# 4 Lesson 4: Base Surface Manipulation and Interrogation

## WELCOME!

This lesson is about getting to know your surface data. Now that you have built a TIN, PowerCivil has a multitude of tools that allow you to edit or review your surface model. In this lesson you will learn how to edit triangle data and how to analyze different aspects of the surface TIN.

## LESSON OBJECTIVES

In this lesson, the topics covered include:

- Topic 1 PowerCivil DTM Edit – edit triangle data
- Topic 2 PowerCivil DTM Analysis – interrogate the surface model

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

This Lesson will show you how to edit surface data with the PowerCivil DTM tools. With the DTM Edit tools you can add or delete vertices, you can move vertices both in plan or elevation and much more. You will also learn how to use the Height tool, how to extract a profile of the surface, how to create thematic mapping, how to use the drainage analysis tools, how to determine line of sight and how to examine TIN statistics.

## DTM EDIT

With the TIN created, the Digital Terrain Modeling options provide you with many ways to edit, analyze and review your surface model.

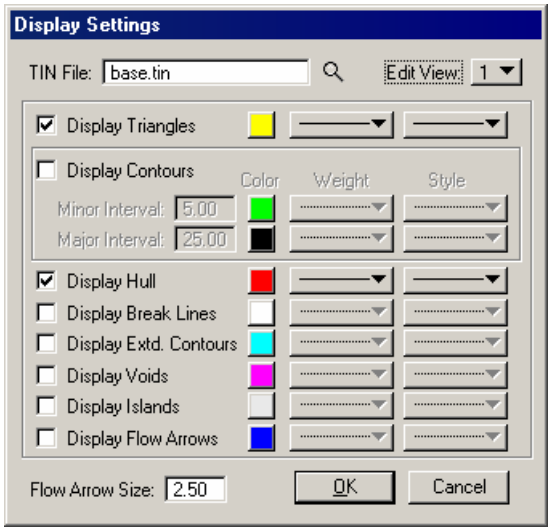
From the desktop launch PowerCivil using the program icon, navigate to the folder for Lesson 4 and then open the file "DTM.DGN". The "DTM.DGN" file is empty but we will use it perform the DTM editing of our surface model.

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


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

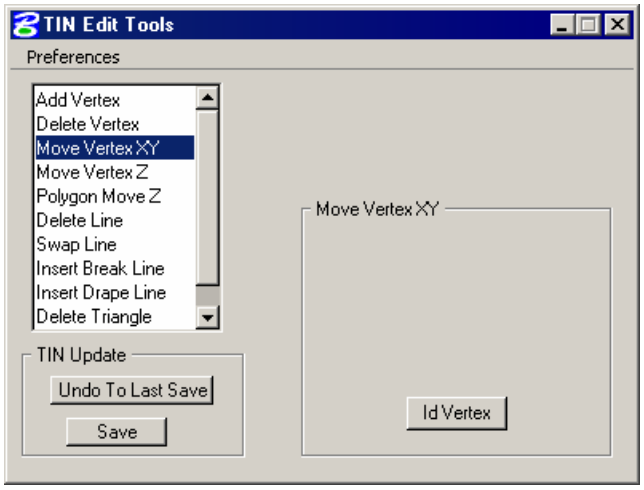
1. Activate the “Digital Terrain Model” tools from the “Civil” menu *(Civil>Digital Terrain Model).*
2. Invoke the “Edit Triangle” tool.


3. Select the TIN File from the Lesson 4 folder “BASE.TIN”.
4. Use View 1 for editing and set the rest of the dialog as follows:




5. When you press the “OK” button, the terrain model should appear.

6. Try the various tools available to make edits to the DTM.




7. Be sure to "Undo to Last Save" button before exiting, this will preserve the initial state of the DTM. If the Save button is used, the DTM will be redefined based on the edits that were made.

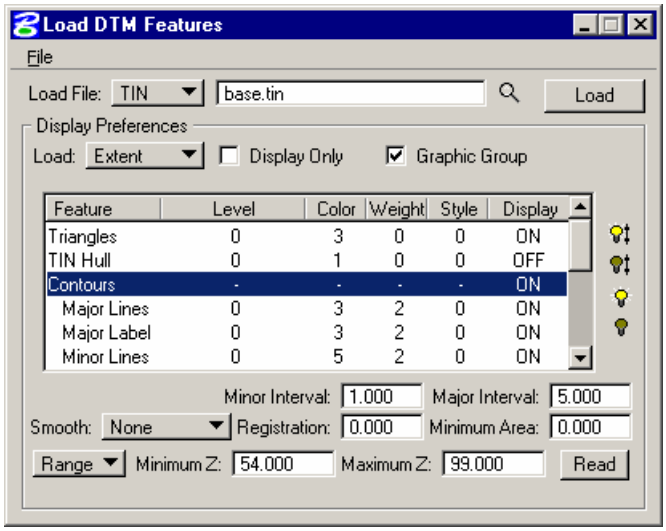
## DTM Analysis

There are many ways to analyze the surface model, the most common and interactive way to query the model is the "Height" tool.

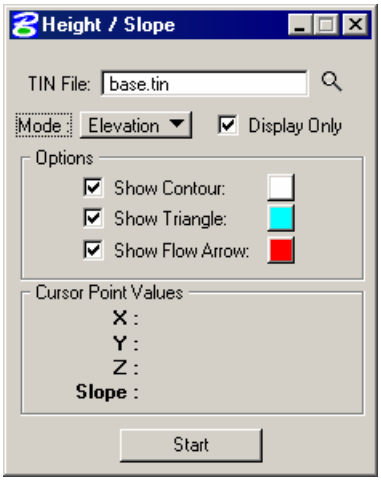
To view this portion of the lesson, press the play button.


Staying in the "DTM.DGN" file, proceed with the following steps:

1. Use the "Load DTM Feature" tool (see Lesson 3) to view the TIN file and deactivate "Display Only" toggle and activate the "Graphic Group" toggle. This will write permanent graphics into the DGN file.



Invoke the “Height” tool from the DTM tool bar.


2. Select the “TIN File” from the Lesson 4 folder “BASE.TIN”.
3. Activate and select a color for the Contour, Triangle and Flow Arrow and press the “Start” button.
4. Query the DTM by moving the cursor over the surface graphics. You will see the instantaneous contour, triangle, flow arrow and elevation as the cursor moves. In the “Height / Slope” dialog you will notice the “Cursor Point Values” change as you move through the model
5. Now tear off the “Analysis” tool palette from the DTM tools and explore some of the other tools available like the “Profile” tool, the “Drainage Analysis” tools or “Line of Sight” tool. The online help is a valuable resource for instruction on these features.

## SUMMARY

The main points to remember are:

- PowerCivil allows you to interactively edit the DTM by adding and removing vertices or triangles. You can edit the surface with a variety of tools.
- Surface interrogation is done using the DTM Analysis tools.
- You can create profiles, thematic maps, site line analysis and analyze drainage features with this flexible set of tools.

For more video instruction please visit the following web page…
http://65.217.17.142/downloads/sitemodeler/GEOPAK%20Site%20Modeler%20Training%20Videos.htm