Lesson 11: Editing The Model

WELCOME!

In this lesson we will look at a variety of tools to edit the current state of the site model. Some of the tools have been used before to create the elements that make up our objects in the model. Other tools were specifically designed for you to make changes in your design surface and to make that process as easy as possible.

LESSON OBJECTIVES

In this lesson, the topics covered include:

- Site Modeler Edit Profile Tool
- Object Raise/Lower Tool
- Element Raise/Lower Tool
- PowerCivil Modify/Manipulate tools

Be sure to have a look at the context sensitive help for PowerCivil. Either while using the tutorial or in general practice with the software, you will find the help system not only includes program documentation but it also is equipped with links to online video clips (internet connection is required). Access the help from the menu bar under Help>Civil Help.

INTRODUCTION

Now that we have a first pass on our grading design, we will look at ways to edit and make changes to it. The lessons will show you how to use some of the available PowerCivil Modeler tools to change the design.

We will modify the Roadway design created earlier, move the building location, change the parking lot grades, and fine tune the grading in the intersections.

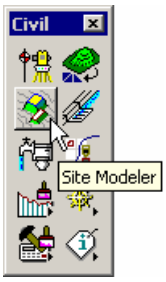
EDITING THE MODEL

From the desktop launch PowerCivil using the program icon, navigate to the folder for Lesson 11 and open the file “LAYOUT.DGN”. The “LAYOUT.DGN” file contains the base planimetrics required for the channel design initiation.

To view this portion of the lesson, press the play button.

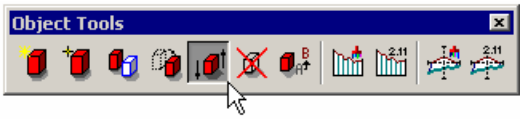
Once in the file, you will want to follow these steps:

1. Open the Civil Tools. *(Civil>Civil Tools)*
2. Invoke the Site Modeler tool and select the GSF File from the Lesson 11 folder "LAYOUT.GSF"

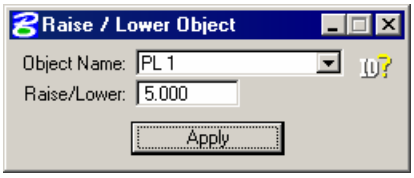


MODIFY THE PARKING LOT AND ACCESS SOUTH ROADWAY

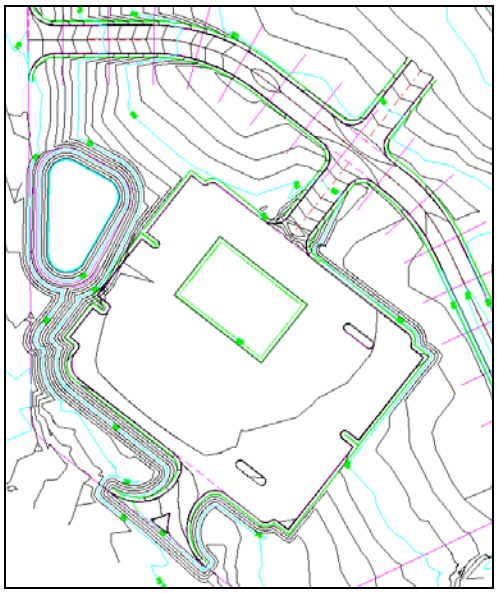
1. Tear of the "Object Tools" palette from the "Site" tool frame.



2. Select the "Raise/Lower "Object" tool *(5th icon, Object Tool Frame)*

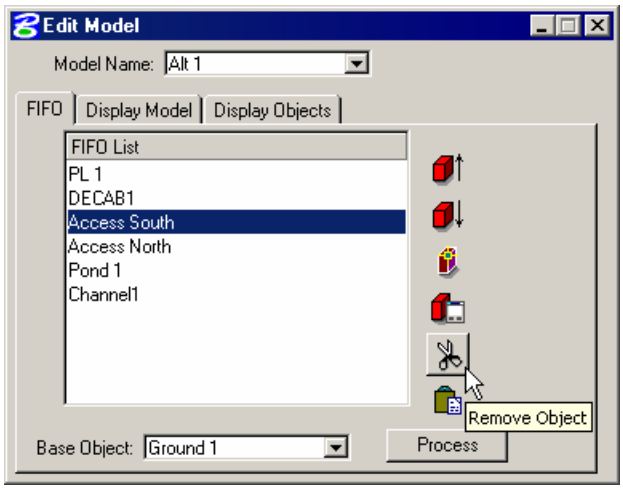


3. Select "Object PL1" and raise it 5.0 feet. Close the "Raise/Lower Object" dialog when finished.



As a result of the raise, the intersection between the access road and the parking lot needs to be reworked. The elements were originally draped on the model and therefore will not automatically update when the parking lot changes.

