

Proposed Cross Sections

12.1 Overview

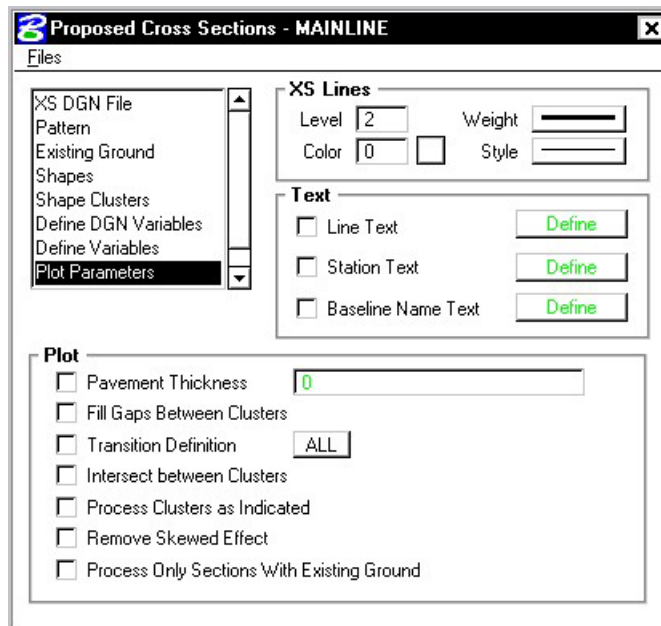
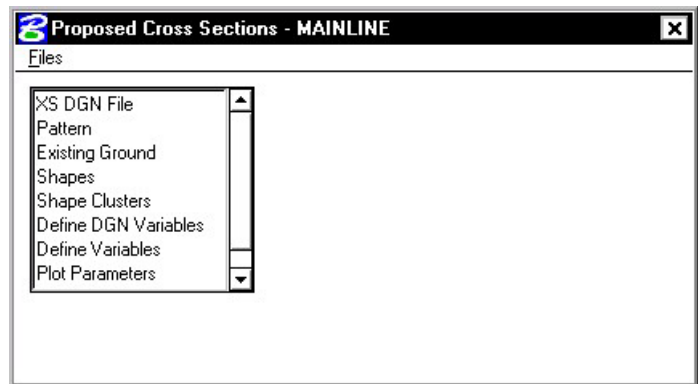
Objectives	Use Project Manager to create proposed cross-sections.
Project Manager	Proposed Cross Sections
Menu Bar Application	Only batch processing of Input file is supported.

When the **Proposed Cross Sections** button in the Road Project Manager is clicked, the Select Run dialog box is displayed. An existing run may be selected or new run may be started. When complete, click the **OK** button, which closes the Select Run dialog box and opens the proposed cross sections dialog box as depicted below.



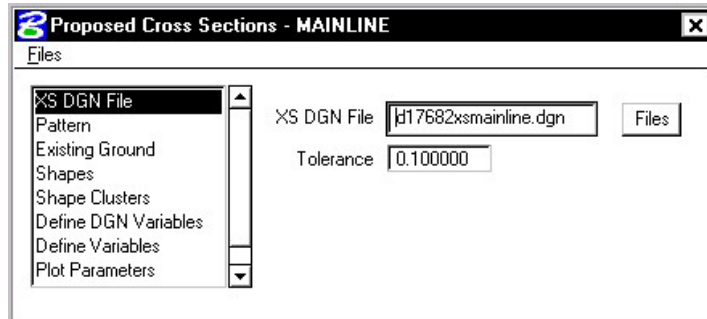
NOTE: This dialog box cannot be accessed outside of the Project Manager.

The left side of the dialog box contains the list of categories required to process proposed cross sections. When each category is selected, the dialog box changes to reflect the requirement of each category. For example, when Plot Parameters is selected, the dialog box changes to reflect the various plot parameters and text as depicted on the following diagram.



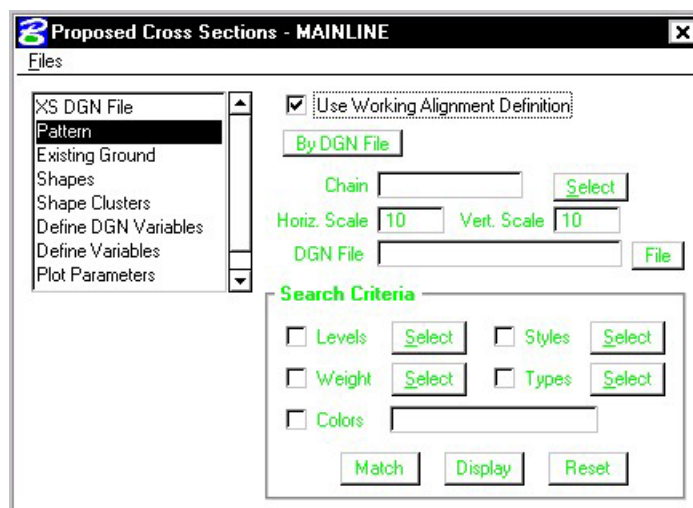
12.1.1 XS DGN File

When XS DGN File is selected from the list box, the dialog box dynamically changes as depicted below. XS DGN File defines the MicroStation file wherein the original ground cross sections are located as well as the location for the proposed cross sections.



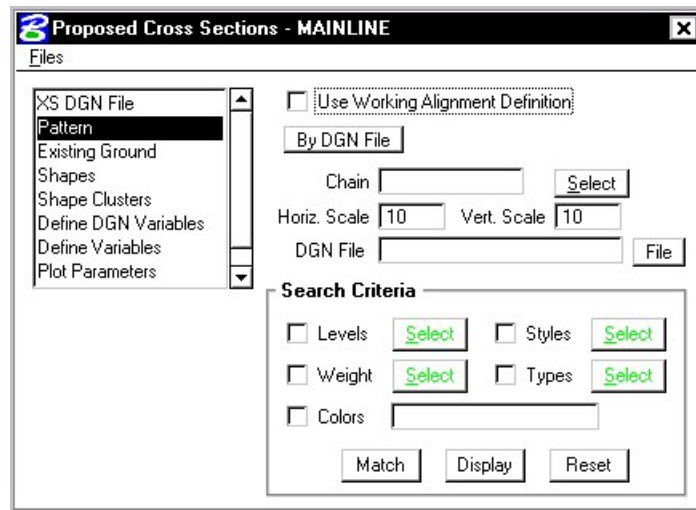
12.1.2 Pattern

When Pattern is selected, the dialog box changes as illustrated below.

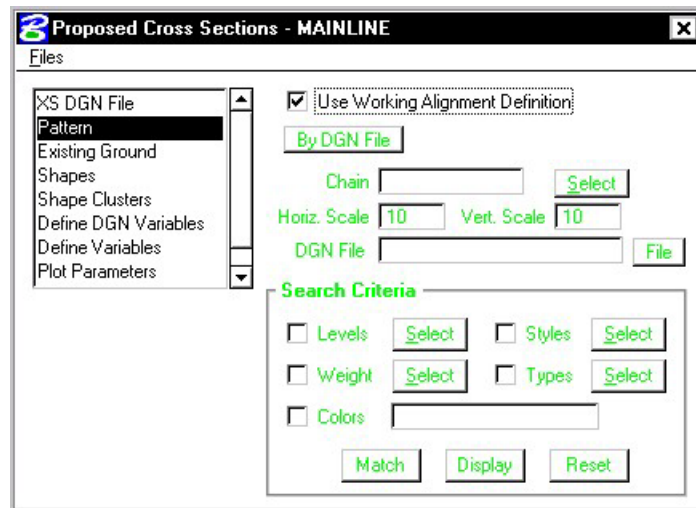


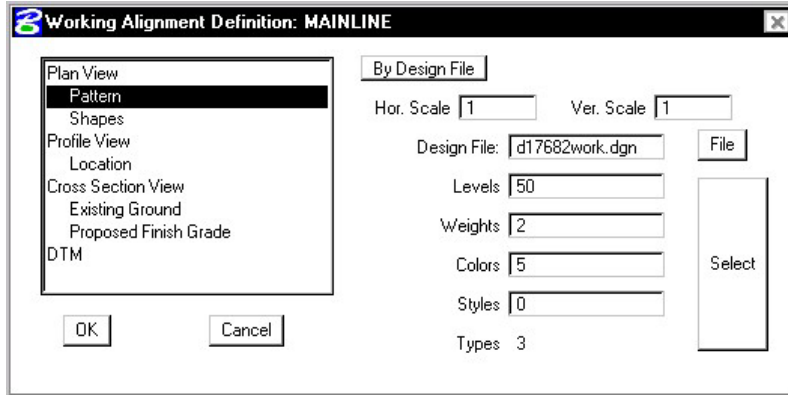
This dialog box defines the type of Pattern Lines used on a project – By DGN or By Station – in addition to other parameters specific to each format.

Three dialog boxes (Pattern, Existing Ground, and Shapes) support a toggle to **Use Working Alignment Definition**. For example, in the Pattern dialog box, if the toggle is not active, the user must supply all pattern information.

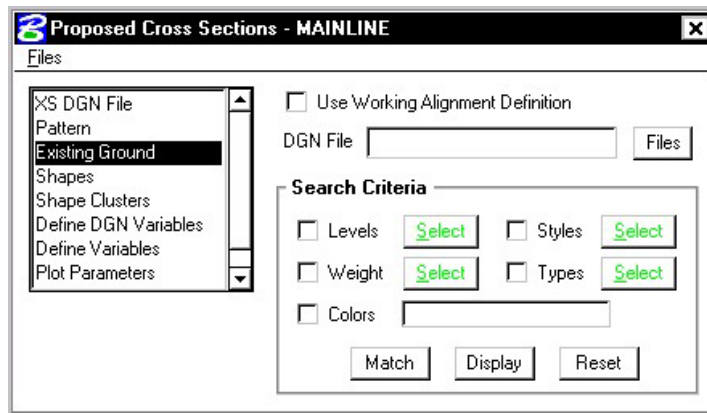


However, if the toggle is active when one of these three categories is selected, the data information part of the dialog box is ghosted and the required information is utilized from the current working alignment definitions. If the toggle is activated, and the required information is not stored within the current working alignment, an Alert message is displayed.



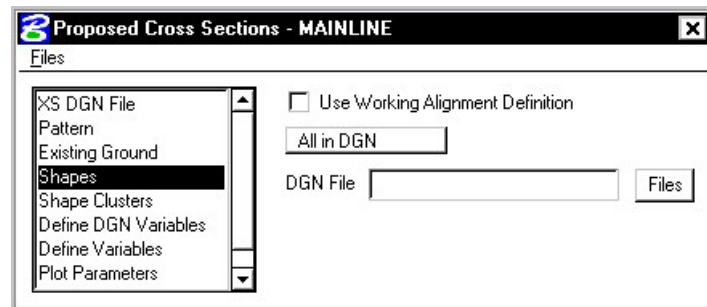


12.1.3 Existing Ground



When the **Existing Ground** category is selected, the dialog box will appear as shown above. In this dialog box the user can select the name of the file that contains the existing ground in addition to the symbology of the existing ground.

12.1.4 Shapes

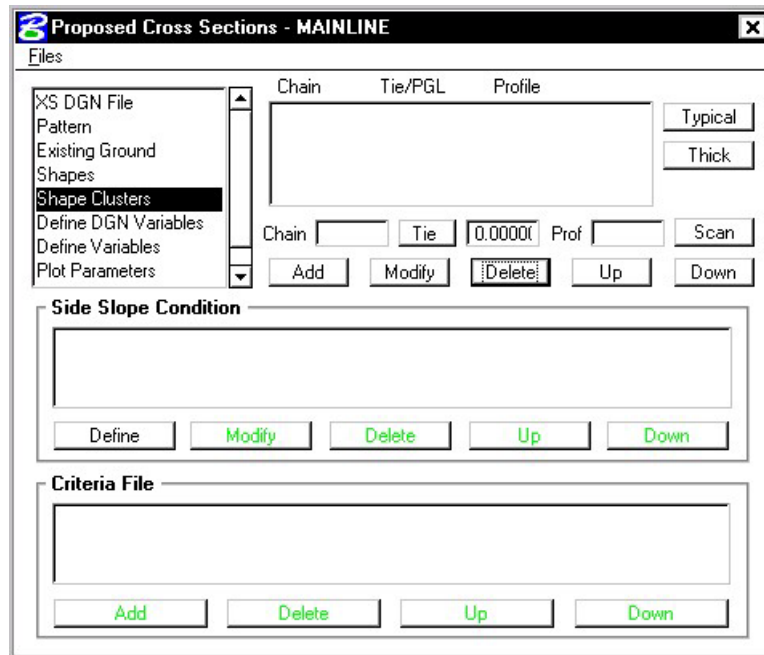


Three Shape definition options are supported:

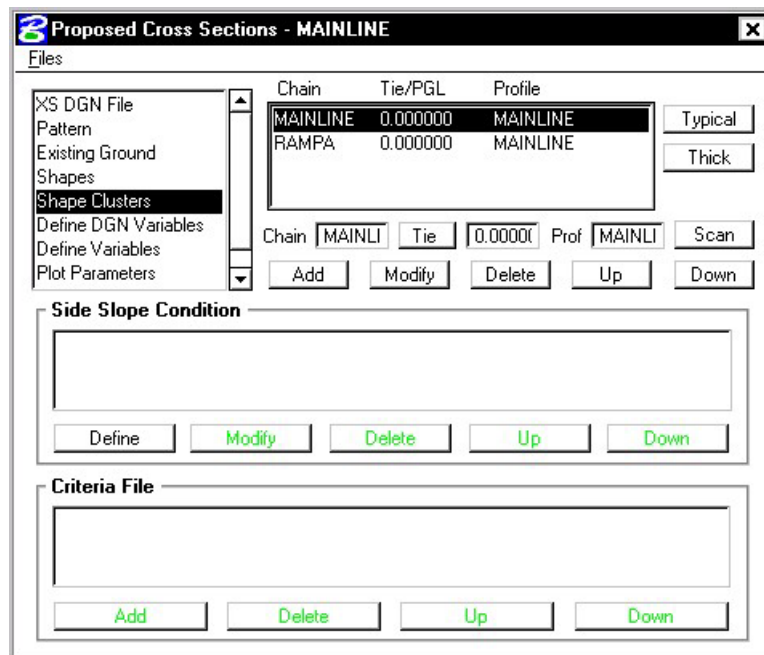
- All in DGN** All shape elements within the specified file are utilized.
- By Search Criteria** Only those shapes that match the specified search parameters are utilized.
- Shapeless** No shapes are utilized, hence, there is no field for a shapes file name or files button. This option will be used with the first exercise to produce existing shoulders and pavement on the existing cross sections.

