Iowa Department of Transportation
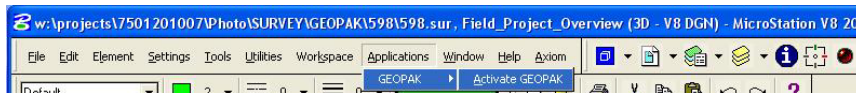**Office of Design**

GEOPAK Load XYZ

Design Manual

Chapter 40

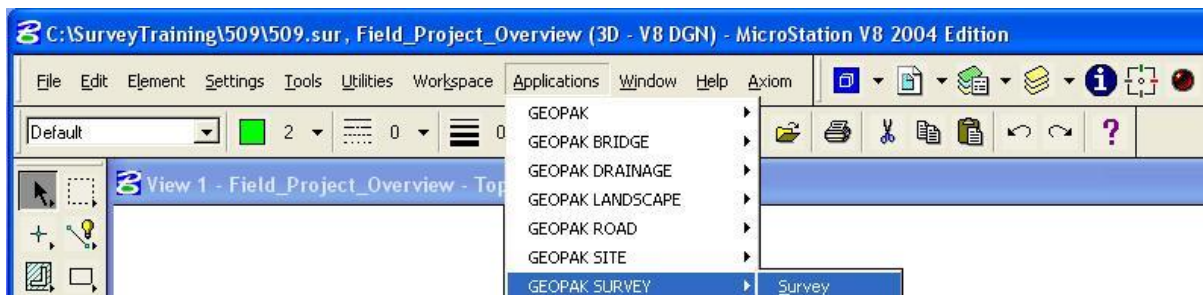**Survey Information**

Originally Issued: 01-09-09

Using GEOPAK Survey and ASCII XYZ Survey Files

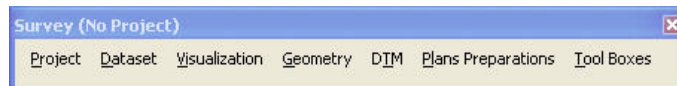1) **Setting the GEOPAK Survey Project Preferences**

Start GEOPAK by selecting **Applications>GEOPAK>Activate GEOPAK** on the *Microstation* menu.
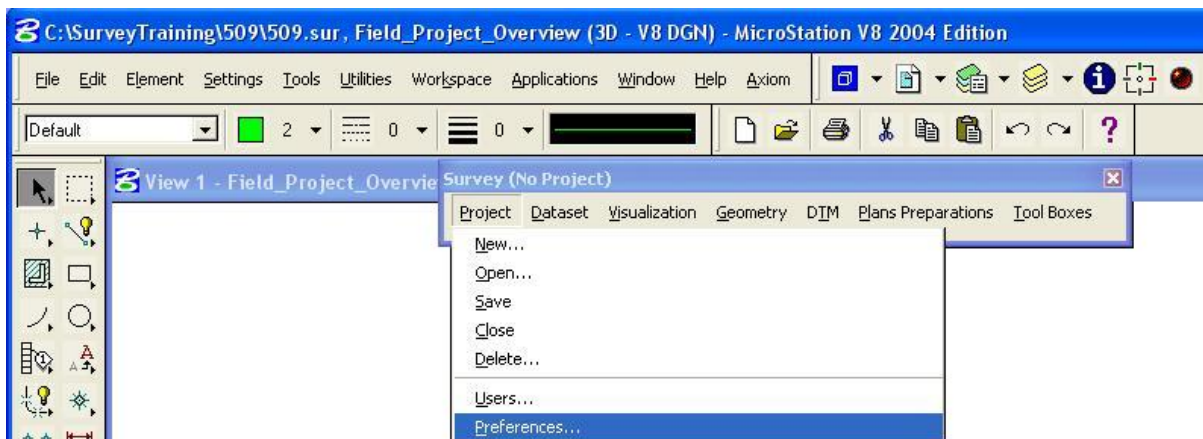

On the *Microstation* menu bar select **Applications>GEOPAK SURVEY>Survey**.
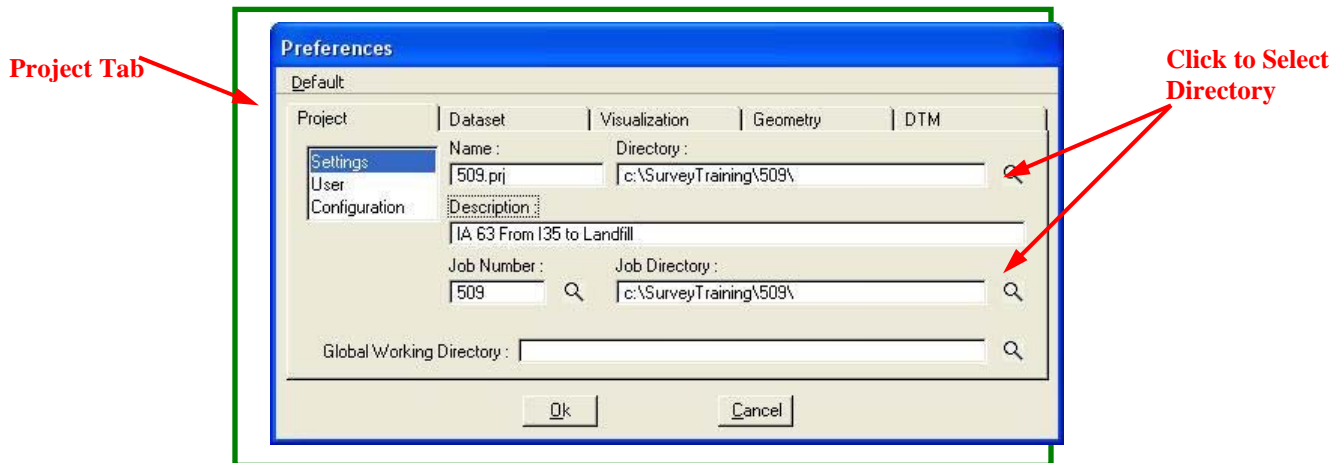

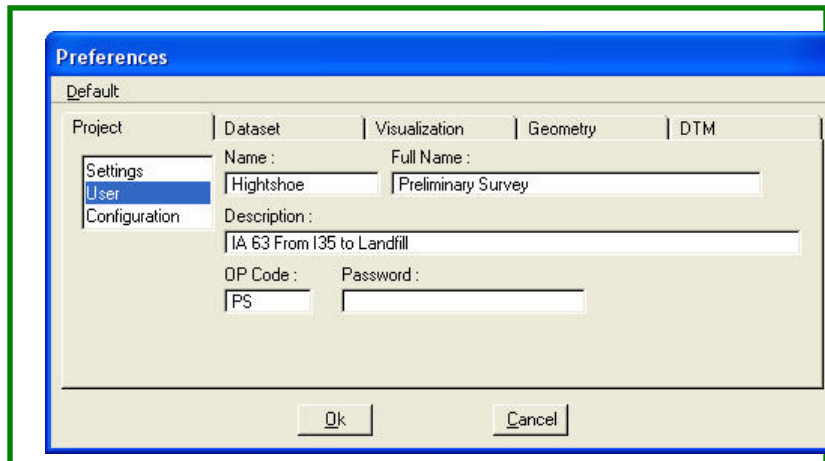The GEOPAK Survey tool bar will then appear.
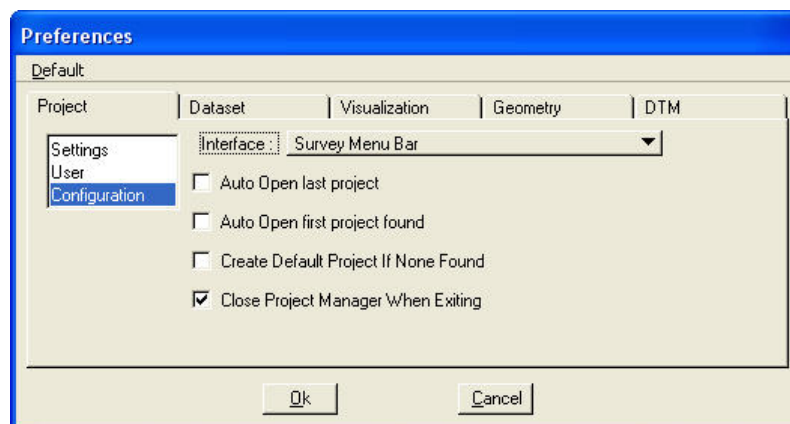

Select **Project>Preferences**.

Complete the *Project Settings* based on the Survey And Photogrammetry Number (SAP#).

