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Fields and Sheet Sets: A Powerful Combination

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GD13-5L Basic sheet set functionality in AutoCAD 2006 enables you to easily find, open, and share your sets of drawings with minimal effort. However, if you want to take full advantage of the powerful sheet set functionality available in AutoCAD 2006, you must update your existing data to include fields. Adding fields to your sheets enables you to change sheet and view data with the assurance that those changes will automatically propagate throughout the sheet set. In this hands-on lab, you will learn the most efficient methods for adding fields to your plot stamps, title blocks, callout blocks, and label blocks enabling you to maximize your productivity.

About the Speaker:

Heidi began using AutoCAD software in 1986. She joined Autodesk in 1992 and has held a variety of AutoCAD-related positions, including product support technician, training specialist, and senior applications engineer. In her current position as a technical marketing manager, Heidi assists the AutoCAD development teams in developing and delivering technical marketing material for AutoCAD and AutoCAD LT.

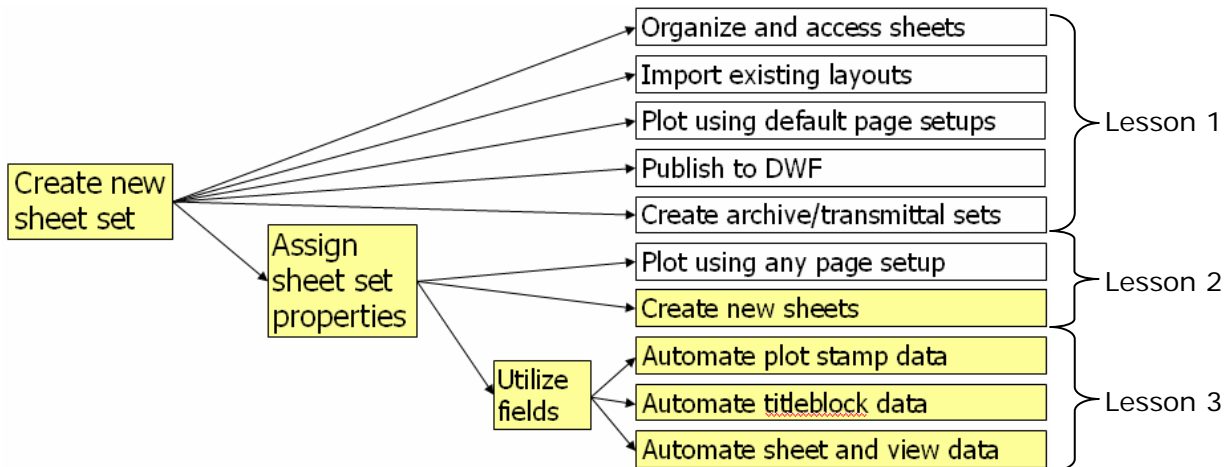
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Introduction

Whether you design manufactured parts, maps, or buildings, sheets happen! The sheet set functionality in AutoCAD enables you to efficiently create, manage, and share your entire set of sheets from one convenient location. At first glance, the powerful functionality offered by the Sheet Set Manager may seem overwhelming but you don't have to learn and implement all of the functionality simultaneously. You can start by creating a sheet set from your existing drawing layouts and then continue to use familiar AutoCAD tools as you implement sheet set functionality one step at a time. Although you can implement sheet set functionality in any order, this ten step process enables you to progress from the simplest to the most complex functionality with minimal disruption to your current workflow.

You can begin taking advantage of sheet set functionality for your current projects with minimal effort by importing your current drawing layouts into a sheet set. From there, you can easily access and manage your entire set of drawings. You can continue editing your sheets using traditional tools with the convenience of accessing them from a central location. You can open drawings by knowing the appropriate sheet name, without having to know the name or location of the drawing (DWG) file and you can plot, publish, archive or create an electronic transmittal of the entire set of drawings. You can continue creating new drawings using traditional methods and then import individual layouts into the sheet set as necessary. Or, you can associate your existing template file with the sheet set and create new sheets (drawings) directly from the sheet set manager. Once you are comfortable using sheet sets for basic sheet management, you can take your sheet sets to the next level by combining Field and Sheet Set functionality. You can create your own fields in the form of custom sheet set properties and then reference those, and other fields, in your plot stamps, callouts, view labels, and titleblocks.