12.1.5 Shape Clusters

When the Shape Clusters parameter is selected, the dialog box dynamically changes as depicted below (there should not be any definitions within the dialog box upon the initial invoking of this parameter):

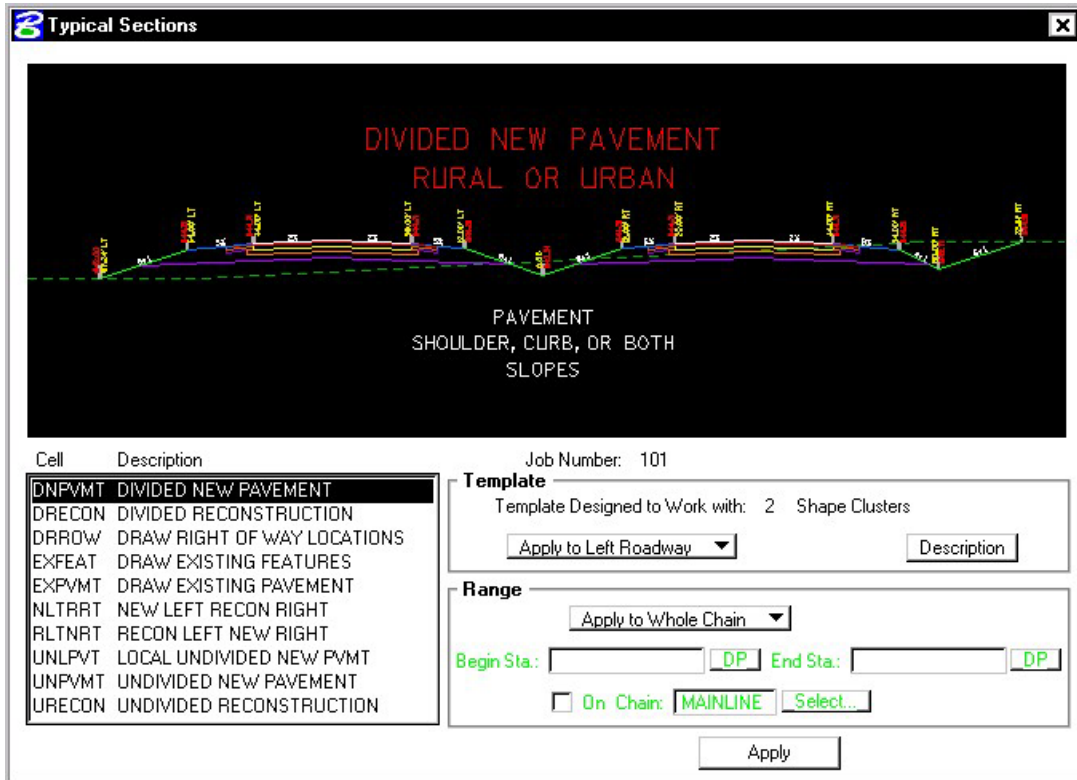


The user may **Add**, **Delete**, or **Modify** any specified shape cluster. When the **Scan** button is clicked, GEOPAK scans the design file and search criteria specified in the Shapes dialog box and lists all matching clusters. In the instance of shapeless criteria, the user must define each cluster by utilizing the **Select** button or typing in the **Chain**, **Tie/PGL** and **Profile** associated with this shape; then click the **Add** button.

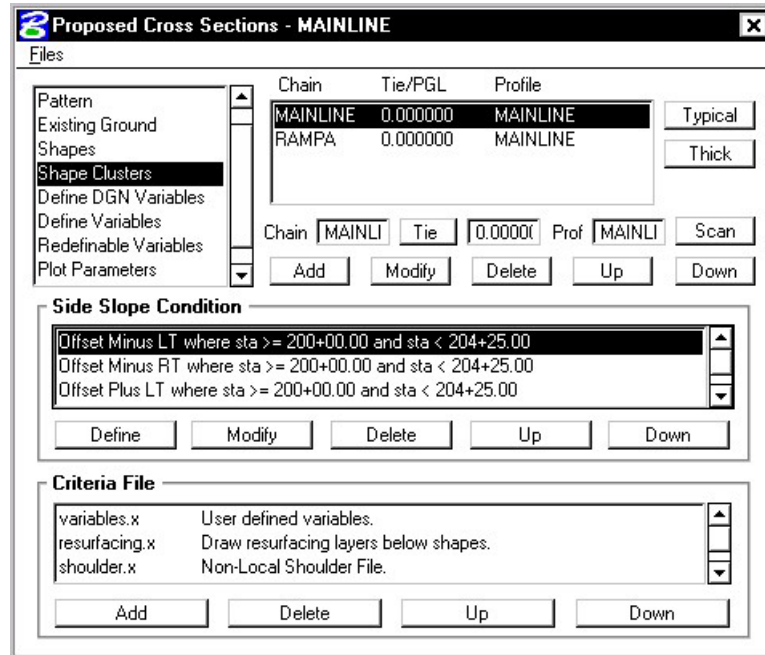


Note the button labeled **Typical**. This application enables the designer to relate specific criteria files from a standardized library to specific typical sections, thereby foregoing the need to pick and choose which criteria files they need. They simply select the typical section(s) for their project and the criteria files are retrieved for them automatically from the library.

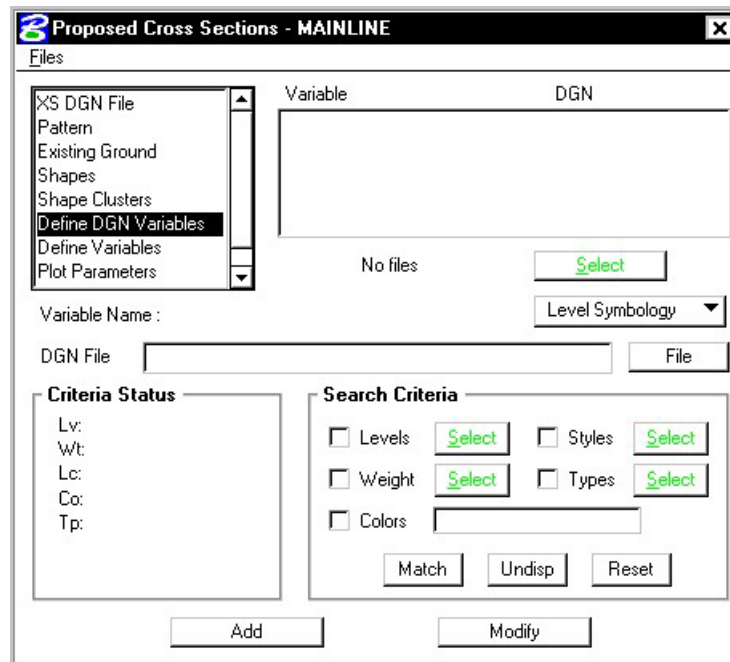
When the **Typical** button is pressed, the **Typical Section Generator** dialog box appears as depicted below.



The user must simply select the typical section from the left, then press **Apply**. For a divided roadway with a left and right Profile Grade Line, the user would apply the selected typical once to the left roadway and then once again to the right roadway. You can also apply the typical to the entire length of the alignment or only a portion of the alignment by changing the **Apply to Whole Chain** toggle to **Apply to Station Range** and specifying a beginning and ending station for the typical.



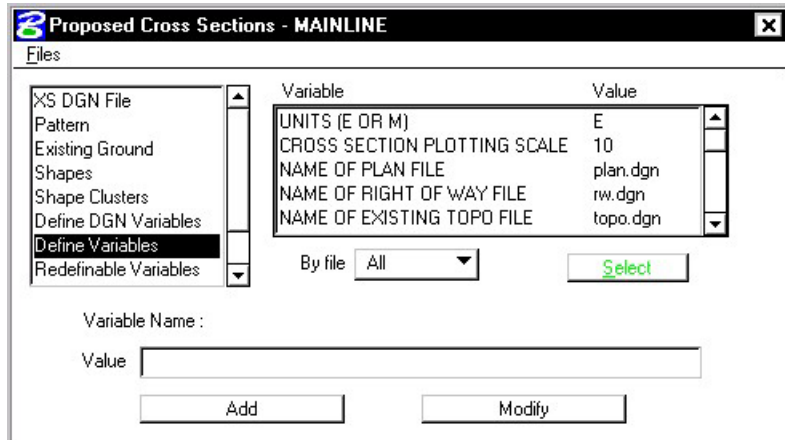
12.1.6 Define DGN Variables



The **Define DGN Variables** option allows the user to define how to locate MicroStation elements used by the criteria files. Define DGN Variables can be determined from the element symbology, or

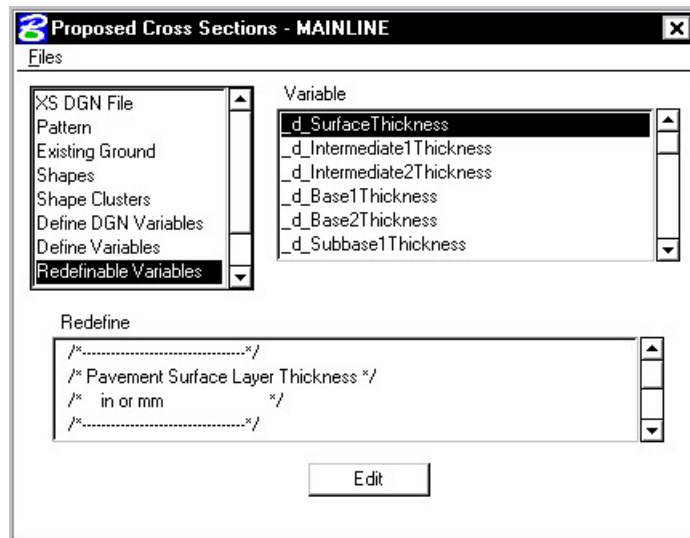
from the symbology and attributes assigned in the D&C Manager database. Variables that are previously defined in the criteria will show up in the list. If the **Select** button is unghosted, variables remain undefined and must be defined before processing the sections. Click **Select** to see a list of undefined variables, assign a value, then click **Add**.

12.1.7 Define Variables



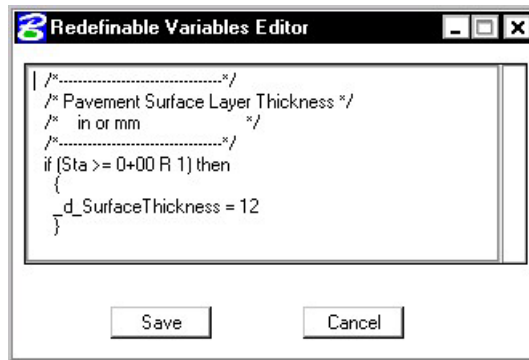
Define Variables enable the user to enter job specific values for certain variables. (i.e. pavement thickness, ditch width, backslope, etc.) The user can select the variable from the list, then enter the new value and click the **Modify** button. The values of these variables are constant for all of the cross sections within a specific run.

12.1.8 Redefinable Variables

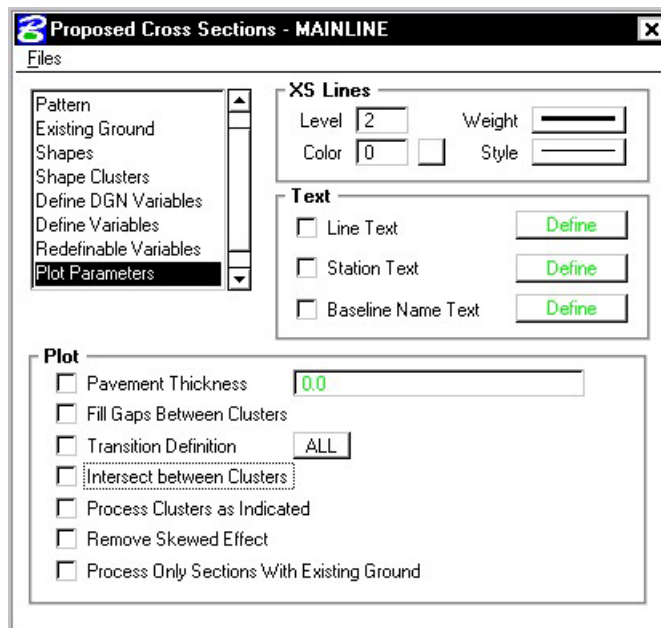


Redefinable Variables are variables that are made available to the designer for those features of the design that may need to vary from project to project or over the course of a single project. This category will not appear until a typical has been selected that utilizes redefinable variables. For each variable name highlighted in the **Variable** list box, the corresponding description and value will be displayed in the **Redefine** list box.

To modify the value of a variable, first highlight the name of the variable, then click **Edit**. This will open the **Redefinable Variables Editor** window. Note that this window is resizable.



12.1.9 Plot Parameters



Plot Parameters enables the user to determine how the data from the superelevation shapes are going to appear. **XS Lines** determine the symbology of the pavement surface. **Text** plots various pieces of text relating to the cross section. The elevation of the PGL of each shape cluster is automatically plotted. Enable the **Line Text** toggle to define this symbology for the PGL text. The Plot group box enables the user to control different aspects relating to the cross sections and criteria files as detailed below.

