TRAINING MANUAL
FOR

DESIGN TO CONSTRUCTION SURVEY
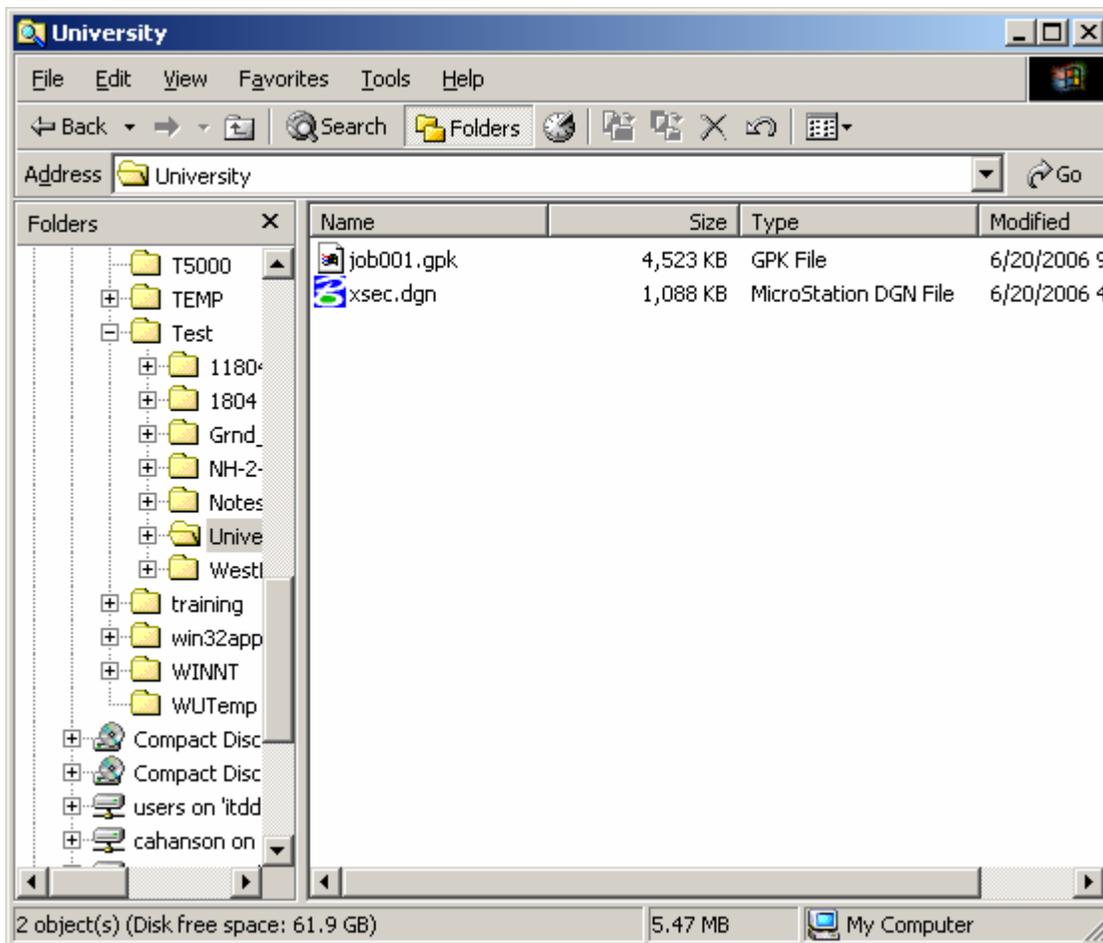# AUTOMATION

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GeoPak GPK Data to Trimble

Step1: Get the cross-section file and the geopak job file from the design folder in the
r:\ drive for the project.

Find out from the designer which files were used for cross-sections.
(Usually Microstation file named "xsec.dgn" and geopak file named "job001.gpk")
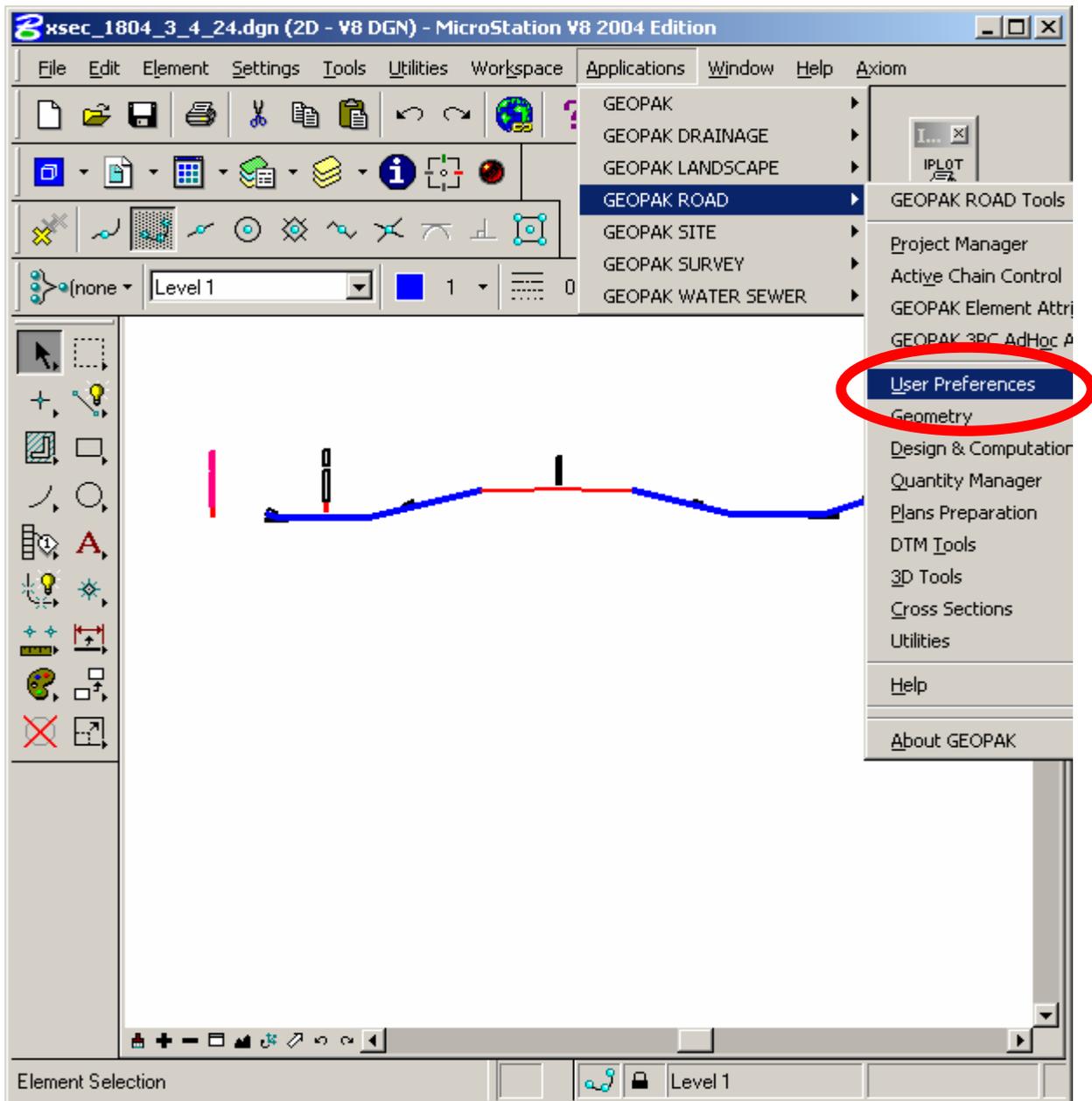
Put these two files in a new folder.

NOTE: Step 2 can be skipped if the gpk files and dgn files are located in the same folder. GeoPak will then default to the working folder. If files are located in different folders, step 2 must be used each time a project is opened.

Step 2: Open "xsec.dgn".
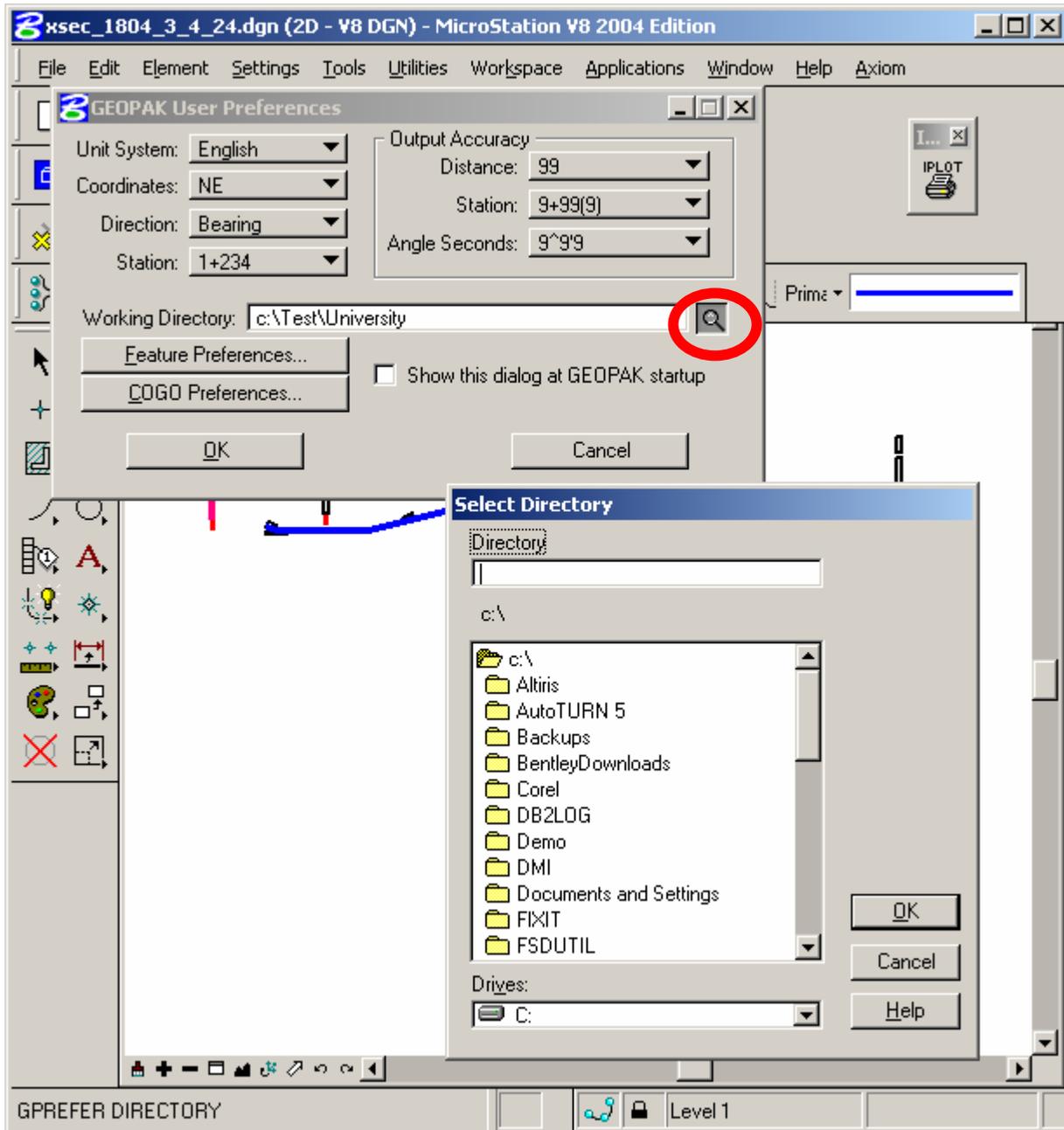
Open : Applications-Geopak Road-User Preferences

Step 2 Cont.:   Select your working directory: (The folder you made in step 1)

Hit OK

Click on COGO Preferences and Change all three directories to your new folder.

Step 3: In Geopak, open Applications-Geopak Road-Geometry-Coordinate Geometry.

NOTE: Refer to Chapter 4.1 of the NDDOT CADD Standards for further information.

Step 3 Cont: Make up a name for the project.
Select the .gpk file where the chains and profiles are stored (Job001.gpk)
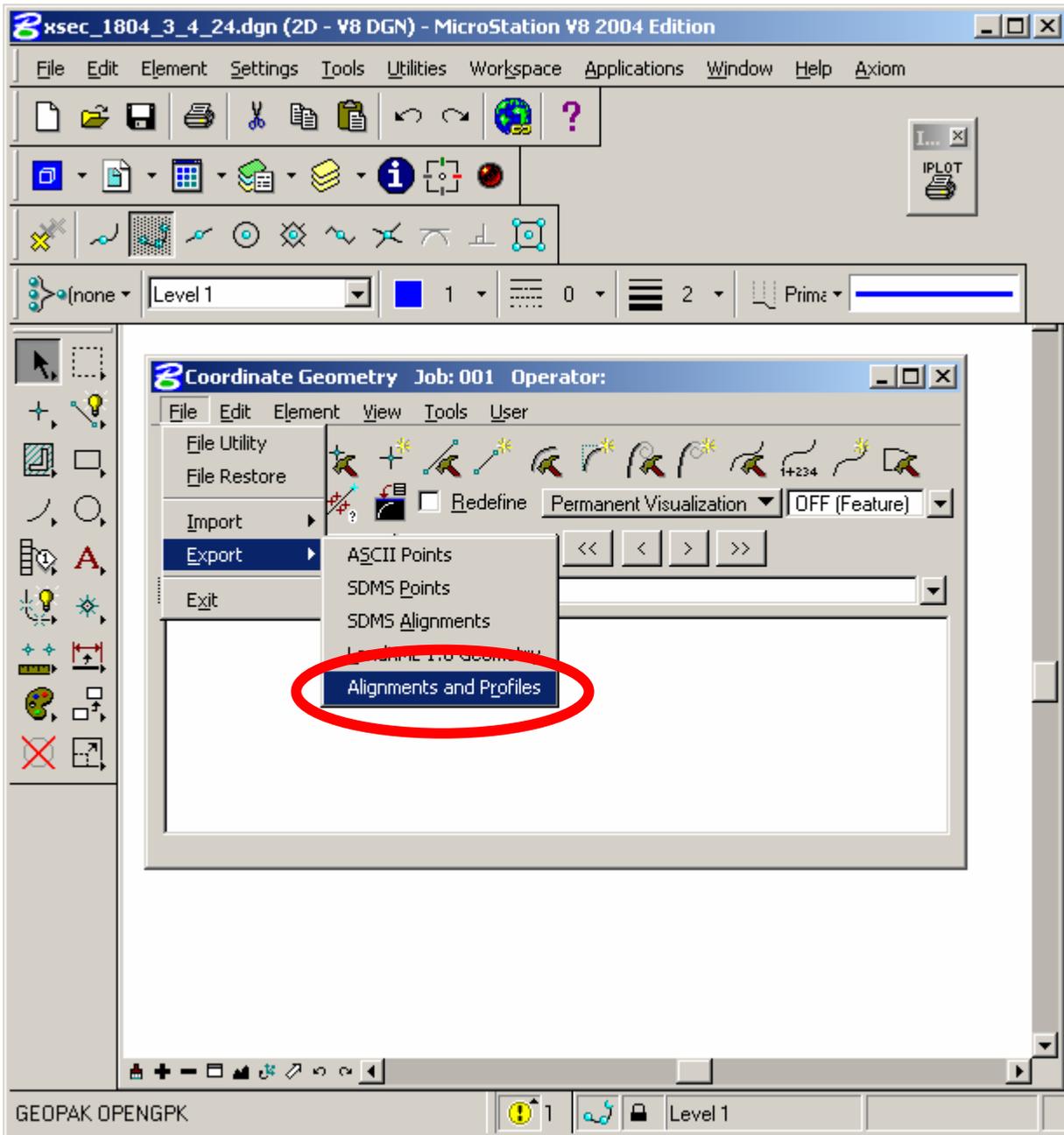Type nd for operator code. You can leave subject blank.