This session focuses on using fields to maximize your efficiency with sheet sets. The advanced topics in this course are based on the third lesson of a comprehensive sheet set course. For more information on the basics of sheet sets, refer to GD21-1L: Ten Steps to Make Sheets Happen.



Lesson 2: Assigning Sheet Set Properties

You can take your sheet sets to the next level, enabling you to work more efficiently, by customizing the sheet set properties.

1. Open an existing sheet set.
 - From the File menu, choose Open Sheet Set.
 - Navigate to the Project02 folder and select Project A.dst.
2. Assign sheet creation properties to the sheet set.
 - Right-click on the sheet set title and choose Properties.
 - For the Sheet Creation Template, navigate to the Project folder and select Project Template.dwt.
 - For the Sheet Storage Location, navigate to the Project/drawings folder.
3. Assign a label block to the sheet set in preparation for Lesson 3.
 - For the Label Block for Views, navigate to the Project folder and select Project Template.dwt.
 - Select the option to Choose blocks in the drawing file and choose the View Label block.
4. Assign callout blocks to the sheet set in preparation for Lesson 3.
 - For the Callout Blocks, choose Add and then navigate to the Project folder and select Project Template.dwt.
 - Select the option to Choose blocks in the drawing file and choose the Callout Bubble.
5. Assign a resource drawing location to the sheet set in preparation for Lesson 3.
 - For the Resource Drawing Locations, navigate to the Drawings/Architectural/Res folder.
 - Choose OK to close the Sheet Set Properties.

Notice that you can assign a sheet creation template and drawing storage location based on the subset.

Create new sheets

1. Create a new “blank” sheet in the sheet set.
 - Right-click in the sheet list and choose New Sheet.
 - Enter a sheet number and name. Notice the file name, folder path, and sheet template.
2. Open the newly created sheet.
 - Double-click on the new sheet
 - Review the titleblock data.
3. Close the new drawing and remove the sheet from the sheet set.

Lesson 3: Utilizing Fields

The Sheet Set Manager enables you to define custom properties to use as fields for the entire sheet set or for individual sheets. For example, you might create custom properties for the project name and number, whose values apply to the entire sheet set. And, you might create custom properties indicating who drew or reviewed a particular sheet, in which case the properties are owned by each sheet. The custom properties you create are available as fields in your drawings.

Continue using the sheet set you created in Lesson 2 or use the sheet set located in the 03Project folder.

1. Create custom sheet set properties.

- In the Sheet Set Manager, right-click over the sheet set title and choose Properties.
- In the Properties window, choose Edit Custom Properties.
- Choose Add to create the custom properties as indicated in Figure 1.

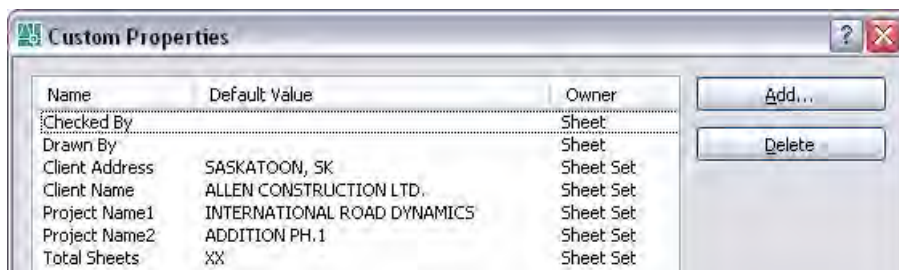


Figure 1.