Pavement Thickness draws the bottom of shaped pavement for all clusters. If the **Thick** button was utilized in the shape clusters dialog box, this should be disabled.

Fill Gaps Between Clusters draws a line between two shape clusters if the criteria does not fill between them.

Transition Definition defines the use of parabolic superelevation transitions.

Intersect Between Clusters extends or trims elements in a median to create a finished, clean appearance.

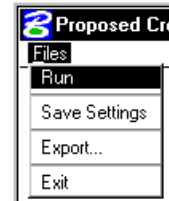
Process Clusters as Indicated forces the criteria to process the clusters as they are listed in the Shape Clusters dialog box. If this option is turned off, the clusters are processed left to right.

Remove Skew Effect forces GEOPAK to correct itself back to the pattern line if a skewed element is encountered in the processing of the criteria files.

Process Only Sections With Existing Ground - If only one group (color) is indicated in the input file for the existing ground in each run, the program loads into memory only the ground lines of the specified color, and processes only those sections. The time reduction may vary depending on the specific conditions of the job and type of machine.

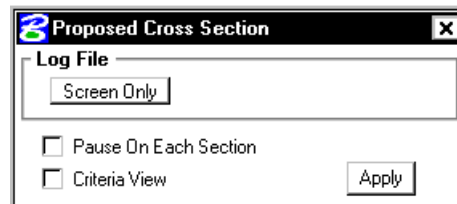
12.2 Files

Under Files, the options are Run, Save Settings, Export... and Exit. To process the cross sections, click the **Run** button, which invokes the Process Cross Section dialog box. Save Settings simply saves the current settings to the run. When the **File > Export** option is selected, the user may save the dialog box information in an ASCII input file for review or subsequent processing. The **File > Exit** option enables the user to exit the Proposed Cross Sections dialog box. The software also prompts the user with an Alert box if the settings should be saved before exiting. Clicking the **Yes** button saves the current dialog box settings, **No** does not save the settings, but both buttons exit to the Project Manager.



12.3 Processing

When **File > Run** is chosen, the dialog box below appears.



The output can be displayed on the **Screen Only**, or written to a **Log File** and displayed to the screen. The **Pause On Each Section** option enables the user to view each section as it is drawn. **Criteria View** displays each step in the criteria file. This is primarily for debugging purposes.

12.4 Criteria Files

One of the most powerful and flexible features of GEOPAK is the use of criteria in generating proposed cross sections. Within criteria, design conditions can be evaluated and complicated design decisions executed in response to these design conditions. The flexibility of criteria allows the designer to make the design as basic or as complex as the project requires. Numerous baselines can interrelate as ditches and medians are drawn between roadways and ramps. Sophisticated drainage details can also be drawn with criteria. The list is endless.

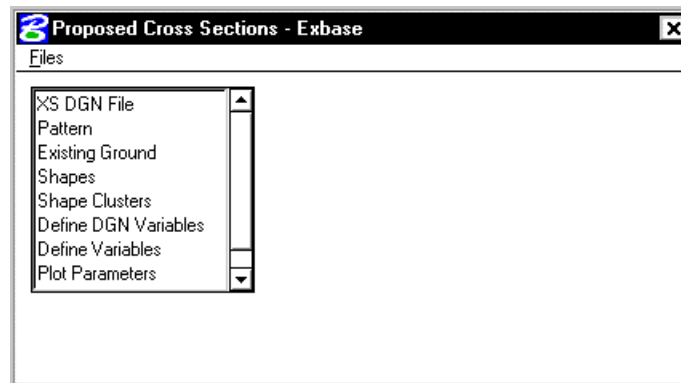
Cross section criteria are used to draw cross section features outside of the mosaic of superelevation shapes typically representing pavement. Operationally, the software constructs the cross section features derived from the mosaic of shapes first. Then, the software constructs the remaining portions of the cross section through the application of criteria emanating out from the outer edges of the mosaic of shapes.

LAB 12: Proposed Cross Sections

12.1 Existing Pavement

In this first section, a new run will be created and used to draw the existing pavement onto the cross sections.

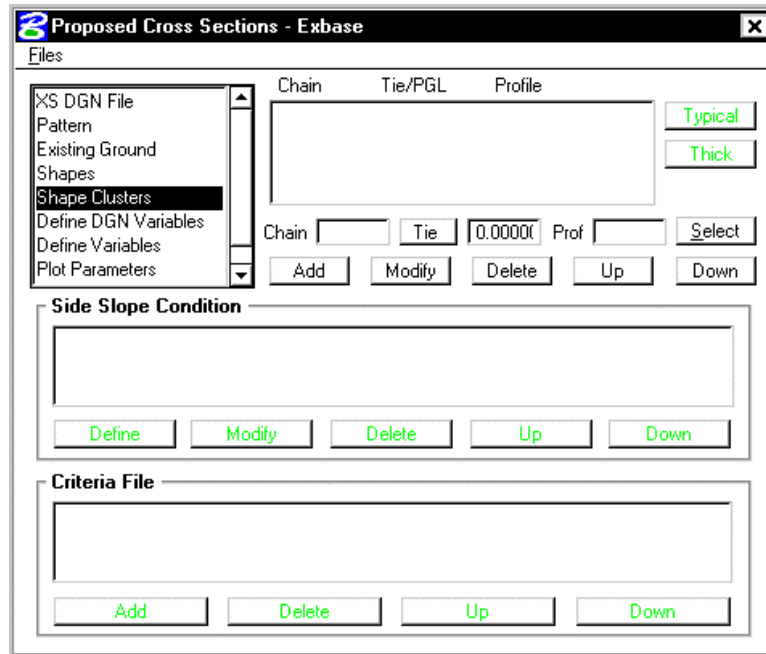
- Step 1.** Execute **C:\data\geo\VDOT\road1\LAB12.EXE**.
- Step 2.** Open the MicroStation file **c:\data\geo\VDOT\road1\d17682xsmainline.dgn**
- Step 3.** Open **Project Manager**. It should automatically access the Road workflow dialog box since we “remembered” the options in Exercise 2.
- Step 4.** Choose **Proposed Cross Sections** from the Project Manager dialog box and create a run called **Exbase**. Then double-click **Exbase** and the following dialog box will appear.



- Step 5.** Complete the following items in the dialog box.

XS DGN File	This filename should be defined as d17682xsmainline.dgn
Pattern	Use Working Alignment Definition
Existing Ground	Use Working Alignment Definition
Shapes	Set the Shape Option to Shapeless.

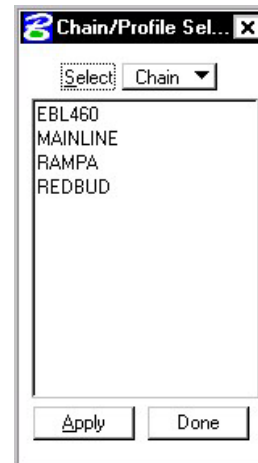
Step 6. Next, select the **Shape Clusters** category to invoke the following dialog box.



First, we will define the **Chain**, **Tie** and **Profile** for the shapes.

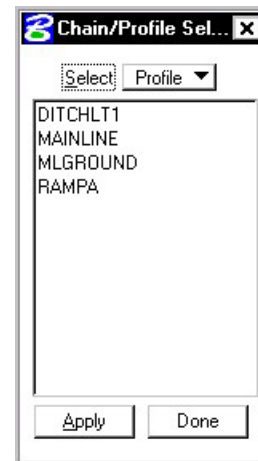
Step 7. Click the **Select** button to invoke the following dialog box.

Step 8. For the **Chain** option, highlight the chain **MAINLINE** and click **Apply**.

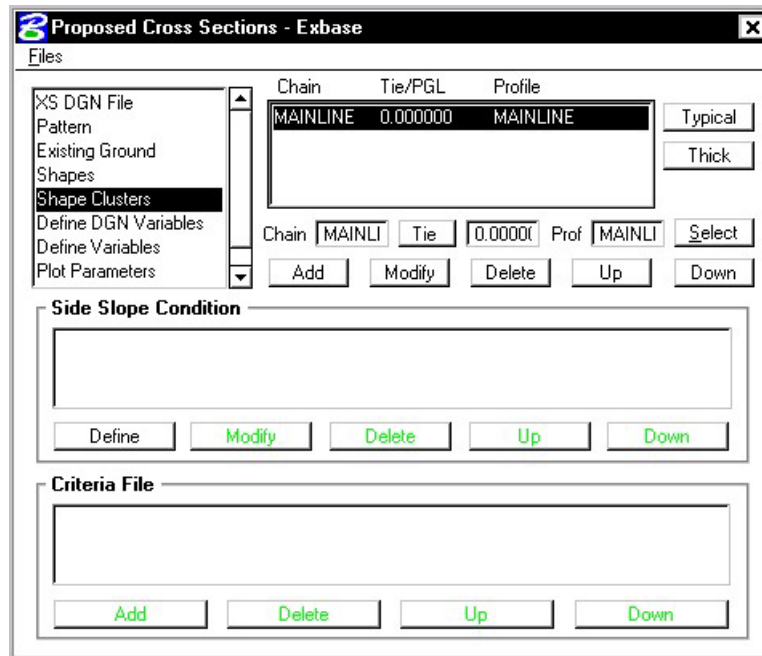


Step 9. Change the option to **Profile** and select the profile **MAINLINE** and click **Apply**.

When the chain and profile have been selected, click the **Done** button.



Step 10. Next, provide a Tie distance of 0 in the Tie field and click the Add button to include this shape cluster in the list box as shown below:

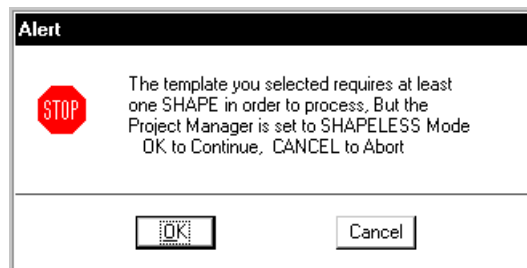


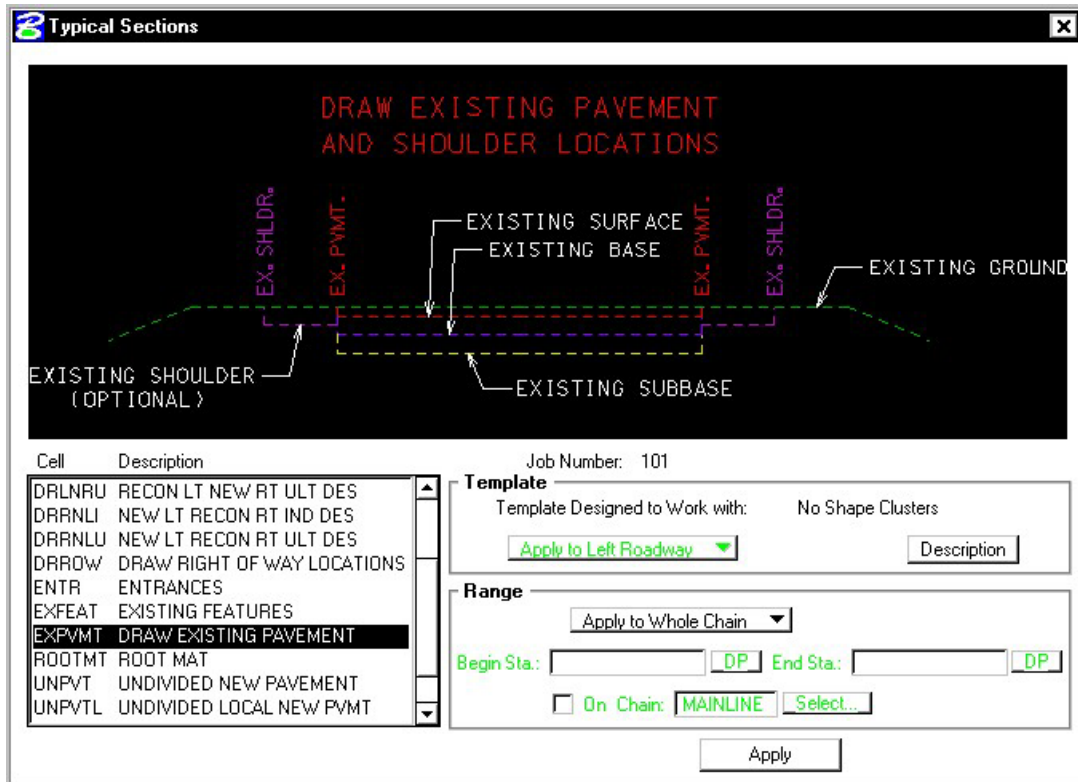
Step 11. Highlight the shape cluster that was just defined in the list box and click the **Typical** button.



Note: The Typical button will not be available until a shape cluster has been selected from the list box.

If the following dialog box appears, click **OK**.





Step 12. Select Typical **EXPVMT**. This typical will be used to draw the existing pavement for the length of the project.

Step 13. Click **Description**. This will open WordPad to show a complete description of what the typical will draw, all variables and their definition, in addition to any special notes or considerations.

After reviewing the description file, dismiss/exit the description file.

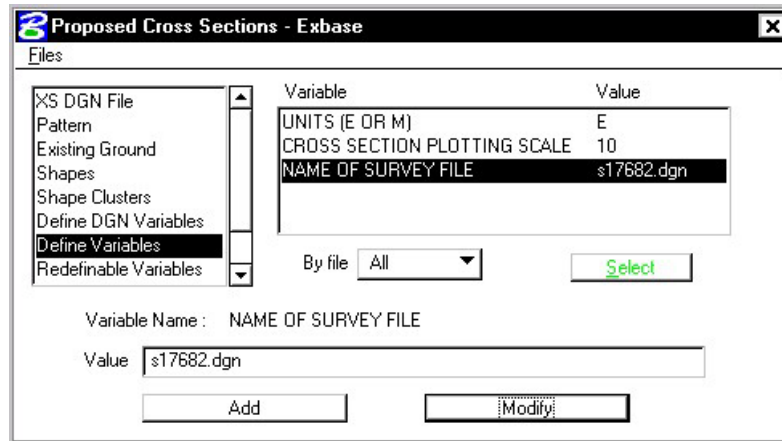
Click **APPLY**.