Click OK.

Step 4: In the Coordinate Geometry Dialog Box, press: File-Export-Alignment and Profiles.

Step 5: For "Export Format" select TRIMBLE DC, Version 7.5, Intl Foot.
Click on Chain and select the chain, Click on Profile and select the profile.
(There may be several. You will have to check with the designer to know which
one to use for the final design and for each alignment)

Make up a name for your new .dc file in the Output File. (Make sure to put the .dc file
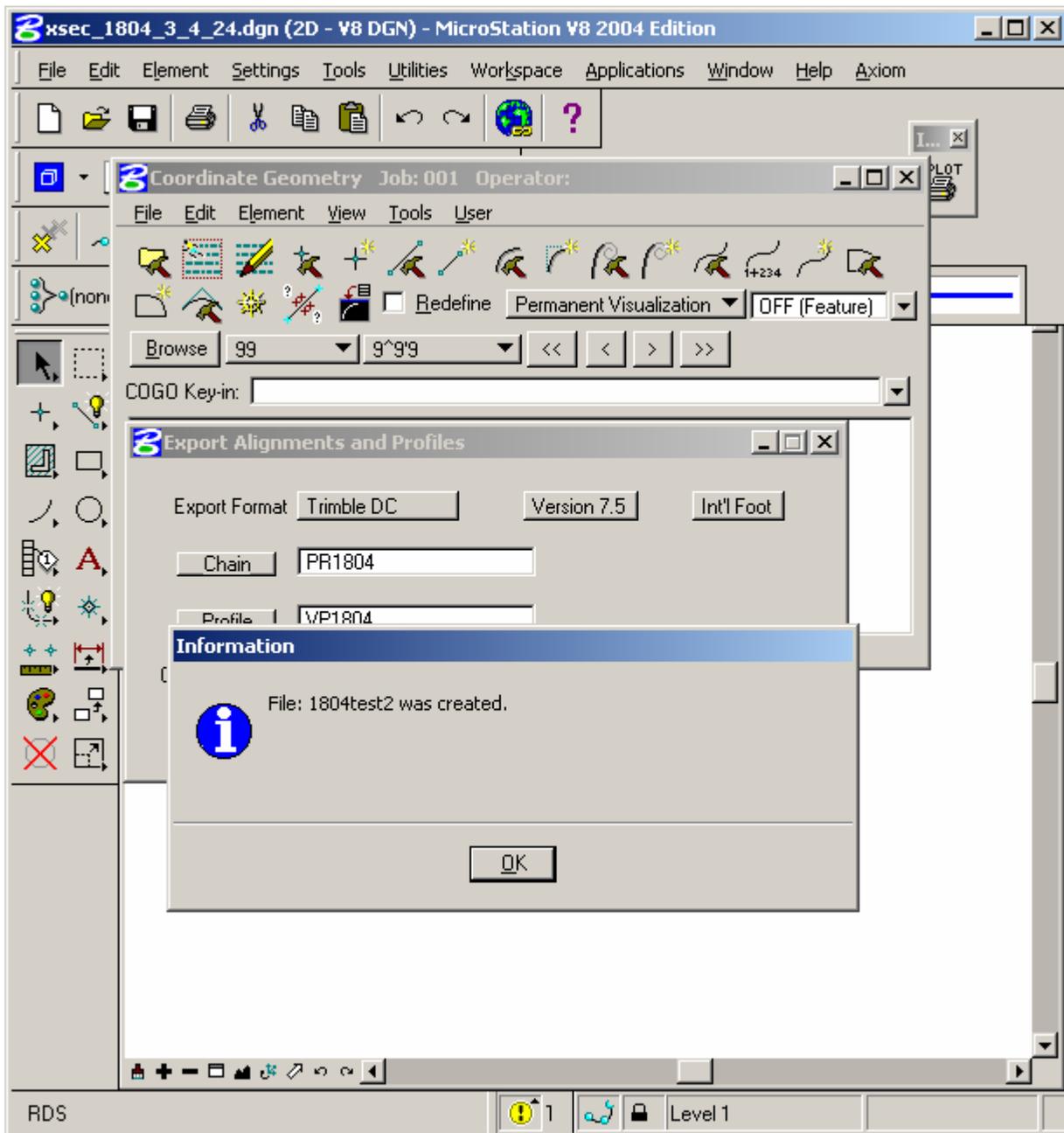extension behind the name)

Step 5 Cont.: Click Apply.

Now you have created a ".dc" file in your working directory. Now you can append CrossSection Template information to this file with the following steps.
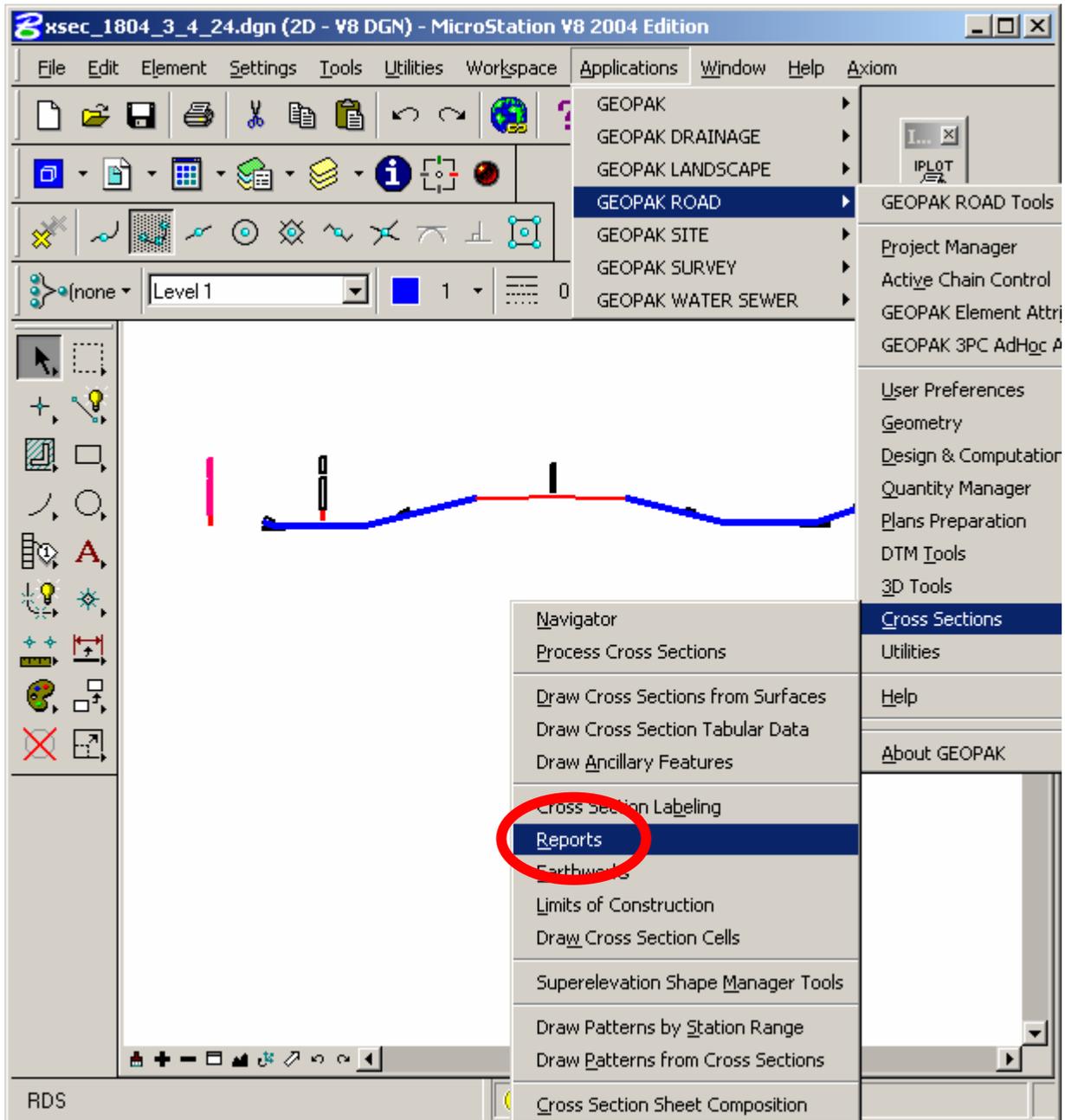
Hit OK.

Step 6: In the xsec.dgn file- Open Applications-Geopak Road-Cross Sections-Reports.

Select Multi-Line.
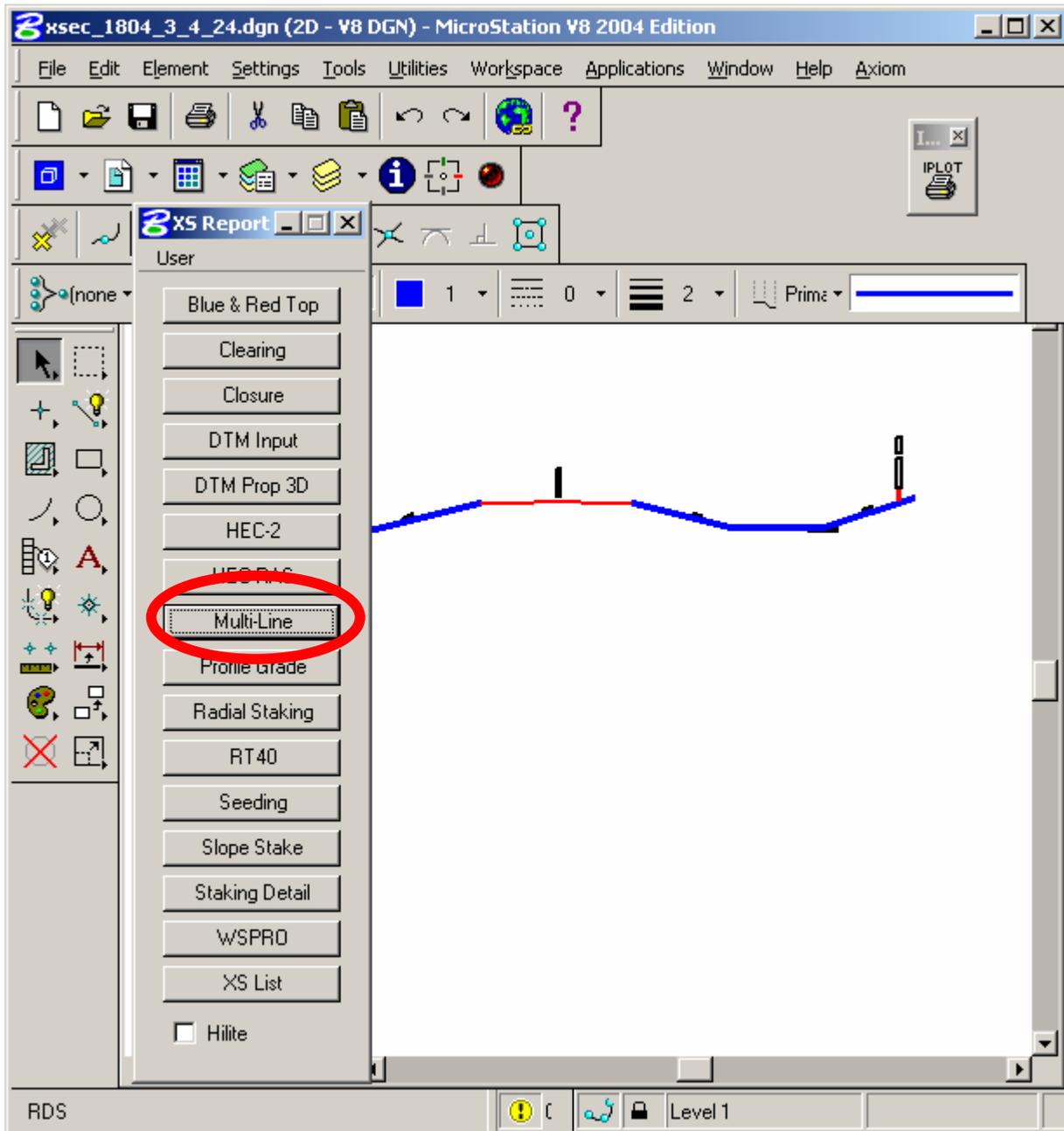
Step 7: Type the Job # where the reference chain or center line chain is stored (i.e. 001)

Select The Chain.

Step 8: Click on the XS Elements button .

Key in the levels, colors, weights, and/or styles of the proposed section.
(For example: Level 7 on this one describes the roadway surface and Level 59 describes the adjacent slopes) Hit OK and close.

Click the little "add" button ⬜ on the right side.

Step 9: Select Append, the Output Format - Trimble DC, and the Version you are using.