4. Select the “Edit Model” tool. *(Modeler>Model>Edit)*



5. Highlight the “Access South” object and click the “Remove Object” icon. Click “Process”.

   This removes the object from the model and now we can reset the centerline based on the new parking lot elevation.

   Close the “Edit Model” dialog. We will come back to it later to add the “Access South” object back.

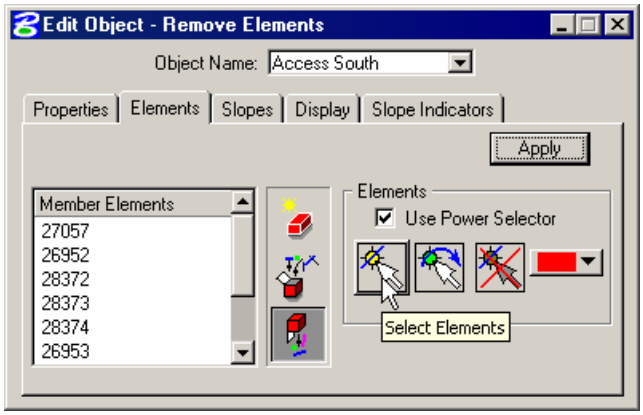
6. Select the “Edit Object” tool. *(Modeler>Object>Edit)*

7. Set the “Object Name” to “Access South”.

   Let’s remove the curb returns from the “Access South” Object.

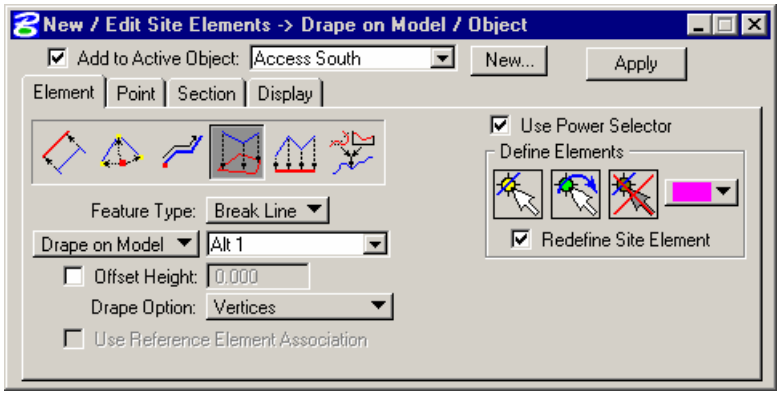
8. Switch to the “Elements” tab on the dialog, select the “Remove Elements” icon, toggle “ON” “Use Power Selector”, and click “Select Elements” icon and select all four curb returns.

   Then click “Apply”. Close the “Edit Object” dialog.



9. Select the "New/Edit Site Elements" dialog. *(Modeler>Elements>New/Edit)*

   We are now going to re-drape the centerline and the curb returns on the model "Alt1".

