

Geopak Drainage – Pipe Profiles

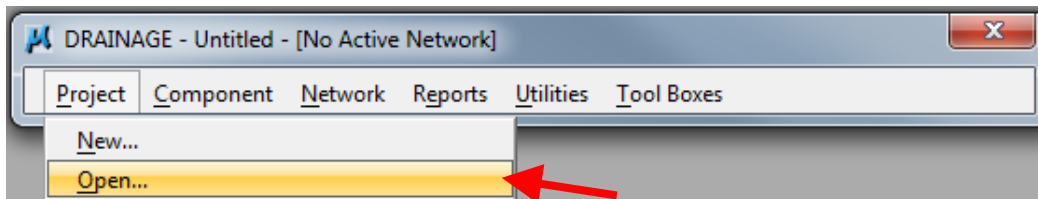
Design Manual
Chapter 4
Drainage

Originally Issued: 09-30-11
Revised: 11-30-11

This section provides instructions for creating pipe profiles. Pipe profiles are cross sections of storm sewer systems. Designers can use them to check for potential conflicts with other utilities and for locations where minimum pipe cover is not achieved. Pipe profiles can also be set to provide hydraulic grade line (HGL) information.

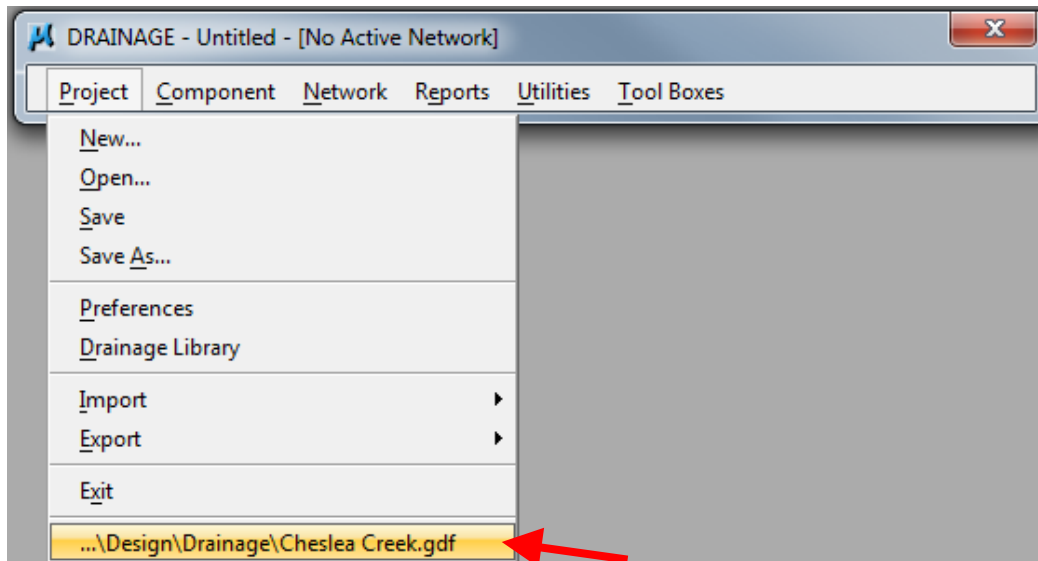
Opening a Project

For instructions on starting a new Geopak Drainage project, see Section 4A-52. To open an existing project, start Geopak Drainage as shown in Section 4A-52. In the DRAINAGE dialog box, go to Project→Open and browse to the appropriate file:



OR

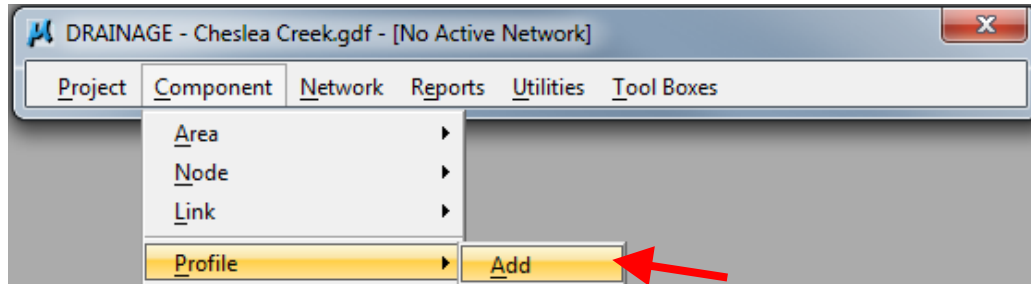
Choose a project at the bottom of the Project menu in the DRAINAGE dialog box:



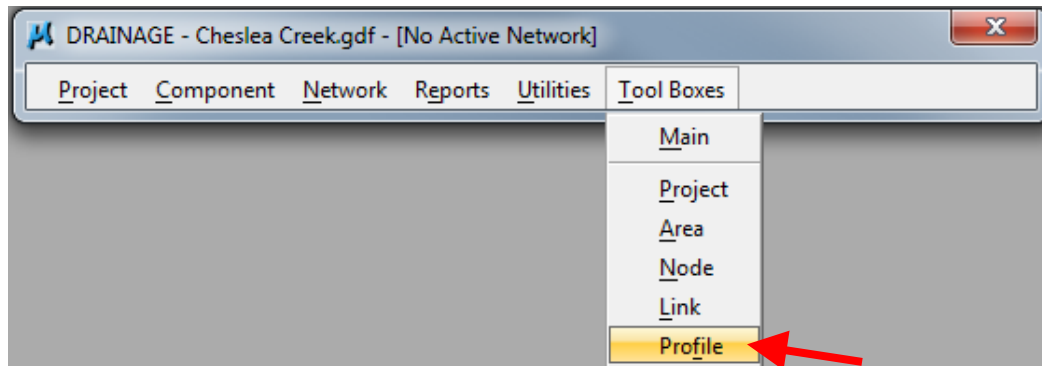
Creating a Pipe Profile

Pipe profiles can be created in several ways:

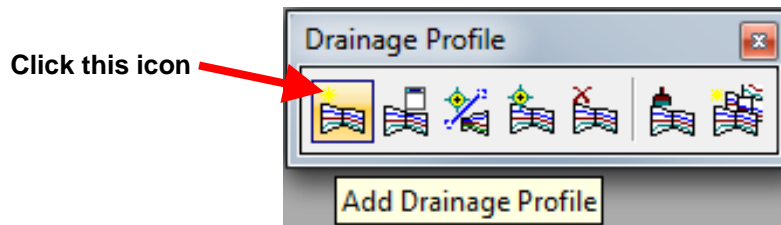
- Using the Component menu in the DRAINAGE dialog box:



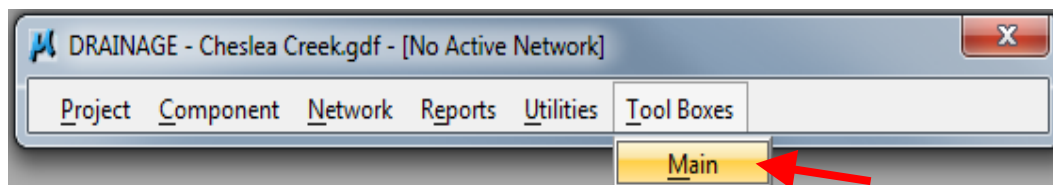
- Using the Drainage Profile toolbox accessed through the DRAINAGE dialog box:



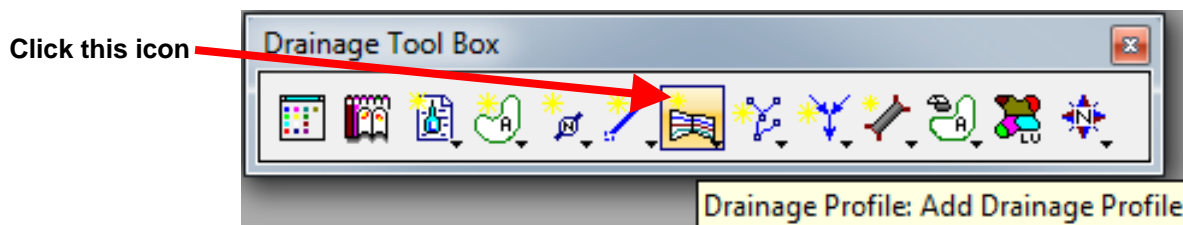
The following tool box will appear:



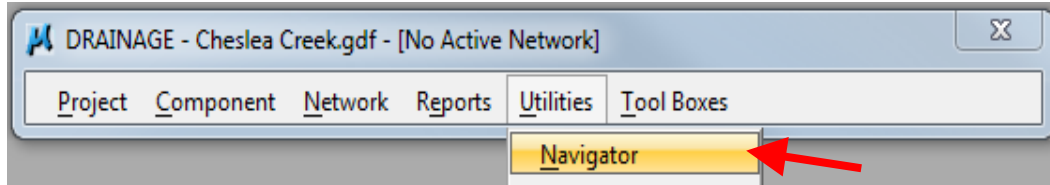
- Using the Drainage Tool box accessed through the DRAINAGE dialog box:



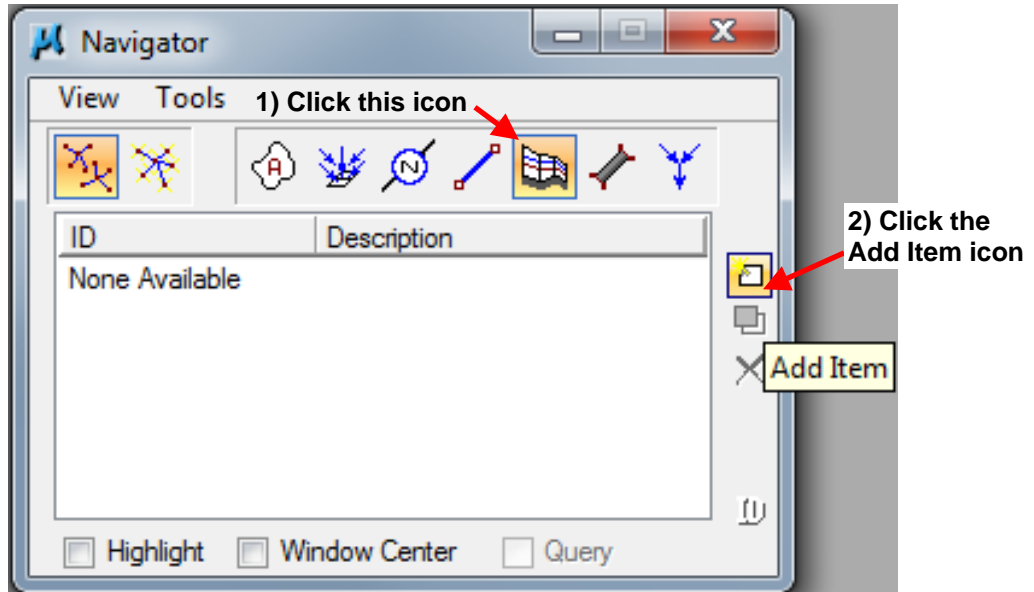
The following tool box will appear:



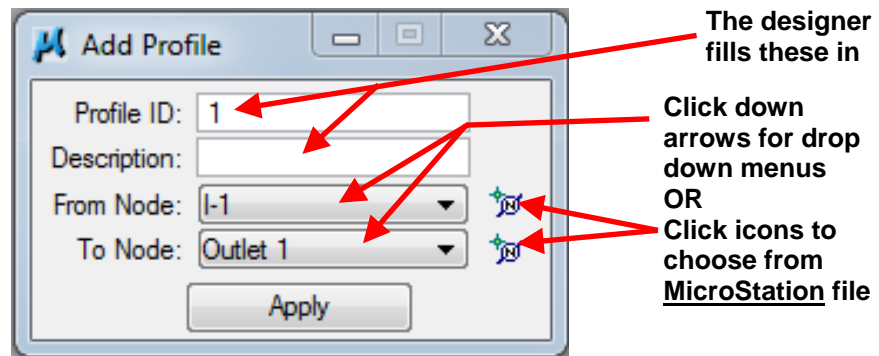
- Using the Navigator accessed through the DRAINAGE dialog box:



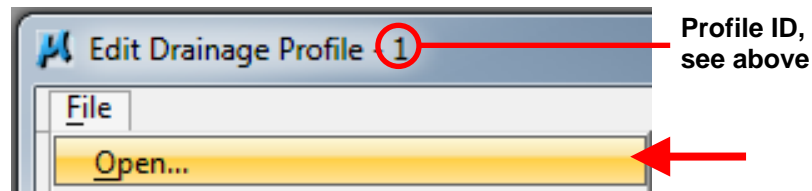
The following dialog box will appear:



Regardless of the method designers use to add a profile, the following dialog box will appear:



Click Apply and the Edit Drainage Profile dialog box will appear. Go to File→Open and browse to the Profile_Preferences.ppf file located in the W:\Highway\Design\CADD\Geopak\Drainage folder. This file presets several settings.



Registration

Clicking on the Registration tab in the Edit Drainage Profile dialog box brings up the following settings:

The screenshot shows the 'Edit Drainage Profile - 1' dialog box with the 'Registration' tab selected. The 'File' menu is open, showing 'Description' and 'View Number' (set to 1). The 'Registration' tab contains several sections: 'Registration Point' with X and Y coordinates (1644326.639 and 1640165.762) and a 'DP' button; 'Scale' with 'Horizontal' (10.000) and 'Vertical' (1.000) settings; 'Node Information' with 'From' (I-1) and 'To' (Outlet 1) dropdowns and a 'Reset Profile' button; 'Projection' with a 'Project to Chain' checkbox and 'Identify Profile Cell' button; 'Grid Stationing and Elevations' with 'Begin Station' (0+00.00), 'End Station' (5+26.47), 'Max. Elevation' (1150.000), and 'Min. Elevation' (1110.000); and 'Reference Surface' with a 'TIN File' dropdown (set to \Photo\17122008.TIN) and a 'Vertical Offset' (0.000) field.

Registration Point

Sets the X and Y coordinates where the pipe profile will be placed. These can be keyed in, or the designer can use the DP button and choose a place within the file or model.

Scale

Preset by the Profile_Preferences file. This setting plots the vertical axis at 10 times the horizontal axis. Changing Horizontal to 5 will plot the vertical axis at 5 times the horizontal axis.

Node Information

The starting and ending points of the profile. These can be changed by selecting from the drop down menu using the ▼ icon, or selecting a node from the MicroStation file using the 📍 icon.

Clicking on the Reset Profile icon will reset the profile display to the current setting of the Edit Drainage Profile dialog box.

Projection

When toggled on, the name of chain onto which profile elements are projected is specified.