Click on the File button next to Append and Select the file you created in step 5 located in your working directory. Be sure that the .dc file extension is typed into this field also.
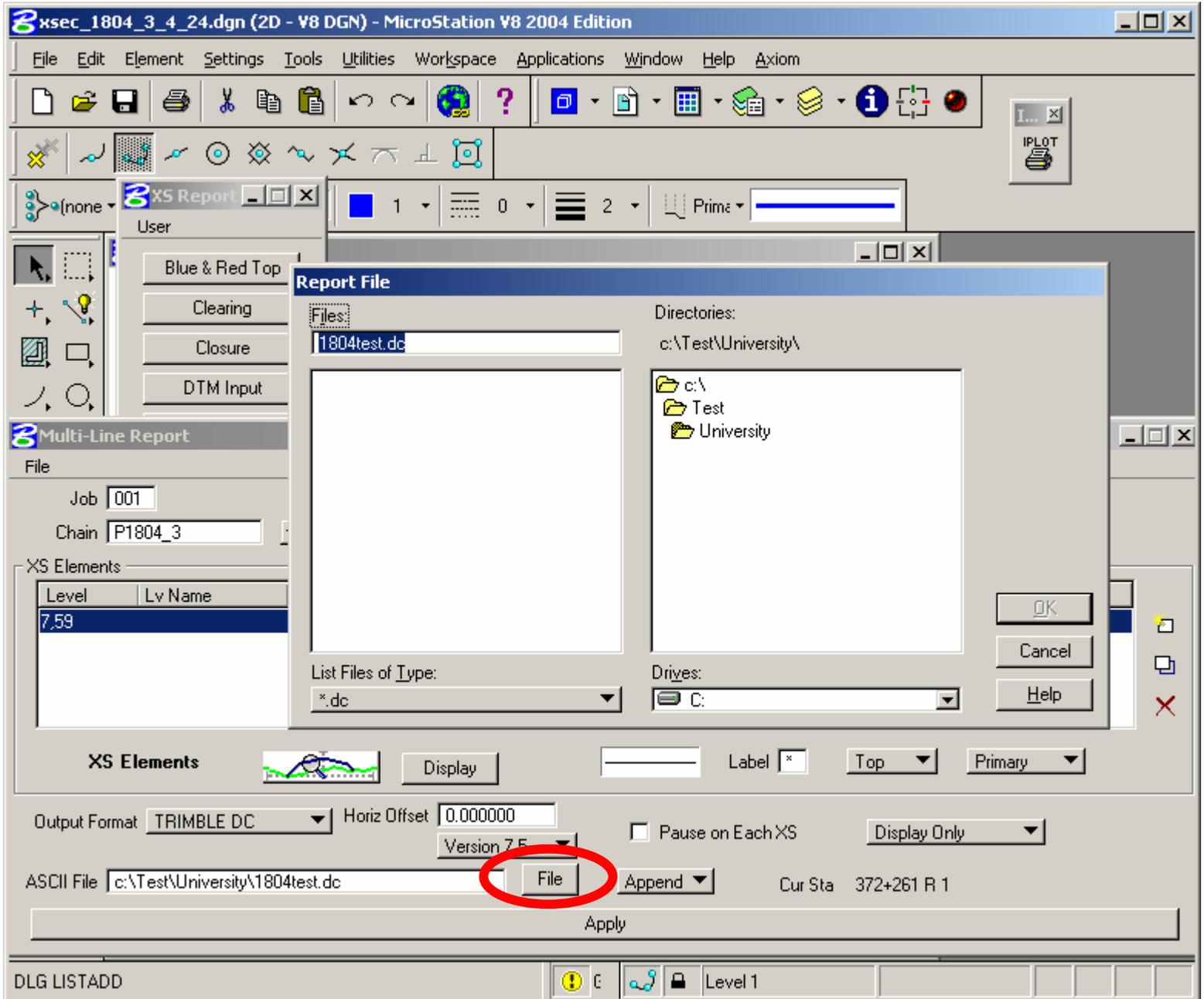
Step 10: Click Apply

GeoPak will now extract the necessary cross section data and exports this to your selected .dc file created in Step 5.

Step 11: Be sure to locate your Trimble .dc file before closing.
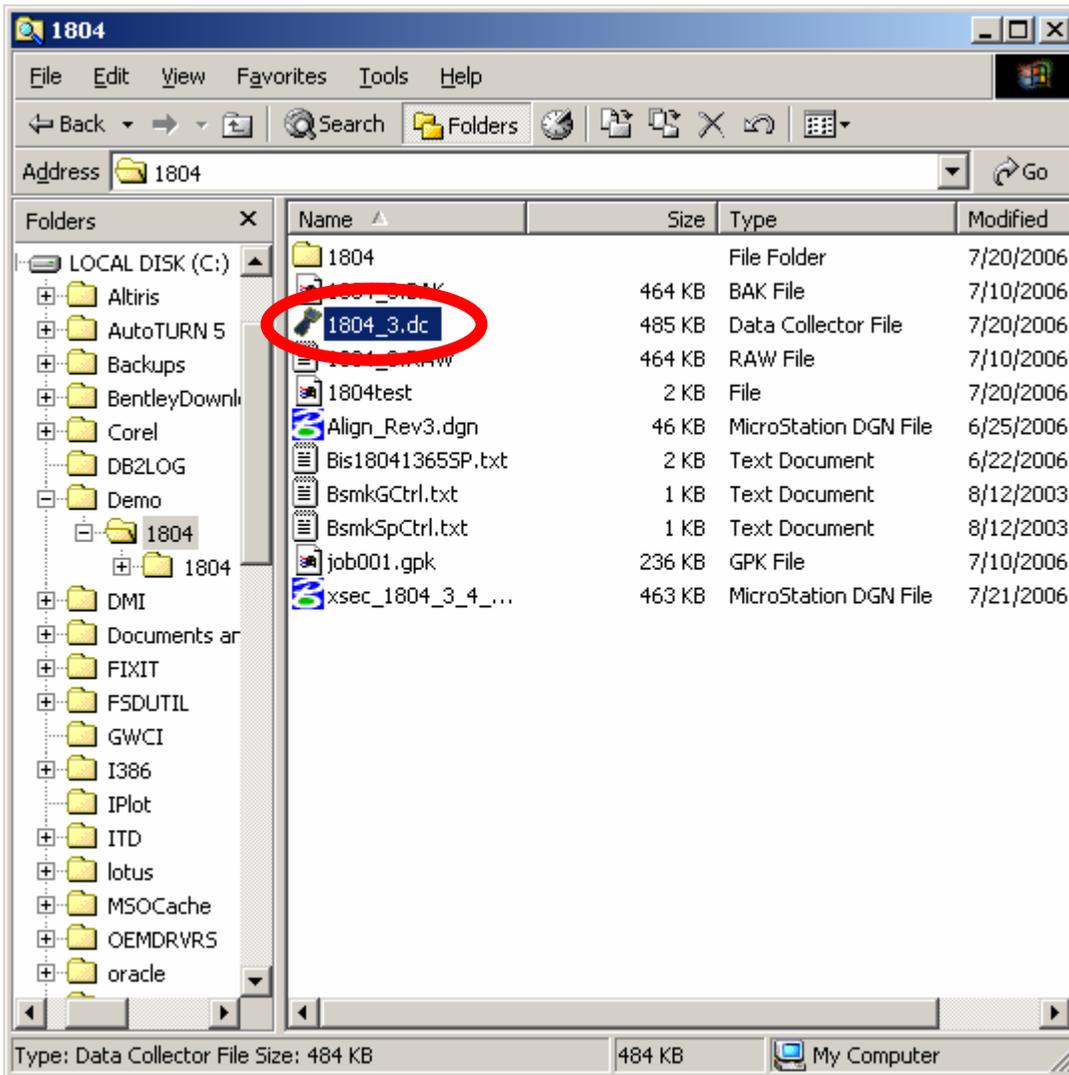
Converting State Plane Grid Coordinates
to State Plane Ground in TGO

Step 1: Open TGO and Select New Project. [New Project]
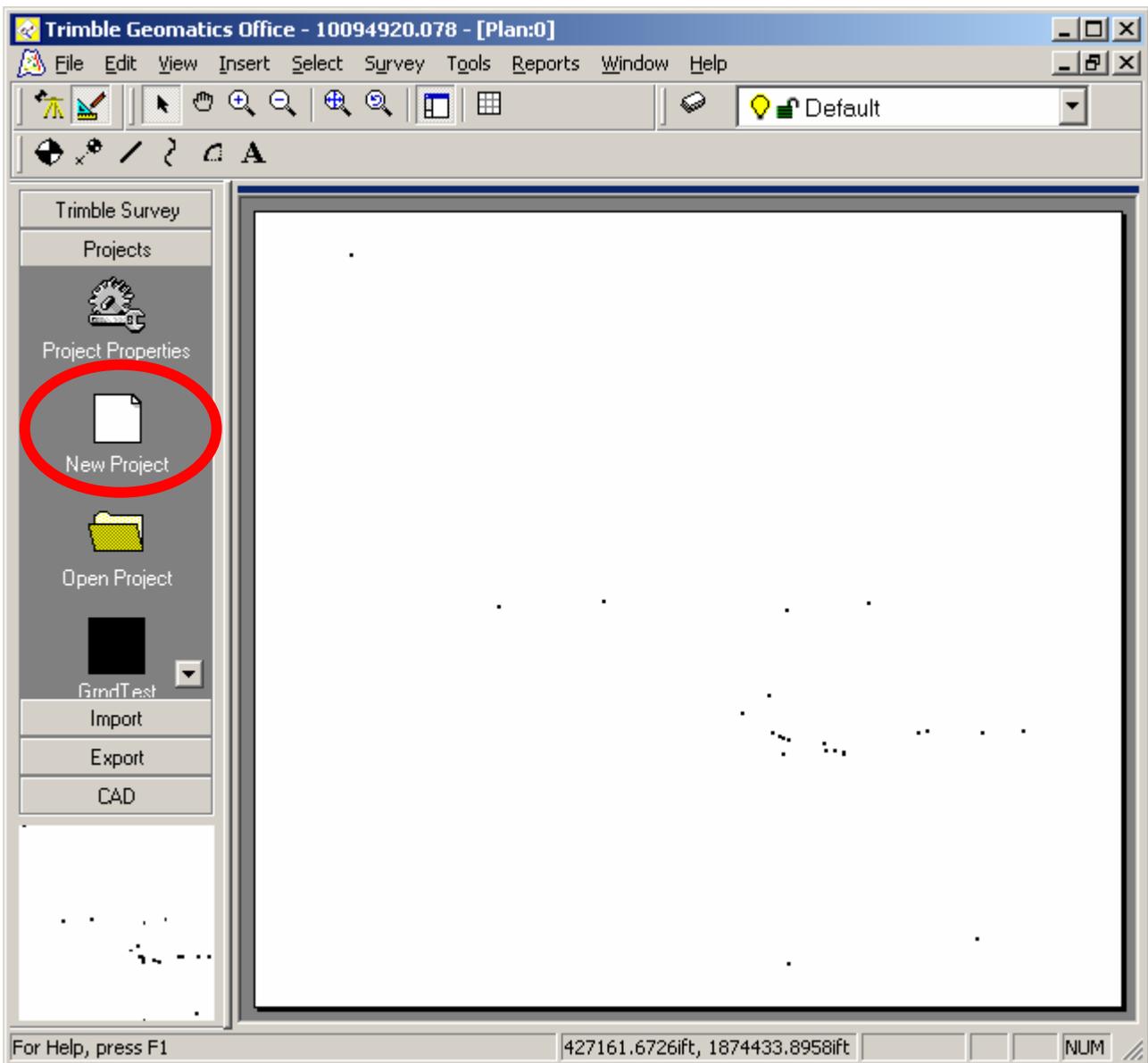
Step 2:   Type in Project Name.

Select the Folder button and select the folder that you want to store the project in.

Select Nzone04 or Szone04 (This will be determined by where the project is located). To determine which State Plane Zone you are in refer to Chaper 19 in the Surveys and Photogrammetry Manual Page 19-23.

Hit OK
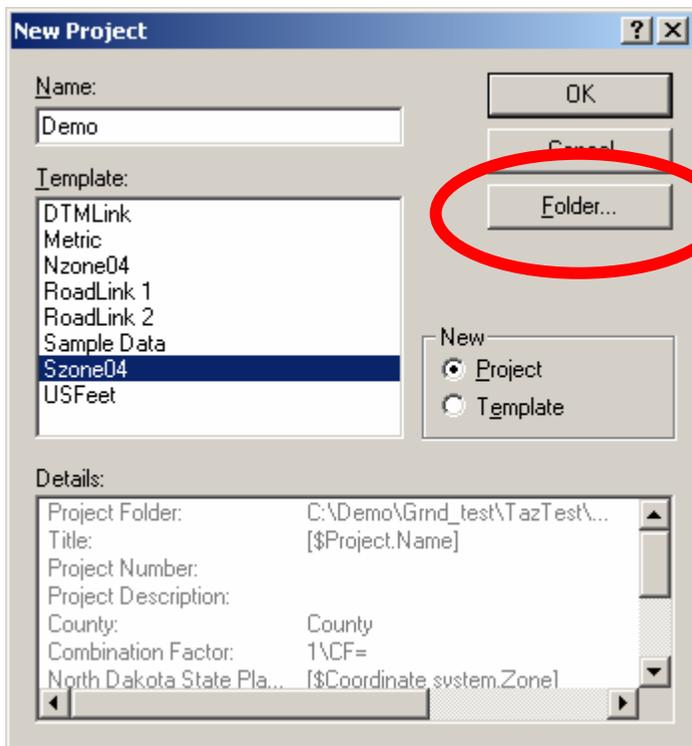
Step 3:   Fill in all Project Details of the Project Properties.

Hit OK

Step 4:   Key in or import [icon] .csv Grid coordinates coordinates into TGO.

OR

Step 5:   Go to File then select Project Properties Project Properties and the following table will appear:

Select the Coordinate System Tab.