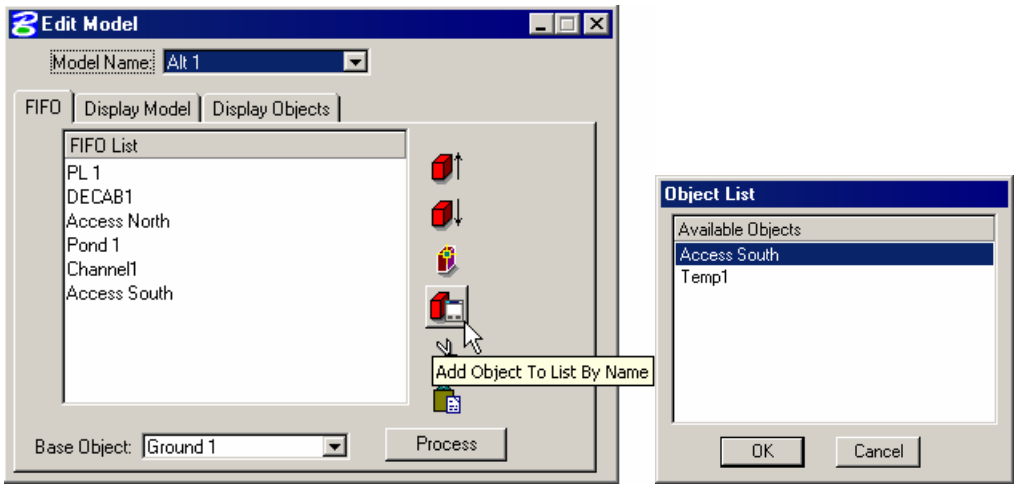


   Select the "Drape on Model/Object" tool *(4th Icon, Element tab)*. Set the "Drape on Model" option to "Alt 1", the "Drape Option" to "Vertices", and toggle "ON" "Use Power Selector" and "Redefine Site Element".

   Click the "Select Elements" icon in the "Define Elements" group box and select the road centerline.

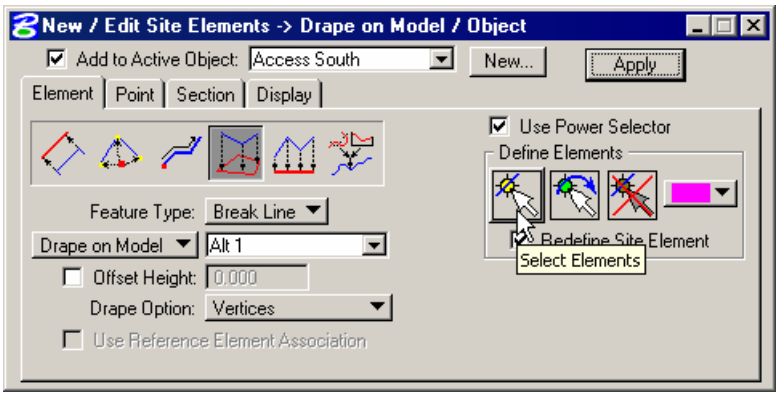
   Click "Apply".

10. Now add the "Access South" object back to the model with the "Edit Model" dialog.



   Select the "Edit Model" tool, click the "Add Object to List By Name" icon, select the "Access South" object, click "OK", and the click "Process".

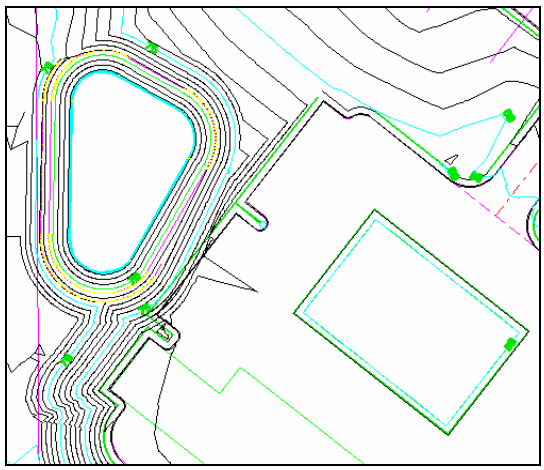
11. Now back at the "New/Edit Site Elements" dialog, click the "Select Elements" icon and select the four curb returns for the "Access South" roadway.



12. Click "Apply". Close the "New/Edit Site Elements" dialog.

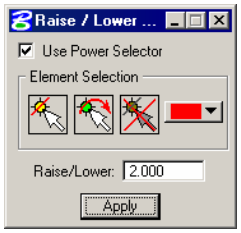
MODIFY THE POND

Now we will modify the Pond object. As the picture below shows, the pond slopes are running into the parking lot. We can raise the pond bottom up a little as well as move the pond to fix this issue.



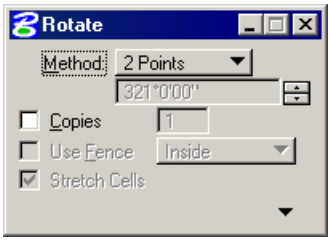
To view this portion of the lesson, press the play button.