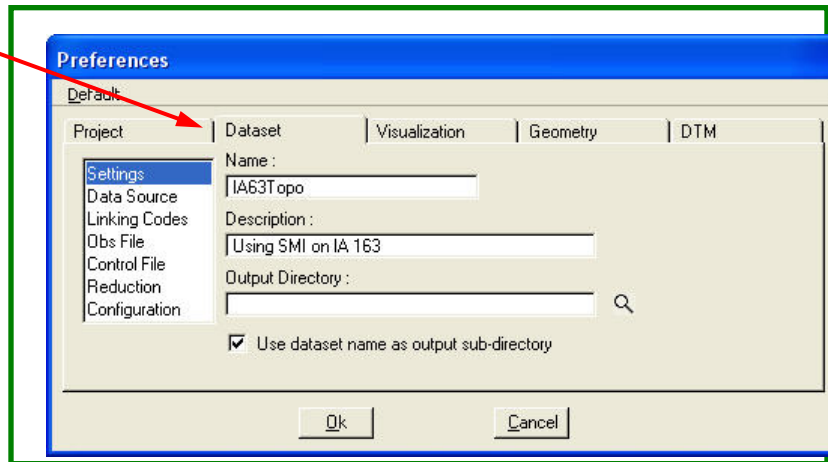Fill in the Project User information based on the party chief and project description.

You can place a check in the box shown below on the *Project Configuration* tab.
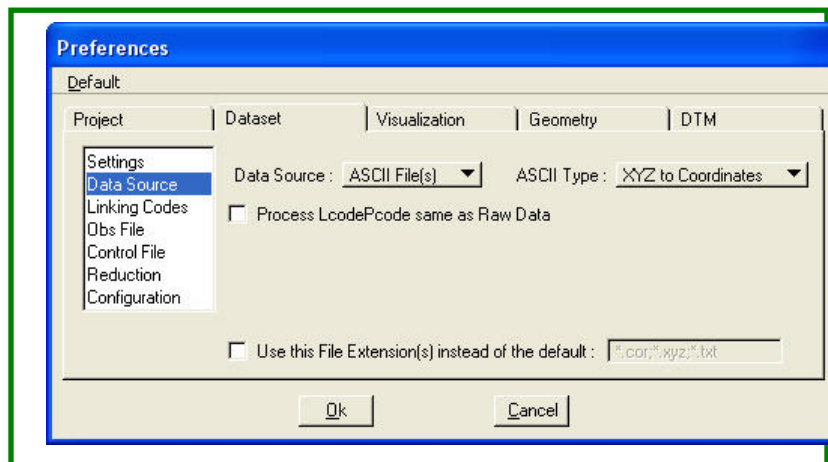
For the *Dataset Settings*, what you type in here is used as the defaults for the dataset names and descriptions you will create later in the process.
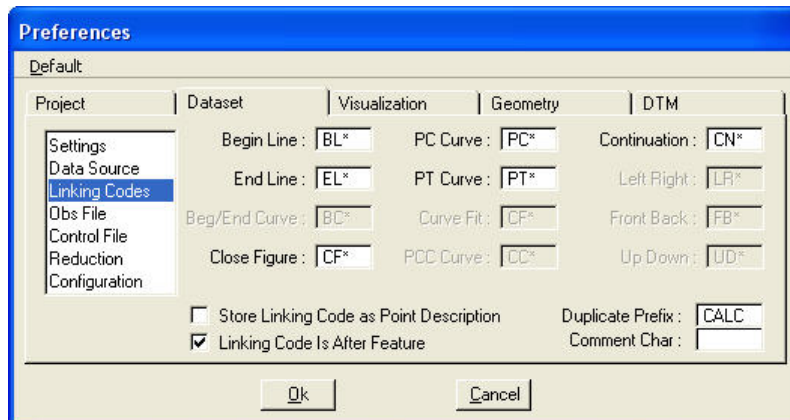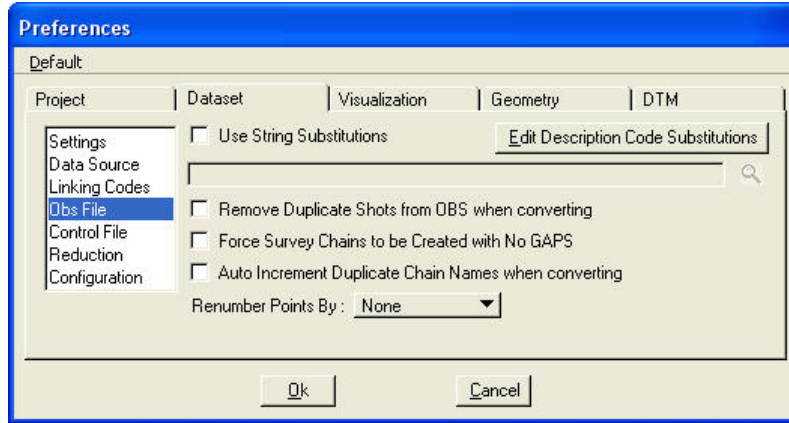
Dataset Tab

The *Dataset Data Source* sets what type of file the dataset will use.
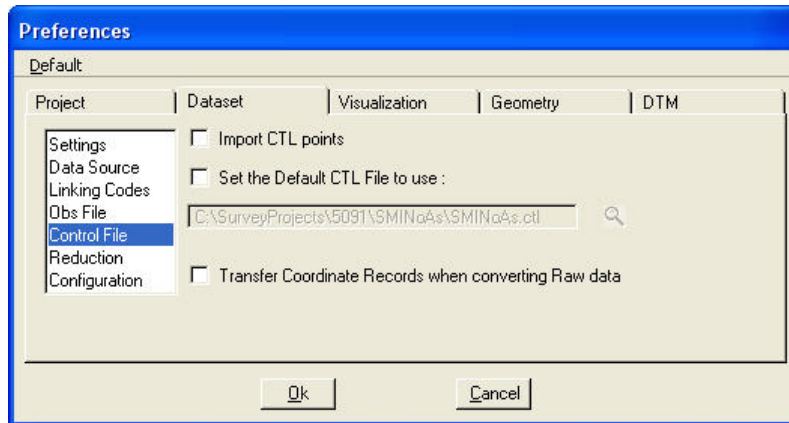

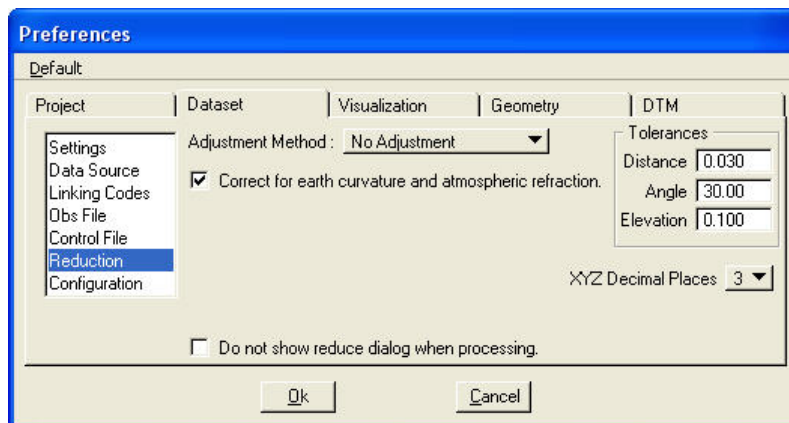
Linking Codes will not be used.

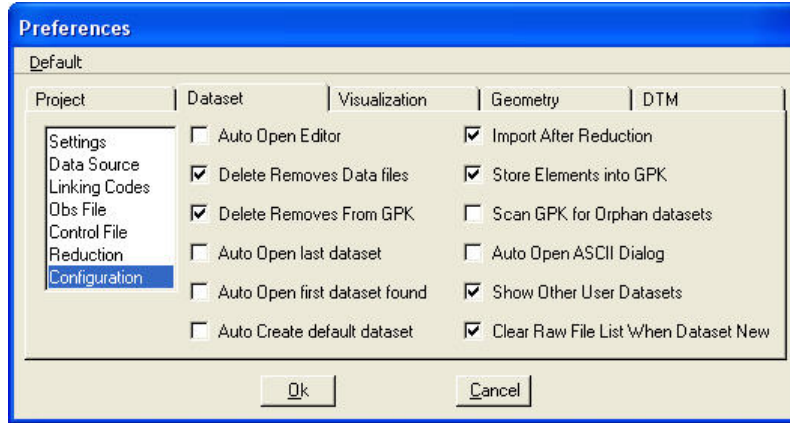You do not need to change the *Obs File* default settings.

You do not need to change the *Control File* default settings.

Make sure that the Adjustment Method is set to No Adjustment and the Correct for earth curvature box is checked on the *Dataset Reduction* tab.
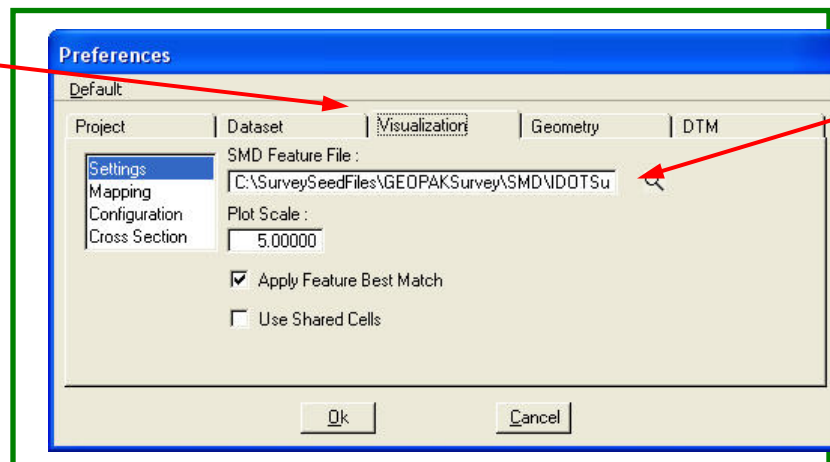
The *Dataset Configuration* check boxes determine how the Dataset operations run.

