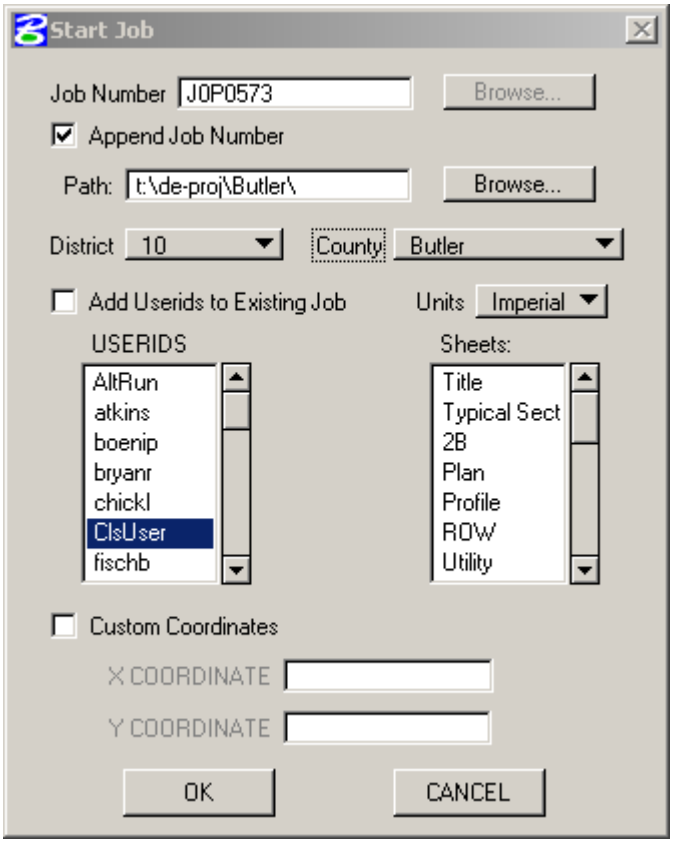
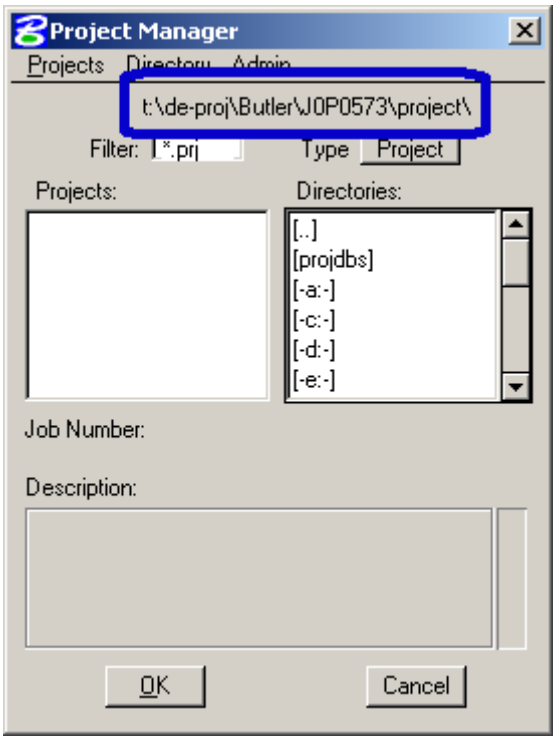
1) Create Project Folder and default MicroStation Files.



2) Open T:\de-proj\Butler\J0P0573\data**plan_J0P0573.dgn**

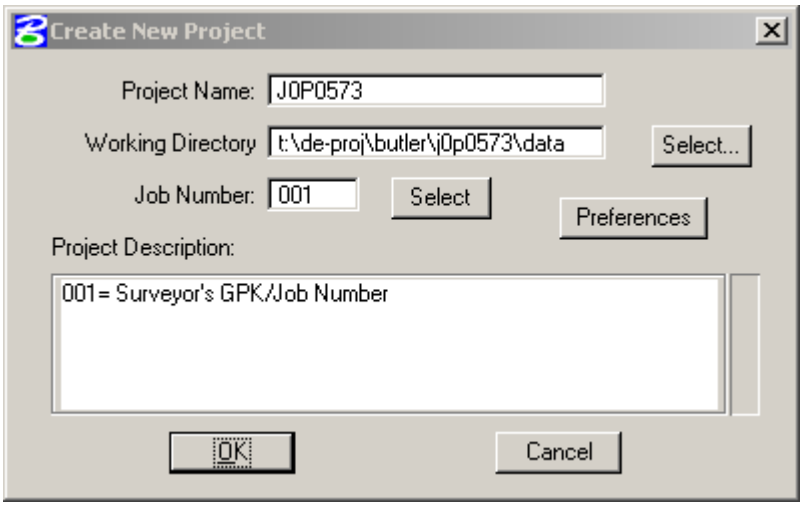
3) Create J0P0573 Project in GeoPak by selecting the following:
Applications > GeoPak Survey > Project Manager

4) In Project Manager set the path to **T:\de-proj\Butler\J0P0573\project**

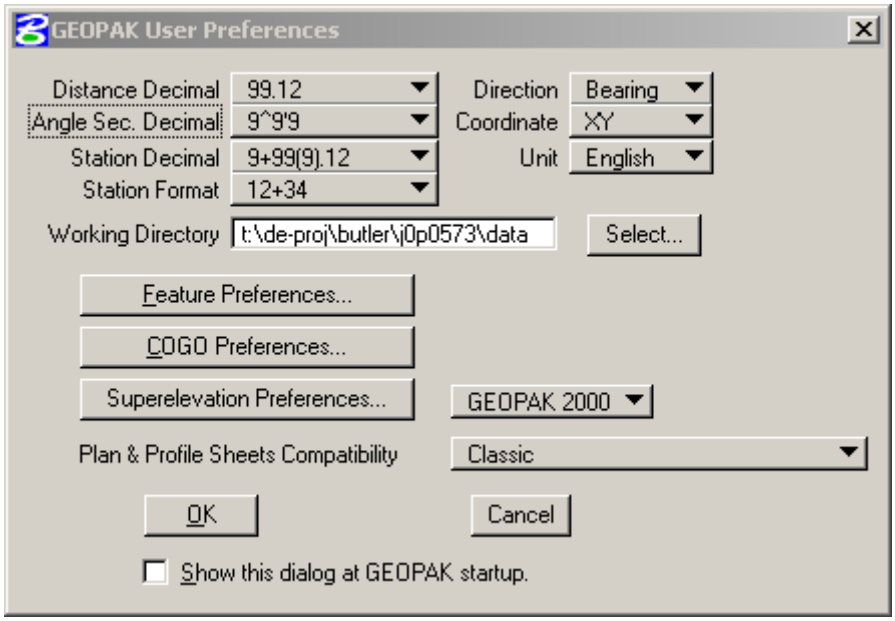


5) Go to the project pull down in the upper left corner and select "**New**"

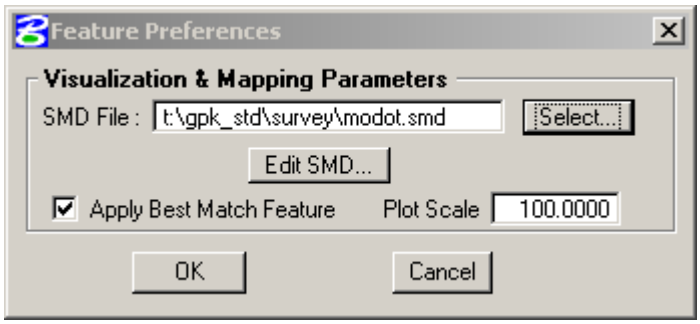
6) Fill out the "**Create New Project**" dialog the same as below.



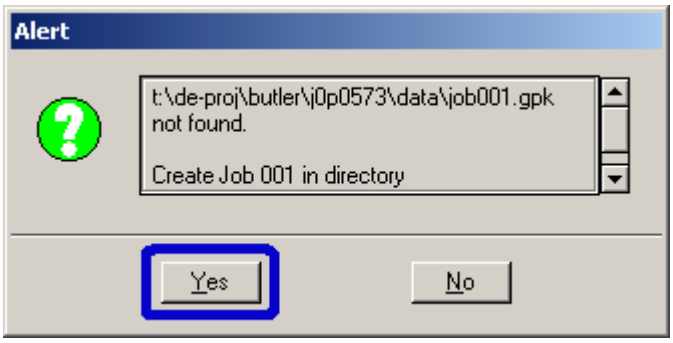
7) Click on "**Preferences**" and set as below:



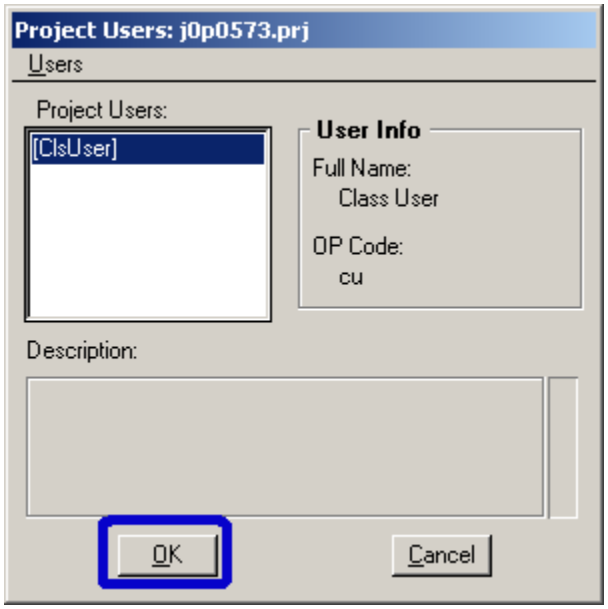
8) Click on Feature Preferences and make sure "**Apply Best Match Feature**" is checked on.



