16 Lesson 16: Plans Production

WELCOME!

This lesson is about producing the plans necessary for construction of our site project. In Lesson 15, the groundwork was laid for the current lesson: The alignment was stationed, cross sections were cut and final contours were exported out from the site model. The data generated will be used to prepare the plans for submission to a client, review agency or contractor.

LESSON OBJECTIVES

In this lesson, the topics covered include:

- Topic 1 Plan Sheet Production – Producing a plan sheet
- Topic 2 Cross Section Sheet Production – Producing a cross section sheet
- Topic 3 Profile Sheet Production – Producing a profile sheet

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*.

PLANS PRODUCTION

Let's begin the lesson by preparing for the plan production. By now, you have seen the true "power" of PowerCivil in its ability to model and analyze the civil design aspects for a site development. PowerCivil can also produce the deliverables required to get the job approved and built. Let's now create a plan sheet for the site.

PLAN SHEET

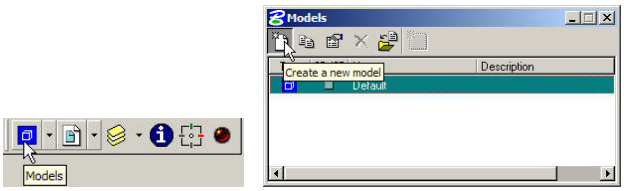
From the desktop, launch PowerCivil from the program icon, navigate to the folder for Lesson 16 and then open the file "LAYOUT.DGN".

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

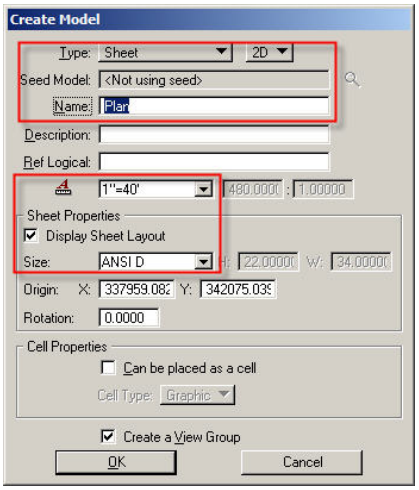
The "LAYOUT.DGN" file contains all of our design data and we will use it to produce a new DGN model for the plan of the site.

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

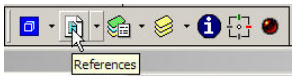
1. Choose the “Models” icon from the “Primary Tool bar”. Now create a new model.



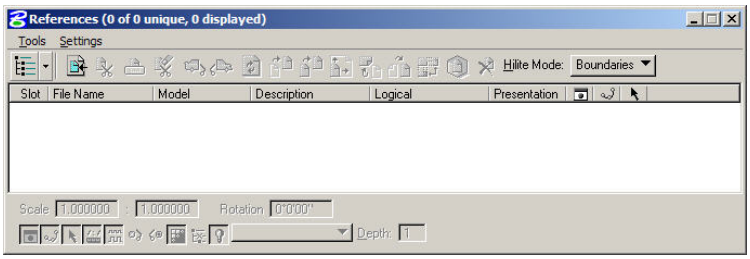
2. Use the following dialog settings hilited below:



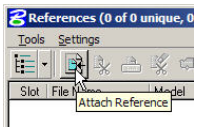
3. Press the “OK” button and you will be in the new model. In order to position the Plan model correctly in space, you will want to reference the file “LAYOUT.DGN” using the default model. From the “Primary Tool bar”, select the “References” icon.