The *Visualization Settings* determines what "smd" file to use and what scale to draw the objects. Use should set the *Plot Scale* to **5**. The location of the "smd" file is:
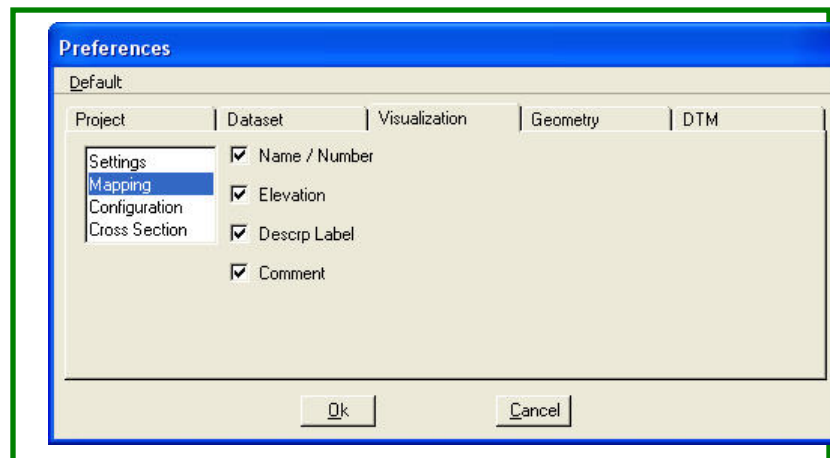
**C:\SurveySeedFiles\GEOPAKSurvey\SMD\IDOTSurvey.smd**

Visualization Tab

Click to Select File

Place check marks in all of the boxes for *Visualization Mapping*. This will give you the ability to plot these items in Microstation.
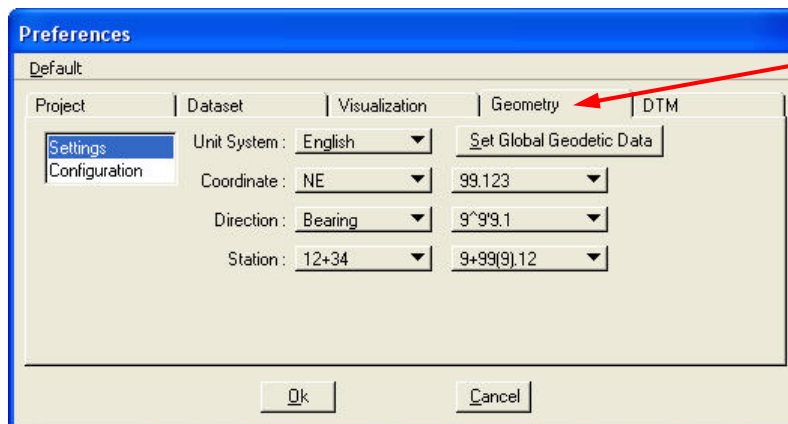
For the *Visualization Configuration* tab, you can check the box to automatically draw the survey information after processing. Make sure that the Point Label Re-Mapping is set to **Redraw according to SMD**.
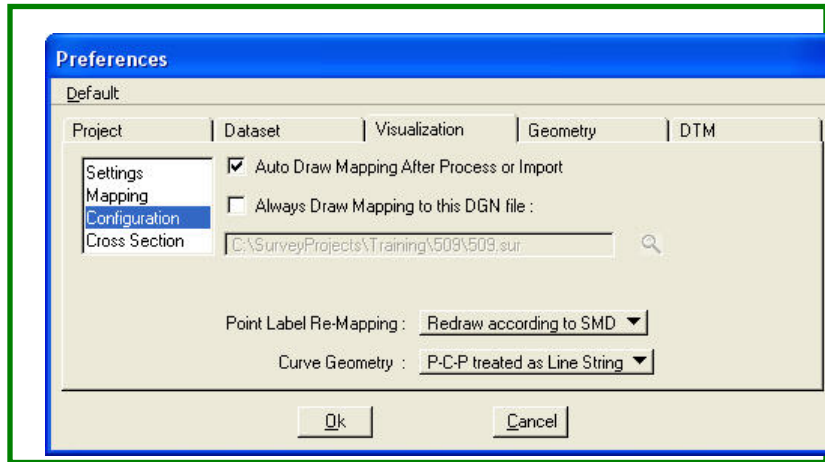
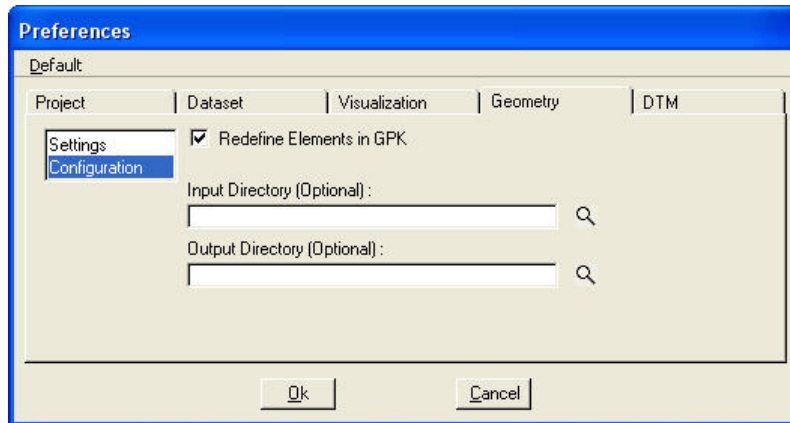The default settings for *Visualization Cross Section* can be used.
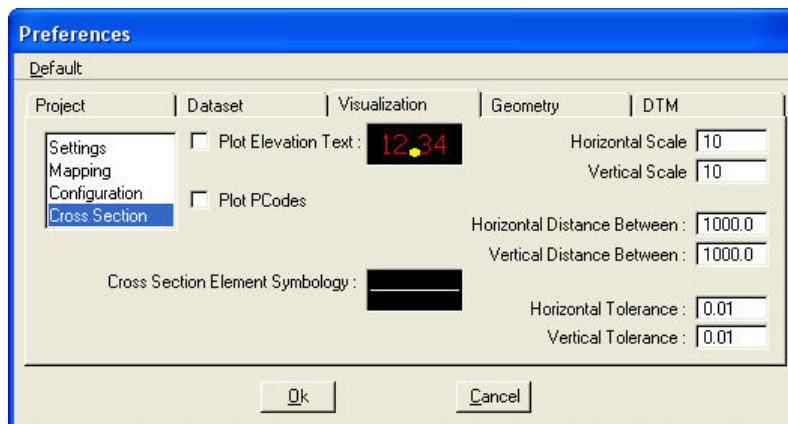
The *Geometry Settings* should look like this for English.
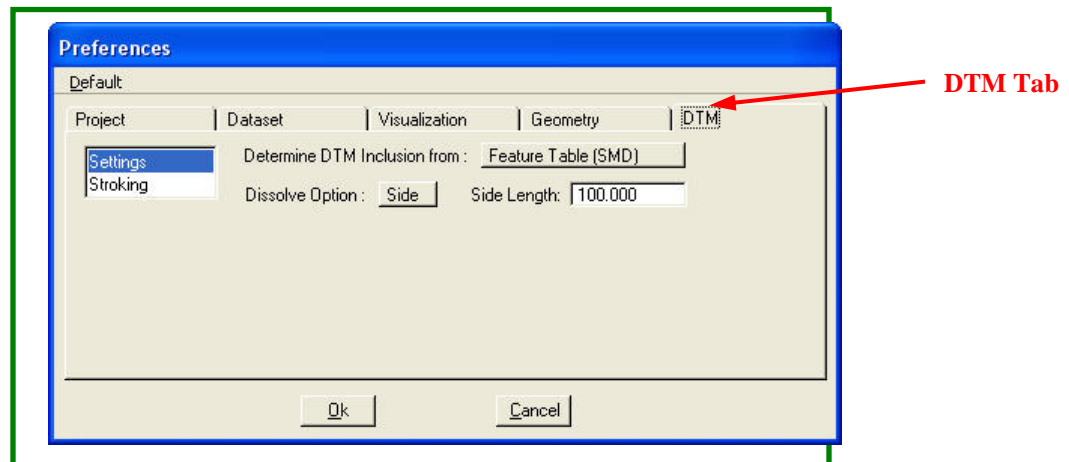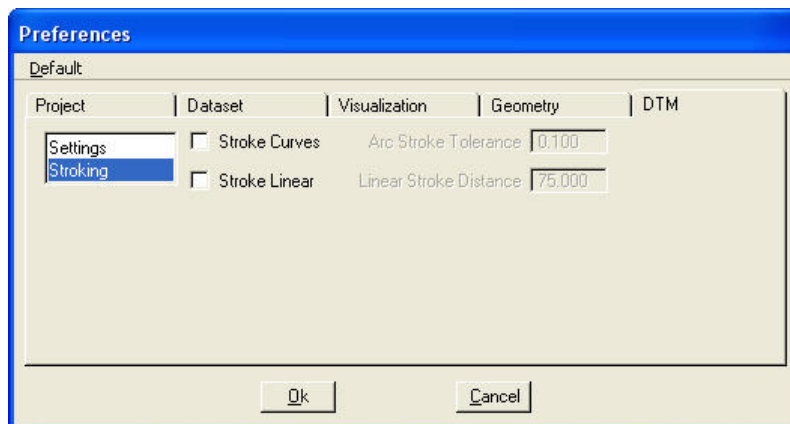
The *Geometry Configuration* tab should have the **Redefine** box checked. This will allow for editing of information after it has already been processed.