Go to Local Site Settings and hit Change.
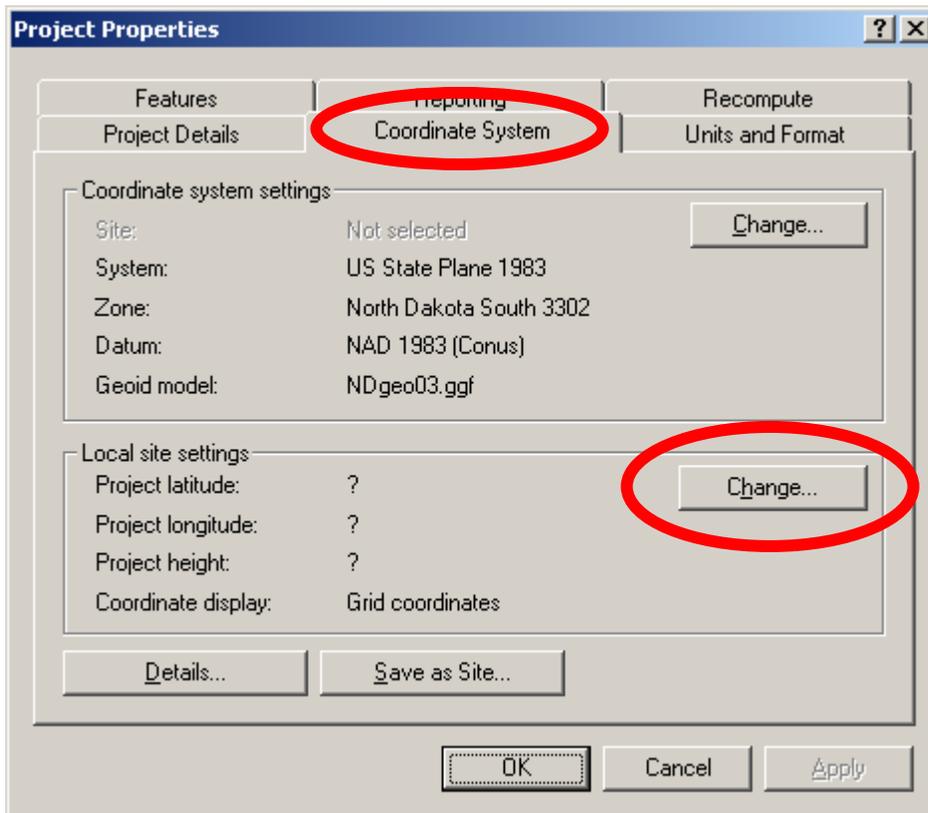
Step 6:   In Project location put "0" (zero) in for the Northing, Easting, and Elevation.

Check Mark "Use Ground Coordinates".

Key in the 1/CF county scale factor.

Hit OK.

NOTE: You will notice the System has changed to US State Plane 1983 (at Ground).

Hit OK.
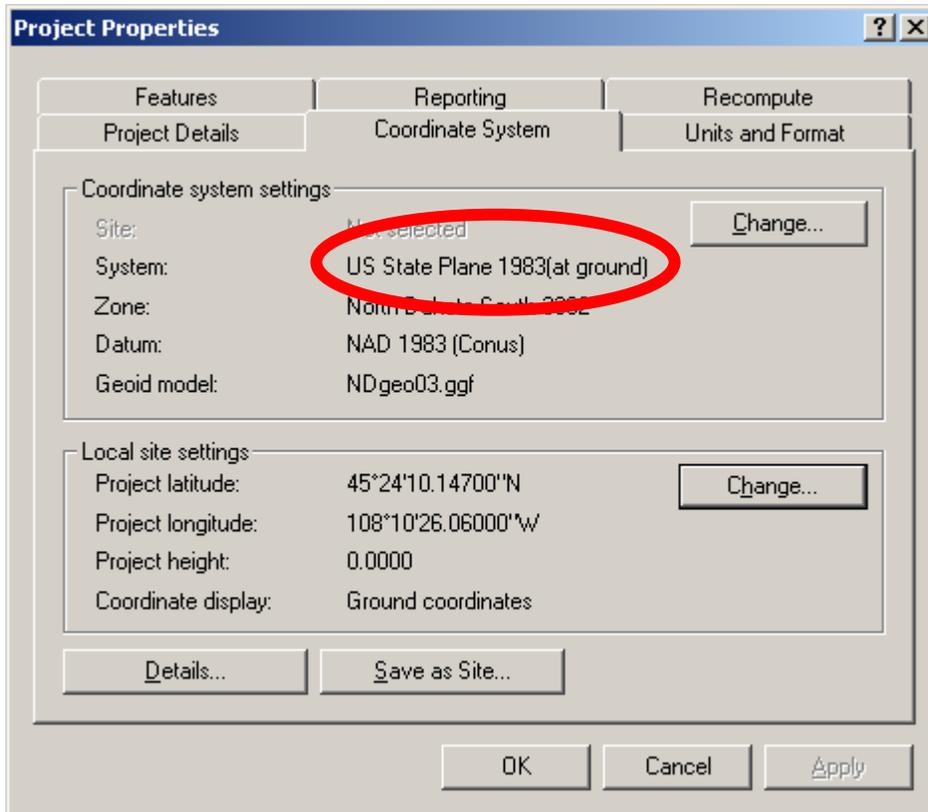
Exporting State Plane Ground Job to Data Collector

Step 1:   Go to the Export tab on the left hand side of the screen.

Select Survey Device.
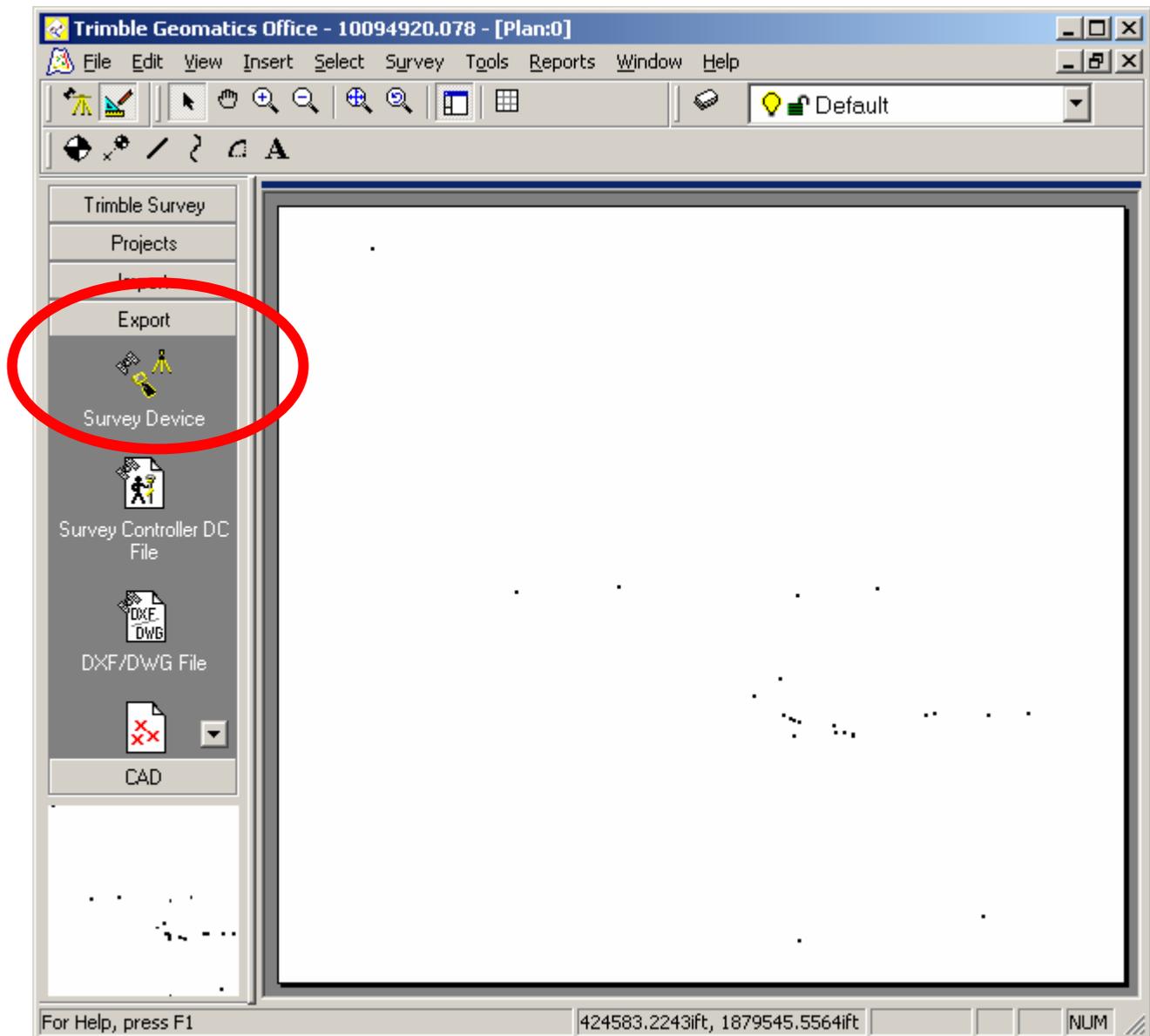
Step 2:   Select Survey Controller on ActiveSync for the controller you are using.

Hit open.

The Job that is currently open will be in the File Name Box.
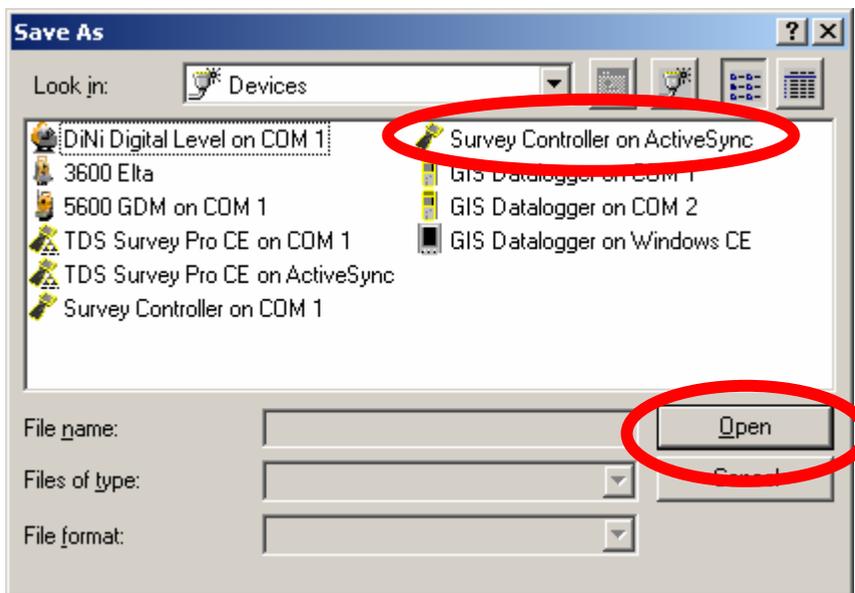
Hit Save.

Step 2:   The Job that is currently open will be in the File Name Box.

Hit Save.
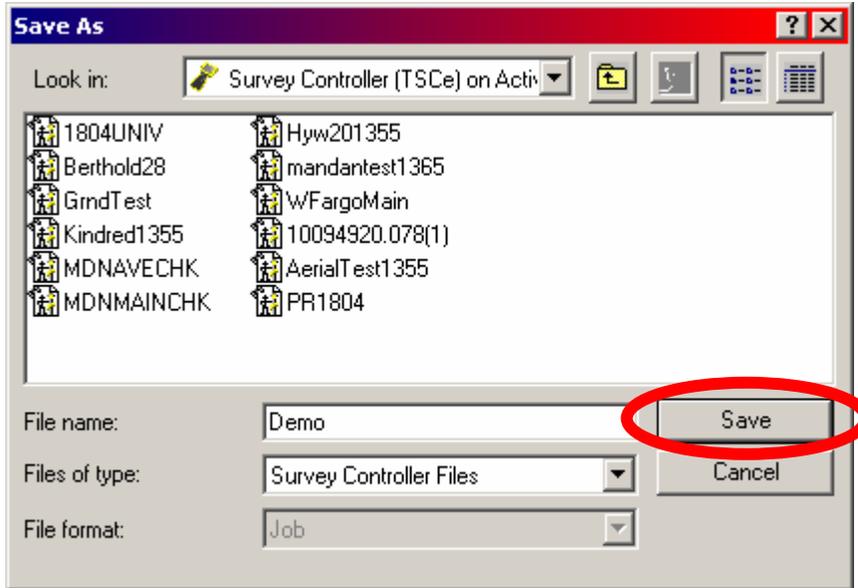
Control and RoadLink Data
To Trimble DC File for Upload

Step 1: Open TGO with project containing ground control points and other necessary data.
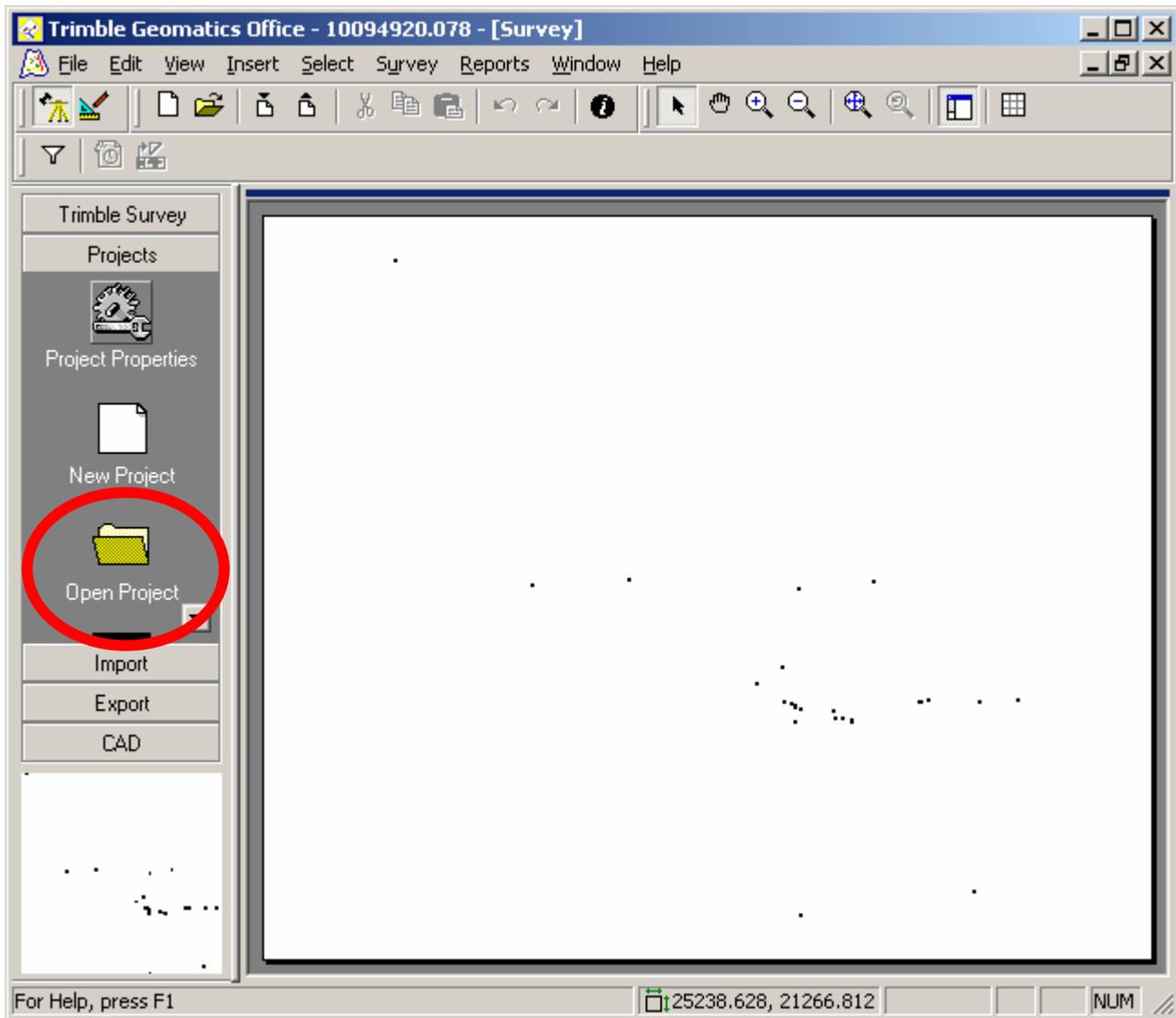
Step 2: Go to the Export tab on the left hand side of the screen or