Step 14. Next we will need to define variables found in this criteria file.

Click the **Define Variables** category. Modify the **NAME OF SURVEY FILE** variable as shown in the dialog box below.

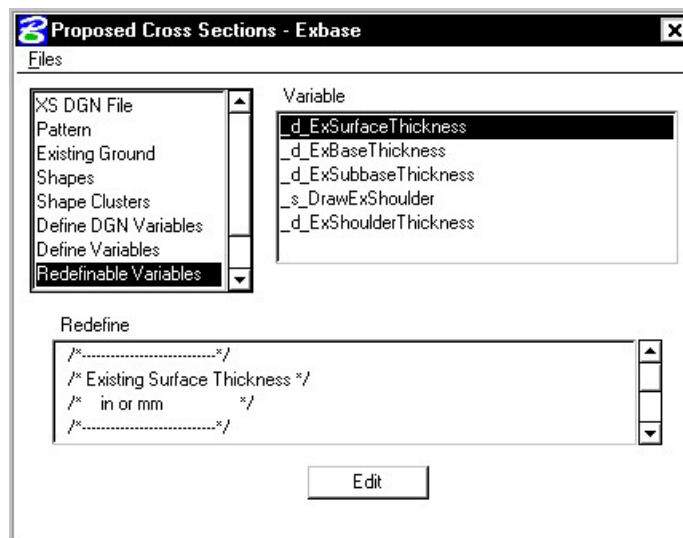
Highlight the Variable you wish to change.

Change the name in the **Value** field and press **Modify**.

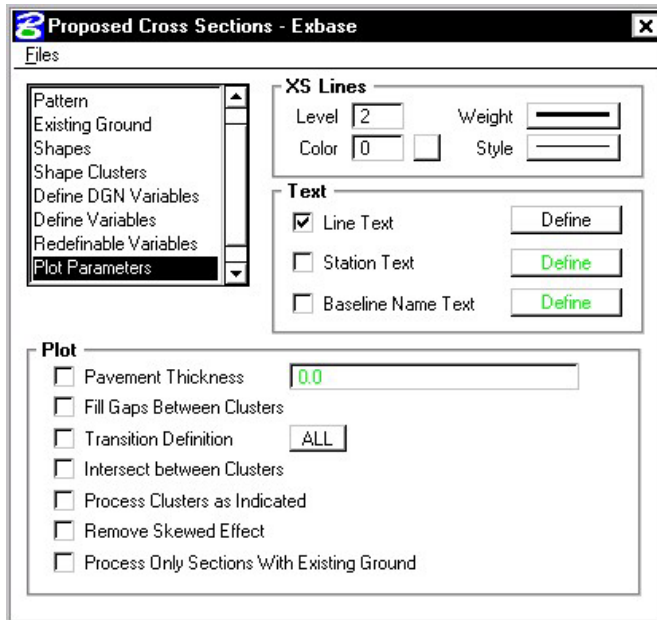


NOTE: Although there is an option on the dialog for Define DGN Variables, this will never be used.

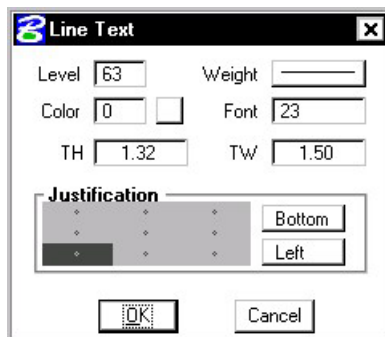
Step 15. Select the **Redefinable Variables** category. Review the values for each variable.



Step 16. Select the **Plot Parameters** category and set it as shown below (**weight = 5**).



Step 17. Press the Define button beside the Line Text toggle to access the following dialog box:

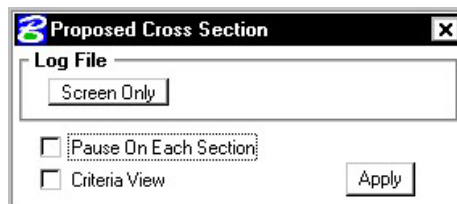


Fill out the dialog box as shown above then push **OK**.

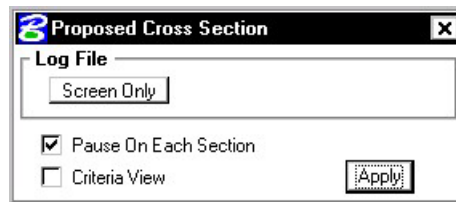
At this point we are ready to process the existing pavement for the chain MAINLINE.

Step 18. From the Proposed Cross Sections dialog box, select **Files > Save Settings**, then **Files > Run**.

The following dialog box is invoked where you may define where you want to see the computed cross section information, in an output file or on the screen only.



- Step 19.** Select **Screen Only** and activate the **Pause on Each Section** toggle to view the first design section once it has been drawn. The dialog should appear as below. Click **Apply**.



NOTE: When errors occur, change the Screen Only to Log File, then click **Apply** to generate the log file. Use the GEOPAK Editor to open the log file to determine the problem



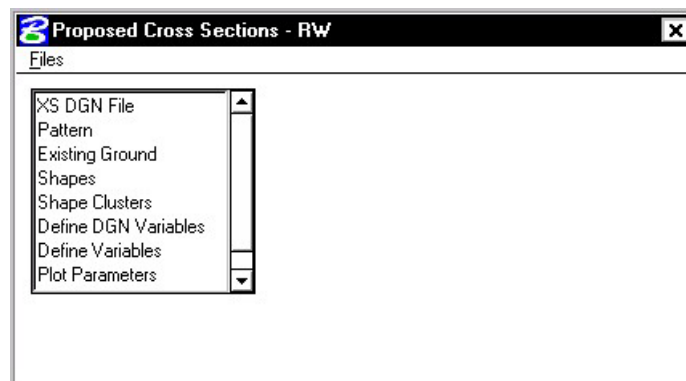
The error usually occurs at the end of the file. However, the error may be in the line(s) prior the error message.

- Step 20.** When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.
- Step 21.** Close the Proposed Cross Sections dialog box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.
- When prompted to Save Settings, answer **Yes**.
- Step 22.** Use Cross Section Navigator to review the existing base as drawn.

12.2 Right of Way and Easements

In this next section, a new run will be created and used to label the Right of Way and Easements on the cross sections.

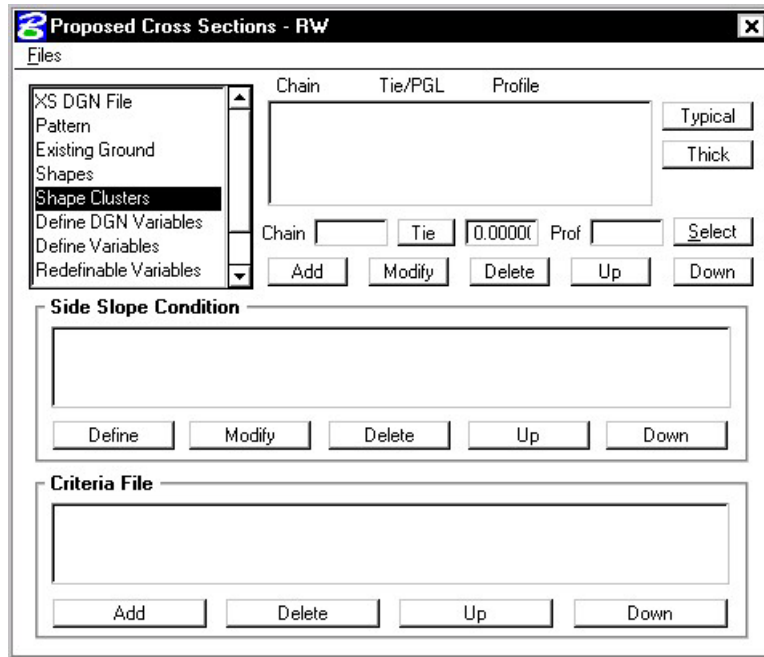
- Step 1.** Choose **Proposed Cross Sections** from the Project Manager dialog box and create a run called **RW**. Then double-click **RW** and the following dialog box will appear.



Step 2. As before, complete the following items in the dialog box.

- XS DGN File** This filename should be defined as d17682xsmainline.dgn
- Pattern** Use Working Alignment Definition
- Existing Ground** Use Working Alignment Definition
- Shapes** Set the Shape Option to Shapeless.

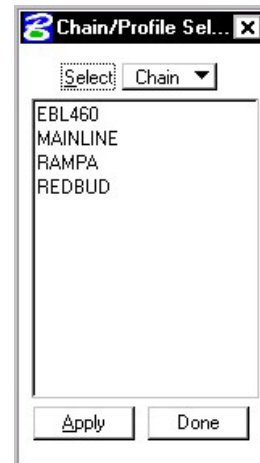
Step 3. Next, select the **Shape Clusters** category to invoke the following dialog box.



First, we will define the **Chain**, **Tie** and **Profile** for the shapes.

Step 4. Click the **Select** button to invoke the following dialog box.

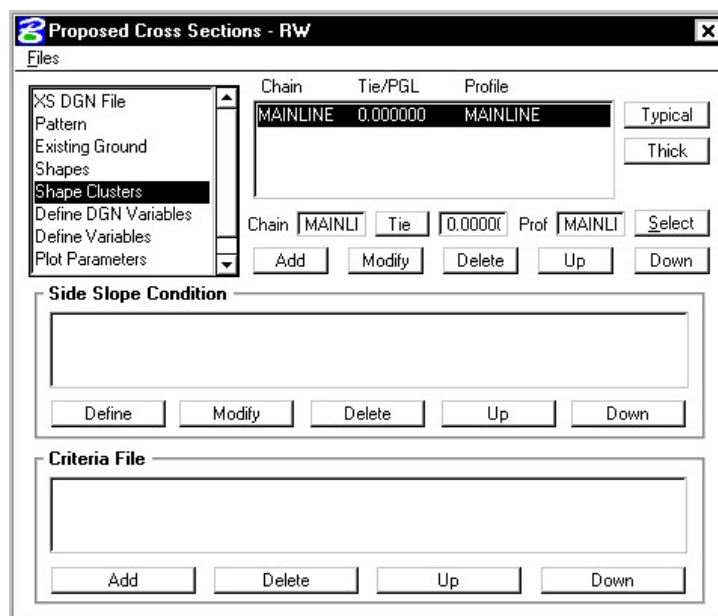
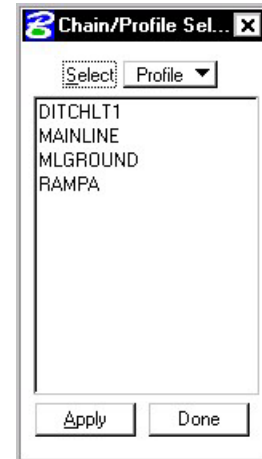
Step 5. For the **Chain** option, highlight the chain **MAINLINE** and click **Apply**.



Step 6. Change the option to **Profile** and select the profile **MAINLINE** and click **Apply**.

When the chain and profile have been selected, click the **Done** button.

Step 7. Next, provide a Tie distance of 0 in the Tie field and click the Add button to include this shape cluster in the list box as shown below:

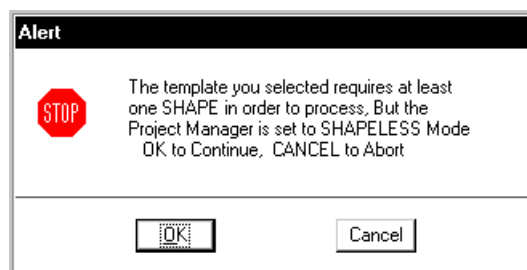


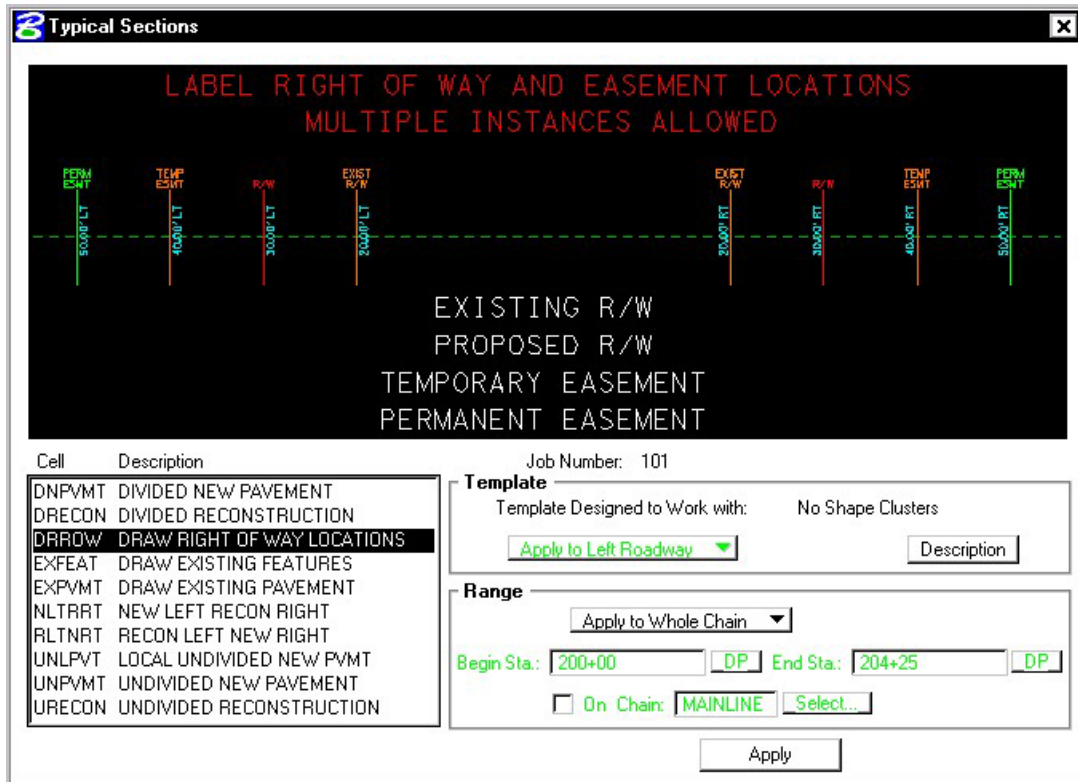
Step 8. Highlight the shape cluster that was just defined in the list box and click the **Typical** button.



