
Motif and Layout Builder Programs for P&P Sheeting

Design Manual
Chapter 21
Automation Tools
Instructions

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Sheeting Options

The Geopak Plan / Profile sheeting program obtains the sheet attributes, including file settings and reference file attachment information, from one of four sources:

1. The active file/model,
2. An exported model from the active file,
3. Motif files, or
4. The combination of Motif files with Layout files.

Source 1: Using the active file / model settings for the sheet file settings is a viable choice for a simple sheeting project such as a one or two sheet Bridge job with no additional side road or detour alignments. The benefit of using the active file / model for sheet attributes is the lack of need to export models or to create Layout or Motif files.

Source 2: Exporting a model for the purpose of placing port shapes followed by creating the associated sheet files is also a usable option. This, however, requires that the model must be imported back into the original design file when the sheeting process is done. There have also been undocumented reports that some settings are occasionally lost or changed while using the Export/Import procedure.

For information on the **Model Export and Import** program, see Section [21A-41](#).

For information on **Plan & Profile Port Shape Parameters**, see Section [21B-6](#).

Source 3: Using the **Motif** file source is a very easy, consistent, and reliable solution. It is easy because the **Motif Builder** program almost automatically creates the necessary Motif files (for each alignment) after the attributes are set, one time, in the active file/model. It is consistent and reliable because after the **Motif** files are correctly created. They can be used without any need for changing, exporting, importing, or anything else.

Source 4: Using a combination of **Motif** files with **Layout** files is possibly the best solution for projects with multiple alignments and models. Like the **Motif** file, the **Layout** file is also developed from an easy to use program in D&C Manager.

The **Layout** file has two purposes:

1. To be used as the active file for laying out the Port Shapes for a given alignment, and
2. To be used as the source file for creating the Motif files (when Layout files are used).

The **Layout** file is a single model file that nearly duplicates the attributes of the design file active model. The exception to this is that all elements in the active model become a reference in the **Layout** file. The only active elements in the **Layout** model are the Port Shapes. After the Port Shapes are placed by the Geopak P&P sheeting program, the **Layout** file is then used as the source for creating the Motif files and also the file from which the sheeting program is run.

Benefits associated with using the **Layout File** concept are:

1. The only active elements in the **Layout File** are the Port Shapes; therefore, they are not likely to be deleted or unintentionally altered.

2. There is only one model in the **Layout File**; therefore, Geopak only has one model to search for the Port Shapes.

For additional information on **Plan & Profile Geopak Sheeting**, see Section [21B-4](#).

Additional information on the **Layout File** is presented later in this document.

The Motif File

A **Motif** file is essentially the Geopak seed-file for sheeting specific Plan/Profile sheets that are associated with a Geopak alignment, whether horizontal, vertical, or both. **Motif** files are created using the **Motif Builder** program, which is accessed through the D&C Manager, as shown at the right. If the item is not found as shown, use the *D&C > Edit > Find* tool to locate it.

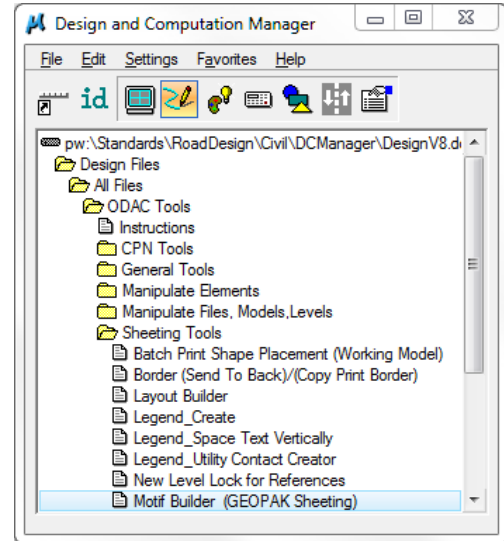
The **Motif Builder** program can create up to three types of **Motif** files, each relating to one of the three possible types of Port Shapes:

PLN (Plan),

PRF (Profile), and

DBG (**D**itch **B**ar **G**raph), the Geopak Tabular Data port shape.

For information on **Plan & Profile Port Shapes**, see Section [21B-6](#).



A set of Motif files (from one to three files, listed above) are created for each unique combination of the Geopak alignment, station range, sheet scale, and sheet type selection. If any of these items change, such as a different alignment, different scale, etc., a new set of Motif files will be created.

