adjusted as needed

Select the surface that you want to make the profile from, if you have multiple surfaces you can place them on the same profile

Click ADD



**NAME:** This is the alignment name

**DATA SOURCE:** The surface where the profile is generated from

**UPDATE MODE:** Dynamic or Static....Leave this at Dynamic and the profile will adjust as you move the alignment in your model space

**STYLE:** Default is Ognd (Original Ground)...you can click this to change the style you want the profile line to be displayed as. If it's for a proposed profile line you might want to use FG (Future Ground) as the style.

**STATION/ELEVATION:** This describes the total length of the alignment and the minimum and maximum elevations. If you see that the elevations are at 0, then you have not selected the correct surface.

## Create Profile View – General

### Select Alignment



Specifies the name of the parent horizontal alignment for the profile that appears in the profile view. Select a name from the list or click to pick an alignment from the drawing.

### Profile View Name

Specifies an editable, system-generated name. The name must remain unique within the drawing.

### Description

Specifies an optional description of the profile.

### Profile View Style

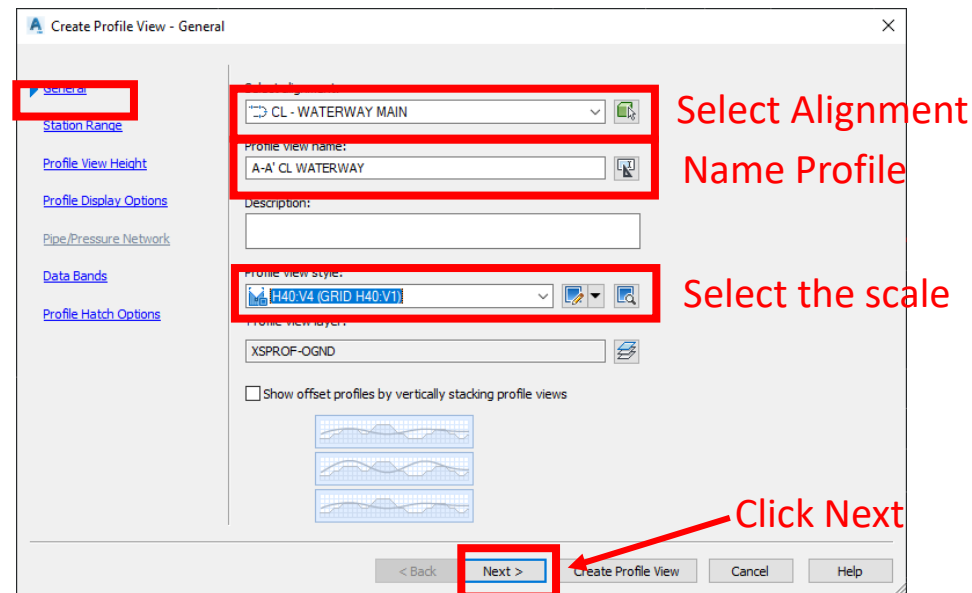
Specifies the style for the profile view. Provides standard controls you use to review or change the style.

### Profile View Layer

Specifies the drawing layer for the profile view.

### Show Offset Profiles By Vertically Stacking Profile Views

Specifies to create stacked profile views. Selecting this option causes the Stacked Profile page to become available.



# Create Profile View – Station Range

## Automatic

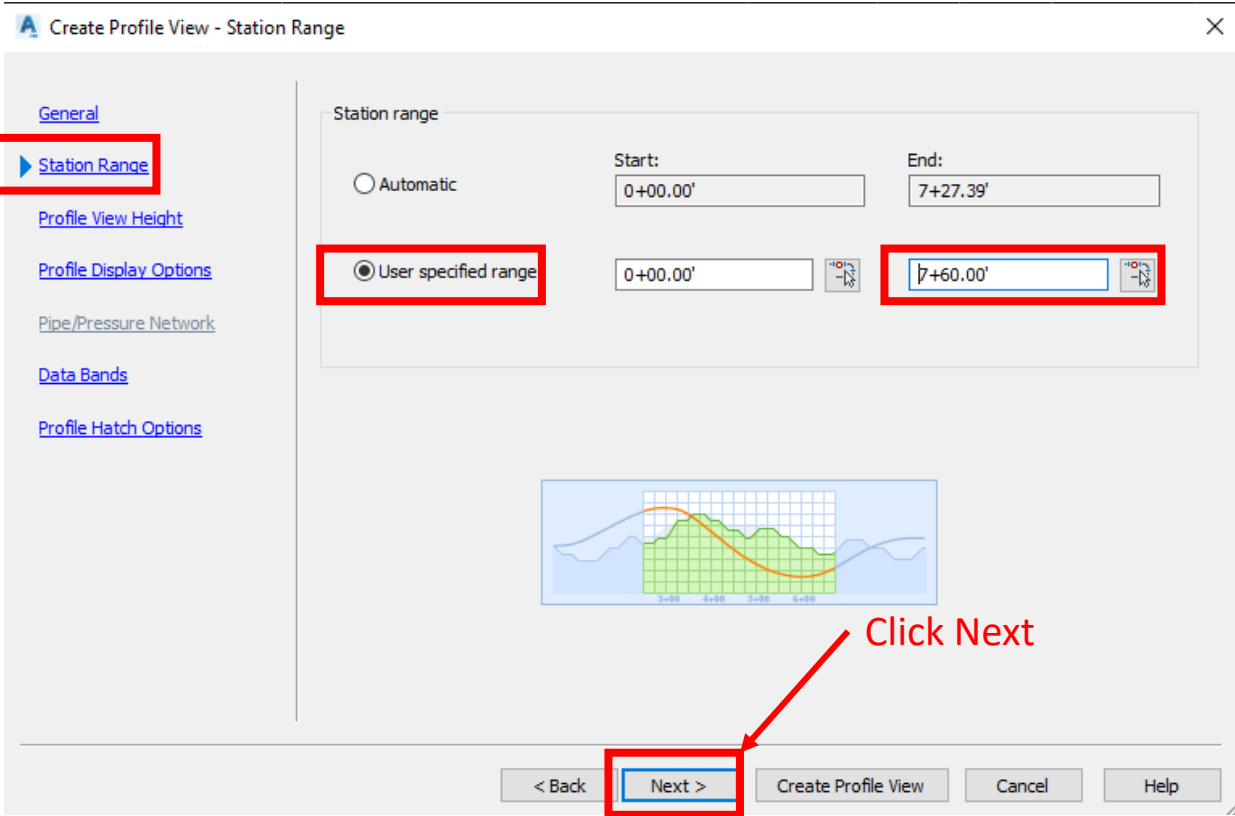
Specifies the full station range for the horizontal alignment.

## User Specified Range

Limits the station range in the profile view. Either enter numeric station values in the Start and End fields, or click to select the range on the alignment in the drawing.

## Length of Each View

Specifies a length for each profile view segment in a multiple profile view.



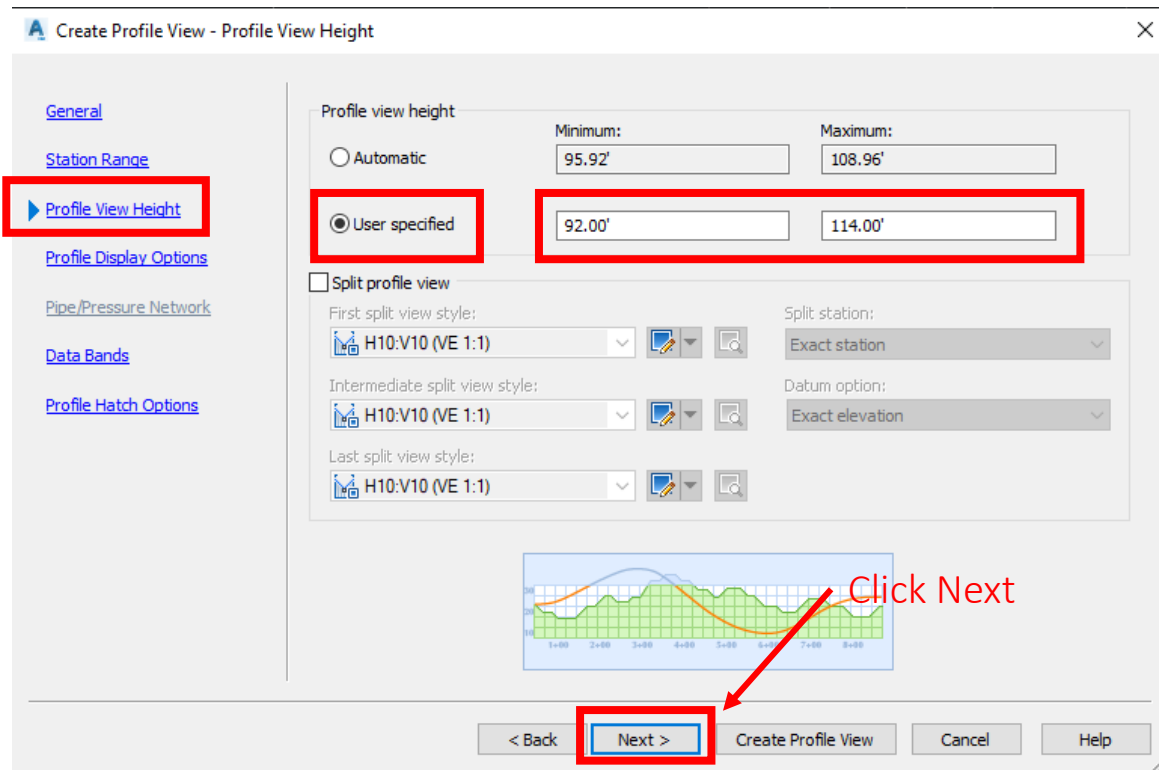
## Create Profile View – Profile View Height

### Automatic

The full height of the highest profile. Includes a buffer region above the maximum and below the minimum Elevations.

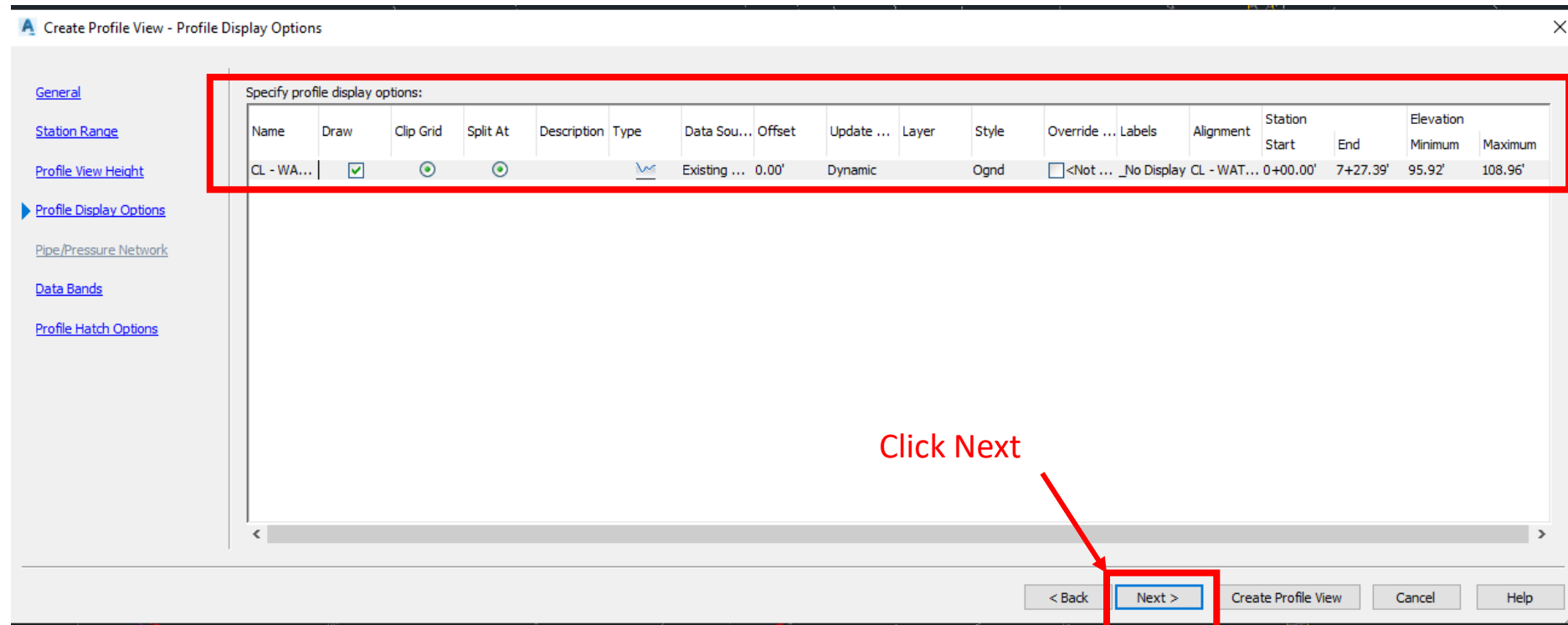
### User Specified

Specifies the height to which the profile view is drawn. If a profile extends beyond the user-specified value, it is either split according to the Split Profile View settings or clipped.



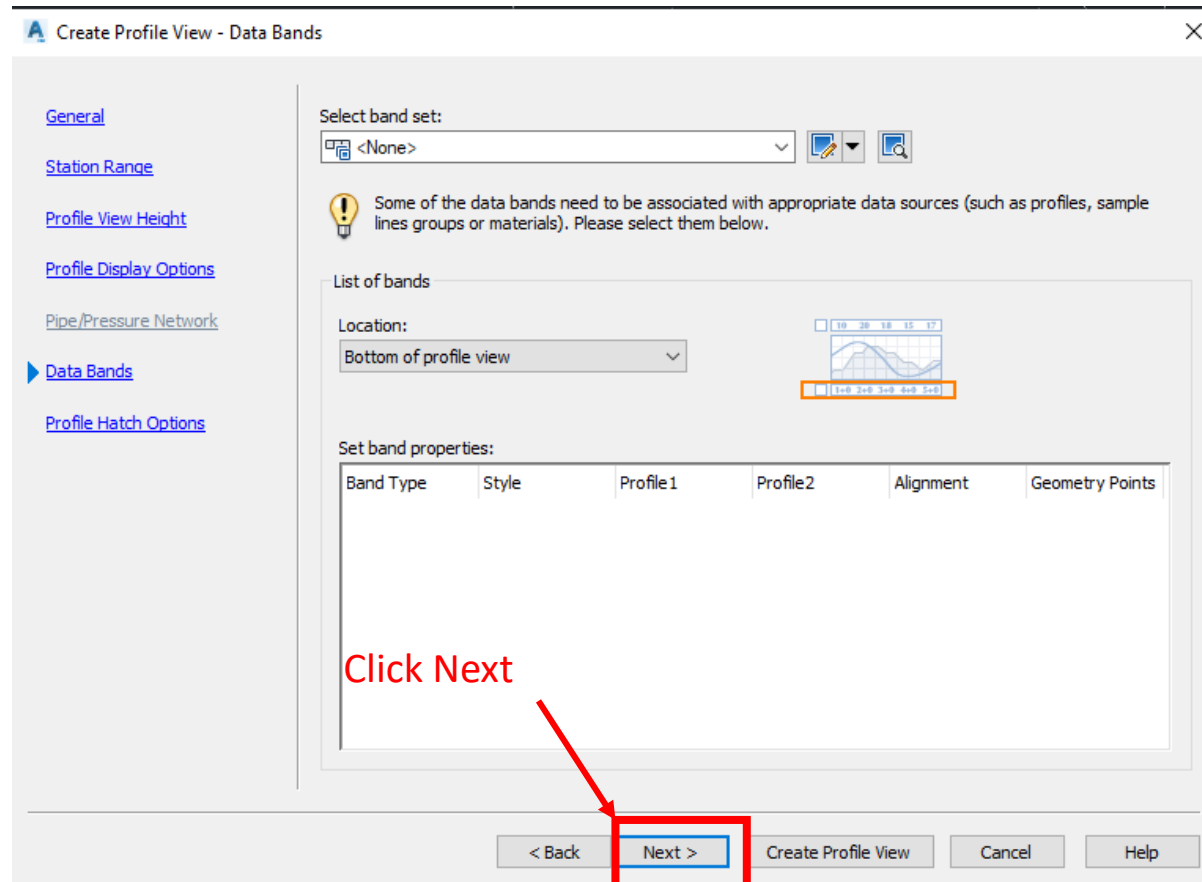
## Create Profile View – Profile Display Options

This will give you a summary of what your profile will look like based off of the inputs you set.



## Create Profile View – Data Bands

Data bands can show you additional information on the profile.  
(We will go over these in another training)



## Create Profile View – Profile Hatch Options

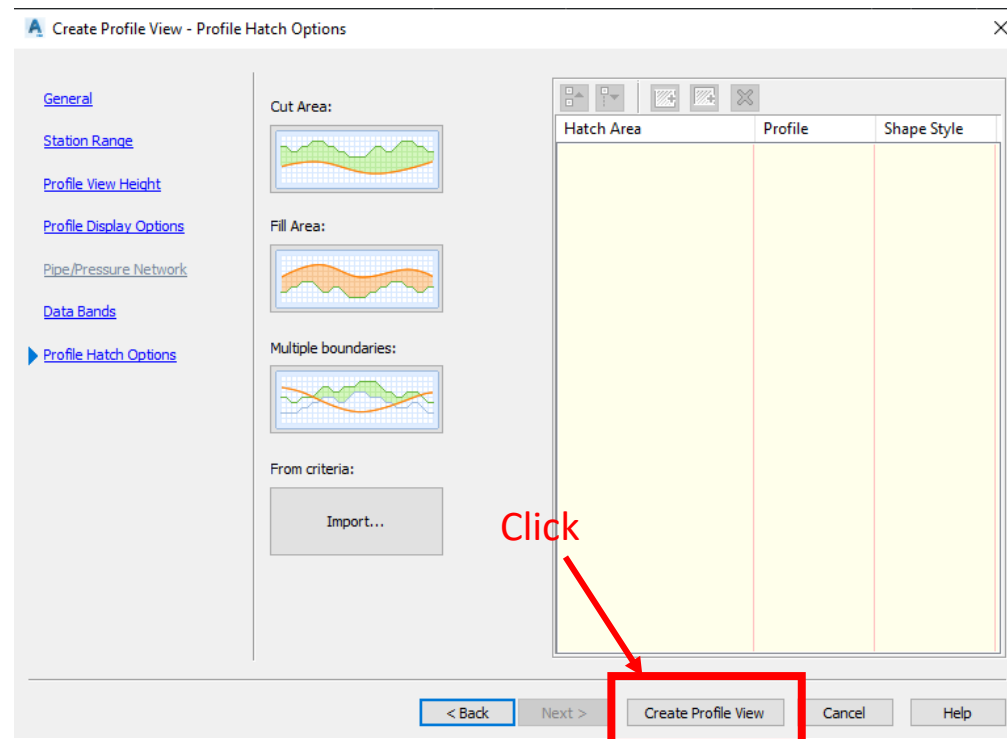
Use this to add hatch areas to show cut and fill regions in a profile view.

**Cut Area** - Click to add hatching to the profile view in areas where terrain must be cut to create the design profile.

**Fill Area** - Click to add hatching to the profile view in areas where terrain must be filled to create the design profile.

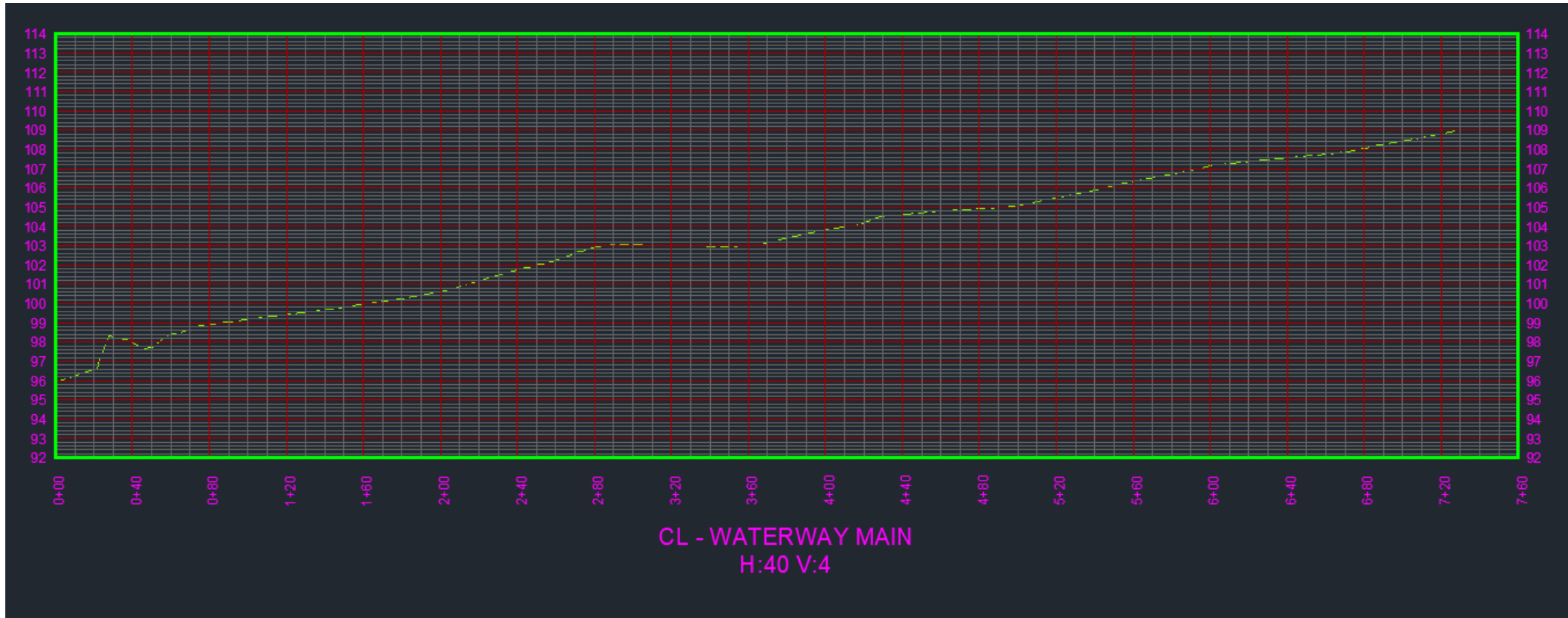
**Multiple Boundaries** - Click to add hatching to the profile view in areas where multiple boundaries are used to define a hatch region.

**From Criteria** - Click to add hatching to the profile view in areas where quantity takeoff criteria are used to define a hatch region



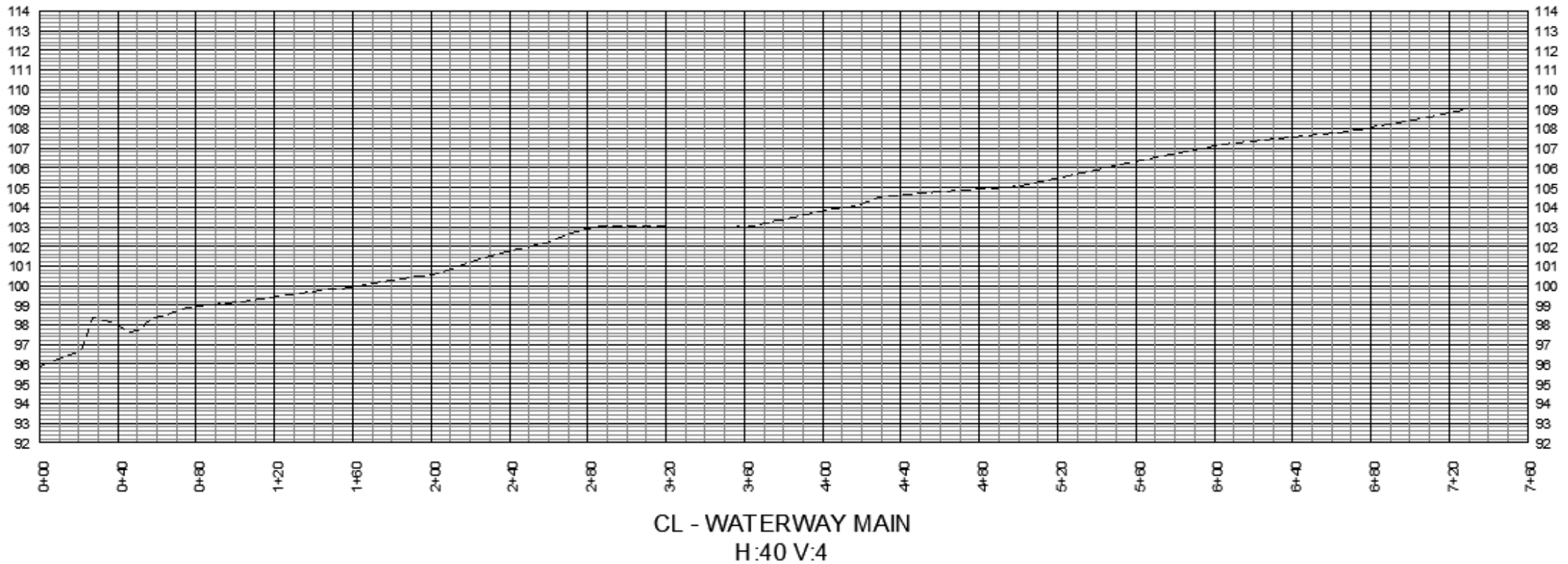


# Completed Profile in Model Space



- ▶ As the user, you can change the Grid Style.