Process Overview: Automating Plot Stamp Data

In AutoCAD, you can combine field functionality with familiar Mtext editing to create a plot stamp that is as flexible in appearance and location as any other piece of text. Since the plot stamp is actually an Mtext object, you can view and modify its appearance in an intuitive WYSIWYG environment without having to first plot the drawing. You can create the plot stamp in your drawing template so that it is automatically included in any new drawings that you create. The field values automatically update to display data based on the new drawing. You can even copy the plot stamp into an existing drawing with the assurance that the field data will update accordingly.

The following procedure describes how to use fields to create a plot stamp. You can use this procedure regardless of whether you are working with individual drawings or sheet sets.

1. In AutoCAD, open the drawing (DWG) or template (DWT) that you use for creating new sheets.
2. Create a new Mtext object.
3. In the Mtext editor create any labels that you want to include in your plot stamp. For example, you might want a label for the plot date, drawing file name, and who plotted the drawing. Creating labels is optional. You may choose to insert field data without preceding text.
4. After each label, right-click in the Mtext editor and choose Insert Field.
5. In the Field dialog box, select a field category and a field name.

The field category and field name that you choose depends on the data that you want to display. The drawing file name field is in the Documents field category but all of the plot-specific fields are in the Plot field category. If you want to display the plot date, for example, select the Plot field category and the PlotDate field name. Depending on the field that you choose, you may have the option to select from various formats such as month/day/year or year-month-day.

When you exit the Field dialog box, the field value appears in the Mtext editor. If the field cannot be evaluated, it will display dashes "----". For example, AutoCAD can't evaluate the PlotDate field until the drawing is actually plotted. After you insert your fields in an Mtext object, you can modify their appearance using typical editing features. You can change a field by double-clicking on it and choosing an alternate one from the Field dialog box.



After you create your plot stamp, you should verify that all of the fields function properly. The fields that you included in your plot stamp will determine how you should test it. The following procedure describes how you might test the fields for PlotDate, FileName, and Login.

1. Log out of Windows and login using a different name (or send your template to a different user to test).
2. In AutoCAD, create a new drawing based on your template.
3. Plot the new drawing.
4. You can plot to a DWF file to save paper and eliminate the need for a hardcopy device.
5. Verify that the plot data, file name, and login name updated appropriately.
6. The plot date in the drawing displays the last plot date. This value will remain in the drawing until the next time the file is plotted.

Automate plotstamp data

1. Open the sheet creation template.
 - Verify the name and location of the sheet creation template in the Sheet Set Properties
 - From the File menu, choose Open and navigate to the template file.
2. Create an Mtext object.
 - From the Draw menu, choose Text>Multi-line Text.
 - Place the Mtext object and enter text similar to Figure 2.



Figure 2.

3. Add fields to the Mtext object.
 - Click in the space after Filename:
 - Right-click and choose Insert Field.
 - Select the Filename field and choose OK.
 - Repeat the process for each of the fields as indicated in Figure 3: PlotDate, DeviceName, PageSetupName, Login.

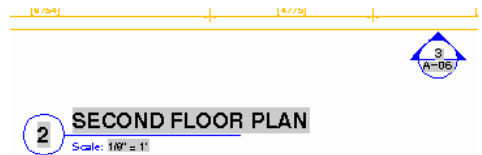


Figure 3.

Process Overview: Automating Label and Callout Data

Most sets of drawings contain information that is interrelated. For example, a view on one sheet might refer to a view on a different sheet. Using traditional methods, you can manually maintain the text references between sheets but that process can be tedious and error-prone. You can dramatically improve your productivity and drawing accuracy by updating your existing callout and view label blocks to include fields. With field-enabled callouts and view labels, not only is the textual data dynamically updated as changes occur, hyperlinks enable you to open the sheet, which is being referred to, and automatically zoom to the appropriate location. Sheet set functionality enables you to create links between callouts and views throughout the entire sheet set.

