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Chapter 14: Survey Manager

Overview

Survey Manager is used to input raw survey data into MicroStation and GEOPAK. This will allow the user to create a **.tin**, and a topo file, and also input surveyed cross sections used in the final design. Survey Manager will also allow the user to make modifications to the data if there is a bust in the original survey. This section will describe the workflows used to input and modify the survey data provided by surveyors.

SMD File

This file contains the parameters GEOPAK uses to draw the survey data, including information such as:

- The cell to be associated with the survey shot.
- The elements to be included in the DTM. For example, a ground shot would be included in the DTM, and a fire hydrant will not be included.
- The shots that should be part of a string, such as an edge of pavement line.
- The shots that should be part of a break line
- The shots which are spot elevations.

The CFLHD standard **.smd** file is **smrV8kAug04.smd**. This file can be attached by clicking on the Feature Preferences button in the GEOPAK User Preferences dialog box, as shown in the GEOPAK preferences chapter.

The Survey cell library, **smrowV8.cel**, must also be attached for the **.smd** file above to produce the desired symbology. See chapter 8, Cell Libraries, for more information on attaching the correct cell library.

Importing Survey Data

The survey team should provide an ASCII file with a **.cor** extension. This file will be in a comma-separated format. The columns will be point number, northing, easting, elevation, point code/line code and then a semi colon with any comments. GEOPAK will read this file and, if the correct **.smd** file is referenced, draw the survey data using the standard level symbology. ***Workflow 1*** will describe the procedure for importing the **.cor** file into GEOPAK.

Workflow 1: Importing Survey Data

1. *Select Applications>GEOPAK SURVEY>Survey from the pull down menu:*

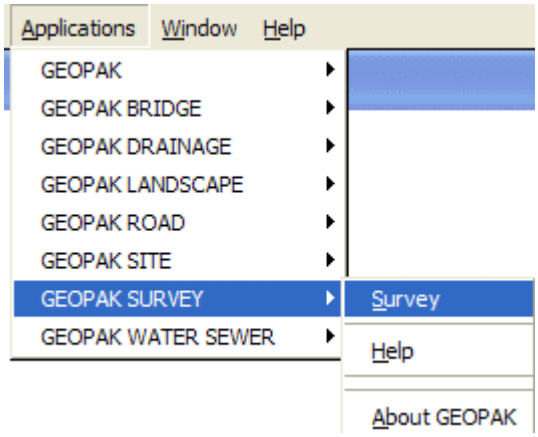


Figure 14-1: Geopak Survey

2. *This will bring up the following dialog box:*

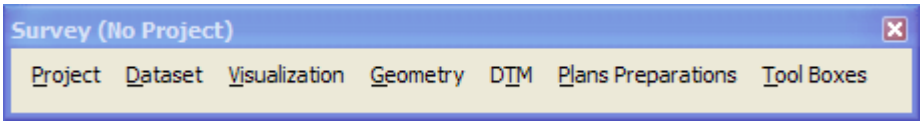


Figure 14-2: Geopak Survey Dialog Box

Select Project>New to get the following dialog box:

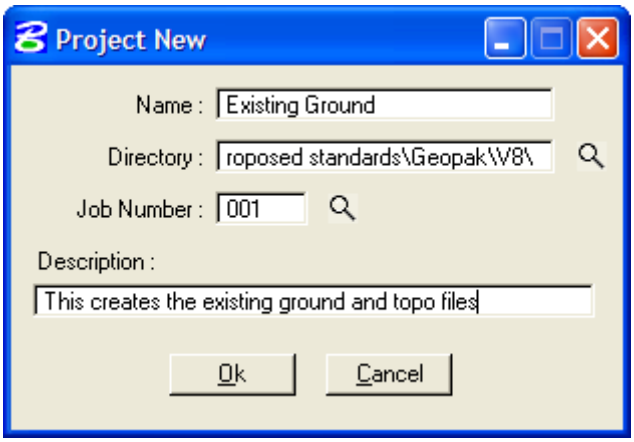


Figure 14-3: New Project

3. *Fill in the dialog box with the required information and pick Ok. This will change the title in the Survey dialog box to show the project name.*
4. *Pick Dataset>New to get the following dialog box:*