9) Select Yes to create Job 001

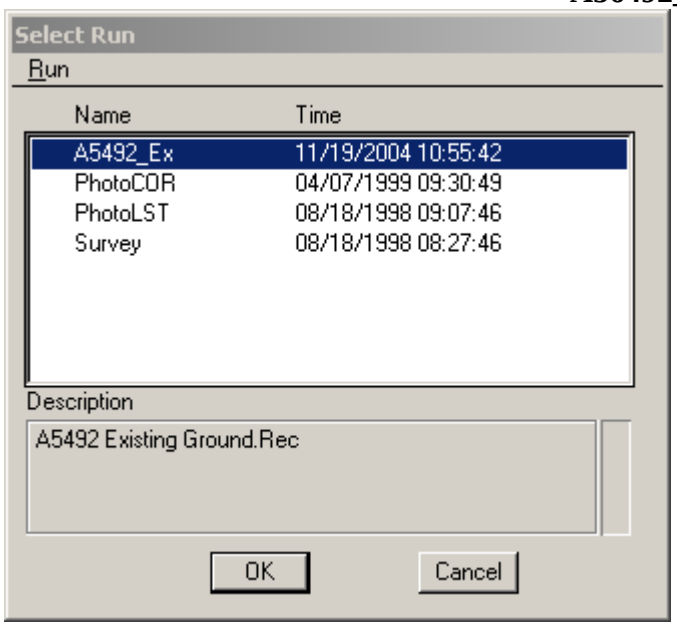


10) For the Project User select "**ClsUser**" and hit "OK".

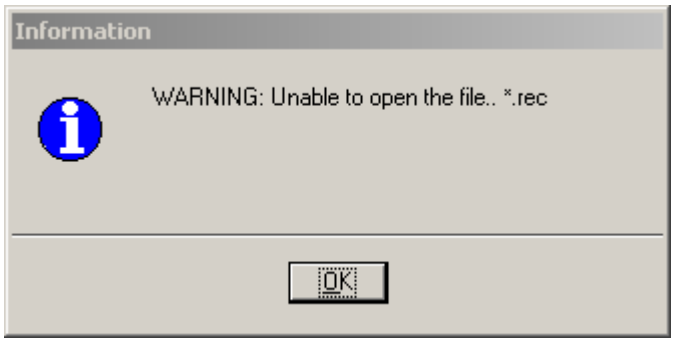


11) Select "**Survey**"

12) Do a "**Run** > **Copy** > **Run**" and select the "**Survey**" Run. Call the new run **A56492_Ex** (See Below).

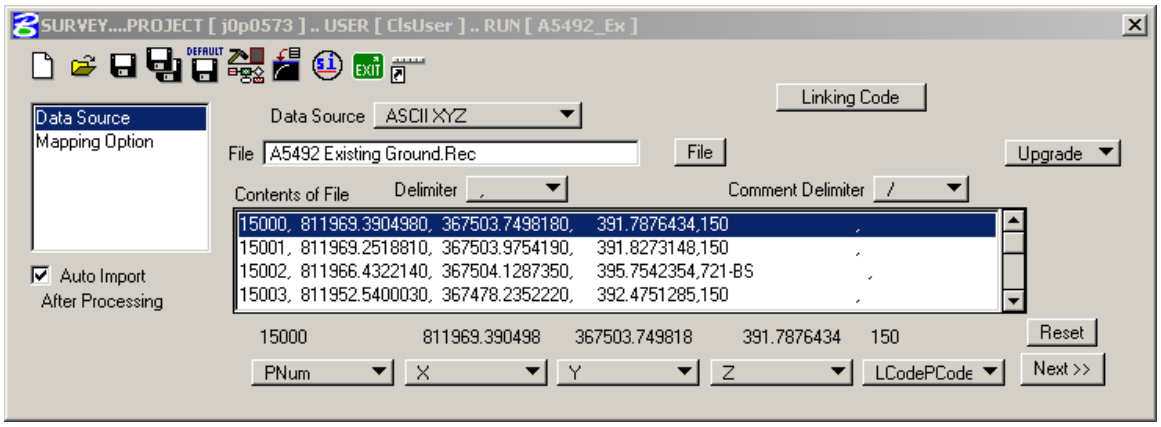


13) Select the **A5492_EX** run and select "**OK**" Ignore Dialog box below

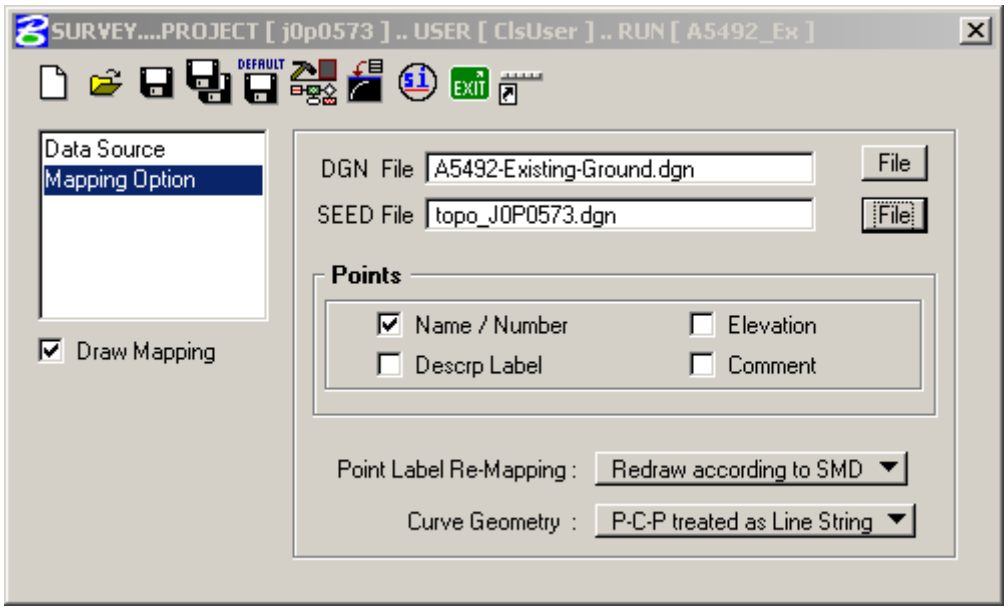


14) Copy the 2 Rec files from the Survey data folder

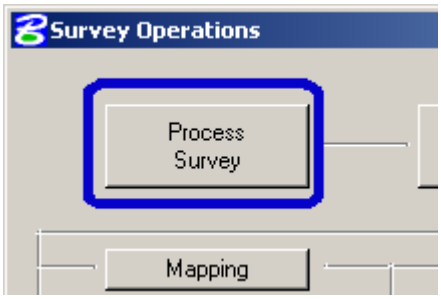
15) Setup the "**Data Source**" Dialog same as below:



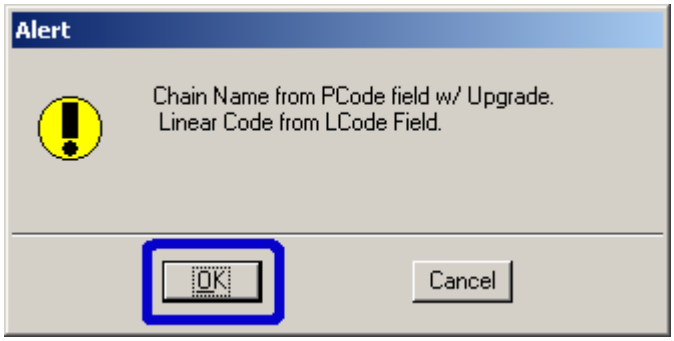
16) Set the "**Mapping Option**" Dialog same as below and save the run.



