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V10 DTM Boundary and Export to InRoads

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Purpose

In this tutorial we will demonstrate how to delete erroneous triangles, DTM points and DTM breaklines on the DTM surface and to create a DTM boundary. A boundary chain may be used by the designers to recreate the DTM surface in InRoads.

Concepts

- One application could be in projects where data is collected through photogrammetric means. What happens in these types of projects is that data is collected over a large area, and some areas are impossible to get to such as underneath tree canopies and large areas covered by trees. Surveyors then end up collecting data in those areas manually, which is to be then merged into the DTM that was created from aerial data. The **Save Boundary** command will allow saving a boundary chain from a DTM created by manual survey data, and then use it to clip data out of the photogrammetric DTM and merge in the ground survey data.
- Another useful application of saving a boundary chain could be after a DTM has been cleaned up with all unwanted DTM data removed and triangles obscured. This boundary chain can then be saved for later use to obscure triangles outside the limits of it, in case a DTM is ever rebuilt due to merging or clipping.

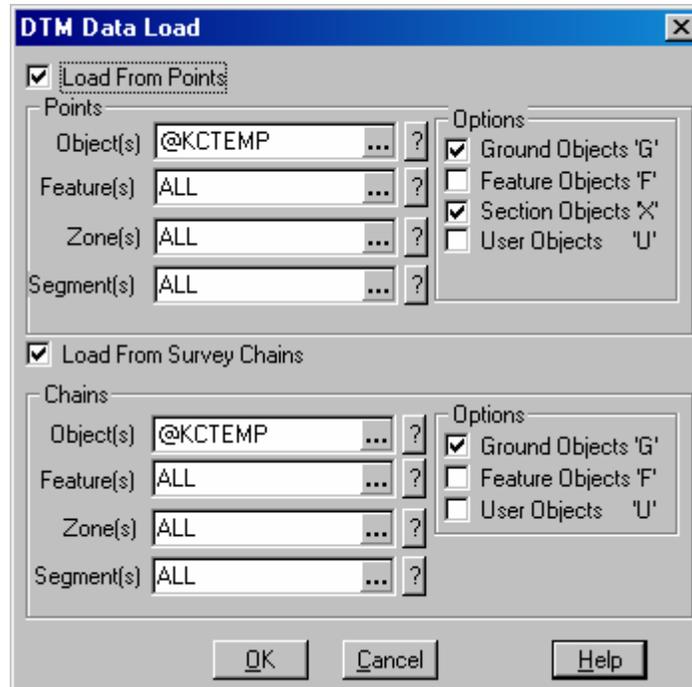
Steps

TO CREATE A DTM SURFACE IN CAICE:

- **DTM > DTM Database Manager.**
- Enter **Name** (Settings in this dialog box are predetermined from **Settings > DTM**, but may be changed here for this active surface).
- **Create > Close.**

TO LOAD A DTM SURFACE IN CAICE:

- With the new DTM surface Active; **DTM > Load DTM Database > From Survey Points and Chains.**
- Select Criteria in **DTM Data Load** dialog box.



- Depending on which Snap Object procedure you use from the 'ObjectListPicker' a **kctemp.lis** file may be created. This may be created in the Object(s) window for 'Load From Points' and also in the Object(s) window for 'Load From Survey Chains'. As it is only possible to have one **kctemp.lis** file exist at a time, the first **kctemp.lis** created must be renamed or it will be overwritten when the next one is created.
- **OK.**

TO BUILD TRIANGLES IN CAICE:

- **DTM > Build Triangles > Yes.**

TO EDIT TRIANGLES IN CAICE:

See User Tip 'V10 Editing DTM Triangles'.