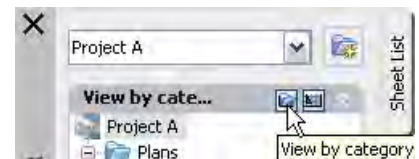
A sheet set may reference one label block and any number of callout blocks. The label and callout blocks can point to block definitions within a drawing (DWG) or template (DWT) or they can point to individual drawing or template files. Even before you customize your callout and label blocks with fields, you can begin using them with your sheet sets. If you associate your label block with a sheet set, it will automatically insert when you place a new sheet view.



1. In the SSM, right-click over the sheet set title and choose Properties.
2. In the Sheet Set Properties dialog box, for the Label Block for Views property, navigate to the drawing (DWG) or template (DWT) where the label is stored.
3. In the Select Block dialog box, select the Drawing File as a Block if the drawing or template itself is the label block. Or, select Blocks in the Drawing File if the label is stored as a block definition within the drawing or template and then select the appropriate block definition.
4. In the Sheet Set Properties dialog box, for the Callout Blocks property, navigate to the drawing (DWG) or template (DWT) where the callouts are stored.
5. In the Select Block dialog box, select the Drawing File as a Block if the callouts are stored in an individual drawings or templates. Or, select Blocks in the Drawing File if the callouts are stored as a block definition within the drawing or template and then select the block definition to use.

In some cases, you may wish to use different callout blocks for different types of views. For example, you might have a view category called Elevations that points to one set of callout blocks and a view category called Sections that points to a different set of callout blocks. You can use the View List tab of the sheet set manager to assign callout blocks to different view categories.

1. In the SSM, select the View List tab.
2. Choose the View by Category icon.
3. Right-click on the sheet set title and choose New View Category.
4. In the View Category dialog box, choose Add Blocks.
5. In the List of Blocks dialog box, choose Add and navigate to the drawing (DWG) or template (DWT) where the callouts are stored.
6. In the Select Block dialog box, select the Drawing File as a Block if the callouts are stored in an individual drawings or templates. Or, select Blocks in the Drawing File if the callouts are stored as a block definition within the drawing or template and then select the block definition to use.



If your callout and label blocks do not contain attribute definitions, you can define block attributes using traditional methods and then insert fields in the Value box. Assuming that your blocks already contain attribute definitions, you will need to modify the attribute definitions to utilize SheetSetPlaceholder fields.

1. From the Modify menu, select Object>Attribute>Block Attribute Manager

- In the Block Attribute Manager:
 - Select a callout block.
 - Double-click on one of the attributes that requires a field (such as view number, sheet number, or viewport scale).
- In the Edit Attribute dialog box:
 - Select Preset mode.
 - Right-click in the Default value box and choose Insert Field.
 - In the Field dialog box, under Field category, select SheetSet and under Field names, select SheetSetPlaceholder.
 - Under Placeholder type, select the appropriate option and if applicable, select Associate Hyperlink and then apply the changes.

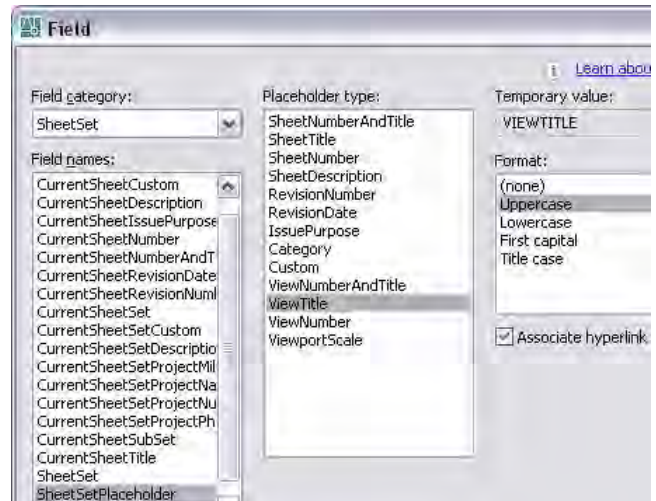
Using the SheetSetPlaceholder fields in your callout and label blocks enables you to define block attributes for fields that are not associated with any particular sheet or sheet set. The placeholder field that you select depends on the data you want displayed for the attribute you are currently editing. Common placeholder fields include:

ViewNumber to display the number of the view for which the callout or label is referring.

