
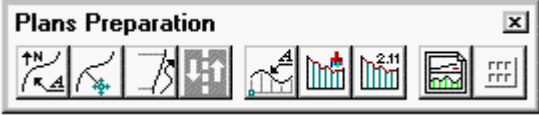


Plan and Profile Sheets

18.1 Overview of Features

Feature / Function	Drawing of plan or plan / profile sheets.
Tool 	
Project Manager (Road)	Plan and Profile Sheets
Menu Application	GEOPAK Road > Plans Preparation > Plan and Profile Sheets

The main feature of the 2001 Plus application is a simplified user interface, compared to the Classic application. In this way, users can quickly and easily generate a variety of plan, plan / profile and tabular data sheets.

In order to maintain compatibility with the Classic application and ease the transition for those users who want to utilize the 2001 Plus application, 2001 Plus supports importing .dat files utilized in the Classic application, and converting them to the new Port-oriented format. Dat files were the equivalent of the Sheet Library in the Classic application.

2001 Plus supports any combination of Ports on a sheet for maximum flexibility.

2001 Plus provides powerful handling of MicroStation reference files. This is accomplished by having other MicroStation files serve as patterns for the reference file attachments. These are called motif files.

2001 Plus has the option to automatically make a notch in the clipping shape at layout time to make room on the sheet for a title block. This is done by putting the clipping shape pattern into the sheet cell.

Extended Stationing is used as a means to allow sheets to be placed partially off of an alignment or even completely off of the alignment.

2001 Plus has the ability to place sheets with a Right to Left Station progression, which is opposite of the standard used in roadway design. This was added for users doing rail design.

A thorough capability is provided to perform sheet numbering. Alphanumeric prefixes and suffixes as well as changing the start number of the sheets and rearranging the ordering are all supported in 2001 Plus.

2001 Plus supports Profile Stair Stepping. In situations with steep grades or narrow profile ports, sometimes the profile goes off the top or bottom of the port before it gets to the end of it. To handle this, users would put a break in the profile port and adjust the elevations to bring the coverage up or down to where it needs to be. Within 2001 Plus, GEOPAK automatically locates these breaks and plots the profile clipping shapes in accordance with that. This adjustment carries through, then, to the sheet design file.

Profile Gap Equalities -- If a Profile has been plotted with the Gap option turned on, the coverage of the sheet is now adjusted so that subsequent sheets remain aligned with the grid.

Raster Manager -- Descartes is not supported by the application. Raster Files are now to be referenced via the Raster Manager application available via Bentley Select.

Tabular Data Application -- Sheet Clip places Clipping Shapes suitable for Tabular Data. However, the actual placement of the tabular values in the dgn file is now done via the Draw Tabular Annotation (Sheet Clip Mode) tool. This approach allows the power and flexibility of the Draw Tabular Annotation application to be used with sheets.

18.2 Invoking 2001 Plus Main Dialog Box

When the GEOPAK User Preferences is set to 2001 Plus and Plan and Profile Sheet tool is selected, the GEOPAK Sheet Layout dialog box depicted below opens.

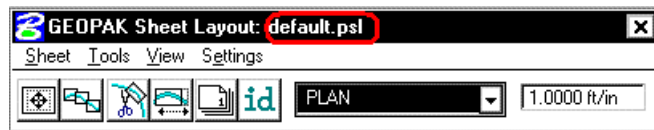


The dialog box is comprised of the title bar which displays the current Sheet Library, the main menu bar, short-cut icons, and the Sheet Name Selector and Plot Scale fields.

The first time the application is invoked, it opens up a default.psl sheet library located in the \geopak\bin\ folder if the configuration variable isn't defined.

The Plot Scale will be displayed in the proper units depending on how it is set in the User Preferences.

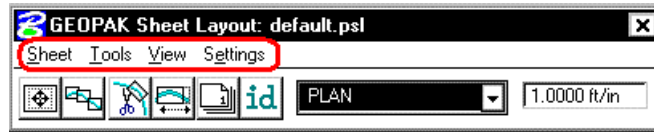
18.2.1 Sheet Library



The parameters for each sheet are defined in a Sheet Library. In order to lay out or clip sheets, a Sheet Library must be attached to the current session. The name of the currently attached Sheet Library is shown in the title bar. Sheet Libraries have an extension of psl. An unlimited number of different sheets can be stored within one library. When the user begins the sheet process, they select the desired sheet layout from the attached library, which loads the associated parameters.

If a different Sheet Library is needed, it can be attached via the menu items Sheet > Library > Attach. It is also possible to review or make changes to the Sheet Library by selecting Sheet > Library > Edit. Detailed information on the set-up of the Sheet Library can be found in the online help section entitled "Sheet Library Set-up."

18.2.2 Main Menu Bar Overview



Four options are supported in the main menu bar:

- Sheet
- Tools
- View
- Settings

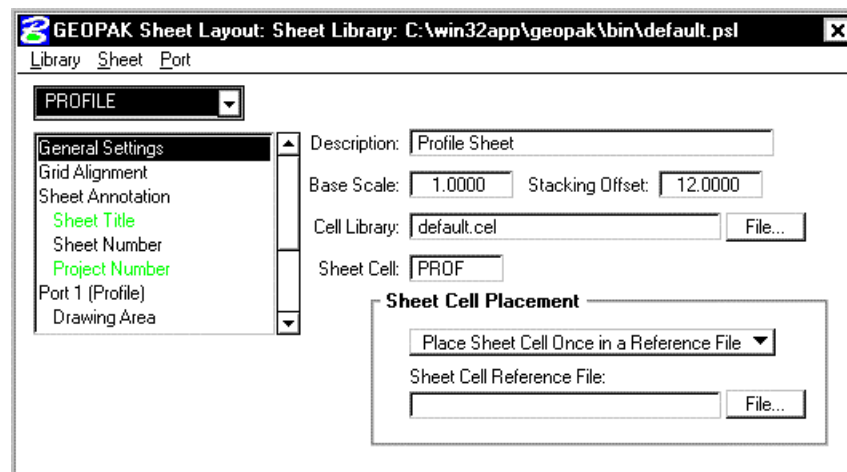
18.2.2.1 Sheet Menu Options

Five tools are supported in the Sheet pulldown and are detailed in the sub-sections below.

- Library
- Composition
- Layout
- Clip
- Exit

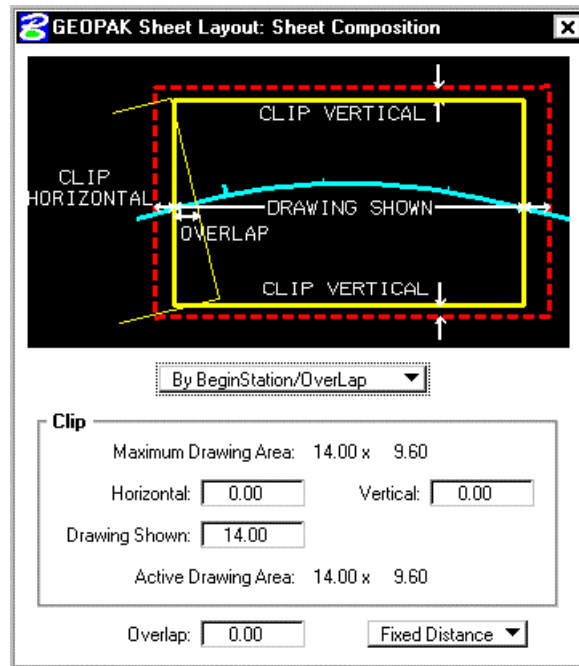
18.2.2.1.1 Library

The Library file contains the various parameters, cells, and dimensions for creating sheets. In this menu option, a new Library can be created, an existing Library can be edited, or the user can define (Attach) the desired Library. For a detailed discussion of setting up and editing a Library, refer to the online documentation "Sheet Library Set-Up."



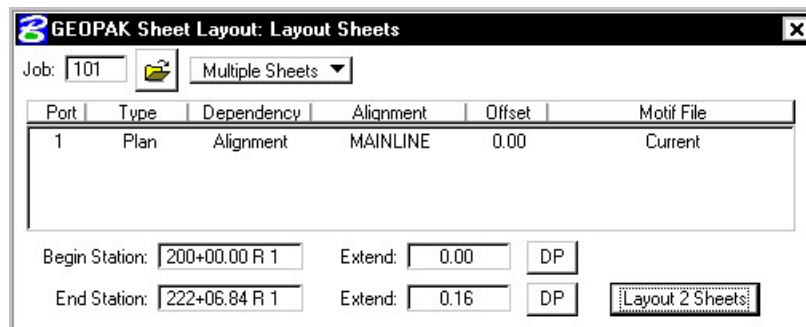
18.2.2.1.2 Composition

This menu item opens the Sheet Composition dialog box, wherein drawing area, overlapping options and other project specific variables are defined. One sample dialog box is depicted below.



18.2.2.1.3 Layout

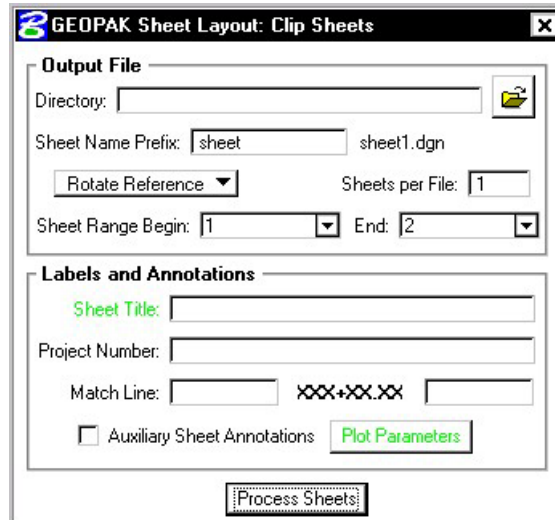
The Layout dialog box is utilized to define the GEOPAK Job Number, alignments, and / or profiles for the desired sheets.



Fields are also supported for stationing, if only part of the chain is being utilized for sheet layout.

18.2.2.1.4 Clip

Once the sheets have been laid out and any modifications complete, the sheets are ready to be clipped and drawn for the final production sheets. The Clip dialog box is utilized to complete these tasks, as detailed below.



18.2.2.1.5 Exit

Exits the Plan and Profile Sheets application, but does not close the MicroStation file.

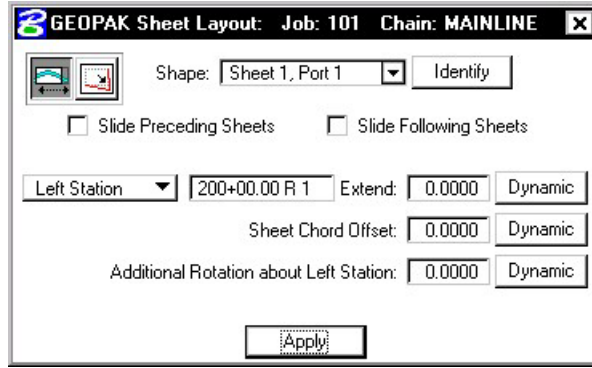
18.2.2.2 Tools Options

Four tools are supported in the Tools pulldown and are detailed in the sub-sections below.