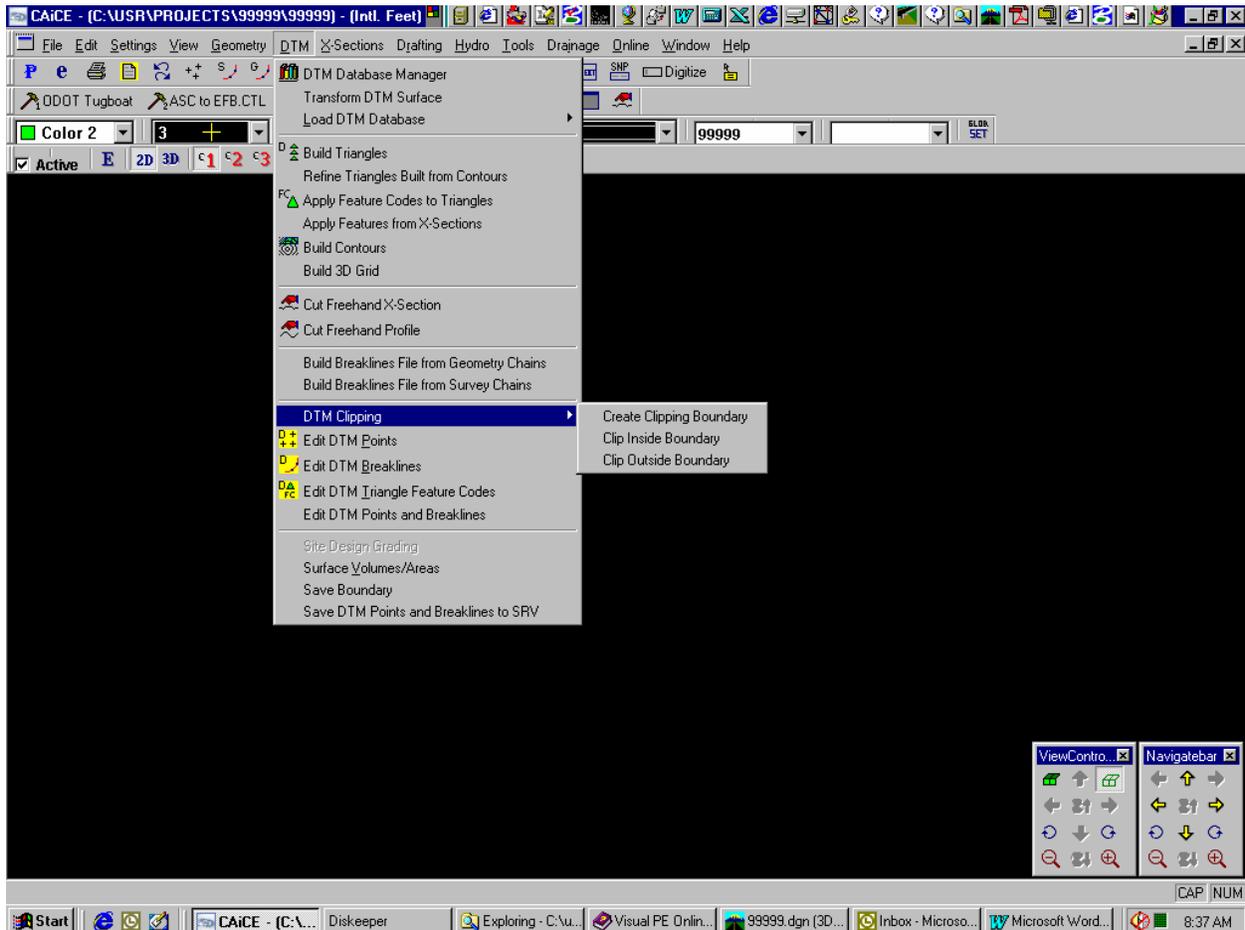
TO SAVE A DTM BOUNDARY:

- From the main menu select **DTM > Save Boundary**.
- Check all the boxes.

The screenshot shows the 'Save DTM Boundary' dialog box. The title bar is 'Save DTM Boundary'. The 'DTM Surface Name' is set to '99999'. The 'Save To Clip File' checkbox is checked, and the 'File Name' is 'C:\USR\PROJECTS\99999\99999B1.CLP'. The 'Save As Survey Chain' checkbox is checked, and the fields are: Name: KC1, Feature: BL, Zone: 39, Desc.: TERRAIN BREAKLINE. The 'Save As Geometry Chain' checkbox is checked, and the fields are: Name: KC1, Feature: BL, Zone: 39, Desc.: TERRAIN BREAKLINE. At the bottom are buttons for OK, Preview, Close, and Help.