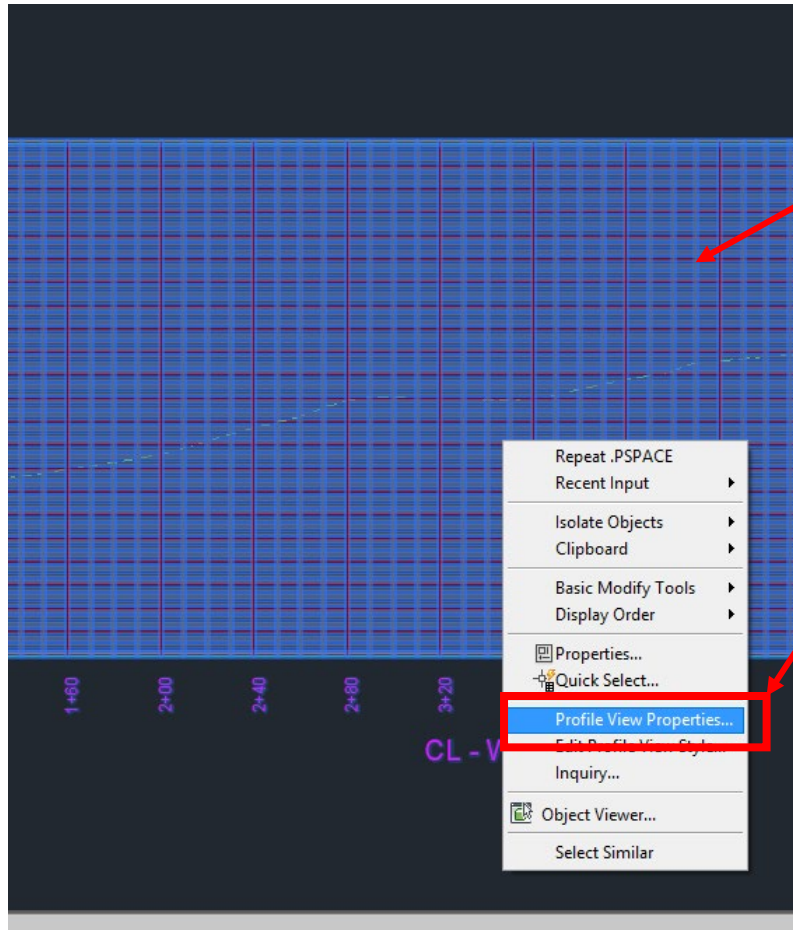
# Completed Profile with plot styles applied



# Profile Styles

# Profile Styles

- ▶ Once you have your Profile completed, you can adjust the properties

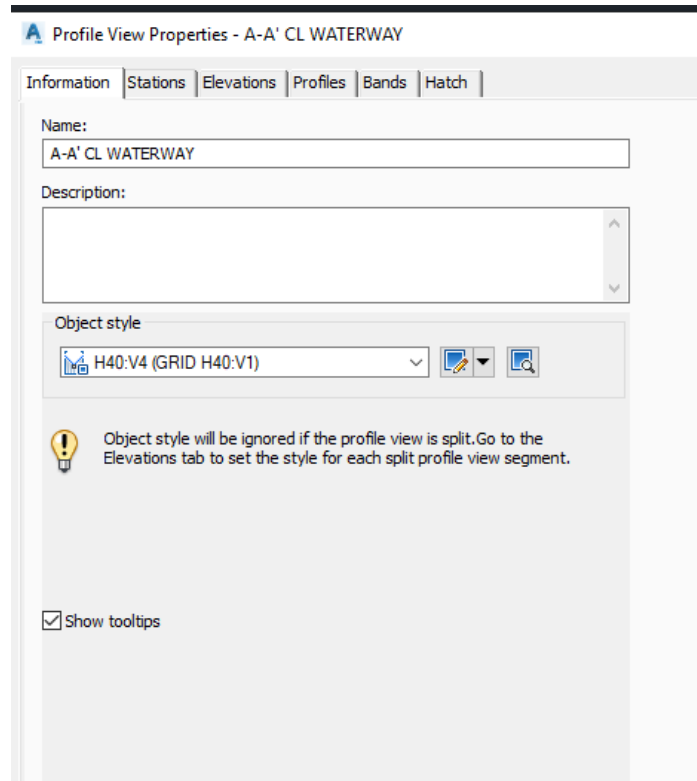


Select the Profile and then RIGHT Click to access menu

Select PROFILE VIEW PROPERTIES

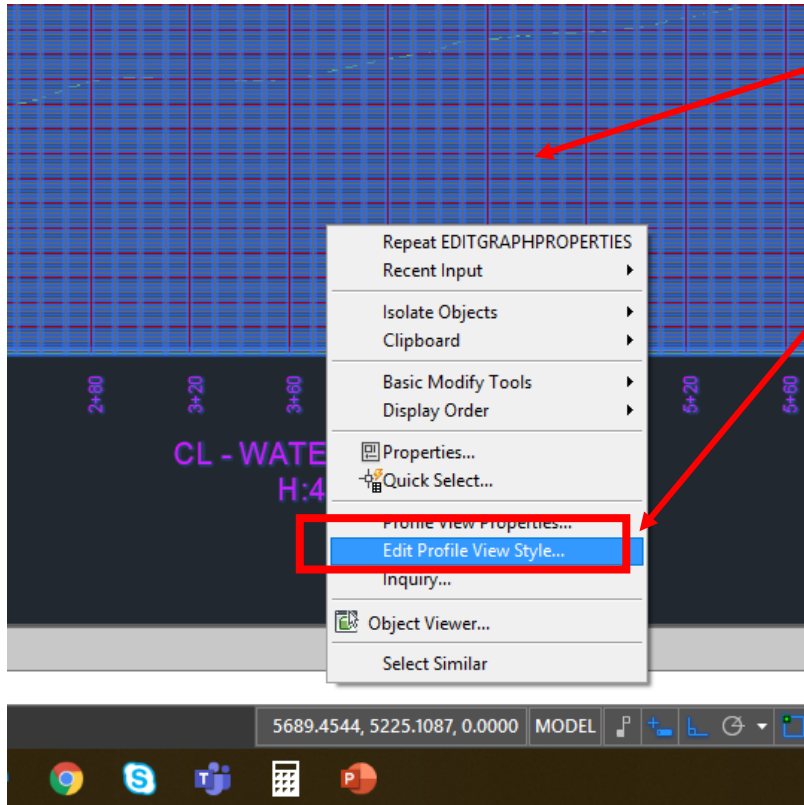
# Profile View Properties

- ▶ This shows you the same properties as when you created the Profile



# EDIT PROFILE VIEW STYLE

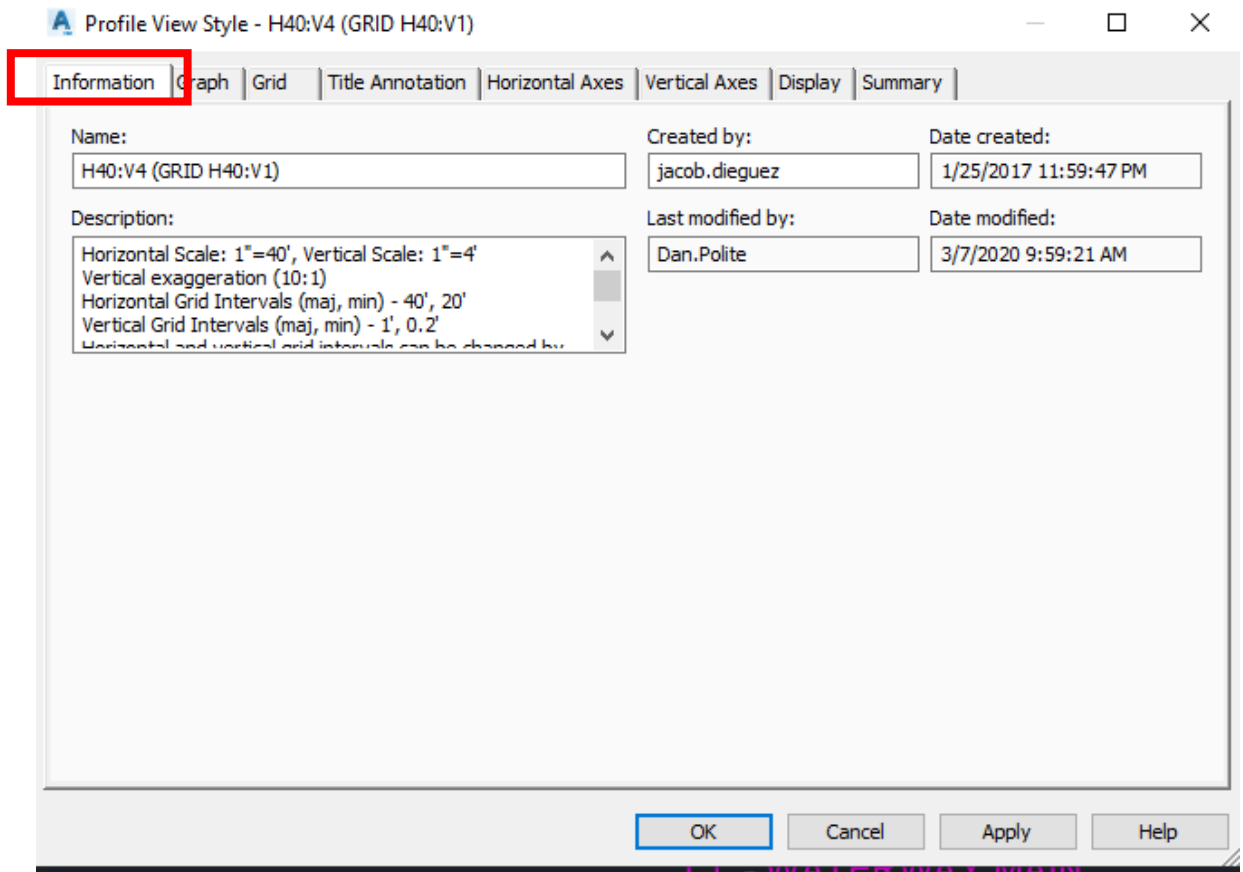
- ▶ This will allow you to change grid, horizontal and vertical spacing for stations and elevations



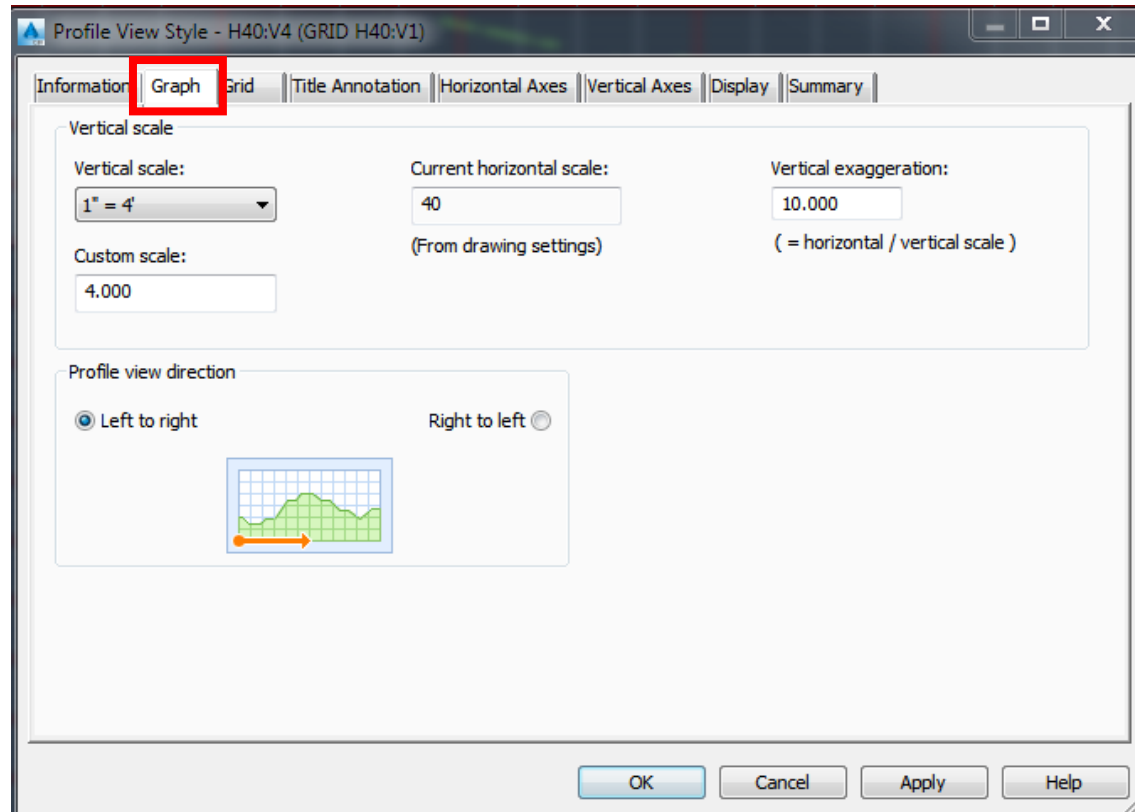
Select the Profile and then RIGHT Click to access menu

Select EDIT PROFILE VIEW STYLE

INFORMATION – Tells you general information about the styles of the profile

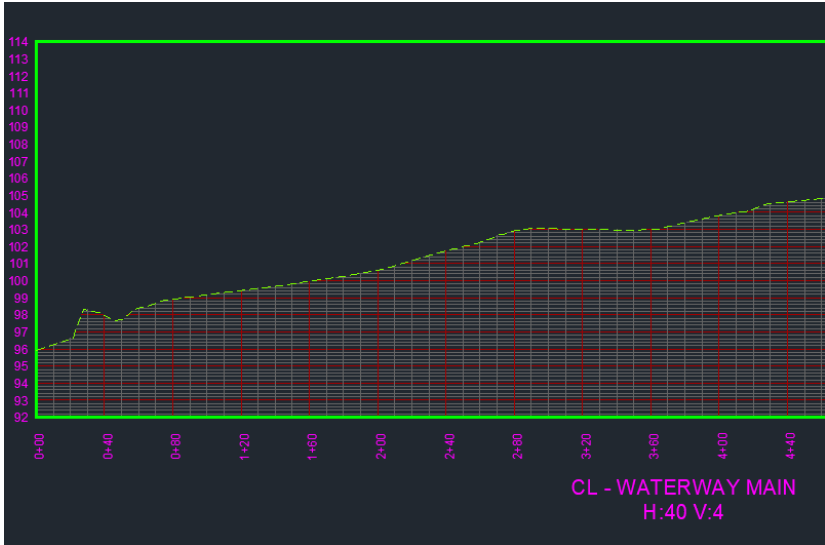
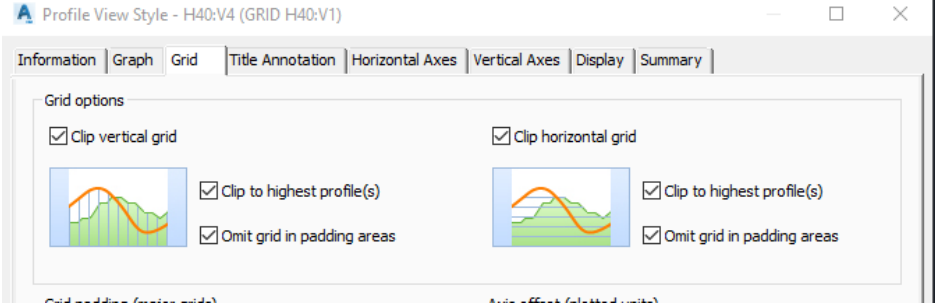
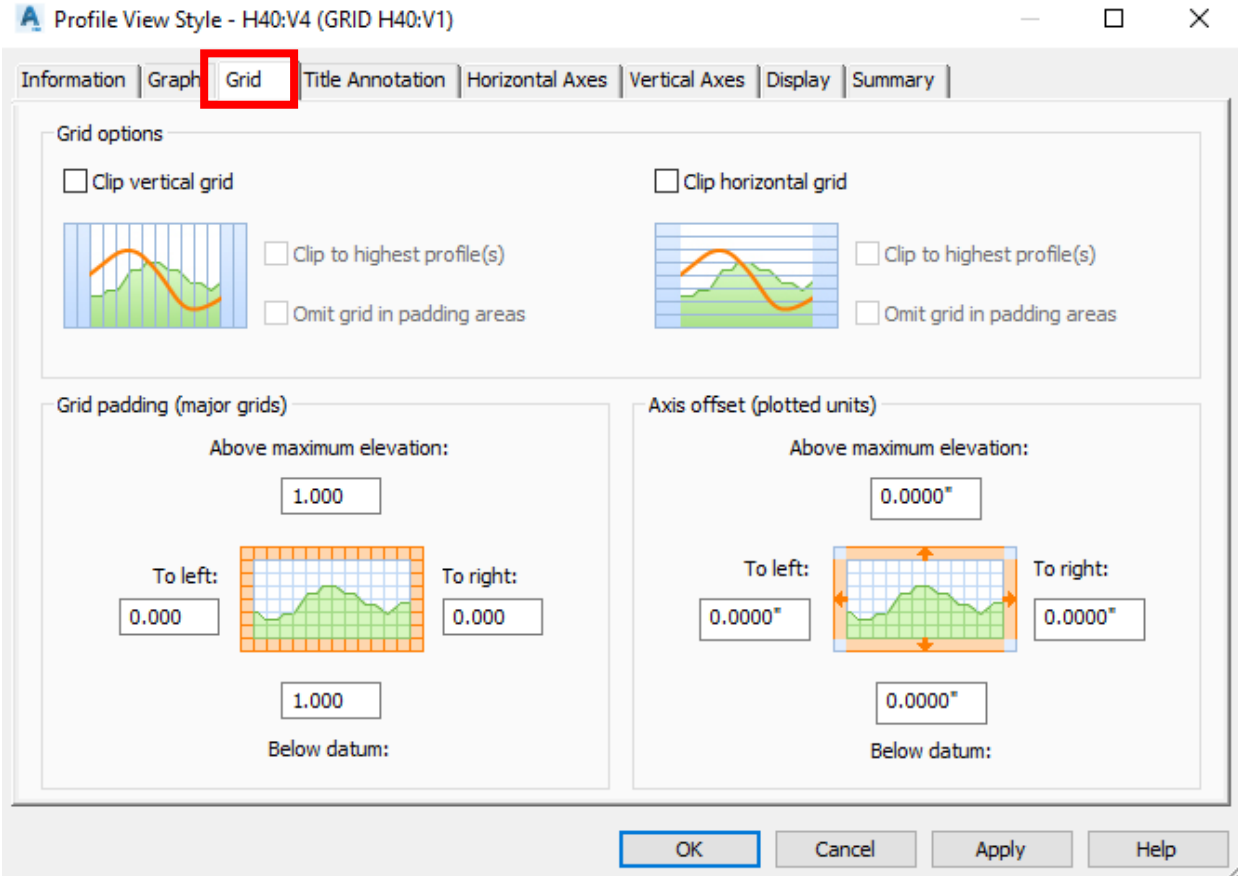


GRAPH – Tells you the Horizontal and Vertical Scale and the vertical exaggeration. This you should not change!





# GRID – This will allow you to Clip the grid to certain profiles



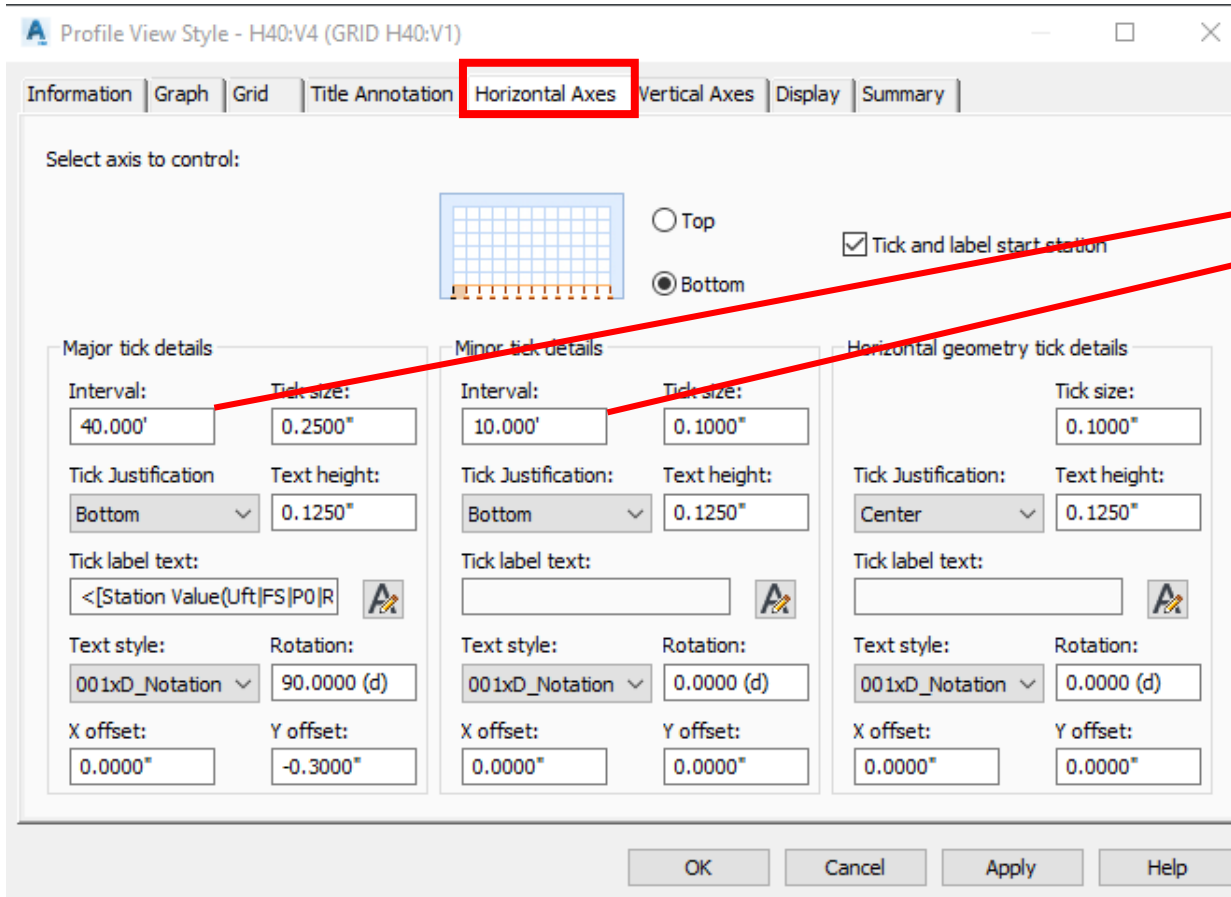
TITLE ANNOTATION – The only thing you should adjust here would be the Title Content...Keep in mind that this will change for ALL the profiles in the drawing

The image shows a software dialog box titled "Profile View Style - H40:V4 (GRID H40:V1)". The "Title Annotation" tab is active. The "Graph view title" section has "Text style" set to "001xD\_Title" and "Text height" set to "0.2190\". The "Title content" field contains the text "<[Parent Alignment(CU)]>H:40 V:4". The "Title position" section has "Location" set to "Bottom" and "Justification" set to "Center". The "Axis title text" section has "Top" selected as the position, "Title text" set to "Station", "Location" set to "Center", and "Rotation" set to "0.0000 (d)". The "Text style" is "001xD\_Notation(A)" and "Text height" is "0.2500\". The "X offset" is "0.0000\" and "Y offset" is "1.0000\". A red arrow points from the "Title content" field to a black box on the right containing the text "CL - WATERWAY MAIN H:40 V:4".