1. Set the Pond as the active object using the "Active Site Object Control" tool frame. Next select the "Raise/Lower Element" tool. *(Modeler>Elements>Raise/Lower)*



2. Raise the Pond bottom element up 2.0 feet. The pond berm is automatically recalculated based on the new bottom elevation.
3. Access the PowerCivil "Manipulate" tool frame. *(Tools>Main>Manipulate)*

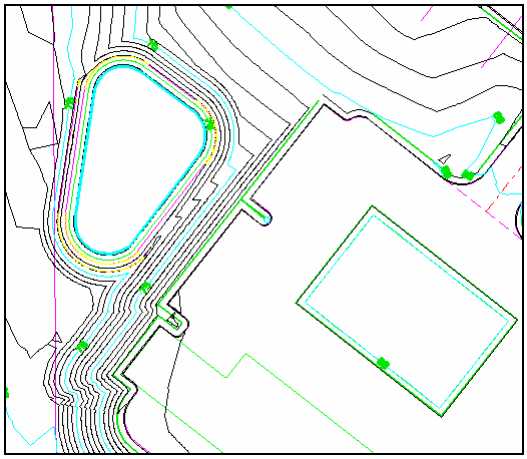
Select the "Rotate" tool and set the tool settings dialog as shown.



Select the pond bottom element.

Following the tool prompts in the lower left corner of your application window, data point at a location on the pond element to define the pivot point.

Data point again to define the new rotated position.



4. Use the "Volume Analysis" tool to check the pond volume. See Lesson 8: Grading a Pond for help.

MODIFY THE ROADWAY

In the next section we will modify "Decab1" roadway using the "Roadway" tool. Next we will grade the intersection to insure proper drainage.

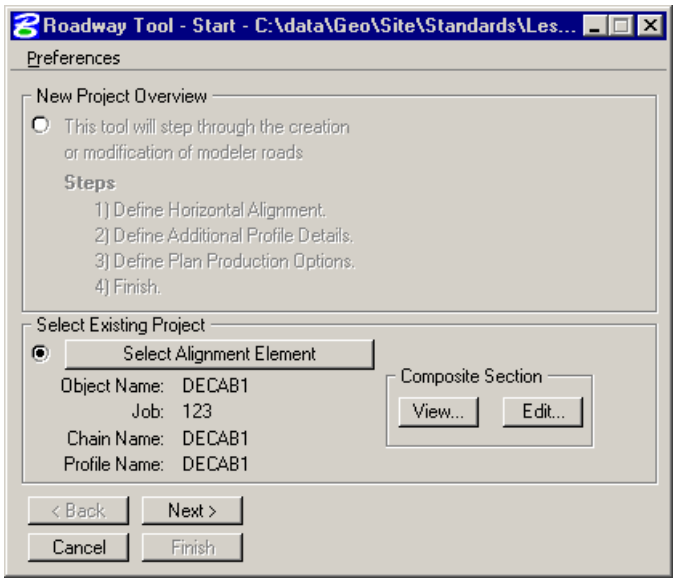
To view this portion of the lesson, press the play button.

1. Set the "Decab1" object as the active object on the "Active Site Object Control" tool frame.

2. Select the “Roadway Tool” *(Modeler>Tools>Roadway Tool).*

3. On the “Roadway Tool” dialog, go to the Preferences Pull down menu and open the “Lesson_07_Designing_Roadways_Preferences.srp” file from ...\data\geo\site\standards folder. Close the Preferences dialog.

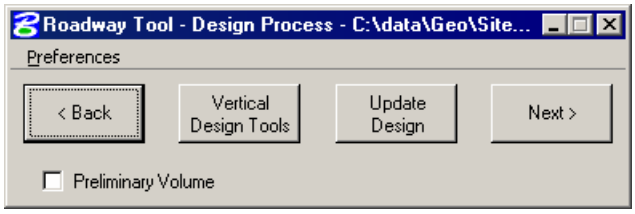
4. Back at the “Roadway Tool” dialog toggle the radio button for “Select Existing Project” and click the “Select Alignment Element” button.



Select the centerline element for “Decab1” Road and accept it. Make sure you still are referencing the preference file located in the standards folder. *(It will be listed along the dialog title bar)*

5. Click “Next” and then answer “No” to the Alert dialog asking to modify cross section pattern lines.

6. We are now at the vertical design process where we can modify the profile. Click the “Vertical Design Tools” button on the dialog.