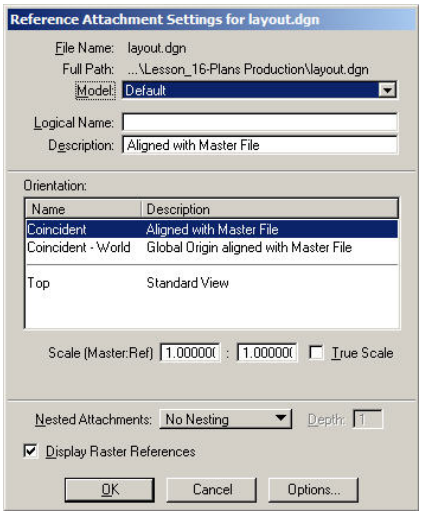


4. This will invoke the “References” dialog.

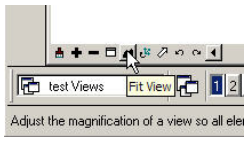


5. Use the “Attach Reference” icon and navigate to the Lesson 16 folder and select “LAYOUT.DGN”. Use the following dialog settings:

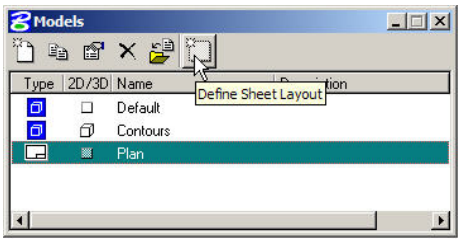




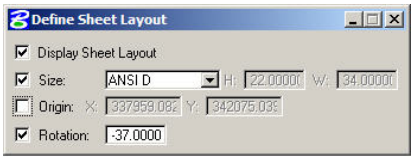
6. Now press the “Fit View” icon to see the location of the sheet model relative to the design data.



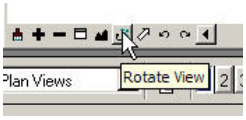
7. You will notice that sheet model extents and the design elements are apart. We will rotate and move the model into position over the design elements. From the “Models” dialog select the “Define Sheet Layout” icon while the Plan model is hilited.



8. This dialog allows for resizing, repositioning and rotating of the sheet model. You will want to rotate the model by -37 degrees and then un-toggle the Origin check box and move the model over the design graphics.

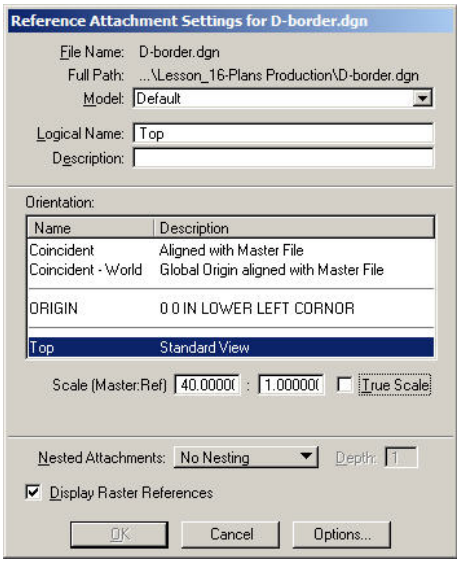


9. Once the sheet model is in place, press the “View Rotate” icon to re-orient the view.

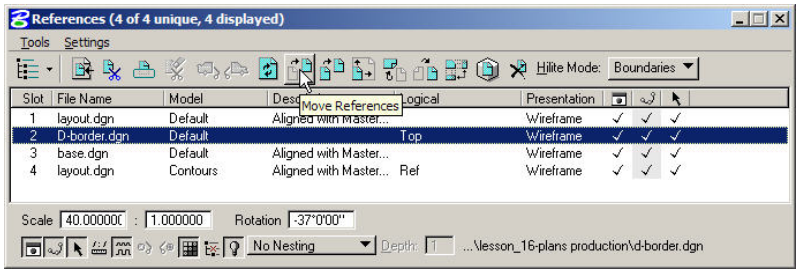


10. Save the file settings under by selecting *File>Save Settings*.

11. With the sheet model in place, attach a sheet border for presentation purposes. Use the “Attach Reference” icon once again as in Step 5, but this time you will attach the reference with the orientation set to “Top” view with scale set to 40:1 and True Scale toggled off. Use the “Center” snap mode to place the border in the center of the sheet model. Use the following dialog settings:

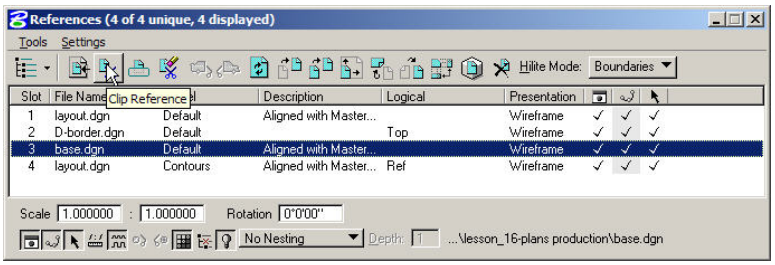


12. In some case it may be necessary to re-position the reference after attachment. Hilite the border reference and use the “Move References” tool to re-position the border attachment.

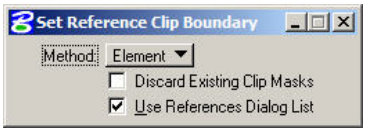


13. Attach the rest of the references that complete the plan content. These will be: BASE.DGN and LAYOUT.DGN (Contours model). Follow the procedure in Step 5 to make these attachments.

14. In some cases, the references need to be clipped to hide extraneous data at the sheet edges. Hilite the base reference then use “Clip Reference” tool to clip the base attachment.



15. In the “Set Reference Clip Boundary” dialog, choose the “Element” option and select the closed element just inside the border edge. Use a data point to accept the selection.



16. This completes the layout of the plan sheet for the project.

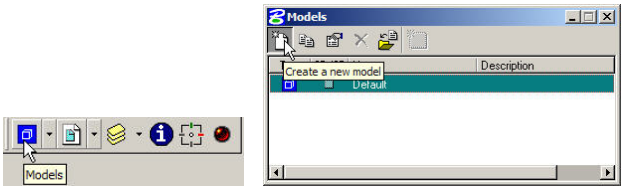
CROSS SECTIONS SHEET

In order to create a cross section sheet, you will again need to create another DGN model. You will again be creating a sheet model, but this time the content of the sheet will be the cross sections created in the previous lesson.

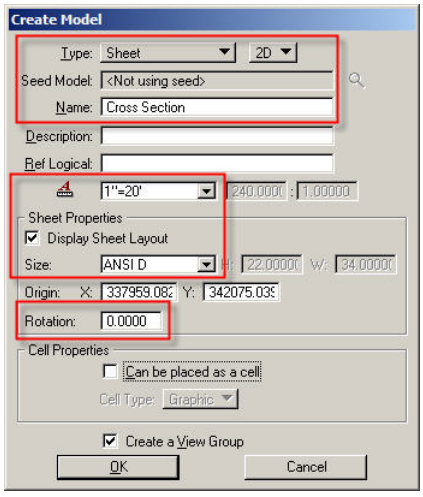
To view this portion of the lesson, press the play button.

Continue working in the “LAYOUT.DGN” file. Begin by creating a new model for the cross section sheet. You will want to follow these steps:

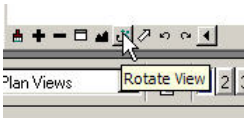
1. Choose the “Models” icon from the “Primary Tool bar”. Now create a new model.