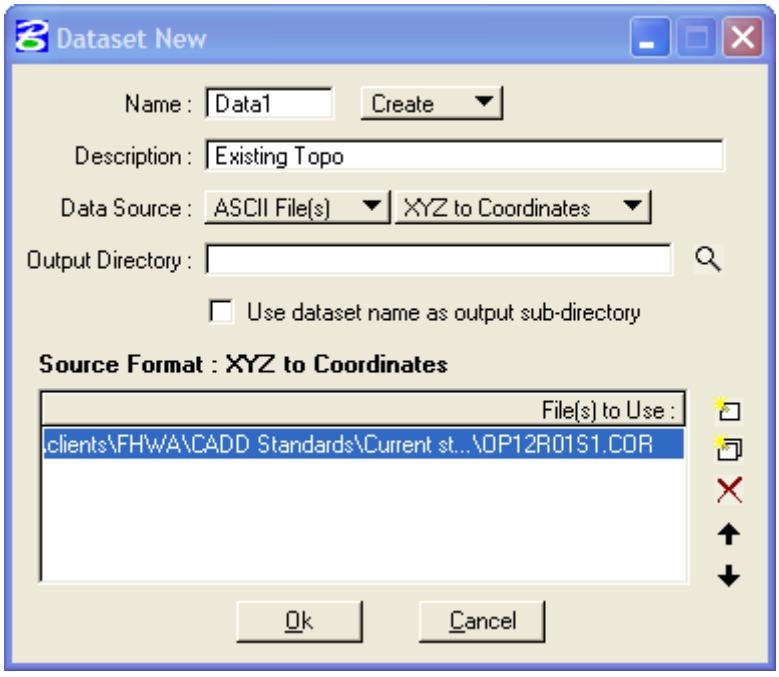


Figure 14-4: Select Dataset

5. *Fill out the dialog box as shown, using the add file to list button to load the desired file. Pick Ok to get the following dialog box.*

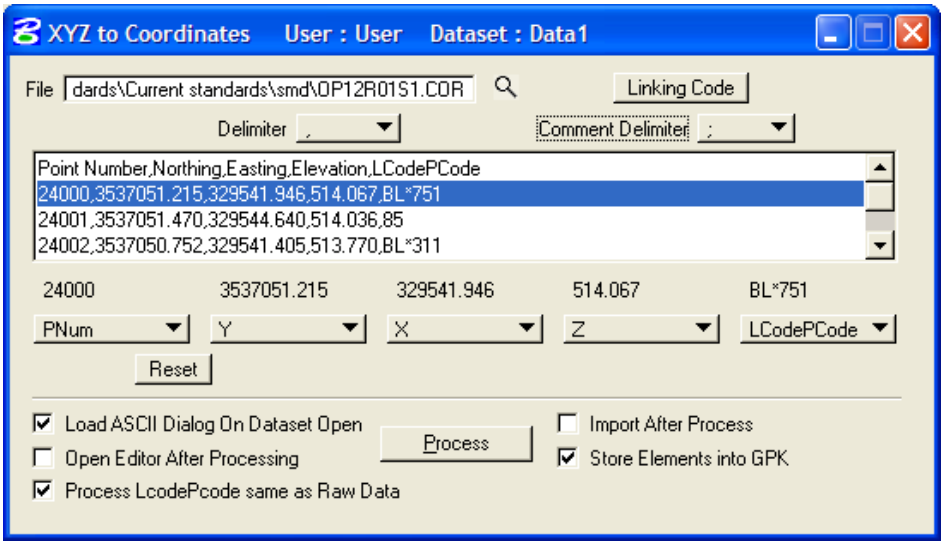


Figure 14-5: Process Dataset

6. *The Linking Code button brings up a dialogue box in which you set the line codes read from the ASCII file. Usually "BL*" is used for begin line and "EL*" is used for end line.*
7. *Make sure the Delimiter is a comma and the Comment Delimiter is a semi-colon. Highlight any line in the data box and GEOPAK will put that information above the buttons at the bottom of the dialog box. Select the buttons as shown in the above example. The*

PNum stands for Point Number, Y is the Northing, X is the Easting, Z is the Elevation, and LCodePCode is the Code that the Survey Manager uses to draw the elements properly. If there is a Next button and it is picked it will show one more column, which is the comment column. This button should be set at none. Check the Store Elements into GPK and Import After Process boxes. This will import the points into the GPK.