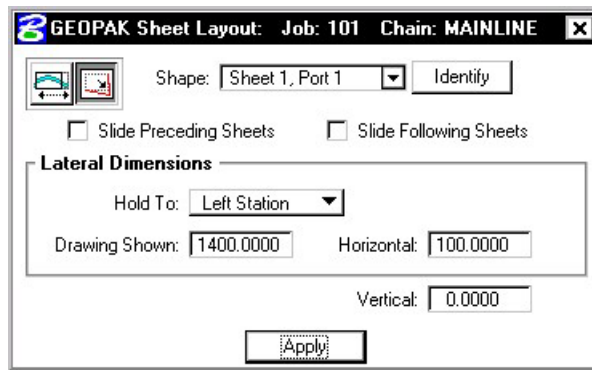
- Modify
- Sheet Number Manager
- Draw Tabular Annotation (Sheet Clip Mode)
- Identify Sheet

18.2.2.2.1 Modify

After the sheets are laid out, the user may want to adjust individual sheets to conform to the project limits, etc. This can be accomplished utilizing the tools in the Modify dialog box, which is illustrated below.



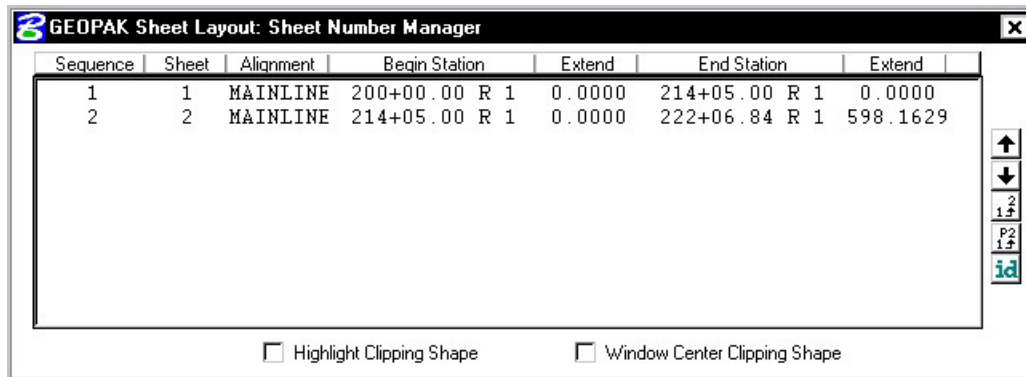
The two icons in the upper left corner are utilized to Slide sheets (along the alignment, rotating, offsetting) and Modify Drawing Area. The Slide options are illustrated above, while the graphic below depicts the Modifying Drawing area.



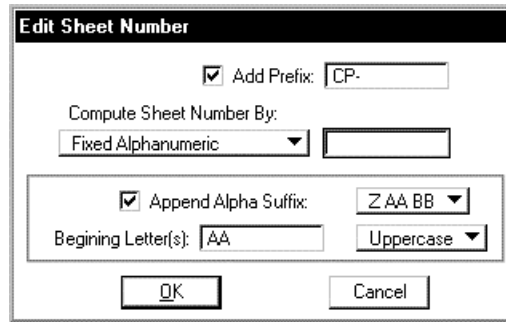
The user can select the sheet to be modified from the pick list or by graphic identification. Sheets can also follow the movement of the selected sheet, i.e., moving one sheet to left moves all preceding or following sheets to the left by the same amount.

18.2.2.2.2 Sheet Number Manager

After the sheets are laid out, the Sheet Number Manager can be invoked as depicted below, populated with the current sheets.



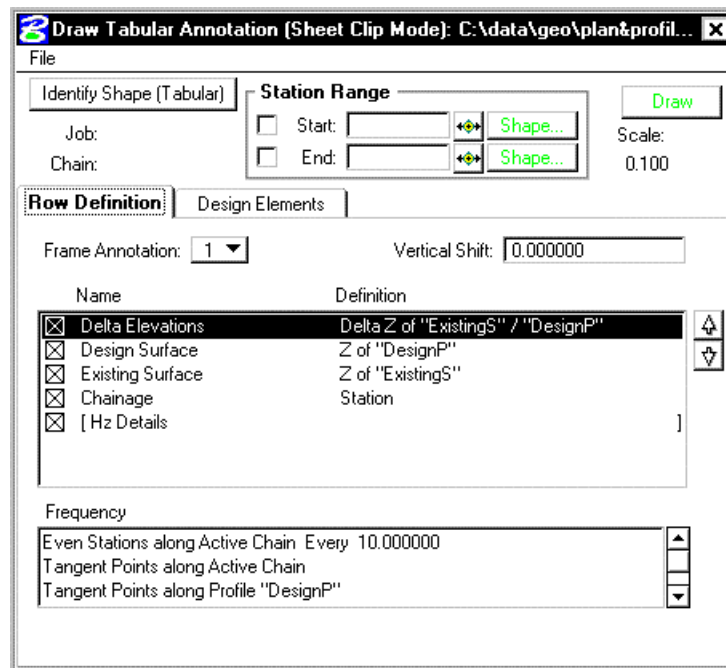
The actual sheet number can be modified, prefix and suffix added, and other labeling options by utilizing the Edit Sheet Number (fourth icon down in the grouping to the right of the list box).



Another option is changing the order the sheets are drawn.

18.2.2.2.3 Draw Tabular Annotation (Sheet Clip Mode)

When the Draw Tabular Annotation tool is selected, the Draw Tabular Annotation dialog box is opened, as depicted below.



The user can define the tabular data to be included within the plan /profile sheets.

18.2.2.2.4 Identify Sheet

Select Identify Sheet, then select and accept a previously placed clipping shape. GEOPAK determines the settings utilized to place the original sheet and automatically populates the dialog box with the Sheet Name and Scale. In addition, the Sheet Name, Scale, Sheet Number and Port are displayed in the MicroStation prompt field at the bottom of the screen. If the parameters for the selected sheet are not found within the current library, a warning message is displayed indicating the sheet is not found, the name of the current library, and the name of the library used to place the original sheet.



18.2.2.3 View Menu Options

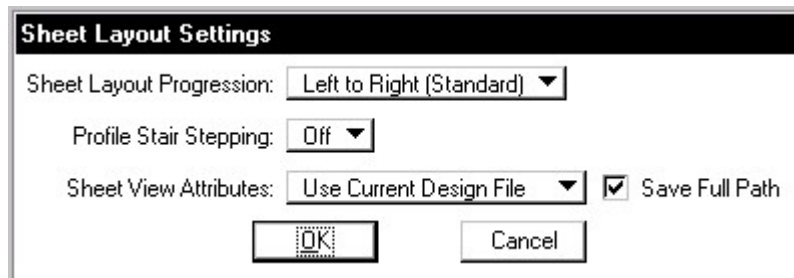
Three tools are supported in the View pulldown and are detailed in the table below.

Filter by Sheet Name	The clipping shapes of the currently selected sheet name are displayed. A MicroStation update view will need to be issued if "Automatic Update" is not toggled on.
Filter by Scale	The clipping shapes of the currently selected Scale are displayed. A MicroStation update view will need to be issued if "Automatic Update" is not toggled on.
NOTE: "Filter By Sheet Name" and "Filter By Scale" can be used together.	
Automatic Update	If this is toggled on when "Filter By Sheet Name" or "Filter By Scale" is selected the view is automatically updated.

18.2.2.4 Settings Menu Options

One tool is supported in the Sheet pulldown and is detailed in the table below.







Sheet Settings	Layout	When the Sheet Layout Settings tool is selected, the dialog box depicted below opens. Three settings are supported within the dialog box including Left to Right or Right to Left layout, Stair Stepping for profiles, and sheet view attributes.
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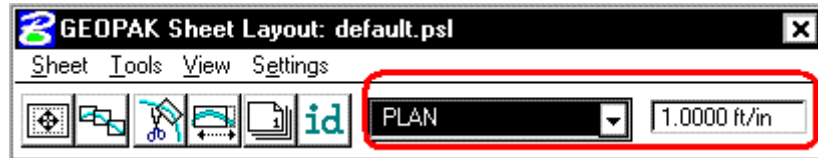
- Sheet Layout Progression:
 - Left To Right (Standard)
 - Right To Left (Rail)
- Profile Stair Stepping:
 - Off
 - On
- Sheet View Attributes:
 - Use Current Design File

18.2.3 Dialog Box Icons

Six short-cut icons are supported for ease of use. These icons correspond to tools located within the menu bar pulldowns and are detailed in the table below.

	Sheet Composition (Sheet > Composition).
	Layout Sheets (Sheet > Layout).
	Clip Sheets (Sheet > Clip).
	Modify Sheets (Tools > Modify).
	Sheet Number Manager (Tools > Sheet Number Manager).
	ID button (Tools > Identify Sheet).

18.2.4 Sheet Name Selector and Plot Scale



Two parameters are global to the entire application and are shown on the main dialog box:

- The **Sheet Name Selector** enables the user to select which sheet is to be placed in the next Layout operation. The drop down list displays all sheets in the currently attached Sheet Library.
- The **Plot Scale** text item determines the scale at which sheets will be placed in the layout.dgn.

18.3 Primary Work Flow

The approach taken by this application is to represent the reference-clipping boundary of each Port on each Sheet. The clipping boundary is represented by MicroStation Shapes, referred to as Clipping Shapes.

For each project, there is one design file which contains all of the Clipping Shapes for a project, for example, layout.dgn. All design elements exist in files referenced to layout.dgn. It is recommended that layout.dgn have only Clipping Shapes in it.

The Primary Work Flow consists of two operations:

- Layout of sheets – places clipping shapes into layout.dgn file.

- Clipping sheets - reads the Clipping Shapes from the Layout dgn and creates new design files which include all required reference files which are clipped at the correct boundaries along with the Sheet Cell and other annotations.

There are two options for Clipping Sheets: Rotate View and Rotate Reference.

When Sheets are clipped using the Rotate View option, the sheet cell and the view are moved and rotated such that they are coordinately correct with the clipping shape of Port One. This arrangement allows only one sheet per design file.

When Sheets are clipped using the Rotate Reference option, the sheet cell and view are not rotated. The reference files are rotated and moved to be in the correct location with respect to the sheet cell. The arrangement allows multiple sheets to be placed in one design file.

18.4 Ports

Each Sheet consists of one or more Ports. A Port can be considered a window into the design. For each sheet that is placed into a layout.dgn, each Port on that sheet is placed as a Clipping Shape.