Grid Stationing and Elevations

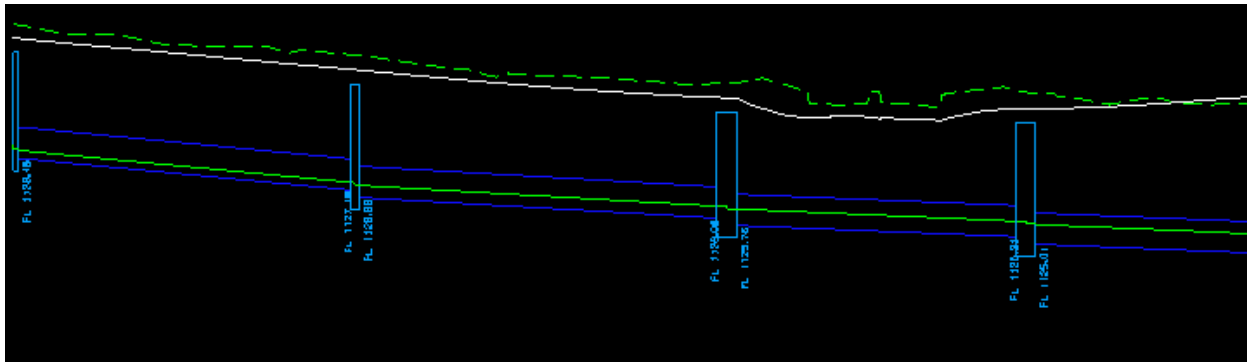
Ending station is calculated based on the length of the profile and the beginning station.

Max. Elevation and Min. Elevation are automatically determined by Geopak Drainage, based on the profile. Designers can key-in values to change the range.

Reference Surface

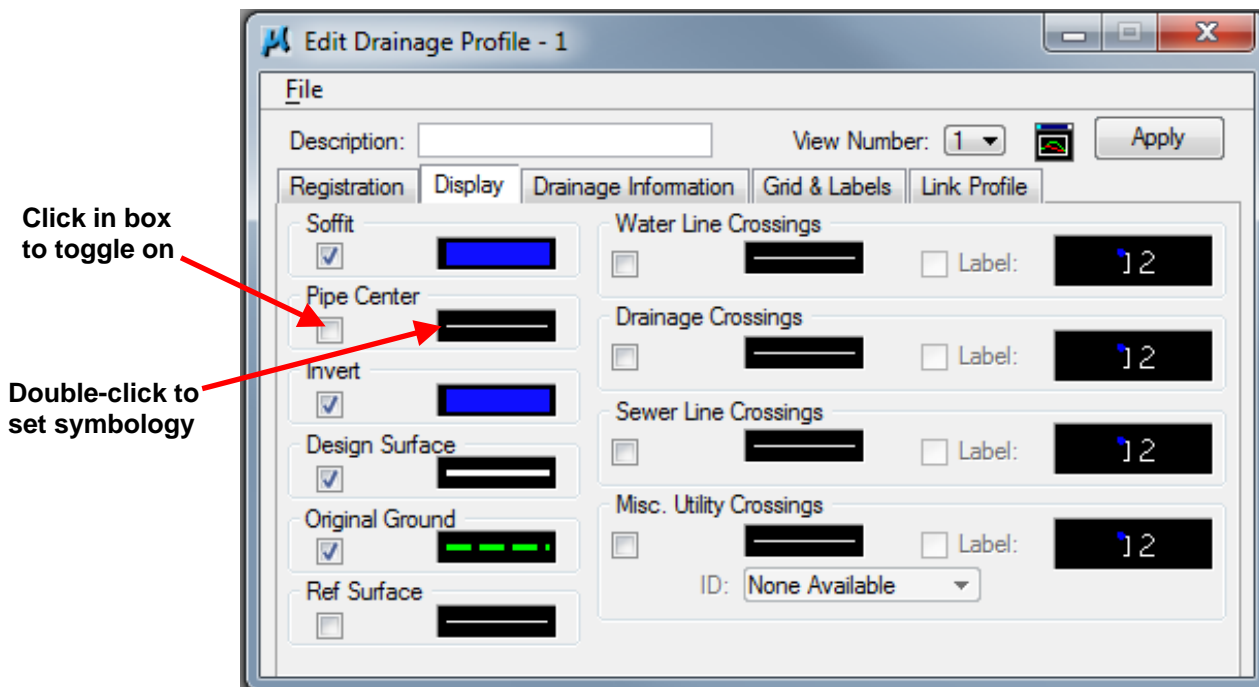
Allows the designer to choose a file to draw a ground profile (can be either existing ground surface or proposed design surface) above the pipe profile. If left blank, individual node elevations are used.

Clicking on *Apply* will draw the profile. It will also redraw the profile if any Registration settings are changed. The profile should look similar to the figure below.



Display

Clicking on the Display tab in the Edit Drainage Profile dialog box brings up the following settings:



Only those items which are toggled on will be displayed in the profile. Designers can add in more items if needed.

The Profiles_Preferences file presets the Display settings as shown above. The default symbology settings are as follows:

Soffit

Level: dsnSewerStormPipeProf

Color: ByLevel

Style: ByLevel

Weight: ByLevel

Invert

Level: dsnSewerStormPipeProf

Color: ByLevel

Style: ByLevel

Weight: ByLevel

Design Surface

Level: dsnProfileGradePropLine

Color: 0

Style: 0

Weight: 2

Original Ground

Level: dsnProfileGradeExistLine

Color: ByLevel

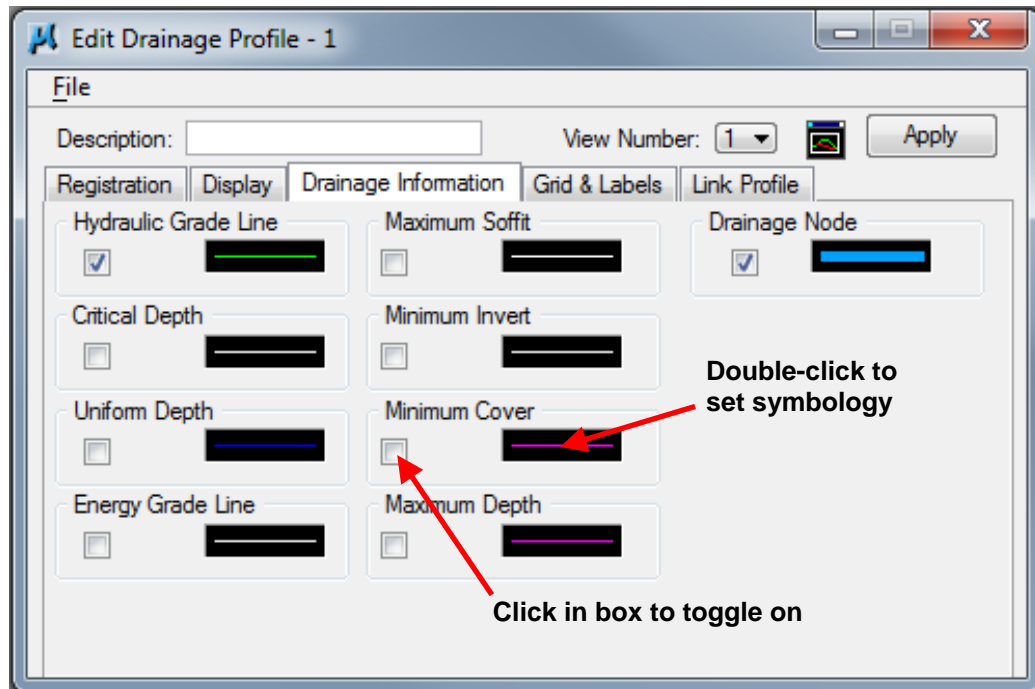
Style: 3

Weight: 2

Clicking on *Apply* will redraw the profile if any Display settings are changed.

Drainage Information

Clicking on the Drainage Information tab in the Edit Drainage Profile dialog box brings up the following settings:



Only those items which are toggled on will be displayed in the profile. Designers can add in more items if needed.

Note: Hydraulic Grade Line is placed on a non-plotable level. It will display on screen, but will not plot.

The Profiles_Preferences file presets the Drainage Information settings as shown above. The default symbology settings are as follows:

Hydraulic Grade Line

Level: dsnNonPlotable

Color: ByLevel

Style: ByLevel

Weight: ByLevel

Drainage Node

Level: dsnSewerStormIntake

Color: ByLevel

Style: ByLevel

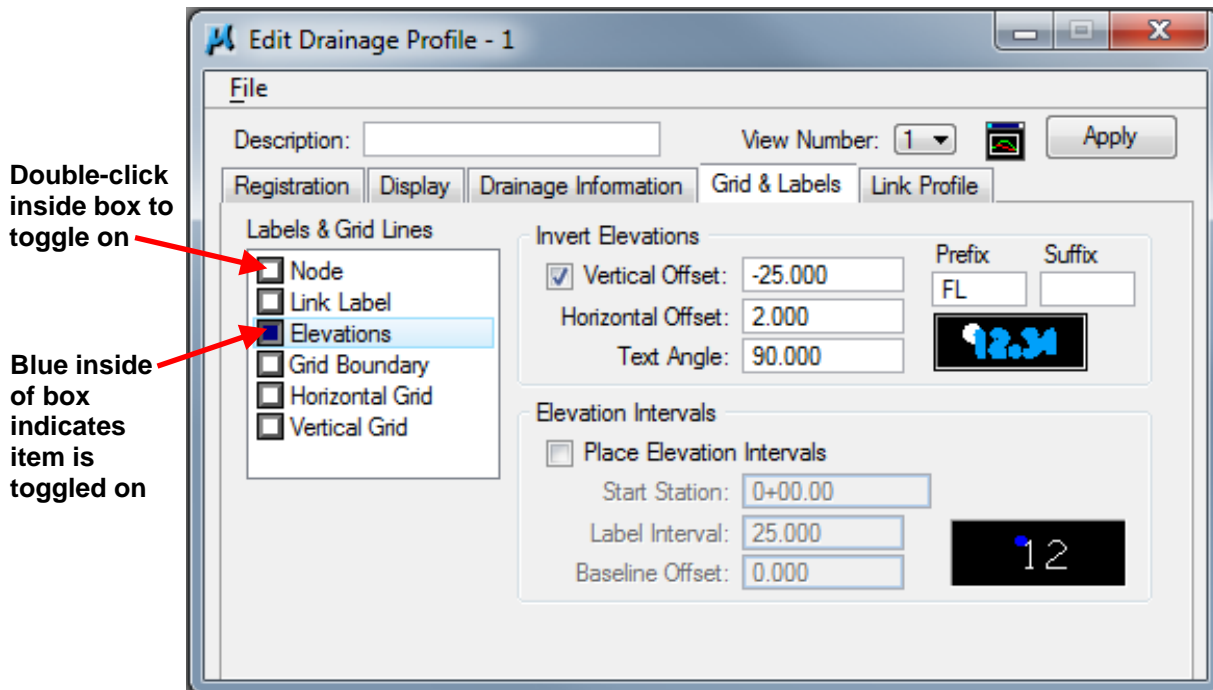
Weight: ByLevel

Toggling *Minimum Cover* on allows designers to check pipe depth to ensure minimum pipe cover is being met. *Minimum Cover* is measured from the form grade elevation for the intakes.

