Iowa Department of Transportation
Office of Design

Build DTM from Survey Data

Design Manual
Chapter 40
**Design Survey**
Specifications

Originally Issued: 09-30-11

Within GEOPAK Survey there is an easy way to create a **TIN** file. This process compares the survey information stored in the GPK file with the information in the SMD file to determine if the data is good for ground processing. This is the perfect process to use when it is necessary to create a **TIN** file for the purpose of reviewing the field data for busts.

One problem with this process is that there is no choice in what data is included in the **TIN** file. This process can create triangles that do not truly represent the existing ground. Customers who use this data may possibly assume that the existing ground in these areas is accurate, just because the data is part of the TIN. Some examples of where this could occur are as follows:

1.) Where draws are surveyed far outside of the rest of the field shots.
2.) Where the centerline of the roadway is shot for the additional 300' past the survey limits.
3.) A point was edited and the Zone was not changed. GEOPAK will still consider this as good as ground.

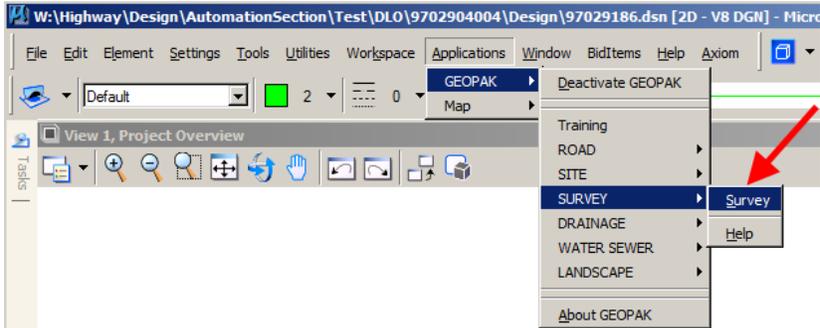The field data used for this example is shown at the right.
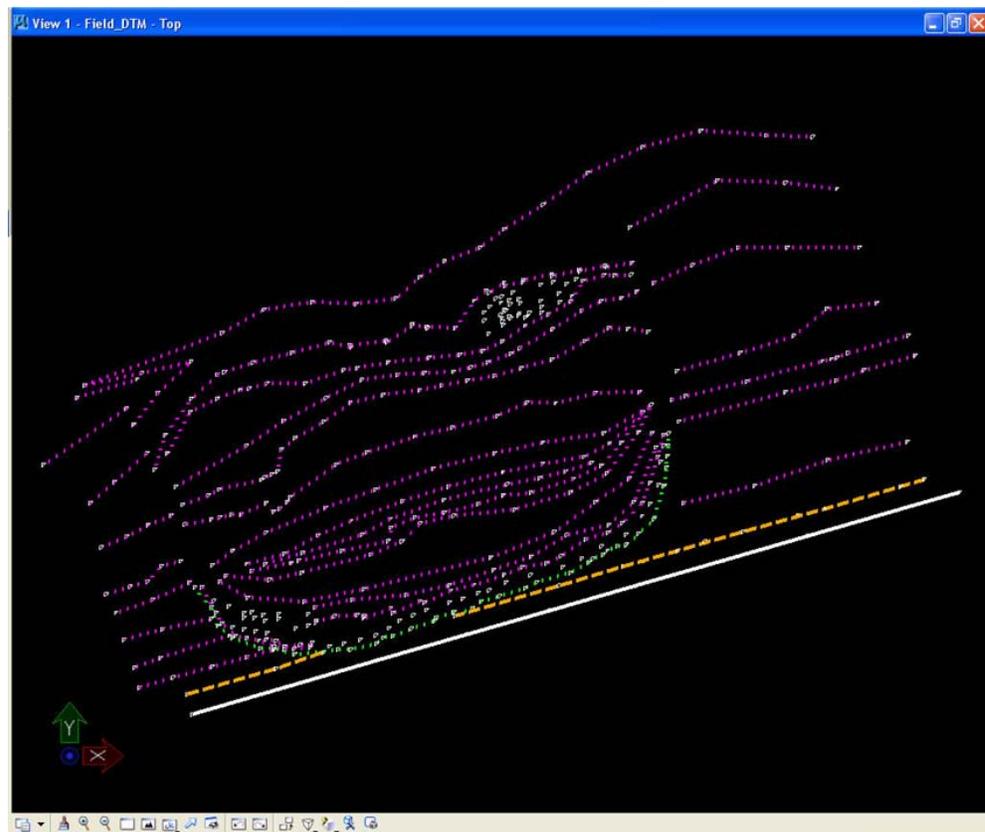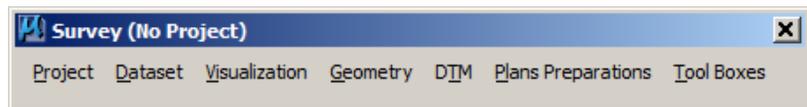
Geopak Survey Menu