SheetNumber to display the number of the sheet for which the callout or label is referring.

ViewportScale to display the scale of the viewport for which the label is referring.

The Associate Hyperlink option is available for view and sheet numbers and titles and is most commonly used for creating callout blocks. If you associate hyperlinks with your callout blocks, you can click on the callout in one sheet and AutoCAD will automatically open the associated sheet and zoom to the proper view.



Once you have updated your label and callout blocks to include fields, you are ready to test them!

- In the Sheet Set Manager, right-click on the sheet set and choose New Sheet.
- In the New Sheet dialog box, enter a sheet number and title.
- In the Sheet Set Manager:
 - Double-click on new sheet to open it.
 - Select the Resource Drawings tab.
 - Navigate to a drawing that contains modelspace views.
 - Drag and drop the drawing or modelspace view within the drawing to the new sheet.

The label block referenced in the sheet set properties is automatically placed on the drawing. Review the label data to ensure that it displays the correct values. By default the view number displays as dashes "----". You must renumber the new sheet view to assign it a value.

4. In the Sheet Set Manager:
 - Choose the View List tab and select the newly created sheet view.
 - Right-click over the view name and select Rename & Renumber.
 - Make changes to view number and view name.
5. Regenerate the sheet to ensure the values update accordingly.
6. In the Sheet Set Manager:
 - Double-click on a different sheet to open it in the drawing editor.
 - Select the View List tab
 - Right-click over the view name and select Place Callout Block.
 - Select one of your callout blocks and place it on the sheet.

Review the callout data to ensure that it displays the correct values. You should repeat this process for each of your callout blocks.

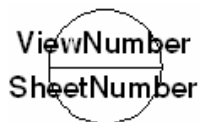
Tip: If you are using a Dynamic Block (introduced in AutoCAD 2006) to combine all of your callouts into a single block definition, you only have to do this procedure once!

Automate sheet and view data

You can automate the process of inserting callout and label blocks by associating them with the sheet set (as you did in Lesson 2), but to fully automate the process of placing views and referencing them with callouts, you must add fields to the blocks. Fields, specifically SheetSetPlaceholder fields, enable you to define callout and label blocks that reference “future” data. For example, you can create a label block with a placeholder field for the viewport scale. What viewport? You don’t know yet. That is why it is a placeholder!

1. Add fields to the Label block.
 - Open the sheet creation template file.
 - Insert and explode the View Label and the Callout Bubble blocks. You can also use BATTMAN to edit the block definition.
2. Replace the default attribute values with fields.
 - Double-click on the attribute (or use BATTMAN)
 - Right-click in the Default box and choose Insert Field.

All the fields for callout and label blocks can be found in the SheetSet field category and the SheetSetPlaceholder field name. For the fields in the callout block, select the Associate Hyperlink option. It is not necessary to associate a hyperlink with the fields for the view label. Repeat this procedure on the remaining callout blocks.