The *DTM Settings* should be changed to match the box below. These settings determine how the "tin" file is created.
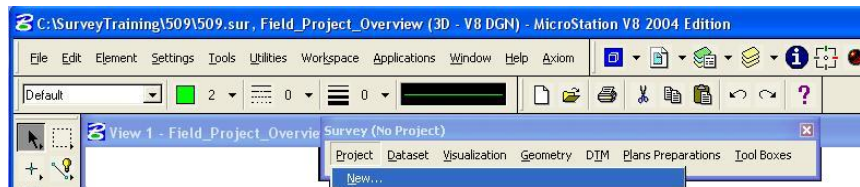

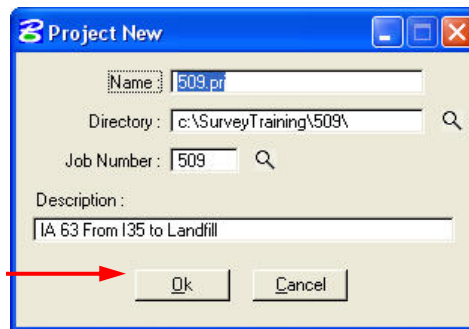The default settings for *DTM Stroking* can be used.

2) Creating the GEOPAK Survey Project

To actually create the GEOPAK Survey project you must select **Project>New** on the *Survey* toolbar.


The *Project New* box that appears will have the information already filled out based on the preferences you set. Press the **OK** button if everything is correct.


3) Creating a New Dataset

Now that the project has been created, we can create the first dataset. A dataset is a file, or files, of survey information that is loaded into GEOPAK. Each dataset may contain one day's work or the entire project. To create the dataset select **Dataset>New**.
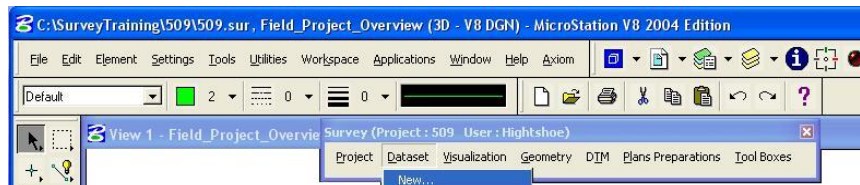
The *Dataset New* box will appear and be preset based on the preferences you set. Click on the **Dataset Add Source File to List** button to select the file containing the survey information.
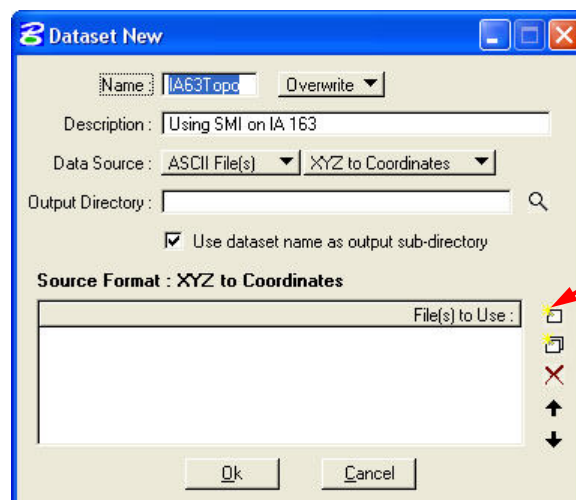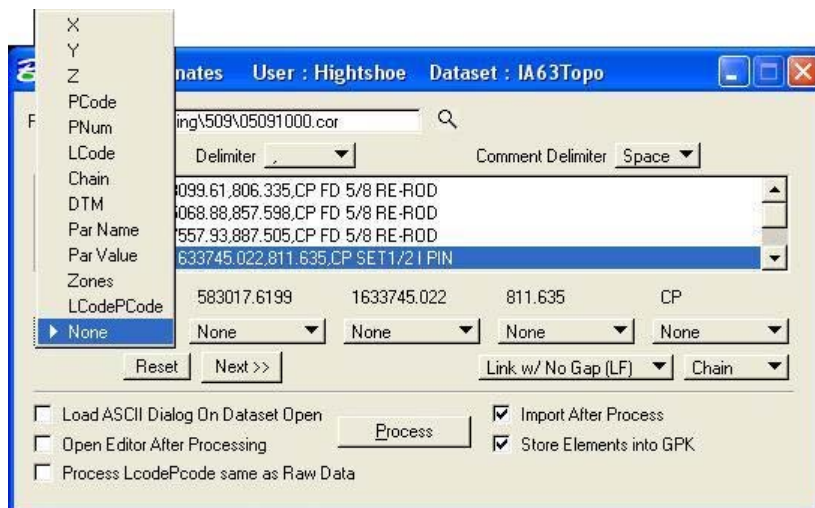
Select the file and then press the **OK** button.
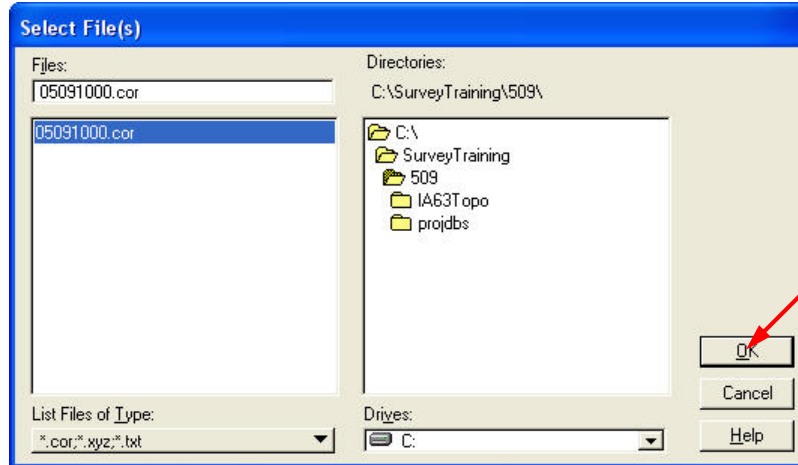
If everything looks correct, press the **OK** button.
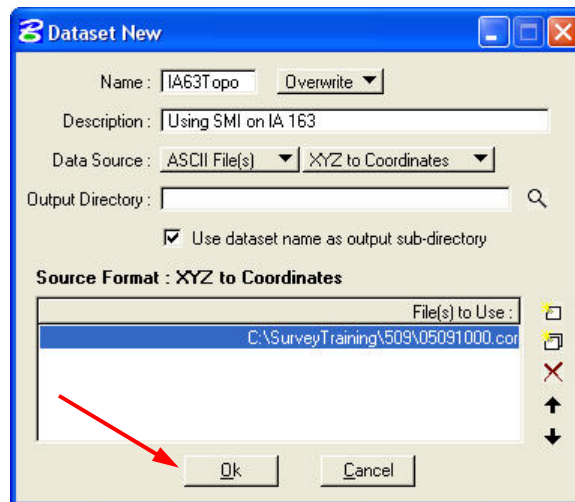
In the *XYZ to Coordinates* dialog box that appears next you must tell GEOPAK what each column represents. There are many options available.

For a standard XYZ ASCII file, you should use the settings shown below. Press the **Process** button after all of the columns have been identified.
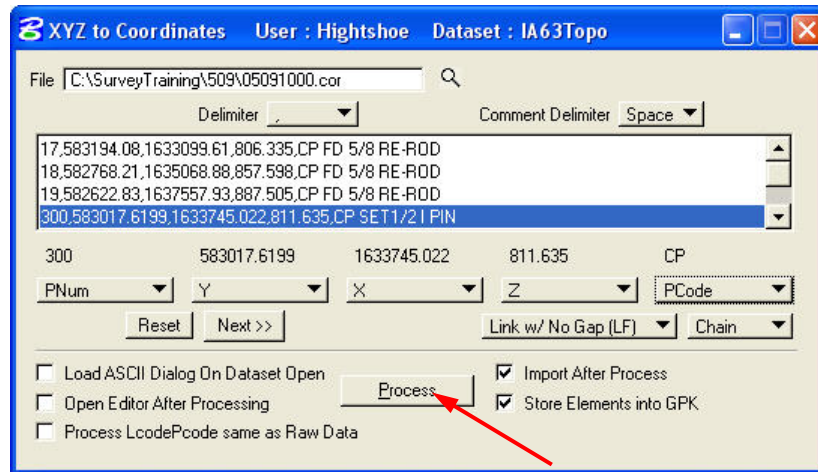

Press the **OK** button on the dialog box that appears next. This dialog explains how the chains will be named.