Start GEOPAK from the
MicroStation menu by selecting
**Applications > GEOPAK >
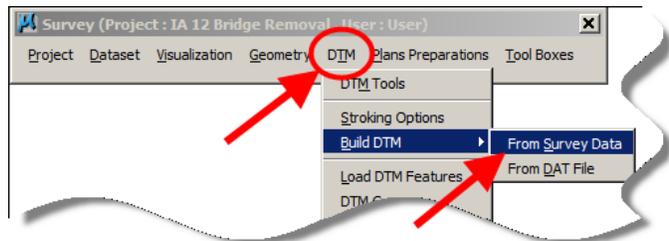Activate GEOPAK**, as shown at
the right.

After GEOPAK has been
activated, access the GEOPAK
Survey menu from the
MicroStation menu by selecting
**Applications > GEOPAK >
SURVEY > Survey**, as shown at
the right.

The **Survey** tool bar should
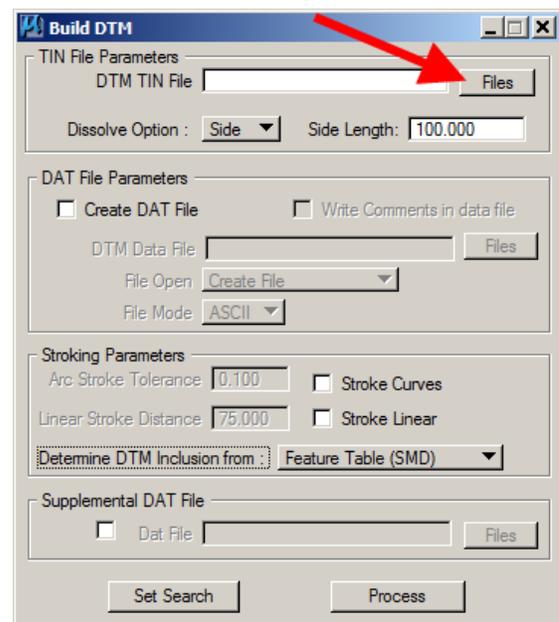display, as shown at the right.

1.   On the **Survey** tool bar, *select*
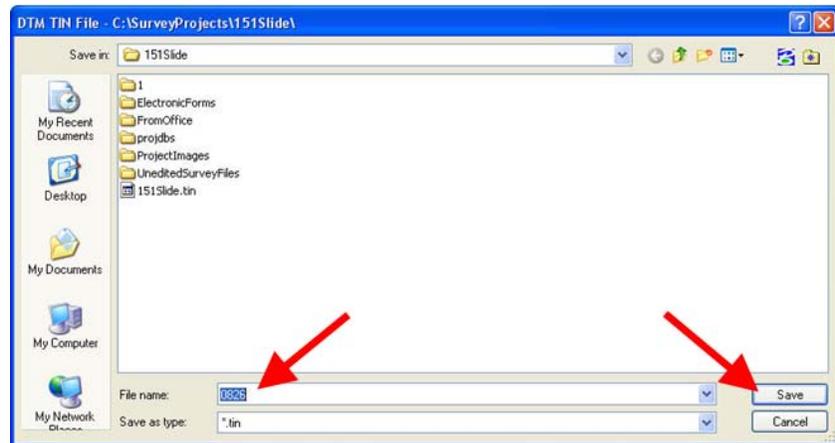**DTM > Build DTM > From Survey Data**,
as shown at the right.