3. Override the old label block definition.
 - Erase the insertions of the blocks.
 - Save the drawing template file.

Process Overview: Automating Titleblock Data

AutoCAD offers considerable flexibility in the way you create and edit your titleblocks. For example, you might attach your titleblock as an external reference but store the titleblock data as text within each drawing. Alternatively, you might insert your titleblock in a template file and then edit titleblock attributes each time you create a new drawing from the template. Regardless of how you create and use your drawing titleblocks, you can significantly automate the process of updating titleblock data by utilizing fields. The field functionality in AutoCAD enables you to include sheet set data in your drawing titleblocks so that, as sheet and sheet set information changes, the title block data is always current. To automate your titleblock data, you must replace the existing data with field codes. You can insert field codes using the Field dialog box that is accessible in most text and attribute editing tools. The Field dialog box includes field codes for common data such as current date, sheet number, and drawing name. In addition to using the predefined field codes, you can create your own fields for a sheet set and then access them from the Field dialog box.

The following procedures assume that your titleblock is inserted on a layout of a template drawing and that the titleblock contains attribute definitions. Even if your situation differs slightly, you can apply the general ideas that are included in these procedures.

1. In the Sheet Set Manager, right-click on the sheet set title and choose Properties.
2. In the Sheet Set Properties dialog box, choose Edit Custom Properties.
3. In the Custom Properties dialog box, choose Add.
4. In the Add Custom Property dialog box:
 - Enter a name for the property.
 - Enter a default value for the property.
 - Specify if the property is owned by the entire sheet set or on a sheet-by-sheet basis.

The custom properties that you define in the Sheet Set Manager are available as sheet set fields in the Fields dialog box.

If your title block is inserted in a template file, your first instinct might be to open the template file and edit the titleblock from there. Although this method will work, it does not offer you instant feedback as you select various sheet set fields because the template file itself is not a sheet in the sheet set. The easiest way to add fields to your titleblock, with the assurance that you are selecting the proper fields, is to work with it as part of the sheet set. You will create a new sheet that is based on your standard template file. To do this, you must have access to a sheet set. You can use any existing sheet set and then, after you update the titleblock to include fields, you can remove the titleblock sheet from the sheet set. If you have multiple sheet sets to choose from, consider using a sheet set that utilizes custom sheet set properties and a sheet creation template that is appropriate for the majority of your projects.

You can use the Sheet Set Manager (SSM) to view or edit the sheet creation template and custom properties associated with your sheet set.

1. In the SSM, right-click over the sheet set title and choose Properties.
2. In the Sheet Set Properties dialog box:
 - Verify (or select) the sheet creation template file (DWT, DWT, or DWS) and layout containing the titleblock.
 - Verify (or create) custom sheet set properties.

3. In the SSM, right-click over the sheet set title and choose New Sheet.
4. In the New Sheet dialog box, enter values for the sheet number and title.
Tip: Use values that are easily recognizable when assigning field codes, such as "SheetNum" and "SheetTitle".
5. In the SSM, double-click on the new sheet to open it in the drawing editor.

After you create a new sheet, which is identical to the template file containing your titleblock, you can easily replace the default attribute values with field codes. Any titleblock data that worked well as an attribute is a good candidate for using fields. When editing attribute definitions, you might be tempted to use REFEDIT or BATTMAN. Although these methods enable you to redefine the attribute definitions, they do not update attribute values of existing block insertions. If you choose to use REFEDIT or BATTMAN to add fields, you must erase the current instance of the titleblock and reinsert the updated block. To simplify the editing process and remove any uncertainty caused by existing block instances, I strongly recommend that you explode the titleblock, making note of its insertion point. You will see all of the attribute tags and you can double-click on them for easy editing.

1. Select the titleblock.
2. From the Modify menu, choose Explode.
3. Double-click on an old (non-field) attribute.
4. In the Edit Attribute Definition dialog box, right-click in the Default value box and choose Insert Field.
5. In the Field dialog box, select a field category and a field name.

The field category and name that you choose depends on the attribute you are currently editing. For example, if you want the attribute to display the current date, you would select the Date & Time field category and the Date field name. Most of the fields that you will use for titleblock data are in the SheetSet field category and the field names begin with "CurrentSheet". Using the CurrentSheet fields in your titleblock enables AutoCAD to read the values that apply to any sheet in which the titleblock is inserted. For example, you will probably want attributes that display the CurrentSheetNumber and CurrentSheetTitle.

