

Generating Profiles from Surface Entities

The following instructions will guide you through the process of creating a profile from any type of surface entity. These instructions require that contours, a triangulation mesh or another 3D entity to be generated beforehand. When the polyline is connected to existing points accurate detail can be shown with this method. SurvCADD modules are displayed as **{Section-Profile}**, main menus are displayed as **[Profiles]**, and submenus and menu commands are displayed as **<Profile from Surface Entities>**.

- 1) Draw a line to represent the location of the profile: **{Any Module} → [Draw] → < 2D Polyline>**. The starting point of the polyline will be station 0+00. Use any osnap mode to connect to the contours and surface objects.
- 2) Create the profile file: **{Section-Profile} → [Profiles] → <Profile from Surface Entities>**
- 3) The “*Profile File to Write - (pro)*” dialog box opens. Save the profile file in your working directory with the rest of your project files, giving it a name you can easily recognize (ex. Smith_WW_CL).
- 4) The “*Profile from Surface Model*” options box opens. Set the following options:
 - a. *Beginning Station*: **0+00**
 - b. *Interpolate Endpoint Elevations from Beyond Profile Extents*: **Checked**. This will look past the end of your line to find intersections with other surface data to use in the profile generation.
 - c. *Extrapolate Endpoint Elevations to Extents of Profile*: Typically **Unchecked**. This option uses the slope from the last known two points to calculate the endpoint elevation.
 - d. *Station by Another Reference Centerline*: **Unchecked**
 - e. *Breakpoint Descriptions from Layers*: **Checked**
 - f. *Ignore Zero Elevation Lines in Surface Model*: **Checked**
 - g. *Profile Offsets*: **Leave Blank**. Will create additional profiles at the offset distances specified in this box. Use negative numbers for left.
 - h. Click “**OK**” when the options are set
- 5) **Click on the line** that was drawn in step 1 that represents the location of the profile.
- 6) **Click on all objects** that you want to use to create the profile. If possible select objects slightly past both ends of the line. Box selections also work for selecting objects.
 - a. Press “**Enter**” when done selecting surface entities

- 7) As long as the command line shows that “Intersections found>” is greater than 0, the profile file was created. The profile now has to be drawn using the draw profile command.
- 8) To draw the profile: **{Section-Profile}** → **[Profiles]** → **<Draw Profile>**
- 9) Select the profile file that you created above. You may need to navigate to the file.
- 10) The “Draw Generic Profile” window appears. Starting in the upper left of the Draw Profile box set your profile options:
 - a. *Draw Grid*: **Check** this option. Draws a grid at specified intervals.
 - b. *Label Scale*: **Check** this option. Draws a scale indicator in the corner of the profile.
 - c. *Grid Direction*: The profiles are usually drawn **left to right** so keep that option checked.
 - d. *Draw Sheet*: Leave **Unchecked**. Draws profiles into paper space.
 - e. *Draw Horz Label Box*: Leave **Unchecked**. Draws box below the profiles with topographic information in it.
 - f. *Draw Break Pt Elev*: Typically **Unchecked**. Draws the elevations vertically on the profile at the break points.
 - g. *Ticks Only*: Tick marks are drawn instead of the grid lines.
 - h. *Match Line Elevations*: Typically **Unchecked**. For high relief profiles, this option will break the profile and redraw the remaining portion with its own vertical scale. Set the vertical elevation range when checked.
 - i. *Draw Break Pt Desc*: Typically **Unchecked**. Draws descriptions of the break points.
 - j. *Design Box*: Leave **Unchecked**. Displays information about breaks in a separate box.
 - k. *Offset Station Text*: Offsets Station text by 6 standard text heights.
 - l. *Offset Elev Text*: Offsets vertical axis text. Typically **Unchecked**.
 - m. *Station Text Orientation*: Controls the orientation of the station text. Set based on user preference.
 - n. *PVI 'I'*: Leave **Unchecked**. Plots an upside down V at the inflection point.
- 11) **Setting the Scales**. Paper space available and use will dictate the scales used. Determine horizontal scale based on available paper space. Typical vertical exaggerations are 2:1, 5:1, and 10:1. Vertical scales are calculated by dividing the horizontal scale by the exaggeration factor. 1:1 scales are the easiest to work in but are not always feasible. Many times this can be an iterative process to get the profile to look acceptable.
 - a. *Horizontal Scale*. Determine horizontal scale based on available paper space (divide profile length by available paper length, round up). **Enter calculated or desired value.**

- b. *Horiz Grid Interval*: Specify an even grid line spacing on the horizontal axis, typically the **same as Horizontal Scale** or multiple of it.
- c. *Horiz Text Interval*: This specifies the frequency of the text along the horizontal axis. **Set the same as the Horizontal Grid Interval** or a multiple of it.
- d. *Vertical Scale*: Vertical scales are calculated by dividing the horizontal scale by the exaggeration factor (10, 5, 2, 1). **Enter a vertical scale.**
- e. *Vert. Grid Interval*: Specify an even grid line spacing on the vertical axis, typically the **same as the Vertical Scale** or a multiple of it.
- f. *Vert Text Interval*: This specifies the frequency of the text along the vertical axis. **Set the same as the Vertical Grid Interval** or a multiple of it.
- g. *Axis Text Scaler*: Set to **0.125**
- h. *Label Text Scaler*: Set to **0.080**
- i. *Profiles to Draw*: Up to 3 profiles can be drawn together on a single grid. Selecting the 1st, 2nd, 3rd buttons will enable you to draw profiles together.
- j. *Starting station*: Can be any station but the default is 0.00 (0+00).
- k. *Ending station*: Can be any station but the default is the last station in the profile file.

Layers option box at the bottom of the screen allows you to set the layers for the profiles, grid and text.

- 12) Click "**OK**" when done setting profile options.
- 13) **Enter the bottom elevation** of the grid to draw. Press "**Enter**" after the elevation. SurvCADD finds the lowest elevation in the profile and rounds down. If many features are going to be added below, consider lowering the bottom elevation.
- 14) **Enter the top elevation** of the grid to be drawn. Press "**Enter**" after the elevation. SurvCADD finds the highest elevation in the profile file and rounds up based on the bottom elevation specified. Increase elevation if needed.
- 15) Use the mouse to click the lower left corner of where the profile is to be drawn in model space (or type in coordinate and then press enter).
- 16) The profile is drawn. Inspect the profile and redo if necessary.