8. *Go to the 3D microstation file that the survey data needs to go in and pick Visualization>Visualize the get the following dialog box:*

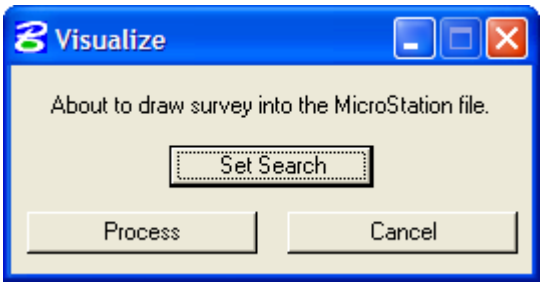


Figure 14-6: Visualization

9. *Set Search allows the user to select the Data Set to import into the drawing. After the correct data set is selected pick Process.*
10. *Once these values are set, pick the Process Survey button on the Survey Operations dialog box.*
11. *GEOPAK will draw the elements into the drawing. If there are error messages during the process, pick the Dataset>Review Reports>Feature Code Error Report pull downs to find out what the error is. Go to the .cor file and modify to the correct feature code.*
12. *This next step will build the .tin. Select the DTM>Build DTM>From Survey data pull downs.*

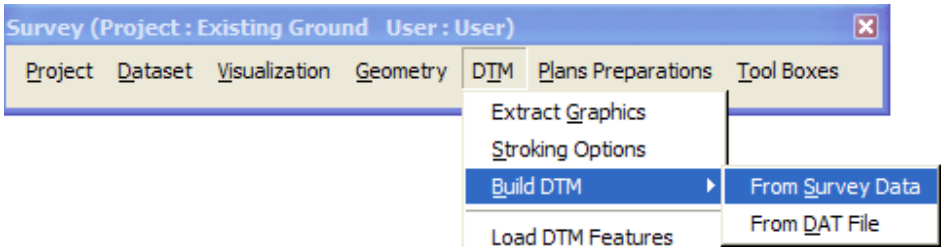


Figure 14-7: Select Build DTM

It will bring up the following dialog box.

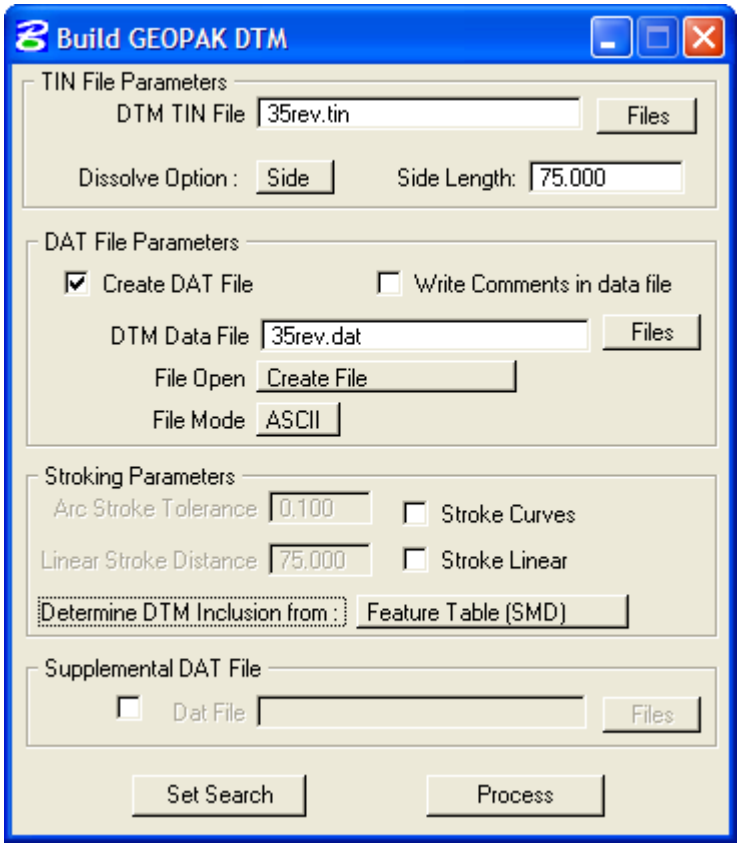


Figure 14-8: Build DTM

13. *Type in the new name for the .tin. Select dissolve option side with a side length that is long enough to avoid any voids along the outside edges of the data. The creation of a. DAT file is not necessary but can be done at this point. Select Process and the .tin will be created.*