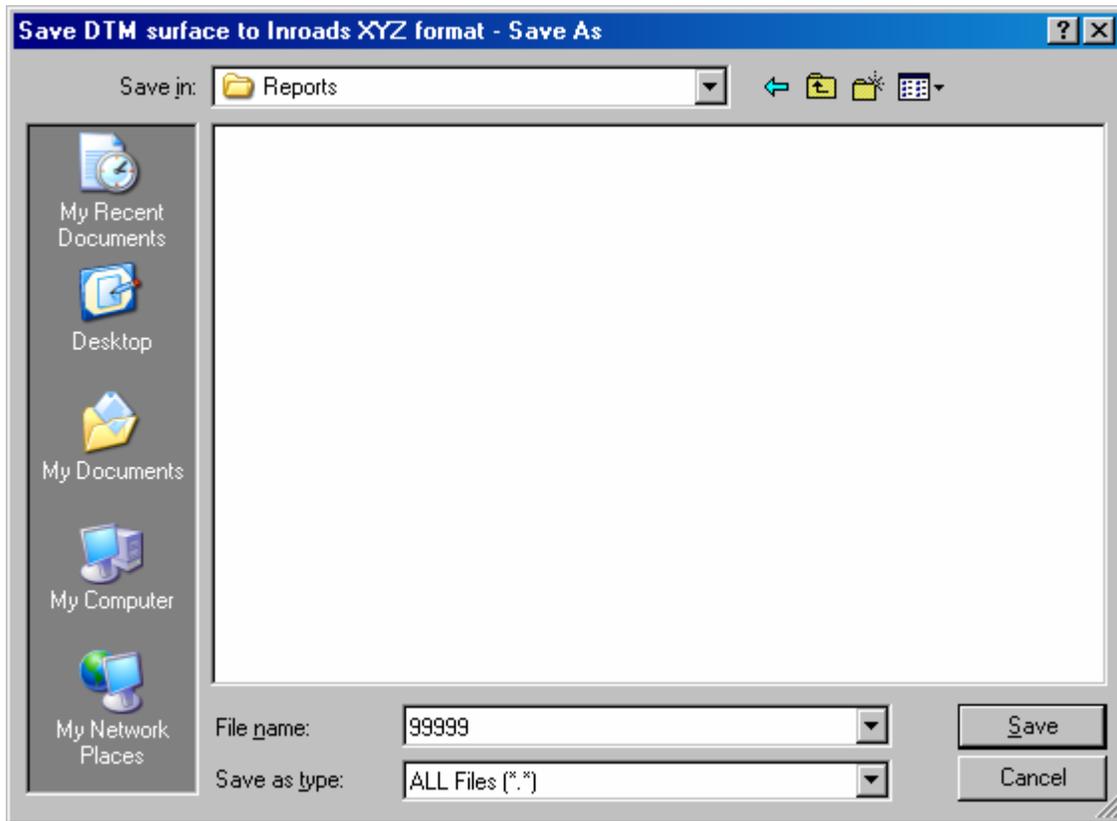
- **Preview** allows viewing of the DTM boundary on the screen.
- **OK**.
- Make note of the names of the types of DTM Boundary saved as a result of using this dialog box. The names may be determined by the user, or the Survey Chain and/or Geometry Chain can be allowed to default to the next available KC number.
- **Close** the dialog box.

- Note: A clip boundary (.CLP) file can be used for clipping (DTM) points and (DTM) breaklines from a DTM surface database. CAiCE will not build triangles in these clipped areas, but might build triangles across them depending on your **Max. Triangle Distance**. (If created, these erroneous triangles will then have to be edited as previously discussed.)
- The CAiCE clip boundary options are accessed from the main menu by:
DTM > DTM Clipping > .



TO EXPORT CAICE DTM TO INROADS:

- **File > Export Translators > To Inroads > DTM Surface to XYZ Format.**



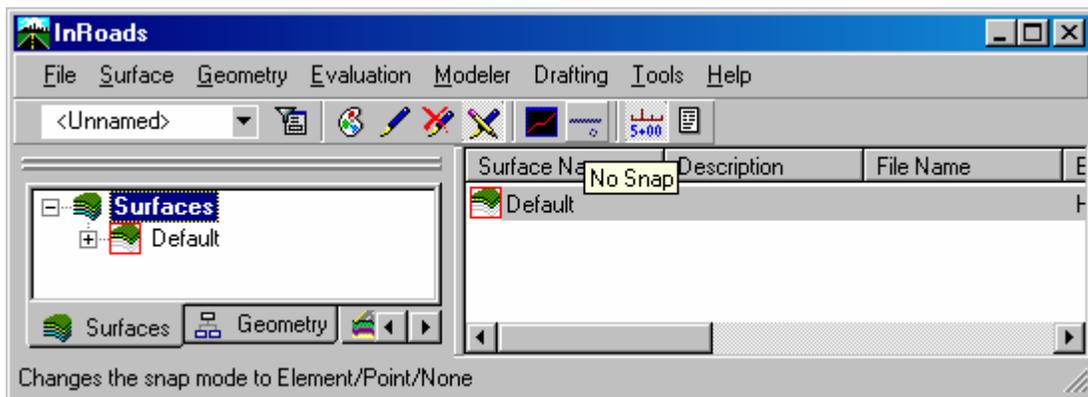
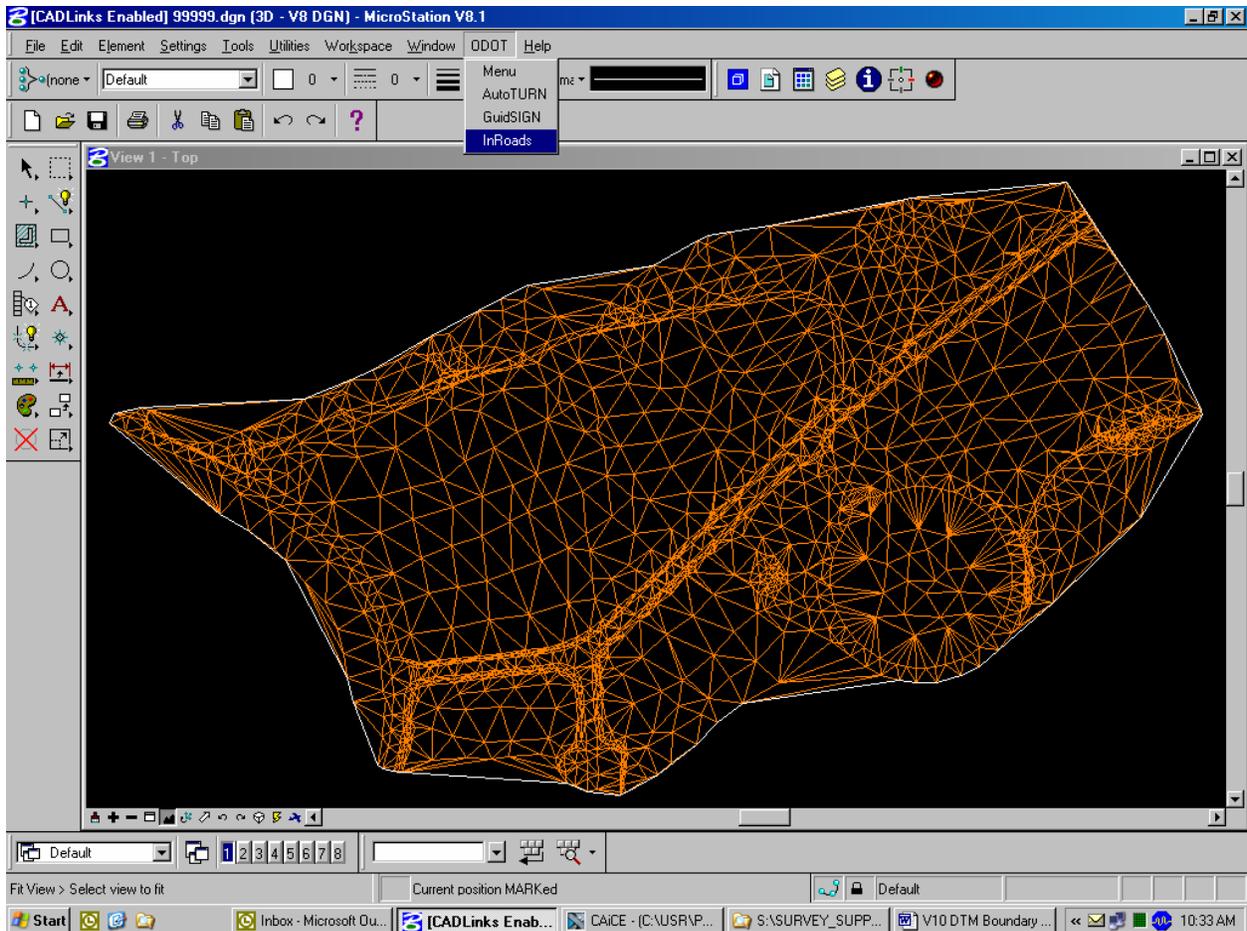
- **Save** will automatically create 2 files (from the example above):
 1. **99999br.dat** is an ascii file of all the DTM (random points).
 2. **99999b.dat** is an ascii file of all the DTM breaklines.