18.4.1 Port Types

There are three types of Ports: Plan, Profile, and Tabular Data. It should be noted the 2001 plus version of Plan and Profile Sheet Composition does not place tabular data values. The application places Clipping Shapes designed to include Tabular Data. The actual placement of the Tabular Data values is accomplished by the Draw Tabular Annotation (Sheet Clip Mode) tool in coordination with the Plan and Profile Sheet Composition application.

18.4.2 Port Information

Before laying out sheets, each Port must have its Port Information filled out. The Port Information Dialog boxes are opened by double-clicking the corresponding row in the Layout Dialog box.

Plan Ports only need the controlling chain, an offset value, and the name of the motif file for the given Port. If the "Use Current Design File" option is selected, Current will be displayed in the dialog box instead of a Motif File name.

Motif files are used to determine reference file attachment.

Profile Ports require the name of the controlling profile in addition to all the information found in a profile cell.

Tabular Data Ports require the same kind of information that Profile Ports do, but also may optionally have the ability to stagger the placement of the ports. This staggering allows the Clipping Shapes to be longer without conflicting so that they may accommodate margin labels.

18.5 Sheet View Attributes

Two options are supported for **Sheet View Attributes**:

Use Current Design File – All reference file attachments, active levels, etc., are based on the current design file. An optional toggle is supported to **Save the Full Path** of reference files. **This toggle is only for the design file that contains the clipping shapes.**

Customize with Motif Files - A blank file is utilized as a pattern file for the reference file attachments. Also levels can be turned on or off as desired. We call these files motif files.

18.5.1 Use Current Design File

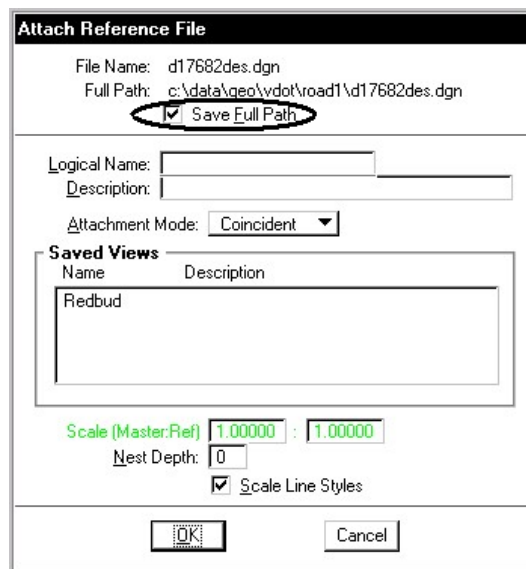
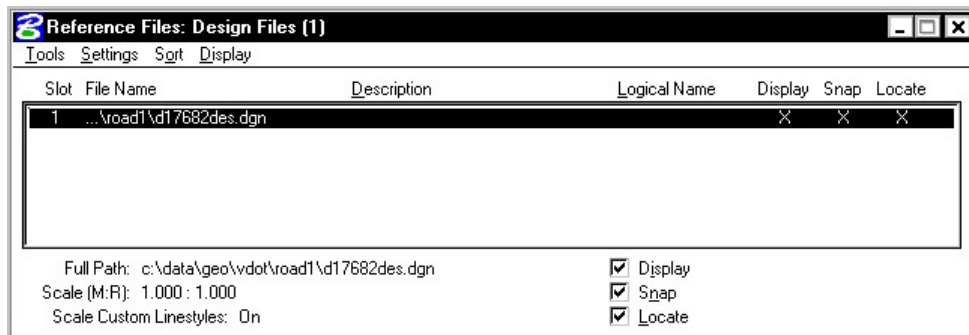
The user can control reference file attachment without the use of Motif Files by selecting the Use Current option for Sheet View Attributes. When this option is used, the Current dgn file (in which clipping shapes have been layed out) is used like a Motif file in that it's reference file attachment information carries over to each Port during Clipping.

Also the design file containing the clipping shapes will be attached as a reference file for each port to accommodate users that wish to place there clipping shapes in the proposed design file.

The advantage of Use Current Design File is that the user does not need to concern themselves with setting up motif files. What they see in the layout design file is what they will get in clipped sheet files. However, when Use Current Design File is that selected option, **it is not possible to have different reference file settings for different Ports on the same sheet.** All Ports must have the same attachment information and can't be customized.

The Save Full Path toggle is used when the sheets will be placed in a different directory than the reference files.

NOTE: If the sheets are to be placed in a different directory, then the reference files must be attached to the current design file with "Save Full Path" toggled on.



18.5.2 Customize With Motif Files

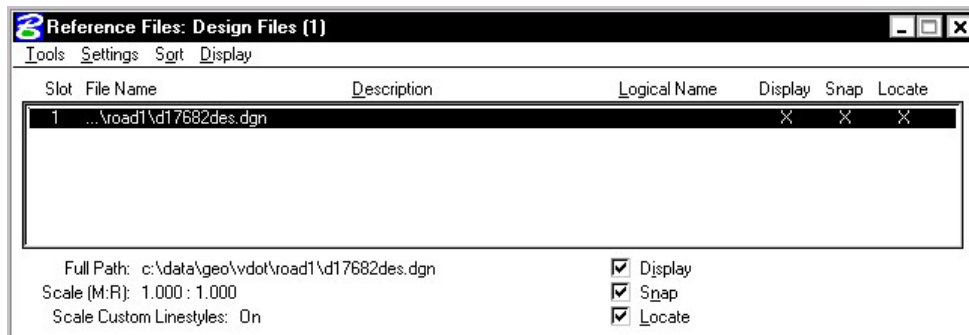
It is sometimes necessary to have two or more Ports on a sheet which have differing reference file attachment settings. This could happen with two Plan Ports which cover the same area but show different aspects of the project. For example, the top Port would show the proposed design and the bottom Port would show traffic control. This could be considered as the two Ports on the same sheet having different themes or different motifs.

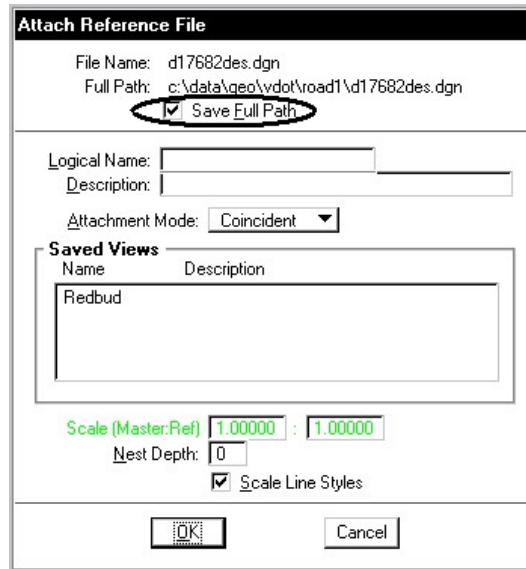
The question arises as to how the various reference file settings are to be controlled for each Port. This is done by using another design file to serve as a pattern for the reference file attachment information. For every Port, there would be a motif file specified by its file name. The Ports on each sheet may have the same or different Motif Files.

During a Clip operation, the reference file attachment information is read from the motif file for each Port. When a Port is placed into the final sheet file, all reference files which are attached to the corresponding Motif File are attached to the final sheet design file. All reference level view on/off settings of the motif file are also applied to the reference file attachment in the final sheet design file. Note the clipping shapes are still used to define the Clip Boundary of each reference file associated with that Port.

In the example described above of a sheet with Design and Traffic Control, the top Port could have a Motif File named design_motif.dgn. The bottom Port could have a Motif File named Traffic_motif.dgn. At any time before sheets are clipped, the Motif Files (which would normally be blank) must be opened, desired levels should be active, and the reference files attached. The reference file names and their paths used for the motif file must match exactly to the reference files and associated paths in the original file. Therefore, the user will normally set up the motif files on a project by project basis, unless an organization has a standardized set of file naming conventions and level structure utilized on every project, where a single set can be developed for the entire organization.

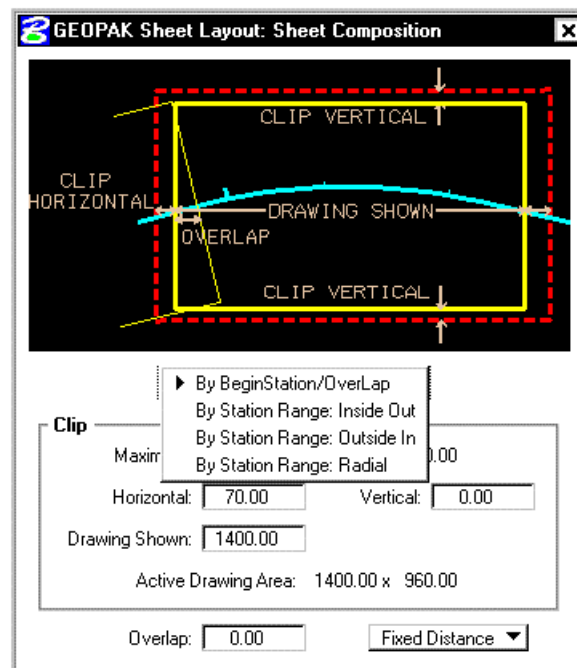
NOTE: If the sheets are to be placed in a different directory, then the reference files must be attached to the motif file with "Save Full Path" toggled on.





18.6 Sheet Composition

When the Sheet Composition tool is accessed, the dialog box depicted below opens.

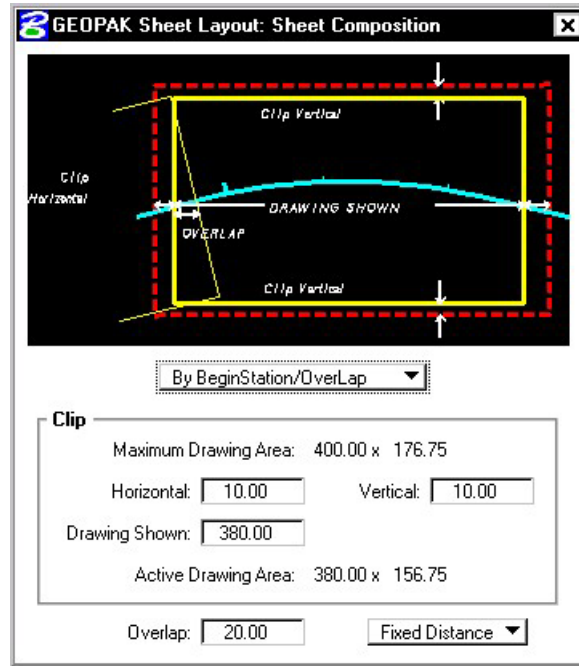


The graphic illustrates the various values required in the dialog box. Directly below, four options are supported, as illustrated in the exploded view above:

- **By Begin Station/Overlap**
- **By Station Range: Inside Out**
- **By Station Range: Outside In**
- **By Station Range: Radial**

18.6.1 By Begin Station/Overlap Option

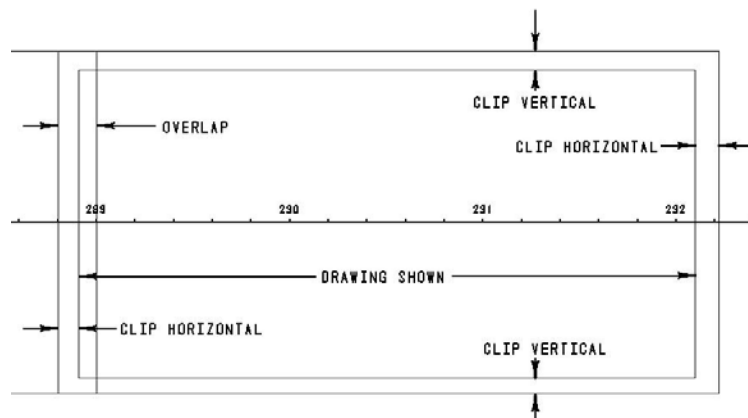
When the **By Begin Station/Overlap** option is selected, the Clip group box containing the Drawing parameters, **Overlap** options and associated fields as depicted in the graphic below:



Before these options are reviewed, a discussion of the **Active Drawing Area**, located within the **Clip** group box, is warranted. Several dimensions are found within the **Clip** group box. These include:

- Maximum Drawing Area (display only)
- Horizontal
- Drawing Shown
- Vertical
- Active Drawing Area (display only, calculated by GEOPAK)

The graphic below illustrates each dimension for the subject sheet. In addition, a portion of the adjoining sheet to the left is shown in order to depict the overlap. Notice that the alignment is also displayed from approximately station 289+00 to 292+00.