Making Corrections

There will be times when there is a problem in the survey and a correction to a chain or a point will need to be made. If you know where this point is in the **.cor** file, it is easy enough to fix. But the size of the **.cor** file can be too large to find the error without spending a large amount of time. The most efficient way is to fix it using the Chain and Point Editing features in Survey Manager. Workflow 2 will describe the procedure for editing a chain and Workflow 3 will describe how to edit a point.

Workflow 2: Chain Editing

1. *While in the drawing containing the graphical elements to be changed select the Geometry>Chains>Edit pull downs. GEOPAK will bring up the following dialog box.*

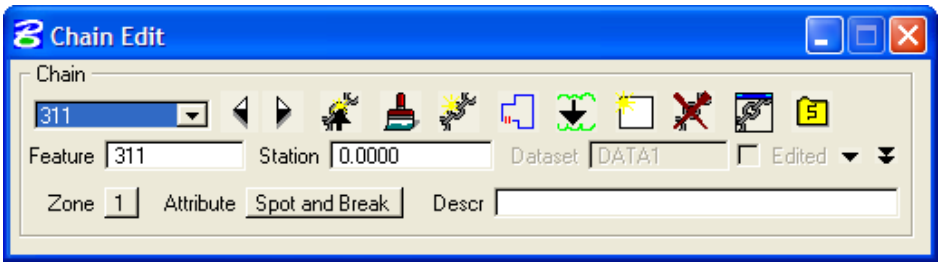


Figure 14-9: Edit Chain, Compact

2. *Click on the Select Chain icon and pick the chain that needs to be modified. GEOPAK will fill all the chain information into the data fields.*
3. *Click on the double arrows at the right side of the dialog box to show all the chain information. The GEOPAK Chain Edit dialog box will expand to the following.*

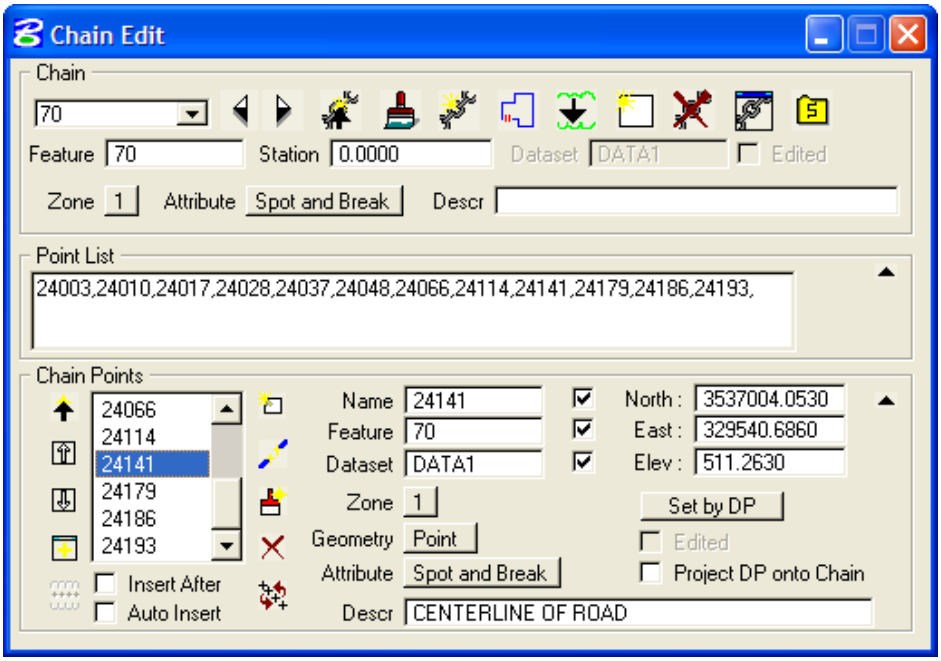
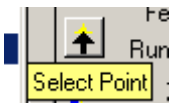


Figure 14-10: Edit Chain, Expanded



4. *Pick the Select Point icon in the Chain Points section and highlight the point that is to be modified. All of the fields will*

be filled in with that point's information. Make the necessary change and Select the Update Point button. 