For information on **Sheet Types** and **Sheet Type Names**, see Sections [21B-4](#) and [21B-6](#).

The **Motif Builder** program creates the Motif files by copying the attributes and reference attachments from the active file and model at the time the Motif Builder program is run. Therefore, the program is initiated from the file and model that is currently being sheeted. This can be from the active design file, an Exported model, or a **Layout** file.

Motif files provide information to the Geopak Sheeting Program about each of the three separate portions of the Plan & Profile sheet (PLN, PRF, and DGB or Tabular Data). They serve two, and only two, purposes. Each specific **Motif** file tells the sheeting program:

1. Which reference file attachments are required for that particular area of the sheet, and
2. Which reference file levels should be turned on.

There is **NO** connection between a Motif file and the plot scale of any sheet.

Each of the three possible **Motif** files for any given alignment will contain all appropriate reference files for the associated Geopak sheeting “Port” shape(s). (Examples: The “Plan Motif” (**PLN**) will include references of all files (and models) having information in the Horizontal Alignment area (Plan area) of the sheet, including such files as **DSN**, **PHO**, **SUR**, **ROW**, **STR**, **GEO**, etc. The only references commonly required for the **PRF** and **DBG Motif** files include the specific alignment model in the design file (such as “*ML_0100...*”) and the **LineWork** model. The “Tabular Data Motif” (**DBG**) will contain the Profile Elevations and the Ditch Bar Graph information at the bottom of the Profile area.)

Motif Builder Program

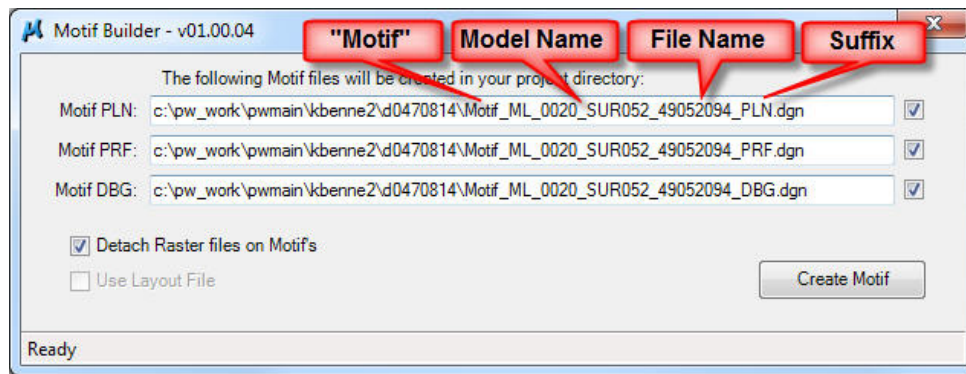
The **Motif Builder** program is to be run from the model containing the **active** Port Shapes for the given Geopak alignment, whether that is in a design file (“*dsn*”, “*geo*”, or “*sol*” or other) or from the **Layout** file.

See above and below for additional information on the **Layout File**.

The **Motif Builder** program will create three **Motif** files, as shown in the dialog below.

The dialog shown below was produced while running the **Motif Builder** program from the design file. A different variation of this dialog will exist when running the **Motif Builder** program from the **Layout** file, as shown later in this document.

The default setting for the “create Motif File” check box is checked, (☑), which is set to create all three **Motif** files. The check boxes can be unchecked (☐) if any **Motif** is NOT to be created. There is also a check box (☑) to “**Detach**” **Raster files from the Motif**, which would cause any raster file attachments to NOT to be included in the sheet file. Also, as shown below, the **Motif** file name will be created as a combination of the active model name, plus the active file name (number), plus a prefix of “**Motif_**”, a suffix of “**_PLN**”, “**_PRF**”, or “**_DBG**”, and a file extension of “.dgn”.



Do not use spaces anywhere within a file name or model name. Instead, use the “underbar” character rather than an actual space. The **Motif Builder** program will fail if there are spaces in the active file name or model name.

When the **Motif Builder** program is run, all Reference Files with the display turned on (visible) in the active model will become reference attachments to the **PLN Motif** File. Before the **Motif Builder** is run, turn off or detach all unnecessary reference file attachments in the active model or they will become attachments to the **PLN Motif**. Also, the exact reference level display (levels ON and OFF) will be duplicated in the **Motif** File reference attachments. Simply stated, the elements displayed when the **Motif Builder** is run are the elements that will be displayed in the **Motif** file, and subsequently in the plotting Sheet file.

