Design Pad Template for Flat Surfaces

The following instructions will guide you through manually entering points. SurvCADD modules are displayed as {**COGO-Design**}, main menus are displayed as [**Points**], and submenus and menu commands are displayed as <**Edit Points**>.

1) In SurvCADD, open the drawing that has the existing grid you want add a flat surface to
2) Make sure the grid is created. If not, create it.
3) Draw the outline of the pad to be created. This will be the outline of the total area to be leveled. This outline can be a closed 2D polyline, closed 3D polyline, an open 2D polyline or an open 3D polyline. The line type will depend on the project you are working on
    a. **Closed 3D polyline** will use the individual elevations at each vertex to grade the area. Allows for greatest control over pad elevations.
    b. **Closed 2D polyline** will let you set the elevation of the pad and will allow a single slope across the pad
    c. **Open 3D polyline** will let you set the individual elevations at each vertex and will prompt for one side of the line to work on
    d. **Open 2D polyline** will let you set the entire line at a single elevation and will prompt for one side of the line to work on
4) If using a 3D polyline, check the elevation at each vertex using the Properties Manager. If using a 2D polyline, determine the elevation of the pad before you run the Design Pad Template routine.
5) Run the Design Pad Template function: **{DTM-Contour}** → **[Site]** → **<Design Pad Template>**
6) The "**Design Pad Template**" box appears. The following is a summary of the commonly used options:
    a. **Source of Surface Model**: Choose between a grid (.GRD) file, screen entities, or a flat elevation
    b. **Slope Direction from Closed Plines:** Choose between Outside or Inside. Sets the direction from the polyline the program will use to create the surface.
    c. **Design Slope Format**: Choose between Ratio, Slope, or Template
    d. **Use Different Slopes for Separate Sides:** Allows you to specify different slopes for different sides of your pad polyline. If this is toggled ON, you will be prompted to specify two of more slope

groups, then you will be prompted to select the polyline segments that belong to each group

e. **Use Slope Pad Design**: Allows you to set a cross slope amount for the top of the pad. You will be prompted to screen pick two points that designate the slope direction.

f. **Round Exterior Corners**: This option rounds the corners of the pad.

g. **Draw Side Slope Polylines**: When this option is ON, Design Pad Template will draw 3D polylines perpendicular to the pad perimeter from the pad to the catch point. This helps visualize the grading and can be an aid when taking cross sections.

7) Select the following in the "**Design Pad Template**" box:
   a. Source of Surface Model: **Surface File**
   b. Slope Direction from Closed Polylines: **Outside**
   c. Design Slope Format: **Ratio**
   d. Round Exterior Corners: **Checked**
   e. Draw Side Slope Polylines: **Checked**
   f. Side Polyline Spacing: **25**
   g. Cut/Fill Factors: **1.000**
   h. Pad Layer Name: **PAD - Pad**
8) Click "**OK**" when done
9) **Click** the polyline that represents the pad
10) In the "**Select the Slope Target Surface**" dialog box that appears, navigate to and **double-click** the grid file to use (your existing grid)
11) Enter the fill slope ratio: **ratio** (i.e. **2**:1, **3**:1, **5**:1, etc.)
12) Enter the cut slope ratio: **ratio** (i.e. **2**:1, **3**:1, **5**:1, etc.)
13) If using a 2D polyline, enter the pad elevation: **elevation**
14) Press "**Y**" to calculate the earth work volumes
15) The "**Pad Report**" displays
    a. Save it to file by hitting the "**Save**" button
    b. Print for your records using the "**Print**" button
16) Press "**Exit**" when done
17) Press "**Enter**" to not adjust and redesign the pad
18) Type "**Y**" and then "**Enter**" to write the surface to a grid file
19) Navigate to your drawing folder and save the grid with a recognizable name
20) Press "**Y**" and then "**Enter**" to trim existing contours inside of the pad
21) Press "**Y**" and then "**Enter**" to save the trimmed sections
22) Press "**Enter**" to leave the trimmed sections on their current layers
23) Press "**Enter**" to contour the pad. Press "**N**" then "**Enter**" to not contour

a. For contouring, select the options desired in the same way as using the main contouring function.
b. Change the layer name (i.e. **CTR – Proposed**)
c. Click "**OK**" once options are set

24) Press "**N**" then "**Enter**" to not join the contours with the existing
25) Inspect the drawing and redo if necessary

Use Different Slopes for Separate Sides

26) If this option was checked, the "**Assign Pad Cut/Fill Slopes**" box appears after selecting the grid file. The box shows a sketch of your pad and a list of groups with possible different cut/fill ratios.
    a. Determine how many different cut/fill groups you need and **enter** their appropriate cuts and fills for **each group**
    b. The pull down menu has the different groups listed. All lines start in group 1. Set the pull down menu to "**Group 2**"
    c. **Double click** the lines in the sketch that you want to use the Group 2 cut/fill ratios. The lines will turn red to show they are in the current group.
    d. **Repeat** with each group until all lines are in the proper groups
    e. Click "**OK**" once groups are set
27) Continue the main instructions from **step 13**

Use Slope Pad Design

28) When checking this option, set the slope of the pad in percent in the "**Design Pad Template**" dialog box.
29) The command line asks for a series of input after hitting step 13 in the main instructions:
    a. First point to define slope direction: **select the desired low point of the pad**
    b. Second point to define slope direction: **select the desired high point of the pad**
30) Continue the main instructions from **step 14**