STEPS TO CREATE A SURFACE MODEL

1. Load the DTM program for the current drawing session.

2. Create A project
You need an ascii (plain text) point file in the form of XYZ, space delimited, to start a surface model. You may use other software to do this or you may use the following options:

Create from DP nodes
Use this to create a project file from DP nodes (if you are using Survey, Cogo and Drafting - You can import points into the drawing. This option will create the project file from the imported points).

Create from points
Use this option to create a project file from AutoCAD or IntelliCAD points.

Create from blocks
Use this to create a project file from block insertion points. (They may be point blocks created by another package).

Create from lines/polylines
Use this to create a project file from the end points of lines, the vertices of polylines or 3d faces.

3. Open project
Open the point (project) file that you created to make a surface model.

4. Select Fault Lines
Select lines, polylines or 3d faces to use as break lines in the model (optional).

NOTE: Fault lines (line endpoints, polyline vertices or 3d faces) need to fall on points in the model. A fault line is telling the program to triangulate in a particular way.

5. Select boundaries
Select lines and polylines to define boundary or void areas for the surface model (optional).
The surface model will stop at the boundary or within voids.

NOTE: Best results are obtained by creating a boundary using a regular 2d closed polyline. Using the polyline, draw from node to node to form an outline along the points in the model. If needed you may offset this boundary out from the model a small amount.

6. Create surface
A dialog box will appear allowing you to set the options to use and create a surface model. You may restrict the model with an elevation range. You may use fault lines. You may use a boundary and voids. Set the parameters and click OK to create the surface.

7. Import TIN
You may import a triangulated irregular network (TIN) of 3d faces into the drawing (optional).

8. Create contours
A dialog box will appear allowing you to set options and create contours. You may restrict the contours with an elevation range. You may assign a thickness to the contour.

9. Label contours
Label single - Select the contour to label. Label multiple - Pick two points to define a line crossing the contours to label. (This routine will use the current text settings).

10. Create mesh
Create a 3d mesh to represent the surface (optional).

Set horizontal spacing and vertical exaggeration.

11. Calculate volumes
Calculate the volume between two surfaces (optional).

STEPS TO CREATE A PROFILE

1. Extract profile from TIN

Select an alignment - it must be a polyline. A dialog box will open up asking you to select a *.tin (surface TIN) file that you created. Then another dialog box will ask you to create a Profile file (*.pfl). This is where the profile will be stored in station elevation format.

2. Import profile

A settings dialog box will appear allowing you to set the following parameters:
Horizontal scale
Vertical scale
English or Metric (stationing)
Elevation decimal precision (number of decimal places to display existing elevations)
Elevation interval (interval to display existing elevations) Enter 0 for no elevations.
Station interval (interval to display stations along base of profile) Enter 0 for no stationing.
Grid lines above profile (number of grid lined to display above profile)
Grid lines below profile (number of grid lined to display below profile)
Cancel (stops command)
OK (draws profile)

A dialog box will appear asking you to select a Profile file (*.pfl) that you created during the Extract profile from TIN command.

Next you will be asked to pick a point in the current drawing. This point will be the lower left corner of the profile grid.
A UCS (user coordinate system) will be created with the same name as the profile.
If the UCS already exists it will be deleted and re-defined.

If you own Design Section Tools & Sewer Profiles you can use them within this UCS to draw by station and elevation or to draw grades & sewers and to label stations and elevations (optional).

The profile is automatically drawn.
Elevations and stations are displayed below the grid.
The grid lines (elevation) are also labeled.

(NOTE: a large profile may take some time for the program to calculate the elevations)

End