Tweaking the level display in a V8 Geopak produced Sheet file model is not an easy task because the reference file logical names are automatically assigned by the Geopak sheeting program and are not as easily understandable. Therefore, the levels should be set correctly in the **Motif** file so they do not require adjustments in the Sheet file. Erroneous settings in the Motif file would cause the same display errors to be present in all sheet models within the Sheet file. If an error is detected after sheeting, it would probably be easier to make the correction to the **Motif** file, and then re-create the sheet file. Otherwise, the errors must be corrected “model by model” in the sheet file.

Each time a different combination of “reference file attachments” and “reference file level display” is required to create P&P sheets, a separate set of **Motif** file(s) will be required.

Motif File Name Description

All **Motif** file names will begin with the word “**Motif_**”, and will, therefore, sort together.

The Model Name portion includes the Roadway Type and the four digit Scale (“*ML_0100*”).

The Roadway Type will be “**ML**” (main line), “**SR**” (side road), “**DET**” (detour), etc.

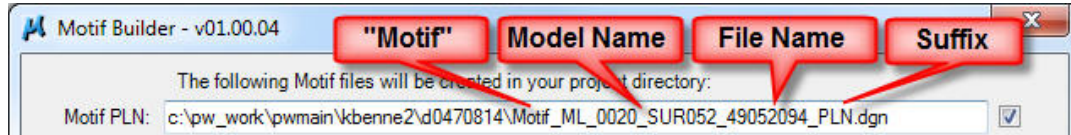
The Description (optional) is useful to differentiate “SR’s”, “Ramps”, etc. (SUR052, below)

The File Name portion is usually the same as the formerly used “K number”, but with no “K”.

The File Name number corresponds to CCRRRPPP, for County, Route, and Paren number.

The last piece of the file name is the addition of the Port type: **_PLN**, **_PRF**, or **_DBG**.

All **Motif** file names will end with the extension “.dgn”.



The Layout File

The **Layout File** has two purposes:

1. To be used as the active file for laying out the Port Shapes for a given alignment, and
2. To be used as the source file for creating the Motif files (when Layout files are used).

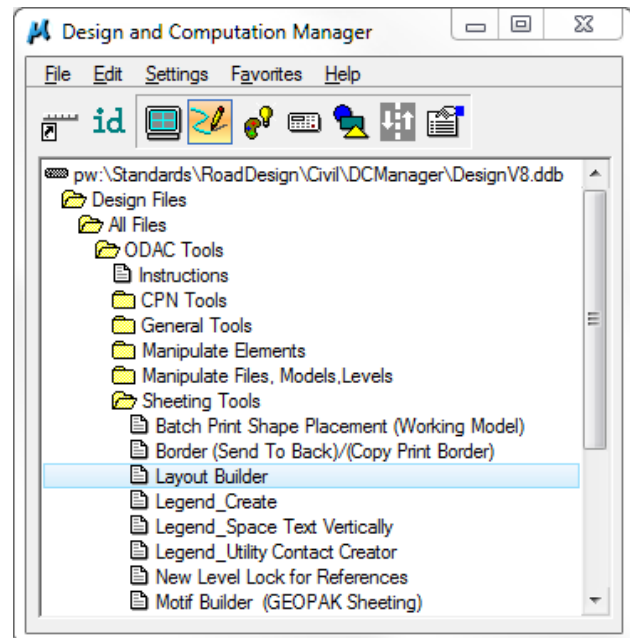
The **Layout** file is a single model file that nearly duplicates the attributes of the design file active model. The exception to this is that all elements in the active model become a reference in the **Layout** file. The only active elements in the **Layout** model are the Port Shapes. After the Port Shapes are placed by the Geopak P&P sheeting program, the **Layout File** is then used as the source for creating the Motif files and also the file from which the sheeting program is run.

Like the **Motif File**, the **Layout File** is also developed from an easy to use program in D&C Manager.

The **Layout File** concept and the **Layout Builder** program are optional sheeting steps, sometimes used to simplify sheeting when the design file contains multiple alignment models that use the same Sheet Type name (such as Eng 3000-10-1-2).

The **Layout Builder** tool can be accessed from the Geopak D&C Manager, as shown at the right.

If the item is not found as shown, use the *D&C > Edit > Find* tool to locate it.