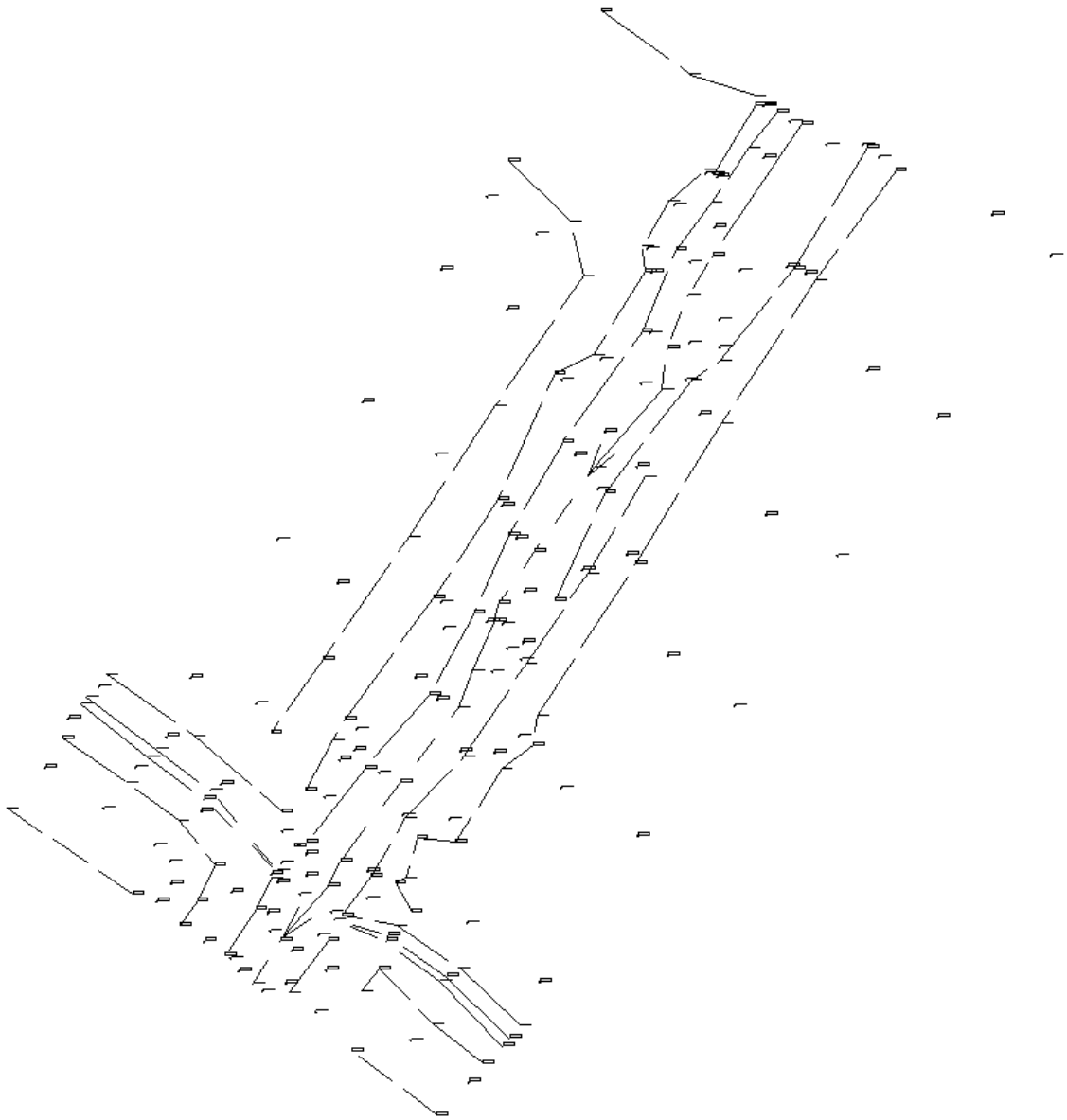
17) Select "**Process Survey**"



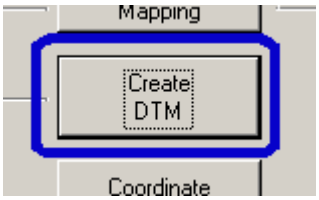
18) Ignore "**Alert**" dialog by selecting "**OK**"



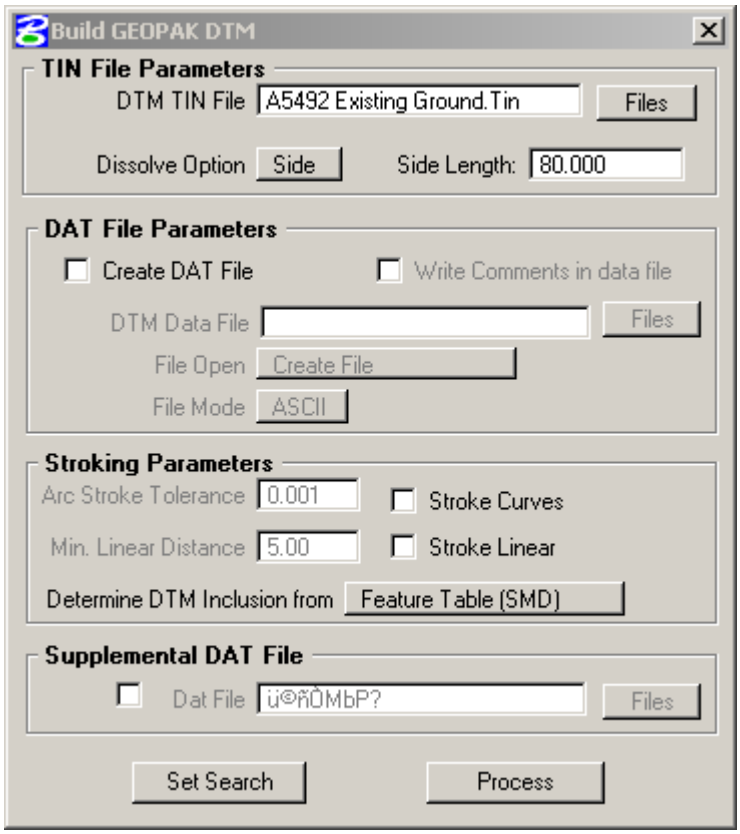
19) Do a MicroStation Fit View "**Fit View**" and the Borrow Pit Survey shots should appear.



20) Select "**Create DTM**" from the Survey Operations dialog.



21) Fill out the "**Build GeoPak DTM**" dialog as below.



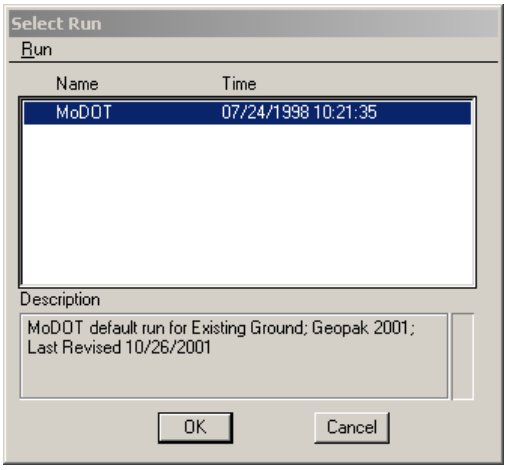
Also select "**Set Search**" and check "**A5492_EX**" Run (See Below)

Lastly, hit "**Process**" in the "**Build GeoPak DTM**" Dialog.

22) View the tin file using the "**Load DTM Features**" pull down by selecting the following:

Applications > GeoPak Road > DTM Tools

Copy the MoDOT Run and name the new run **J0P0573**. ➔ ➔ ➔

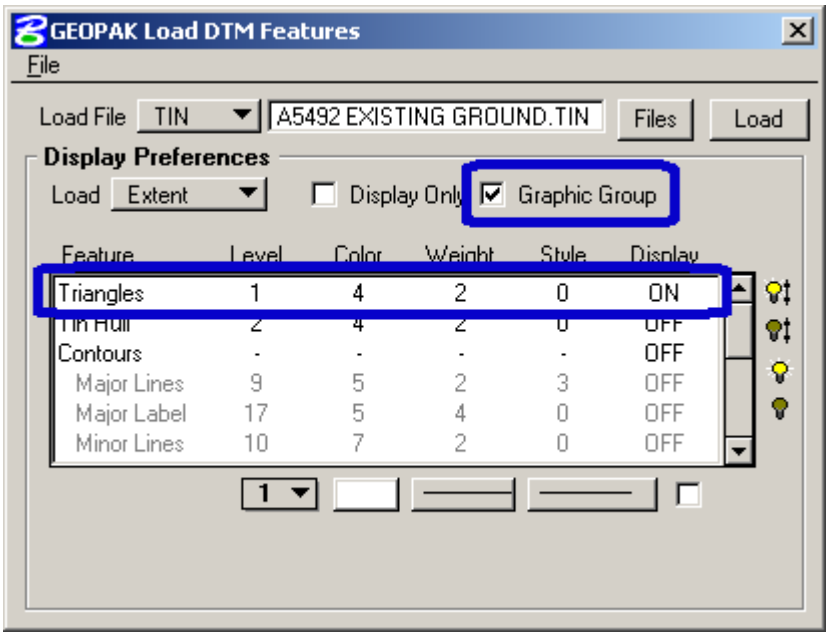


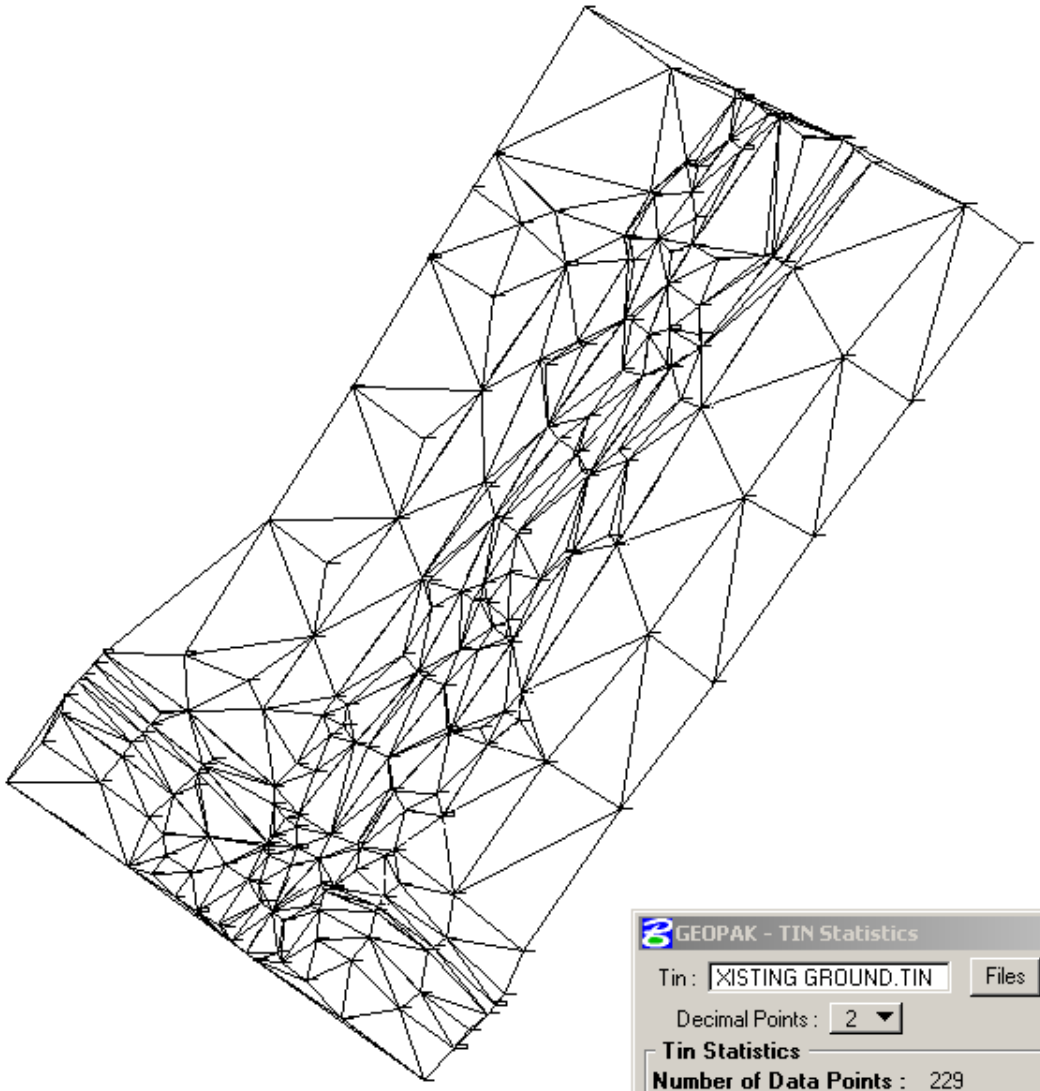
Afer the run is created open the **J0P0573** Run