2.   This will open the **Build DTM** dialog box.

Click the **Files** button to name the **TIN** file.

3. Confirm that the correct directory is selected then name your file to match the **SAP** number for the project.

Click the **Save** button.

4. The **Dissolve Option** should be set to the **Side** option, and the **Side Length** is to be set to **100**. This will limit the side length of the **TIN** file triangle creation to be no longer than 100'.

5. The "**Determine DTM Inclusion from"** option should be set to "**Feature Table (SMD)"**. The **SMD** file contains the information that determines which feature codes are good for ground shots.

6. *Click* the **Set Search** button to select the data sets that should be included in the **TIN** file.
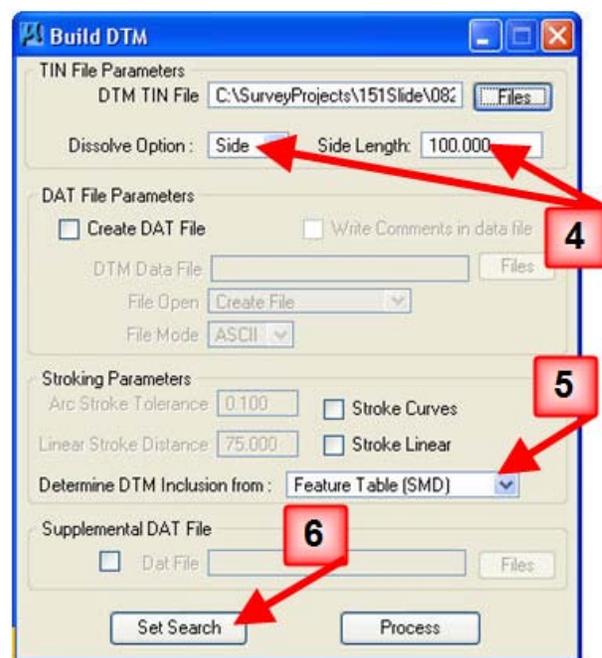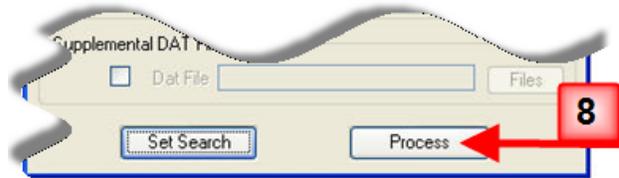
7. Individual data sets to be included within the **TIN** can be *selected* by placing a check (☑) next to each name. All of the data sets will usually be included in the **TIN**. To select all data sets, *click* the **Mark All** button.

Click the **OK** button after all selections have been made.
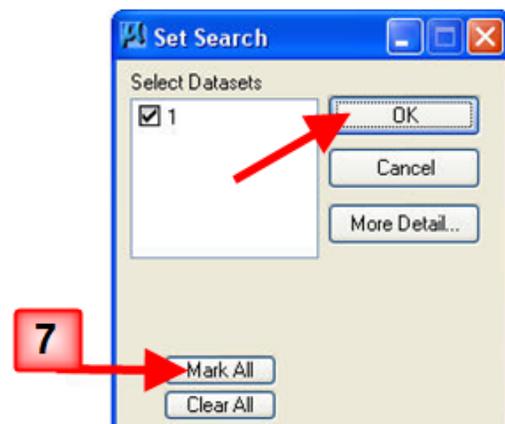
8.   When everything is set, *click* the **Process** button on the **Build DTM** dialog to create the **TIN** file.