Note: The Typical button will not be available until a shape cluster has been selected from the list box.

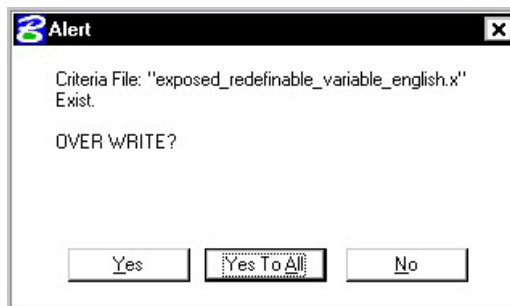
If the following dialog box appears, click **OK**.





Step 9. Select Typical **DRROW**. This typical will be used to label the right of way and easements for the length of the project.

Step 10. Press **Apply**. When you see the following dialog box, always press **Yes to All**.



Step 11. Next we will need to define variables found in this criteria file.

Click the **Define Variables** category.

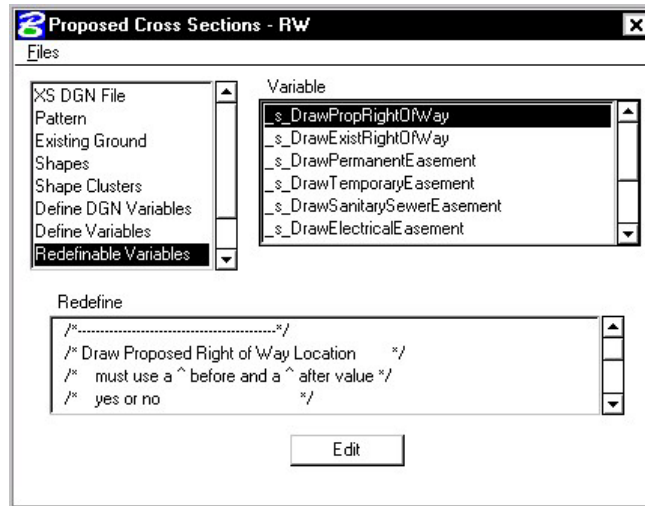
Modify the variables as shown in the table below:

Name of Proposed R/W File	d17682des.dgn
Name of Existing R/W File	s17682.dgn

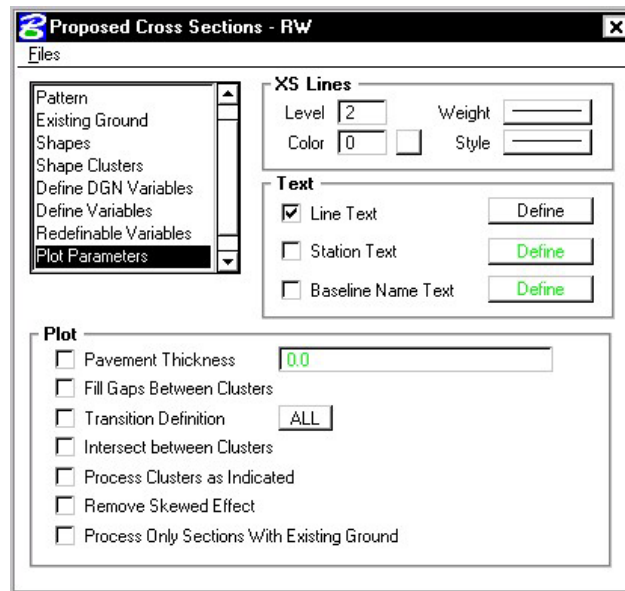


NOTE: Although there is an option on the dialog for Define DGN Variables, this will never be used.

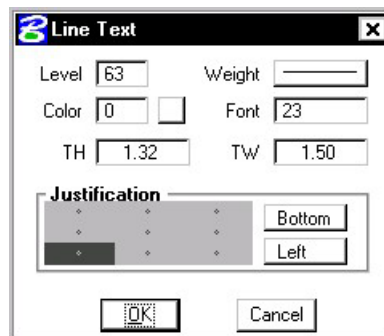
Step 12. Select the **Redefinable Variables** category. Review the values for each variable.



Step 13. Select the **Plot Parameters** category and set it as shown below (**weight = 5**).



Step 14. Press the Define button beside the Line Text toggle to access the following dialog box:

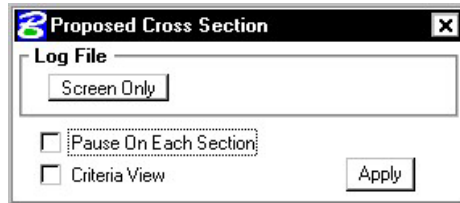


Fill out the dialog box as shown above then push **OK**.

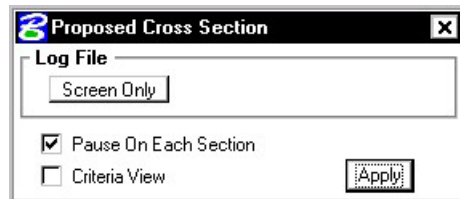
At this point we are ready to process the r/w and easements for the chain MAINLINE.

Step 15. From the Proposed Cross Sections dialog box, select **Files > Save Settings**, then **Files > Run**.

The following dialog box is invoked where you may define where you want to see the computed cross section information, in an output file or on the screen only.



Step 16. Select **Screen Only** and activate the **Pause on Each Section** toggle to view the first design section once it has been drawn. The dialog should appear as below. Click **Apply**.



Step 17. When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.

Step 18. Close the Proposed Cross Sections dialog box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.

When prompted to Save Settings, answer **Yes**.

Step 19. Use Cross Section Navigator to review the right of way and easements as drawn.

Step 20. Before moving on to the next section, lock all the elements in the design file by using the Microstation pulldowns

Edit > Select All

Edit > Lock

12.3 Proposed Cross Sections (Sta. 200+00 to Sta. 204+25)

In this set of steps, a new run will be created and used to generate the proposed cross sections.

Step 1. Choose **Proposed Cross Sections** from the Project Manager dialog box and create a run called **ML1**. You may enter this station range in the description if you wish.

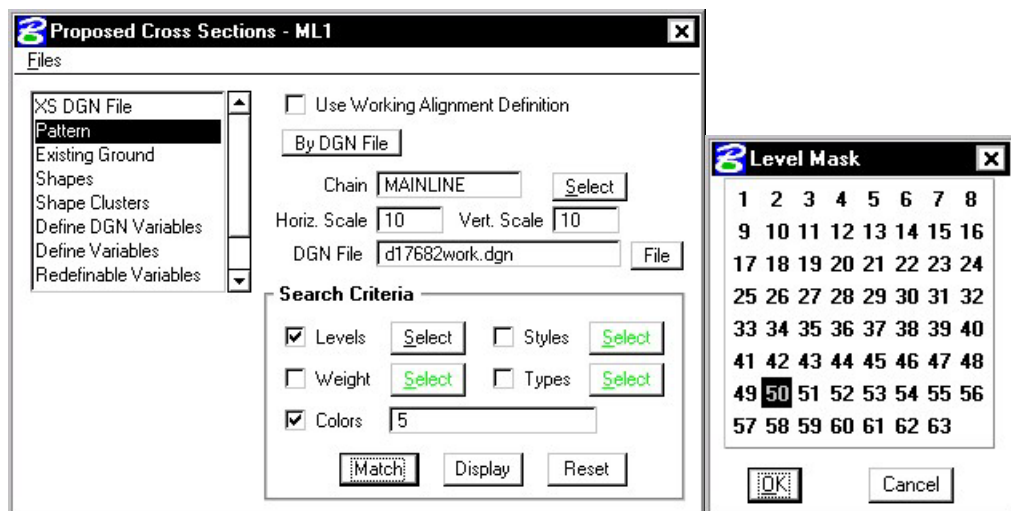
Step 2. Complete the following items in the dialog box.

XS DGN File This filename should be automatically defined as **d17682xsmainline.dgn**.

Pattern See dialog box below

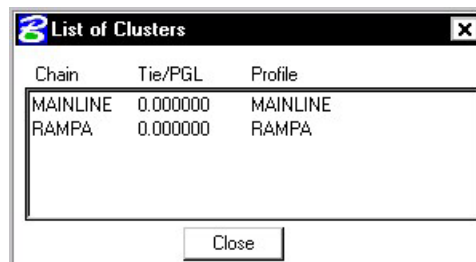
Existing Ground Use Working Alignment Definition

Shapes Use Working Alignment Definition



Step 3. Click **Shape Clusters** to define shape clusters, side slope conditions and criteria files.

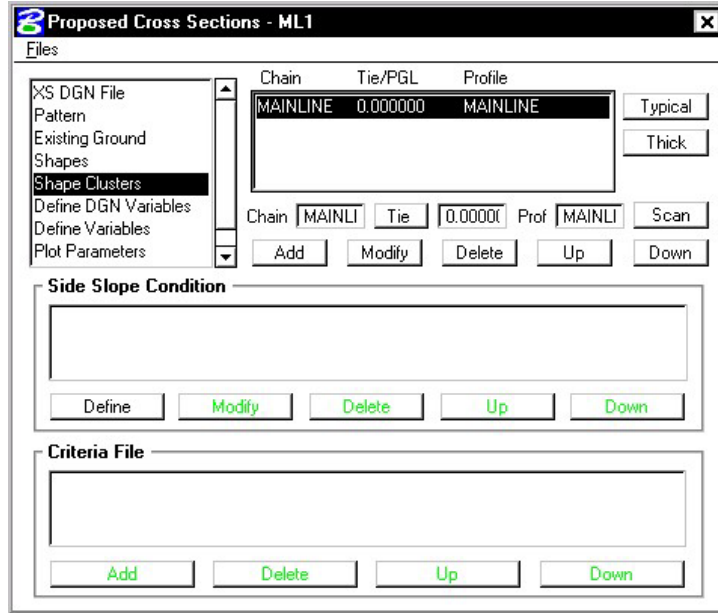
Step 4. Click the **Scan** button to have the software scan the **d17682work.dgn** file for all of the shape clusters.



Select Chain **MAINLINE**.

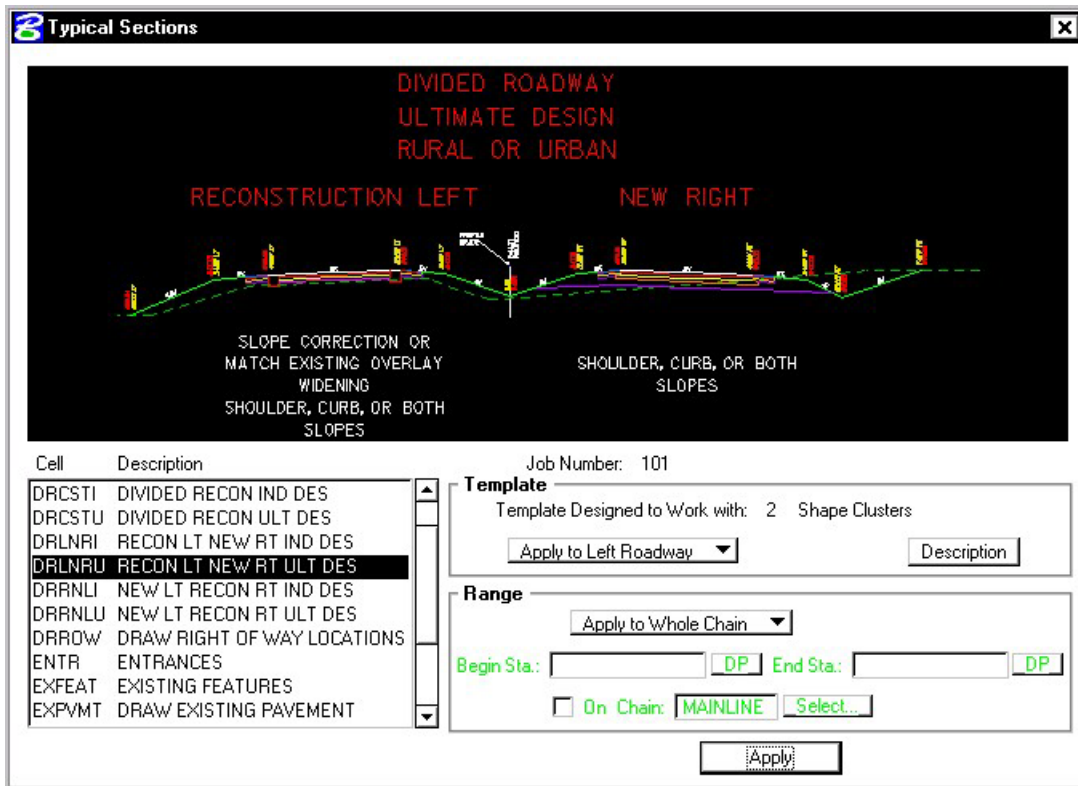
On the **Proposed Cross Sections dialog box**, click **Add** to add the this cluster to the shape cluster list box

Click **Close** to close the List of Clusters window.