TO EXPORT CAICE BOUNDARY TO INROADS:

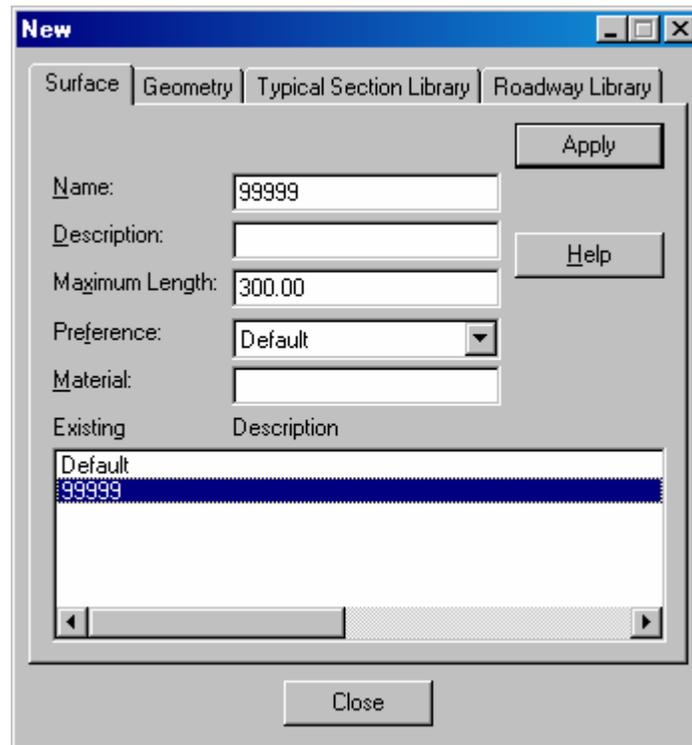
- Display the boundary (exterior and/or interior) in CADLinks as a Survey Chain.
Note: The exterior boundary in this example is on Level 1, Color 0.
- Display the triangles in CADLinks. Triangles should be on Level 58, Color 6.

TO IMPORT A CAICE DTM AND BOUNDARY INTO INROADS:

- Open InRoads from within CADLinks.