First, GEOPAK utilizes the Maximum Drawing Area based on the Sheet Name and Scale selected in the main Sheet Layout dialog box, in our example, 400.00 x 176.75. Then the Clip **Vertical** is subtracted twice, once for the top and once for the bottom. In this case,

$$176.75 - 10 - 10 = 156.75$$

which is shown in the **Active Drawing Area**. The same method is utilized for the Horizontal computations. The horizontal clip is subtracted twice, once for the right side and once for the left side. In this case,

$$400.00 - 10 - 10 = 380.00$$

which is shown in the **Drawing Shown** and the **Active Drawing Area**.

By BeginStation/Overlap ▼

Clip

Maximum Drawing Area: 400.00 x 176.75

Horizontal: Vertical:

Drawing Shown:

Active Drawing Area: 380.00 x 156.75

Once again referring to the graphic above, GEOPAK considers the Overlap shown on the left side between the two adjoining sheets. The **Overlap** toggle has two options as depicted in the exploded view below:

Clip

Maximum Drawing Area: 400.00 x 176.75

Horizontal: Vertical:

Drawing Shown:

Active Drawing Area: 380.00 x 156.75

Overlap:

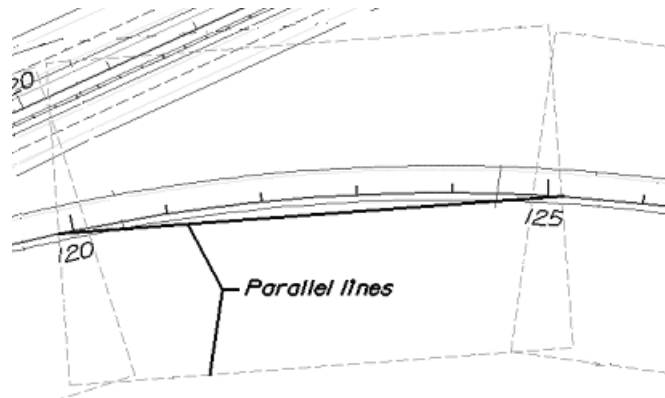
- Percentage
- Fixed Distance

When the **Percent** option is selected, the designer keys in the desired overlap in percent format in the **Overlap** field. Note the percent sign (%) is not required. The Percentage is calculated utilizing the Drawing Shown value. In this example, the 5.26% overlap is 156.75 feet (5.26% of 176.75).

In our Percentage example, the overlap is 5.26%. Therefore, a 20.00 foot overlap in clip areas is present between successive sheets.

If the **Fixed Distance** option is utilized, the Value field is in master units, i.e. feet or meters.

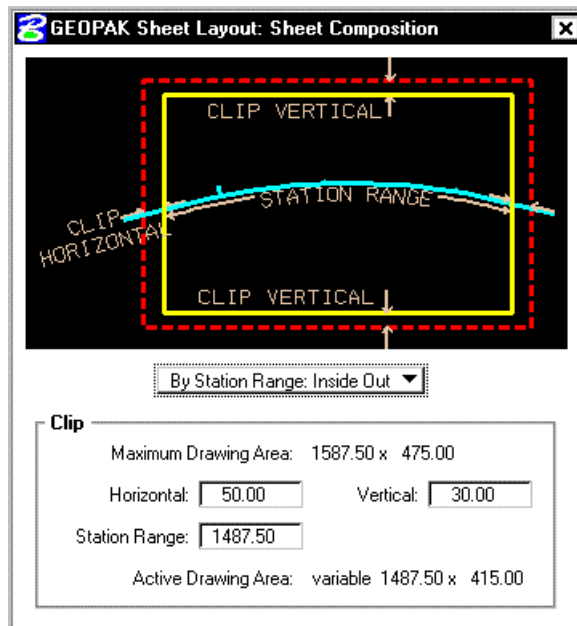
When placing sheets on a curve, the chord of the curve where it intersects the inside border is utilized to orient the sheet as depicted in the graphic below:



Since the **By Begin Station/Overlap** Sheet Composition option uses a chord distance to compute the length of the sheet, in the area of a curve more stationing will be covered. On a Plan/Profile sheet, this means there will be unequal coverage between the Plan and Profile. With this in mind, it is recommended that **By Begin Station/Overlap** Sheet Composition option be used for a Plan only case.

18.6.2 By Station Range Inside Out Option

The **By Station Range: Inside Out** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field. When utilizing this option, the Clip group box also has a slightly different look as seen in the graphic depicted below.



Now the **Active Drawing Area** is not constant, but displays **Variable** in the output field.

The **Horizontal** keyin has a slightly different meaning which can be best illustrated with an example. Let's use 500 feet for the **Station Range**, and 15 feet **Horizontal**. The dialog box is depicted below.

By Station Range: Inside Out ▾

Clip

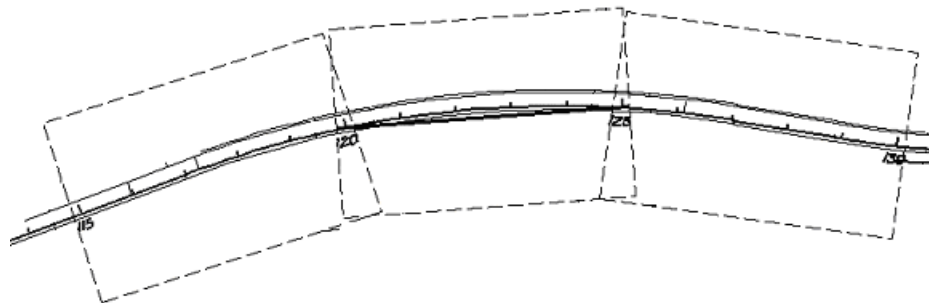
Maximum Drawing Area: 1587.50 x 475.00

Horizontal: Vertical:

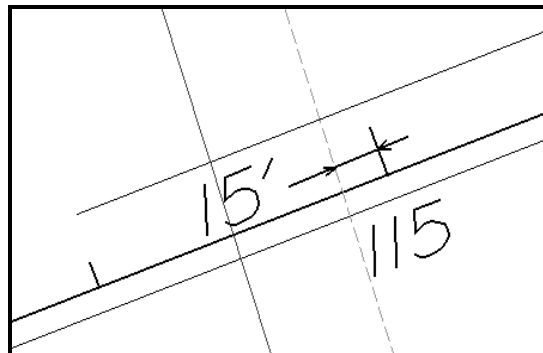
Station Range:

Active Drawing Area: variable 1557.50 x 435.00

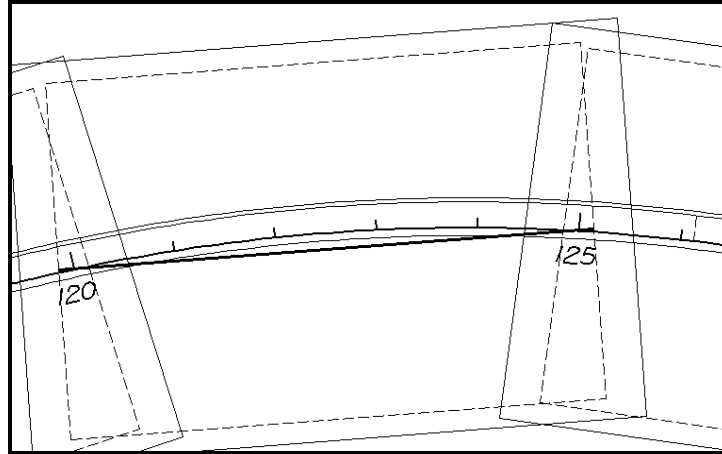
Utilizing the dialog box above, the following sheets are generated.



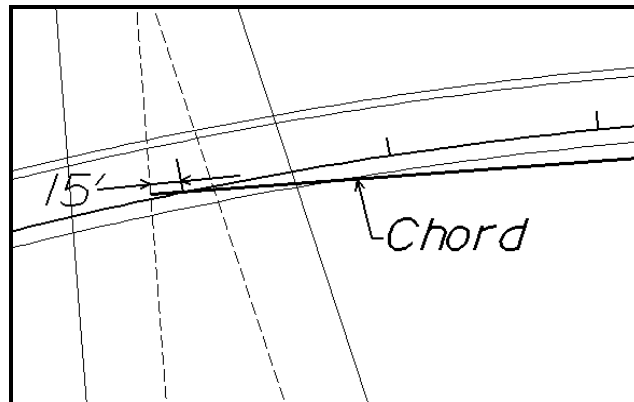
The first step when the sheets are drawn is to determine the stationing for each sheet. Our first sheet will be oriented between stations 115+00 to 120+00. GEOPAK then expands the sheet clip area by the **Horizontal** keyin distance. Looking at a detail of the beginning of the project, the clip area is expanded fifteen feet before station 115+00 as seen in the graphic below. Note the inside border is the dashed line, and station 115+00 and its associated tick mark are shown.



The curve is calculated slightly different. The second sheet in this series is on a curve. The station range is 120+00 to 125+00. A chord is drawn for the curve between stations 120+00 and 125+00 as seen in the graphic below.