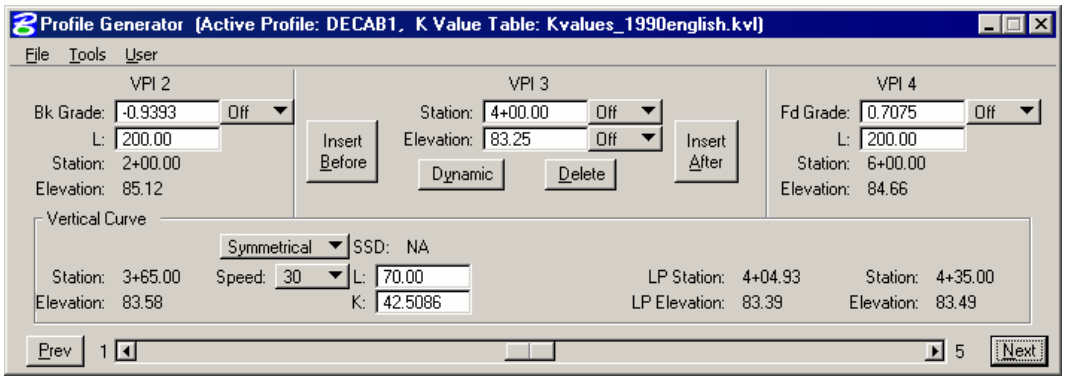
The vertical alignment generator comes up with the profile information loaded up.

7. In the vertical alignment generator dialog step through the VPI’s to VPI #3.

Overwrite the station value with 4+00.00 and press the enter key or tab key.

Set the length of the vertical curve to 70.0 feet.

Again, press the “Enter” of “Tab” key after you type in the value.

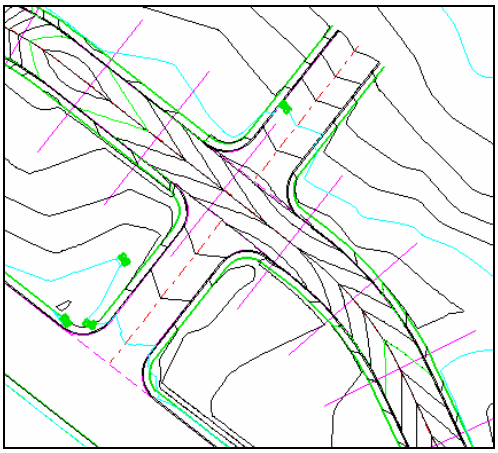


8. Click the “Prev” button and step back to VPI #2 and set the station value to 2+00.00.

   Set the curve length to 80.0 feet

   Feel free to make other changes prior to exiting the dialog.

9. Close the “Profile Generator” and click “YES” to save the updated profile.
10. Click the “Update Design” button on the “Roadway Tool” dialog.
11. Continue to click “Next” and “Finish” to exit the “Roadway Tool”.

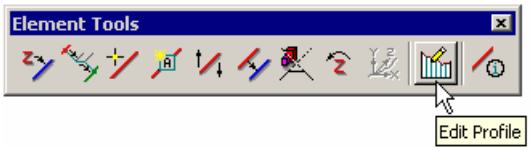


GRADING THE INTERSECTION

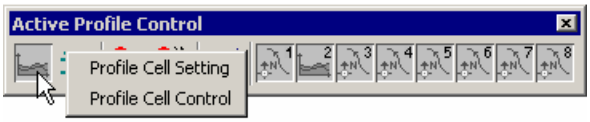
We are going to take a look at each curb return in the intersection between the access roads and Decab1 Road. Using the “Edit Profile” tool in “Modeler”, we can create a profile of each curb return element and re-grade it if necessary.

To view this portion of the lesson, press the play button.

