

Creating 3D Surfaces

The following instructions will guide you through the process of creating a 3D surface from the surveyed point data that represents the existing field conditions. Also the user may view the graphical representation of the newly created surface. These instructions assume that the point data has already been downloaded and drawn in Carlson Software. SurvCADD modules are displayed as {**Civil Design**}, main menus are displayed as [**Surface**], and submenus and menu commands are displayed as <**Make 3D Grid File**>.

- 1) Isolate your breaklines (if they exist) and points layer: {**any Carlson Module**}
⇒ [View] ⇒ <Isolate Layers>
- 2) When prompted to “retain point layer” type “Y” for yes.
- 3) Create 3D grid file: {**Civil Design**} ⇒ [Surface] ⇒ <Make 3D Grid File>
- 4) Name the grid file: (ex. Eg_landowner_practice code) Save the file in the project work folder.
- 5) In the command line it will ask to use a position from another file or pick the location of the grid. Type “P” for pick.
- 6) When “Pick” is selected, the command line instructs the user to pick the lower left grid corner. Draw the pick box large enough to encompass all of the points of the surveyed area, but is tightly around them.
- 7) In the dialog box, the only item that needs to be manipulated is the grid resolution. Ranges of Elevation/Values to process, Modeling Method, and the Triangulation Mode should be left as default.
- 8) Under grid resolution, it is a rule of thumb that the total number of cells should not be greater than 250,000 (500 x 500). When specifying grid resolution select the option “**Number of Cells in X and Y**”. Click Ok.
- 9) Select all points and breaklines that will be used to create the 3D surface of the existing ground. Make sure to exclude any points that are not on the ground that you do not want included in the surface model. (i.e. nail in base of tree)
- 10) In the command line the user notices that the values for the grid are being assigned.
- 11) Now that the 3D grid file has been created it can be plotted on the drawing and contained on its own layer: {**Civil Design**} ⇒ [Surface] ⇒ <Draw 3D Grid File>

- 12) The dialog box appears for the user to select the grid that was just created. Navigate to the location that houses the grid file and select the file and open it.
- 13) The Plot 3D Grid File dialog box appears on the screen.
- 14) The defaults can be left as they are. If there are going to be multiple surfaces created for this job then rename this mesh layer to so it can be distinguished as the original ground surface. Also check inclusion\exclusion areas.
- 15) The option is also given so that grid can be colored based on user defined colors and user defined elevation ranges.
- 16) If this option is chosen, click '**Set Elev Zones**'. The user is now able to manually set the elevation ranges of the survey or let the program select them automatically. To select the ranges automatically then click "**Auto**". Once auto is selected then the user can determine the starting elevation values and the interval of the ranges along with the color for each zone.
- 17) Once these options are complete click "**OK**".
- 18) The command line prompts the user to select inclusion areas.
- 19) Next, select any exclusion areas that are in the drawing.
- 20) Now the 3D mesh is on the plan view of the drawing.
- 21) In the command line, it prompts the user to select a location for the color legend. Pick the location on the screen for the legend.
- 22) Hit "**Enter**" when prompted to enter the legend size.
- 23) The color legend is now on the screen in the location that was selected.