

ALIGNMENTS & PROFILES

Alignment Overview:

As in previous CAD versions, an alignment is a line that describes where you intend the centerline of your planned work to be and that was all. But, in Civil 3D that line is now interactive with both existing ground and finished ground. You can move it around and it changes the stationing automatically.

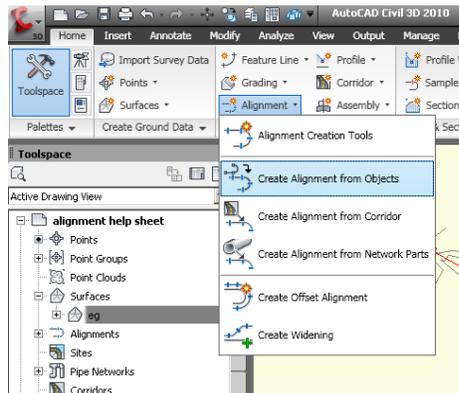
Profile Overview

Using profiles, you can view changes in elevation along a horizontal alignment. In addition to the centerline profile, you can create offset profiles for features such as waterway or ditch banks. If you change the location of your alignment, the profile adjusts automatically.

The following uses a waterway as an example, but the same concept can be applied to a dam or any other simple alignment.

I. CREATE AN ALIGNMENT

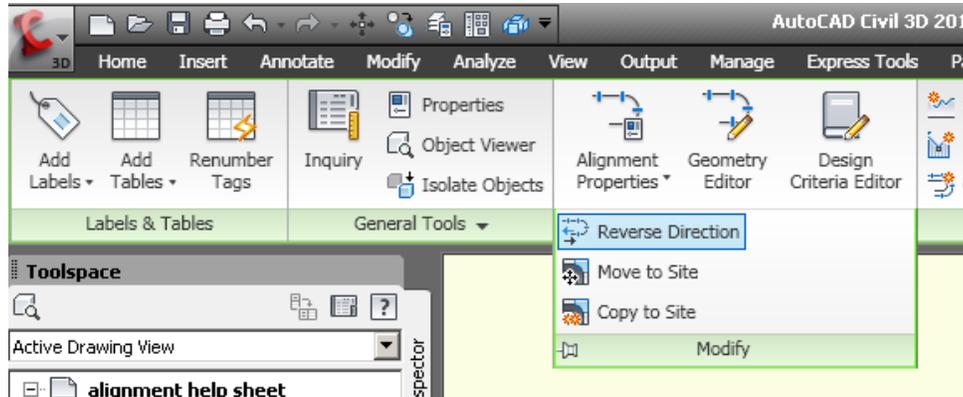
1. Using a 2D Polyline draw where your alignment will go (i.e. centerline of waterway)
2. From the Home Ribbon > Create Design Tab > Choose the Alignment dropdown > Create Alignment from Objects and Follow the Directions at the Command Line



3. From the pop-up window “Create Alignment From Objects”.
 - i. Give your alignment a relevant name (i.e. WW1).
 - ii. Leave the rest of the defaults alone.
 - iii. Hit “OK”.
4. Reverse the Stationing
 - i. Let’s say you accidentally started your alignment at the wrong end, resulting in 0+00 were you don’t want it. Click on the Alignment. A Conceptual Toolbar will

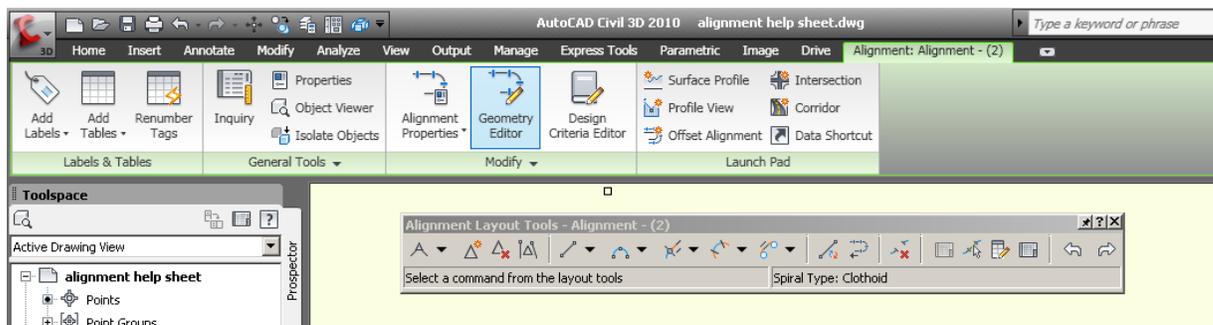
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appear. Click on the Modify Tab > Pull Down > Reverse Direction. Follow the Directions at the command Line.