You will get the following Alert box if you have used any feature codes that are not in the "smd" file. Press the **OK** button to continue.

If a point has already been loaded into the "gpk" file from another dataset, the following dialog box will appear. You will have to decide what action to take.
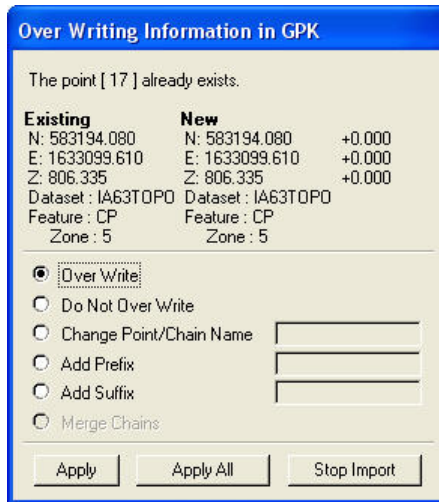

After all of the following *Importing Points into the GPK and Importing Chains into the GPK* dialogs have gone away, the survey information will have been plotted into the Microstation file. If you had any unknown feature codes the dialog box from above will be shown again. Press the **OK** button on this box.
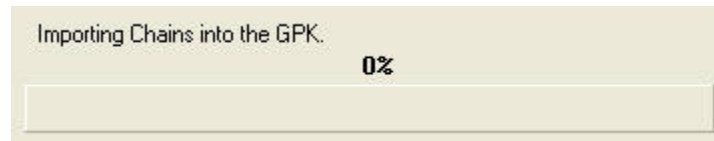
You can use the **Fit View** button on the **Microstation View Control** tool bar to fit all of the survey items onto the screen.
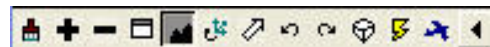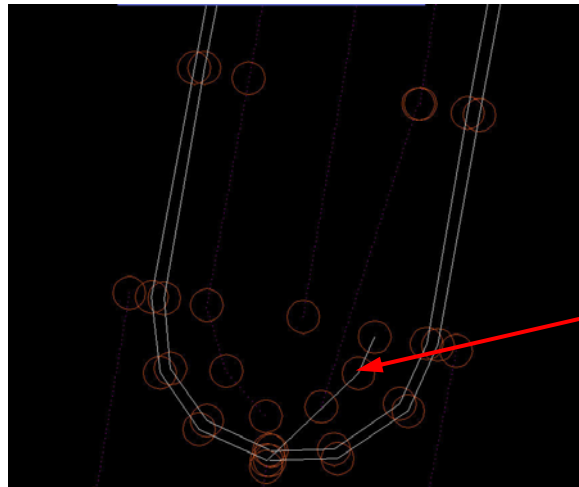

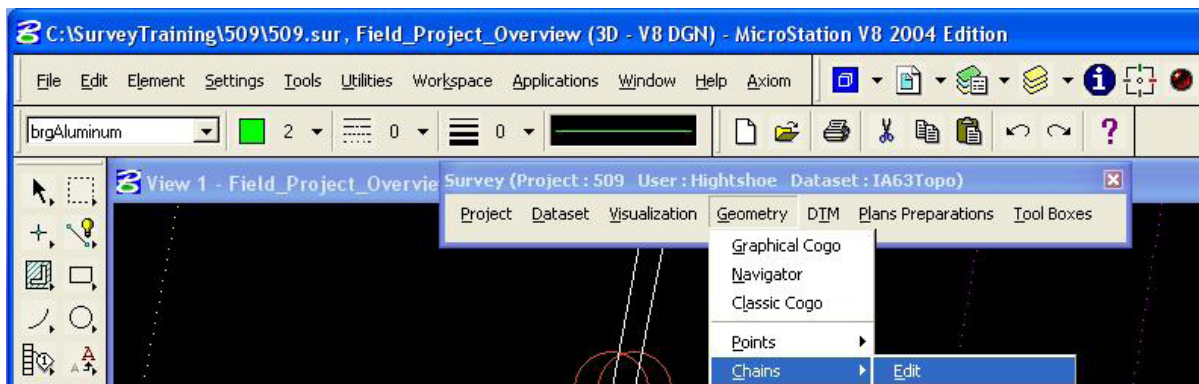Below is an example of the survey information shown in Microstation.
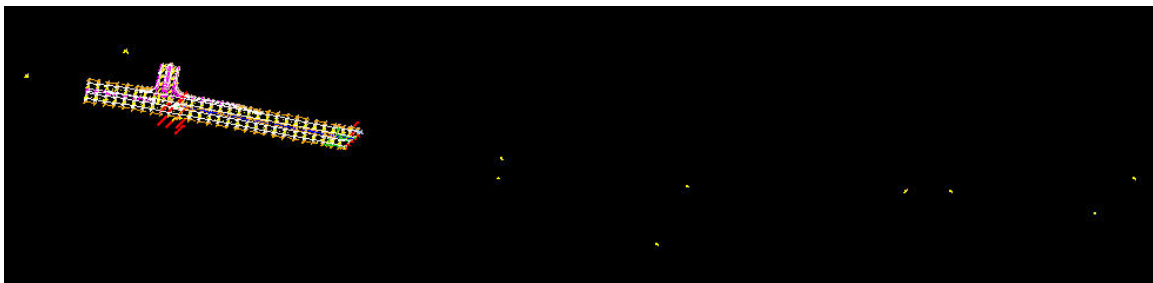
4) Editing a Survey Chain

In the Picture below, two BL points were added to the end of a GU survey chain by mistake.


Select **Geometry>Chains>Edit** from the *Survey* tool bar to fix this chain.
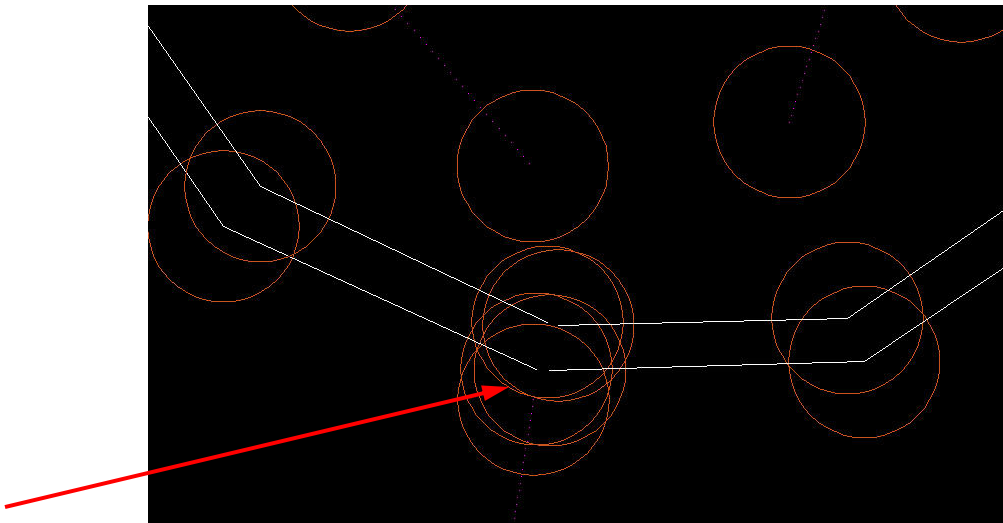