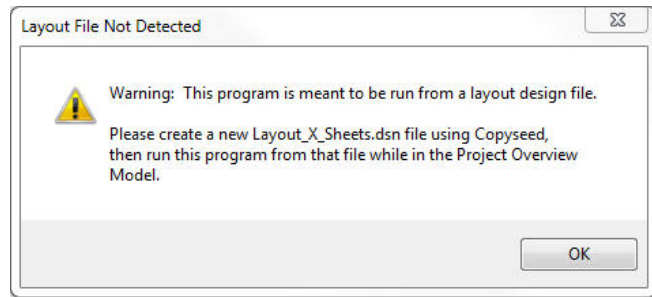


For additional information on **Plan & Profile Geopak Sheeting**, see Section [21B-4](#).

For information on **Sheet Types** and **Sheet Type Names**, see Sections [21B-4](#) and [21B-6](#).

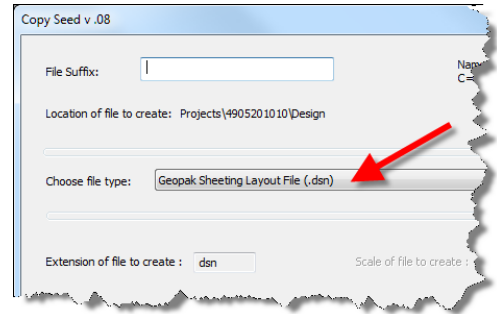
The **Layout Builder** program is to be run from within an empty **Layout** file. The file name must begin with “**Layout_**” (Example file name: “Layout_D_Sheet_ML052NB.dsn”). A warning (error) message will display if an attempt is made to run the **Layout Builder** program from a file with a name that does not

begin with “**Layout_**”. The “**Warning**” message shown to the right (“**Layout File Not Detected**”) will state that “a new **Layout** file should be created through the **CopySeed** program”.



The **CopySeed** file type to be selected is “**Geopak Sheeting Layout File (.dsn)**”, as shown at the right.

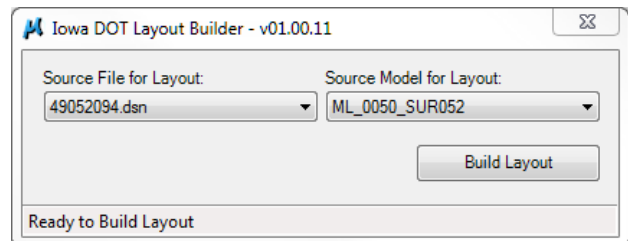
For more information on the **CopySeed** program, see Section [21C-54](#).



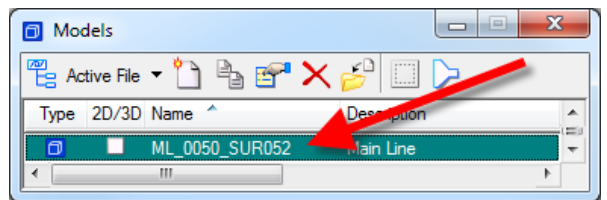
Do not use spaces anywhere within a file name or model name. Use the underbar character rather than an actual space. A space anywhere in the file name or model name may cause the **Motif Builder** program to fail.

If the Layout file is being created for the purpose of sheeting a “.geo” or “.sol” file, the new Layout file extension should be “.geo” or “.sol” to match the design file. In the “**Choose file for Layout**” drop-down selection list (shown below) the **Layout Builder** program will list only files with extensions that are the same as the **Layout** file extension.

To run the **Layout Builder** program from the newly created empty **Layout** file, *double-click* the **Layout Builder** item in the Geopak D&C Manager (as shown on the previous page). This will produce the **Layout Builder** dialog, shown at the right. From the drop-down selection lists, choose the design file and model that are to be used to build the new **Layout** file, then *click* the **Create Layout** button.



