

Creating Contour Map from Surveyed Points

The following instructions will guide you through the process of creating a contour map from the surveyed point data that represents the existing field conditions. These instructions assume that the point data has already been downloaded and drawn in Carlson Software. Carlson modules are displayed as {**Civil Design**}, main menus are displayed as [**Surface**], and submenus and menu commands are displayed as <**Triangulate and Contour**>.

- 1) If there are only certain areas of the plan view to be contoured draw an inclusion boundary around that area. (i.e., perimeter of site)
- 2) If there only certain areas of the plan view to be excluded from being contoured, draw an exclusion boundary around that area. (i.e., building outlines)
- 3) Inclusion and exclusion lines must be closed polylines.
- 4) Create Contours from points: {**Civil Design**} \implies [**Surface**] \implies <**Triangulate and Contour**>
- 5) The Triangulate and Contour dialog box appears on the screen. There are four tabs across the top of the box: Triangulate, Contour, Labels, and Selection.
- 6) Under the **Triangulation** tab, the options that are typically selected are as follows, Use Inclusion/Exclusion Areas, Ignore Zero Elevations, and Erase Previous Contour Entities.
- 7) Now, go to the **Contour** tab.
- 8) Here, make sure that the Draw Contours box is checked. The Interval Method to use is **Contour by Interval**. **Contour an Elevation** can be used if the user wants to only contour a certain elevation. Change the layer name. (i.e. CTR – Existing)
- 9) When using **Contour by Interval**, select the desired Contour Interval for the site to be contoured, and change the layer name (i.e. CTR - Index)
- 10) The Reduce Vertices option here is defaulted. By having this option on it will draw contours faster. The offset distance is the maximum distance that the original contour will shift in order to reduce the number of vertices. A larger value will remove a higher number of vertices and shift more from the original contour line.
- 11) Select the option **Draw Index Contours**. Change the layer name for the Index Layer. Also, select you index interval and the line width for the index line.

- 12) When the **Hatch Zones** option is selected, this will create hatching between contours based on user defined elevation zones. The hatch can be a user defined solid color or hatch pattern.
- 13) If this option is selected then the define ranges dialog box opens. Here the user can define the elevation ranges or select the ranges automatically. Then click "**Ok**" once the ranges have been selected.
- 14) Now, got to the **Labels** tab.
- 15) Make sure that the **Label Contours** option is selected. Under this tab, the layers can be selected for the contour text, and the index contour text. Also, the label style can be changed here.
- 16) The user should select labeling that suite them. Whether the contours are to be broken at the label, or labeling the contour ends, etc.
- 17) The final tab under the Triangulate and Contour dialog box is "**Selection**".
- 18) Here the user may specify what type of entities the routine triangulate contour uses to create the contours. (i.e., points, Lines)
- 19) Once everything has been set in the dialog box, click "**Ok**".
- 20) In the command line it will prompt the user to select inclusion area polylines. Select any inclusion polylines if applicable.
- 21) Next, in the command line it will prompt the user to select exclusion area polylines. Select any exclusion polylines if applicable.
- 22) Finally, in the command line it will prompt the user to select all points and breaklines to use for creating contours. Remember to select breaklines that represent slope breaks (i.e., top of slope, and toe of slopes) and unselect any points that are not on the ground (i.e. nail at the base of trees). Draw a pick box around the points and breaklines to be contoured.
- 23) Once all points and breaklines have been selected click "**Enter**"
- 24) The site is now contoured.