Press the **Select Chain** button on the *Chain Edit* dialog box and then data point on the chain you want to edit. This will load all of the information for the chain into the *Chain Edit* dialog box as shown below.
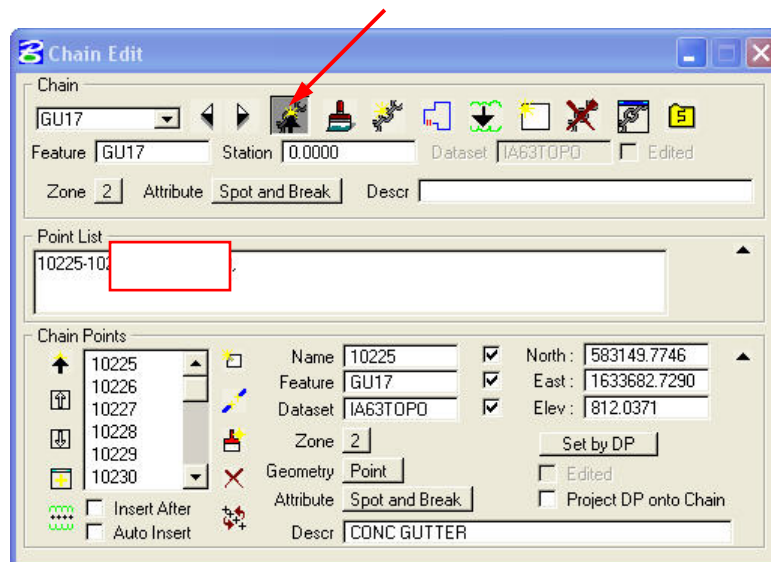
Points 10249 and 10250 need to be removed from the end of the chain. To do this, simply **delete** the points from the *Point List* portion of the box. Press the **Update Chain** button to finalize the edit.
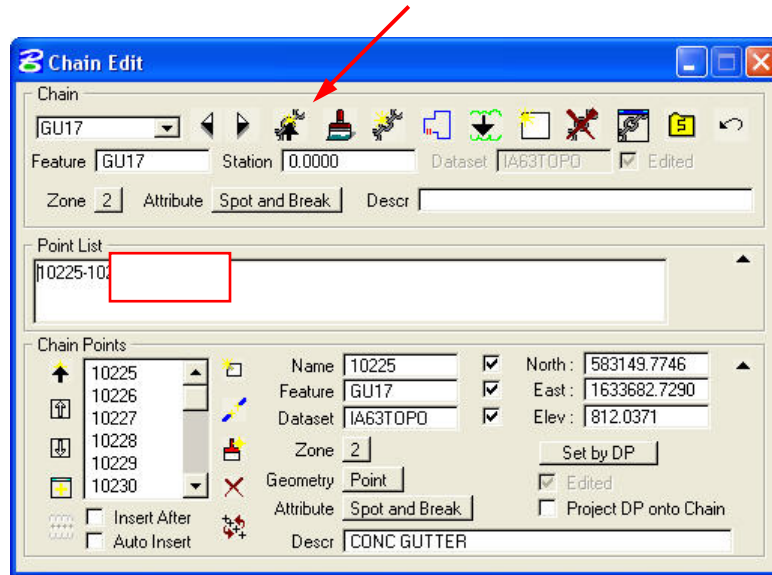

After the Update Chain button has been pressed the chain will be automatically updated in the Microstation and "gpk" files. In the picture below the CU chain and the GU chain both have gaps in them that should be connected.

On the *Chain Edit* dialog box use the **Select Chain** button again to select the chain you want to close. Press the **Close Chain** button and the last point of the chain will be connected to the first point of the chain.
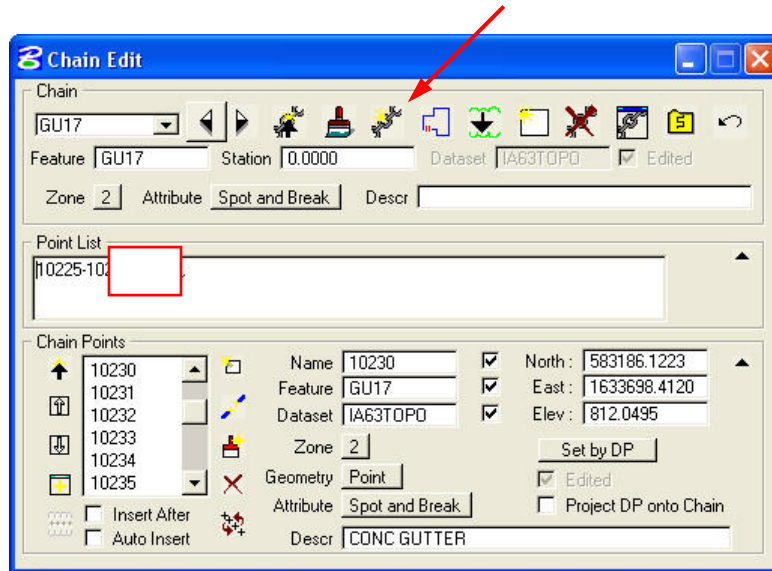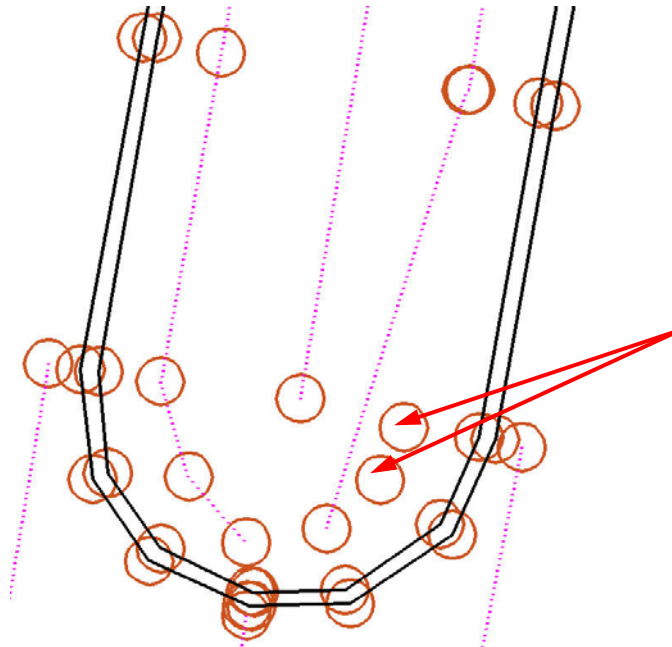

The closed chains appear below.
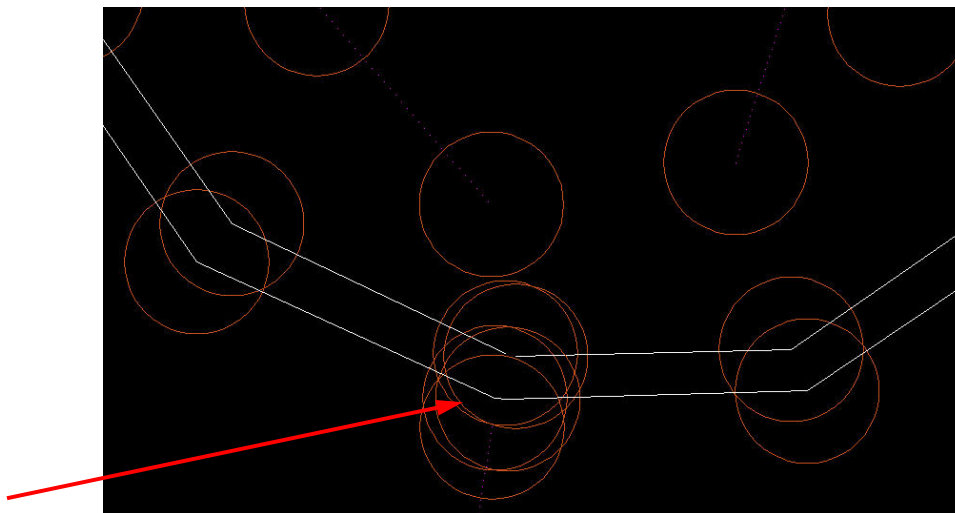
To add the original to points into the correct survey chain, use the **Select Chain** button to identify the survey chain you want to add them to.
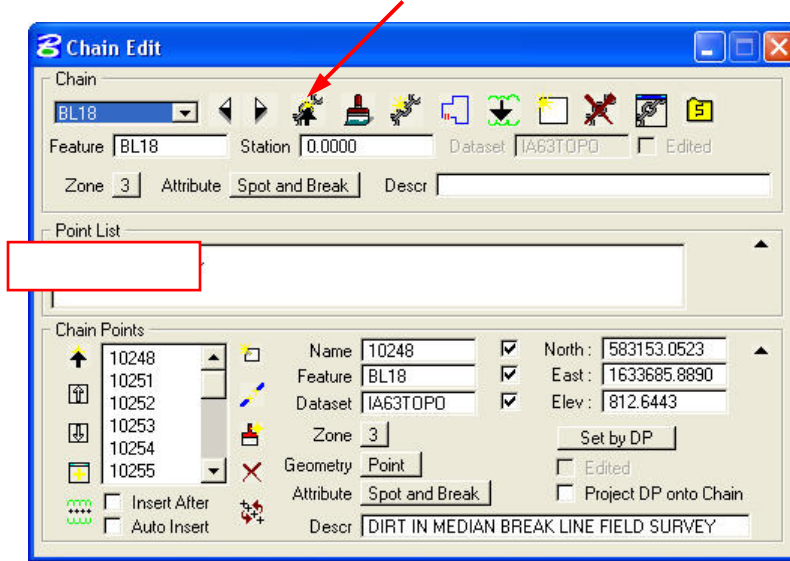

The following picture shows the two points and the BL survey chain they need to be made a part of.