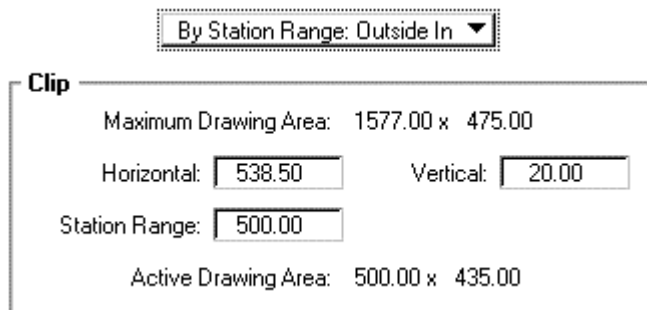
Notice that the inside sheet border is wider than the chord. The software will extend the chord the amount of the Horizontal keyin (in our example, fifteen feet) to establish the vertical edge of the inside border as seen in the detail below.



18.6.3 By Station Range Outside In Option

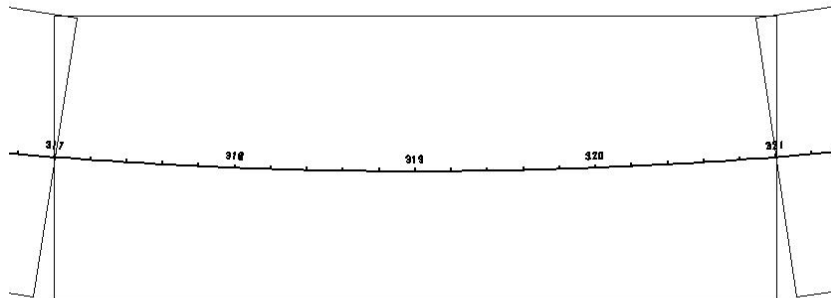
The **By Station Range: Outside In** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field. When utilizing this option, the Clip group box also has a slightly different look as seen in the graphic depicted below.

The **Outside In** option is slightly different as seen in the dialog box below.



The Clip Area is no longer variable, but a constant based on the **Sheet Size** as well as the **Horizontal** and **Vertical** fields. In our example, the same 500 feet is keyed in. When generating the

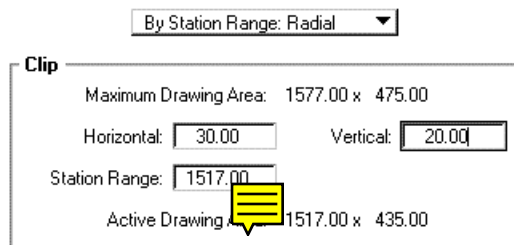
sheets, GEOPAK determines the center of the sheet, and the corresponding station. In our example the midpoint of the stationing for the sheet from 120+00 to 125+00 is 122+50. This point will be placed at the midpoint of the sheet as depicted in the drawing below:



Since the clip area covers a constant station range, the length of the clipping shape will vary depending on the curvature of the alignment.

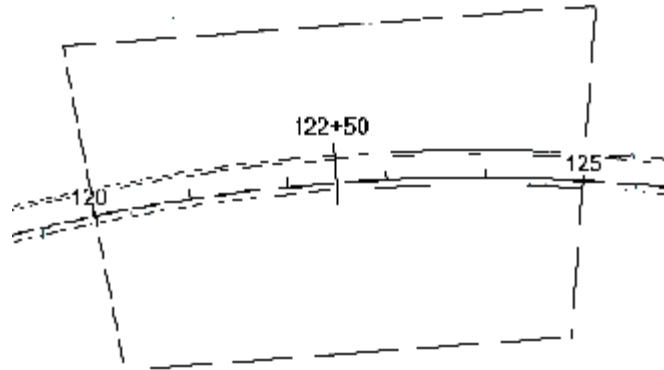
18.6.4 By Station Radial Option

The **By Station Range: Radial** option orients sheets between a rounded station interval. This interval is entered in the **Station Range** field. An example best describes how this feature works. In the dialog box below, each sheet has a station range of 500 feet. Based on the station ranges in the bottom of the dialog box, the first sheet would encompass station 120+00 to 125+00, while the second sheet would include stations 125+00 to 130+00.



To draw this second sheet, GEOPAK locates the midpoint station 122+50, which in our example is on a curve. Utilizing the chord of curve as the vertical center, GEOPAK draws the top and bottom of the clip regions 217.5 feet from the chord, making the clip region 435 feet high. This is computed from the sheet size of 475 minus the vertical keyin of 20 for the top and 20 for the bottom, resulting in a 435 feet height.

In the next step, GEOPAK moves to station 125+00 and draws the clip border radial to the alignment at the specified station until it intersects with the previously computed top and bottom clip regions. The same process is repeated at the other end of the sheet, i.e., 130+00. Therefore, the inside clip region is trapezoidal as depicted in the graphic below.



Since the clip area covers a constant station range, the length of the clipping shape will vary depending on the curvature of the alignment.



Note: Any time sheets are deleted from the file using MicroStation commands, the file must be compressed before laying out the sheets again.

LAB 18: Plan and Profile Sheets

18.1 Getting Started

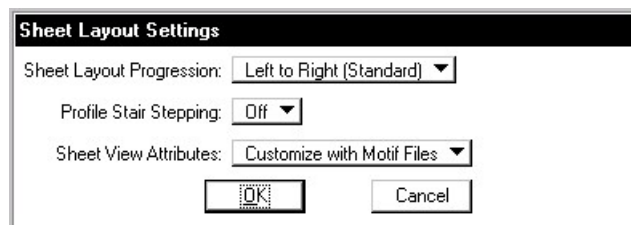
- Step 1. Execute **C:\data\geo\VDOT\road1\LAB18.EXE**.
- Step 2. Open the Microstation file **c:\data\geo\VDOT\road1\d17682work.dgn**.
Access **Project Manager**.

18.2 Plan Sheet Layout Process

- Step 1. Click the **Plan & Profile Sheets** button from the **Road Project: 17682.prj** workflow dialog box.
- Step 2. Create a run named **Plan** to set up the plan sheets. Initially, the dialog box will appear similar to the one shown below.



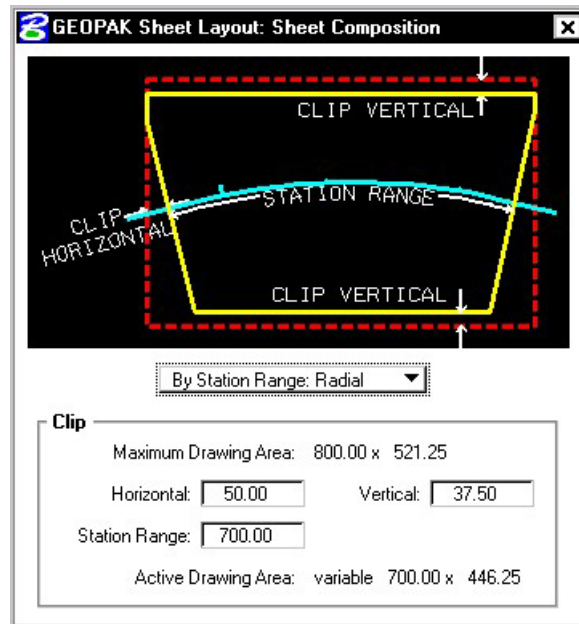
- Step 3. Select **Settings>Sheet Layout**. Change “**Sheet View Attributes**” option to **Customize with Motif Files** then click **OK**. The completed dialog box is shown below.



- Step 4. On the **GEOPAK Sheet Layout** dialog box, select **PLAN** from the sheet list then set the scale to **25.0000 ft/in**. The **GEOPAK Sheet Layout** dialog box should appear as below.



Step 5. Press the **Sheet Composition** icon. Populate the **Sheet Composition** dialog box as below.



Note: The Vertical setting will trim off the top and bottom of the clipping shape so that plan data will not be placed inside the title blocks on the sheet.

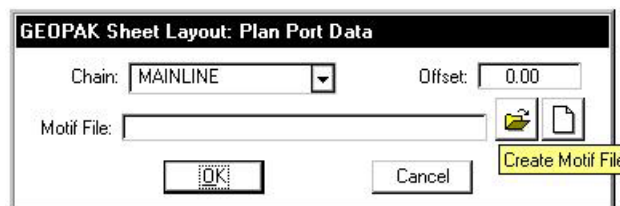
Step 6. Dismiss the **Sheet Composition** dialog box by pressing the **X** in the upper right hand corner.

Step 7. Press the Layout Sheets icon. Click **OK** on the information modal.

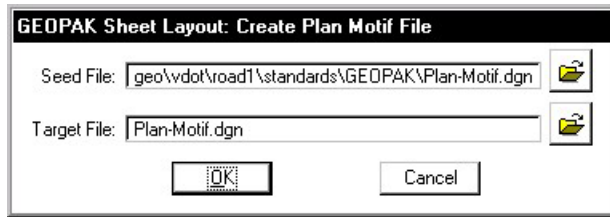
Step 8. Press the **Open GEOPAK Job** icon then select job number **101**.

Step 9. Double click on **Port 1**. Set the **Chain** to **Mainline** by selecting it from the option list.

Step 10. Press the **Create Motif File** icon.

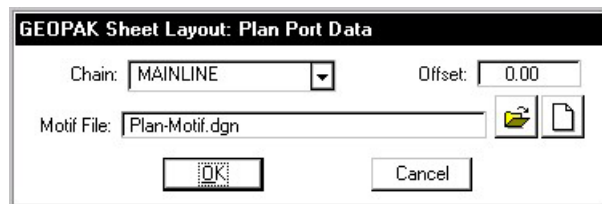


Step 11. Populate the **Create Plan Motif File** dialog box as below.

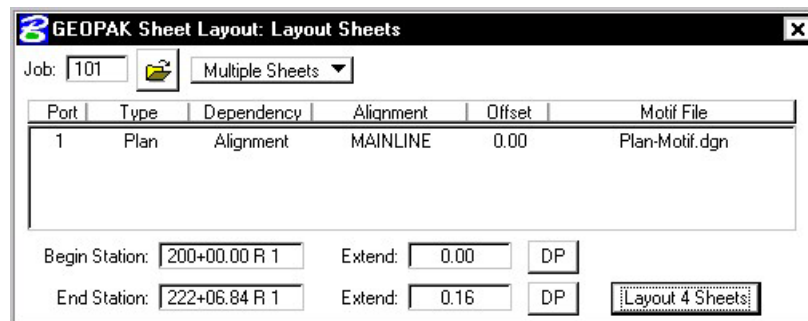


Note: The **Seed File** can be selected by pressing the **Select Seed Motif File** icon then selecting **Plan-Motif.dgn**. The **Target File** name should be entered manually.

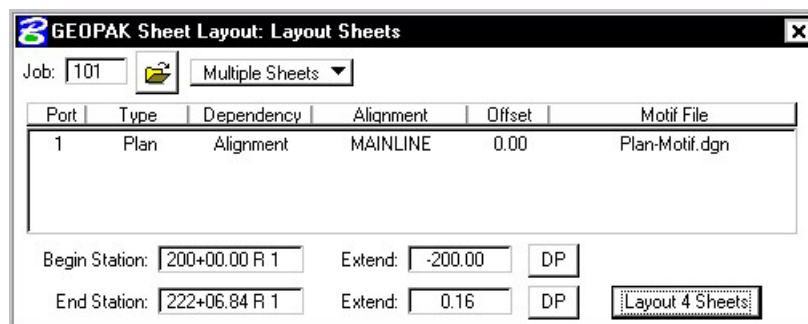
Step 12. Press **OK** on the **Create Plan Motif File** dialog box. A file named **Plan-Motif.dgn** should be created in the working directory and the **Plan Port Data** dialog box should appear as below.