5. Modify the Alignment

- i. If you forgot a point or need to add one you didn't want: Click on the Alignment > A Conceptual Toolbar will appear > Click on Geometry Editor > The Layout Tools toolbar will appear. Hover over any of the icons to find out what they do.

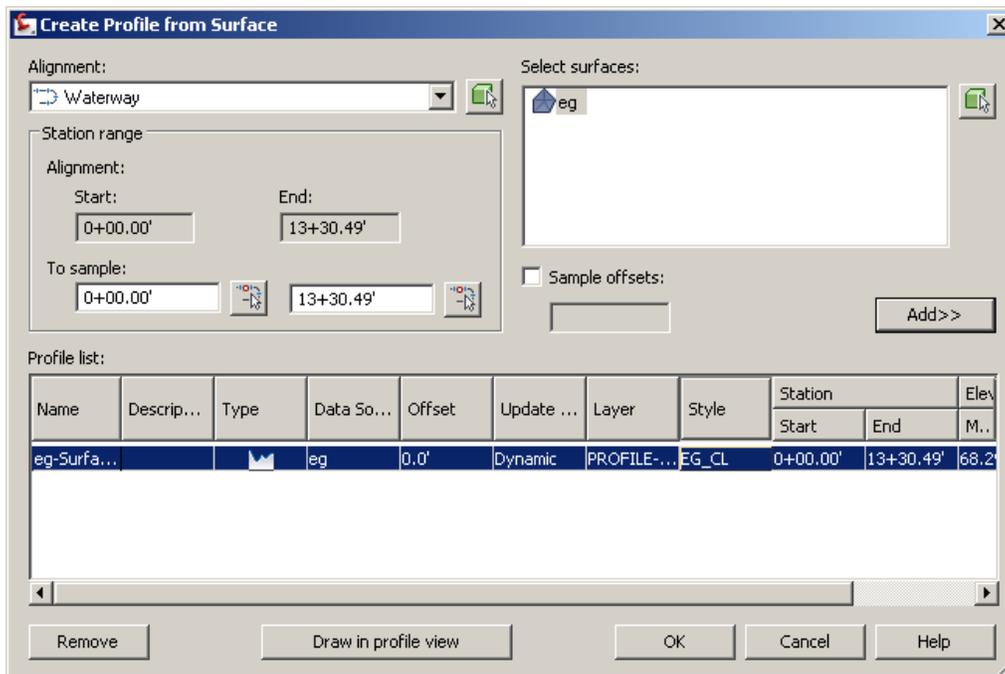


II. CREATE A PROFILE

1. From the Home Ribbon > Create Design Tab > Profile > Create Surface Profile
2. From the pop-up window :“Create Profile from Surface”

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- a. The profile will use the entire alignment unless you edit the stations you wish to assign the profile to under the “Station Range” section.
 - b. ****OPTIONAL STEP:** Pick small box marked “Sample Offsets”. When the window enables, enter your planned bank shots and centerline shots relative to the alignment (i.e. -15,0,15)*
*(*Note: sample distances left of centerline are designated as a “negative” distance* Left bank and right banks, in this case, are sampled 15’ off centerline. And the centerline is sampled right on the alignment.
3. Select the Surfaces you want to be sampled then Pick the “Add” button. The data will show up in the Profile List.
 4. To change how the profile line will look in the Profile View, Click in the Style Column on the Profile you wish to change.
 - a. Use the pull down to choose and appropriate style.
 - b. Pick “OK”.



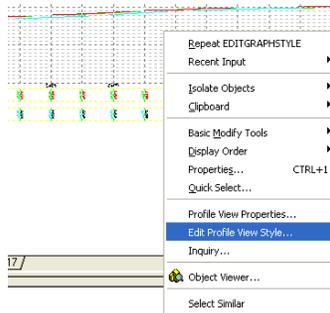
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III. CREATE A PROFILE VIEW:

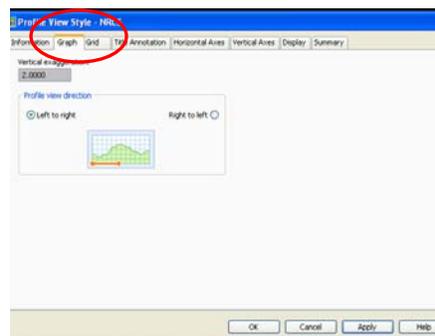
1. From the Home Ribbon > Profile and Section View Tab > Profile View > Create Profile View
 - a. You'll get a "Create Profile View" dialog box.
 - b. If you have more than one alignment, pick the one you want to profile under "Select Alignment"
 - c. Give the Profile View a name.
 - d. Pick "Create Profile View" button.
 - e. Pick a "blank" spot on the screen to place the Profile View

IV. EDIT THE PROFILE VIEW

1. Select the profile by clicking anywhere on the profile, (the whole thing lights up).
2. Right-click on the selected profile and choose "Edit Profile View Style" and the "Profile View Style" window pops up.