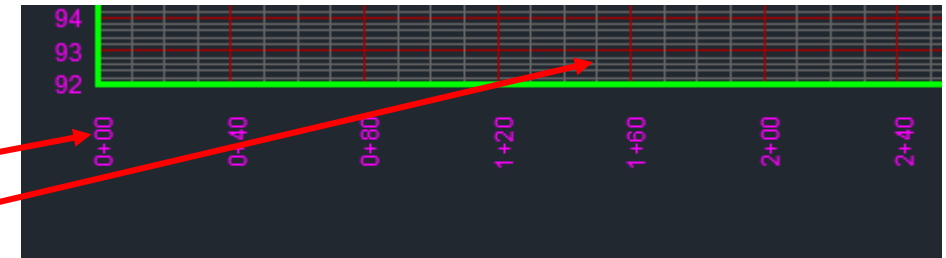
Template Setting

CL - WATERWAY MAIN  
H:40 V:4

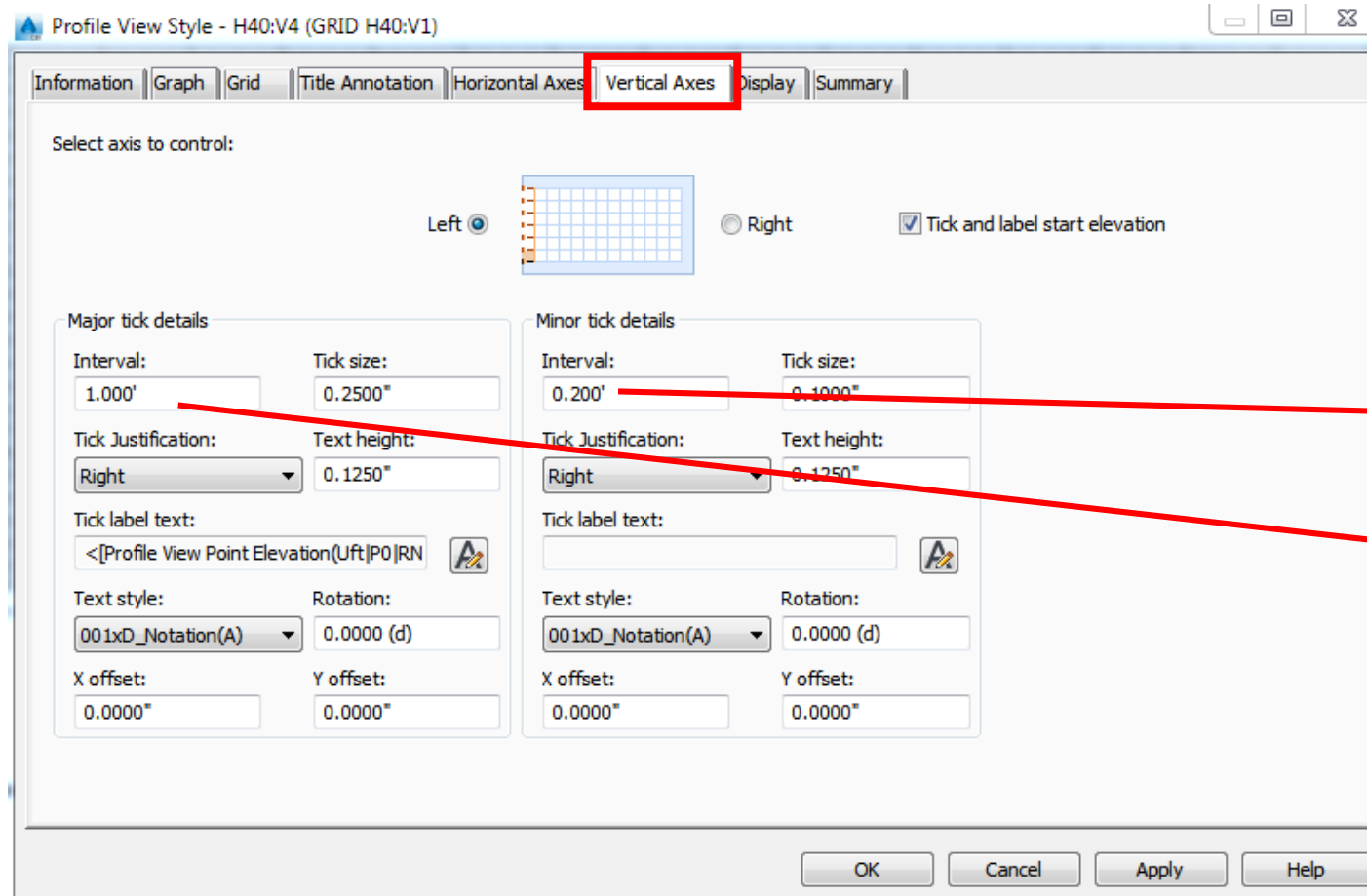
HORIZONTAL AXIS – This is where you can adjust the Intervals of Major and Minor grid lines and text intervals



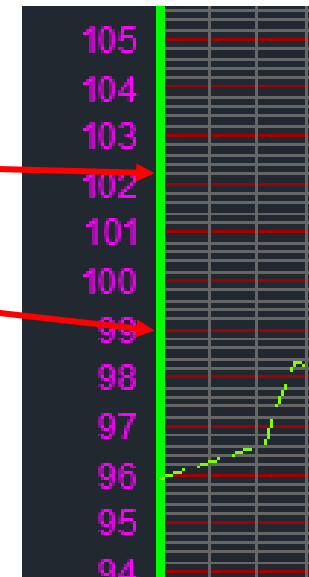
Template Settings



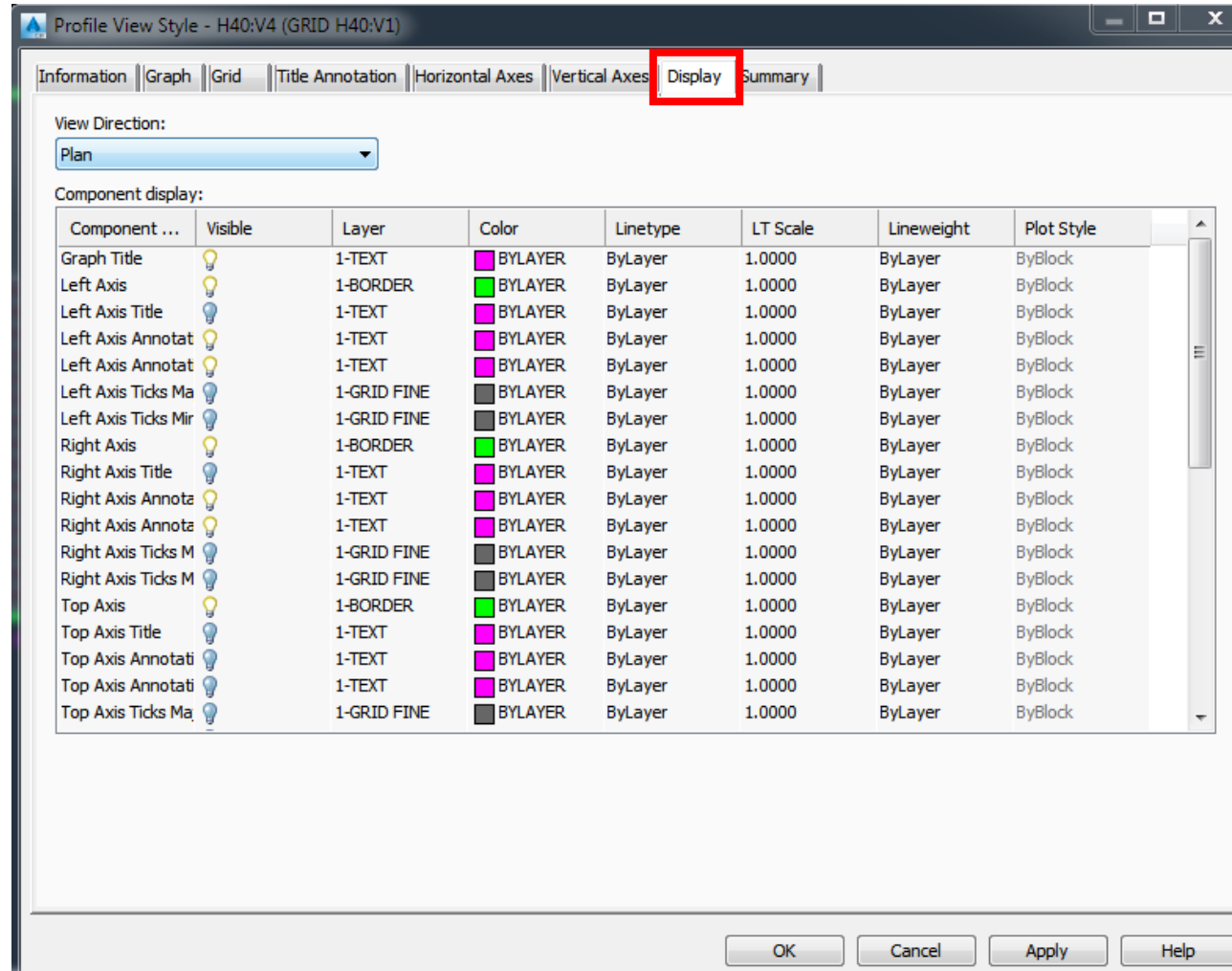
VERTICAL AXIS – This is where you can adjust the Intervals of Major and Minor grid lines and text intervals



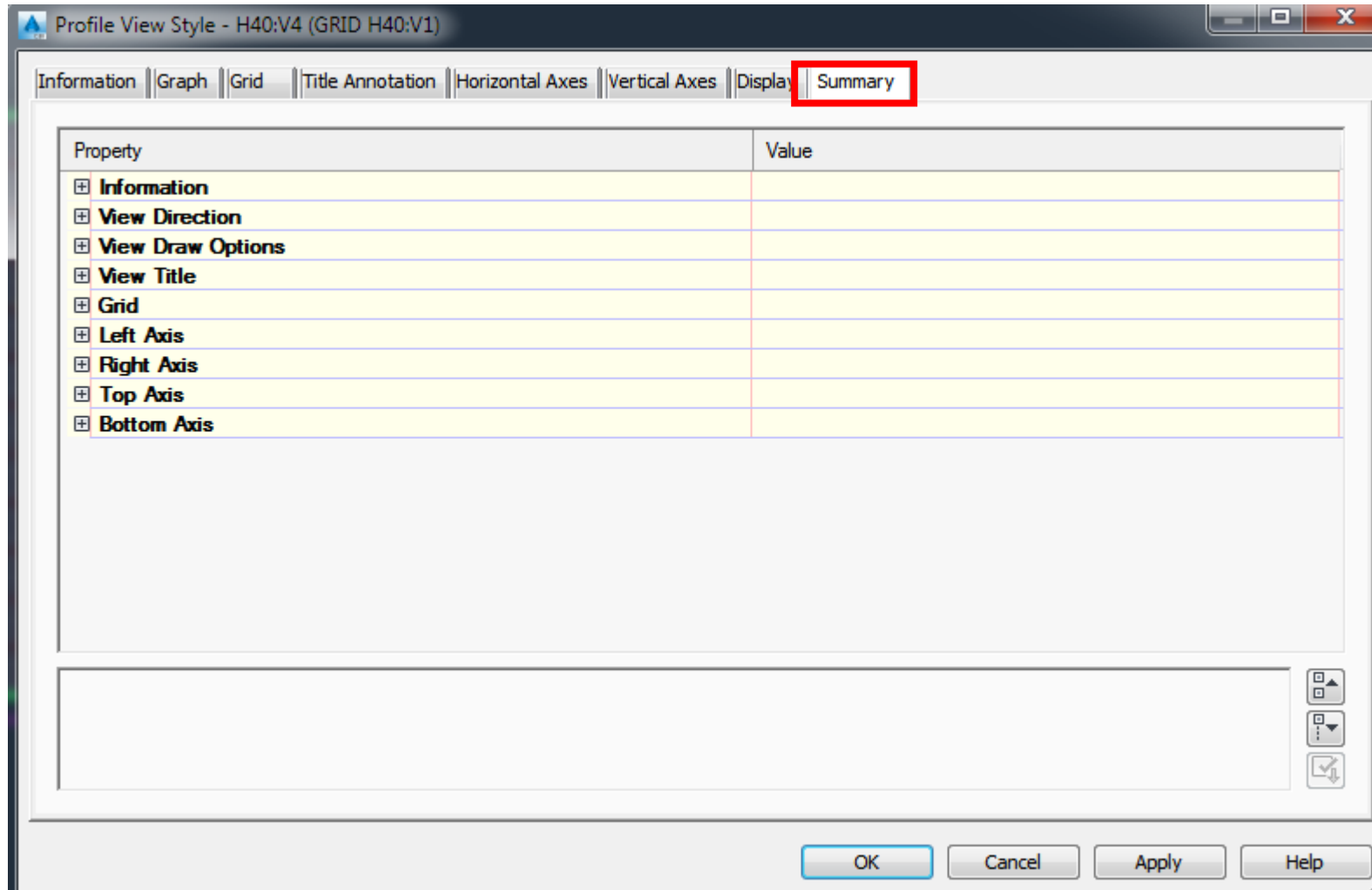
Template Settings



DISPLAY – This is where you can turn on and off certain layers that will change your profile



SUMMARY – Gives you a summary of all the settings for your PROFILE VIEW STYLES



PROSPECTOR– You will be able to view all the Alignments, Profiles, and Profile Views that you create. There are additional options if you RIGHT CLICK on each one.

The image shows a tree view under the heading "PROFILES". The tree structure is as follows:

- PROFILES
  - Points
  - Point Groups
  - Point Clouds
  - Surfaces
  - Alignments** (highlighted with a red box)
    - Centerline Alignments
      - CL - WATERWAY MAIN** (highlighted with a red box)
        - Superelevation Views
        - Profiles
          - CL - WATERWAY MAIN - Existing Ground** (highlighted with a red box)
        - Profile Views
          - A - A' CL WATERWAY** (highlighted with a red box)
      - Sample Line Groups
    - Offset Alignments
    - Curb Return Alignments
    - Rail Alignments
    - Miscellaneous Alignments
  - Feature Lines
  - Sites

Three red arrows point from text labels to the highlighted items:

- An arrow points from "This is the Alignment that was created" to the "Alignments" folder.
- An arrow points from "This is the Profile that was created" to the "CL - WATERWAY MAIN" folder.
- An arrow points from "This is the Profile View that was created" to the "A - A' CL WATERWAY" folder.

# Profile Labels

- When you create a layout profile, you can automatically label it using label styles you specify in the Create Profile – Draw New dialog box. For other types of profiles, add labels using the Edit Labels command.
- Profile label styles can be configured to mark any of the following standard points along the profile:
  - Major and minor stations of the parent horizontal alignment
  - Horizontal geometry points
  - Grade breaks
  - Lines
  - Sag curves
  - Crest curves
- You can save profile label styles as a profile label set and apply the labels to a profile as a group.



# Profile View Labels

- After creating a profile view, use the **ADD LABELS** dialog box to manually add labels to particular points of interest anywhere on the profile view grid. These labels can be of three types:
  - Station Elevation, showing the station and elevation of a point.
  - Depth, showing the elevation difference between two points, and other data such as slope and distance.
  - Projection, showing the station and elevation of a projected object.
- Create and edit the styles for profile view labels using the Label Style Composer.
- If a profile view contains projected objects, label styles for these objects are managed as feature settings for the profile view object.

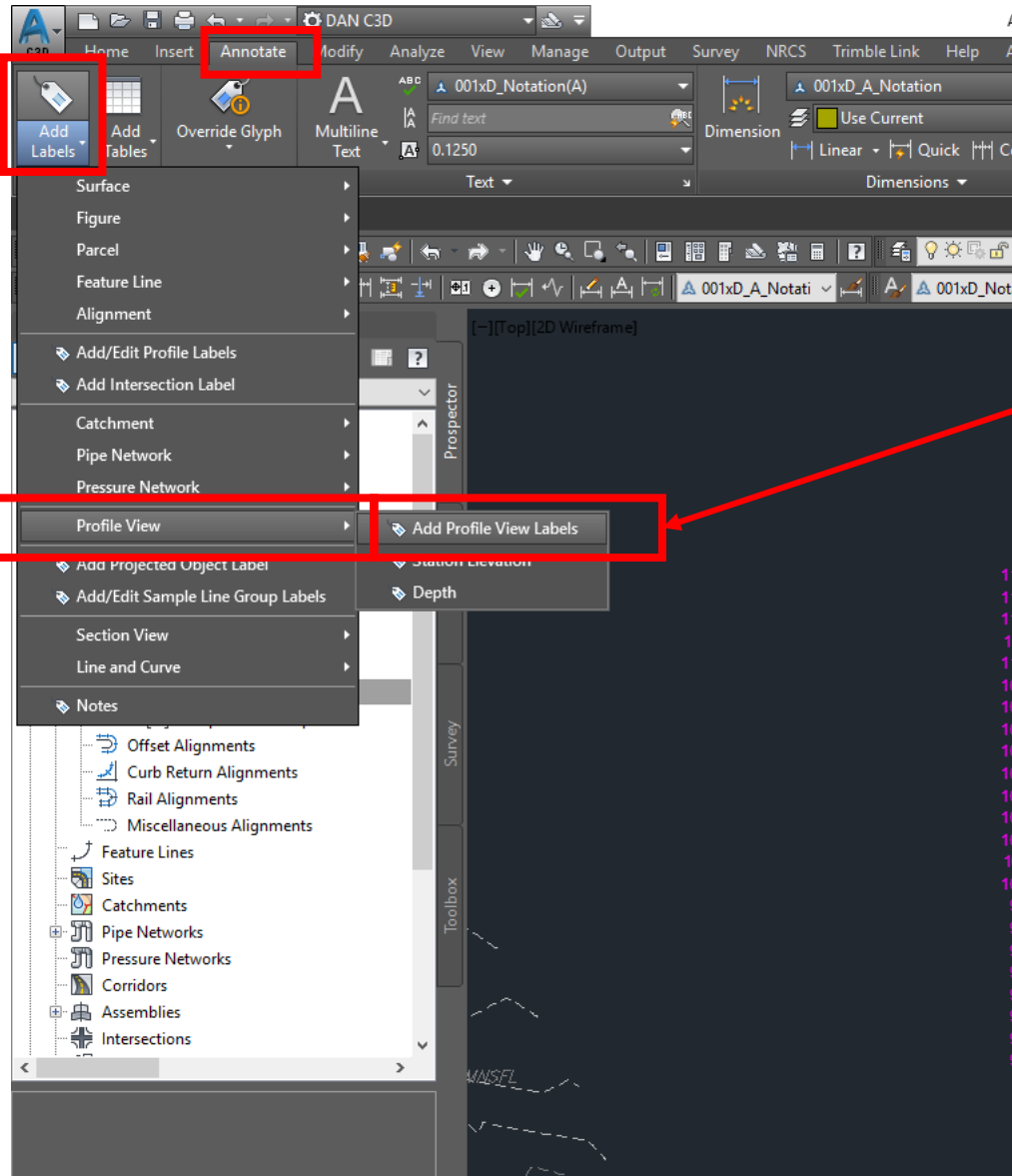
**Tip:** To label points on a feature line projected into a profile view, use Station Elevation or Depth labels.

# Profile View Bands

- Place data bands along the top or bottom of a profile view grid to annotate the various profile lines with station and elevation data, vertical or horizontal geometry points, or superelevation, sectional, or pipe network data. You can also group a set of commonly used data bands into a band set that can be applied to a profile view as a single selection.

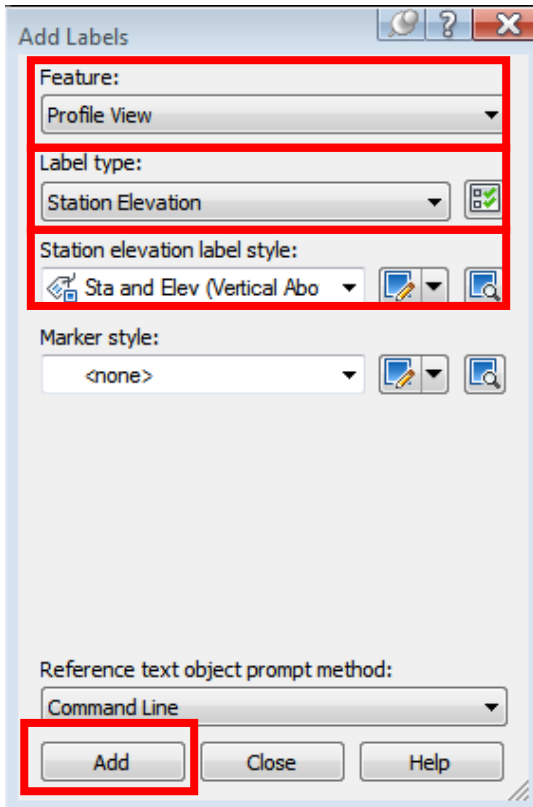
**Note:** The individual geometry points to label can be specified with the Profile Data band type.

# Profile Labels

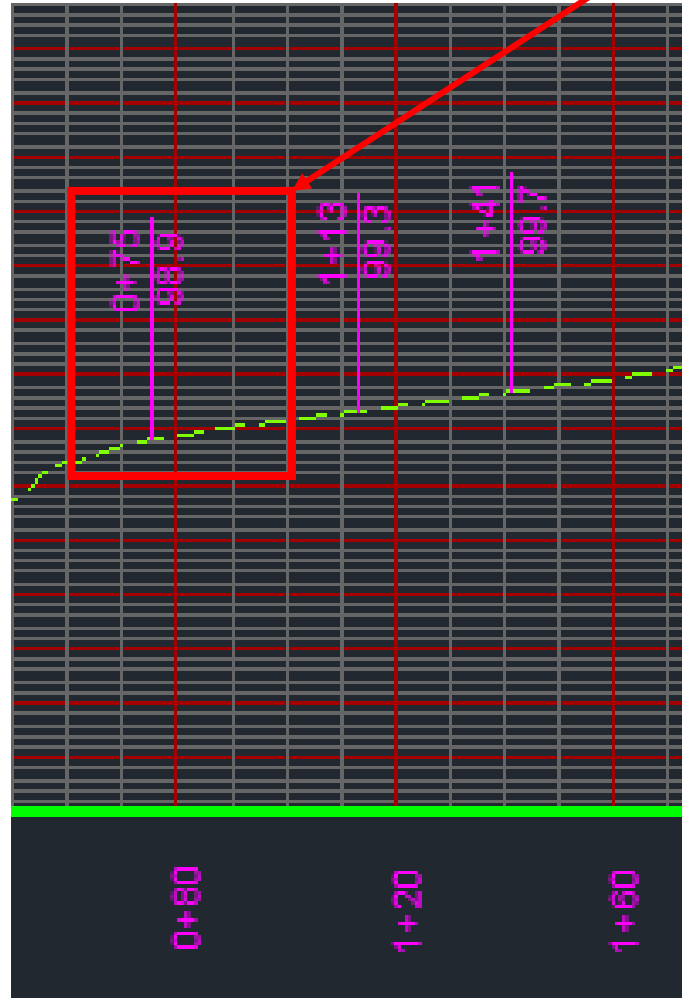


Annotate > Add Labels > Profile View

Add Profile View Labels



What the label will look like based off of the table to the left

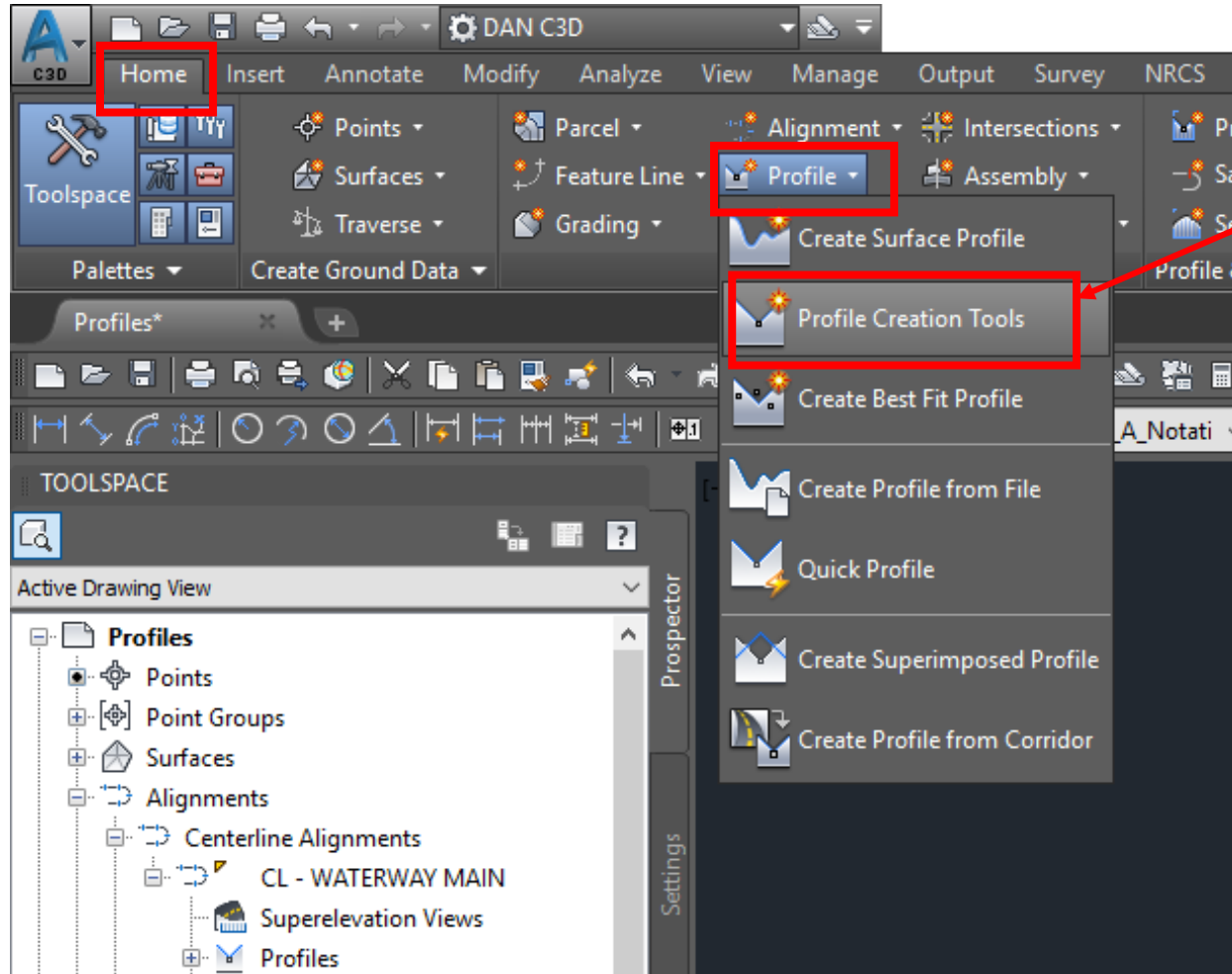


# Proposed Features on a Profile

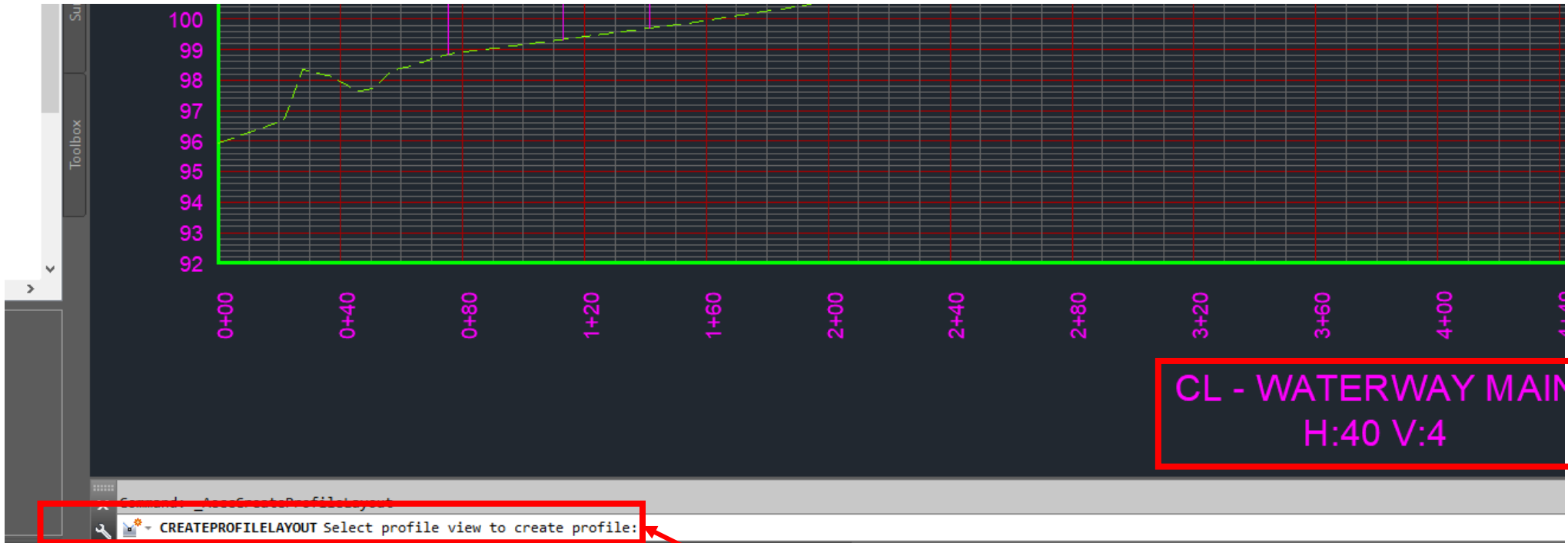
- Once you have your existing Profile completed, you can add proposed features.
- If you just add Polylines, keep in mind that if you change the Profile Scale it will not change your polyline scale. If you know that your scale will not change on your profile or cross section, you may create proposed lines using polylines.
- The correct way to add lines to your profile is by using the Profile Creation Tool. This will link the features that you draw to your profile.
- If you have created a Proposed Surface you can also show that on your Profile.