If you created custom sheet set properties, you can access them using the CurrentSheetSetCustom and CurrentSheetCustom field names. Of these two custom options, the one you select depends if the custom property you created is owned by the sheet set or by the sheet. A drop-down list enables you to see all of the available custom properties. For example, if you created a custom sheet set property called Project Name, which is owned by the sheet set, you would select the CurrentSheetSetCustom field name and then select Project Name from the Current Property Name list.

As you apply fields to your attribute definitions, you receive instant feedback by seeing the appropriate value displayed in the Edit Attribute Definition dialog box. If you do not see a value, the sheet set property has not been assigned a default value. You might find it helpful to include generic default values for all of your sheet set properties. For example, in the Description property for a sheet, enter the words "Sheet Description". The instant feedback that you receive during the field insertion process is the only reason that I suggest updating the titleblock drawing as part of a sheet set rather than editing the template file directly. If you opened the template file without it being part of the sheet set, you would receive no feedback regarding sheet set properties and because it would have no current sheet set to read from, the list of custom property names would be blank requiring you to remember the custom property names rather than selecting them from a list.

After you update all of the titleblock data, you must remove the titleblock drawing from the sheet set and use it to replace the old sheet creation template.

1. In the SSM, right-click on the sheet you have been working on and choose Remove Sheet.

The drawing is still open but it no longer belongs to the sheet set.

2. From the File menu, choose Saveas.
3. In the Save Drawing As dialog box, select the appropriate file type (DWT, DWG, or DWS), and select the sheet creation template file to overwrite.

Tip: Prior to saving the file, it is a good idea to verify the file name and path of the sheet creation template in the Sheet Set Properties to ensure that the one you overwrite is the same one that is being used by the sheet set.

4. From the Draw menu, choose Block>Make.
5. In the Block Definition dialog box, select the name of the titleblock block definition.
6. Select all of the objects to include in the block definition.
7. Specify the basepoint for inserting the titleblock. Hopefully you took note of the previous insertion point prior to exploding the block.

Because you redefined the titlblock after removing the sheet and resaving the drawing, there are no current sheet set values associated with this template drawing and all of the current sheet set fields display with # symbols. If you redefine the block prior to removing the drawing from the sheet set, the attributes will maintain the last evaluated field values. This could be helpful depending on the default field values that you chose. For example, if the current sheet number was "SheetNum" as suggested, it might be helpful to see that text displayed in your titleblock (as opposed to seeing ###). If, on the other hand, the current sheet number was "01", it would be confusing to see that irrelevant text displayed in your titleblock.

After you replace your previous titleblock template with your new version, you should verify that all of the titlebock fields function properly. You can do this by creating a new sheet using your new template and then reviewing and editing the associated titleblock data.

1. In the Sheet Set Manager, right-click on the sheet set and choose New Sheet.
2. In the New Sheet dialog box, enter a sheet number and title.
3. In the Sheet Set Manager, double-click on new sheet to open it.
4. Verify the titleblock data to ensure that it displays the correct values.
5. Make changes to sheet and sheet set values and then regenerate the new sheet to ensure the values update accordingly.

Once you have verified that your titleblock data updates appropriately you are good to go! New sheets that you create using your titleblock will automatically display the current sheet information and, with little effort, you can replace the titleblocks in the existing drawing layouts that you imported. Simply erase and purge the old titleblock definition from existing drawings and insert the new titleblock. You don't have to reenter the attribute data because it is still stored with the sheet set and automatically read by the titleblock fields.

Automate titleblock data

1. Edit a copy of the sheet creation template.
 - Create a new sheet in the sheet set using SHEETNUM and SHEETNAME for the number and title.
 - Open the new sheet and explode the titleblock. Do not double-click or use REFEDIT or BATTMAN.
2. Replace the default attribute values with Fields.
 - Double-click the attribute.
 - Right-click in the Default box and choose Insert Field.
 - Select the field as indicated in Figure 4.