2. Use the following dialog settings hilited below:

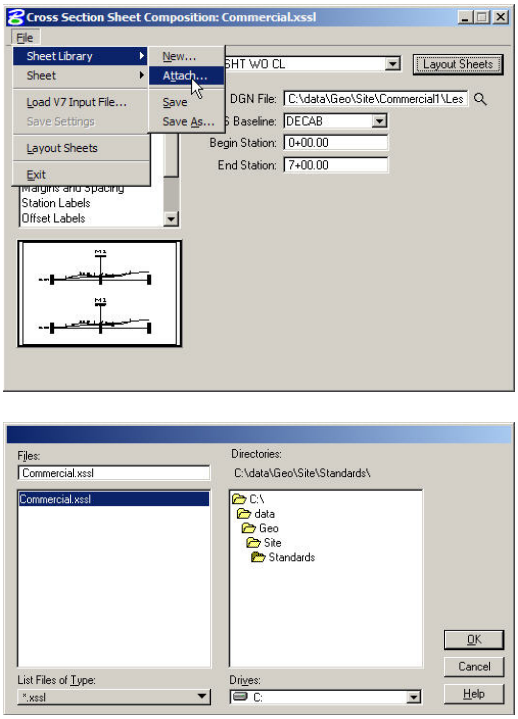


3. Press the "OK" button and you will be in the new model. Use the "Rotate View" tool to un-rotate the view. Use a data point to confirm the rotation.

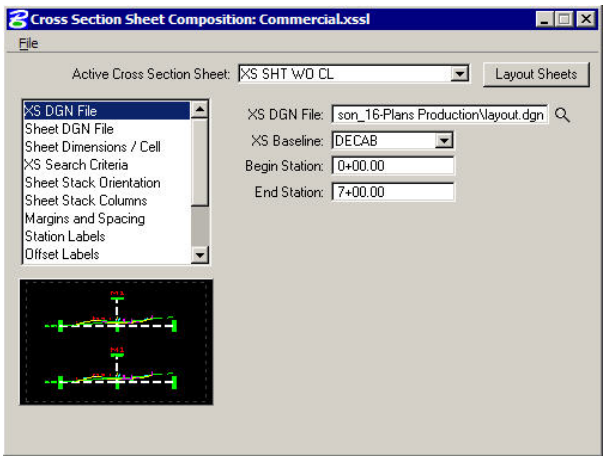


4. Attach the border reference as you did in Steps 10 & 11 in the previous section. The only difference being that this sheet is 20:1 scale.
5. In order to display the cross sections in the sheet model you will need to invoke the "Cross Section Sheet Composition" tool from the Civil Tool box *(Civil>Plans & Quantities>Cross Section Sheet Composition).*

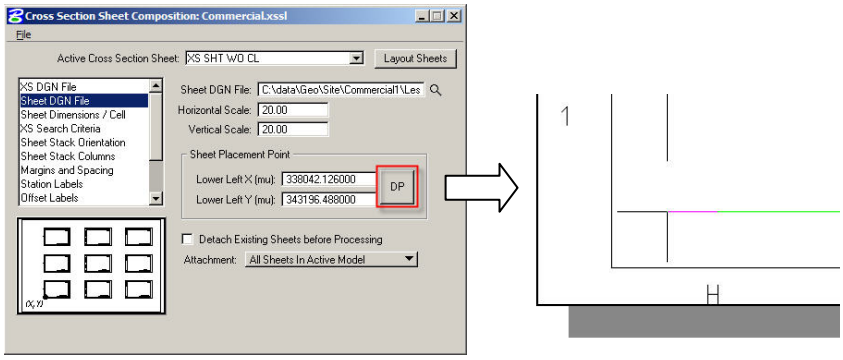
6. The “Cross Section Sheet Composition” tool will create a reference attachment for each section based on the station range specified. A Cross Section Sheet Library has been developed and should be attached by using the File menu on the “Cross Section Sheet Composition” dialog under *File>Sheet Library>Attach*. Then navigate to the “Standards” folder under the tutorial file system. Select “Commercial.xssl”.