# Proposed Features on a Profile

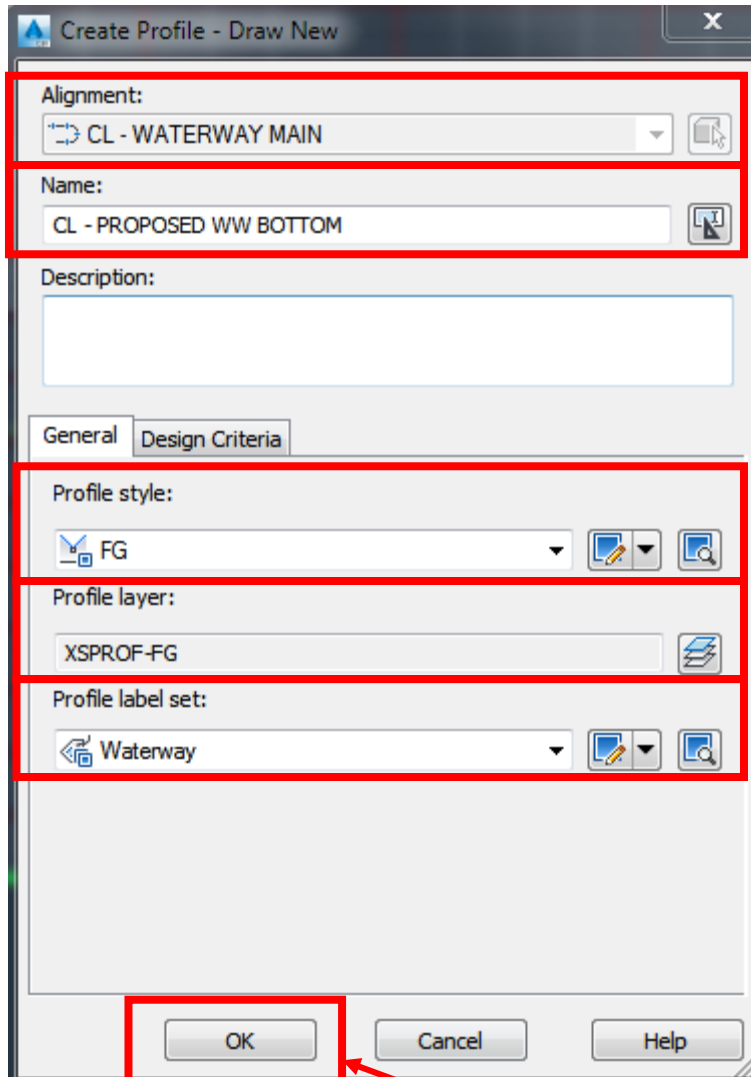
- ▶ In this example, you will see how to use the Profile Creation Tools



Profile Creation Tools



Select the Profile



Alignment the profile is associated with

Name your proposed line

Select the style – FG = Future Ground

Place on the XSPROF-FG layer

Select type of label

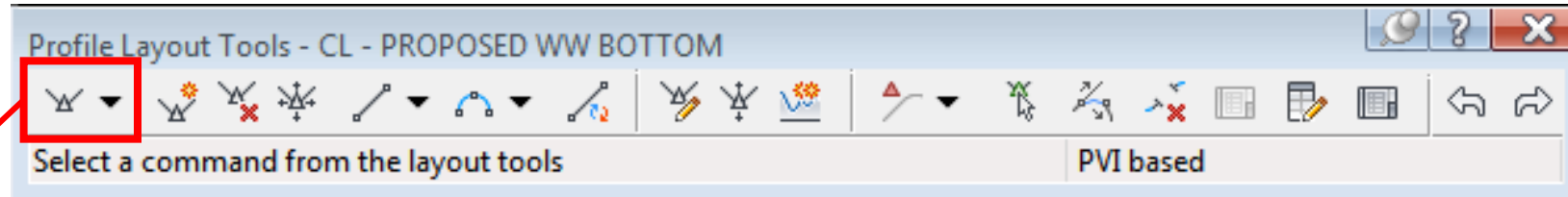
Click OK

After you click OK; the following slide shows the toolbar that will become available.



# Profile Layout Tools

# Profile Layout Tools



## Layout Profile Creation

These three buttons control how a layout profile is drawn on a profile view.

### Draw Tangents

Adds a series of fixed tangents between specified points.

### Draw Tangents With Curves

Adds a series of fixed tangents between specified points, with free curves automatically added at the points of vertical intersection.

### Curve Settings

Specifies the curve parameters to use with the Draw Tangents with Curves command.

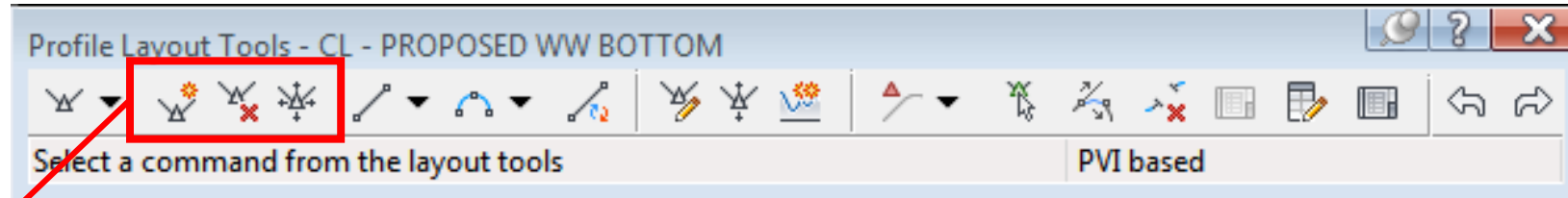
To change the default curve settings, go to the Profile Creation section of the [Edit Feature Settings - Profile](#) dialog box.

### Convert Free Vertical Curve (Pass Through)

Converts free vertical curves (created with either the Free Vertical Curve (Circular) command or the Free Vertical Curve (Parabola) command) which use a pass through point as their constraint type to curves that use length as their constraint type. This command converts the constraint type of all relevant curves at once.

**Note:** This command does not convert PVI-based curves that are defined by pass-through point.

# Profile Layout Tools



## PVI Edit Operations

Use these three buttons to graphically modify the PVI's in a layout profile.

### **Insert PVI**

Breaks a tangent into two adjacent tangents by creating a point of vertical intersection (PVI) at a specified location on the profile view. Click above or below an existing tangent to specify the new PVI location.

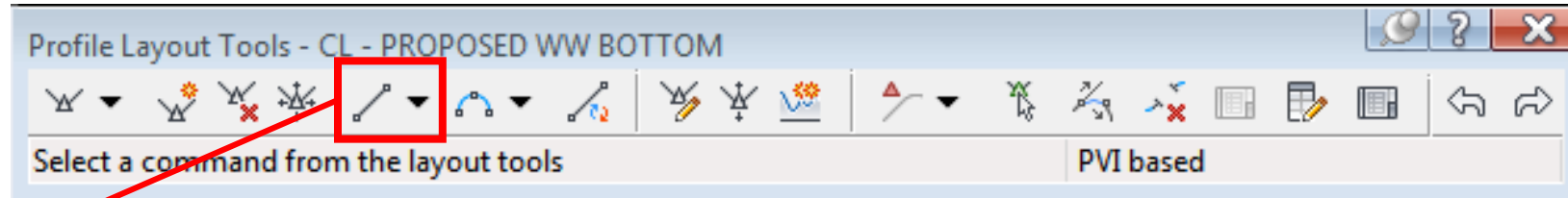
### **Delete PVI**

Creates a single tangent from two adjacent tangents by removing a point of vertical intersection (PVI) from a profile. If two tangents meet at the PVI, they are replaced by a single tangent between two adjacent PVI's.

### **Move PVI**

Moves a profile point of vertical intersection (PVI) to a new location on a profile view. The tangents connected to the PVI remain attached. You can also use editing grips to move a PVI.

# Profile Layout Tools



## Tangent Creation Operations

Use these three buttons to add tangents to a layout profile.

### **Fixed Tangent (Two Points)**

Adds a fixed tangent between two specified points.

### **Fixed Tangent - Best Fit**

Adds the most probable fixed tangent through a series of AutoCAD Civil 3D points, AutoCAD points, existing entities, or clicks on screen.

### **Floating Tangent (Through Point)**

Adds a floating tangent from an existing entity to a specified pass-through point.

### **Float Tangent - Best Fit**

Adds the most probable floating tangent from a point on an existing entity through a series of AutoCAD Civil 3D points, AutoCAD points, existing entities, or clicks on screen. Tangency is maintained to the attached entity, regardless of how the entity is edited.

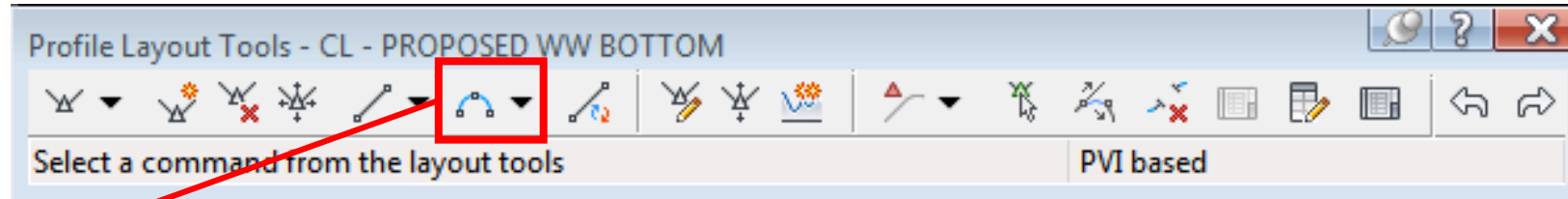
### **Free Tangent (Between Two Parabola)**

Adds a free tangent between two parabolic curves.

### **Solve Tangent Intersection**

Creates a PVI at the intersecting grade line of two tangents.

# Profile Layout Tools



## Curve Creation Operations

Use these buttons to add a curve to a profile. You can create curves by selecting entities to attach to, specifying parameters, or selecting a PVI where you want to add a curve. Parameters can be specified numerically or graphically.

For example, to numerically specify a pass-through point, enter the point coordinates. To graphically specify the point, select a point in the drawing window.

To graphically specify a curve length, K value, or radius, use the cursor to pick two points on the screen the correct distance apart. For parabolic and circular curves, you see a preview of the curve as you move the cursor. For asymmetrical curves, you do not see the preview until you begin to specify the second length.

### Fixed Vertical Curve (Three Points)

Adds a fixed curve through three specified points.

### Fixed Vertical Curve (Two Points, Parameter)

Adds a fixed sag or crest curve, with a specified K value or minimum radius, through two specified points.

### Fixed Vertical Curve (Entity End, Through Point)

Adds a fixed curve from the end of an existing entity to a specified pass-through point.

### Fixed Vertical Curve (Two Points, Grade at Start Point)

Adds a fixed curve that is defined by two specified pass-through points and a specified grade at the start point.

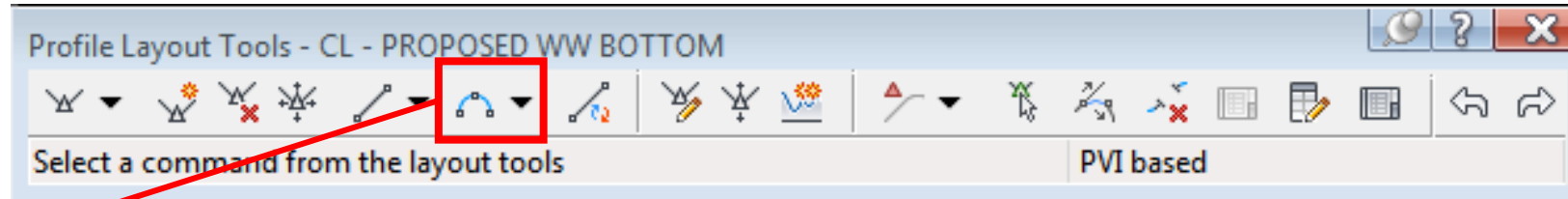
### Fixed Vertical Curve (Two Points, Grade at End Point)

Adds a fixed curve that is defined by two specified pass-through points and a grade at the end point.

### Fixed Vertical Curve - Best Fit

Adds the most probable fixed vertical curve through a series of AutoCAD Civil 3D points, AutoCAD points, existing entities, or clicks on screen.

# Profile Layout Tools



## Floating Vertical Curve (Parameter, Through Point)

Adds a floating curve, which is defined by either a K value or minimum radius, between an existing entity and a specified pass-through point.

## Floating Vertical Curve (Through Point, Grade)

Adds a floating curve, which is defined by a specified pass-through point and grade, to an existing entity.

## Floating Vertical Curve - Best Fit

Adds the most probable floating vertical curve from an existing entity through a series of AutoCAD Civil 3D points, AutoCAD points, existing entities, or clicks on screen. Tangency is maintained to the attached entity, regardless of how the entity is edited.

## Free Vertical Curve (Circular)

Adds a free circular curve, which is defined by a specified pass-through point, curve length, or radius, between two tangents.

**Note:** This type of curve cannot be created between two curves or between a tangent and a curve.

## Free Vertical Curve (Parabola)

Adds a free parabolic curve, which is defined by a specified pass-through point, curve length, radius, or K value, between two entities.

## Free Vertical Parabola (PVI Based)

Adds a free vertical parabola, which is defined by a specified curve length, pass-through point, or K value, to an existing point of vertical intersection (PVI).

## Free Asymmetrical Parabola (PVI Based)

Adds a free asymmetrical parabola, which is defined by specified before and after PVI curve lengths, to an existing point of vertical intersection (PVI).

**Note:** If the first length you specify is too large for the asymmetric curve, you cannot enter the length for the second curve. The length of the first curve must be less than the station distance between the PVI you select and the station value of the previous PVI (or end station of the previous curve).

## Free Circular Curve (PVI Based)

Adds a free circular curve, which is defined by a specified radius or pass-through point, to an existing point of vertical intersection (PVI).

## Free Vertical Curve - Best Fit

Adds the most probable free vertical curve between two existing entities, and through a series of AutoCAD Civil 3D points, AutoCAD points, existing entities, or clicks on screen. Tangency is maintained to the attached entities, regardless of how the entities are edited.

# Profile Layout Tools



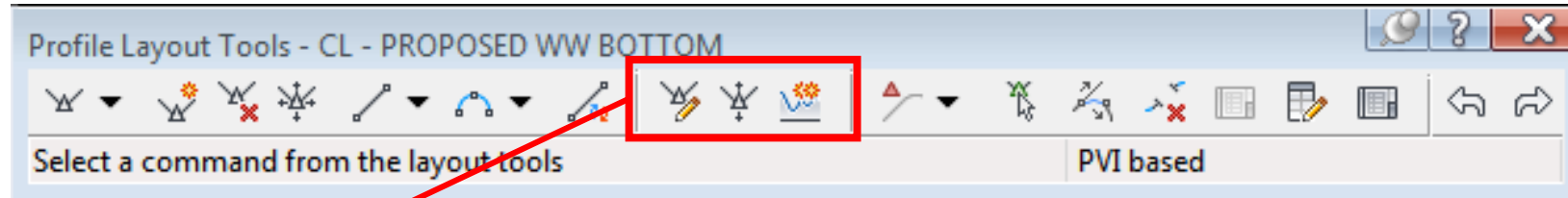
## Convert AutoCAD Line and Spline

This button enables you to convert an AutoCAD line or spline to a profile sub-entity.

### Convert AutoCAD Line and Spline

Creates a fixed tangent or three-point vertical curve entity from an AutoCAD line or spline.

# Profile Layout Tools



## PVI Operations

These buttons control various operations with PVIs when the Profile Grid View dialog box is active. If the profile is dynamic, only the Copy Profile button is available.

### **Insert PVIs – Tabular**

Creates points of vertical intersection (PVIs) at multiple locations simultaneously.

### **Raise/Lower PVIs**

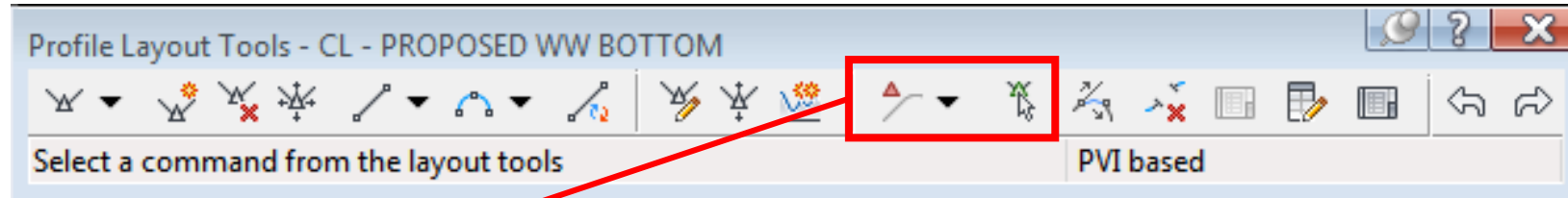
Changes the vertical position of a series of points of vertical intersection (PVIs) simultaneously.

### **Copy Profile**







Copies all or a part of a layout profile or static surface profile.



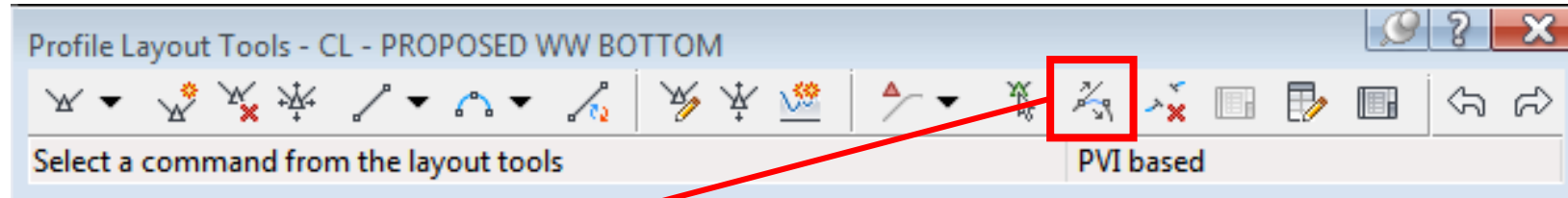
# Profile Layout Tools



## Selection Operations

-  **PVI Based**  
Edits the profile PVI parameter values in tabular format.
-  **Entity Based**  
Edits the profile entity parameter values in tabular format.
-  **Select PVI**  
Displays a selected PVI's parameter values in the Profile Layout Parameters dialog box. If you do not see this button, click  to change to a PVI-based view.
-  **Select Entity**  
Displays a selected profile subentity's parameter values in the Profile Layout Parameters dialog box. If you do not see this button, click  to change to an entity-based view.

# Profile Layout Tools



## Extend Entity

This button enables you to extend an entity to the extents of the profile view.

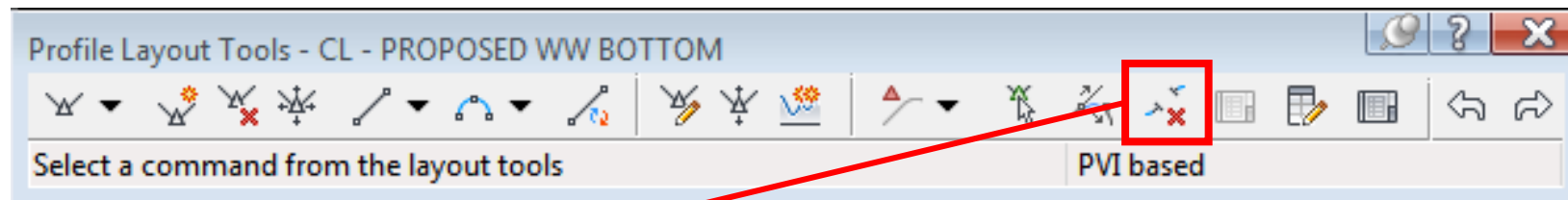


### Extend Entity

Extends a fixed or floating tangent or parabola to the extents of the profile view.

**Note:** This command respects any grid padding that is included in the profile view style. If the grid padding is greater than 0, the entity will not be extended to the full extents of the profile view.


# Profile Layout Tools



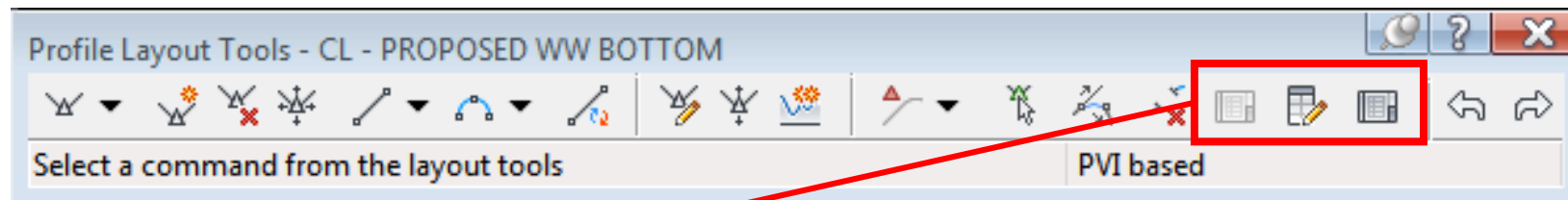
## Delete Entities

This button enables you to delete a tangent or curve.

### Delete Entity

Deletes a specified tangent or curve. If you do not see this button, click  to change to an entity-based view.

# Profile Layout Tools



## Data Analysis

### **Edit Best Fit Data For All Entities**

Toggles the display of a horizontal table of regression data for all entities in the profile that were created by best fit.

### **Profile Layout Parameters**

Toggles the display of a vertical table of numeric data about a single, selected profile subentity or PVI.

### **Profile Grid View**

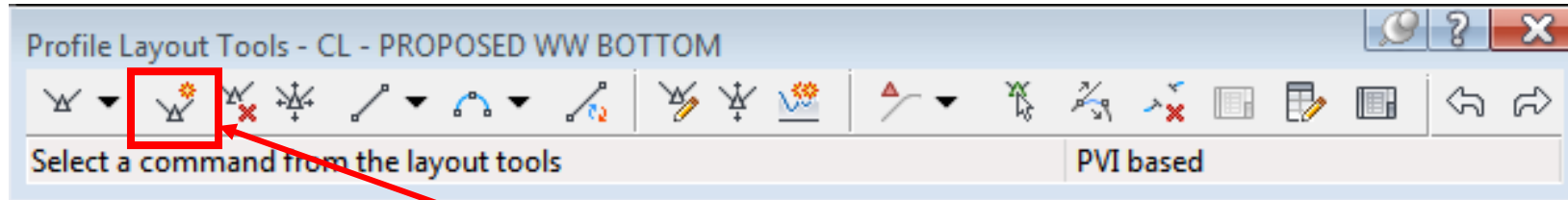
Toggles the display of a horizontal table of numeric data about multiple, selected profile sub-entities or PVIs.