Step 13. Press **OK** on the **Plan Port Data** dialog box. The **Layout Sheets** dialog box should now appear as below.



Step 14. In the **Layout Sheets** dialog box, set the **Extend** value for the **Begin Station** to **-200.00**. This will force the first sheet to end at **Station 205+00.00**. The dialog box should appear as below. Click the **Layout 4 Sheets** button to draw the clipping shapes into the design file.



4 clipping shapes should be placed for the **Plan** port.

Step 15. Dismiss the **Layout Sheets** dialog box by pressing the **X** in the upper right hand corner.

Step 16. Exit the Plan and Profile Sheet dialog box and save your run. Review the results.

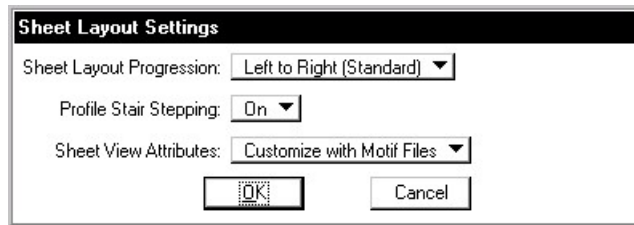
18.3 Profile Sheet Layout Process

Step 1. Click the **Plan & Profile Sheets** button from the **Road Project: 17682.prj** workflow dialog box.

Step 2. Create a run named **Profile** to set up the profile sheets. The dialog box should appear as shown below.



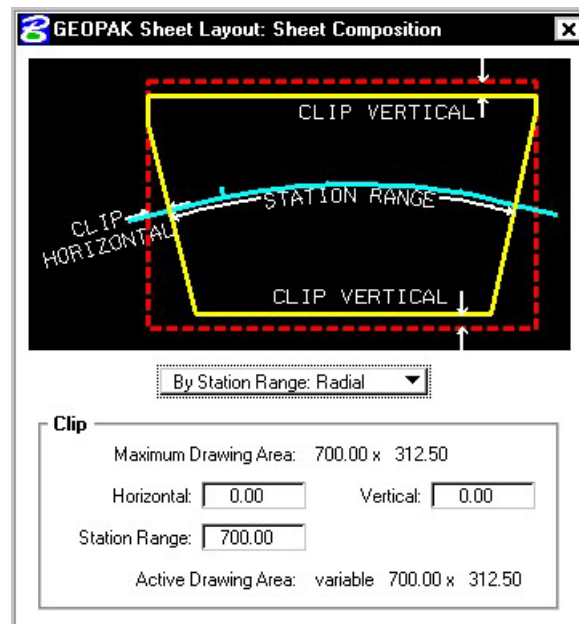
Step 3. Select **Settings>Sheet Layout**. Change “**Profile Stair Stepping**” option to **On** and “**Sheet View Attributes**” option to **Customize with Motif Files** then click **OK**. The completed dialog box is shown below.



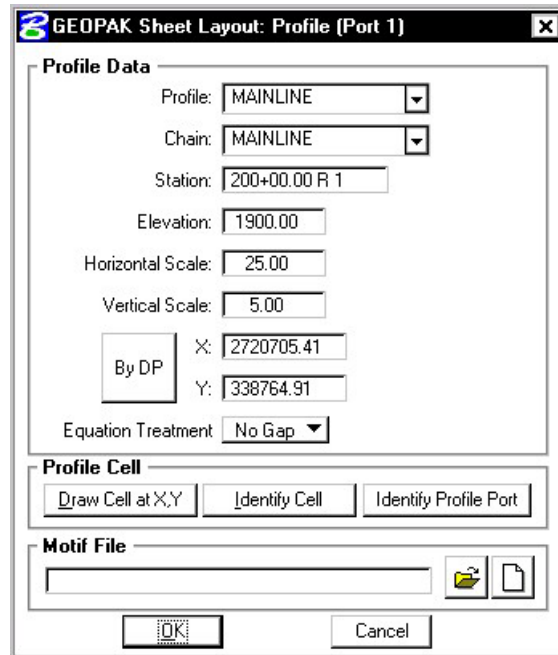
Step 4. On the **GEOPAK Sheet Layout** dialog box, select **PROFILE WITH SUPER** from the sheet list then set the scale to **25.0000 ft/in**. The **GEOPAK Sheet Layout** dialog box should appear as below.



- Step 5.** Press the **Sheet Composition** icon. Populate the **Sheet Composition** dialog box as below.

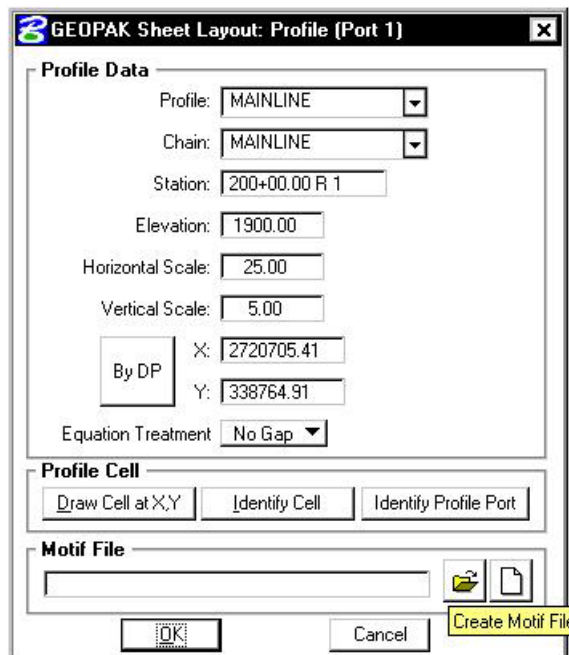


- Step 6.** Dismiss the **Sheet Composition** dialog box by pressing the **X** in the upper right hand corner.
- Step 7.** Press the **Layout Sheets** icon.
- Step 8.** Press the **Open GEOPAK Job** icon then select job number **101**.
- Step 9.** Double click on **Port 1**. Set the **Profile** to **Mainline** by selecting it from the option list.
- Step 10.** Populate the remaining fields on the **Profile (Port 1)** dialog box by pressing the **Identify Cell** button then graphically identifying the profile cell. The dialog box should appear as below.

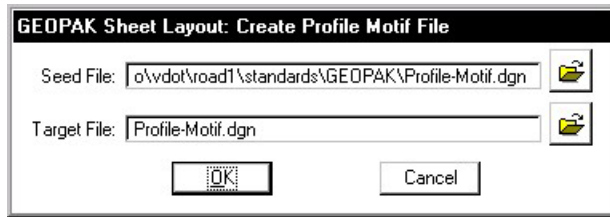


Note: The X and Y coordinates may be different than what is shown in the dialog box. They should match the insertion points of your profile cell.

Step 11. Press the **Create Motif File** icon.

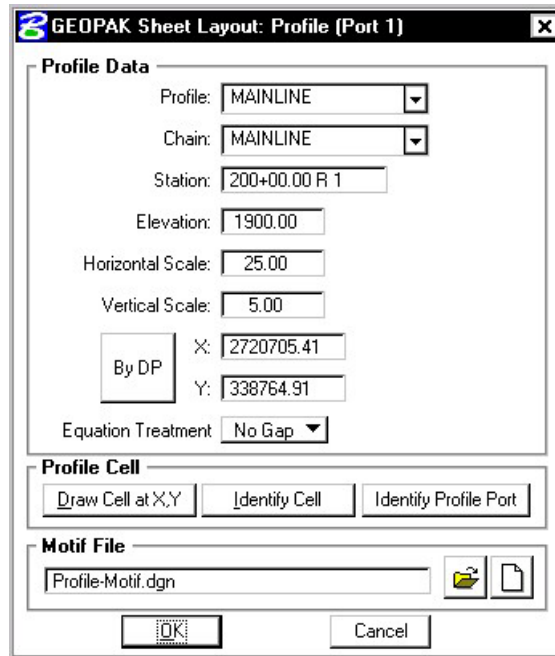


Step 12. Populate the **Create Profile Motif File** dialog box as below.

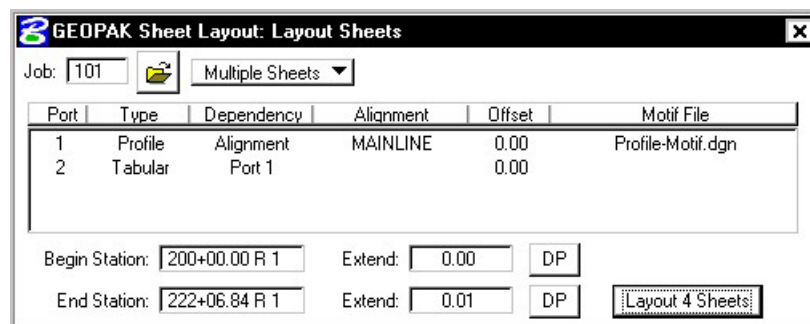


Note: The **Seed File** can be selected by pressing the **Select Seed Motif File** icon then selecting **Profile-Motif.dgn**. The **Target File** name should be entered manually.

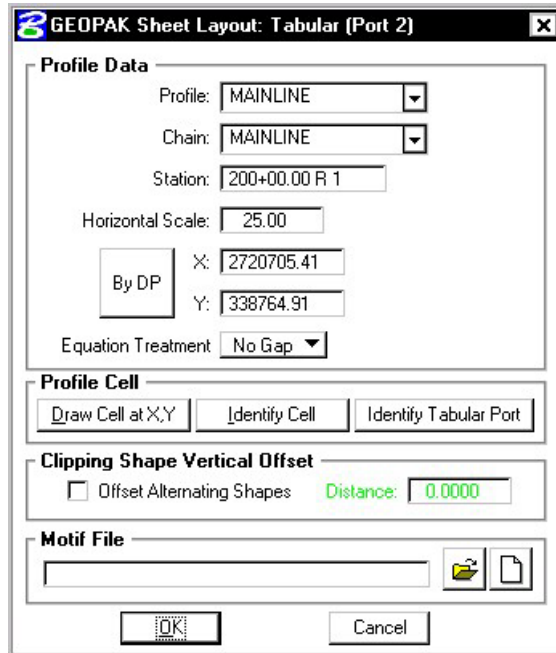
Step 13. Press **OK** on the **Create Profile Motif File** dialog box. A file named **Profile-Motif.dgn** should be created in the working directory and the **Profile (Port 1)** dialog box should appear as below.