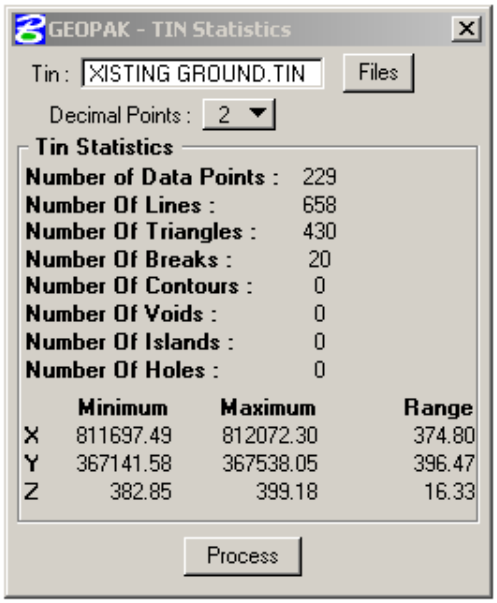
Select the "**DTM Menu**" Icon ➔

Now Select the "**Load**" pull down ➔

23) Fill out The "**GeoPak Load DTM Features**" Dialog same as below:







24) **Tin Statistics** can also be generated from the DTM Menu by going to:

Reports > Triangle Satistics ➔ ➔

25) Save the **A5492-Existing-Ground.dgn** Microstation File.

26) Next we need to import the **Bottom of Culvert** information.

27) The Bottom of Culvert Information will be brought into GeoPak using a SOE file.

SOE = Station, Offset, Elevation

Since we're going to use an SOE file we need to have a chain defined.

28) The Construction inspector created a chain that ran down the centerline of the culvert. The chain name he used was **CULVERT-CL.** We need to add that chain to our 001 GPK/Job Number before we can import the Bottom of Culvert SOE file.

Chain **CULVERT-CL** contains:
Points 1 & 2

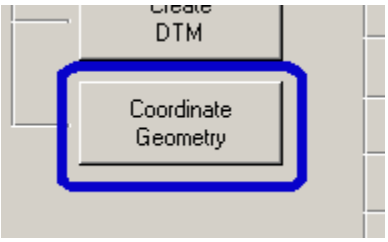
Beginning chain CULVERT-CL description
==========
Point 1 X 811,842.08 Y 367,180.76 Sta 0+00.00

Course from 1 to 2 N 15^ 02' 36" E Dist 331.33

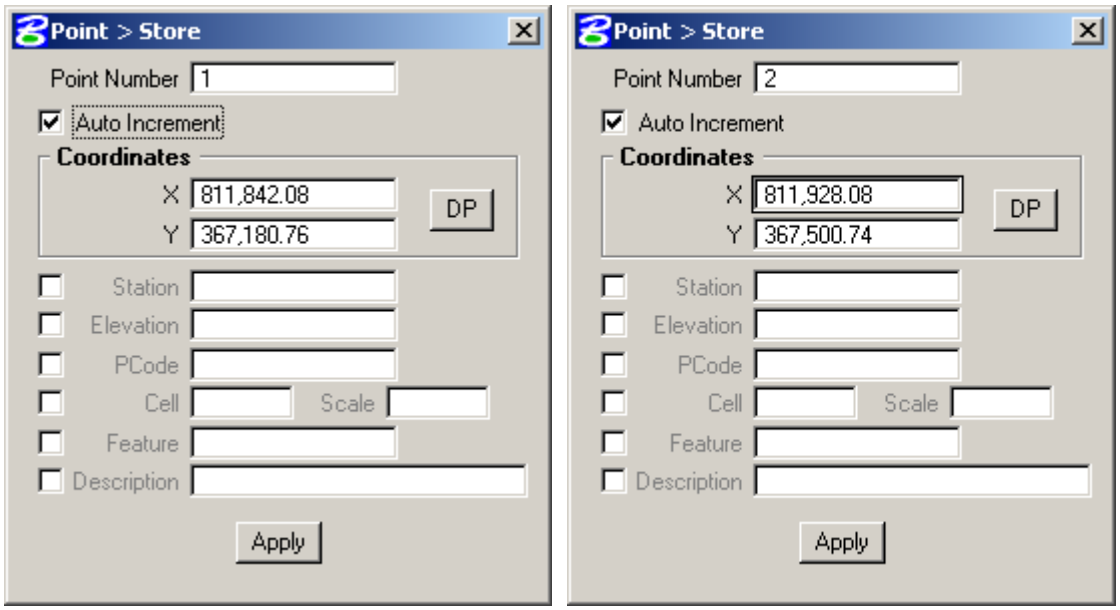
Point 2 X 811,928.08 Y 367,500.74 Sta 3+31.33

==========
Ending chain CULVERT-CL description

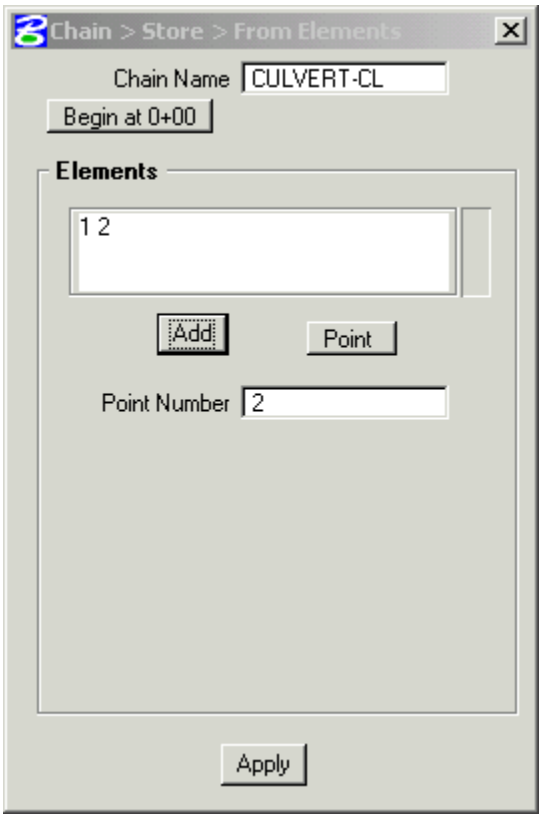
29) From the Survey Operations Dialog Select "**Coordinate Geometry**".



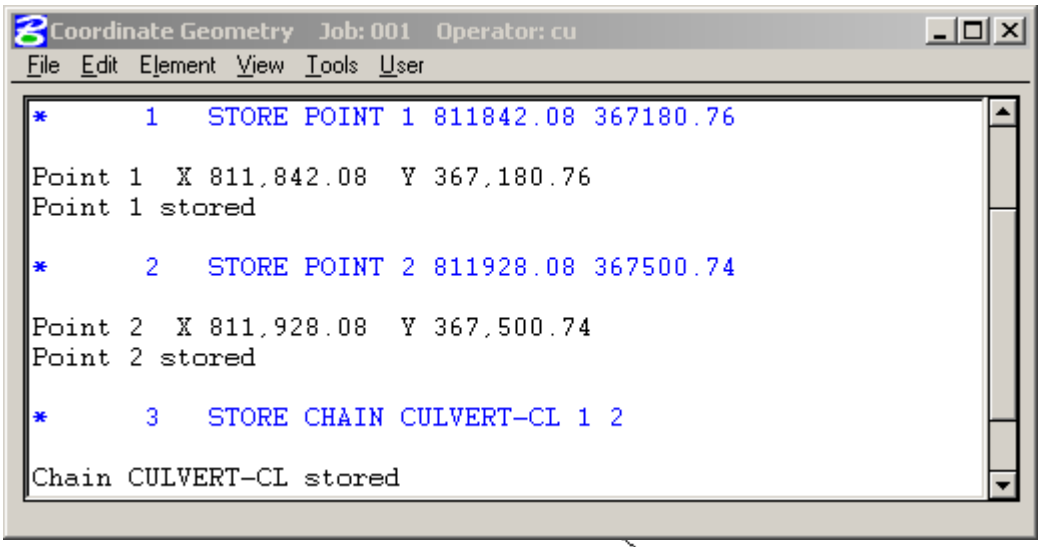
30) In COGO store the following points:

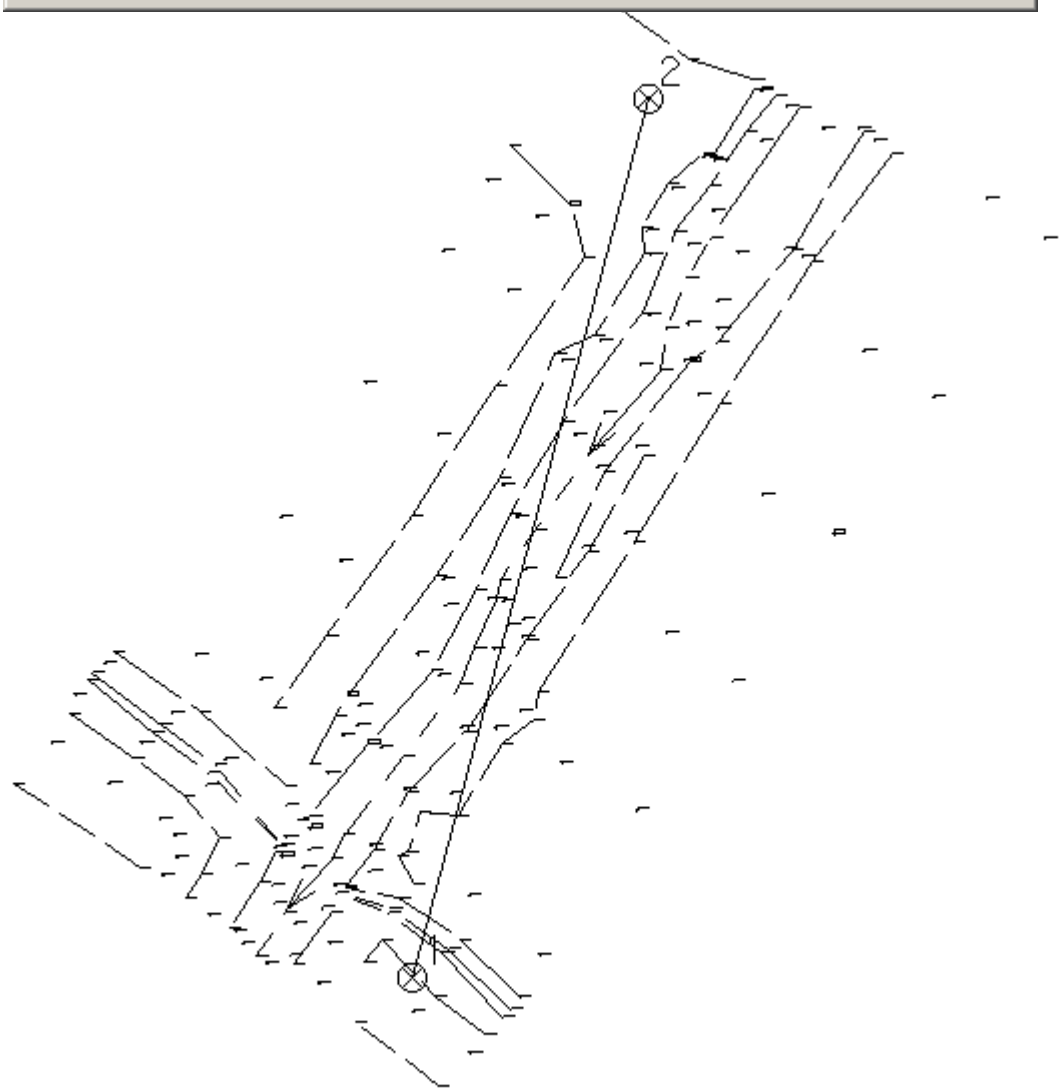


31) Store a Chain called “Culvert-CL”.



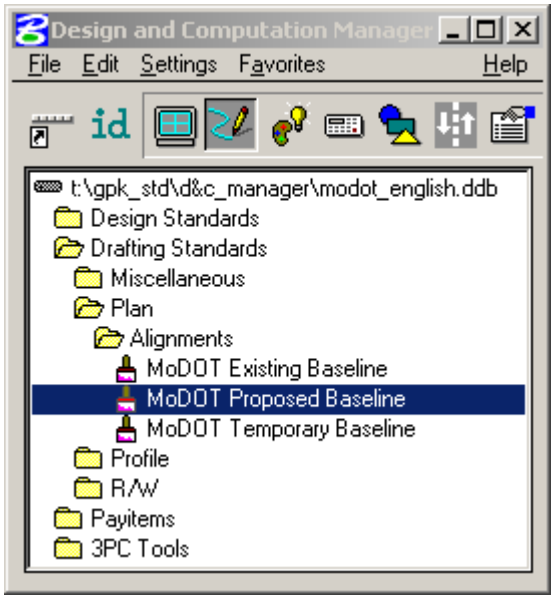
32) Below is a view of what your screen and COGO output window should look like.

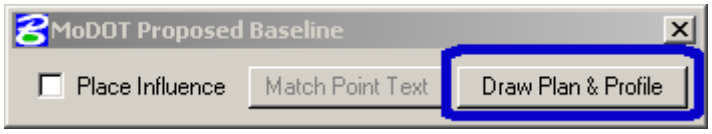


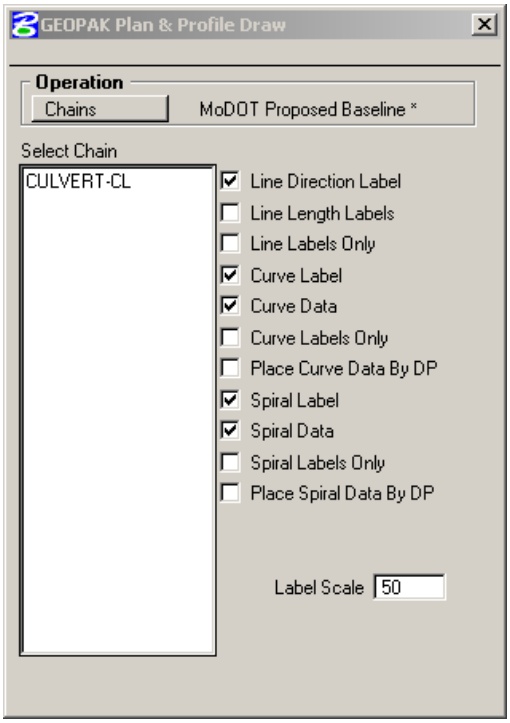


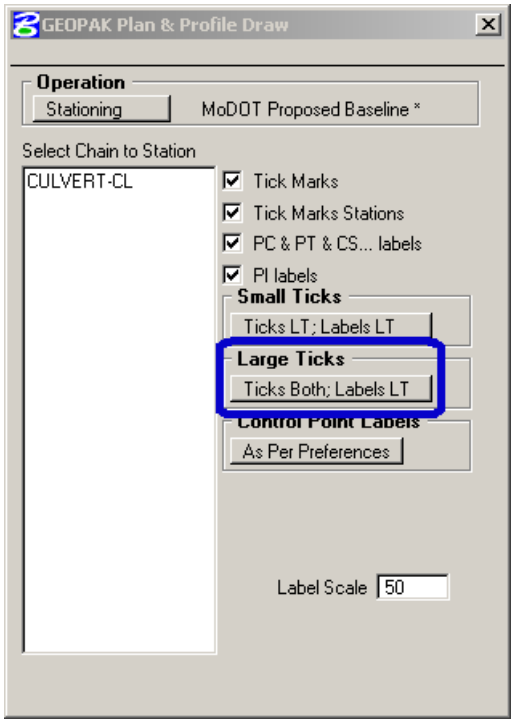
33) **Optional Step** – Plotting Chain and Stationing information permanently into a MicroStation file (MoDOT Standards). To do this, select the following:

Applications > GeoPak Road > Design & Computation Manager







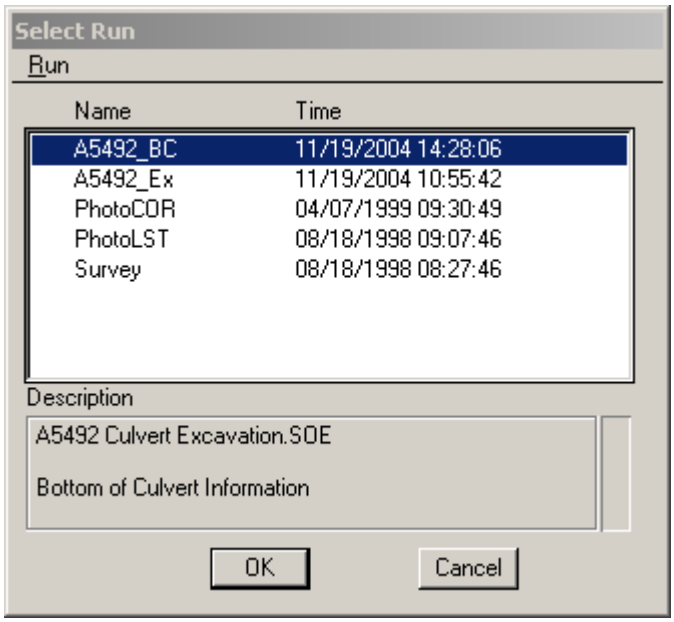


34) After you have apply the D&C Manger setting your file should look as follows:

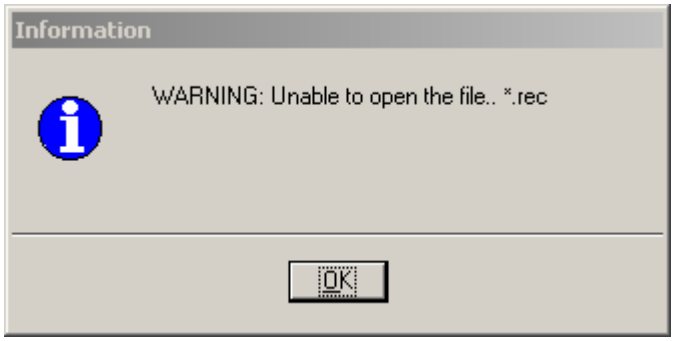
35) Now that we have a chain for our culvert, we are now ready to import our Bottom of Culvert SOE file.