9.   The **TIN** creation process is complete after the text stops flashing in the MicroStation task bar at the bottom of the window. To close the **Build DTM** dialog, *click* the "**X**" in the red box at the upper right corner.
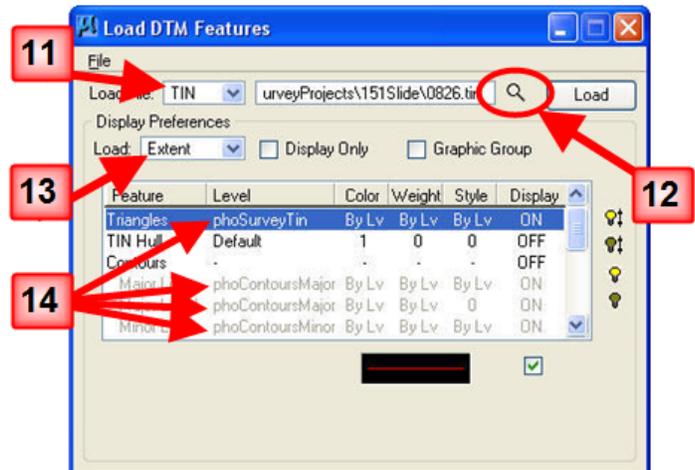
10. The **TIN** that was just created will not be drawn into the file automatically.

The first step to cause the **TIN** triangles to be drawn into the file is to select **DTM > Load DTM Features** on the **Survey** tool bar.
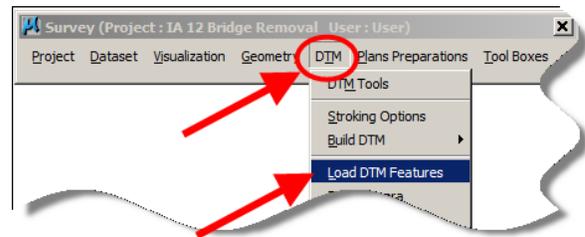
11. This opens the "**Load DTM Features**" dialog box. The **Load File** option should be set to "**TIN**".

12. The name of the **TIN** file just created should automatically be shown in the **TIN** data entry field at the top of the dialog. If what is shown is not correct, *click* the magnifying glass **Browse** icon (🔍) and locate and select the correct **TIN** file.

13. The **Load** option should be set to **Extent**. This will cause the complete **TIN** to be drawn into the model.

14. If the dialog box does not display the same levels as shown at the right, the correct settings must be loaded so that everything will be drawn correctly.
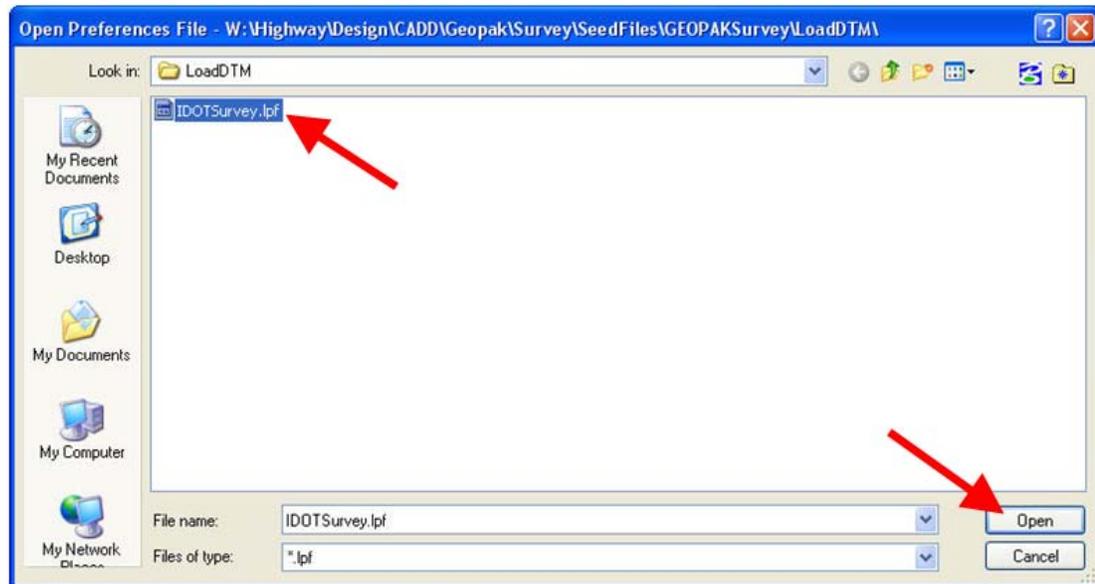
If the settings must be changed, (as indicated above), *click* **File > Open** to choose the settings file, as shown at the right. This will open the **"Open Preferences File"** dialog, as shown below.
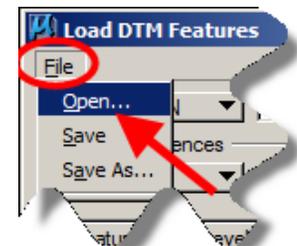
15. Browse to the directory listed below,