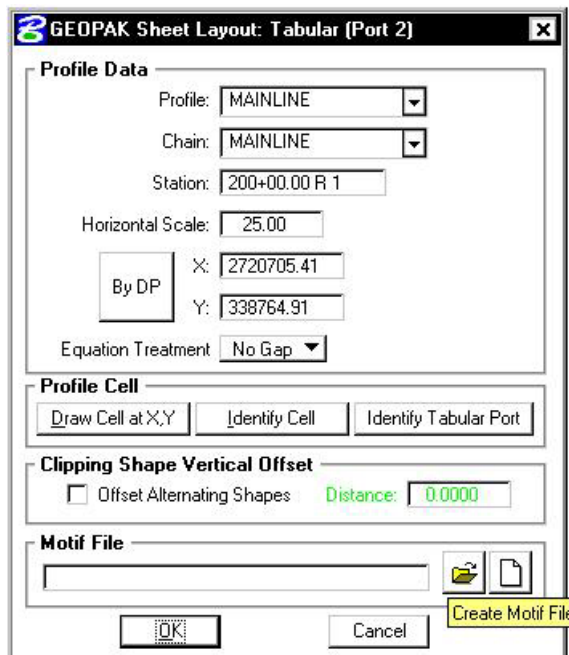
Step 14. Press **OK** on the **Profile (Port 1)** dialog box. The **Layout Sheets** dialog box should now appear as below.



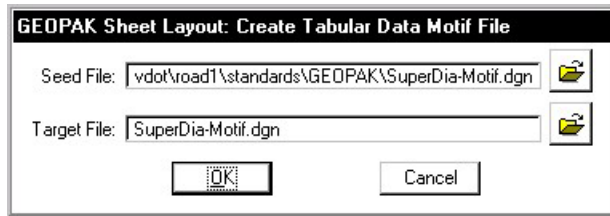
- Step 15.** Double click on **Port 2**. Set the **Profile** to **Mainline** by selecting it from the option list.
- Step 16.** Populate the remaining fields on the **Tabular (Port 2)** dialog box by pressing the **Identify Cell** button then graphically identifying the profile cell. The dialog should appear as below.



- Step 17.** Press the **Create Motif File** icon.

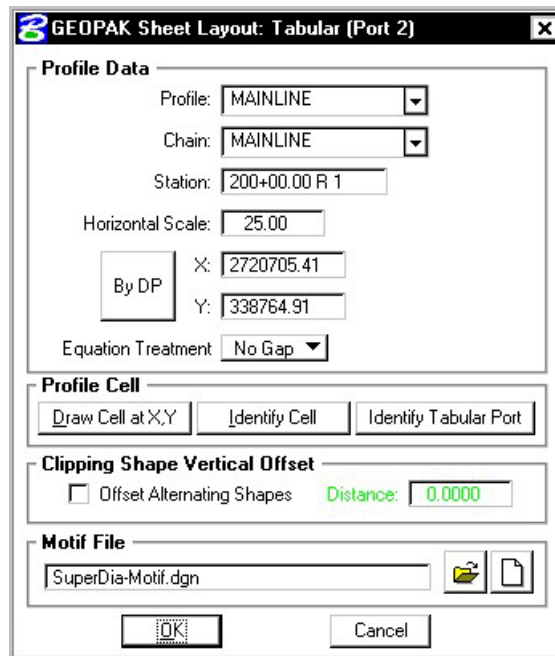


Step 18. Populate the **Create Profile Motif File** dialog box as below.

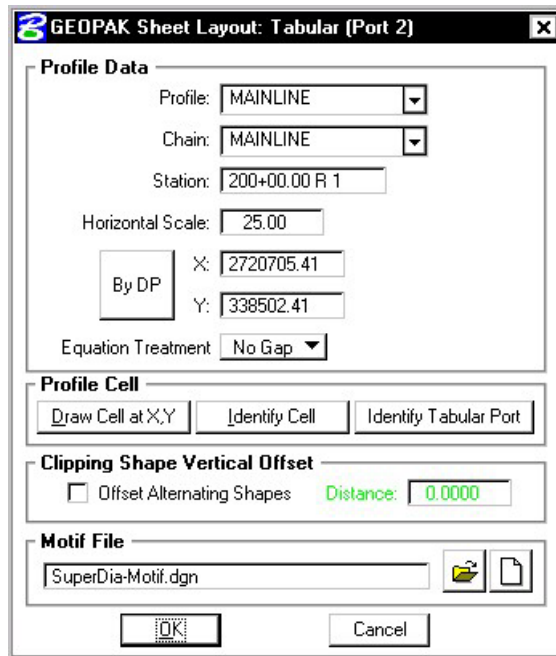


Note: The **Seed File** can be selected by pressing the **Select Seed Motif File** icon then selecting **SuperDia-Motif.dgn**. The **Target File** name should be entered manually.

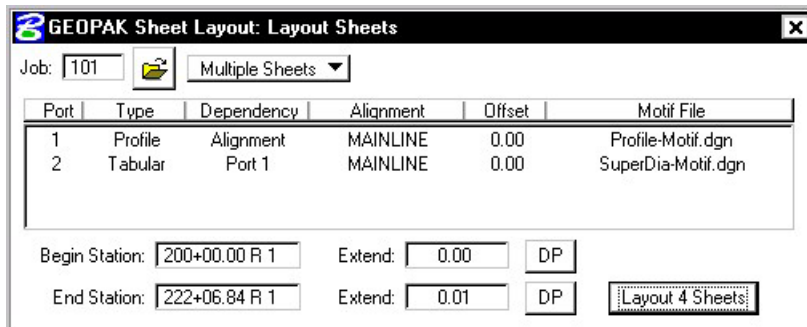
Step 19. Press **OK** on the **Create Tabular Data Motif File** dialog box. A file named **SuperDia-Motif.dgn** should be created in the working directory and the **Tabular (Port 2)** dialog box should appear as below.



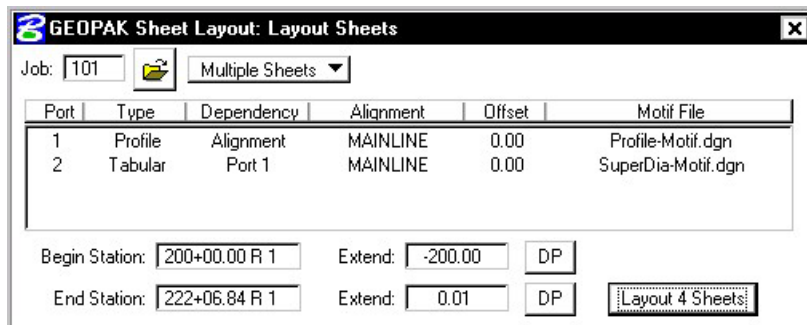
Step 20. The X and Y Coordinates need to be reset in order for the clipping shapes to be placed on the Superelevation Diagram. Press the **By DP** button then snap to the line immediately left of the Superelevation Diagram lines. The dialog should appear as below.



Step 21. Press **OK** on the **Tabular (Port 2)** dialog box. The **Layout Sheets** dialog box should now appear as below.



Step 22. In the **Layout Sheets** dialog box, set the **Extend** value for the **Begin Station** to **-200.00**. This will force the first sheet to end at **Station 205+00.00**. The dialog box should appear as below. Click the **Layout 4 Sheets** button to draw the clipping shapes into the design file.



4 clipping shapes should be placed for the **Profile** and **Tabular Data** ports.

Step 23. Dismiss the **Layout Sheets** dialog box by pressing the **X** in the upper right hand corner.

Step 24. Exit the Plan and Profile Sheet dialog box and save your run. Review the results.

18.3 Motif File Setup

In the following steps we will set up the **Motif Files** created in the previous section so that the **Plan** view file will be displayed in the **Plan Port** and the **Profile** view file will be displayed in the **Profile and Tabular Data Ports**.

Step 1. Open **Plan-Motif.dgn**.

Step 2. Attach **d17682des.dgn** as a reference file. Do a **Fit View** and **Save Settings** if necessary.

Step 3. Open **Profile-Motif.dgn**.

Step 4. Attach **d17682prof.dgn** as a reference file. Turn off levels **30** and **63** in the reference file. Do a **Fit View** and **Save Settings** if necessary.

Step 5. Open **SuperDia-Motif.dgn**.

Step 6. Attach **d17682prof.dgn** as a reference file. Turn off level **63** in the reference file. Do a **Fit View** and **Save Settings** if necessary.

Step 7. Open **d17682work.dgn**.



Note: Any design file that needs to be clipped to the sheets should be attached to the Motif Files (e.g. Survey, Utilities, Contours, etc.).

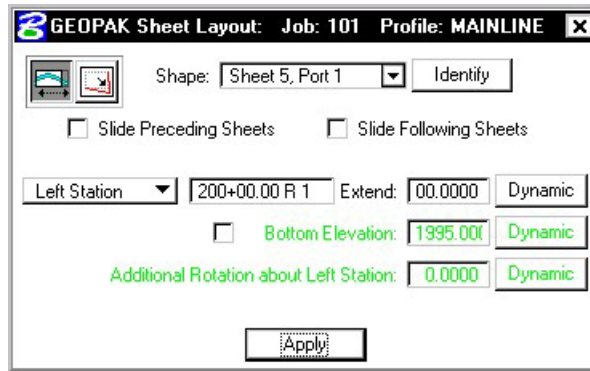
18.4 Move The Profile Clipping Shape

You should notice that the vertical curve data doesn't fall inside the second Profile Clipping Shape. In the following steps we will move the Profile Clipping Shape utilizing the **Modify** tools in Plan and Profile Sheet Composition.

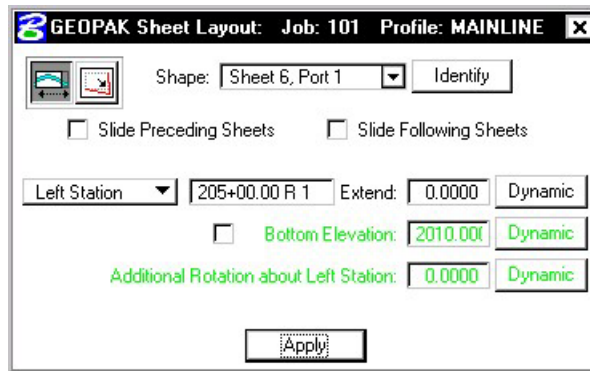
All work should be done in **c:\data\geo\VDOT\road1\d17682work.dgn**.

Step 1. Click the **Plan & Profile Sheets** button from the **Road Project: 17682.prj** workflow dialog box. Access the **Profile** run.