Select "**Survey**"

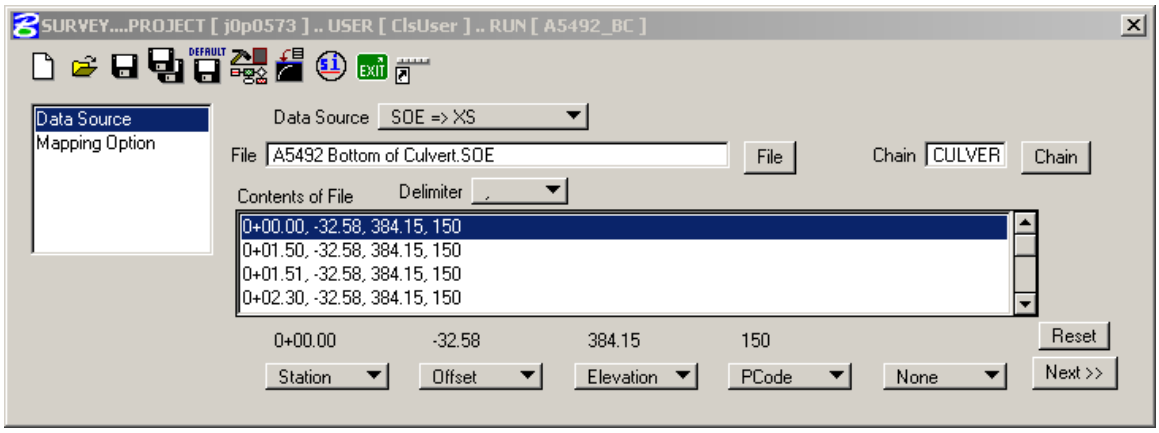
36) Do a "**Run > Copy > Run**" and select the "**Survey**" Run. Call the new run **A5492_BC** (See Below).



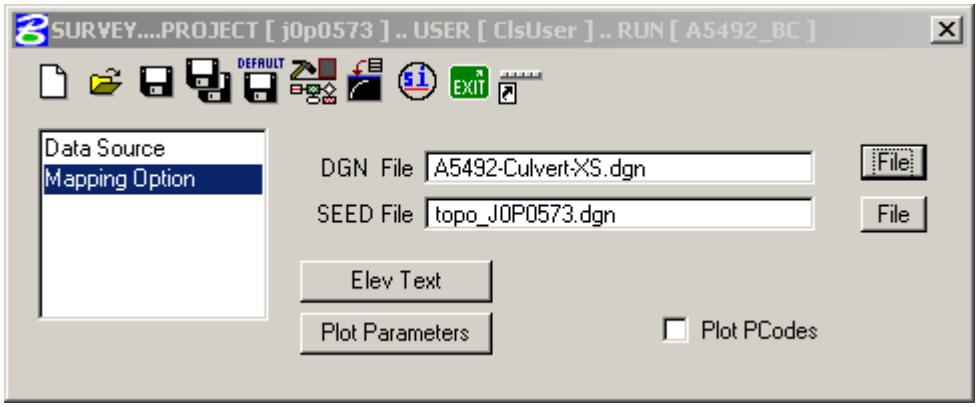
37) Select the **A5492_BC** run and select "**OK**" Ignore Dialog box below

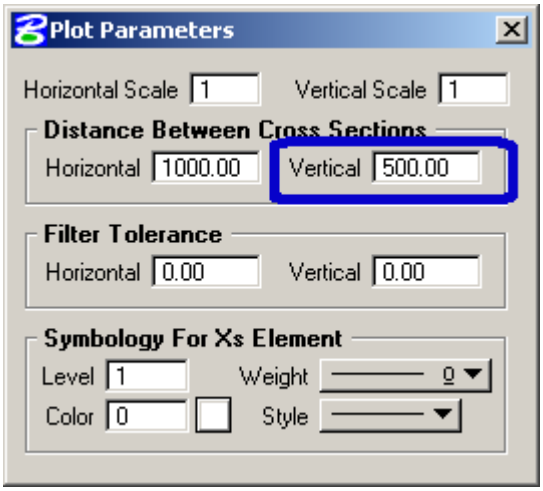


38) Setup the "**Data Source**" Dialog same as below:

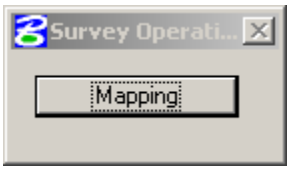


39) Setup the "**Mapping Option**" Dialogs same as below, then click on the

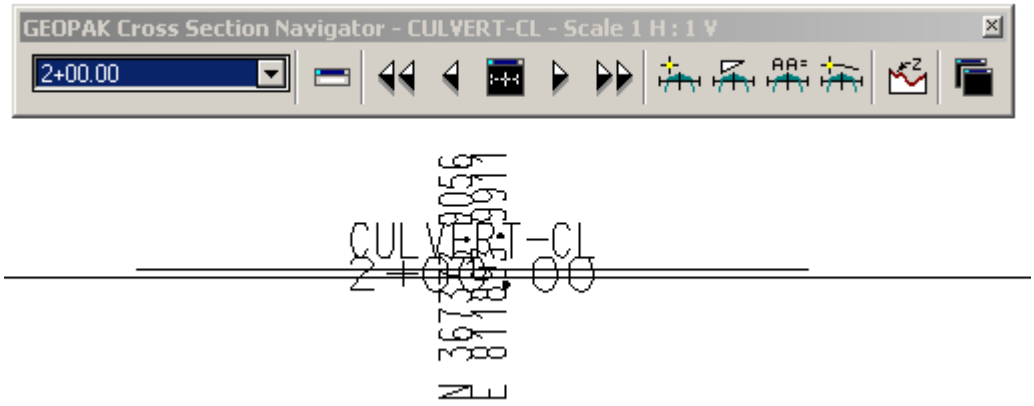




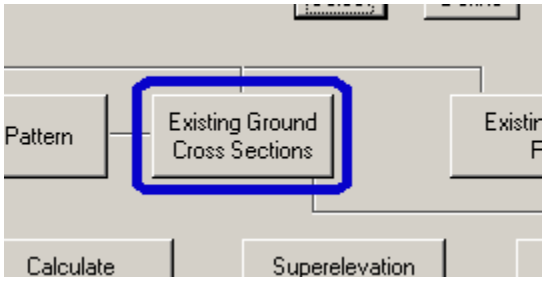
After all dialogs are setup Click on the "**Mapping**" Button ➔ ➔



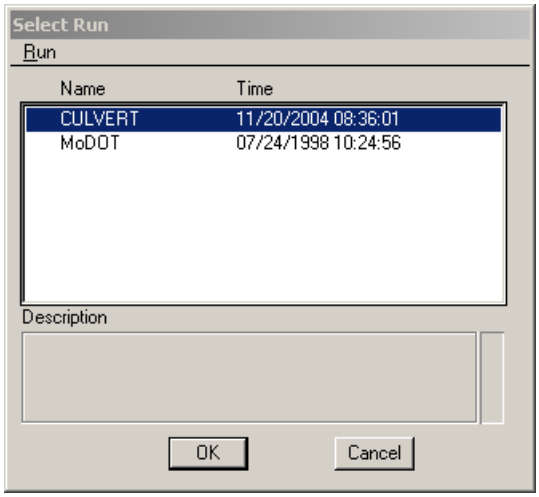
40) When the mapping is finished you should have several cross section that look like the following:



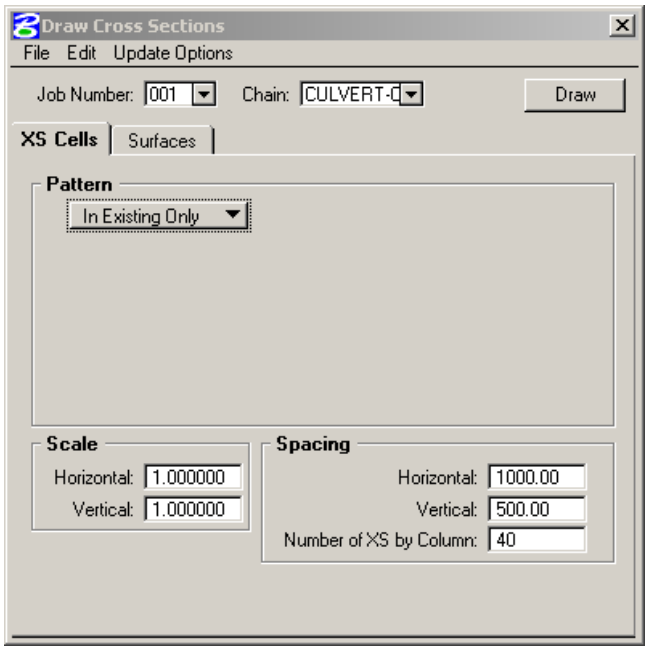
41) Next we need to plot our Exist Ground Surface into our Cross Sections. To do this we'll select "**Existing Ground Cross Sections**" from the GeoPak Road Dialog.