### **Undo**

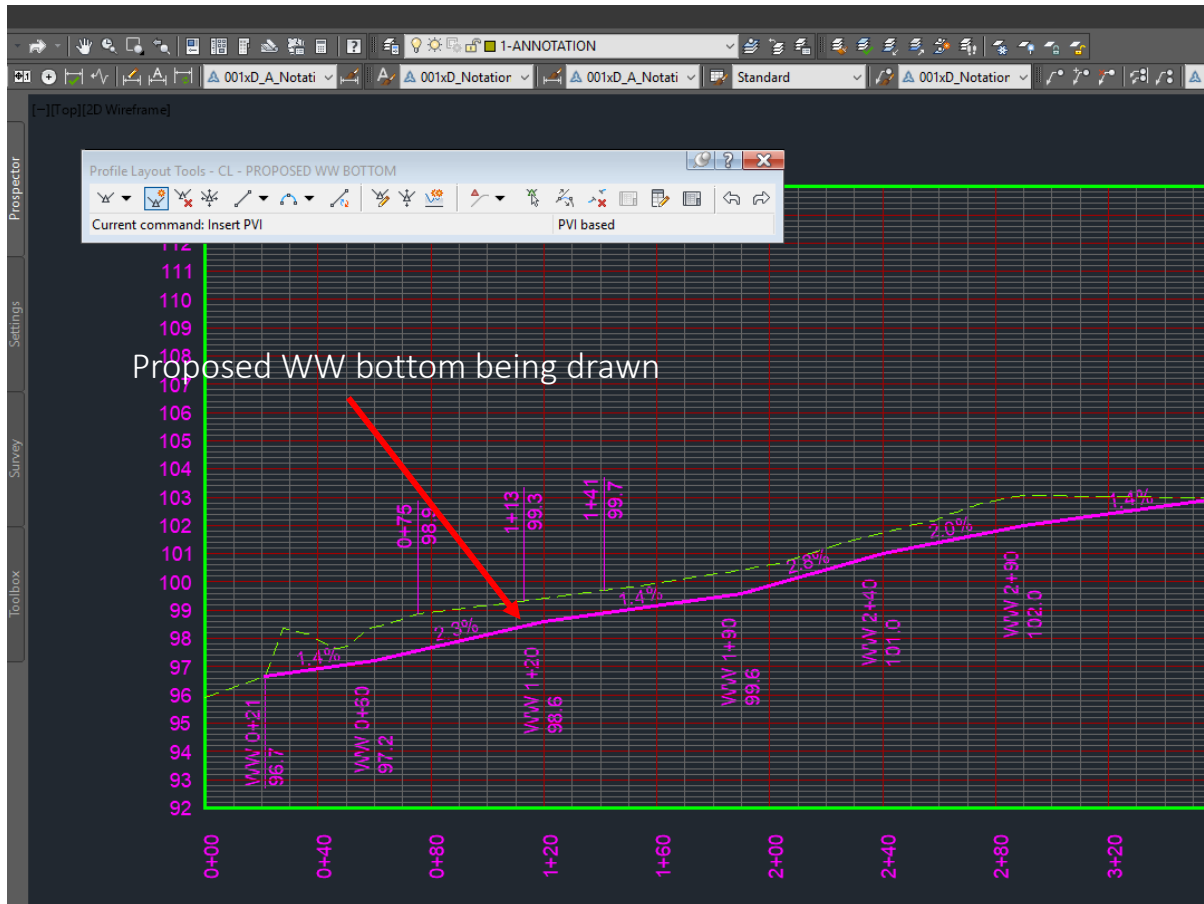
Reverses the last AutoCAD Civil 3D or AutoCAD command.

### **Redo**

Reverses the last AutoCAD Civil 3D or AutoCAD undo operation. Redo is limited to one operation.



Select Insert PVI

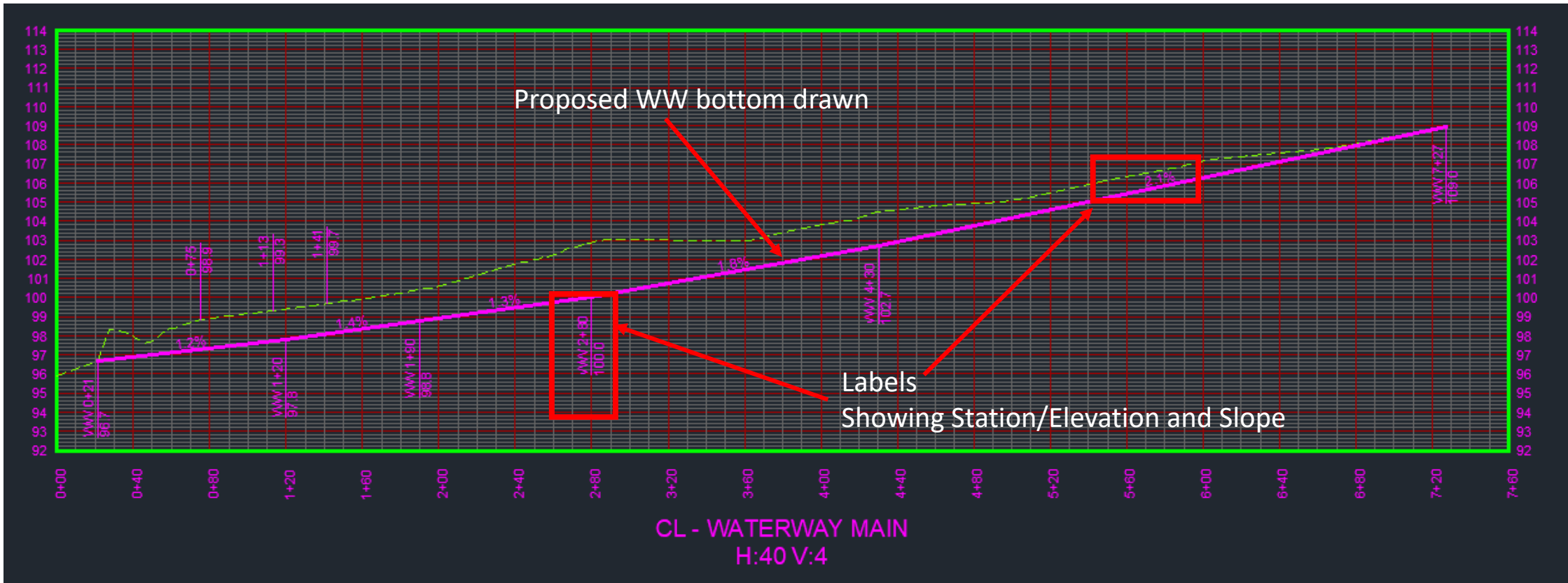


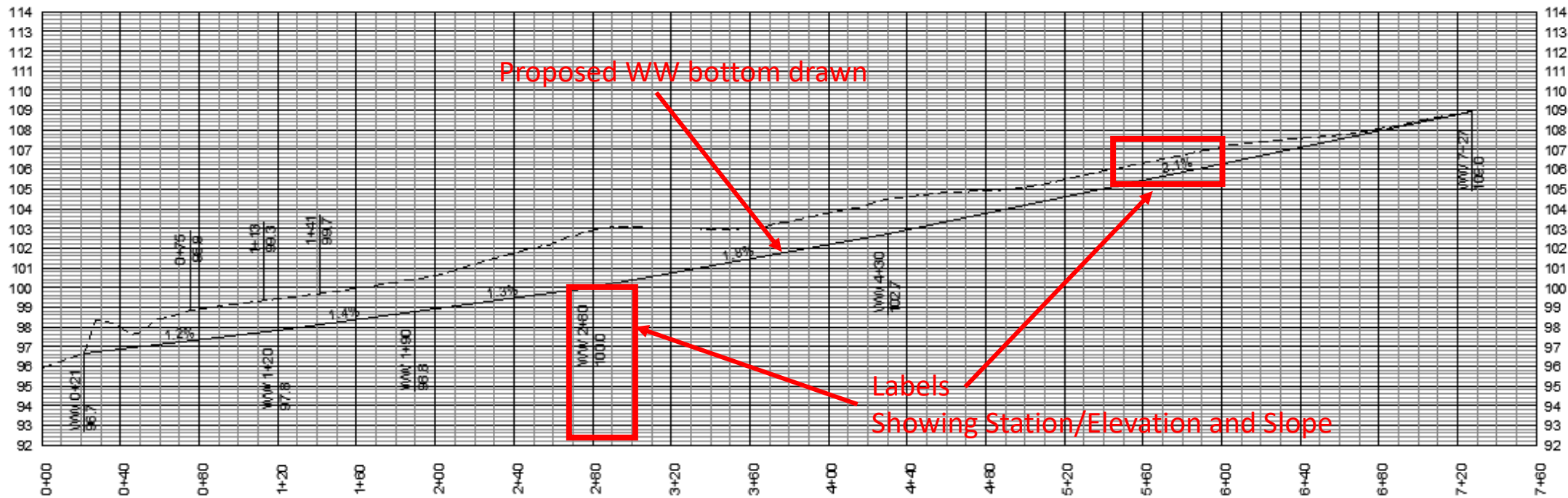
Proposed WW bottom being drawn

As the user, you can Insert PVI's to the purple line ("Proposed Waterway"), using the Profile Creation Toolbar.

PVI's allow the user to adjust the "Proposed Waterway" line on the profile as needed.

PVI stands for:  
*Points of Vertical Intersection*





CL - WATERWAY MAIN  
H:40 V:4

Proposed W/W bottom draw

Labels  
Showing Station/Elevation and Slope



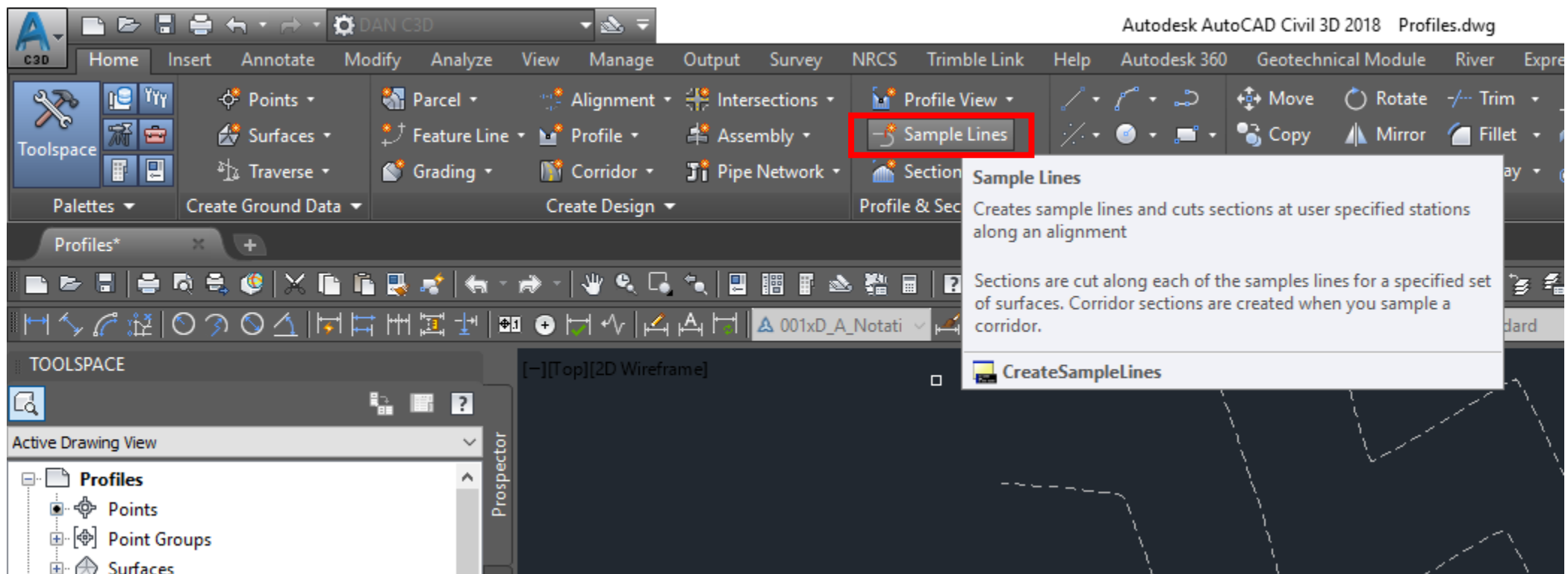
Sample Lines



# Sample Lines

(For Creating Cross Sections along desired locations of an Alignment)

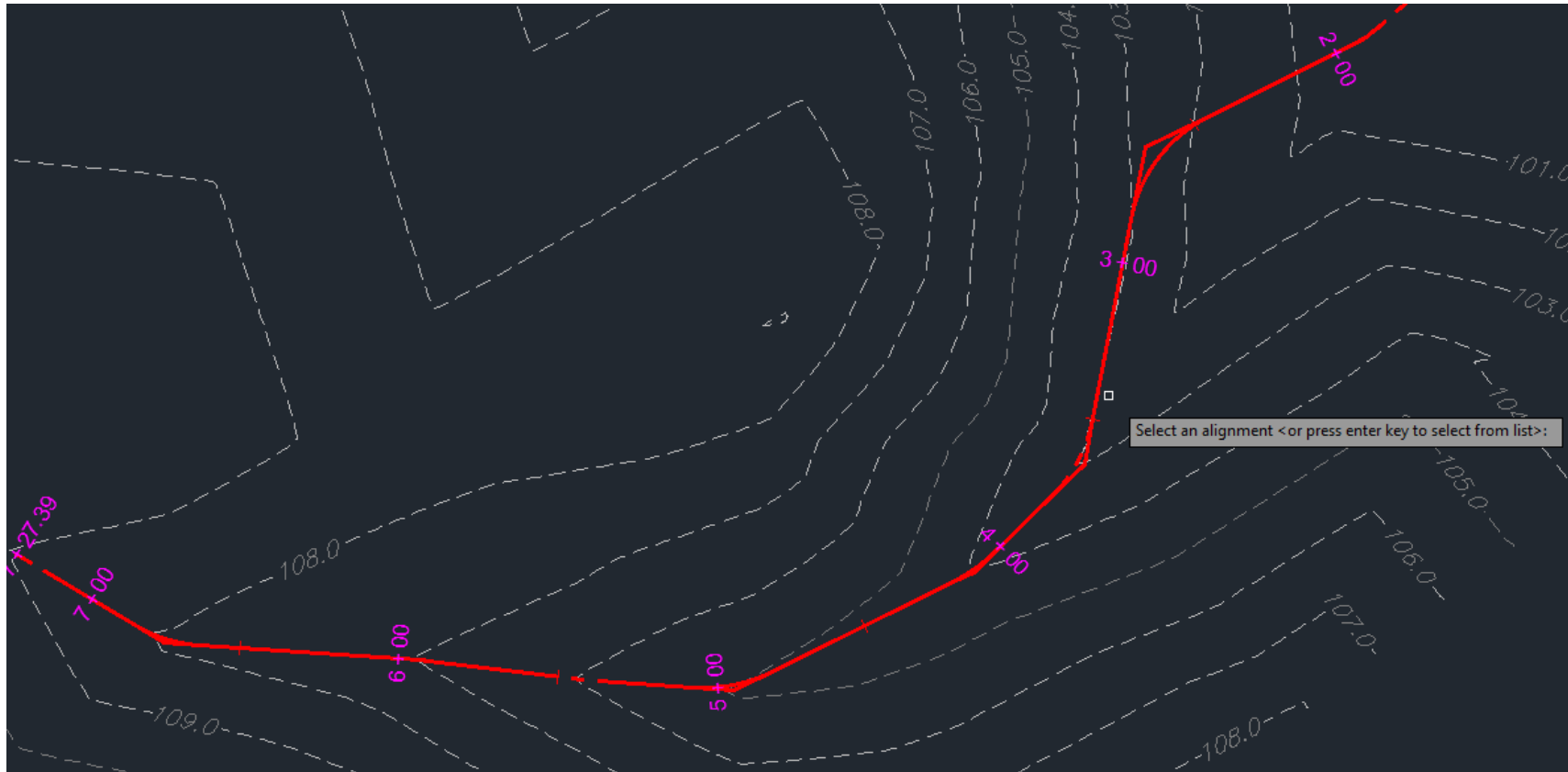
- ▶ Sample lines are line segments placed along an alignment, usually perpendicular to the alignment path and at regular intervals. Sample lines represent the location and orientation of surface cross sections that can be studied through section views.



You can also locate Sample Lines within the Prospector Tab of tool space.

# Sample Lines

- ▶ Select the Alignment



# Sample Lines

- ▶ Once you select the Alignment, the Create Sample Line Group will appear. You can choose what surfaces are displayed in the Section Views.

**Create Sample Line Group**

Name:

Description:

Alignment:

Sample line style:

Sample line label style:

Sample line layer:

Select data sources to sample:

Type	Data Source	Sample	Style	Section layer	Update Mode
	Existing Ground	<input checked="" type="checkbox"/>	Sections	XSPROF-OGND	Dynamic
	Proposed Surface	<input checked="" type="checkbox"/>	Sections	XSPROF-OGND	Dynamic
	As-Built	<input checked="" type="checkbox"/>	Sections	XSPROF-OGND	Dynamic

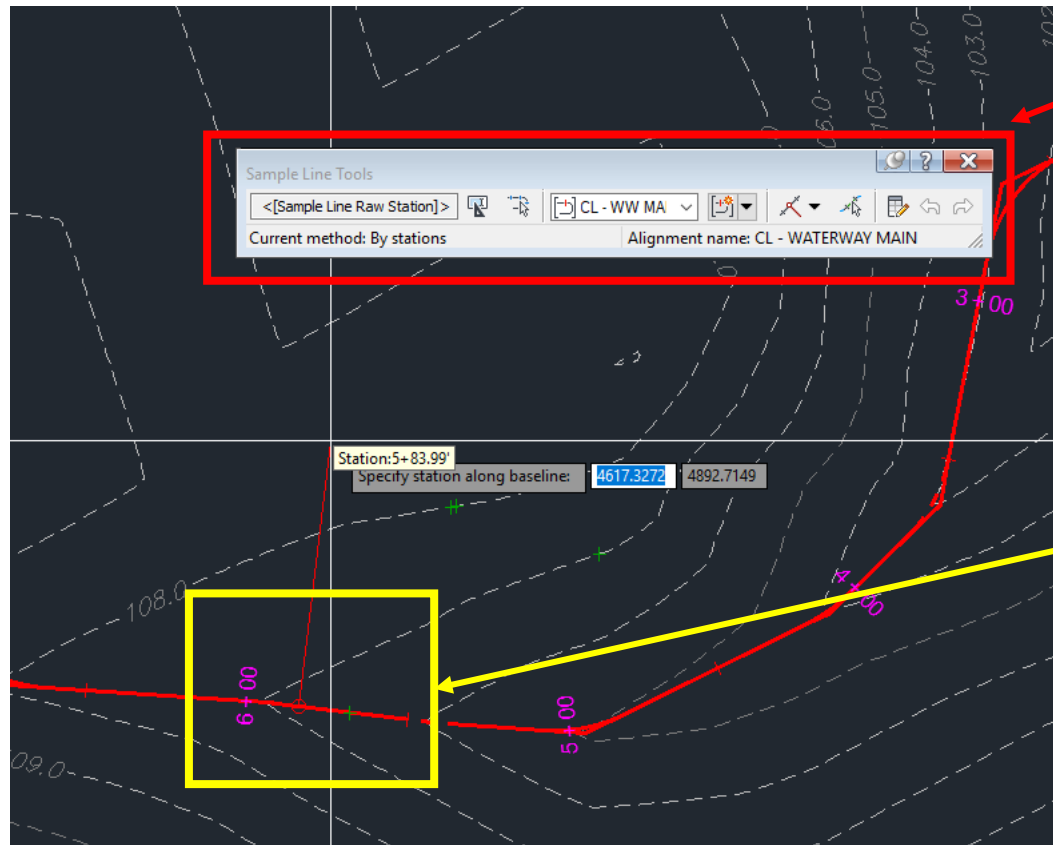
You can name the group the same as your alignment, or whatever you want to name it

You can select which surfaces are shown on the Section Views

Click OK

# Sample Line Tools

- ▶ Now you can *select* a location *anywhere* on the alignment that you want to create a cross section. You can enter in a specific station or you can select one along the alignment.

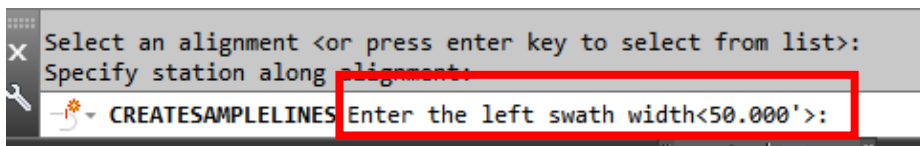
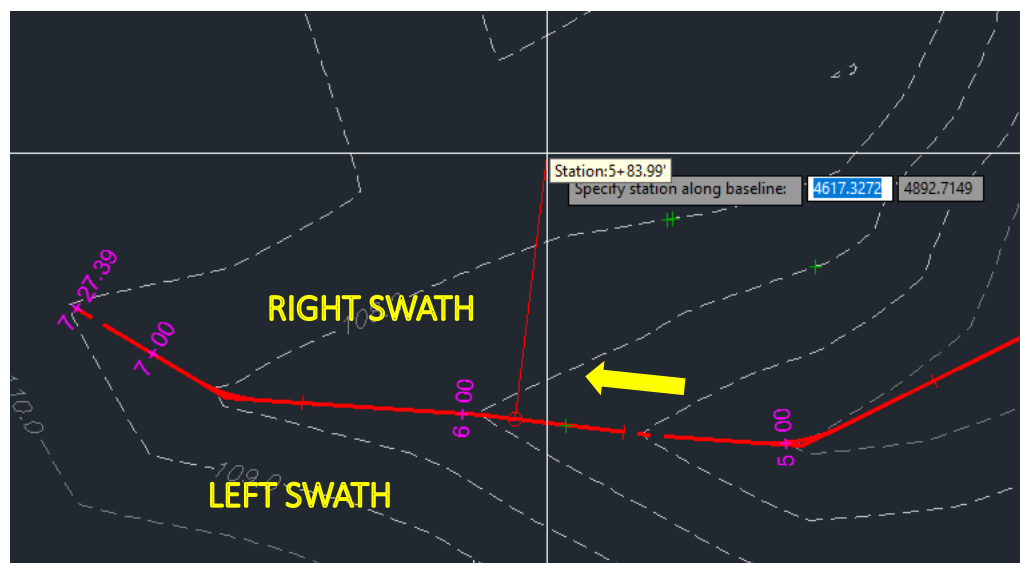


Sample Line tools window

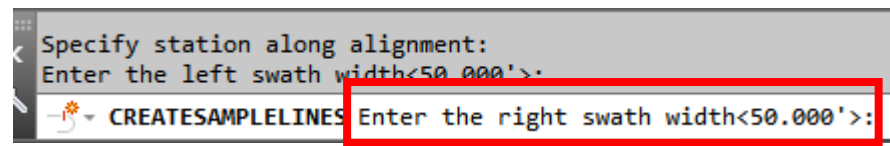
Select the Station along the Alignment

# Sample Line Tools

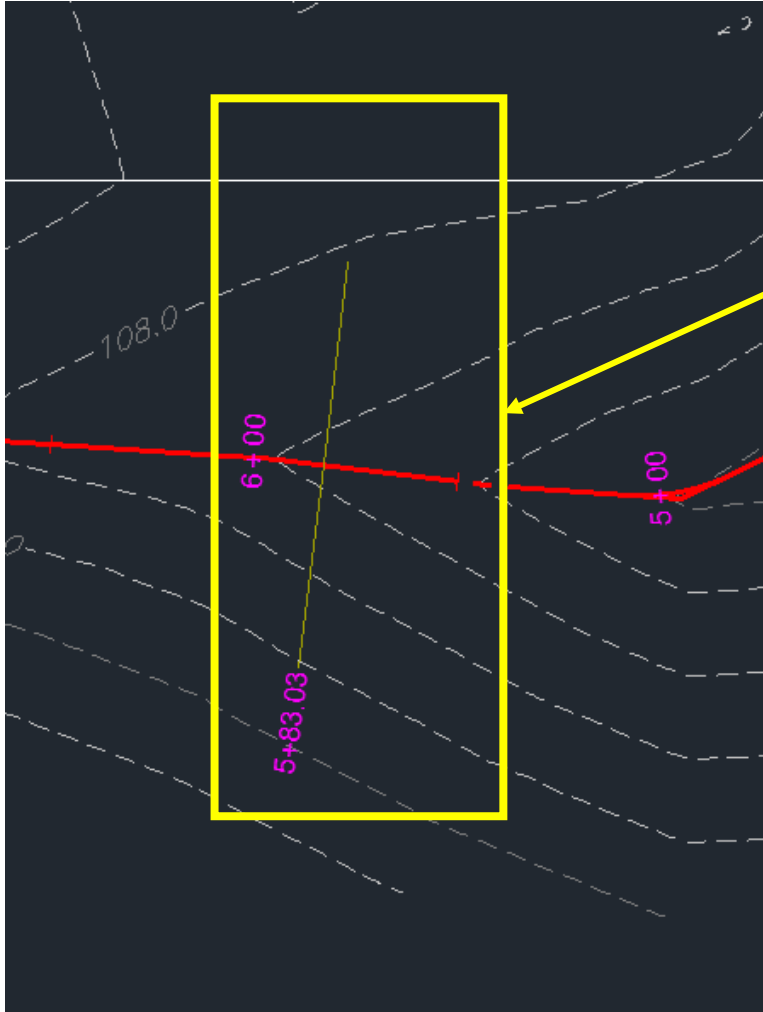
- ▶ Enter the LEFT SWATH (this is the length from the centerline of the alignment). You can type in the length or draw a line for the length. Keep in mind the LEFT and RIGHT swaths are determined by the direction of the way the Alignment was drawn and you as the user, when looking towards the direction of the alignment.