W:\Highway\Design\CADD\Geopak\Survey\SeedFiles\GEOPAKSurvey\LoadDTM

Select the **IDOTSurvey.lpf** file and then *click* the **Open** button, as shown below.


16. To draw the Triangles into the model, *highlight* the **Triangles** row and *click* the light bulb icon (💡). It should now say **ON** in the **Display** column of the **Triangles** row.

As a second method for *toggling* the value in the **Display** column, you can *double-click* on the **Triangles** row to change the **Display** value to **ON**.
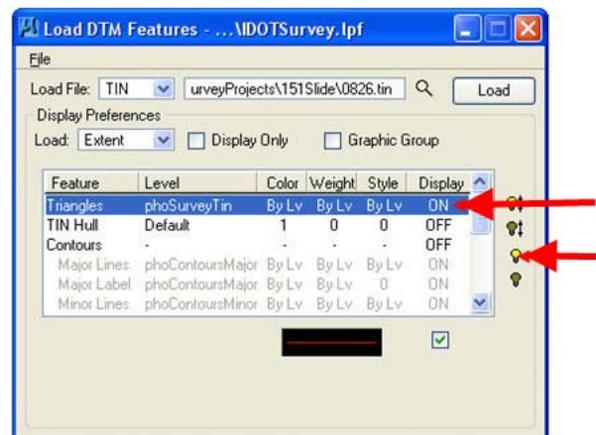
17. When all of the settings are correct, *click* the **Load** button, as shown at the right. The **TIN** triangles should now be drawn into the MicroStation file model on the **phoSurveyTin** level.
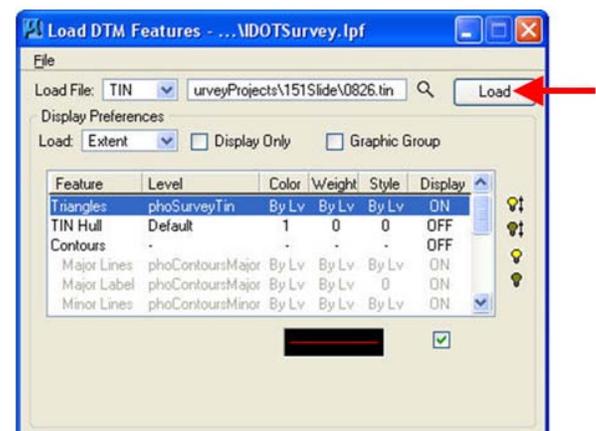
Chronology of Changes to Design Manual Section:

040D-009   Build DTM from Survey Data

9/30/2011   NEW

New