Clicking on *Apply* will redraw the profile if any Drainage Information settings are changed.

Grid and Labels

Clicking on the Grid & Labels tab in the Edit Drainage Profile dialog box brings up the following settings:



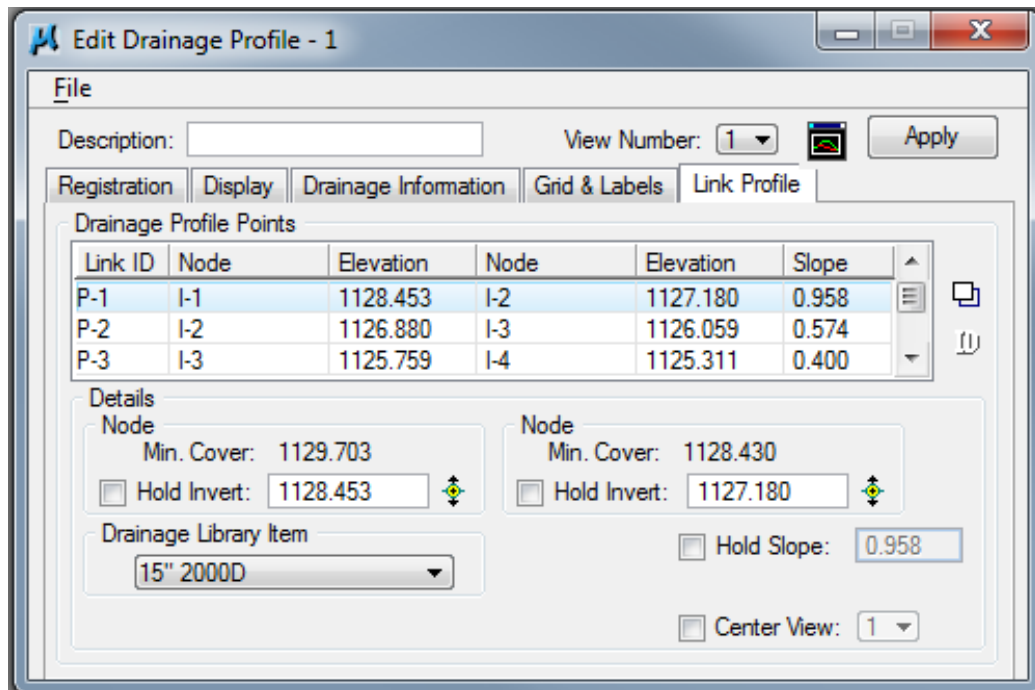
The Profiles_Preferences file presets the Grid & Labels settings as shown above. This setting will display flow line elevations in the profile.

Only those items which are toggled on will be displayed in the profile. Designers can add in more items if needed.

Clicking on *Apply* will redraw the profile if any Grid & Labels settings are changed.

Link Profile

Clicking on the Link Profile tab in the Edit Drainage Profile dialog box brings up the following settings:



Designers can use this tab to review and modify links included in the profile.


Drainage Profile Points

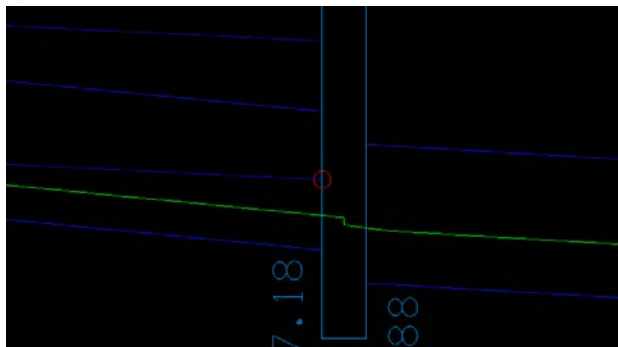
This contains the list of links included in the profile. Click on a link to modify it (P-1 for this example). Details will automatically populate.


Details

Min. Cover: Based on the minimum depth chosen when setting the elevations for the node (see Elevations in Section [4A-53](#)).

Hold Invert: Toggling this on allows the designer to set the elevation for the invert of the pipe. The designer has 2 options:


- Key-in a value. The designer can type in a value for the invert.
- Use the  icon. This will allow the designer to change the invert elevation by moving the invert up or down within the MicroStation file. Move the cursor into the red circle and move the mouse up or down to position the invert



Drainage Library Item: The designer can change the pipe size or class by choosing an item from the drop down menu using the  icon.

Hold Slope: Toggling this on allows the designer to set the slope for the pipe.

Center View: Toggling this on allows the designer to center the pipe in the chosen view.

Clicking the *Modify Segment* icon  will accept changes.