Enter the length away from CL of Alignment



Enter the length away from CL of Alignment

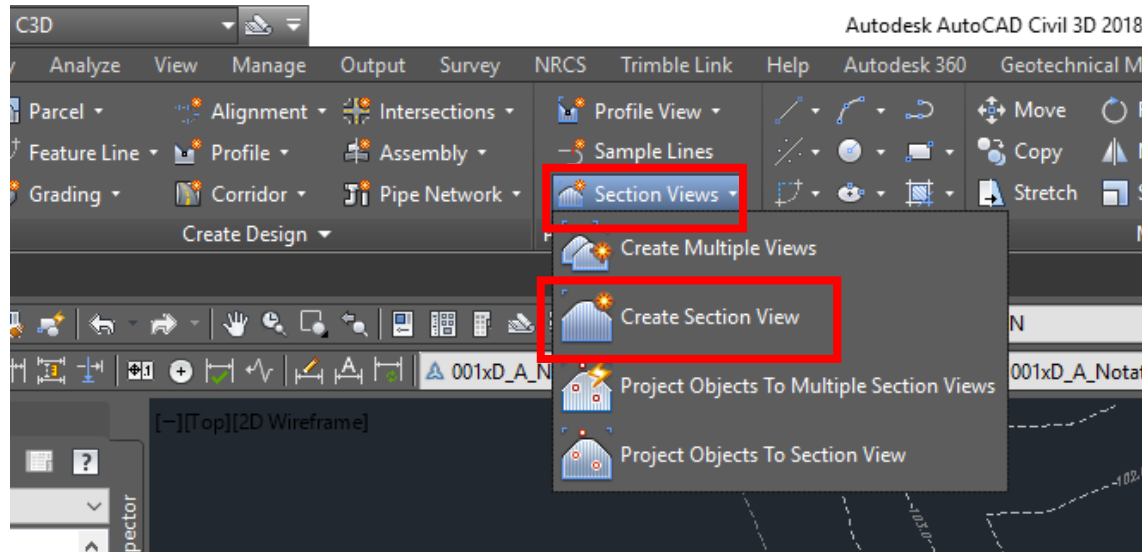


What the Sample Line will look like. The Sample line will be labeled and shown once created.

# Section View

# SECTION VIEW

- ▶ Create a section view to display an existing ground section, using sample lines cut across a horizontal alignment.
- ▶ Sample lines (1) must be created prior to creating a section view (2). Section views can display existing ground surface sections, corridor sections, and pipe sections.
- ▶ Each section view must be linked to an alignment. The section view displays new or existing sections. Sections can also be created without displaying them on a section view. When you create a section view for an alignment, the complete list of sections for the alignment is displayed. Choose which sections to include in the section view.
- ▶ You can change the display style of a section view, and add labels and bands.

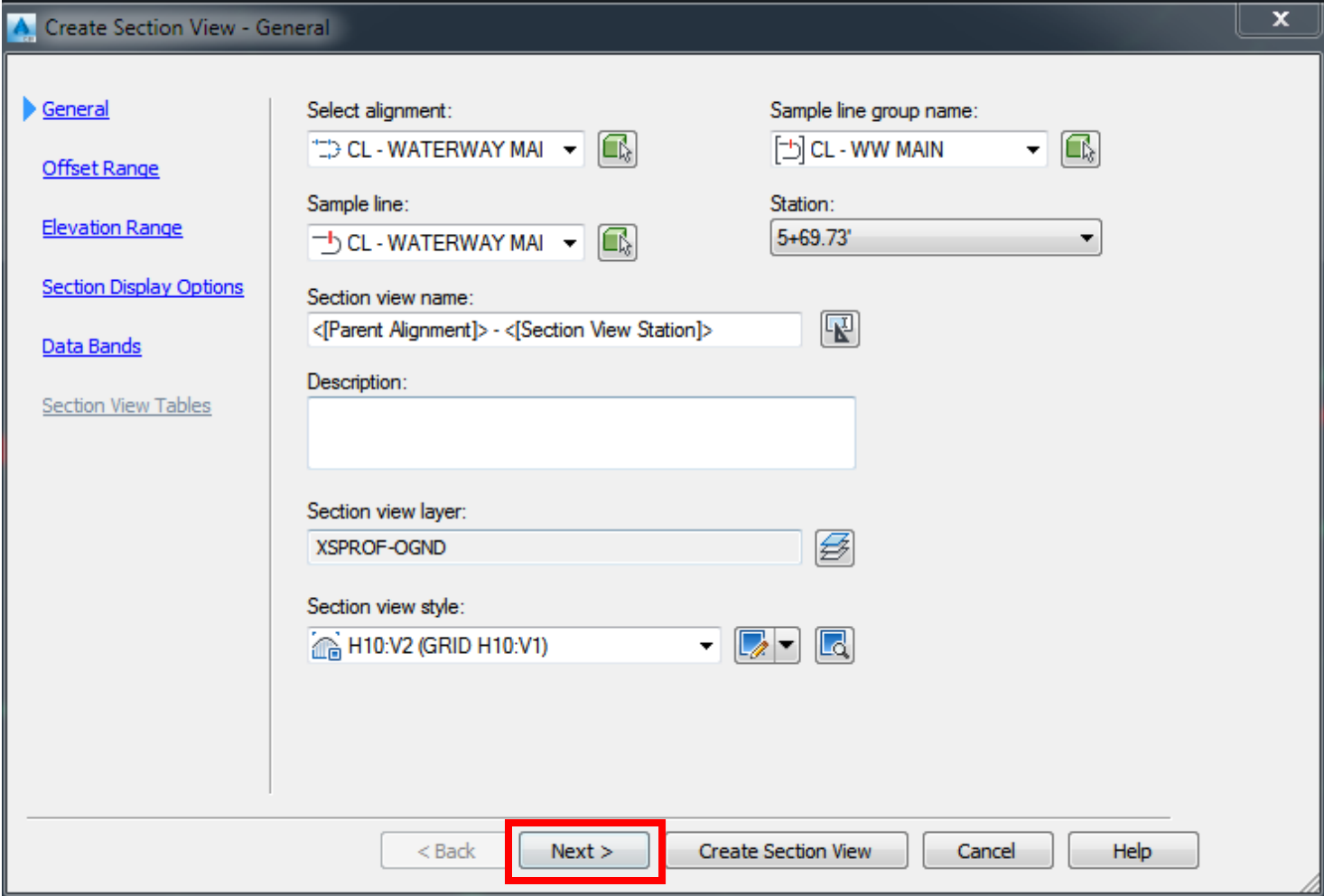




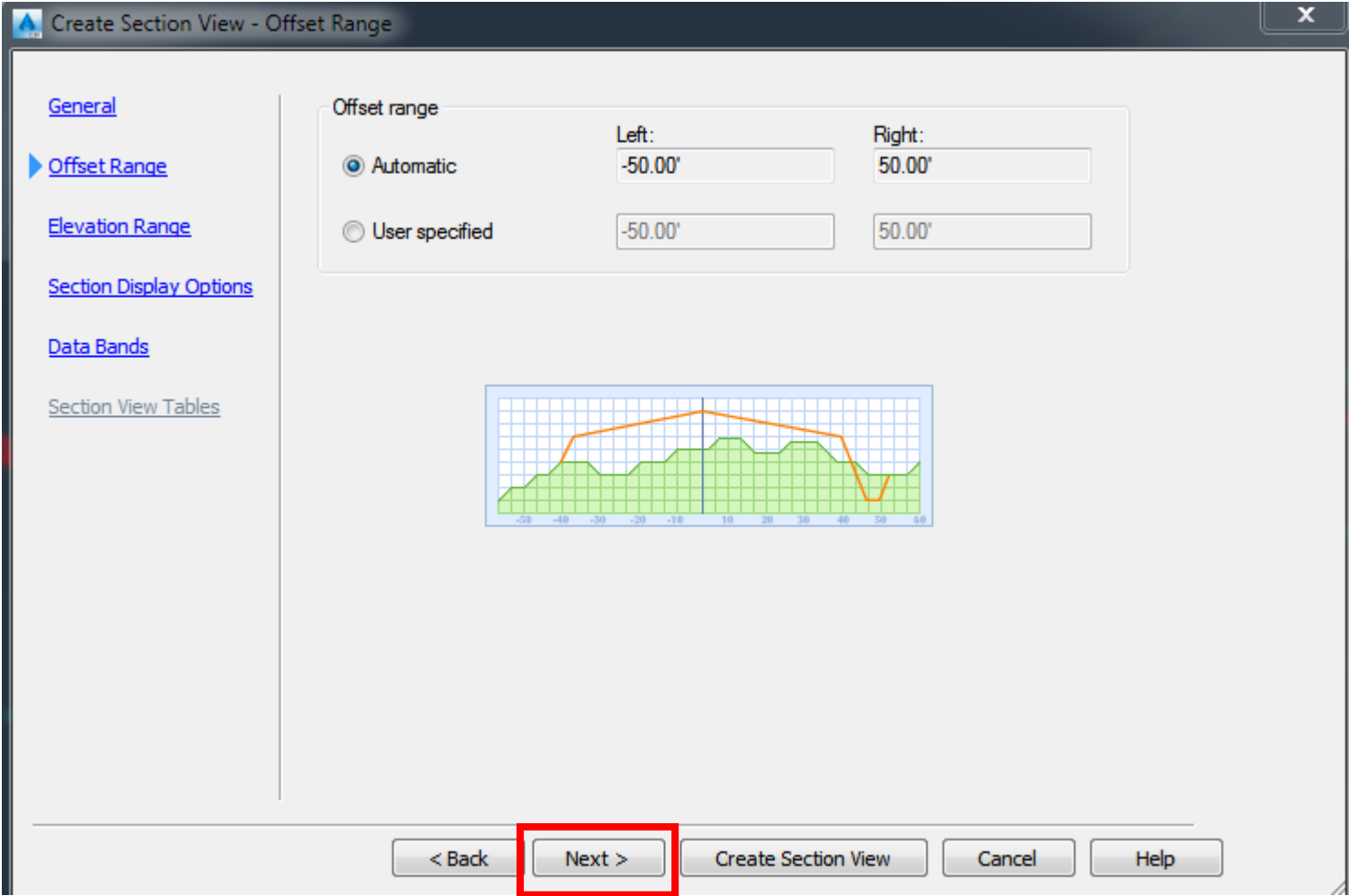
# SECTION VIEW

- ▶ General: Change the location, name, layer and style of the new section view.
- ▶ Offset Range: Change the width of the offsets of the new section view.
- ▶ Elevation Range: Change the maximum and minimum elevation of the new section view.
- ▶ Section Display Options: Change the visibility and style of the new section view.
- ▶ Data Bands: Change the band set and data band location for the new section view.
- ▶ Section View Tables: Change the type and style of volume tables, and their position relative to, the new section view.

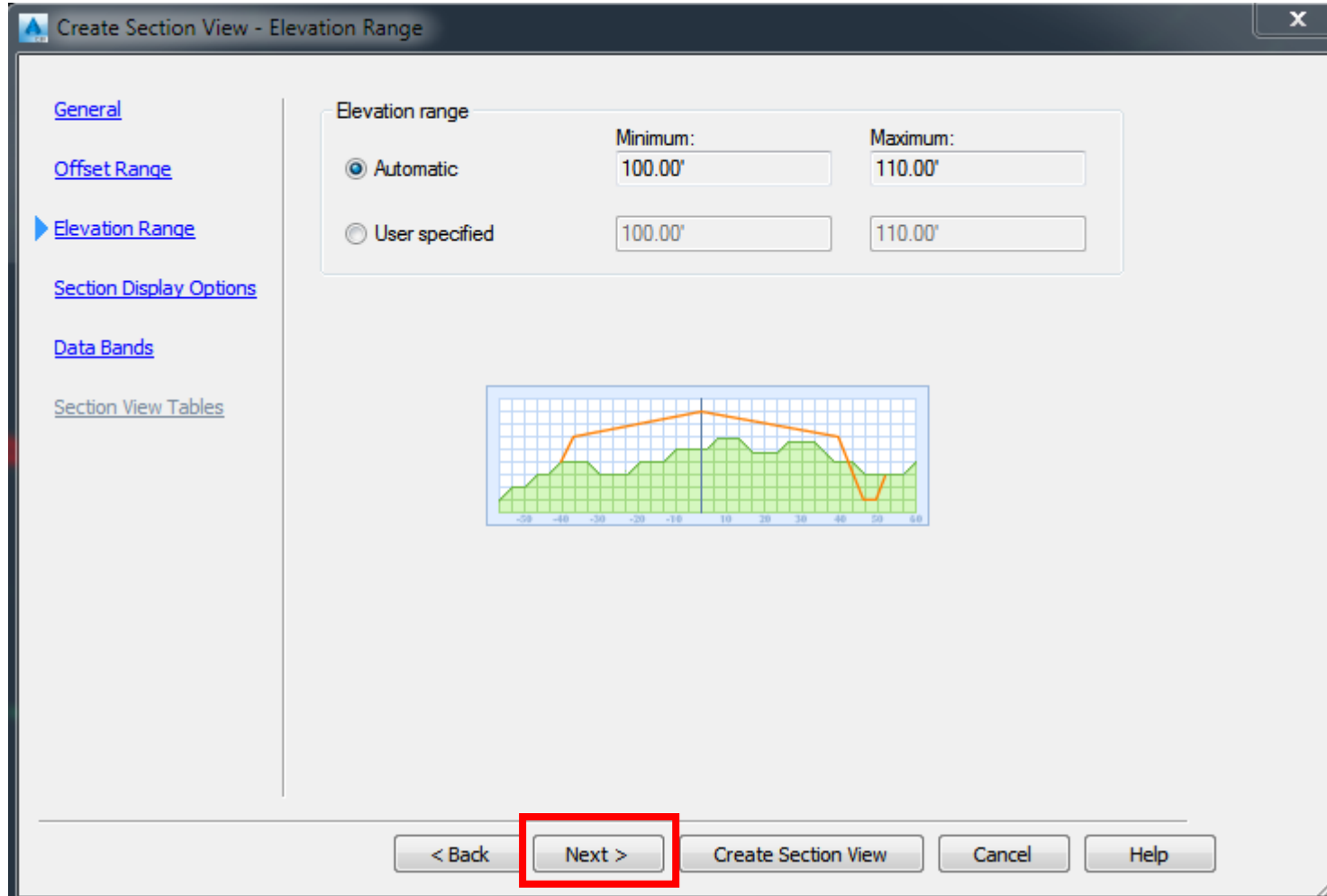
**General:** Change the location, name, layer and style of the new section view.



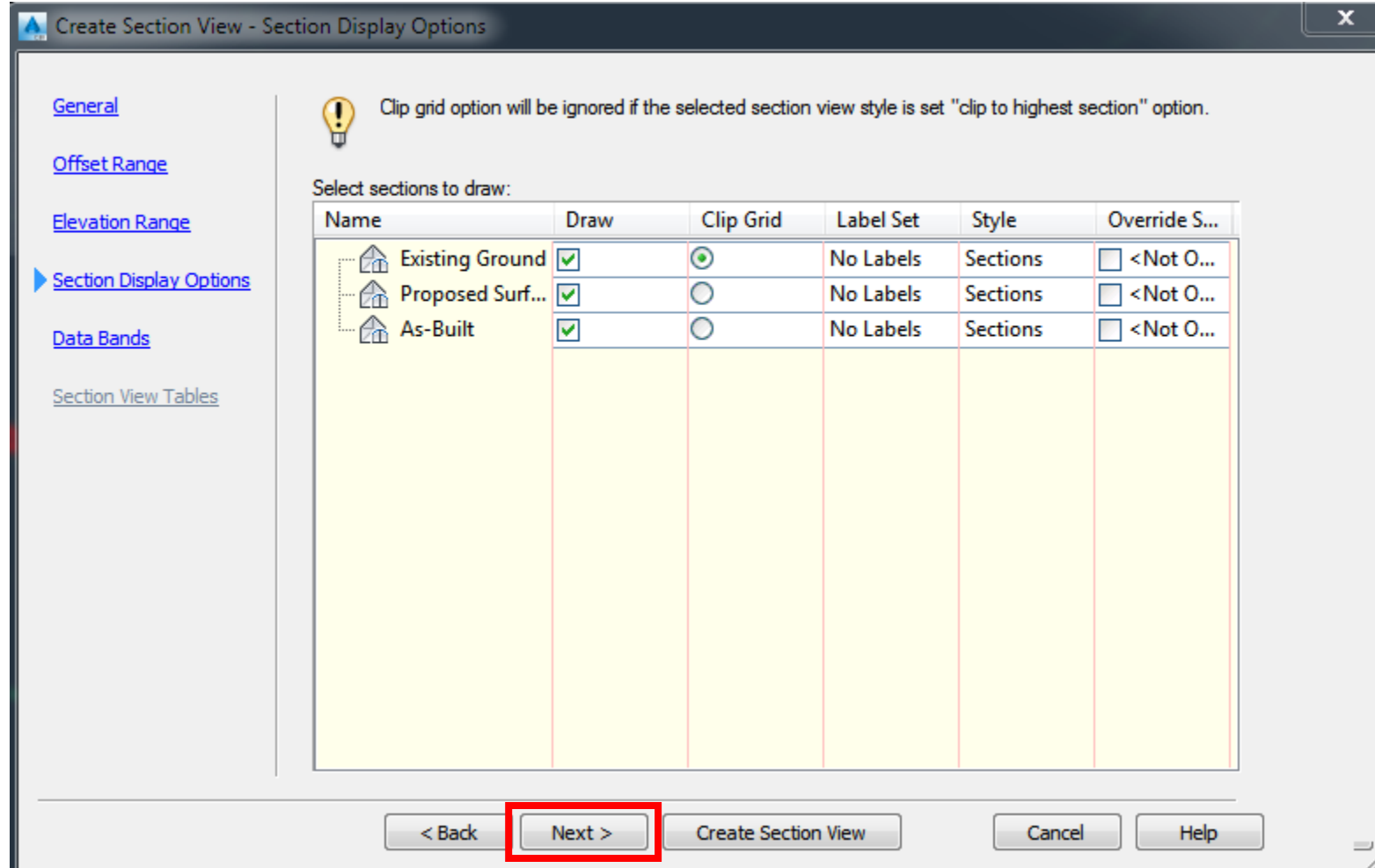
**Offset Range:** Change the width of the offsets of the new section view.



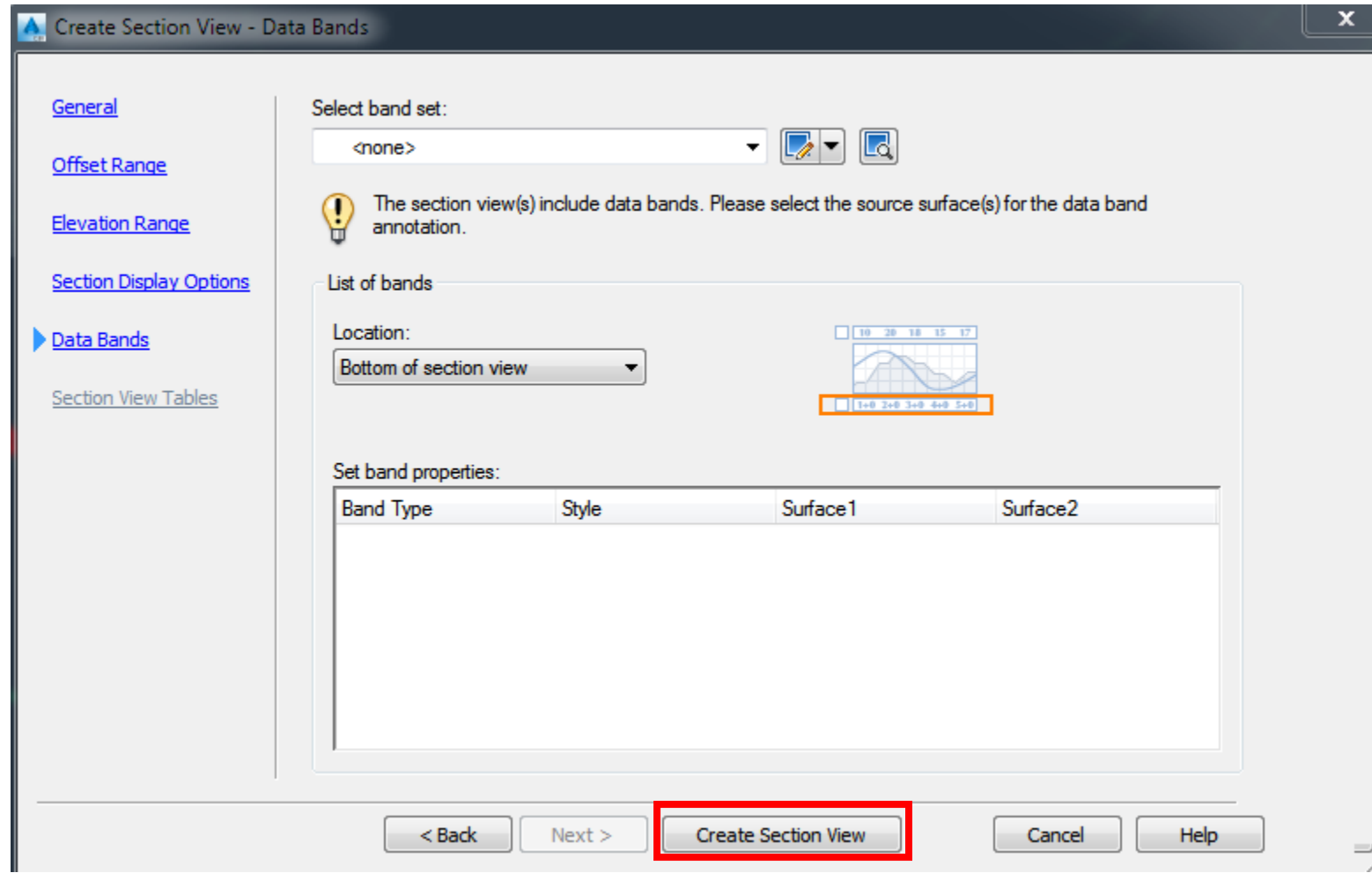
**Elevation Range:** Change the maximum and minimum elevation of the new section view.



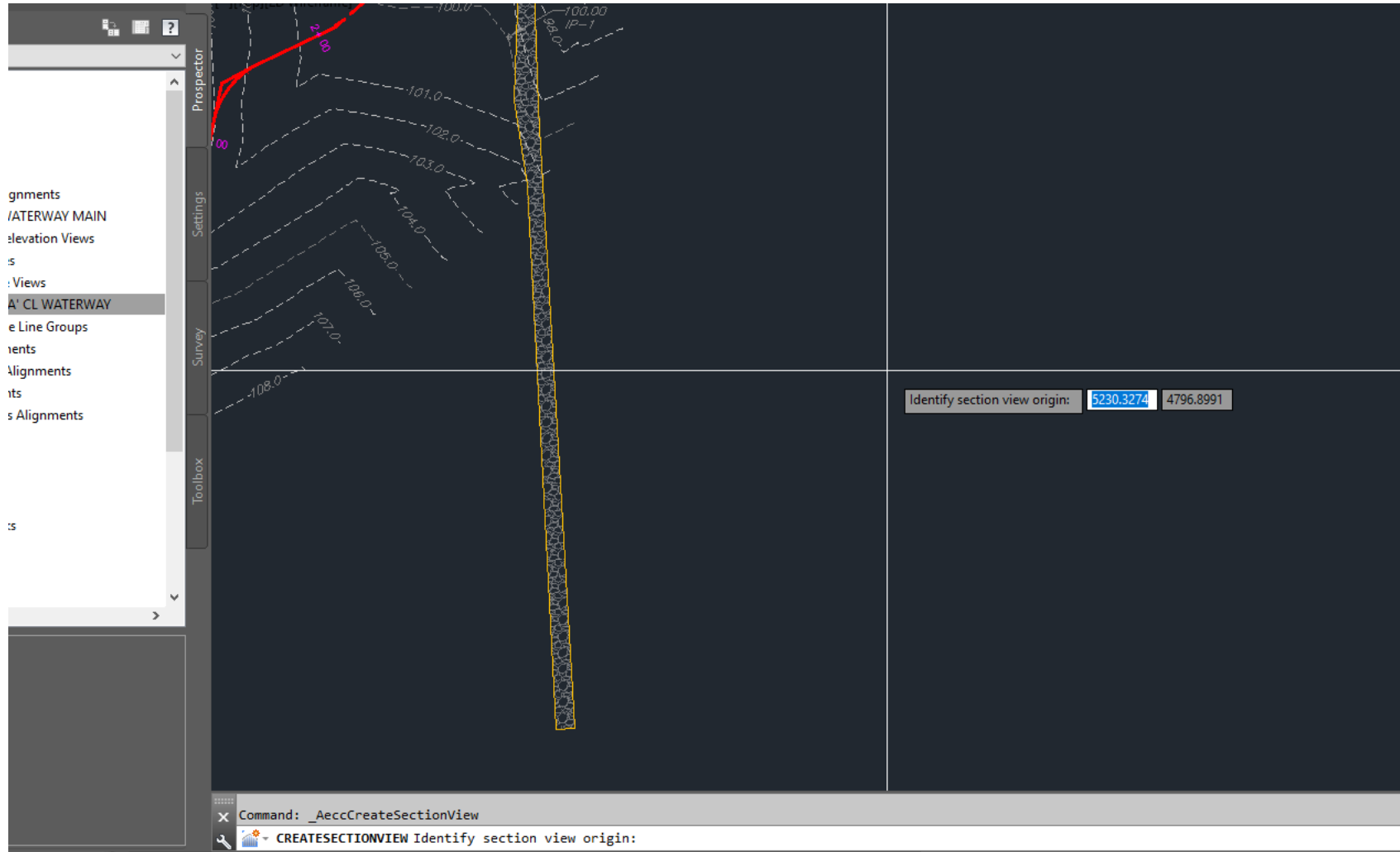
**Section Display Options:** Change the visibility and style of the new section view.