Select Survey Controller DC File.
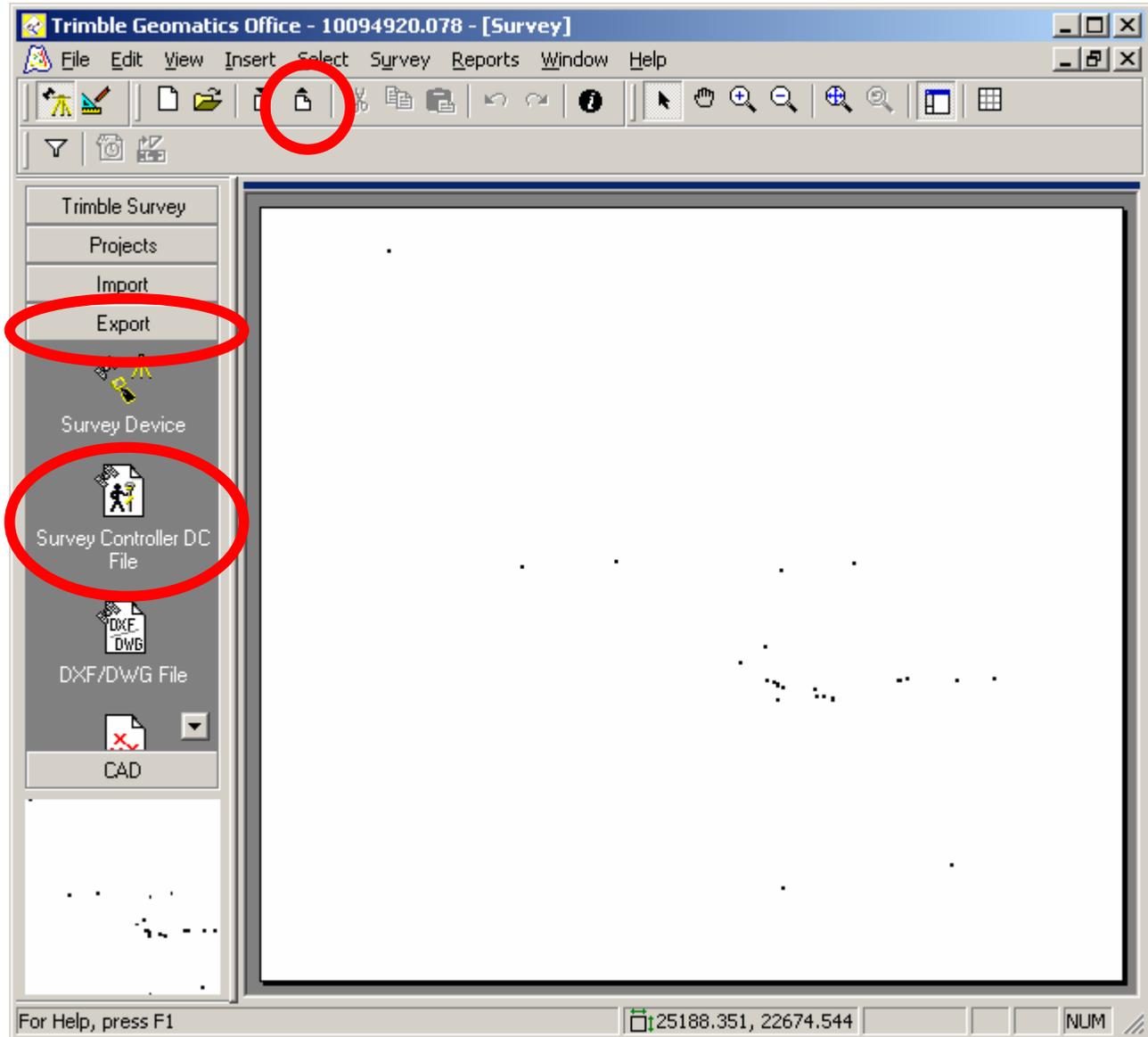
Step 3: Select the folder that you want to save the DC file to (TGO defaults to the Export folder under the current project folder).

The Job that is currently open will be in the File Name Box.

Hit Save.

This will create the base Trimble DC file with the needed ground control data.
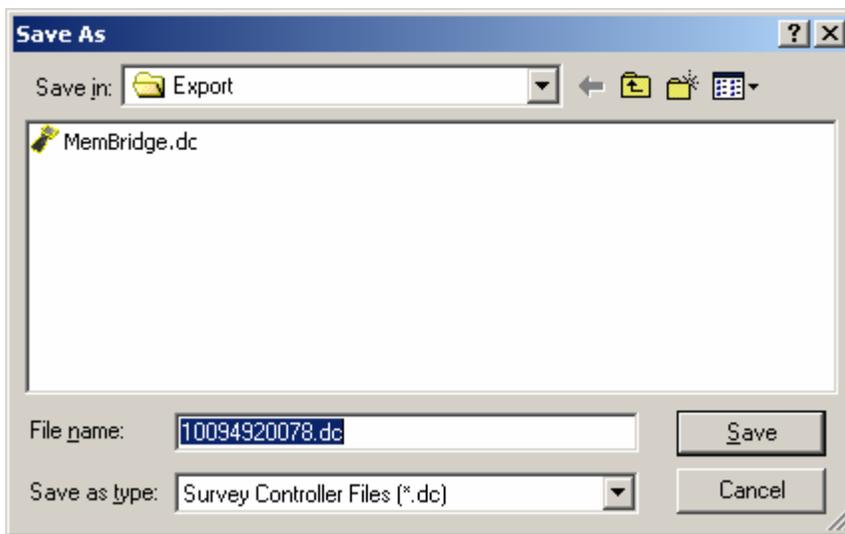
Step 4: Select Plan View option by using the pull down menu VIEW – PLAN.   or

Open RoadLink by going to pull down menu TOOLS - ROADLINK – START.
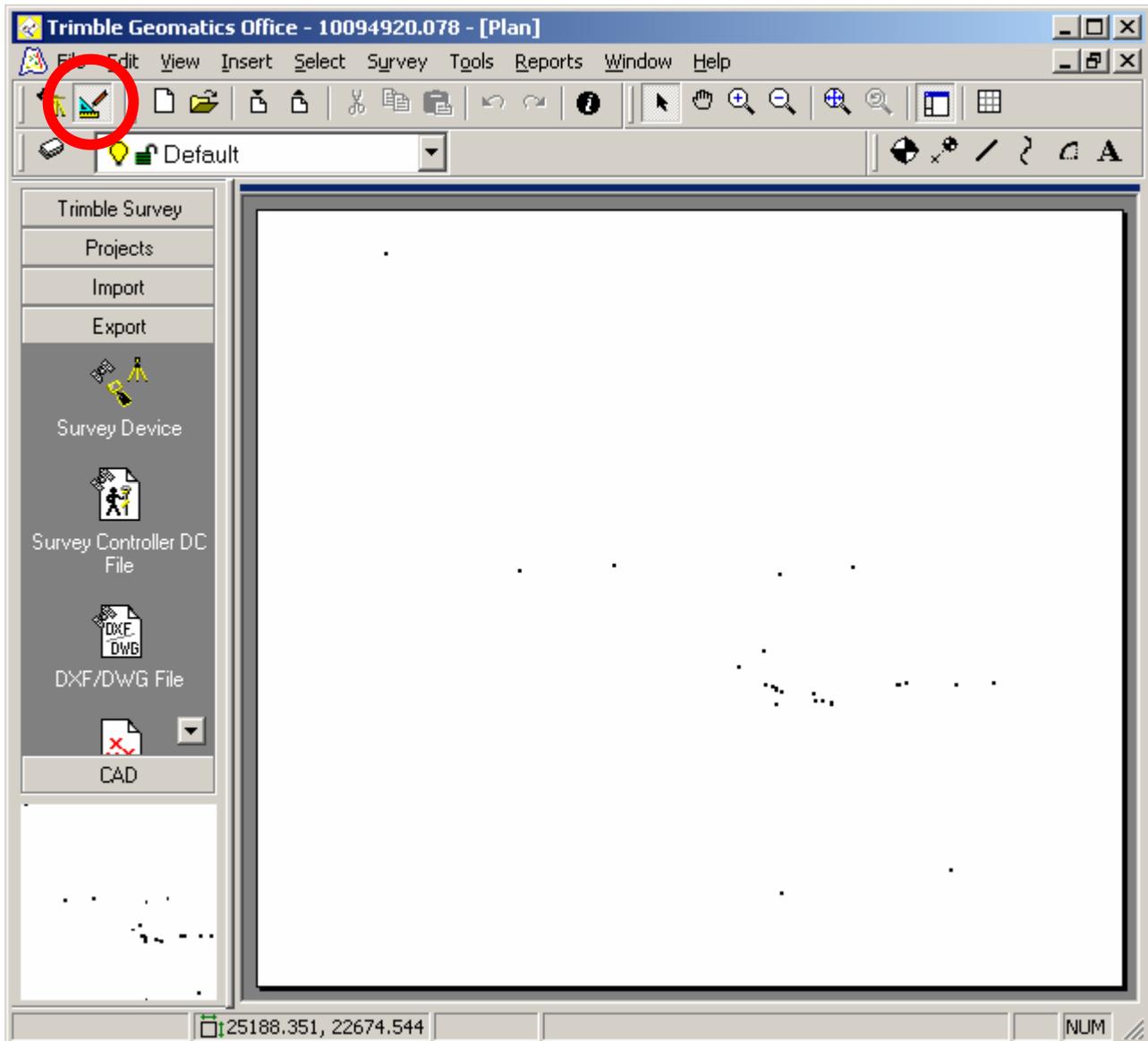
Step 5: You now need to import the road file created by Geopak by selecting Import [icon].
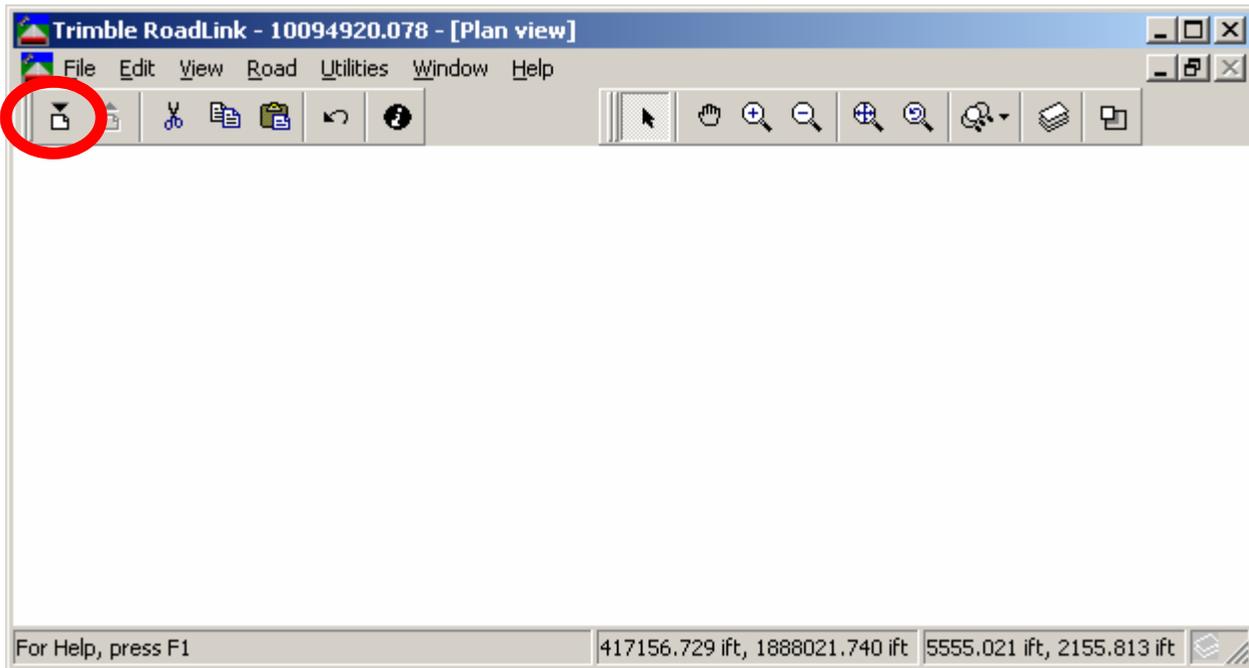
Select the Road definition from Trimble Survey Controller file.

Hit OK after selecting your RoadLink .dc file road definition you want to import.
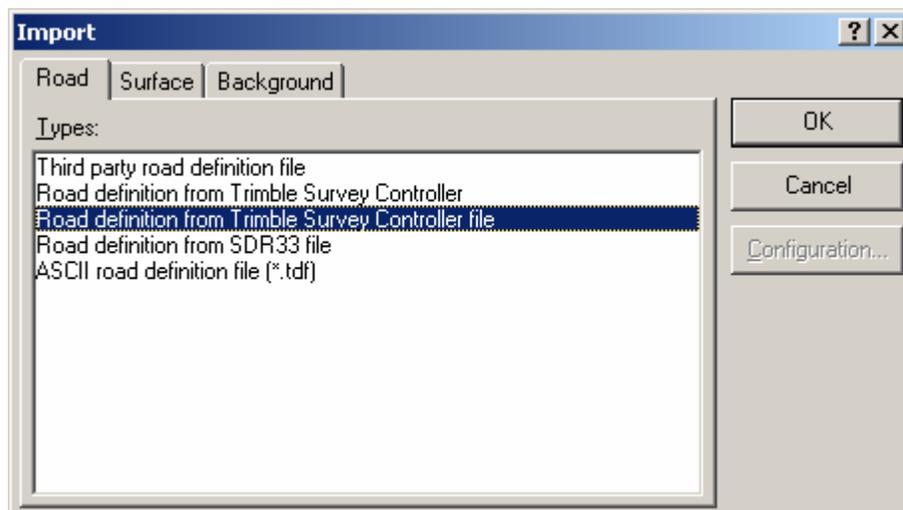
Step 6: Open the Road that you created in the "GeoPak GPK Data to Trimble" procedures by selecting from the FILE pull down menu OPEN ROAD.