Because the two points could be added to the chain in sequential order with the existing points, the point list was changed to what is shown below using a hyphen. If the points were not in sequential order they could have been added in the appropriate locations separated by commas. Press the **Update Chain** button after the point numbers have been modified.
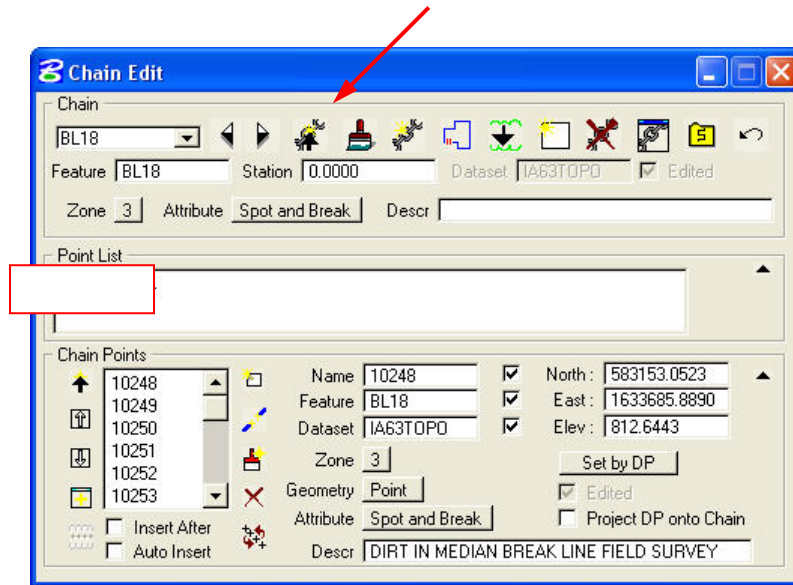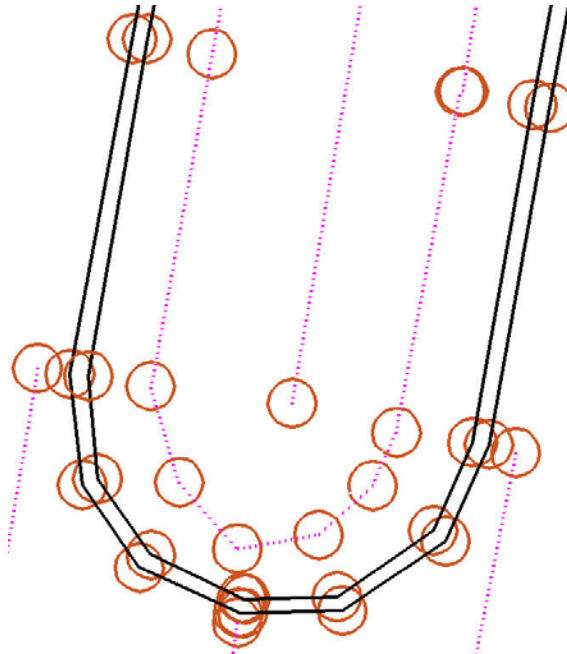

The modified BL survey chain is shown below.
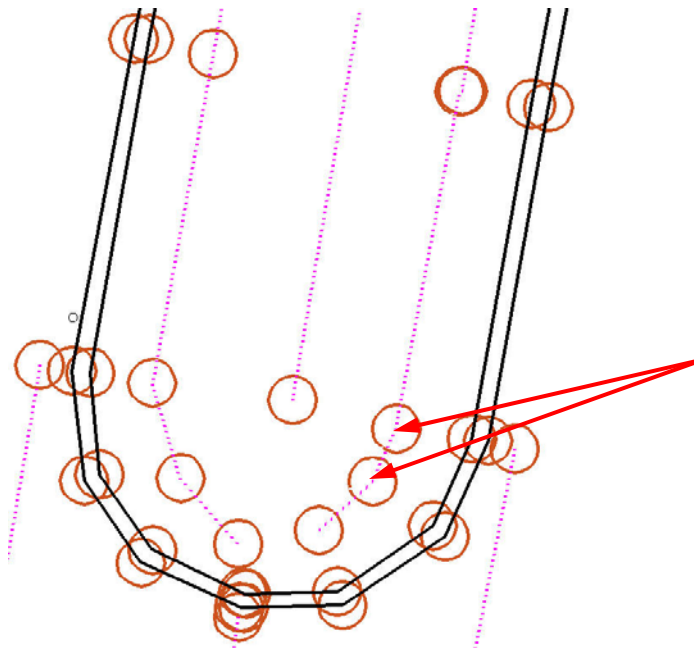
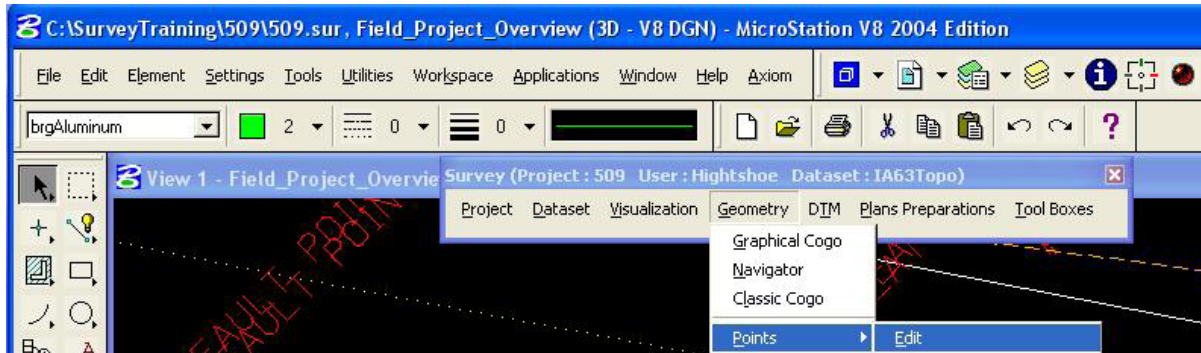This chain also needed to be closed using the **Select Chain** and **Close Chain** buttons.
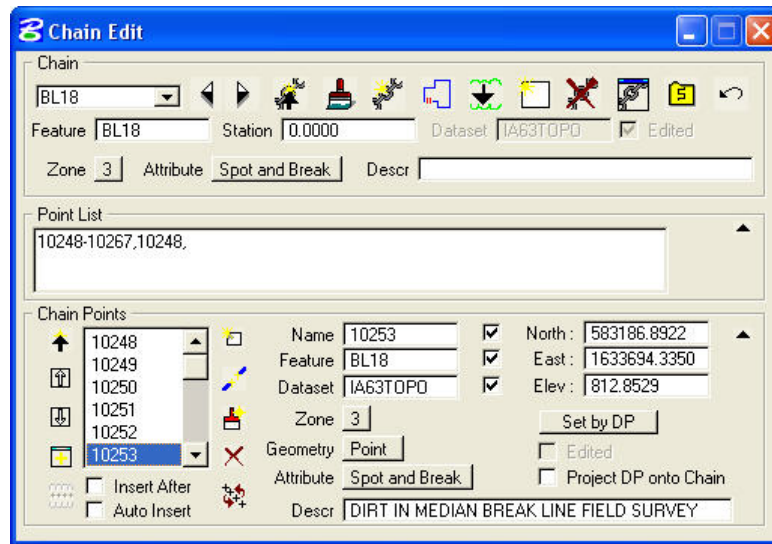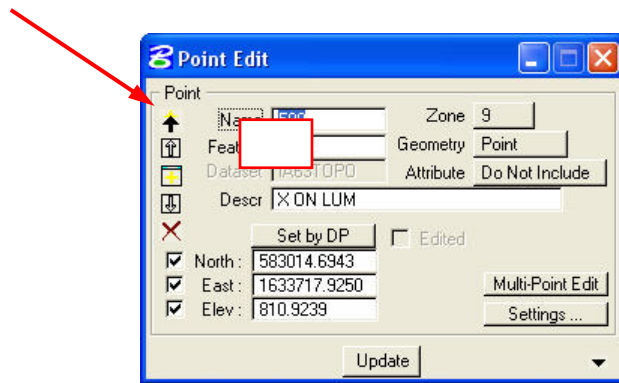

The finished chain is shown below.

5) Edit Points

Select **Geometry>Points>Edit** on the *Survey* tool bar to edit a point.