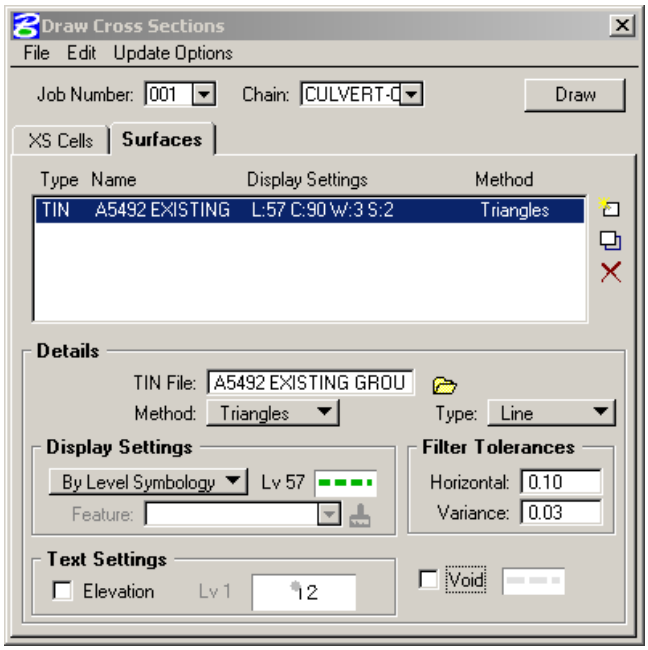


42) Select "**Run** > **Copy** > **Run**" and select the MoDOT run to copy. Call the new run "**CULVERT"**

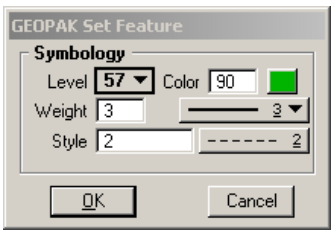


43) Fill out the two Draw Cross Sections Dialogs as follows:

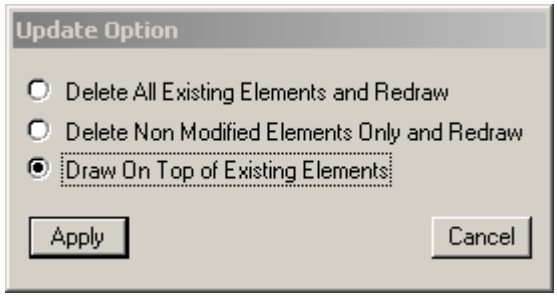




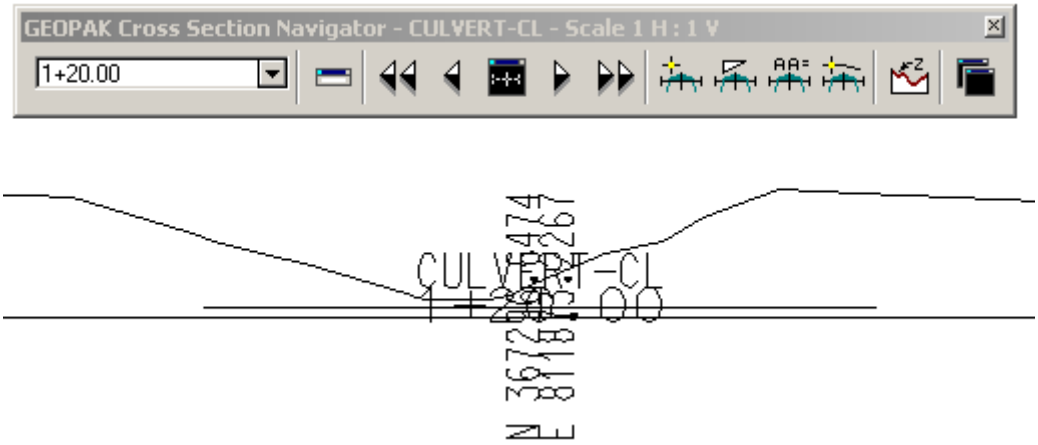
Existing Ground Symbology ➔



44) Once the “Draw Cross Sections” dialog is filled out select the “**Draw**” button in the upper right corner. When the Update Option Dialog appears select “**Draw On Top of Existing Elements**”. Then hit “**Apply**” in the lower left hand corner.



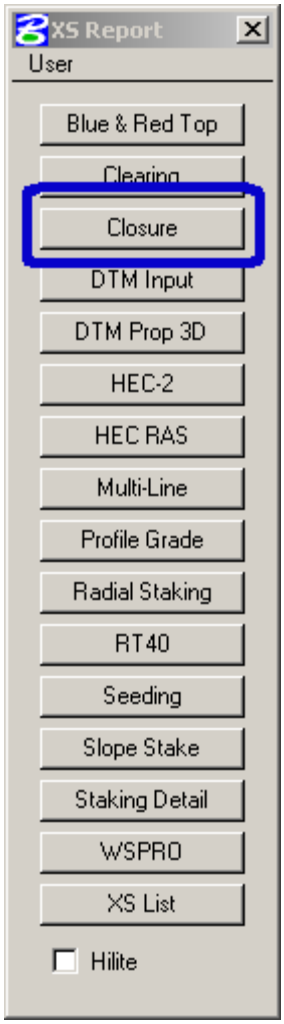
45) Once the Existing Ground Layer has been added you cross section should look like the following:

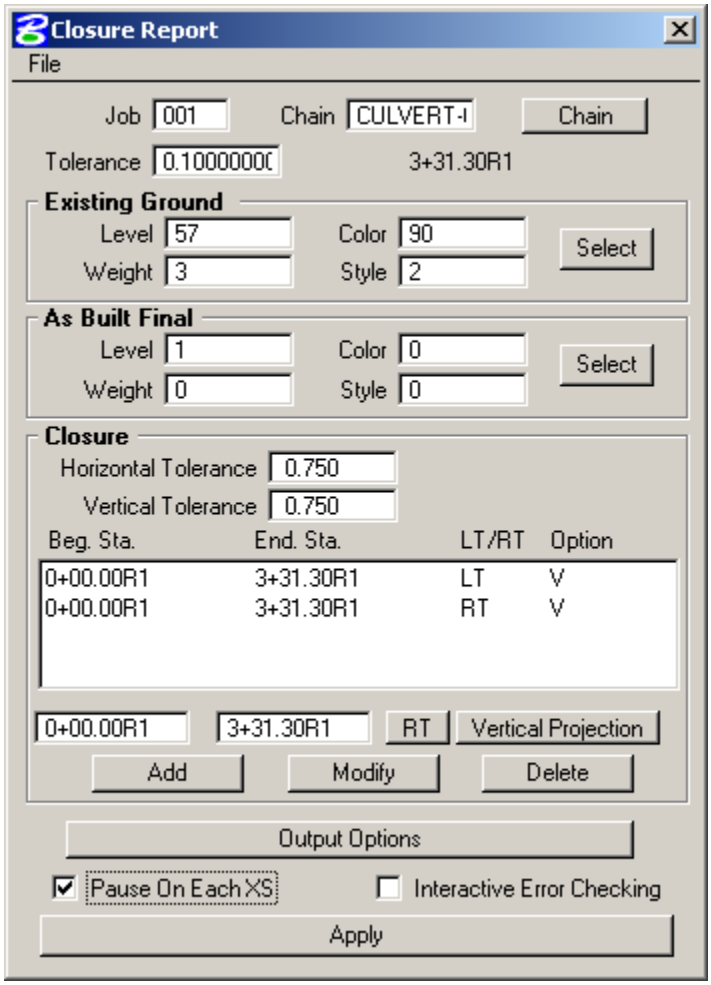


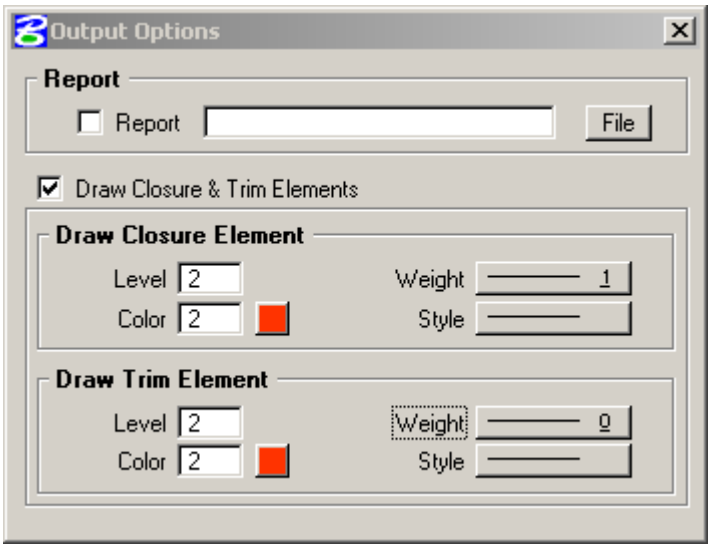
46) Next in order for Earthwork to run we’ll need to join the Bottom of Culvert line with the existing ground line. To do this select the following:

Applications > GeoPak Road > Cross Sections > Reports

47) Select the "**Closure Report**" and then fill the dialog out as follows:



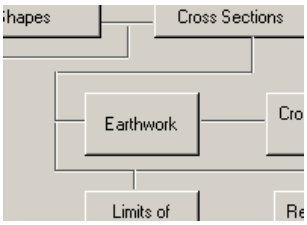




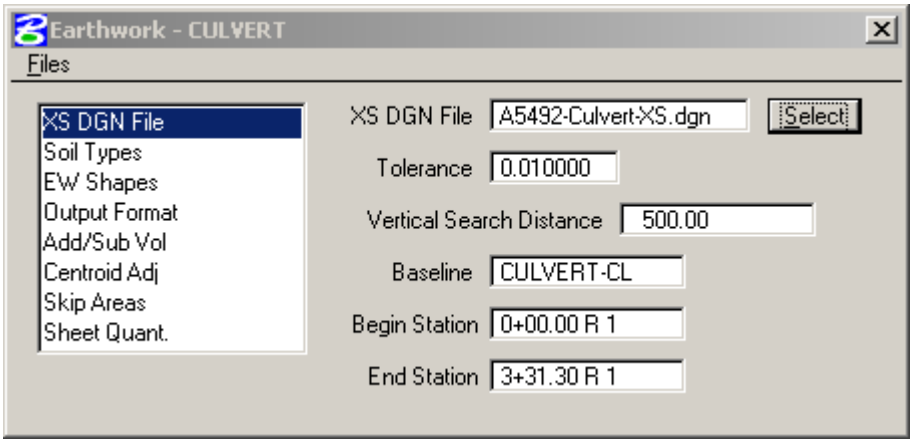
48) Now that the Cross Section are complete, lets run **Earthwork**.

Do **a Run** > **Copy** > **Run** and copy the **MoDOT** run.

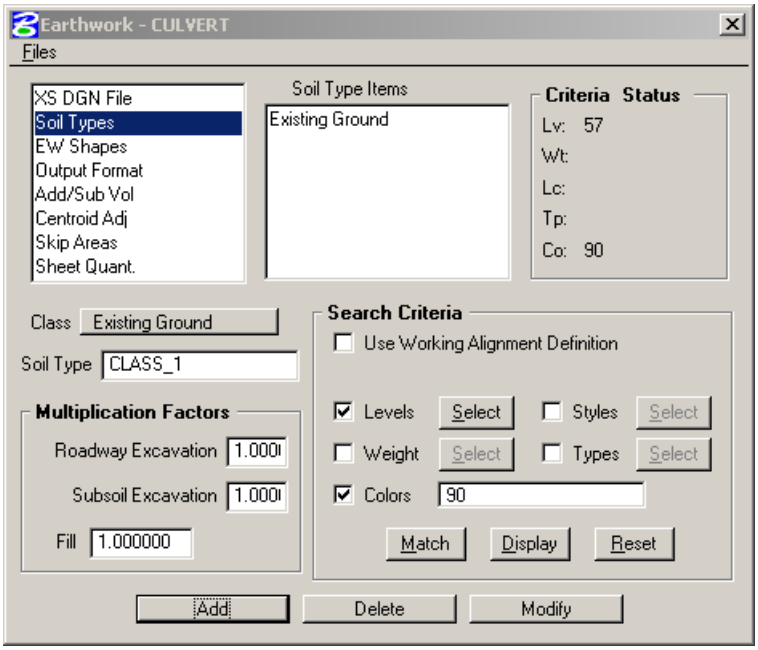
Call the new run **Culvert**

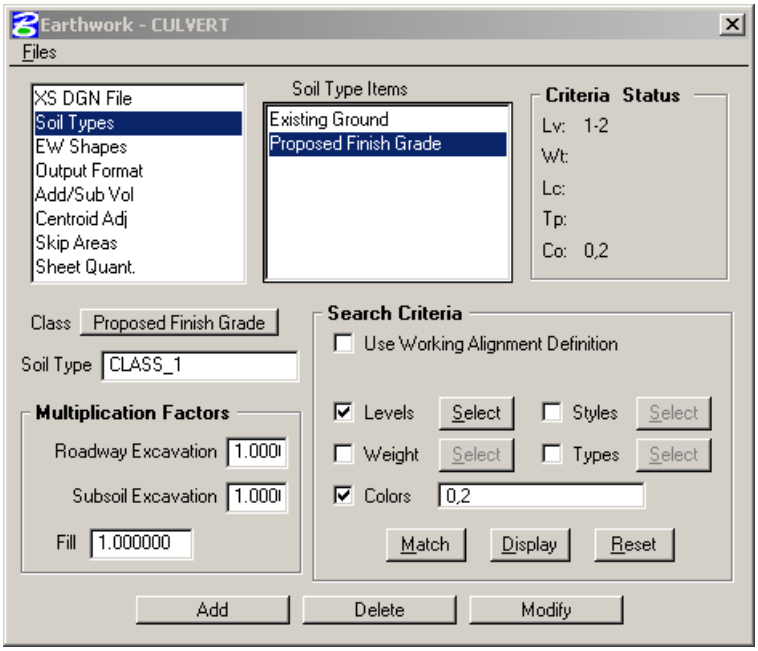


49) XS DGN File – Using the Select button and chose A5492-Culvert-XS.dgn. This is the file that has our Cross Sections plotted in it.



50) Soil Types – This section is used to define the soil types in the Cross Section File. In this class example we have 2 soil types, **Existing Ground** and **Proposed Finish Grade**.

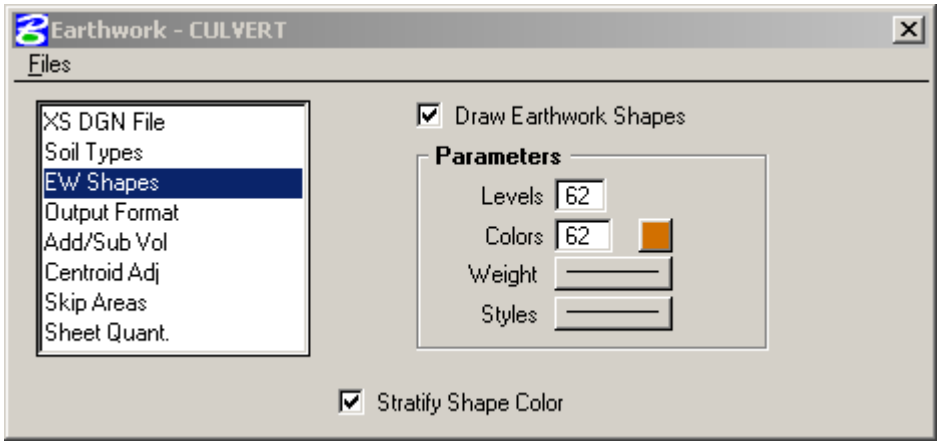




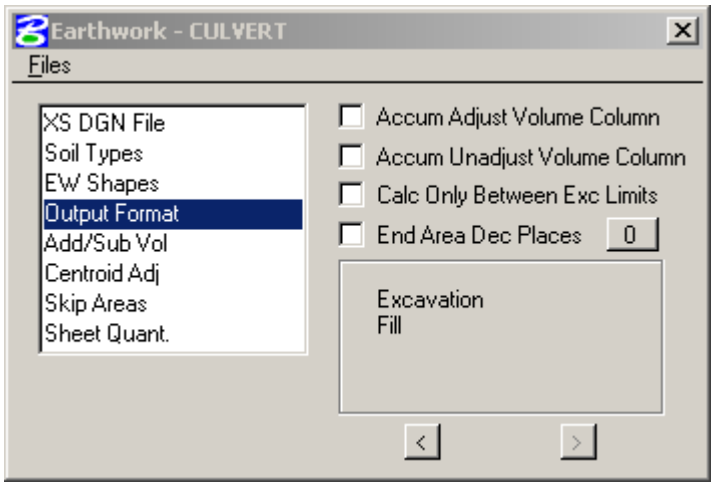

```
Proposed Finish Grade
        lv = 1-2
        co = 0,2
```

```
Existing Ground Line
        lv = 57
        co = 90
```

51) EW Shapes – Check on **Draw Earthwork Shapes** and Stratify **Shape Color**.



52) Output Format – Use the arrows at the bottom of the dialog until Excavation and Fill are the only options displayed.

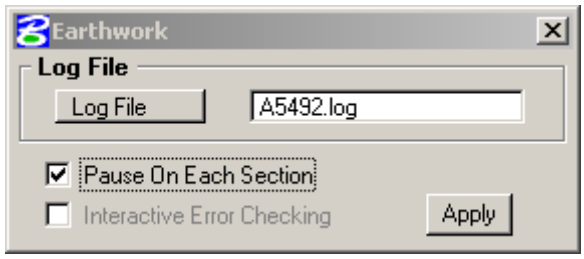


53) Go to the "**File**" Pull-down and select "**Save Settings**".

Then again go to the "**File**" Pull-Down and select "**Run**".

54) In the **Earthwork Run dialog** change the Log file option from **Screen Only** to **Log File**.

Call the Log file **A5492_Culvert.log**



55)

```
              G R A N D     S U M M A R Y     T O T A L S
            Material Name          Unadjusted Adjusted   Mult
                                   Volumes    Volumes    Factor
                                   (cu. yd.)  (cu. yd.)
     ---------------------------- ---------- ---------- ------
     CLASS_1
                        Excavation       4685       4685   1.00
                          Fill              0          0   1.00
```