Your Road should appear as follows:
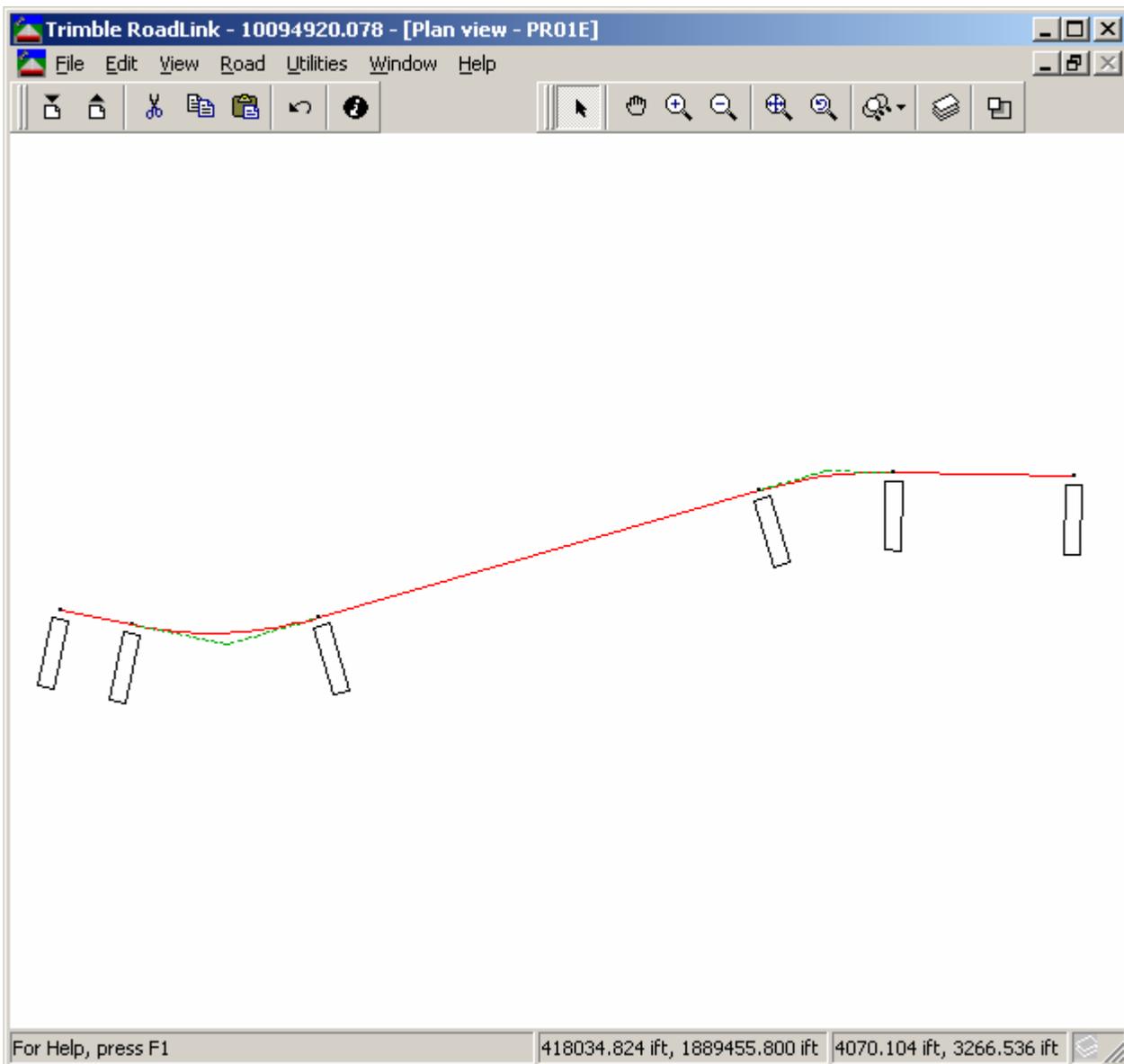
Step 7:   Select from the FILE pull down menu Export or .

Select CONFIGURE and input the desired version.

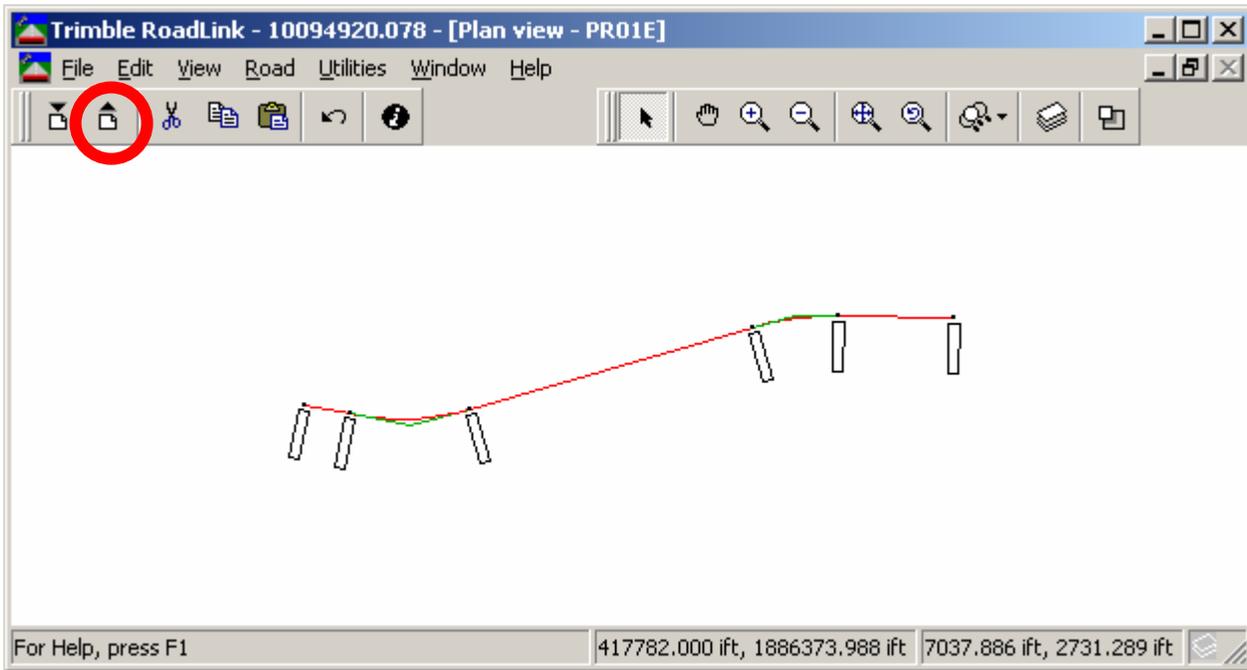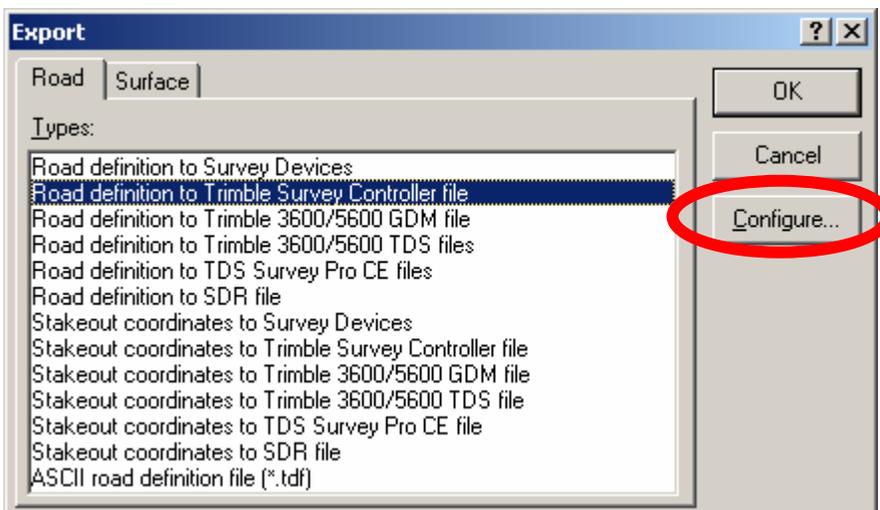You then need to check the APPEND TO FILE box and link the DC file from step 3 containing your ground coordinate control.

Hit OK.

This will add the Road data to the original DC file.
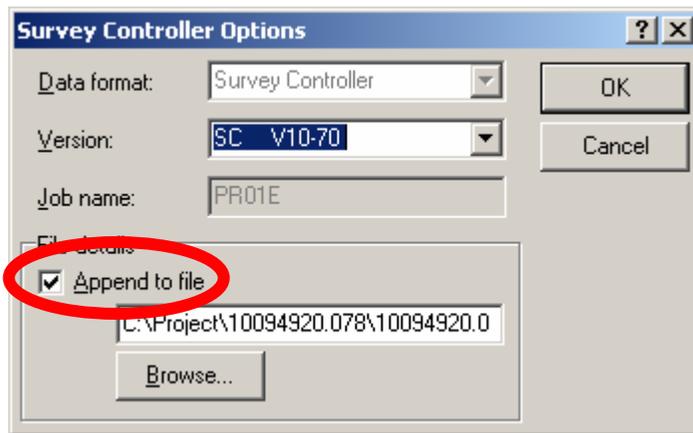
NOTE: For projects with multiple alignments steps 5, 6, and 7 will need to be done for each Road file using the Append File detail.

Creating a DTX file with Geopak

The first step is to have an already created TIN file. To begin we will need to create a Lattice file using the previous TIN file. From the Applications menu select GEOPAK ROAD-DTM Tools.
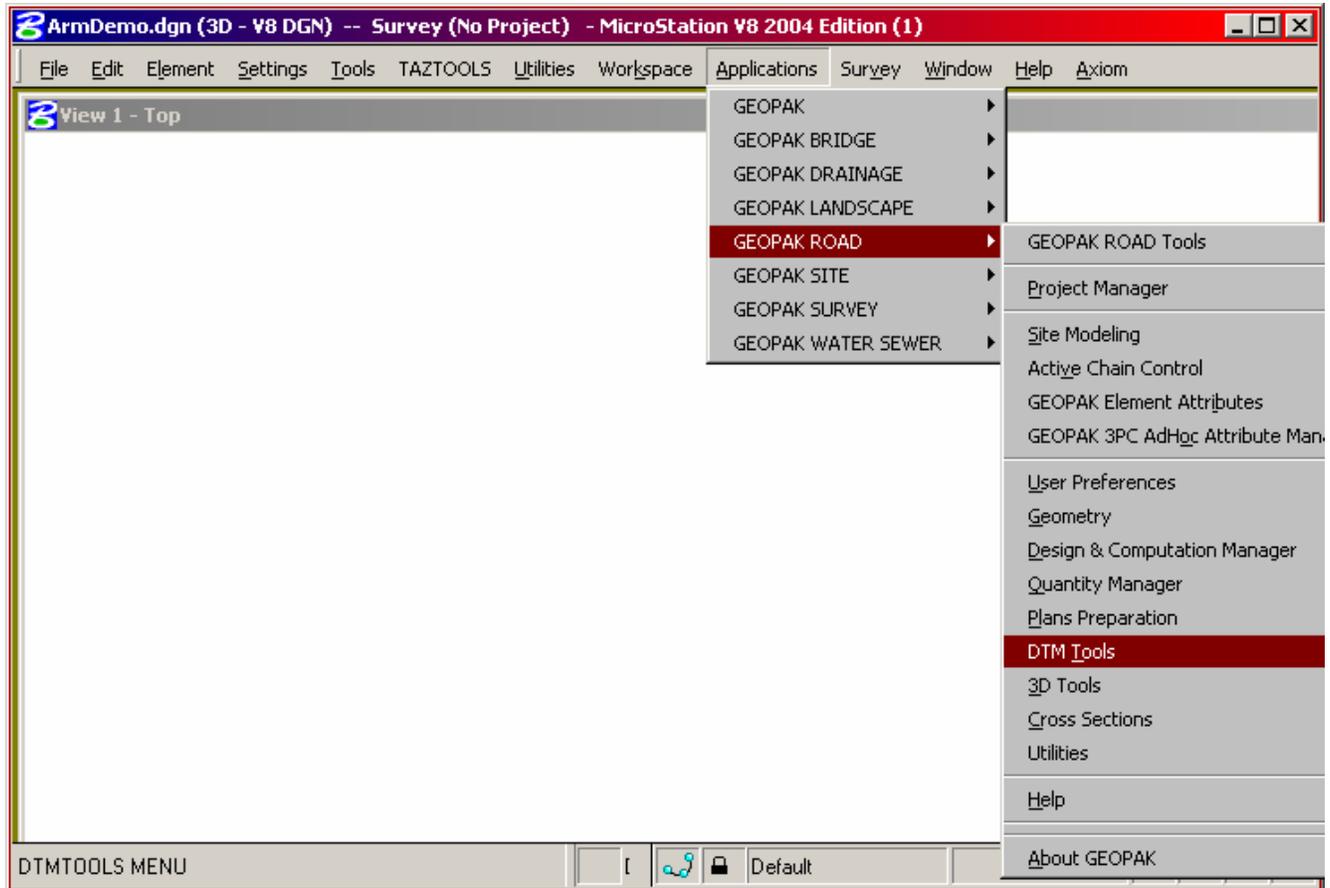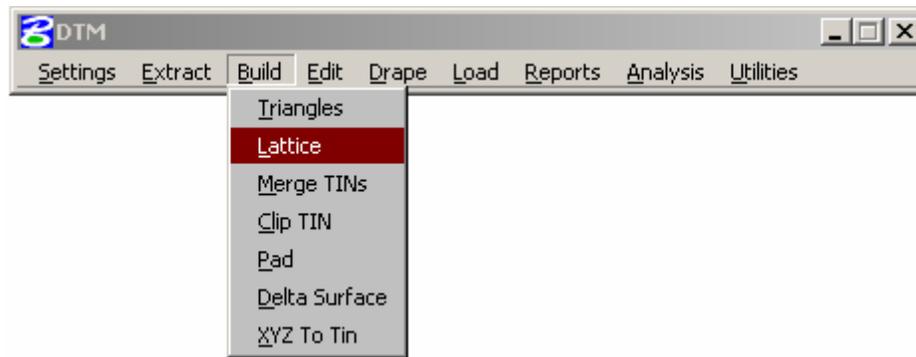

The following button bar will appear:

Select the ![button] button to access the DTM Menu as shown below.