5. *Once all of the modifications have been made, the tin can be updated by repeating steps 12 and 13 of workflow 1.*

By using the Chain Editing tool, the user can break a chain, add points to the chain, and delete points. GEOPAK will also highlight the point that is selected.

Workflow 3: Point Editing

1. *While in the drawing containing the graphical elements to be changed select the Geometry>Points>Edit pull downs. GEOPAK will bring up the following dialog box.*

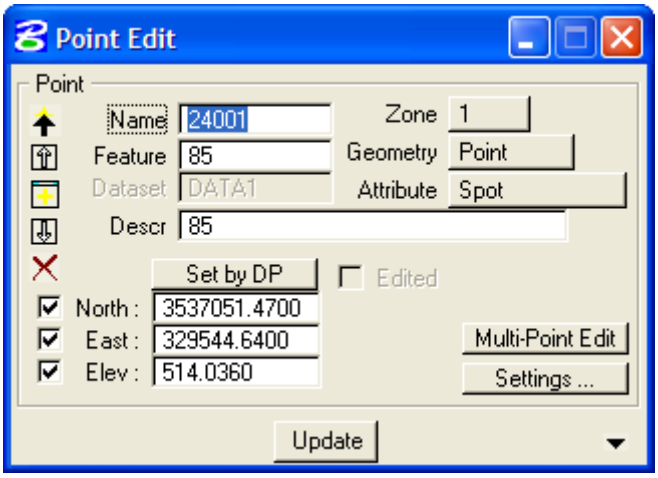
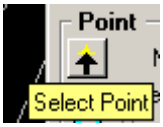


Figure 14-11: Edit Point

2. *Click on the Select Point icon* 

and highlight the point to be modified. GEOPAK will fill in all the fields with the values for that point.
3. *Click the Update button at the bottom of the dialog box.*
4. *Once all of the modifications have been made, the tin can be updated by repeating steps 12 and 13 of workflow 1.*

Reference Hub Cross Sections

Once the alignment is set. The surveyors will provide a Reference Hub survey. These are provided in a .soe file. These sections will need to be imported into the cross section cells for comparison to the existing sections based on the tin and then the proposed sections will need to be modified to tie into the surveyed sections. Workflow 4 will describe the procedure for importing the .soe file into the existing cells cross section cells.

Workflow 4: Importing Reference Hub Sections

1. *While in the cross section drawing, go through the same first four steps as in Workflow 1 above. Instead of changing the Download Raw button to ASCII XYZ, change it to SOE => Cross-Section. This will bring up the following dialog box.*

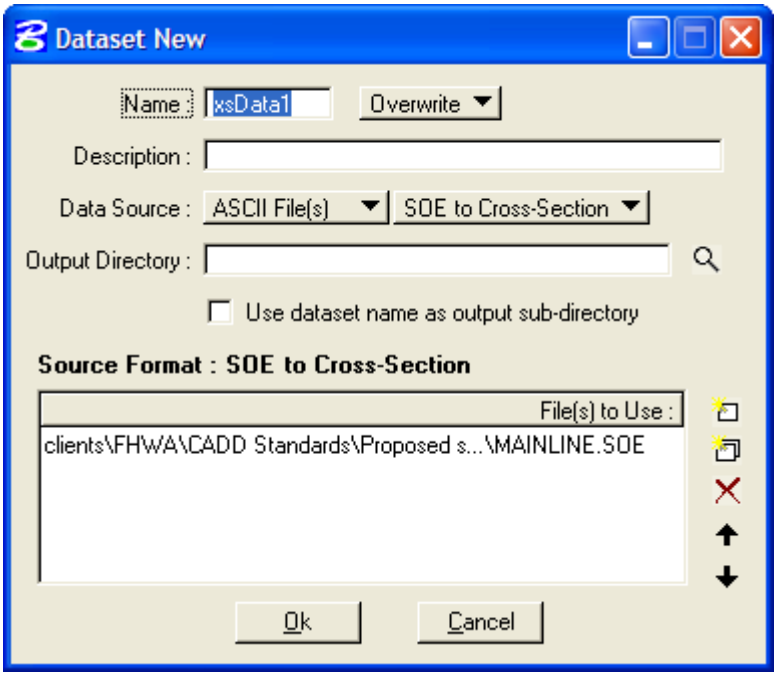


Figure 14-12: SOE =>XS Data Source

2. *Pick the Add File button to load the .soe file to get the following dialog box.*