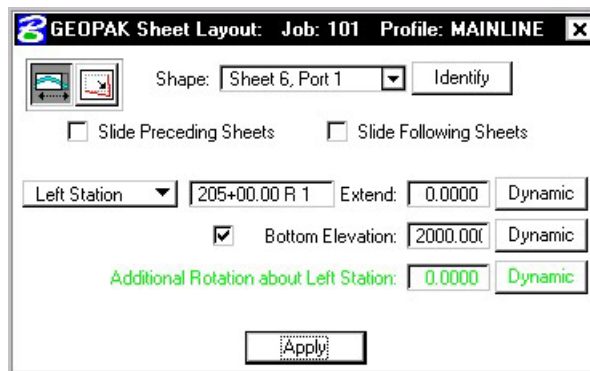
Step 2. Press the **Modify Sheets** icon. The dialog box below should appear.



Step 3. Press the **Identify** button then graphically select the second Profile Clipping Shape. The dialog box should now appear as below.



Step 4. Toggle on **Bottom Elevation** then enter **2000.00** for the elevation. The dialog box should now appear as below.



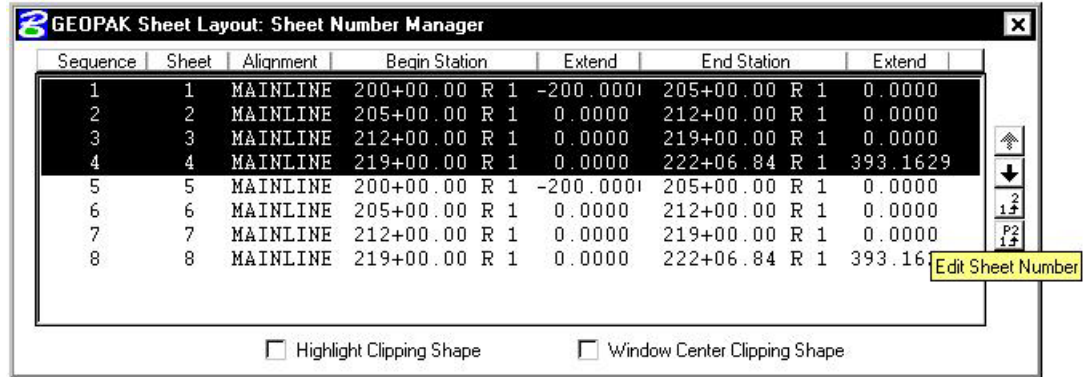
Step 5. Press **Apply**. **Sheet 6, Port 1** should be moved down so that the bottom of the clipping shape is at elevation **2000.00**.

Step 6. Dismiss the **Modify Sheets** dialog box by pressing the **X** in the upper right hand corner.

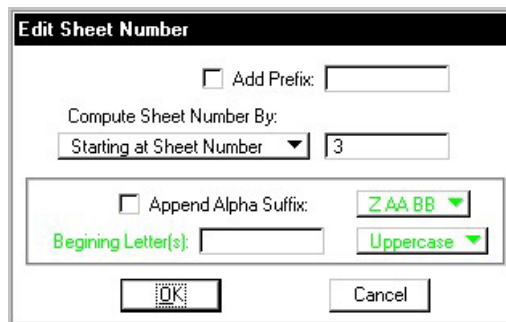
Step 7. Exit the Plan and Profile Sheet dialog box and save your run.

18.5 Renumber Sheets

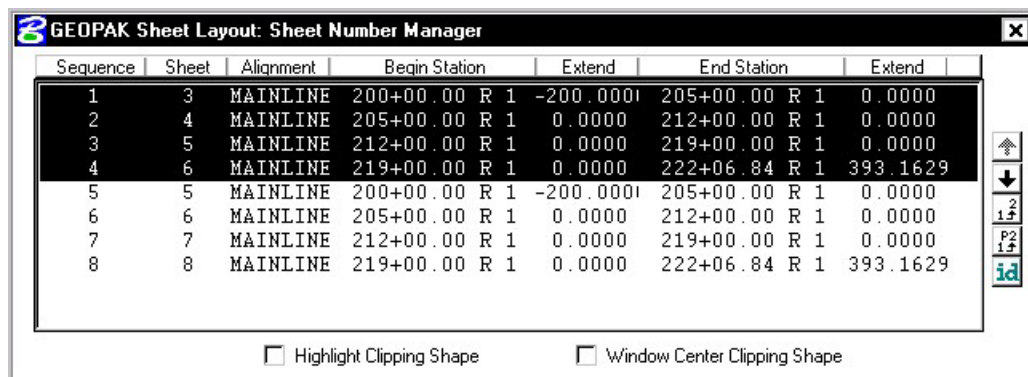
- Step 1. Click the **Plan & Profile Sheets** button from the **Road Project: 17682.prj** workflow dialog box. Access the **Plan** run.
- Step 2. Press the **Sheet Number Manager** icon.
- Step 3. Select Sequence Numbers **1 through 4** then press the **Edit Sheet Number** button.



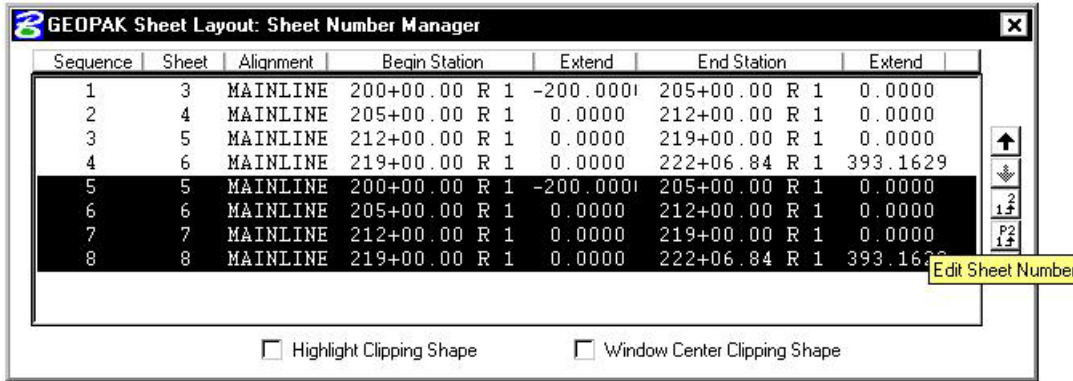
- Step 4. Populate the **Edit Sheet Number** dialog box as below then push **OK**.



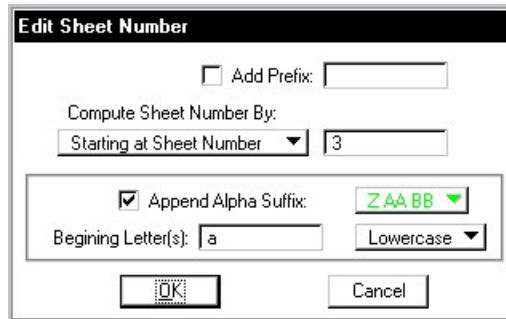
The **Sheet Number Manager** dialog box should appear as below.



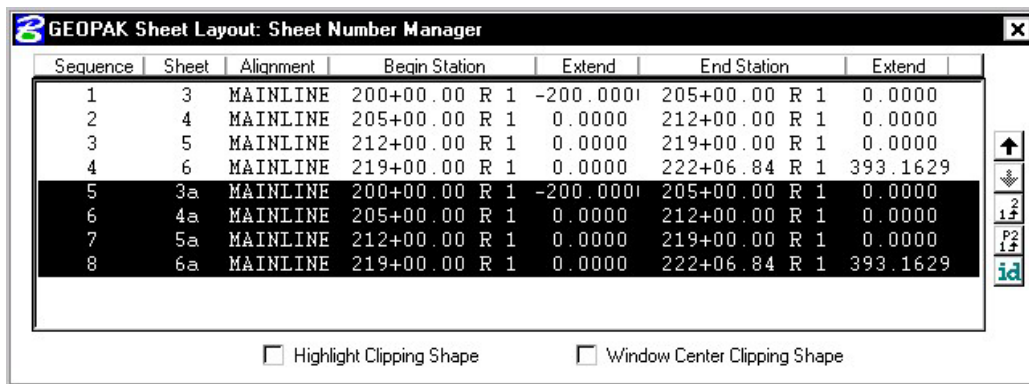
Step 5. Select Sequence Numbers **5 through 8** then press the **Edit Sheet Number** button.



Step 6. Populate the **Edit Sheet Number** dialog box as below then push **OK**.



The **Sheet Number Manager** dialog box should appear as below.



Step 7. Dismiss the **Sheet Number Manager** dialog box by pressing the **X** in the upper right hand corner. Press **Yes** when prompted to **Save Settings**.

18.6 Clip Plan Sheets

You should still be in the **Plan** run from the previous section.

Step 1. Press the **Clip Sheets** icon. Populate the **Clip Sheets** dialog box as below.

GEOPAK Sheet Layout: Clip Sheets

Output File

Directory:

Sheet Name Prefix:

Sheets per File:

Sheet Range Begin: End:

Labels and Annotations

Sheet Title:

Project Number:

Match Line:

Auxiliary Sheet Annotations



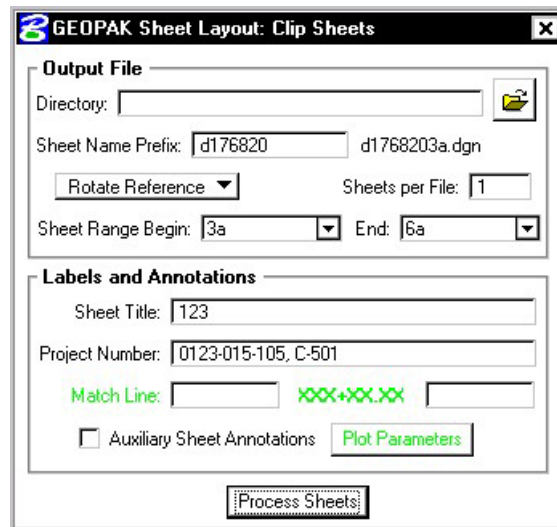
Note: The **Sheet Title** field will be used to place the **Route Number**.

- Step 2.** Click the **Process Sheets** button to create the plan sheets.
- Step 3.** Dismiss the **Clip Sheets** dialog box by pressing the **X** in the upper right hand corner.
- Step 4.** **Exit** the Plan and Profile Sheet dialog box and save your run.
- Step 5.** Open any of the newly created **Plan Sheet** files to see the resulting sheets.

18.7 Clip Profile Sheets

The following steps should be done in design file **d17682work.dgn**.

- Step 1.** Click the **Plan & Profile Sheets** button from the **Road Project: 17682.prj** workflow dialog box. Access the **Profile** run.
- Step 2.** Press the **Clip Sheets** icon. Populate the **Clip Sheets** dialog box as below.



Note: The **Sheet Title** field will be used to place the **Route Number**.

- Step 3.** Click the **Process Sheets** button to create the profile sheets.
- Step 4.** Dismiss the **Clip Sheets** dialog box by pressing the **X** in the upper right hand corner.
- Step 5.** **Exit** the Plan and Profile Sheet dialog box and save your run.
- Step 6.** Open any of the newly created **Profile Sheet** files to see the resulting sheets.
- Step 7.** **Exit** MicroStation.