Select Build-Lattice.

Navigate to the desired TIN file and enter in the location and name of the LAT file you want to create. Then select Process.
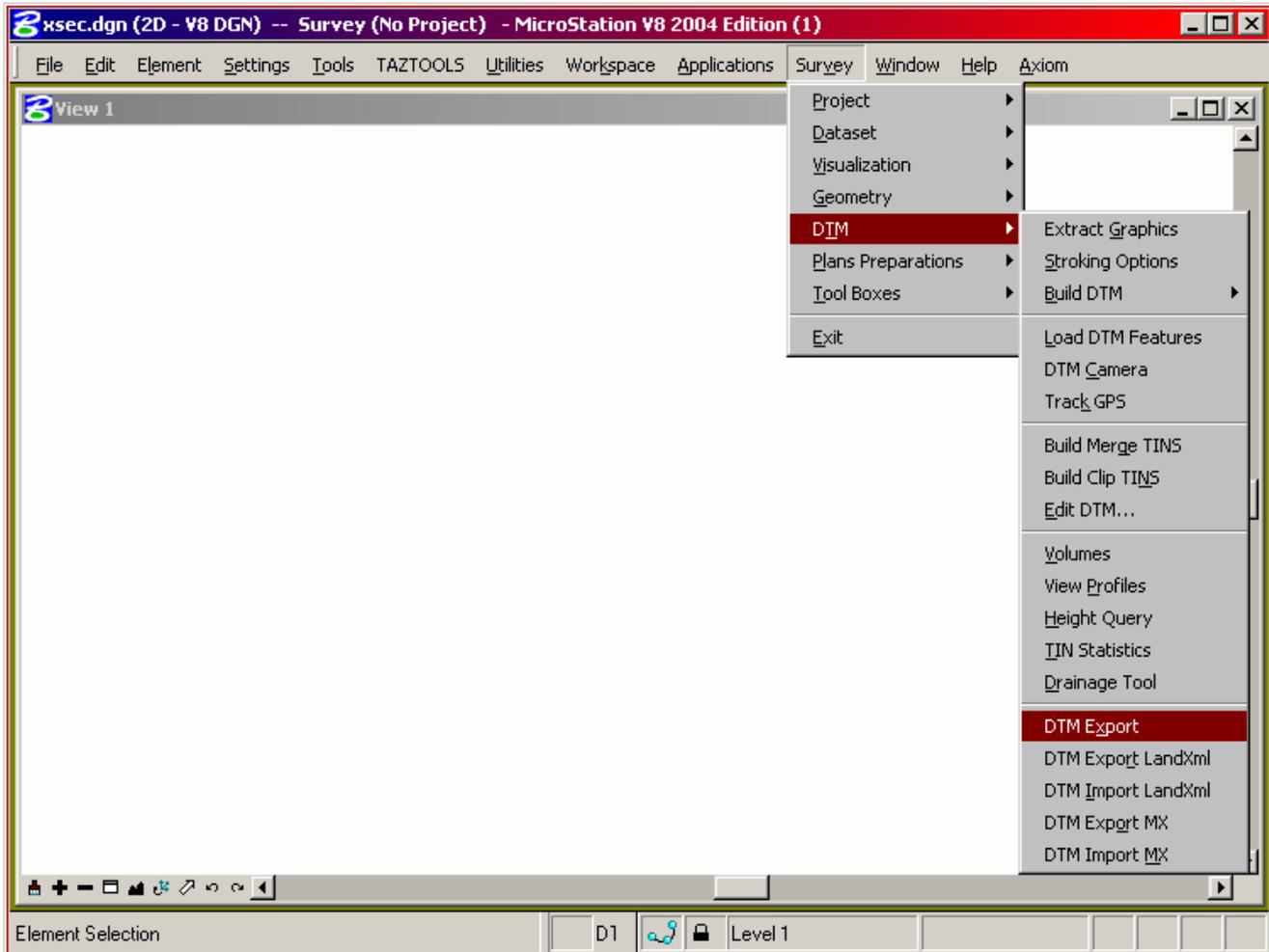
The next step will be to export a DTX file using the LAT file you just created.
Go to the Survey menu and select DTM-DTM Export.

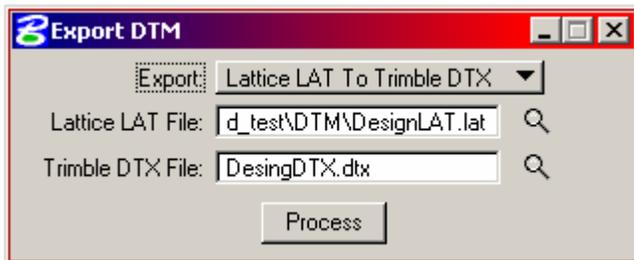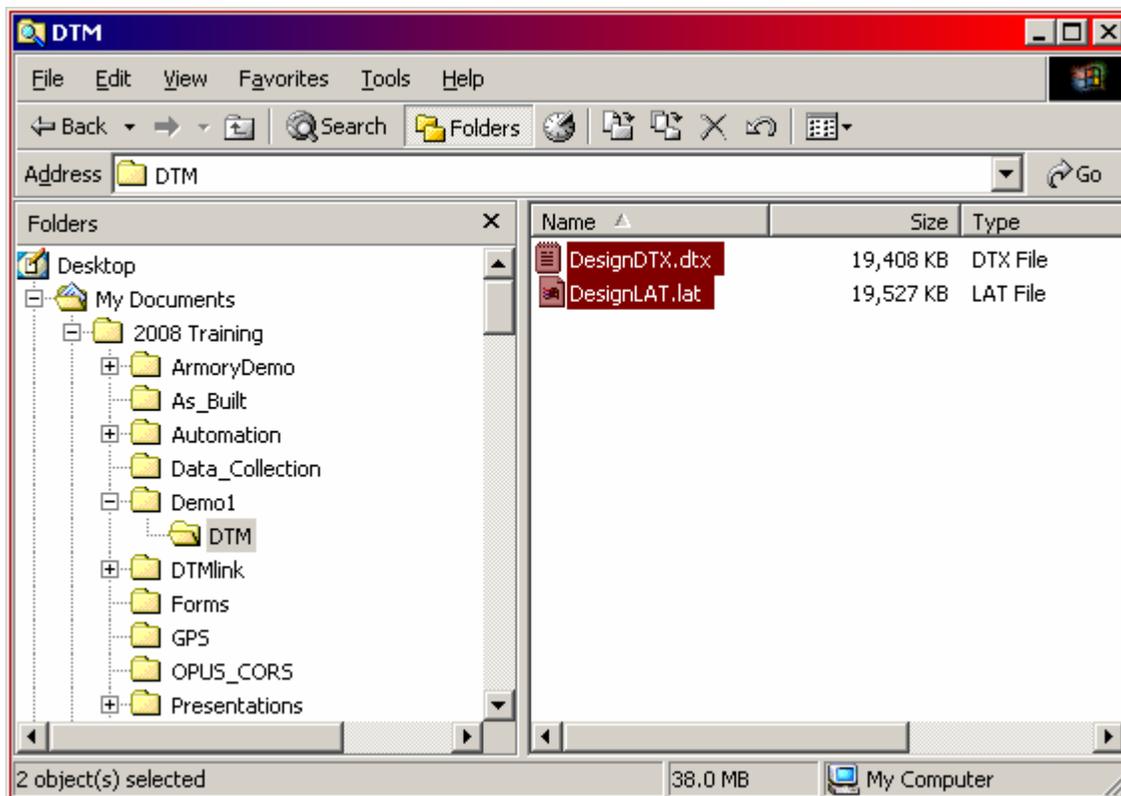For the Export select Lattice LAT to Trimble DTX.

Navigate to and select the LAT file we created in the previous steps. Then navigate to the location you want the new DTX to be located and give a name that is appropriate.

Select Process after the above steps have been completed.
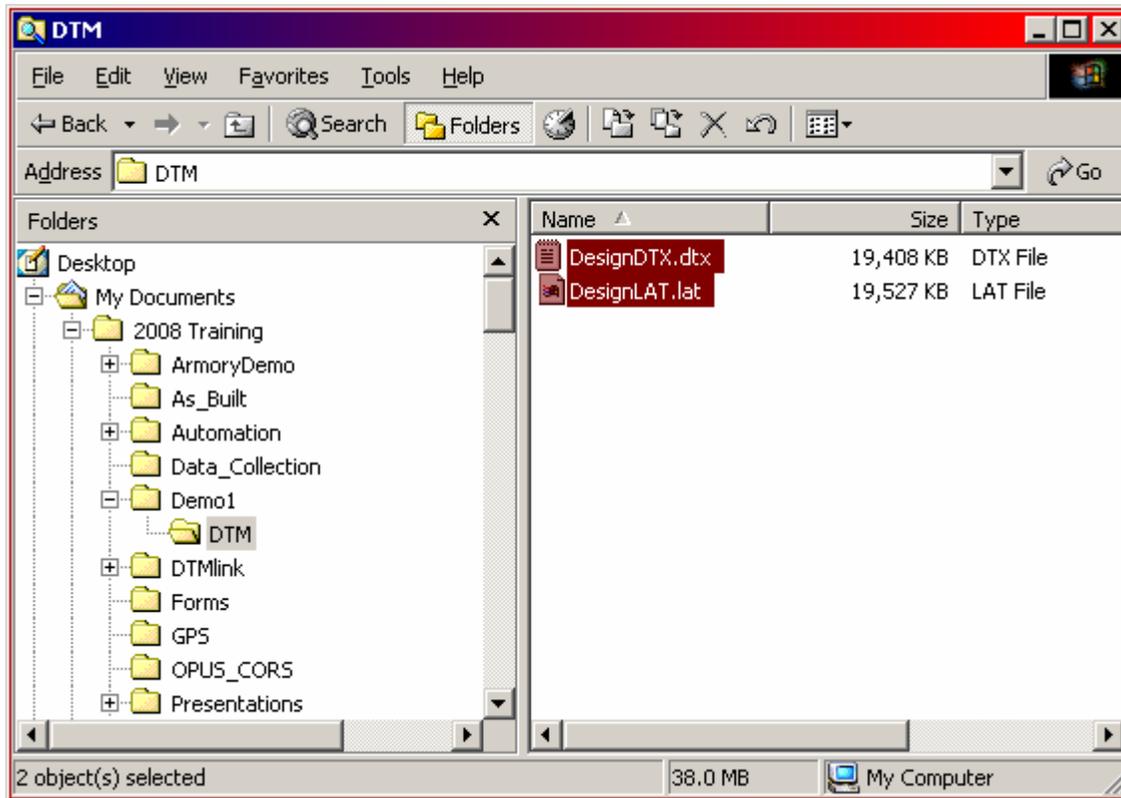

Make sure the files exist where you want them.

Importing a DTX file into TGO DTMLink

First find the location of the DTX file.
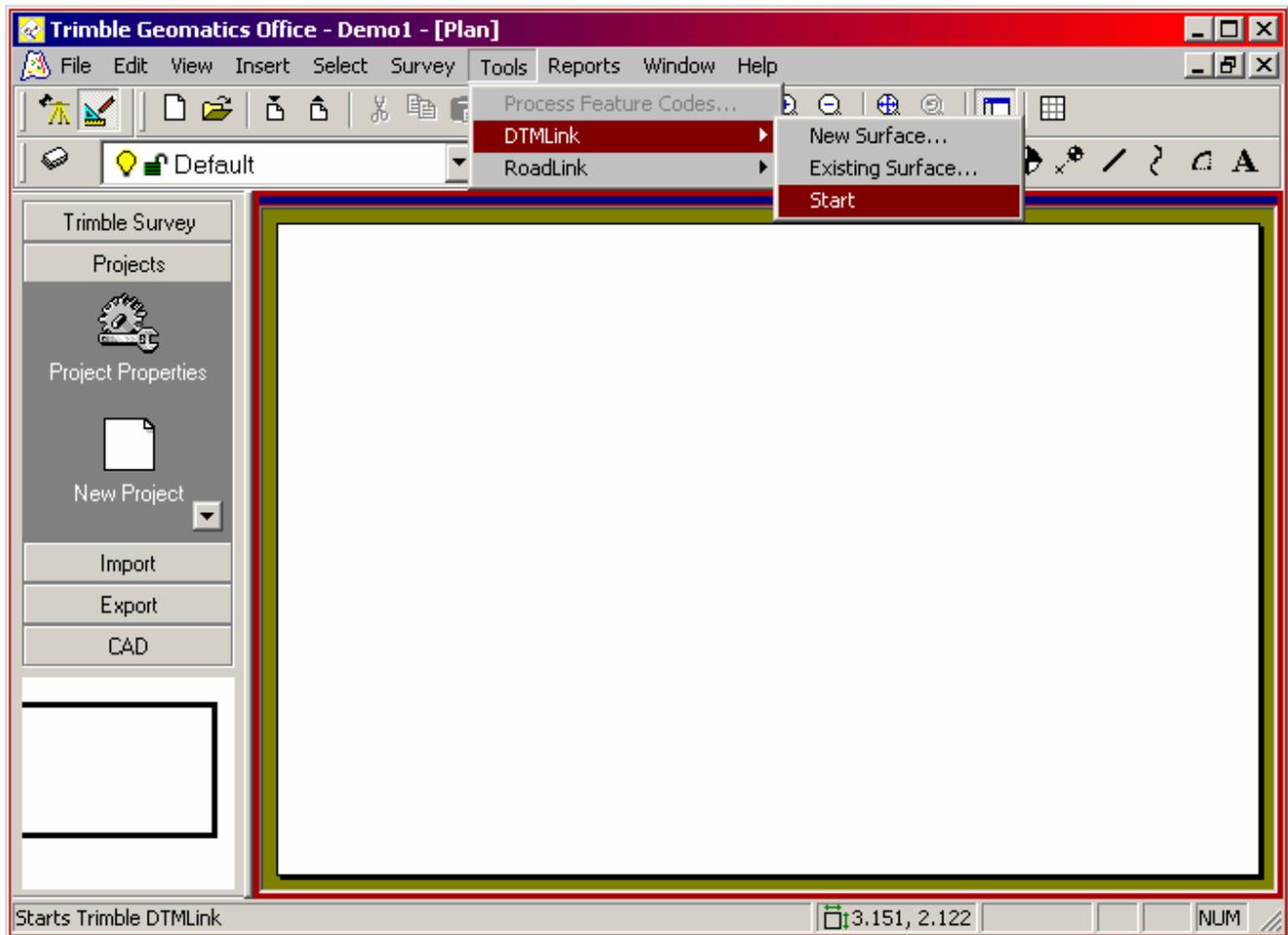

Open the TGO project you will be working on.