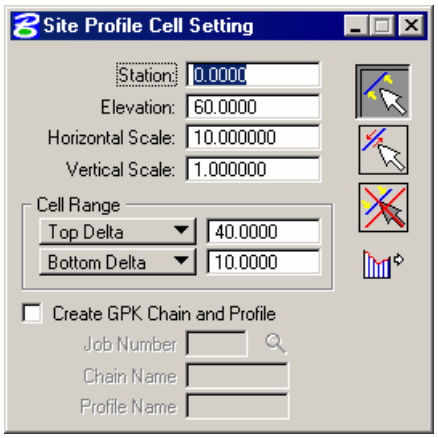
1. Open View 2. Select the “Edit Profile” tool. *(Modeler>Elements>Edit Profile)*



2. Locate the “Active Profile Control” tool frame and right click on the first icon.



3. Select “Profile Cell Setting”.

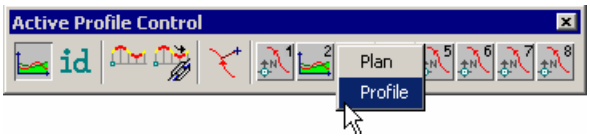


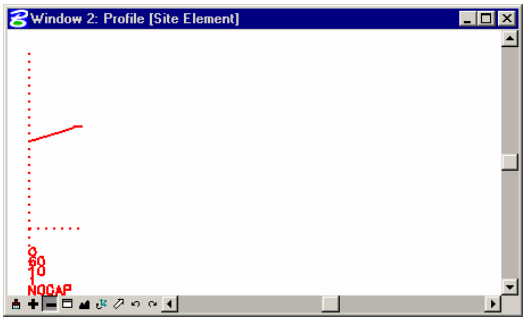
Click on the “Add Element PCell Chain” icon *(1st Icon, Upper Right)*

Select and accept the curb return in the south east corner of the intersection. Select and accept each element to the left and right of the curb return element.

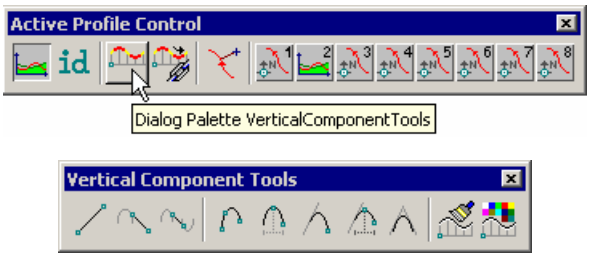
Click the “Place Site PCell” icon. *(4th Icon, Lower Right)*

4. Data point in View 2 to place the profile.
5. Close the “Site Profile Cell Setting” dialog.
6. Right Click on the “View 2” button on the “Active Profile Control” tool frame and set it to “Profile”.



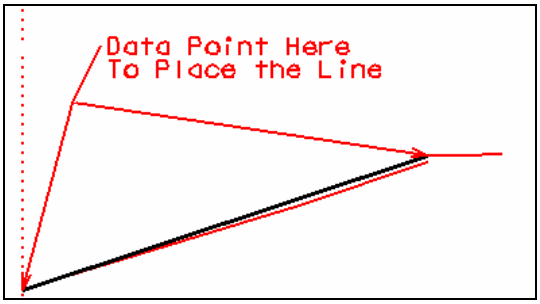


7. Select the “Vertical Component Tools” from the “Active Profile Control” tool frame.

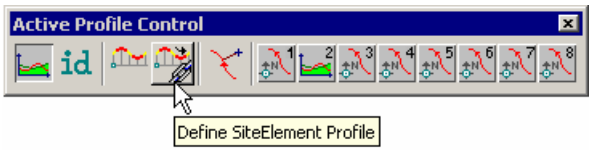


8. Click the “Place Profile Line By Points” icon. *(1st Icon, Vertical Component Tool Frame)*

   Data point at the two locations identified in the picture to place the line.



9. Click the “Define Site Element Profile” icon on the “Active Profile Control tool frame” *(4th Icon, Active Profile Control Tool Frame).*



   Select the vertical profile line you just created.

   Accept the line with an additional data point.

   Data point to apply the profile back to the site element.

10. Repeat Step 2 through Step 9 for each of the three other curb return elements in the intersection.

11. Now you can perform the same steps for the curb return elements adjacent to the parking lot and the Access South road.