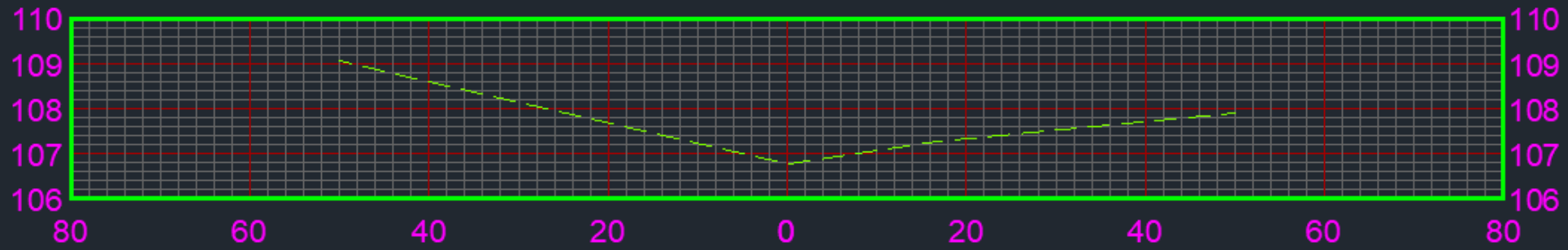
**Data Bands:** Change the band set and data band location for the new section view.



Select location where you want to place the Section View



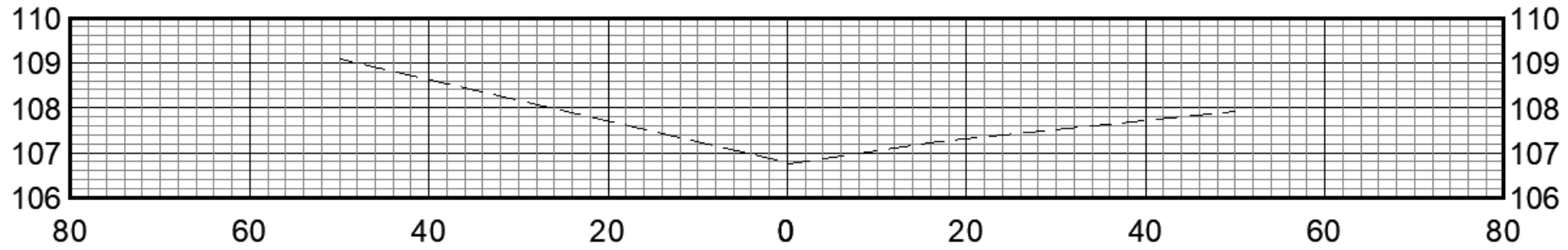
# SECTION VIEW



5+83  
H:20 V:4



# SECTION VIEW

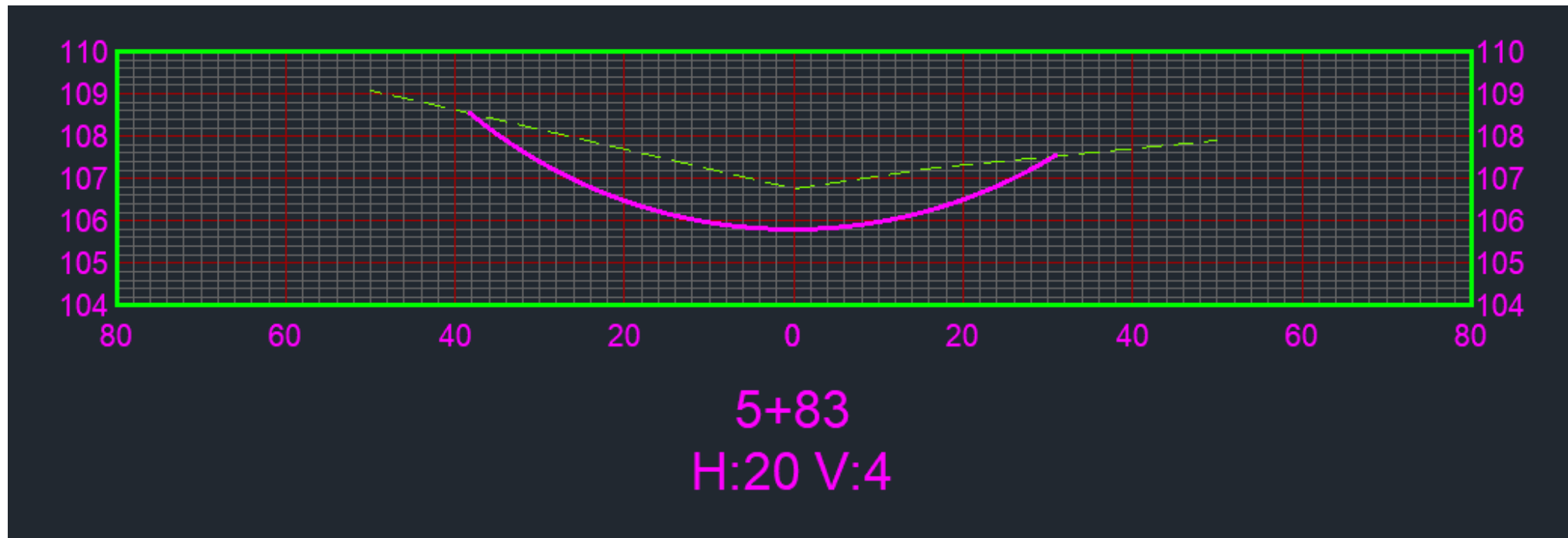


**5+83**  
**H:20 V:4**

# Section View Labels

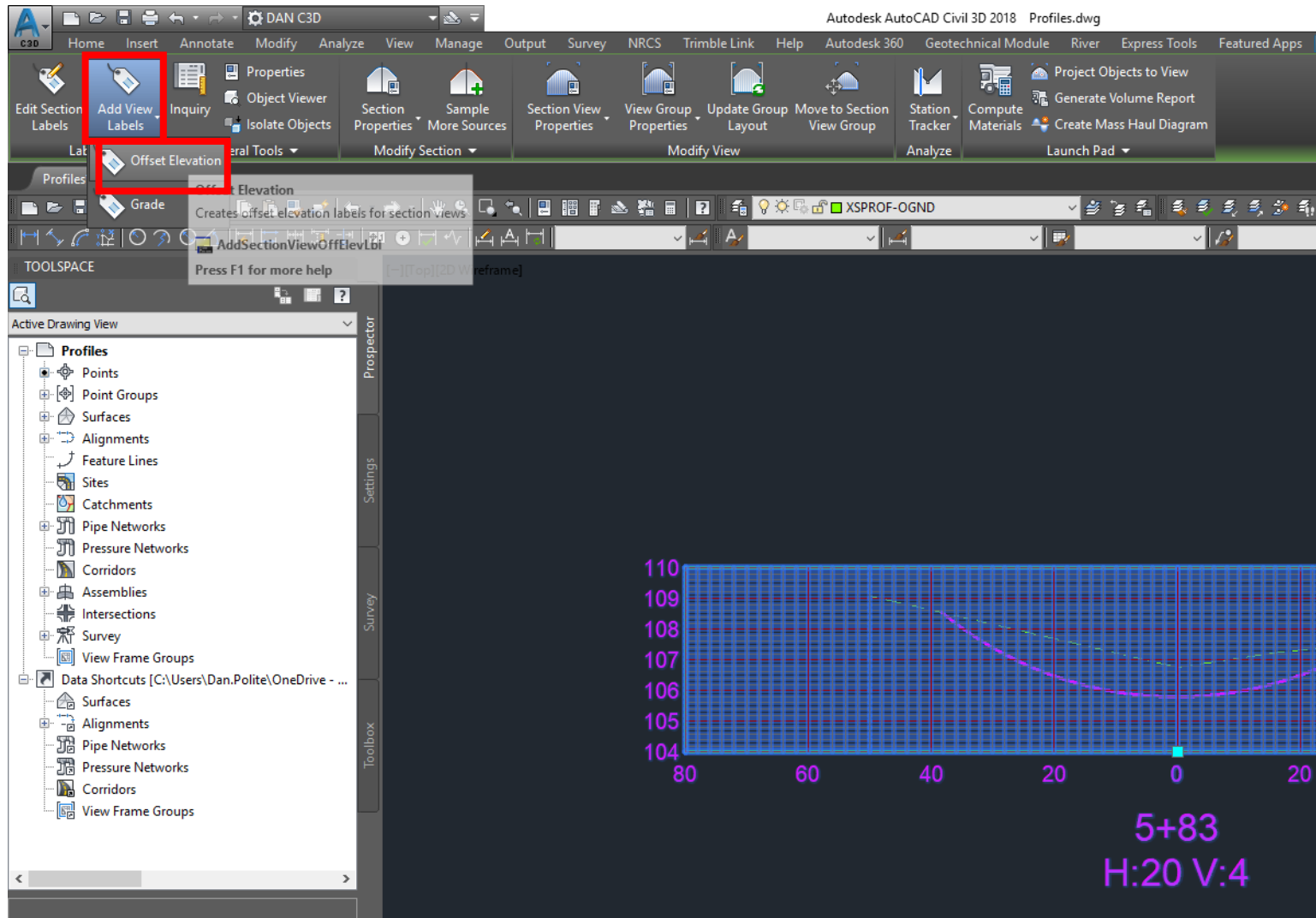
# SECTION VIEW LABELS

- ▶ Select the Section View that you want to label

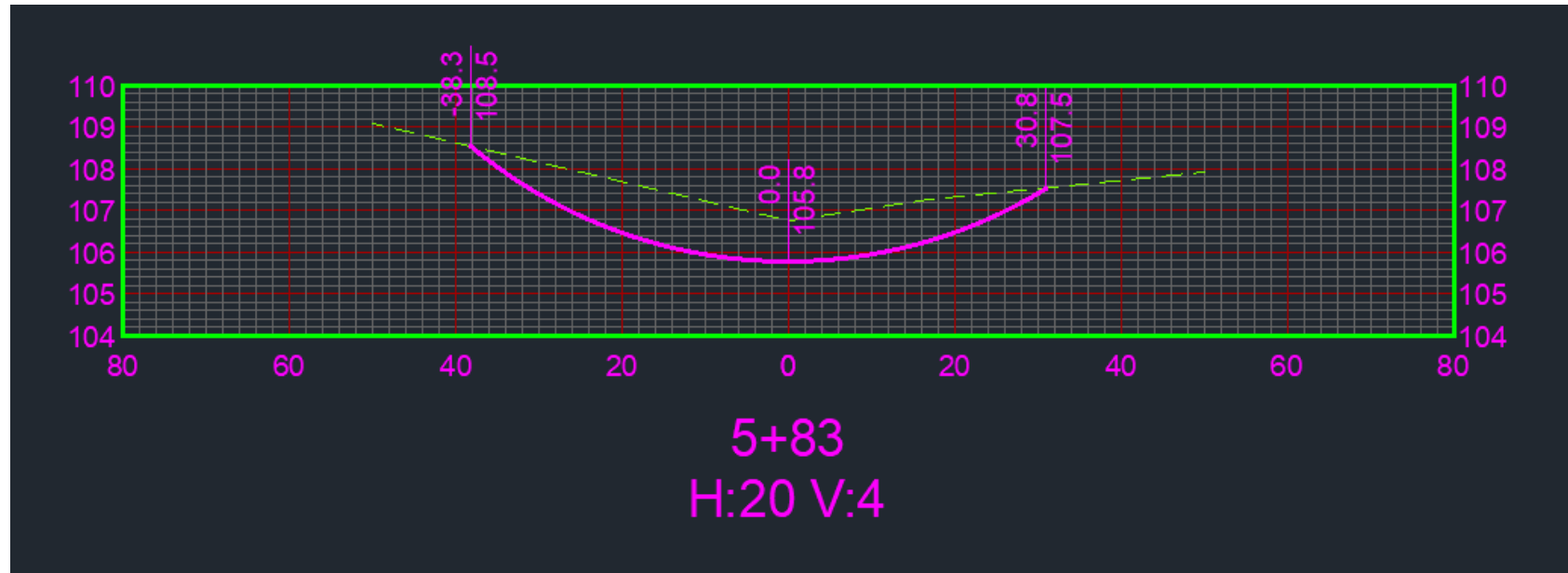


# SECTION VIEW LABELS

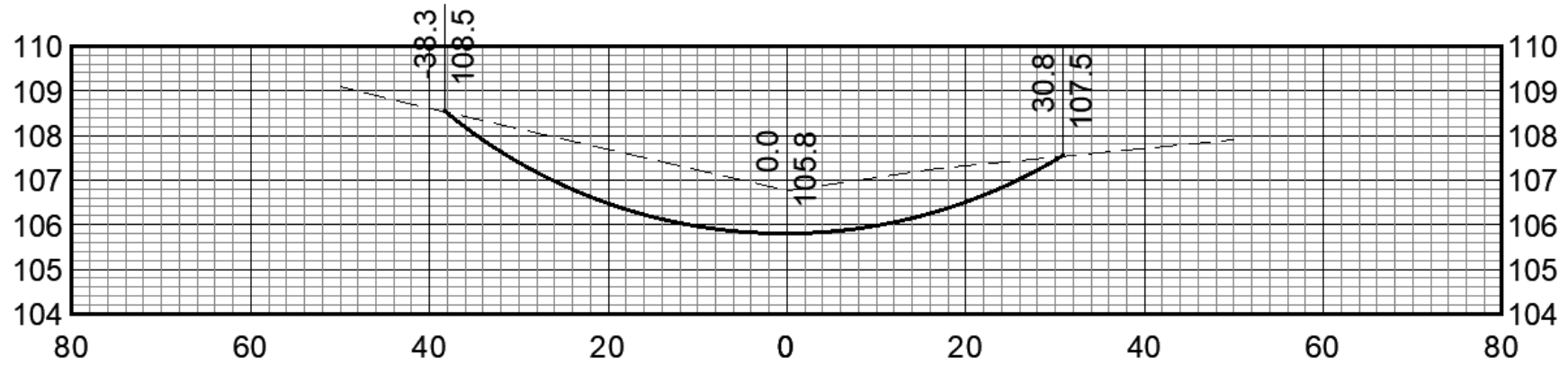
- ▶ Select the Section View that you want to label>Add View Labels>Offset Elevation



# SECTION VIEW LABELS



# SECTION VIEW LABELS



5+83  
H:20 V:4

# Overview of Profiles & Sections

## **Profiles**

An alignment must exist before a Profile can be created.

Types of profiles:

- Surface profiles – extracted from a surface and dynamically linked to the surface
- Layout profiles – proposed profiles created by using the Profile Layout Toolbar
- And others

Profile View must be created before the profile can be shown.

# Overview of Profiles & Sections

## **Profile Views**

A profile view is used to display profiles as graphed lines on a grid.

A specific profile can be displayed in more than one profile view.

Each profile view allows you to control what data is displayed.

- Profiles labels are live linked to the profile.
- Profile view labels stay at the same place in the view even if a profile is changed.

*(Profile labels will remain with the profile when changed)*

New profiles that are created will be added to all the existing profile views of that alignment.



# Overview of Profiles & Sections

## **Sample Line**

The user sets the locations of where they want to extract a section (*Cross Section*) & the width to extract.

## **Sections** (*Cross Section*)

Surfaces and Alignments must exist before Sections can be created.

Sample lines are setup along an alignment in order to extract Sections from the surfaces.

In order to display sections, there must be a Section View created.

# Overview of Profiles & Sections

**Sample Line Groups** are the holder for:

- Sample lines
- Sections (*Cross Sections*)
- Section Views

## **Section Views** (*Cross Section*)

A section View is used to display Sections (*Cross Sections*) extracted at a sample line.

A specific section can be displayed in more than one section view.

Section Views can be created as a group or individually

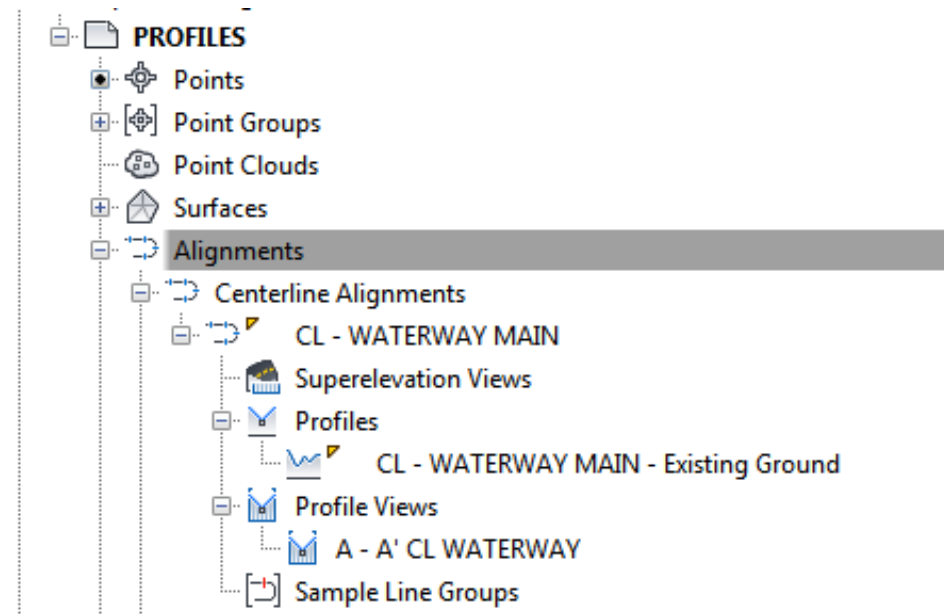
Each section view allows you control what data is displayed.

- Section labels are linked to the sections. (*Cross Sections*)
- Section view labels stay at the same place in the view even if a section is changed.

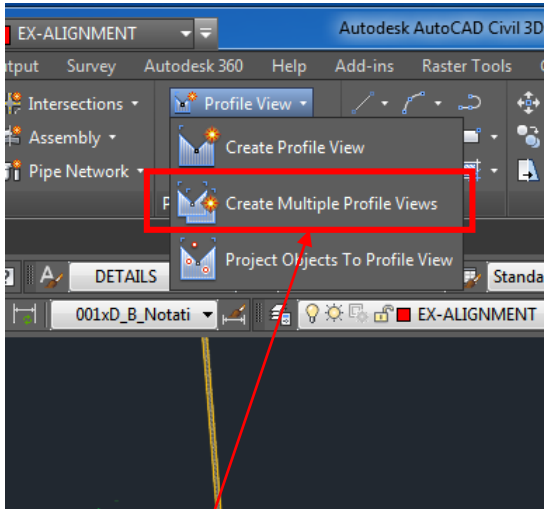
# Overview of Profiles & Sections

In *Toolspace... Prospector Tab...* **Profiles, Profile Views, and Sample Line Groups** are found under *Alignments*

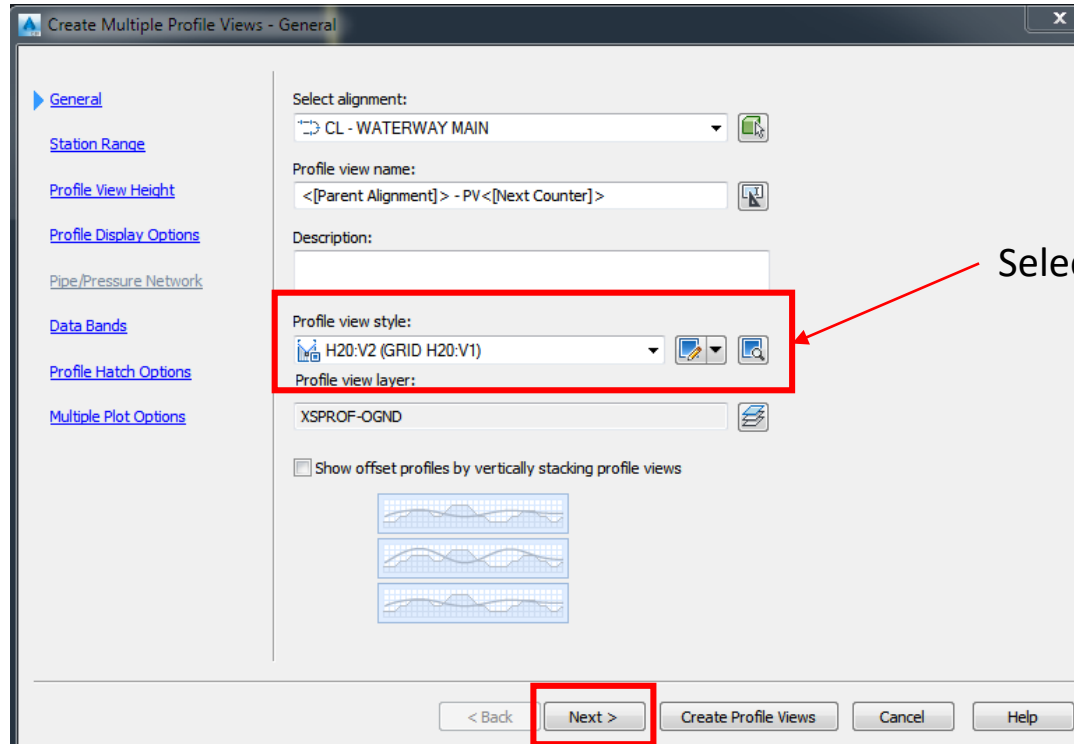
If the scaling of a Section View or Profile View is changed, the labeling adjusts.