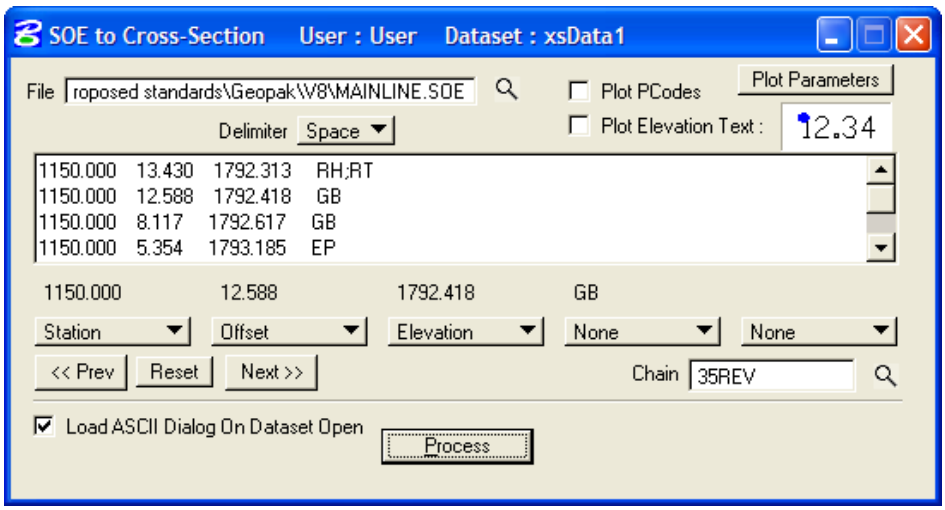


Figure 14-13: Process SOE =>XS Data

3. *Make sure the Delimiter button is correct (either Space, or Comma).*
4. *Highlight a row in the Contents of File and GEOPAK will drop those values in the space above the bottom buttons. Set the bottom buttons to match the example.*
5. *Pick the Plot Parameters button to get the following dialog box.*

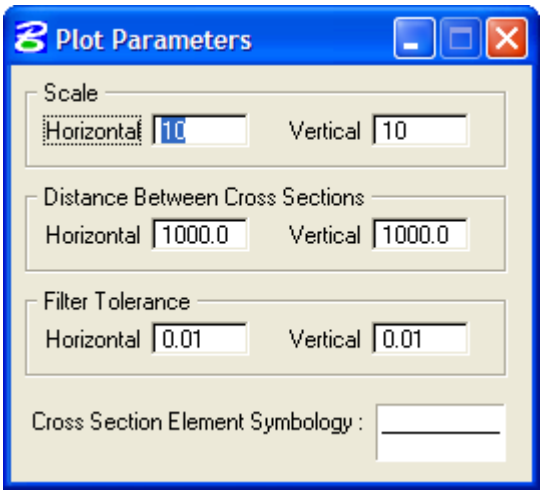


Figure 14-14: Ref Hub Mapping Option

6. *Since the sections are going into the existing cells, the only changes to be made are in the Cross Section Element Symbology. Change the Level, Color, Weight and Style values to match the example below*

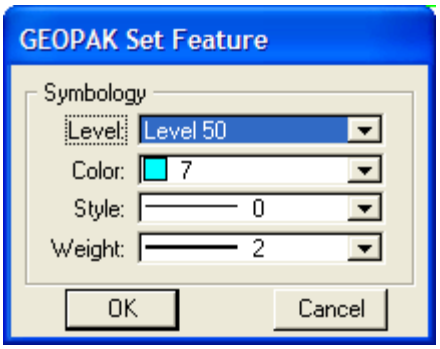


Figure 14-15: Plot Parameters

7. Pick Process and the sections will be drawn into the drawing.