MODIFY A PARKING LOT CONTOUR

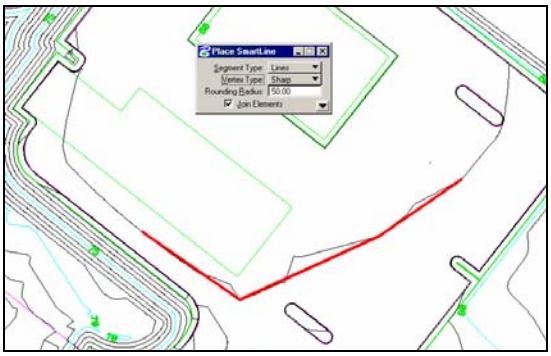
In this section we will modify a contour that looks irregular due to the triangulation of the parking lot object.

To view this portion of the lesson, press the play button.

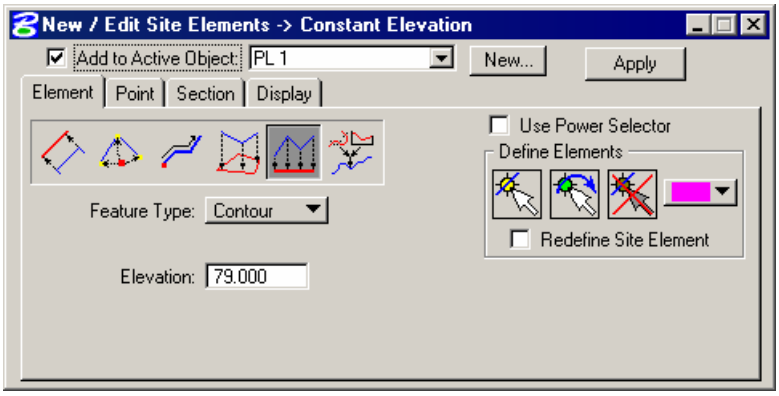
1. Set the “PL 1” object to be the active object using the “Active Site Object Control” dialog.

2. Zoom in on the parking lot object as shown in the picture below.

3. Using the Place "SmartLine" tool with the tool settings below. Draw the new contour.

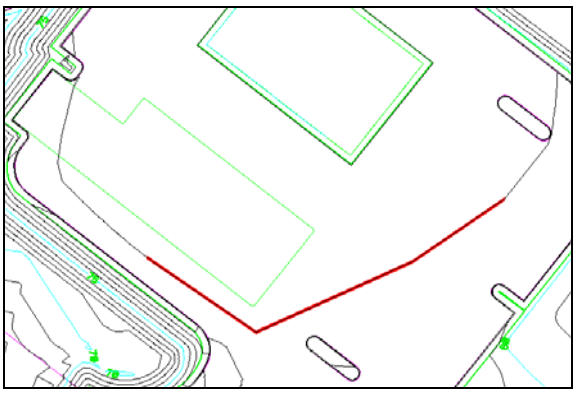


4. Now select the "New/Edit Site Element" tool. *(Modeler>Elements>New/Edit)*



Set the "Feature Type" to "Contour" and set the "Elevation" to 79.0 feet.

5. Click the “Select Elements” icon from the “Define Elements” group box and select the graphic element just drawn in the previous step.
6. Click “Apply”.



SUMMARY

The points to remember.

- There are a variety of tools to edit the model. More often than not simply using the tool that originally defined the element is the best way
- Introducing elements as we did with the contour in the parking lot can provide a nice looking finished surface.
- The Edit Profile Tool allows site elements to be redefined and edited using the component based vertical alignment tools.
- There are a series of steps the User must undertake to use this tool for the redefinition of vertical geometry of existing Site elements.
    1. Create a profile cell based on the elements that are to be redefined. Use the Profile Cell Setting Dialog to achieve this step.
    2. Place vertical components over part or the entire profile to accurately define the proposed vertical information.
    3. Apply this new vertical geometry back to the existing Site Elements using the Define Site Element Profile icon.
    4. The existing elements will be redefined using the vertical information from the vertical components. The interval that the new Z values will be replaced is based on the vertices of the plan view graphics, the linear and curve stroking tolerance set in the Site Modeler User Preferences, the B-Spline Plan stroking tolerance set in the Site Modeler User Preferences, critical vertical component points and the B-Spline Profile stroking tolerance set in the Site Modeler User Preferences.

For more video instruction please visit the following web page…

http://65.217.17.142/downloads/sitemodeler/GEOPAK%20Site%20Modeler%20Training%20Videos.htm