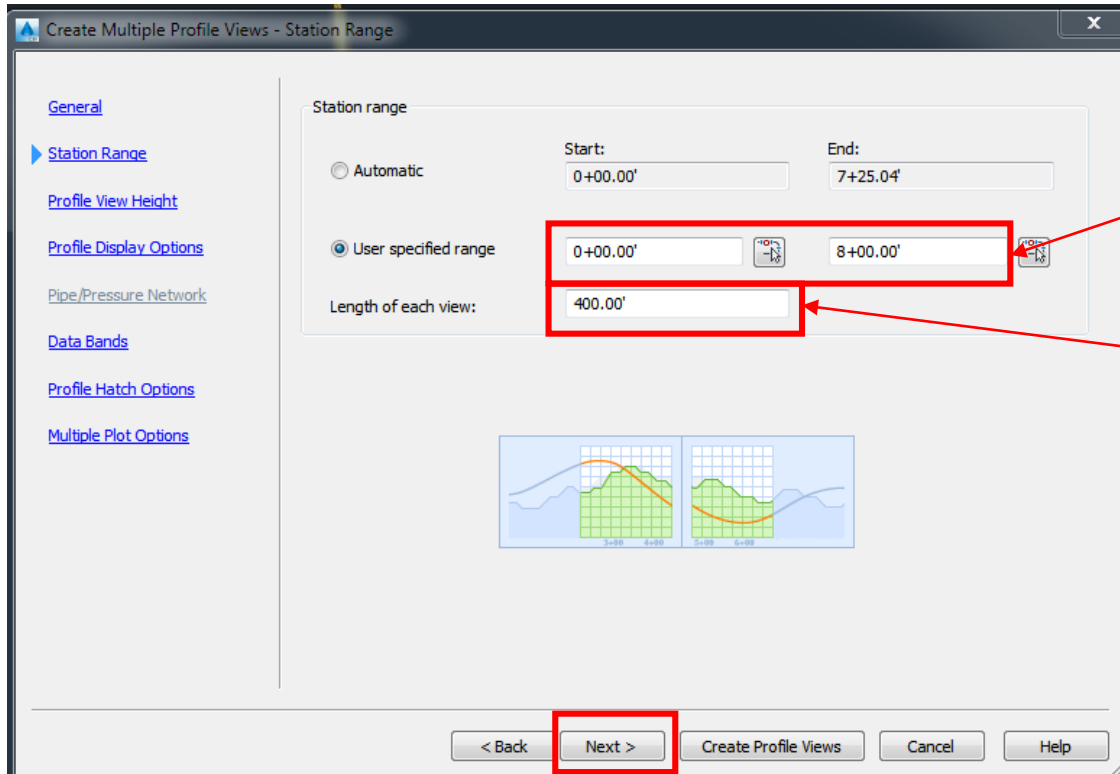
# Splitting Profiles



Profile View – Create Multiple Views

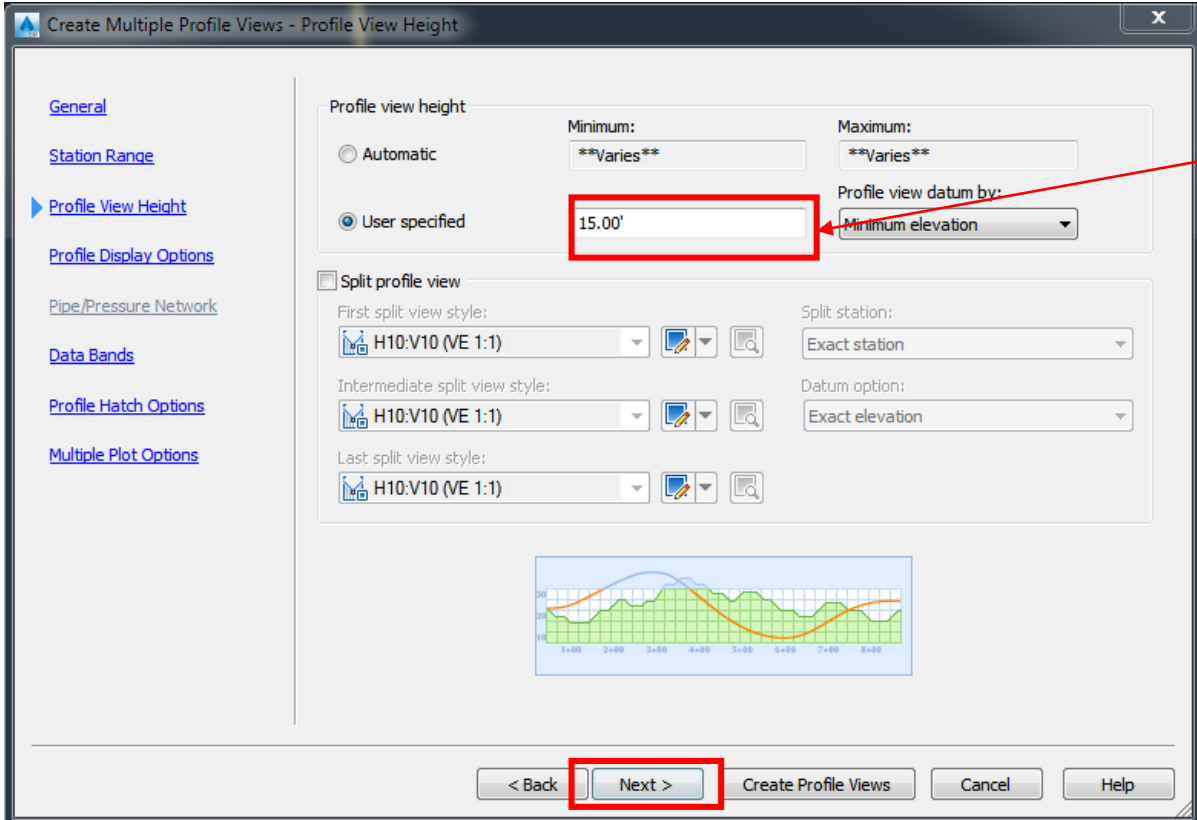


Select Scale

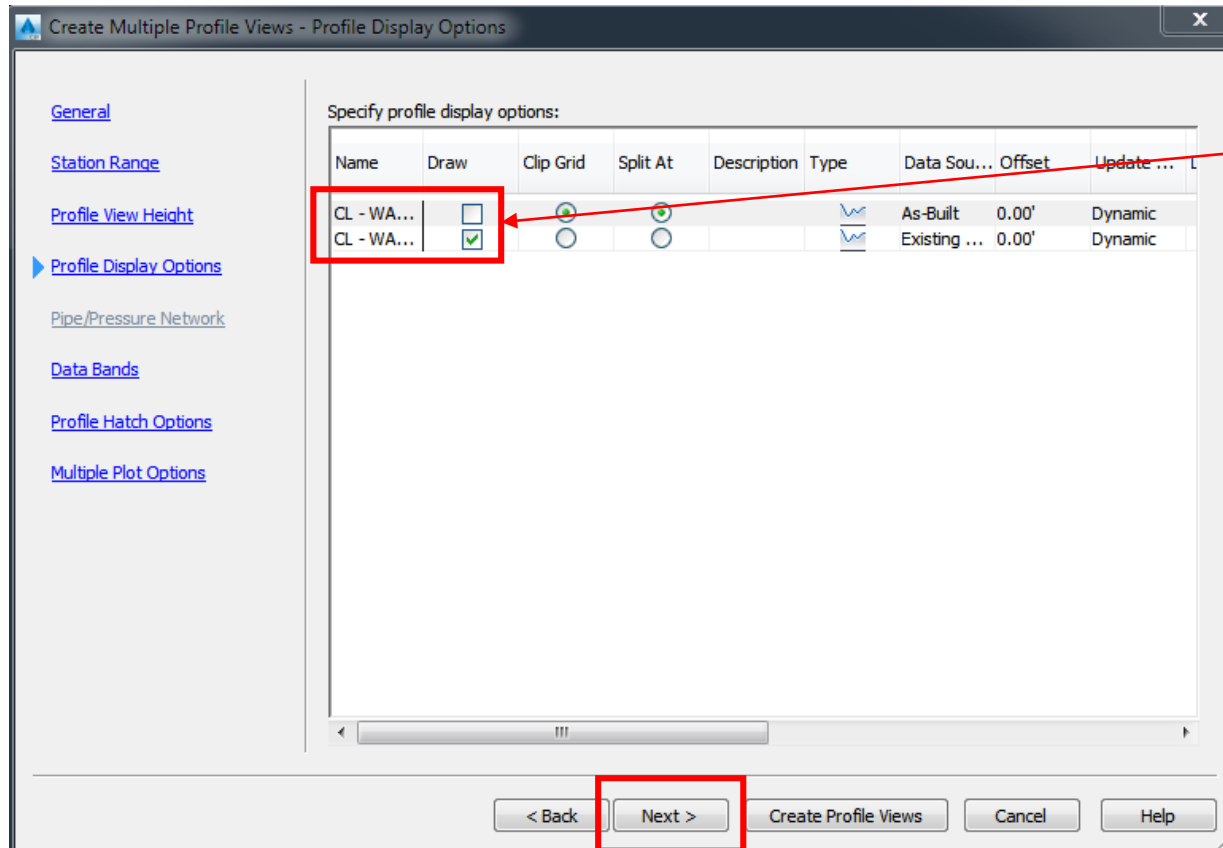


Select Length

Select Length on where you want to split profile at

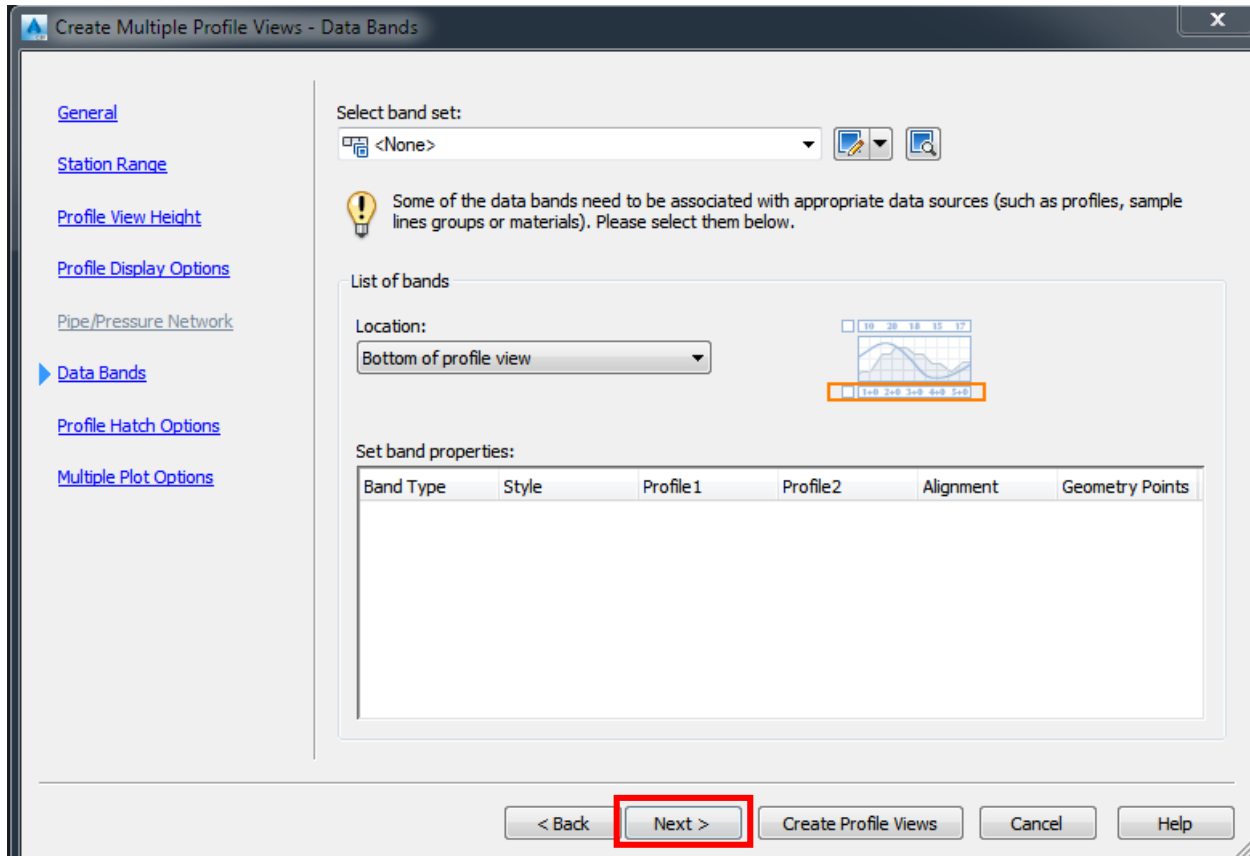


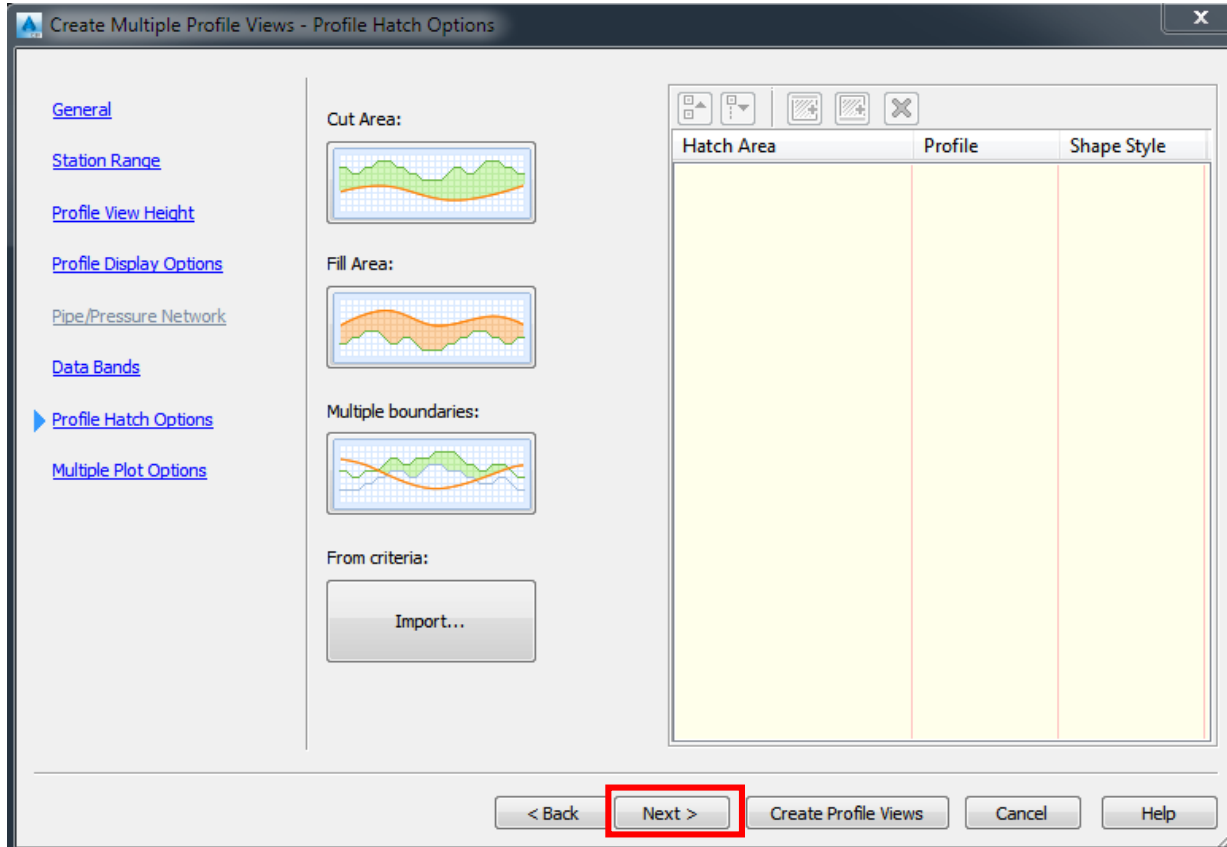
Total Height of Profiles

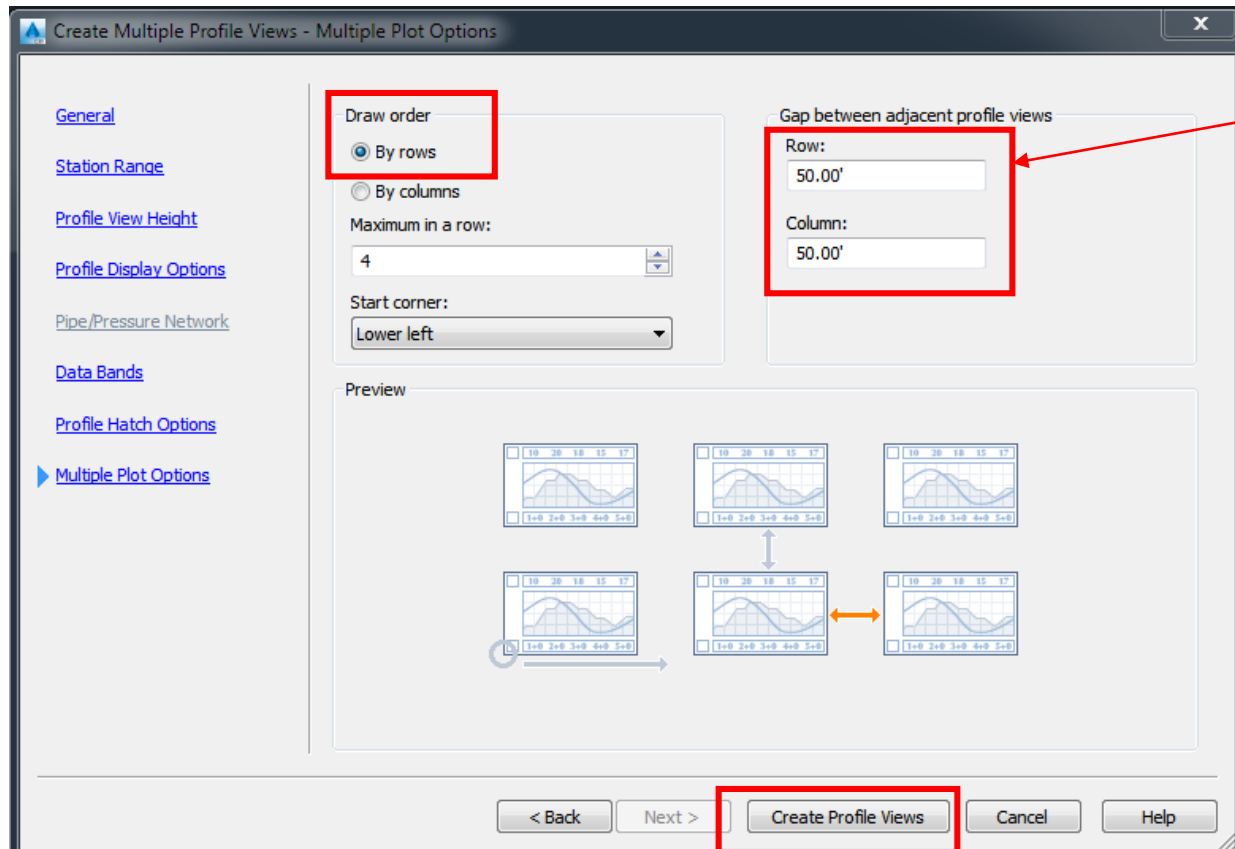


Select Surfaces



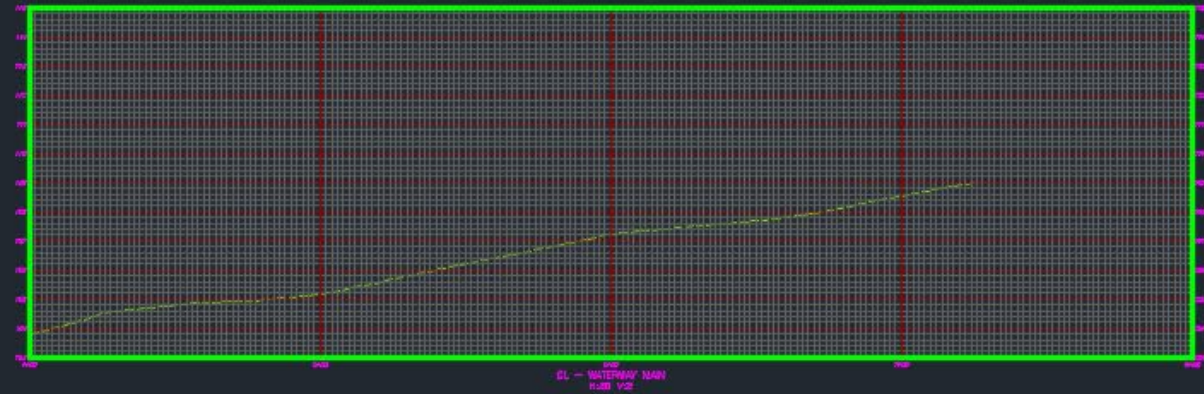
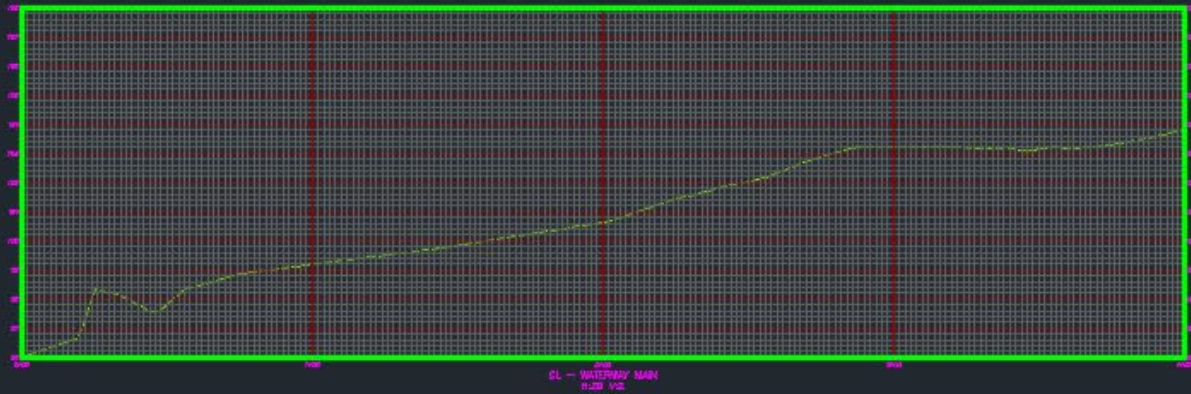




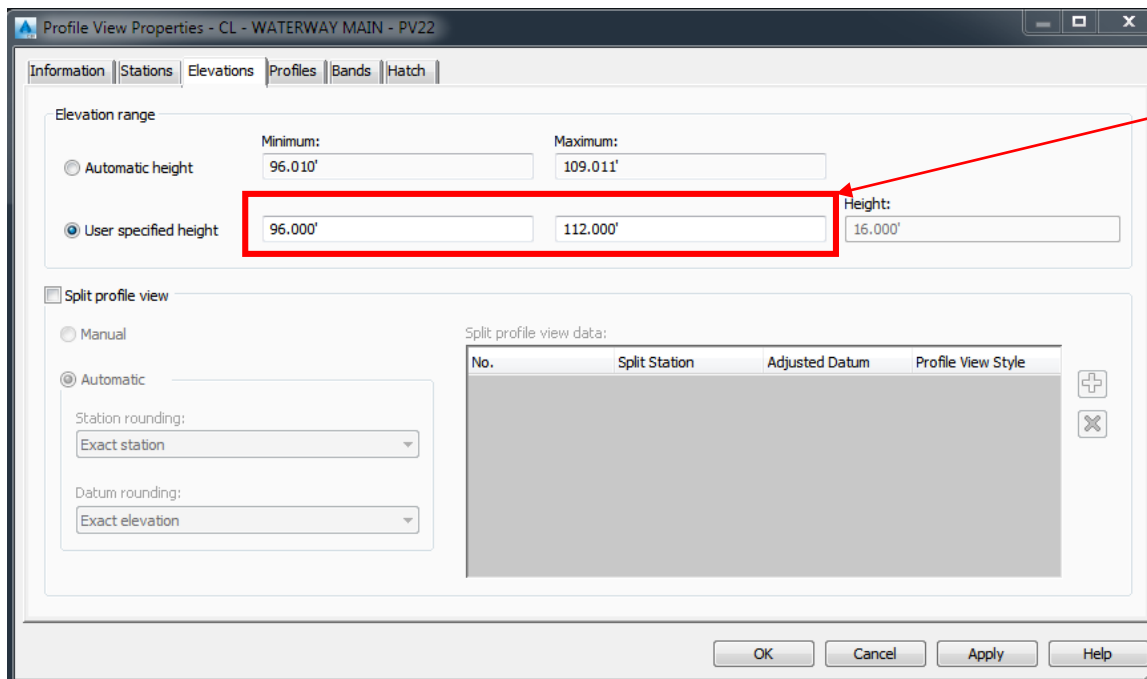


Select Distance between Profiles

Profiles that have been split

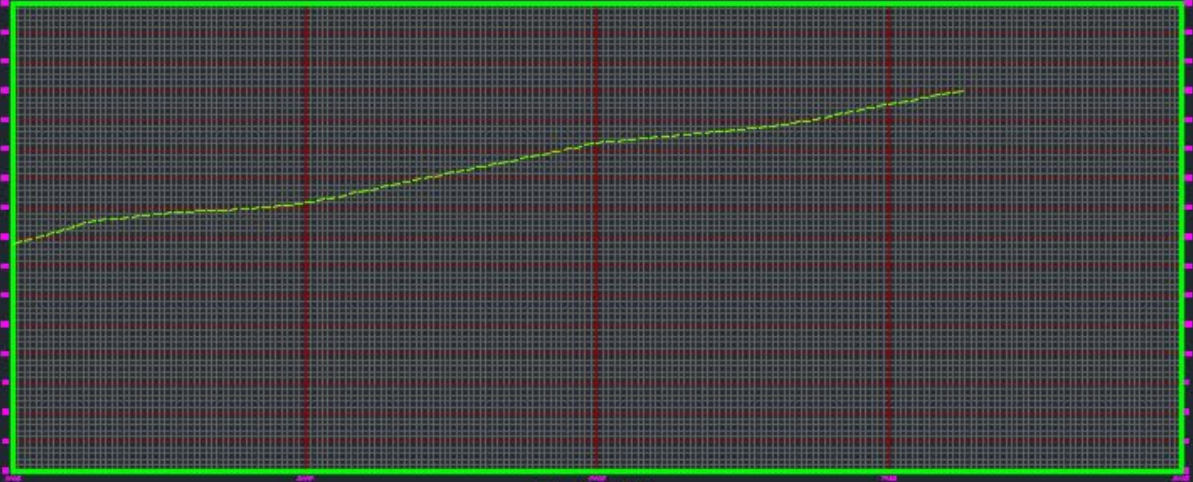
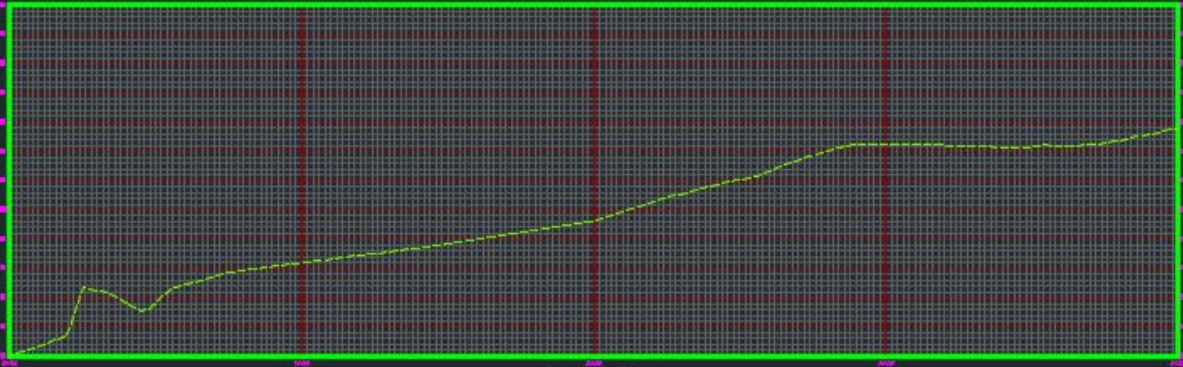


If you want to have the profiles match up with elevations, you can change the profile view properties from the second profile



Select Min Height of first profile and go 2ft above the highest elevation

# Profiles that have been split



# Profiles that have been split in Paperspace