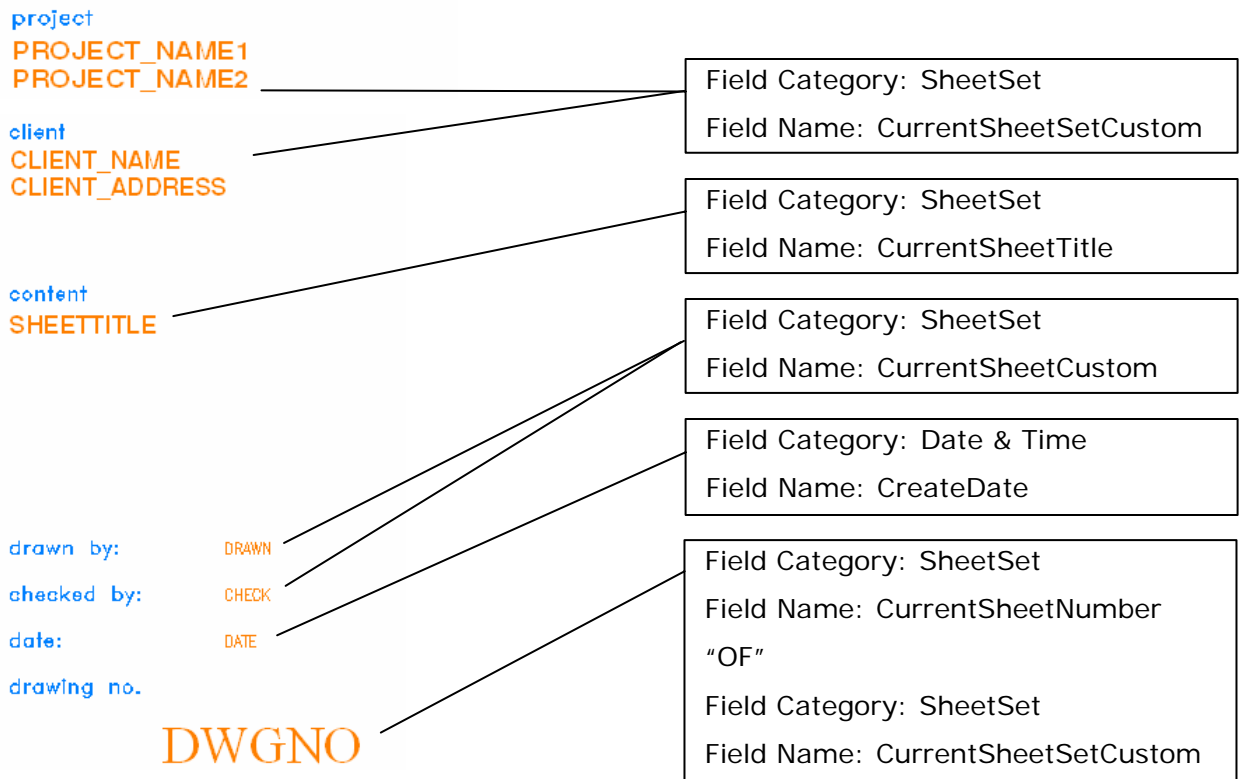


Figure 4.

3. Remove the SHEETNUM SHEETNAME sheet from the sheet set.
4. Reblock the TitleBlock using 0,0 as the insertion point.
5. Replace the old sheet creation template with the new one.
 - Verify the name and location of the current sheet creation template in the Sheet Set Properties.
 - Use SaveAs to overwrite the previous version of the sheet creation template.

With the Sheet Set Manager and field functionality, you will save time and reduce errors. You can let AutoCAD update text references between views and sheets while you focus on your design!