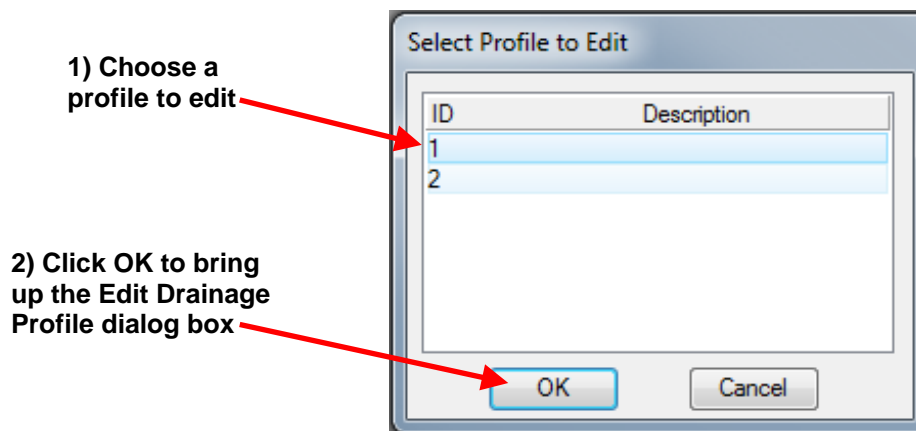
Clicking on *Apply* will redraw the profile if any Link Profile settings are changed.

Adding Pipe Apron Profiles

Geopak Drainage does not draw pipe aprons in pipe profiles. These must be added separately. The drainage cell library contains profile views of pipe aprons listed in the Standard Road Plans. These are added to pipe profiles in MicroStation in the same manner as other cells (remember to set the correct horizontal and vertical scale when placing). Once placed, they can be manipulated and further scaled as needed.

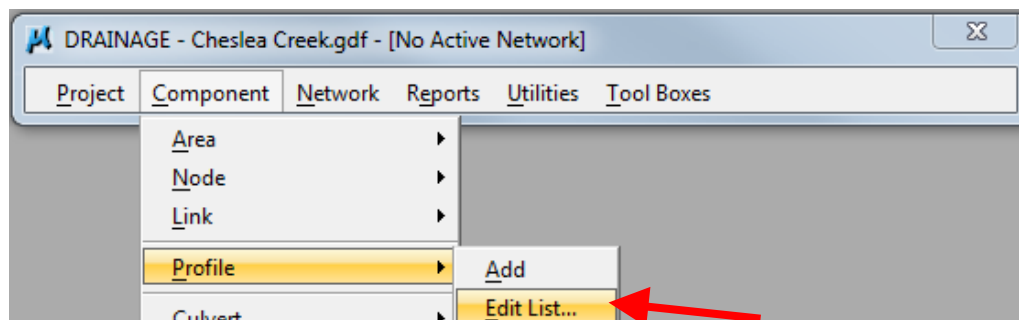
Editing a Pipe Profile

Pipe profiles can be edited at any time. This is done through the Edit Drainage Profile dialog box. To open the Edit Drainage Profile dialog box, designers need to access the Select Profile to Edit dialog box:

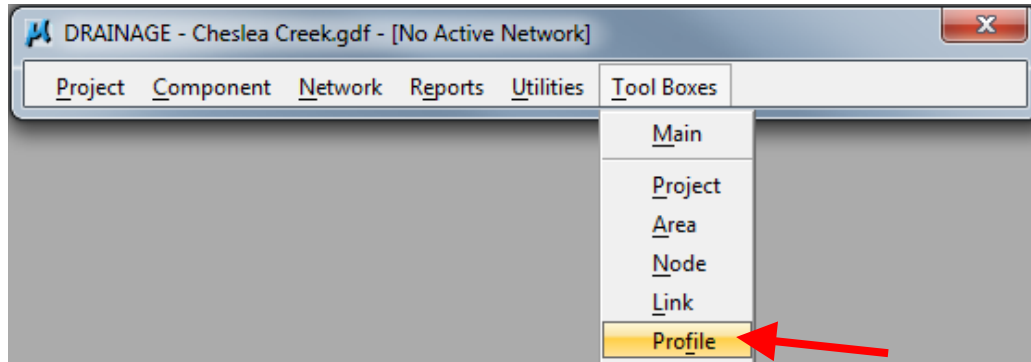


Accessing the Select Profile to Edit dialog box can be done in several ways:

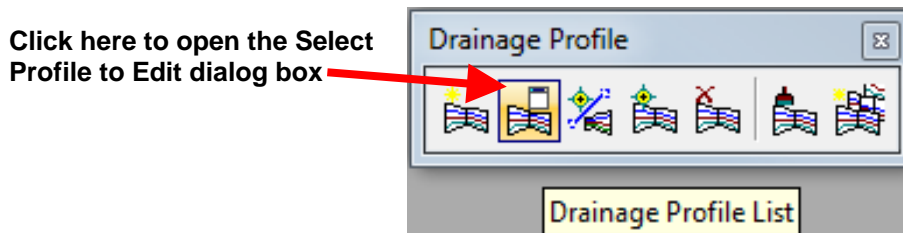
- Using the Component menu in the DRAINAGE dialog box:



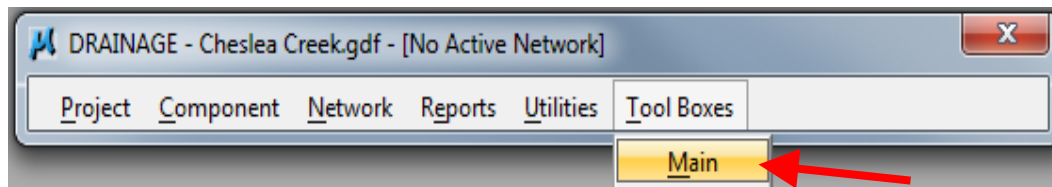
- Using the Drainage Profile toolbox accessed through the DRAINAGE dialog box:



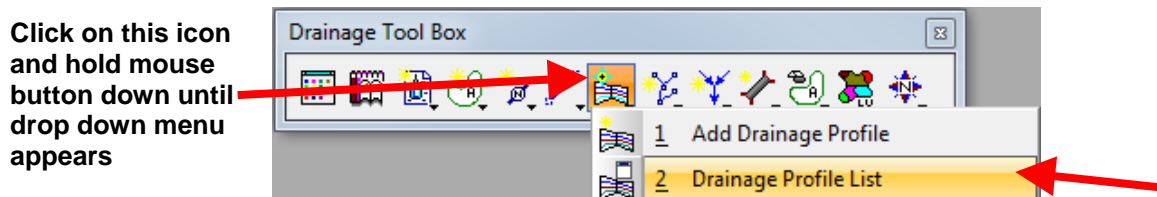
The following tool box will appear:



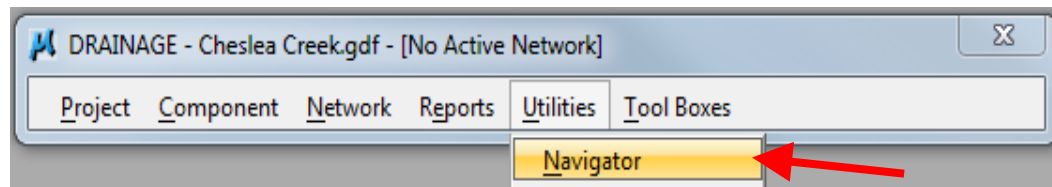
- Using the Drainage Tool Box accessed through the DRAINAGE dialog box:



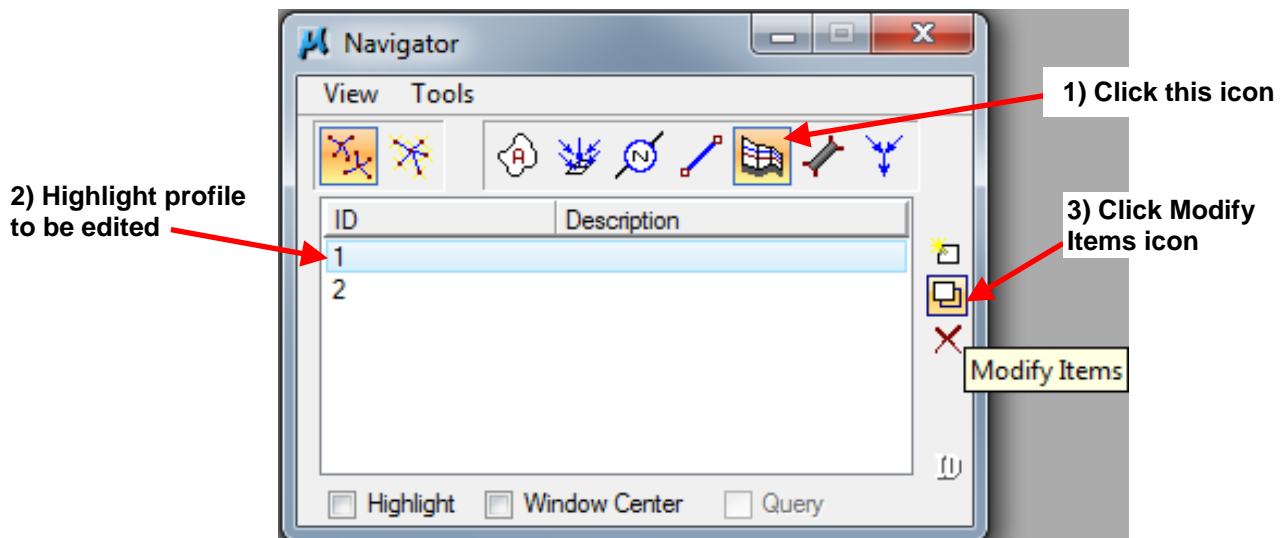
The following tool box will appear:



Designers can also access the Edit Drainage Profile dialog box using the Navigator accessed through the DRAINAGE dialog box:



The following dialog box will appear:



Once the Edit Drainage Profile dialog box has been opened, designers can modify profiles using the same procedures discussed for creating a profile.

Note: In order to have changes take place, the *Apply* button must be clicked.

Chronology of Changes to Design Manual Section:

004A-057 Geopak Drainage - Pipe Profiles

- | | |
|------------|---|
| 11/30/2011 | Revised
Change "Invert" to "Drainage Node" under Drianage Information |
| 9/30/2011 | NEW
Instructions for creating and editing pipe profiles in Geopak Drainage |