3. If you want to change the vertical exaggeration of the profile, for example, Go to the "Graph" tab and change the "vertical exaggeration" to a higher number. Pick "OK"

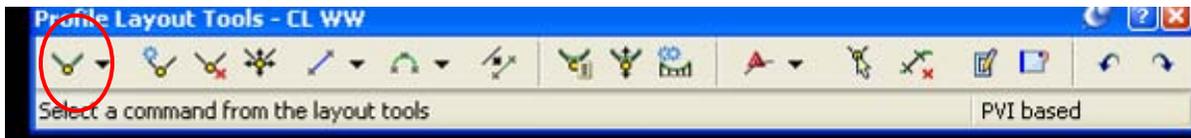


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4. There are many things you can change by selecting different tabs in the “Profile View Style” window.

V. CREATE FINISHED GROUND PROFILE

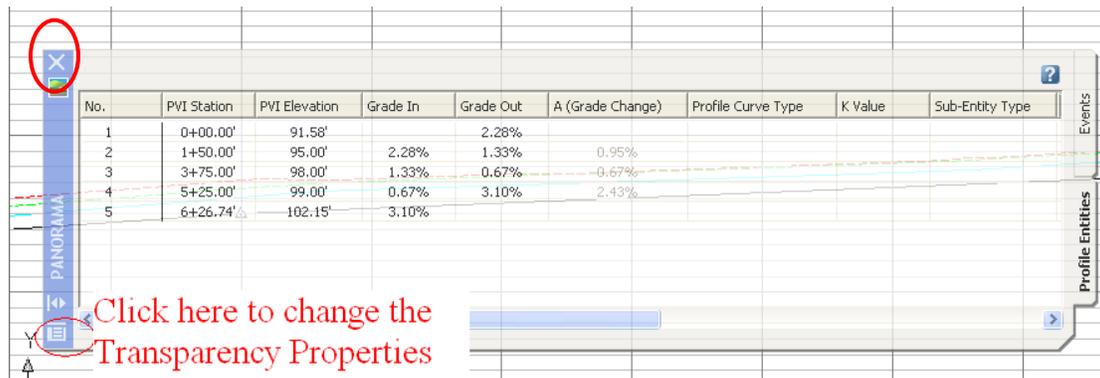
1. From the Home Ribbon > Create Design Tab > Profile > Profile Creation Tools
 - a. Click on the Profile View you want to add a Profile To
 - b. The Create Profile dialog box opens > Name the Profile (i.e. WW)
2. The “Profile Layout Tools” toolbar will automatically popup.
 - a. Choose “Draw Tangents without Curves” icon.



- b. Starting at the beginning of your profile (0+00), draw-roughly-the grades and grade breaks (PVI's) you want across the profile.
 - c. When done, hit “Enter”.
3. To edit the line to exact grades, grade changes, and/or elevations,
 - a. Pick the FG line you just drew. Right-click.
 - b. From the menu, choose “Edit Profile Geometry”
 - i. You’ll get a “Profile Layout Tools” toolbar.
 - ii. Choose “Profile Grid View” icon



- iii. The panorama window opens up and you can edit grades, grade break locations, and elevations as needed by double-clicking in the boxes and editing the numbers. When finished, select the “X” in the upper left to close panorama window.