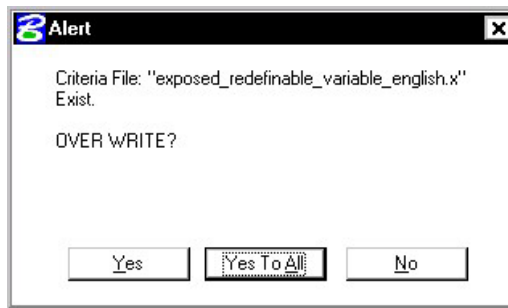


Step 5. Highlight the shape cluster option and click the **Typical** button.

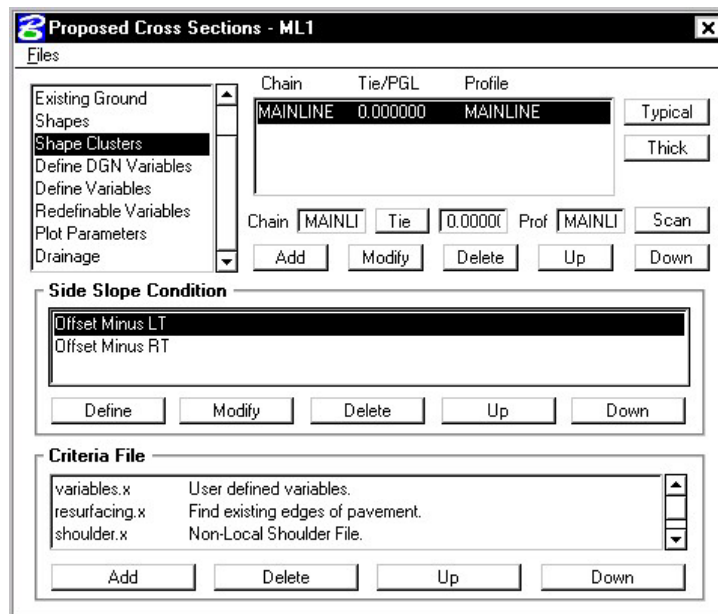
Step 6. Select the typical **DRLNRU**. Set the option in the **Template** window area to **Apply to Left Roadway**. Set the **Range** option to **Apply to Whole Chain**. Click **Apply**.



Click **Yes to All** when prompted to overwrite criteria files.

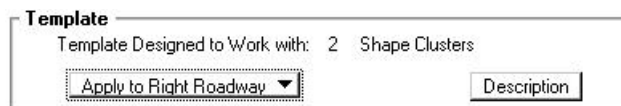


Step 7. Your dialog box should look like the following:

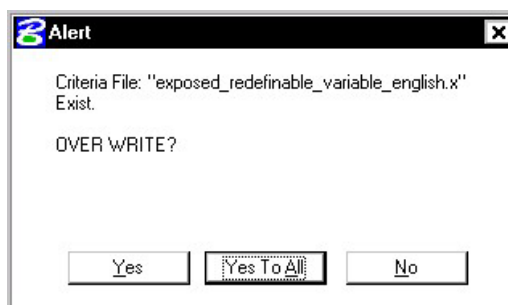


Step 8. With the shape cluster still highlighted, click the **Typical** button again.

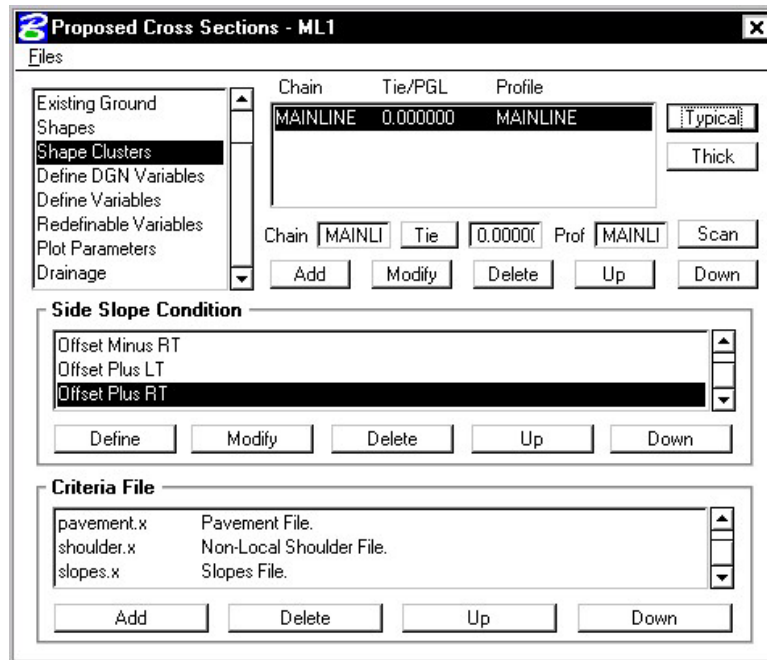
Step 9. Leave everything the same, but set the option in the **Template** window area to **Apply to Right Roadway**. Click **Apply**.



Click **Yes to All** when prompted to overwrite criteria files.



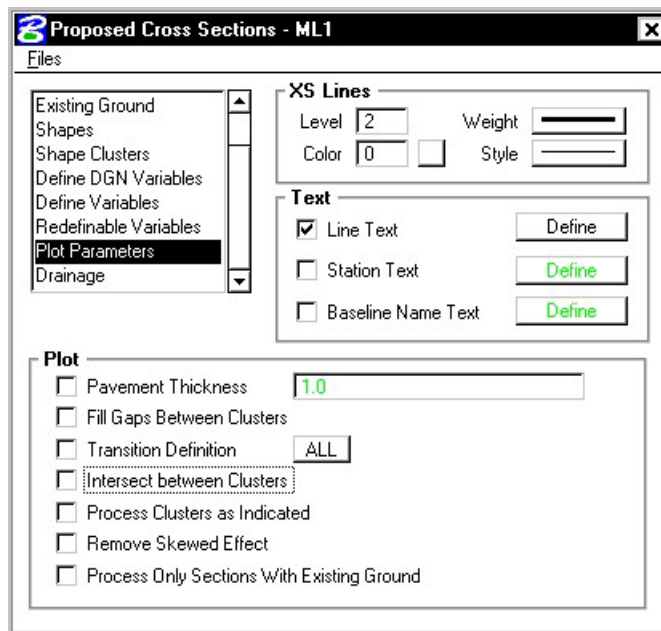
Step 10. Your dialog box should update with 2 additional Side Slope conditions:



Step 11. Select the **Define Variables** category. Modify the following variables as shown:

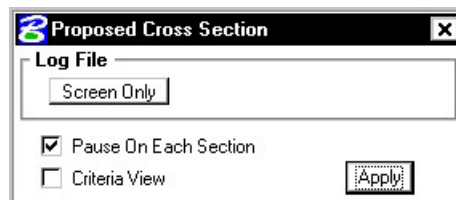
Name of Plan File	d17682des.dgn
Name of Profile File	d17682prof.dgn
Name of Proposed RW File	d17682des.dgn
Name of Existing RW File	s17682.dgn
Name of Survey File	s17682.dgn
Name of Working File	d17682work.dgn
Name of Cross-Section File	d17682xsmainline.dgn

Step 12. Select **Plot Parameters**. Set the **XS Lines** values as shown (**Weight=5**) and disable all options in the **Plot** section of the dialog box. Also set the Line Text to **Level = 63** as in the previous sections.



Step 13. Click **Files > Save Settings** then click **Files > Run**.

Select **Screen Only** and activate the **Pause on Each Section** toggle to view the first design section once it has been drawn. The dialog should appear as below. Click **Apply**.



Step 14. When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.

Step 15. Close the Proposed Cross Sections dialog box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.

When prompted to Save Settings, answer **Yes**.

Step 16. Use Cross Section Navigator to review the proposed cross sections as drawn.



Note: At this point the sections will not be correct because we ran them with the default values. We'll come back in subsequent sections and use our variables to modify our design.

Step 17. Before moving on to the next section, let's turn off certain levels to make our sections more readable.

Turn **OFF** the following levels:

- 51 Elevation Labels**
- 52 Offset Labels**
- 53 Existing Pavement Labels**
- 55 Warning Text Labels**
- 56 Feature Labels**

Step 18. File > Save Settings

12.4 Proposed Cross Sections (Sta. 204+50 to Sta. 220+00)

Step 1. Choose **Proposed Cross Sections** from the Project Manager dialog box and create a run called **ML2**. You may enter this station range in the description if you wish.

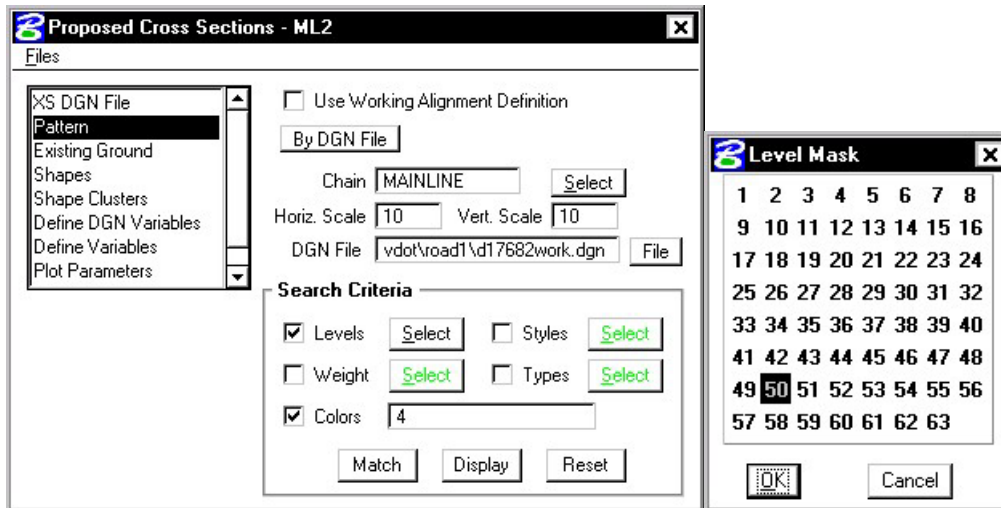
Step 2. Complete the following items in the dialog box.

XS DGN File This filename should be automatically defined as **d17682xsmainline.dgn**.

Pattern See dialog box below

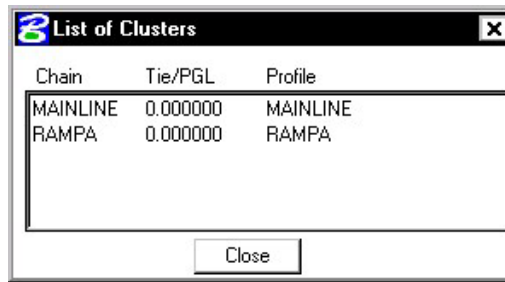
Existing Ground Use Working Alignment Definition

Shapes Use Working Alignment Definition



Step 3. Click **Shape Clusters** to define shape clusters, side slope conditions and criteria files.

Step 4. Click the **Scan** button to have the software scan the **d17682work.dgn** file for all of the shape clusters.



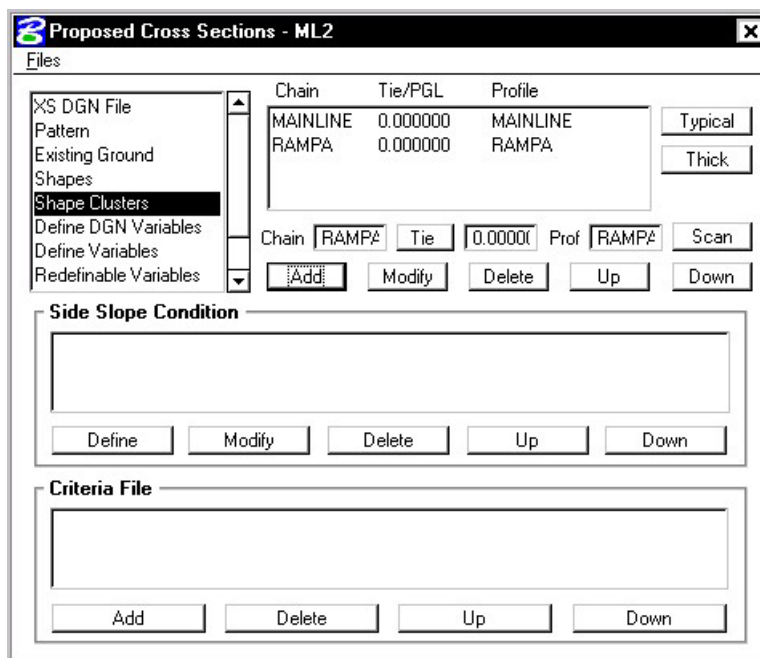
Select Chain **MAINLINE**.

On the **Proposed Cross Sections dialog box**, click **Add** to add the this cluster to the shape cluster list box

Next, Select Chain **RAMPA**.