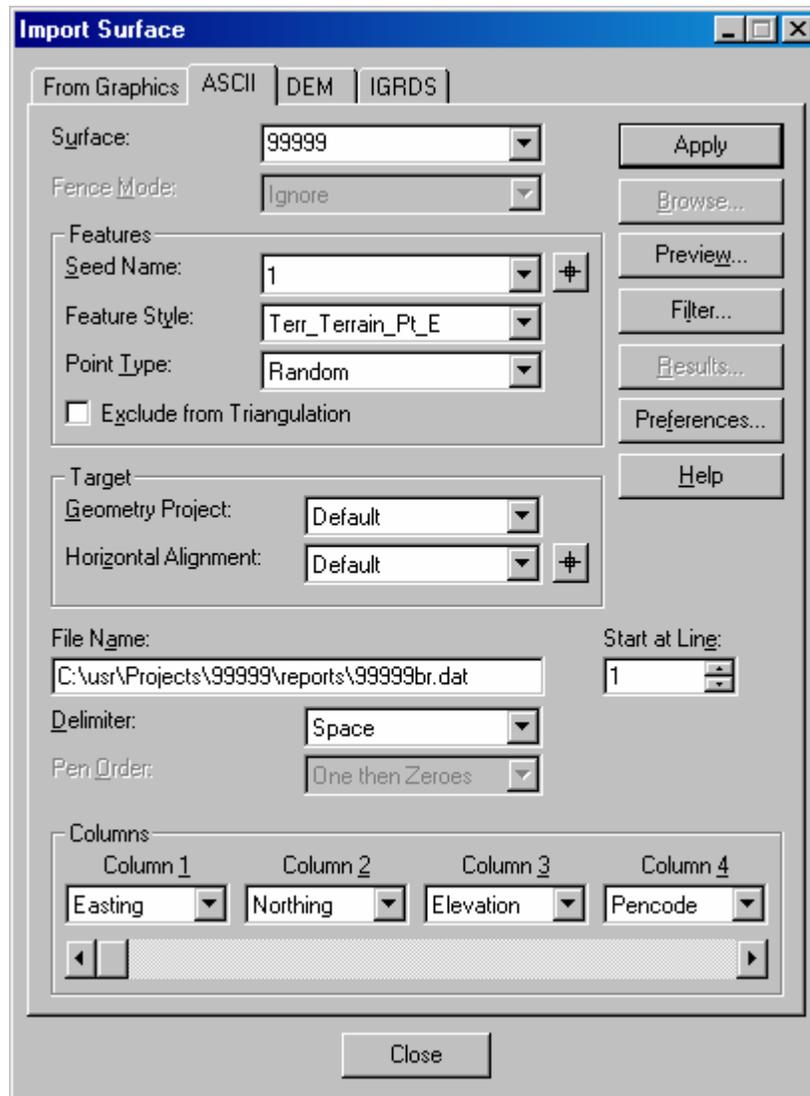


- To create a DTM Surface **File > New**.



- **Maximum Length** should be set to the same as the Max. Triangle Distance was in CAiCE.
- **Apply > Close**.

- **File > Import > Surface.**
- Select **ASCII.**
- Shown below are the settings for importing a .dat file containing DTM points:



- Note: The **Browse** button will become active if you single-click with the left mouse button in the **File Name:** dialog box.
- **Apply.**

- (Select **ASCII**).
- Shown below are the settings for importing a .dat file containing DTM breaklines:

Import Surface

From Graphics: ASCII | DEM | IGRDS

Surface: 99999

Fence Mode: Ignore

Features

Seed Name: 1

Feature Style: Terr_Terrain_Brk_E

Point Type: Breakline

Exclude from Triangulation

Target

Geometry Project: Default

Horizontal Alignment: Default

File Name: C:\usr\Projects\99999\reports\99999b.dat

Start at Line: 1

Delimiter: Space

Pen Order: Zero then Ones

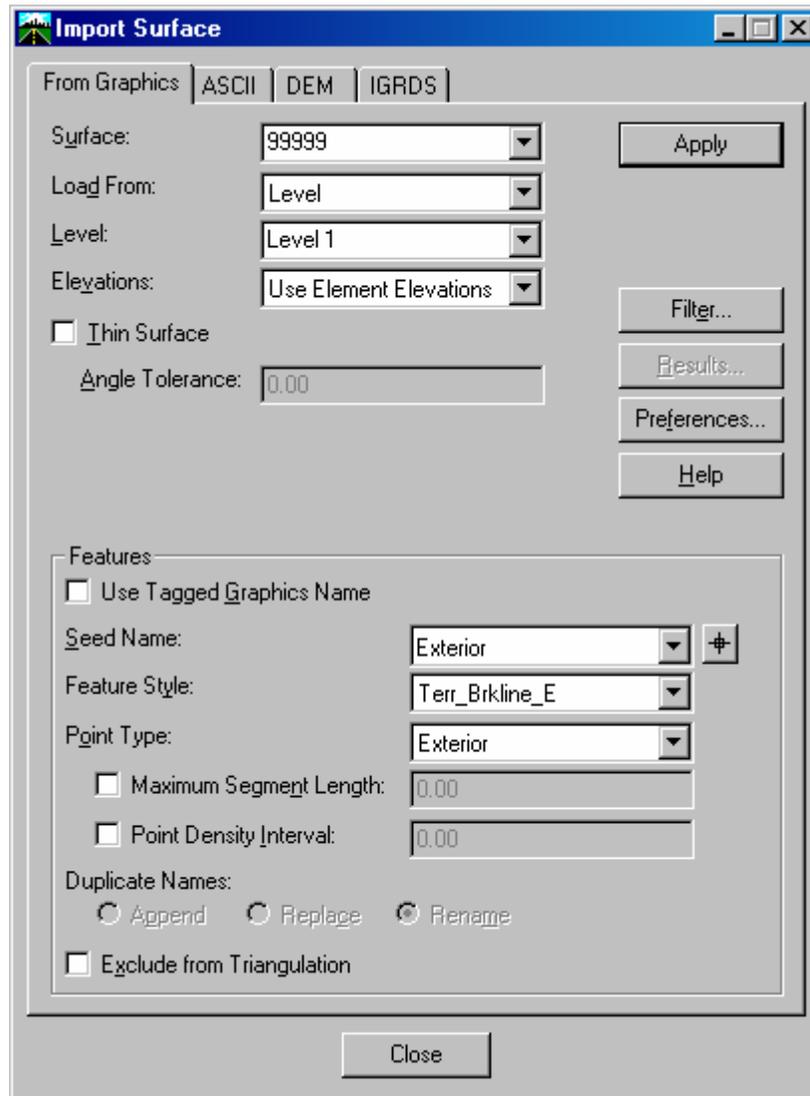
Columns

Column 1	Column 2	Column 3	Column 4
Easting	Northing	Elevation	Pencode

Buttons: Apply, Browse..., Preview..., Filter..., Results..., Preferences..., Help, Close

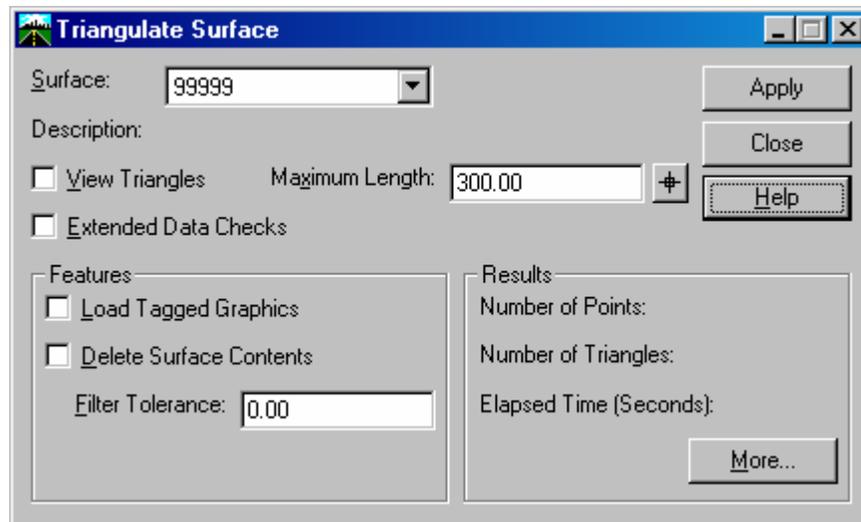
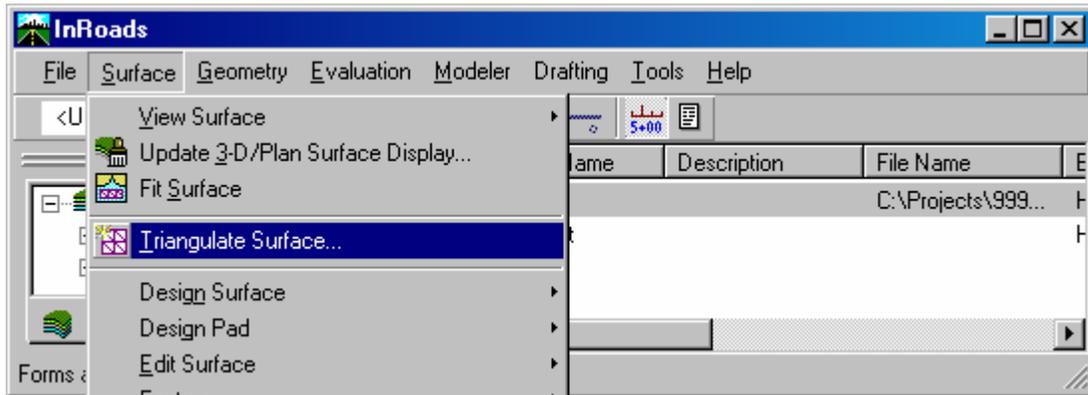
- **Apply.**

- Select **From Graphics**.
- Shown below are the settings for importing an exterior boundary. Interior boundaries are imported using this same process. The only difference would be the Point Type – Interior.
Note: An InRoads surface can contain only one exterior and one interior boundary.



- **Apply > Close.**

- **Surface > Triangulate Surface.**



- **Apply.**
- **Close.**
- **Surface > View Surface > Triangles.**
- **Apply.**
- **Close.**
- Do a quality check by comparing the InRoads DTM triangles with the triangles created from the CAiCE DTM.

- Save the Surface in InRoads: **File > Save > Surface**.