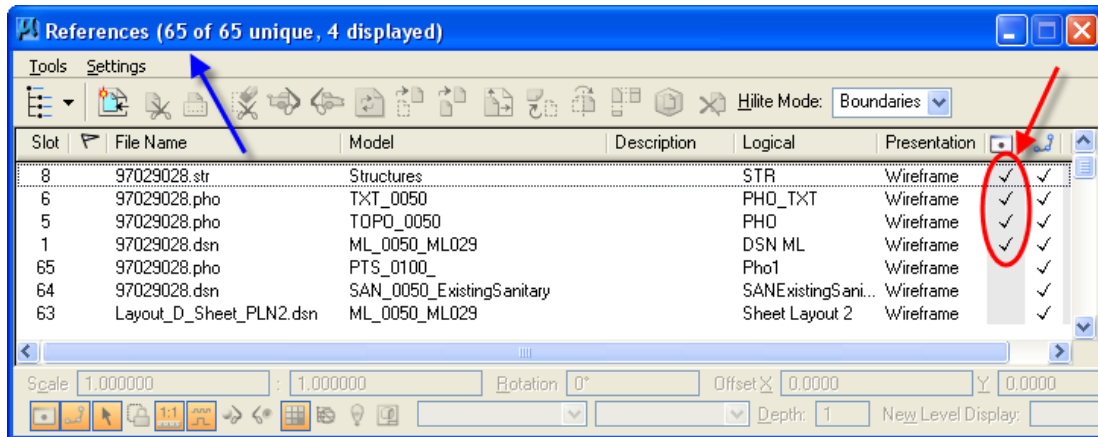
The only model in the **Layout** file will be the MicroStation default model, which the **Layout Builder** program will rename to match the name of the copied model, as shown at the right.



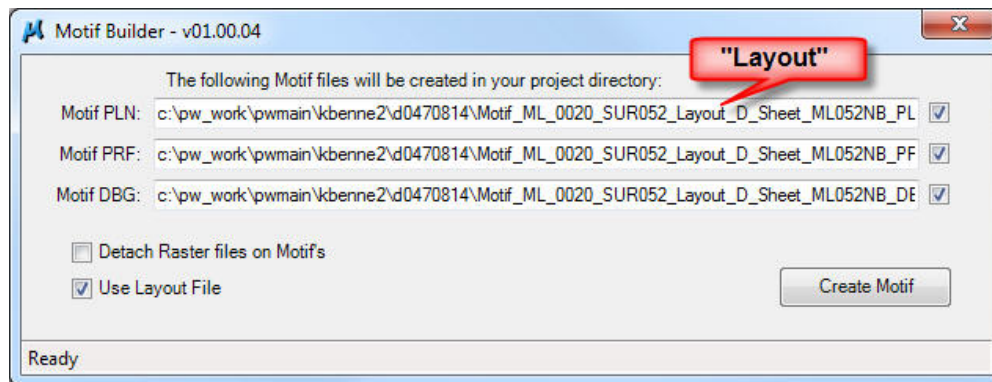
The new model in the **Layout** file will be nearly identical to the copied model, except that all live elements in the original model will become one additional reference attachment in the new **Layout File**. This will cause the **Layout File** to have no live elements until the Port Shapes are placed by the Geopak P&P Sheeting program.

When using the **Layout Builder** program to create the **Layout File**, the entire list of references present in the original design file model will be present in the **Layout File** (shown by the blue arrow below). The only reference attachments originally displayed (turned on) in the new **Layout File** (shown by the red arrow) will be the same references that were being displayed in the design file model at the time the layout file was created. Even though detaching the unused and non-displayed references is not required, unnecessary references should be detached to clean up the file and eliminate unnecessary baggage.

Note: Some procedures check every element in every reference and model, even if they are not displayed (turned on). Therefore, eliminating unused references should speed up processing.



When creating the **Motif Files** from the **Layout File**, the file name structure for the **Motif File** is nearly identical to that shown previously when the **Motif File** was created from the design file. The exception is that “**Layout**” is now in the file name, as shown below. Also, when creating the Motif Files from the Layout file, the “**Use Layout File**” check box is displayed and no longer grayed out and must be checked (☑) as shown below. This is necessary to produce the correct **Motif** attachments from a **Layout File**.



The next step in the **Layout** file development is the placement of the Geopak plan sheet Port Shapes through the **Plan Sheet Layout** dialog. The procedure for “**Port Shape Placement**” is the same in the project design file or in the newly created alignment specific **Layout File**. Therefore, the same instructions for the Geopak **Plan Sheet Layout** procedure will work for both files.

For information on **Port Sheet Placement** and general **Plan & Profile Geopak Sheeting**, see Section [21B-4](#).

Chronology of Changes to Design Manual Section:

021B-002 P & P Sheet Motif Builder

10/13/2014 Revised
Images updated to reflect migration to ProjectWise.

6/30/2011 Revised
Combined 21B-1 and 21B-2.

5/31/2009 NEW
Previously Updated.