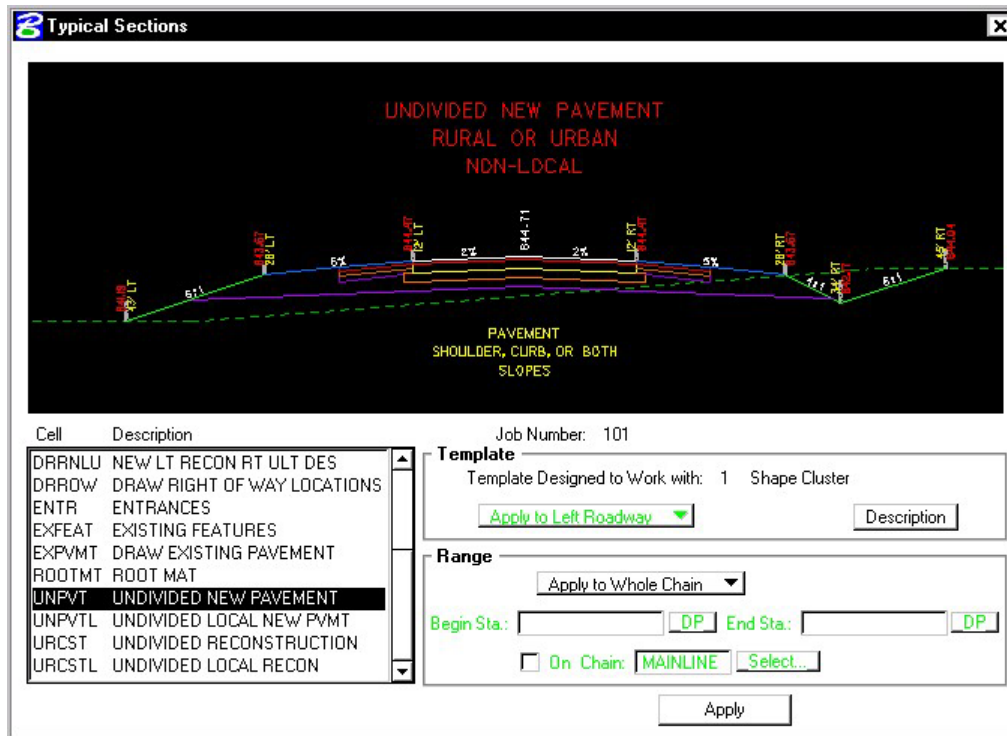
On the **Proposed Cross Sections dialog box**, click **Add** to add the this cluster to the shape cluster list box

Click **Close** to close the List of Clusters window.

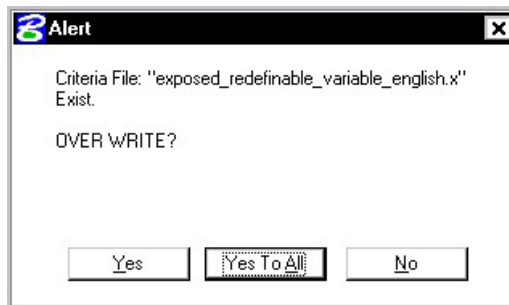


Step 5. Highlight the shape cluster entry for chain **MAINLINE** and click the **Typical** button.

- Step 6.** Select the typical **UNPVT**. Set the **Range** option to **Apply to Whole Chain**.
Click **Apply**.

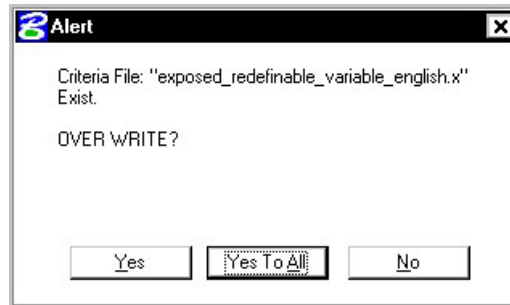


Click **Yes to All** when prompted to overwrite criteria files.



- Step 7.** Highlight the shape cluster entry for chain **RAMPA** and click the **Typical** button.

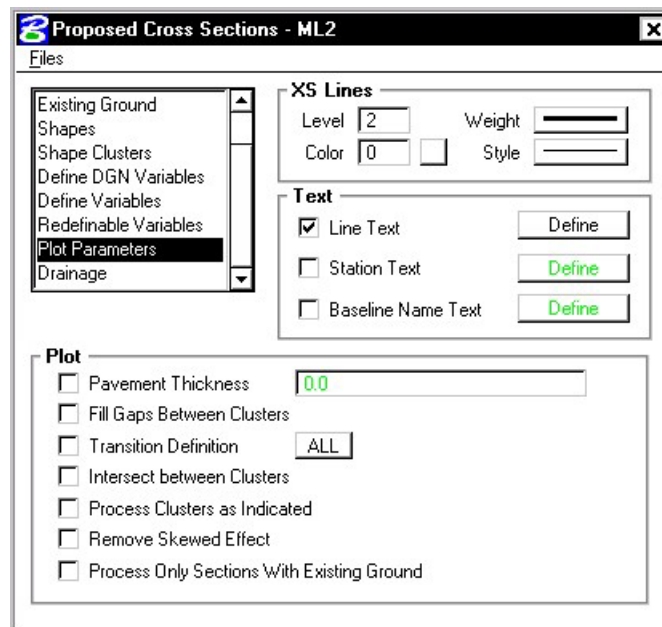
- Step 8.** Select the typical **UNPVT**. Set the **Range** option to **Apply to Whole Chain**.
Click **Apply**. Click **Yes to All** when prompted to overwrite criteria files.



- Step 9.** Select the **Define Variables** category. Modify the following variables as shown:

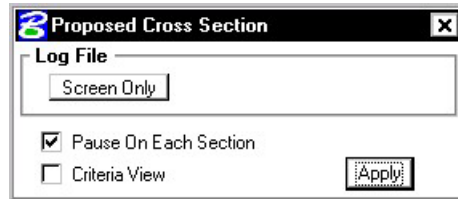
Name of Plan File	d17682des.dgn
Name of Profile File	d17682prof.dgn
Name of Proposed RW File	d17682des.dgn
Name of Existing RW File	s17682.dgn
Name of Survey File	s17682.dgn
Name of Working File	d17682work.dgn
Name of Cross-Section File	d17682xsmainline.dgn

- Step 10.** Select **Plot Parameters**. Set the **XS Lines** values as shown (**Weight=5**) and disable all options in the **Plot** section of the **dialog box**. Also set the Line Text to **Level = 63** as in the previous sections.



Step 11. Click **Files > Save Settings** then click **Files > Run**.

Select **Screen Only** and activate the **Pause on Each Section** toggle to view the first design section once it has been drawn. The dialog should appear as below. Click **Apply**.



Step 12. When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.

Step 13. Close the Proposed Cross Sections box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.

When prompted to **Save Settings**, answer **Yes**.

Step 14. Use Cross Section Navigator to review the proposed cross sections as drawn.

Step 15. Before moving on to the next section, delete all of the proposed xsections. We'll re-run them again in the next section. You can do this easily by doing the following:

Edit > Select All

Press the **Delete** icon.

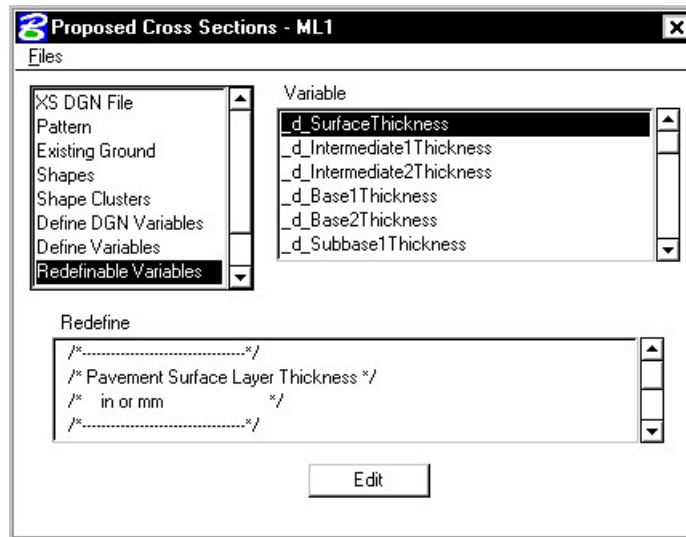
12.5 Variables

In this section we'll learn how to use our variables to modify the xsections.

12.5.1 Pavement Variables

Step 1. Choose **Proposed Cross Sections** from the Project Manager **dialog box** and access the previously created run called **ML1**.

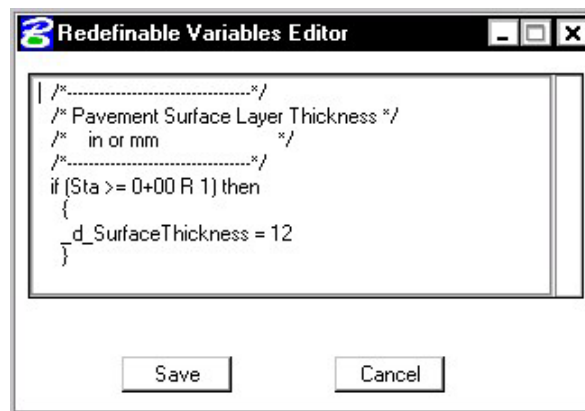
Step 2. Select the **Redefinable Variables** category to display all of the redefinable variables for the run.



Step 3. Let's change the variable **_d_SurfaceThickness** from **12** to **3**. In order to change a variable, follow these steps:

Highlight the variable **_d_SurfaceThickness**.

Click the **Edit** button to access the Redefinable Variable Editor.



Change the value of **_d_SurfaceThickness** to **3** and click **Save**.

Step 4. Modify these additional variables as shown:

_d_Intermediate1Thickness	3
_d_Base1Thickness	3
_d_Subbase1Thickness	6
_d_OverlaySurfaceThickness	3
_d_OverlayIntermediateThickness	3
_d_OverlayBaseThickness	3

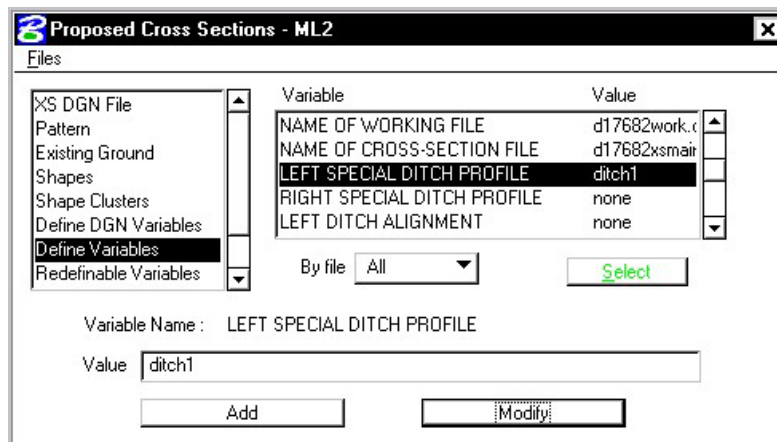
_d_MillingDepth	2.5
_d_WideningSurfaceThickness	3
_d_WideningBase1Thickness	3
_d_WideningSubbase1Thickness	12
_d_ShoulderSurfaceThickness	3
_s_ExtendSubbase1	1

- Step 5.** Click **Files > Save Settings** then click **Files > Run**.
- Step 6.** When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.
- Step 7.** Close the Proposed Cross Sections box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.
When prompted to **Save Settings**, answer **Yes**.
- Step 8.** Use Cross Section Navigator to review the proposed cross sections as drawn.

12.5.2 Slope Variables

12.5.2.1 Special Ditches

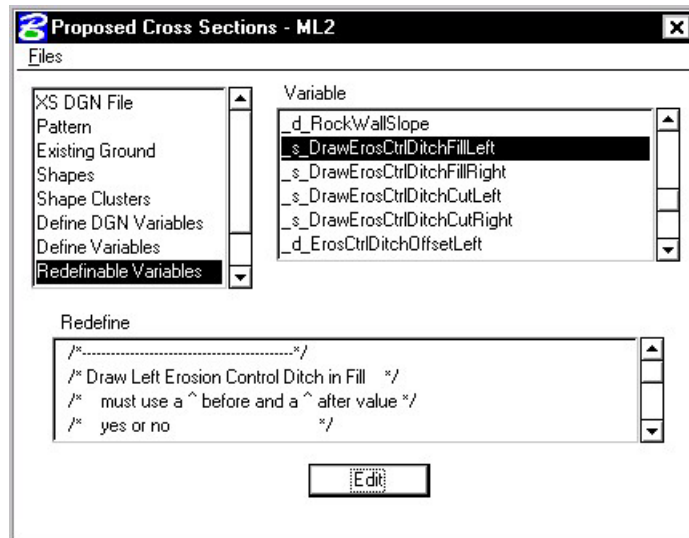
- Step 1.** Choose **Proposed Cross Sections** and access the previously created run called **ML2**.
- Step 2.** Select the **Define Variables** category and change the variable for **Left Special Ditch Profile** to “ditch1” as shown:



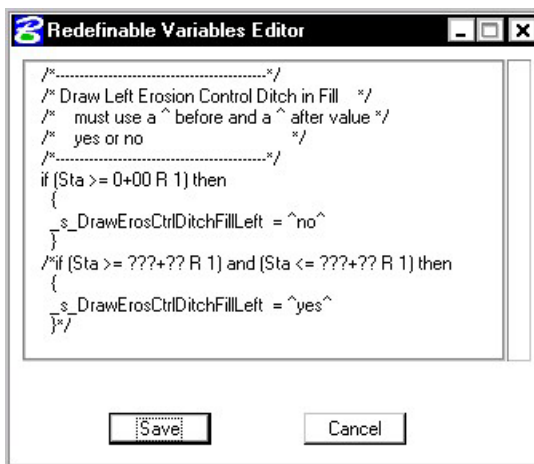
This is a special ditch profile that runs from Sta. 214+75 to Sta. 217+00.

12.5.2.2 Erosion Control Ditches & Berms

- Step 1.** Under the Redefinable Variables category, select `_s_DrawErosCtrlDitchFillLeft` as shown in the dialog box below.



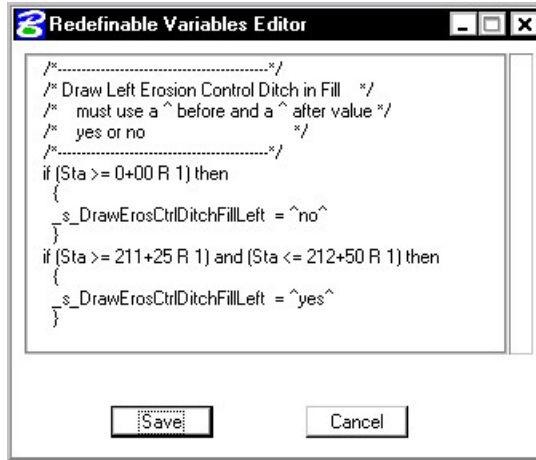
- Step 2.** Click the **Edit** button to access the Redefinable Variables Editor. The dialog box should appear as below.