Use the **Select Point Button** on the *Point Edit* dialog box to identify the point to edit. If you know the point name you can also just type it in the *Name* area and hit the **Enter** key.
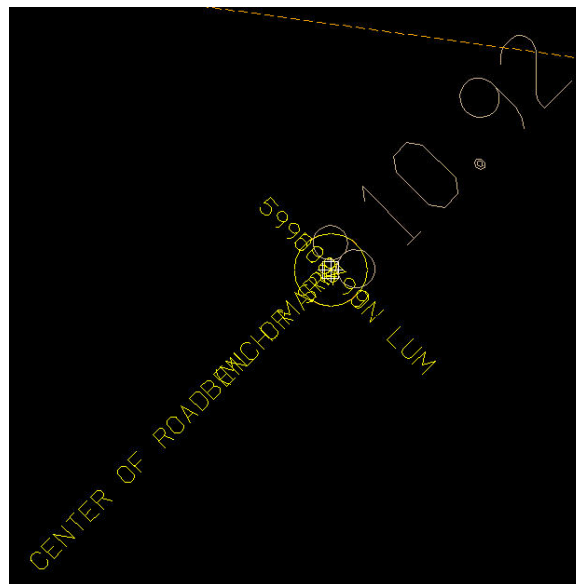

This point came in with the default feature because the feature that was assigned to it in the field (TBM) is not in the "smd" file.
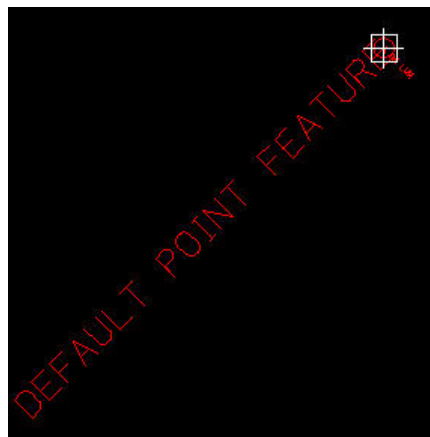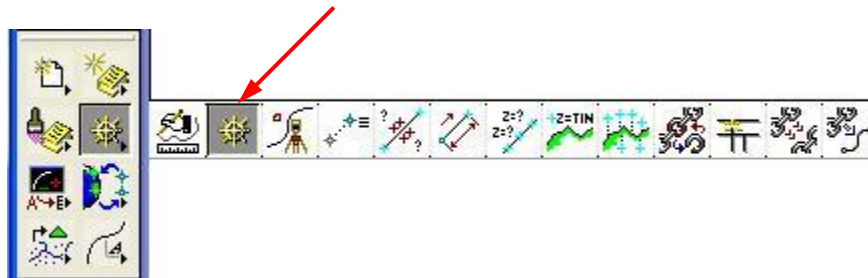
The *Feature* of this point was changed to BM and the zone was changed to 5.
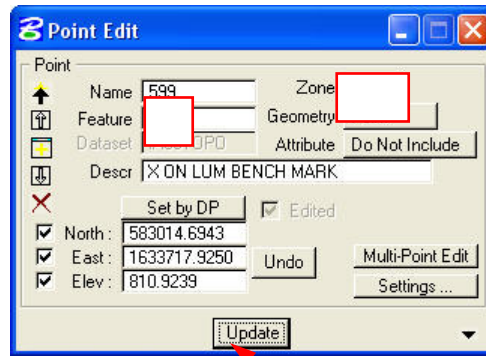

After pressing the **Update** button the Microstation and "gpk" file are both automatically updated as shown below.


Another way to modify points is in the *Coordinate Geometry (COGO) Navigator*. You can access the **COGO Navigator** from the *Survey* tool palette.

After selecting the button, two boxes will appear. The *COGO* box is shown below. To make this procedure work correctly, the **Redefine** box must be checked and the visualization must be set to **Permanent Visualization**.
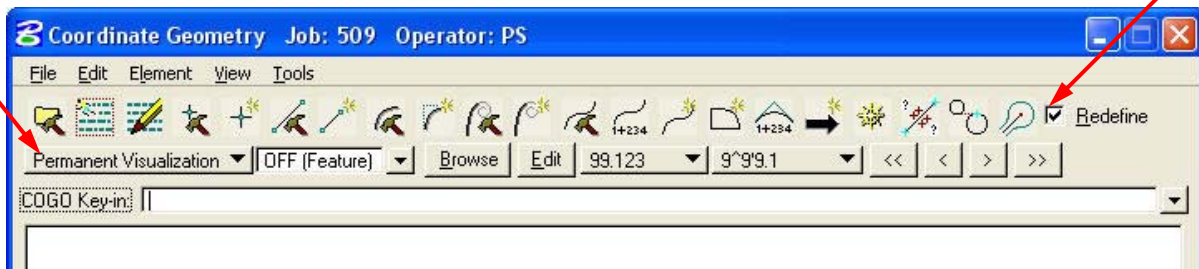

The *COGO Navigator Box* is shown below. To modify an individual point highlight it's row. Then click on the item, such as Feature, that you want to change and type in the new information.
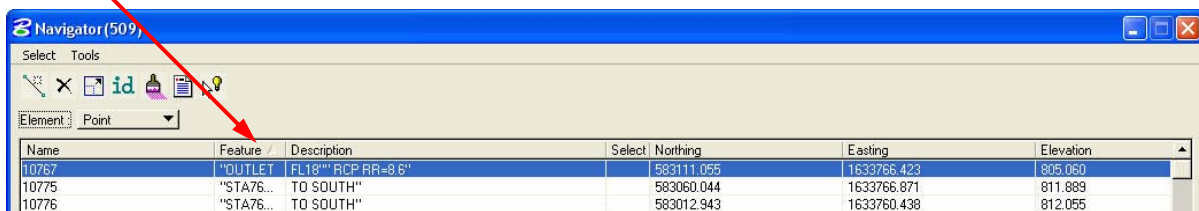

The change to the feature code is shown below. The point is automatically updated in the Microstation file.
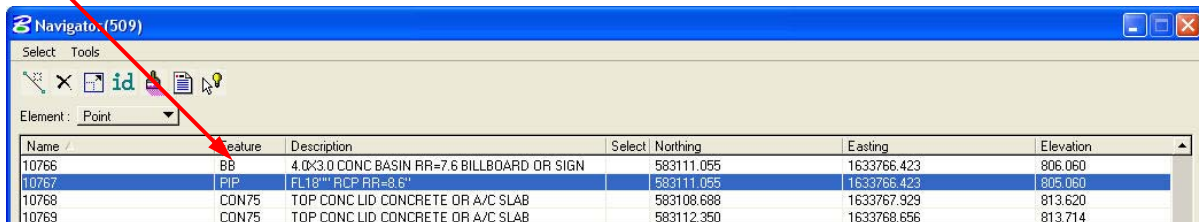
You can also modify multiple points at one time. Click on the first point to modify. If all of the points to be modified are in order in the COGO Navigator window, hold down the Shift key and data point on the last point. If the points are not next to each other in the COGO Navigator window, hold the CTRL key down and data point on each individual point that need to be edited.
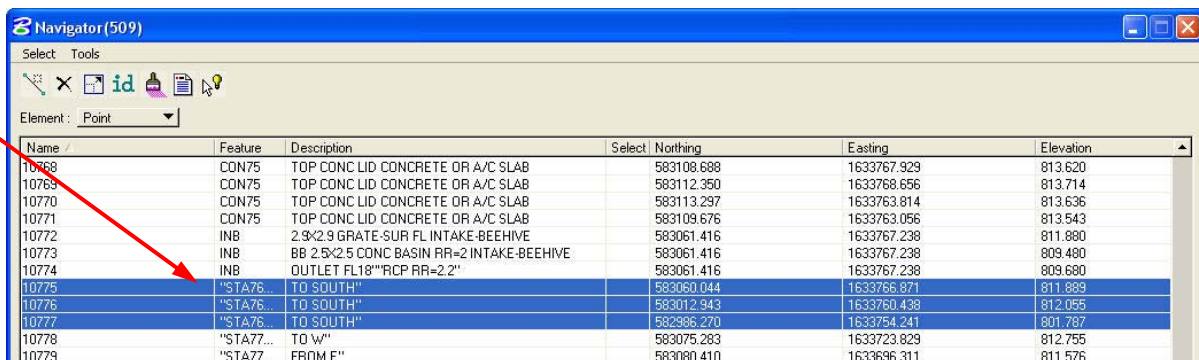
Once all of the points are highlighted, right-click on the highlighted area and select the option that describes what you want to edit. In this case I am going to edit the feature of these three points.
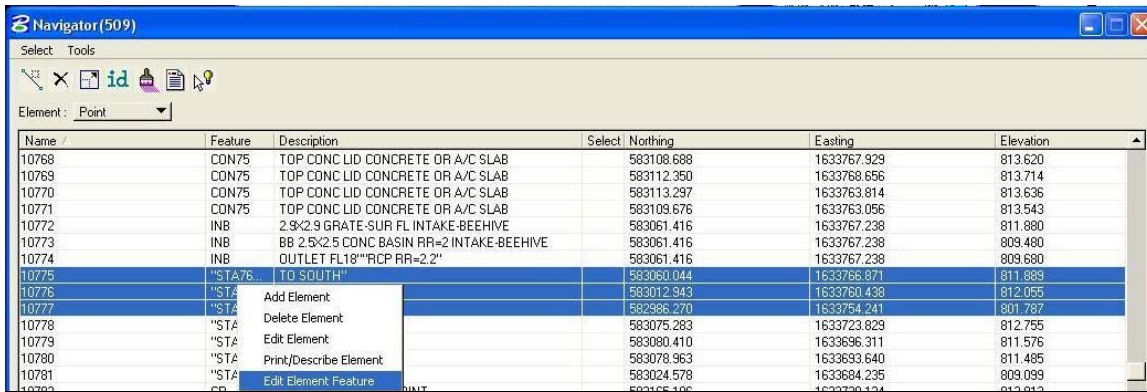
In the Edit Element Feature box, type in the feature that you want the points changed to.

The points have now been modified as shown below.