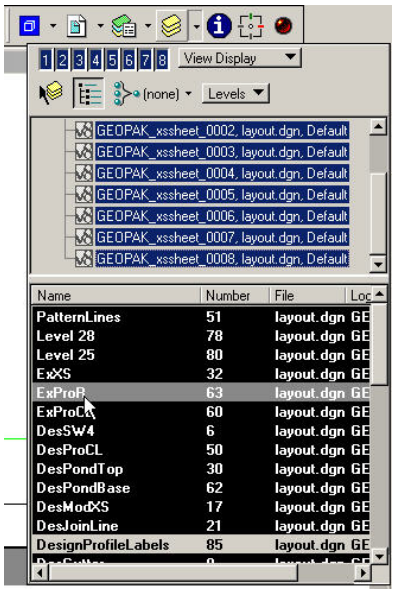
7. In the Composition tool dialog under “XS DGN File” option, select the file “LAYOUT.DGN” form the Lesson 16 folder.



8. In the Composition tool dialog under the “Sheet DGN File” option, select the “DP” button and data point in the lower left corner of the border file. This will be the anchor point for all offsets used by the “Commercial.xssl” library file.



9. Press the “Layout Sheets” button and the cross section should be displayed in the cross section sheet model.
10. To clean up the graphic display, use the “Level Display” tool *(Settings>Level>Display)* to turn off level “ExProR” in all 8 cross section references.

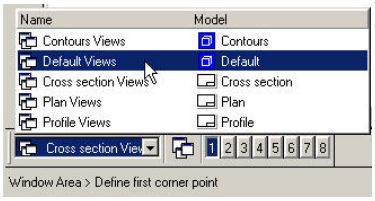


PROFILE SHEET

Before creating a profile sheet, you will need to first annotate the profile in the default model of the LAYOUT.DGN file. Once annotated, you will generate another sheet model and reference the completed profile and a portion of the plan.

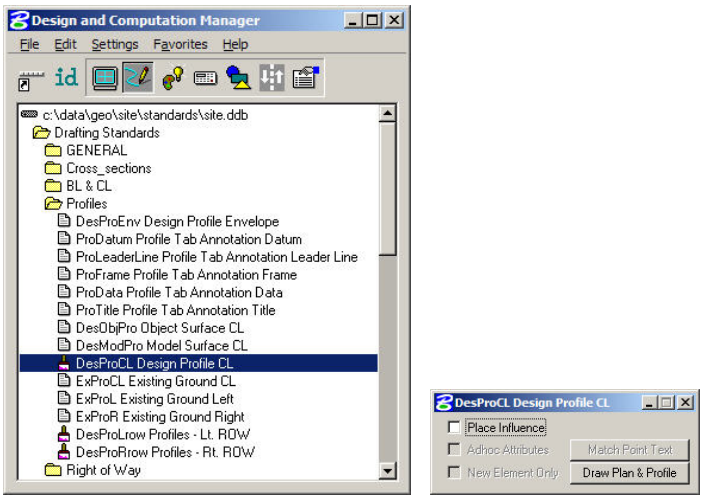
To view this portion of the lesson, press the play button.

Begin this exercise by staying in the “LAYOUT.DGN”, return to the “Default” model by selecting the “Active View Group” from the lower left of the program window.

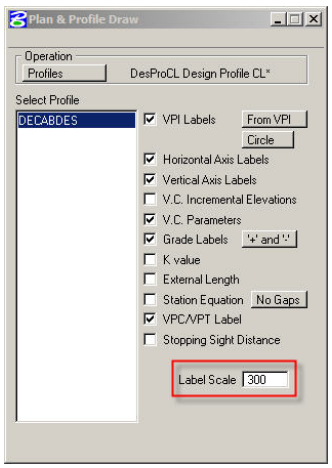


Follow these steps:

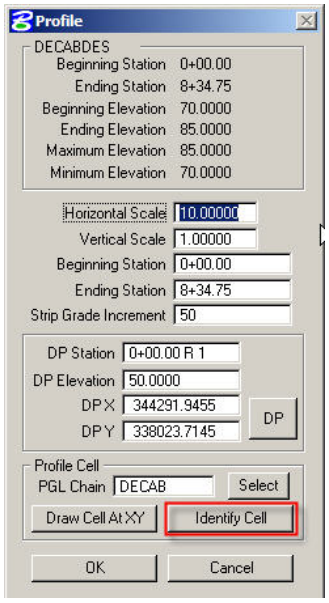
1. Fit the entire design and then use the “Window Area” tool to zoom the profile region of the file.
2. Invoke the “Design and Computation Manager” *(Civil>Plans & Quantites> Design & Computation Manager)* and navigate to the “Drafting Standards>Profiles folder”. Select the “DesProCL” feature and press the “Draw Plan & Profile” button.



3. Accept the “Job 123” dialog and enter “300” in the Label Scale field of the Plan & Profile Draw dialog. Select the DECABDES profile.



4. This will invoke the “Profile” dialog. Use the following dialog settings and press the “Identify Cell” button.



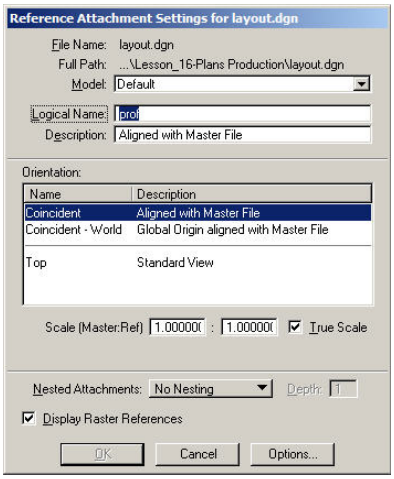
5. Place a data point on the profile cell that bounds the profile graphics in the DGN. Use a data point to accept the cell selection.

6. The profile should now be annotated.

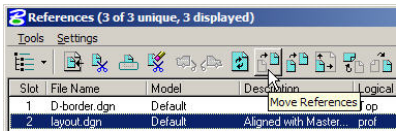
7. Create a new sheet model just like the plan sheet model created earlier in this lesson. The profile sheet model will be 40:1 scale.

8. Attach the border reference.

9. Attach the “LAYOUT.DGN” reference for the profile portion of the sheet. Provide the Logical Name “prof” and press the “OK” button.

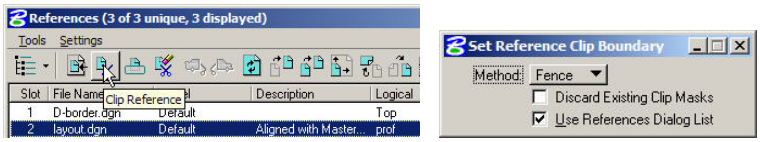


10. Move the reference into position using the “Move Reference” tool.



11. Anchor the profile reference at the lower left corner of the sheet border.

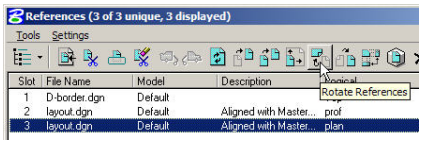
12. Draw a fence, using the “Block” method – place the fence around the extents of the profile and press the “Clip Reference” icon. Utilize the “Fence” method.



13. Attach the “LAYOUT.DGN” reference for the plan portion of the sheet. Provide the Logical Name “plan” and press the “OK” button.

14. Move the reference into position using the “Move Reference” tool.

15. Rotate the reference by points using the “Rotate Reference” tool.



16. Draw a fence using the “Shape” method around the extents of the profile and press the “Clip Reference” icon. Utilize the “Fence” method.

17. Use the “Level Display tool” *(Settings>Level>Display)* to turn off any unnecessary graphics in the plan and profile references.

SUMMARY

The main points to remember are:

- PowerCivil is not just for civil design, plan production tools help get the project ready for print.
- The use of Sheet Models expedites the production of plans.
- Referencing design data allows for a variety of plan types.
- Cross section sheet composition is very much automated with PowerCivil.

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