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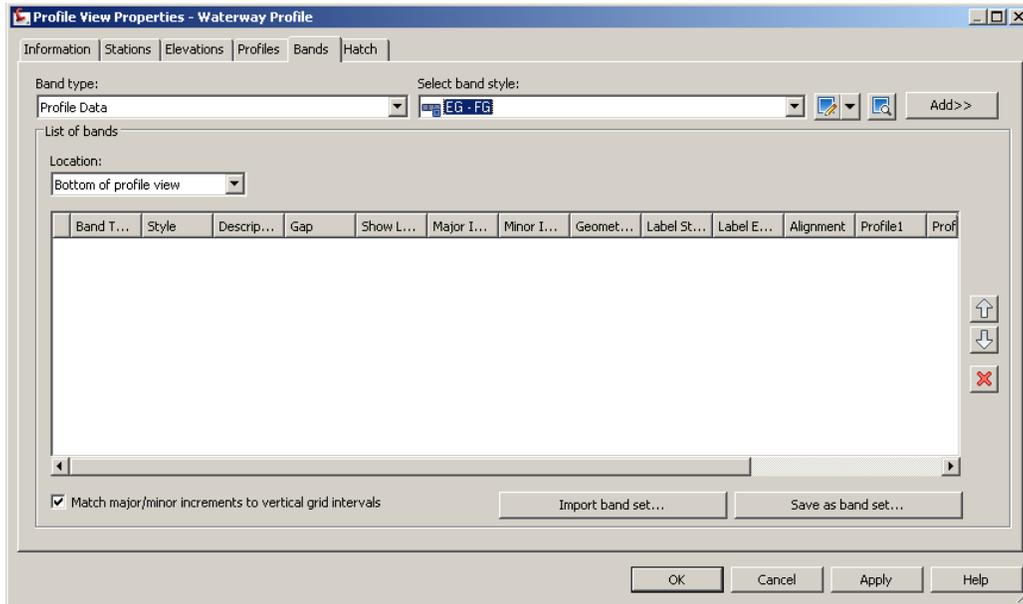
- iv. You can remove or add a grade break by picking the appropriate tool on the “Profile Layout Tools” dialog box.

**VI. Adding Bands**

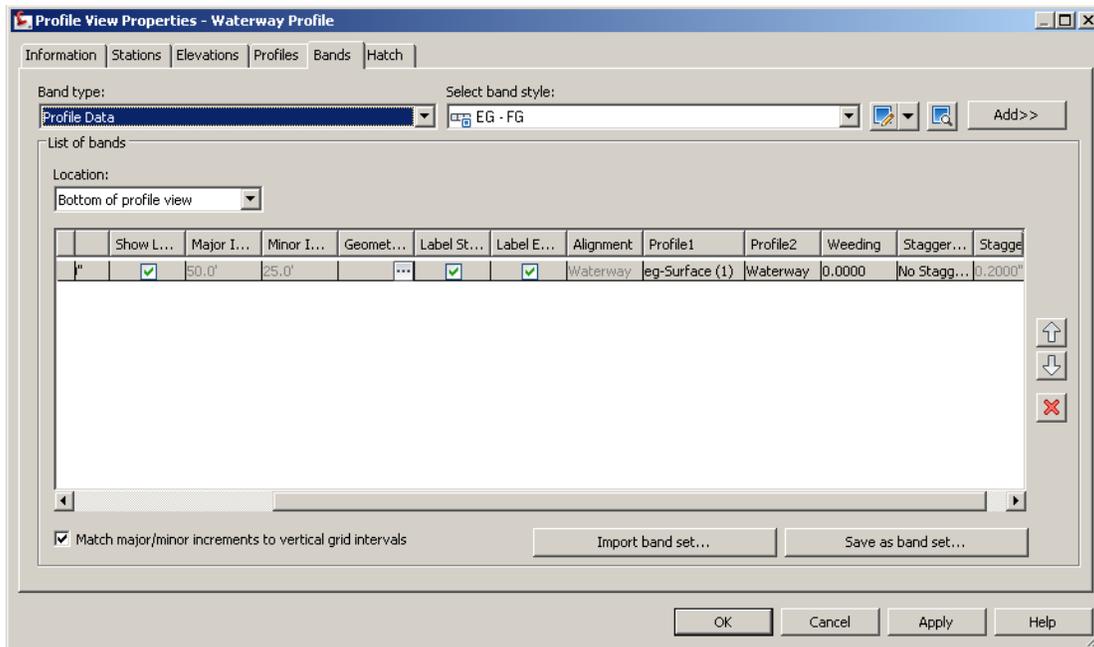
1. To Add or Modify Bands
 - a. Pick anywhere on the profile grid. Right-click. Choose “Profile View Properties”
A window pops up with the same name.
 - b. Pick the “Bands” tab.
 - c. Select the Band Style you want than > “ADD”.

NO BANDS

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- d. For the “EG-FE” row, make sure “Profile 1” column has the Existing Ground (EG) centerline data and “Profile 2” column has Finished Ground (FG) data.
- e. Change the Weeding to “0”



- f. When finished, hit “OK”. Elevation data on the bottom of the graph should match the profile lines for existing and finished ground.

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1. Sometimes you will not have all the finished ground surface(s) when you create your profiles. These can easily be added to the cross sections with a few clicks.
2. From the Home Ribbon > Profile > Create Surface Profile
 - a. Select the correct Alignment
 - b. Select the Surfaces you want to add to the Profile/Cross Sections
 - i. Click the “ADD” Button
 - c. Change the style of the newly added surfaces so you can differentiate them in the profile.
 - d. Click “OK”