Select the plan view button, .   Or use the View pull down menu and select Plan.

From the Tools menu select DTMLink-Start.

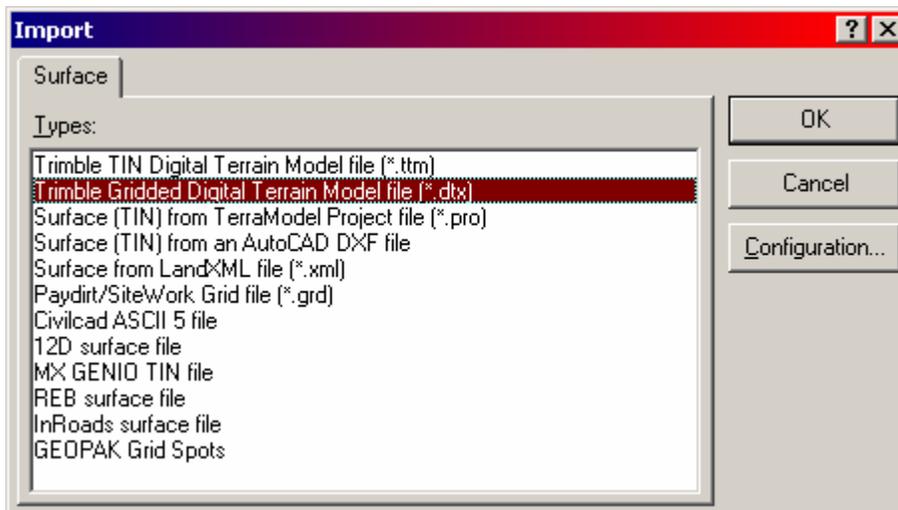In DTMLink select File-Import or use the command button

From the Import screen you will need to select the Trimble Gridded Digital Terrain Model file (*dtx).

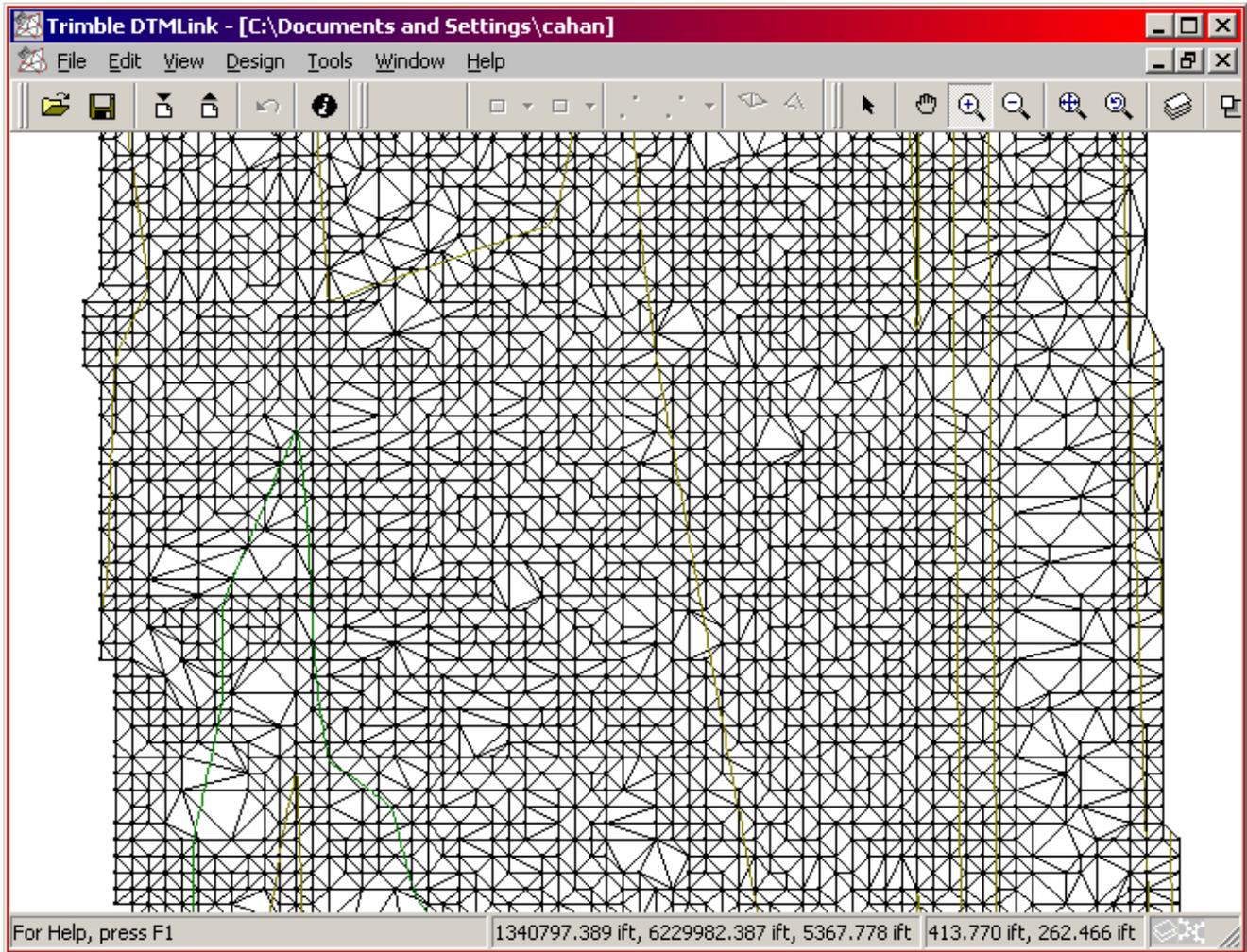Select the desired DTX file. Then select Open and OK on the Import screen.
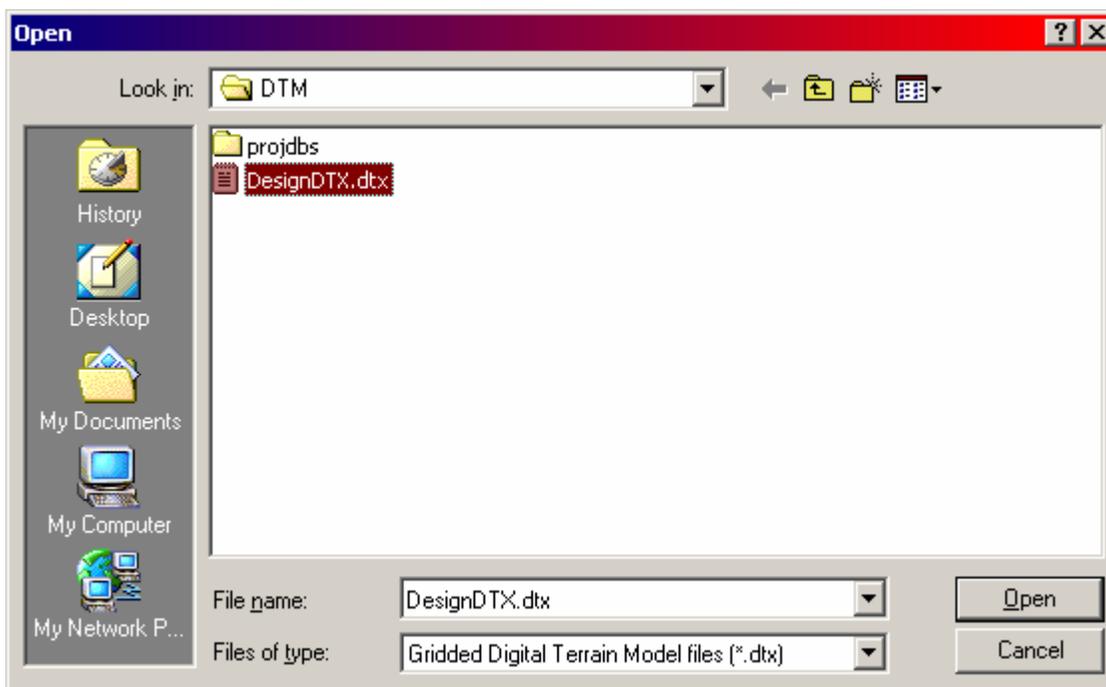
Now you should be able to review and check your DTM in DTMLink.

This DTM can now be Exported using File-Export or the Export command button .

You can now export to a Survey Controller or to a Trimble Survey Controller file (*.ttm)
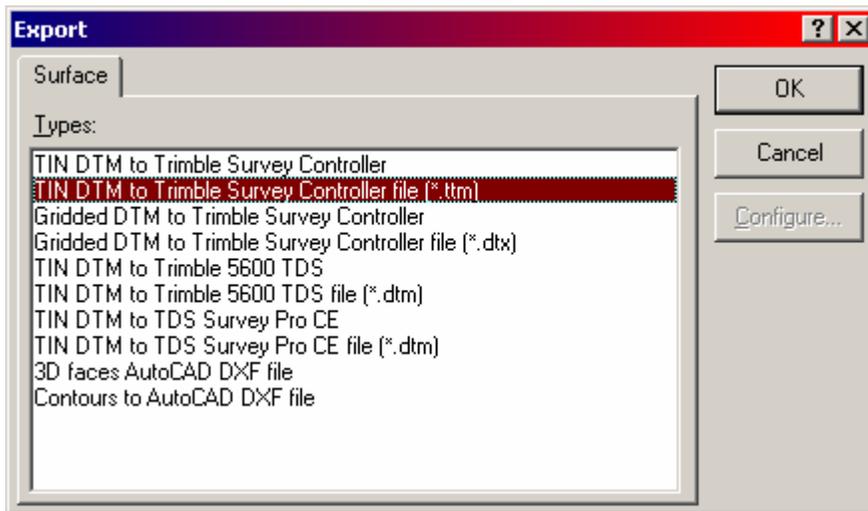
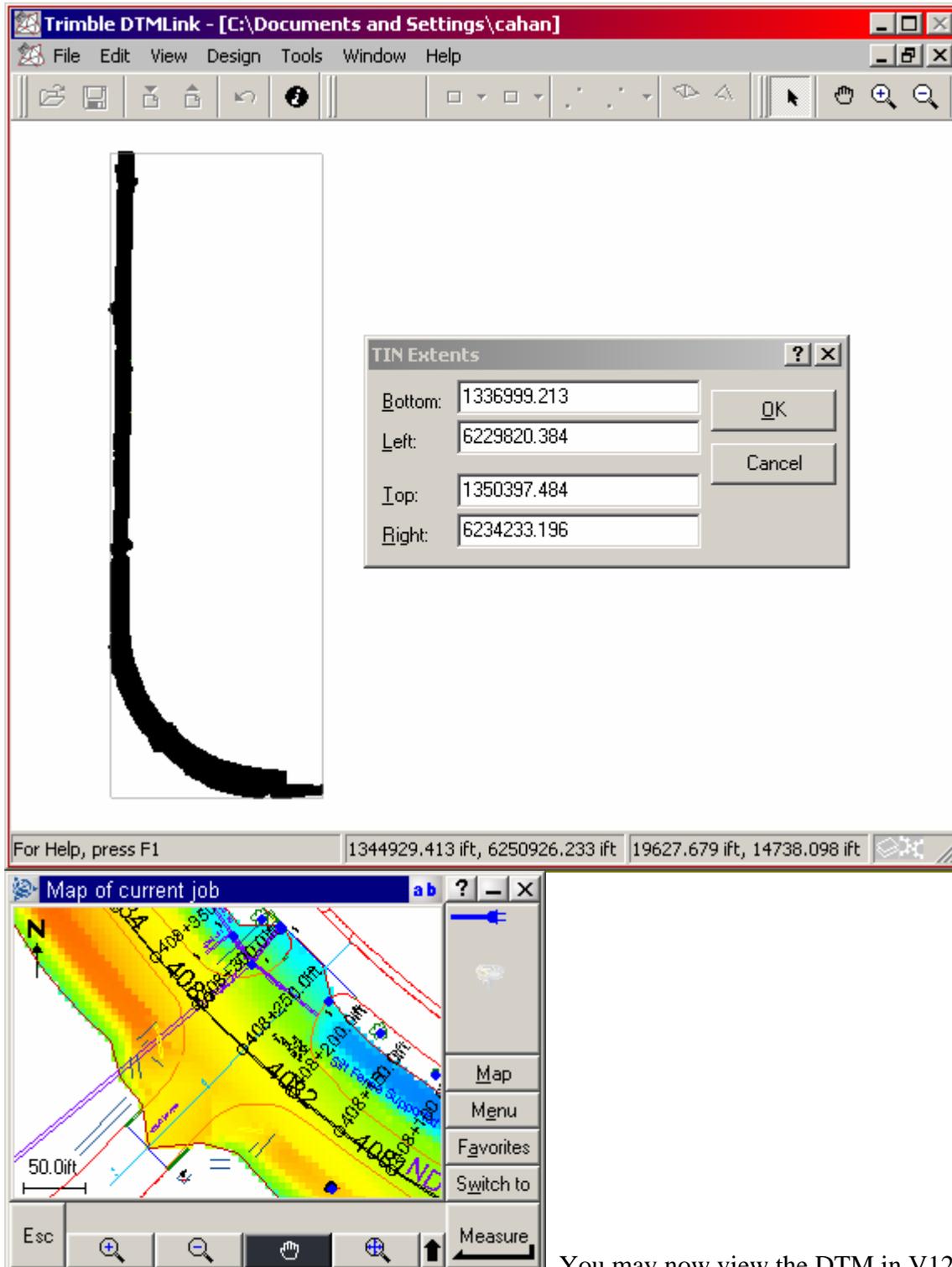A TIN Extents window will appear.
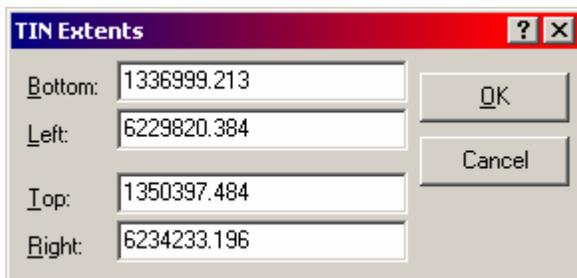
Check to make sure it encompasses your whole DTM.

You may now view the DTM in V12.20