Step 3. Change the station range as shown to specify a certain area where we want to draw an erosion control ditch.

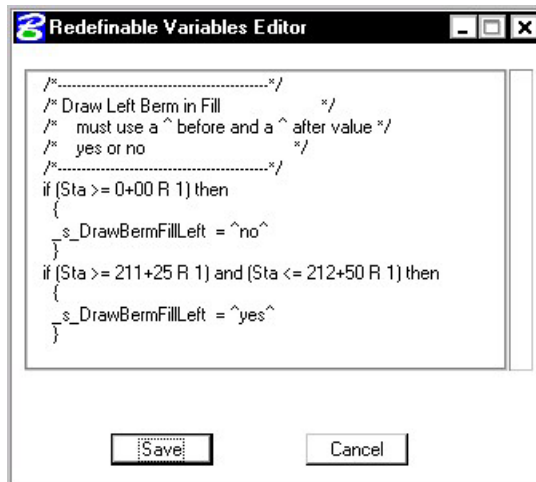
NOTE: Be sure to remove the comments (*/* */*) from around the command containing the new station range.

The dialog box should appear as below. Click **Save**.



Important: When you change a variable in the editor by specifying a station range, remember that you are responsible to make sure that any station to be processed has an assigned value for the variable.

Step 4. Make the same change to the variable **_s_DrawBermFillLeft** and click **Save**.

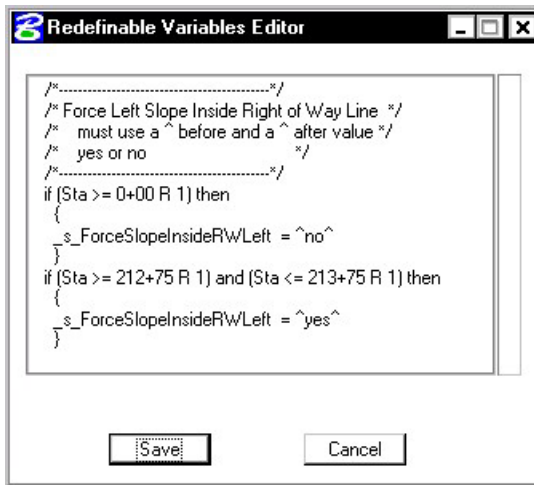


12.5.2.3 Force Slope Tie Inside RW

- Step 1.** Under the **Redefinable Variables** category, select **_s_ForceSlopeInsideRWLeft** and make the changes as shown in the **dialog box** below.

Force the cross sections to draw a front slope inside the Right Of Way on the left side from **Sta. 212+75** to **Sta. 213+75**.

NOTE: Be sure to remove the comments (*/* */*) from around the command containing the new station range.

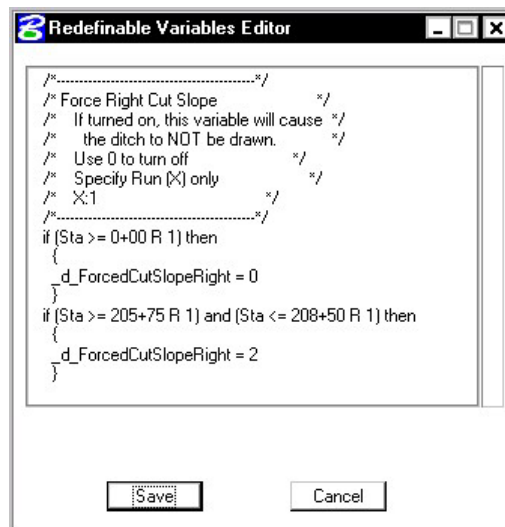


12.5.2.4 Force Cut and Fill Slopes

- Step 1.** Under the **Redefinable Variables** category, select **_d_ForcedCutSlopeRight**.

Force the cross sections to use a Cut slope of **2:1** on the right side from **Sta. 205+75** to **Sta. 208+50**.

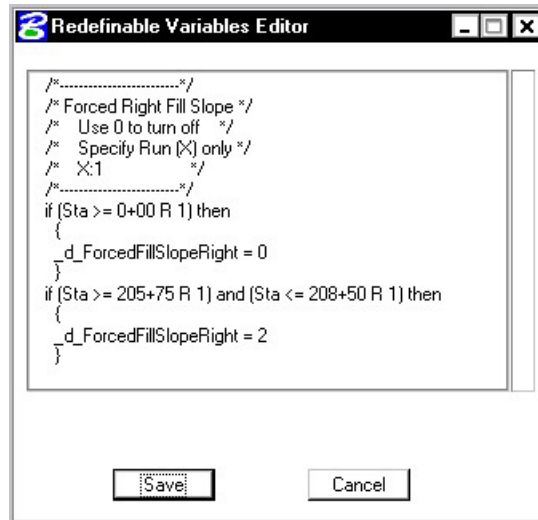
NOTE: Be sure to remove the comments (*/* */*) from around the command containing the new station range.



Step 2. Under the Redefinable Variables category, select **_d_ForcedFillSlopeRight**.

Force the cross sections to use a Fill slope of **2:1** on the right side from **Sta. 205+75** to **Sta. 208+50**.

NOTE: Be sure to remove the comments (**/* */**) from around the command containing the new station range.



Step 3. Click **Files > Save Settings** then click **Files > Run**.

Step 4. When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.

Step 5. Close the Proposed Cross Sections dialog box by using the “**X**” on the upper right of the dialog box or by using the **Files > Exit** pulldown.

When prompted to **Save Settings**, answer **Yes**.

Step 6. Use Cross Section Navigator to review the station ranges denoted for the variables to make sure the changes were picked up.

12.6 Rootmat

Step 1. Open the MicroStation file **c:\data\geo\VDOT\road1\d17682work.dgn**.

Step 2. Turn off levels 50 and 63. Review the design file and notice the elements on level 13. These elements were drawn via D&C Manager and reflect the following:

Road Design > Ground Cover > WLFWR (Wood Left Field Right)

Road Design > Ground Cover > WOOD (Woodlands Throughout)

Road Design > Ground Cover > FLWR (Field Left Wood Right)

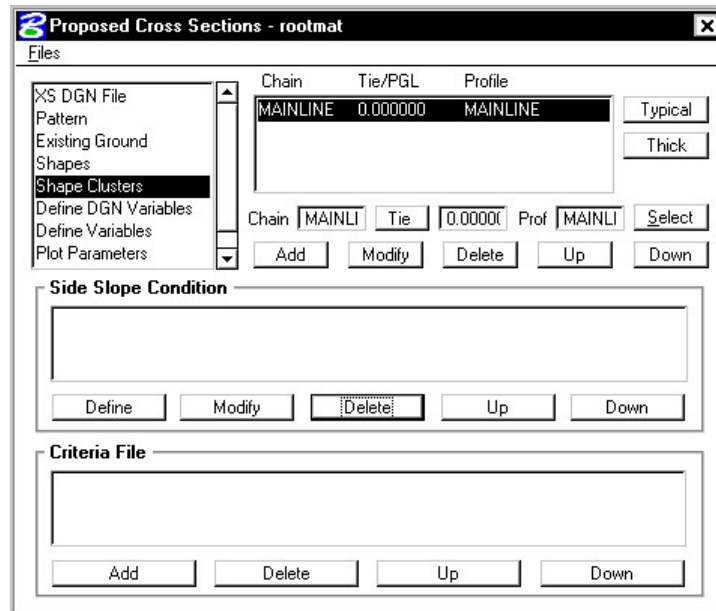
Step 3. Open the MicroStation file **c:\data\geo\VDOT\road1\d17682xsmainline.dgn**.

Step 4. Choose **Proposed Cross Sections** from the Project Manager dialog box and create a new run called **ROOTMAT**.

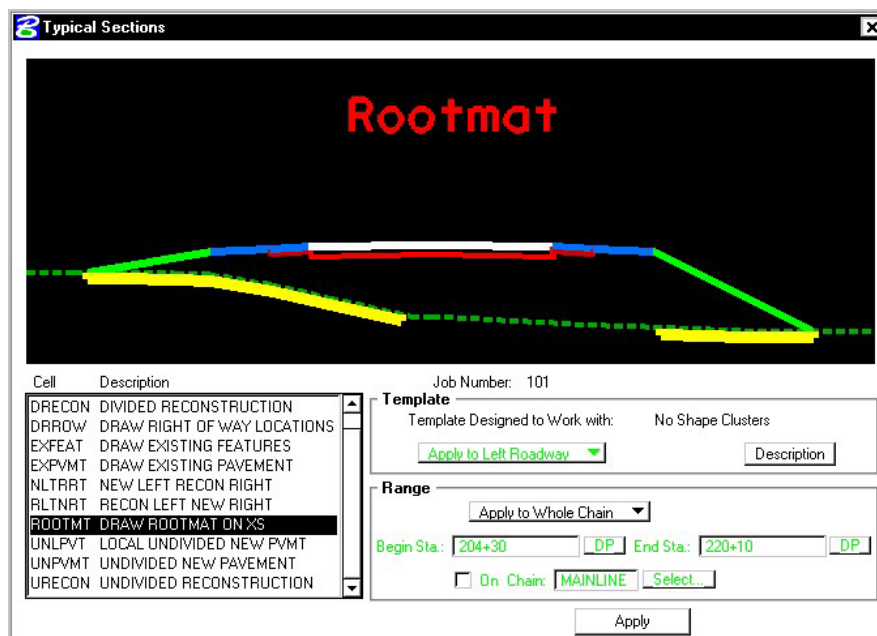
Step 5. Complete the following items in the dialog box.

- XS DGN File** **This filename should be automatically defined as d17682xsmainline.dgn.**
- Pattern** **Use Working Alignment Definition**
- Existing Ground** **Use Working Alignment Definition**
- Shapes** **Shapeless**

Step 6. Fill out the shape cluster category as shown and click the **Typical** button.



Step 7. Select the rootmat typical (**ROOTMT**) as shown and click **Apply**.

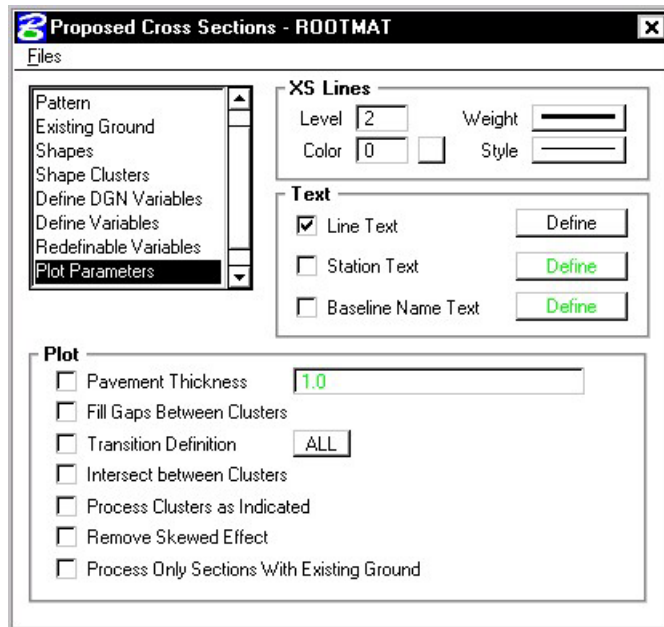


Step 8. Select the **Define Variables** category. Modify the following variables as shown:

Name of Working File	d17682work.dgn
Name of Cross-Section File	d17682xsmainline.dgn

Step 9. Review the Redefinable Variables.

Step 10. Select **Plot Parameters**. Set the **XS Lines** values as shown (**Weight=5**) and disable all options in the **Plot** section of the **dialog box**. Also set the Line Text to **Level = 63** as in the previous sections.



Step 11. Click **Files > Save Settings** then click **Files > Run**.

Step 12. When processing is complete, click **Exit** to return to the Process Cross Sections dialog box.

Step 13. Close the Proposed Cross Sections dialog box by using the “X” on the upper right of the dialog box or by using the **Files > Exit** pulldown.

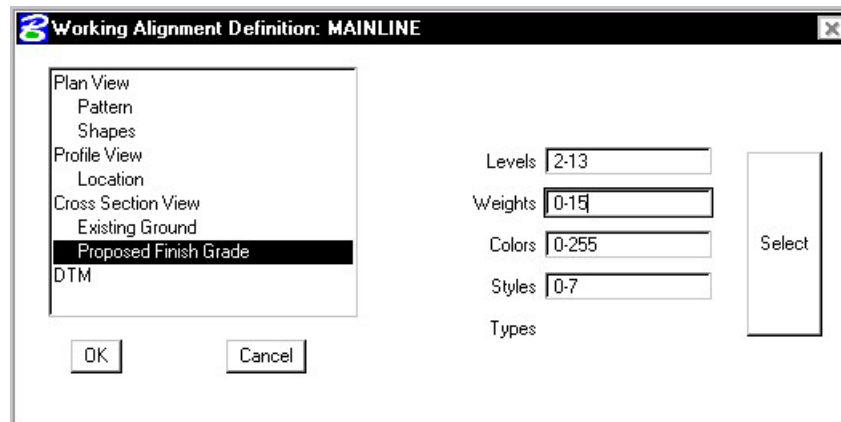
When prompted to **Save Settings**, answer **Yes**.

Step 14. Use Cross Section Navigator to review the cross sections.

12.7 Working Alignment

Now that we have the information for our proposed xsections, we need to update our Working Alignment Definition in Project Manager.

- Step 1.** From the Workflow dialog box of Project Manager, click the **Define** button.
- Step 2.** Highlight the **Proposed Finish Grade** option and populate the dialog box as depicted below.



- Step 3.** Click **OK** to save your changes and exit the dialog box.
- Step 4.** Exit MicroStation.