Schedules: Beyond the Basics

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AB1712 - If you can model it, you can schedule it. Using schedules in Autodesk® Revit software is a powerful way of viewing the information in your Building Information Modeling (BIM) projects. Most users create basic schedules and have a good understanding of how to create schedules. What most users do not know is some of the more powerful features of schedules. This class will explore some of the lesser-known aspects of creating schedules, such as creating embedded schedules, using conditional formatting in schedules, and understanding key schedules. We will also dive into shared and project parameters and how to use them in calculated formulas.

Learning Objectives

At the end of this class, you will be able to:

- Know when and where to use Key Schedules

- Create an Embedded Schedule

- Know how to use Conditional Formatting in Schedules

- Understand how to work with Parameters in Schedules

About the Speaker

Mike has more than 15 years of experience as an architect working on various types of projects. He is currently Senior AEC Building Application Specialist at Applied Software, where he helps firms assess, plan, and implement new technology. His knowledge and enthusiasm for AutoCAD® products runs deep; he has been a user of AutoCAD since Release 9 and of AutoCAD Architecture since its debut. He has also developed a deep appreciation for Autodesk® Revit®. Mike is a contributing author of Autodesk Official Training Courseware and a repeated speaker at Autodesk University.

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Table of Contents

Introduction

Welcome to this session! I hope you will be able to go Beyond the Basics when using schedules after this session. Schedules are a power part of Revit. The 'I" in BIM stands for information. Schedules are the key to getting to the information.

Creating basic schedules in Revit are pretty simple. I want to discuss some of the lesser known areas of schedules and show some examples that will improve your ability to retrieve the information you need.

How to work with Parameters in Schedules

Parameters are the keys to schedules. Revit comes out of the box with many parameters that can be used to extract information. Of course, not all parameters can be included out of the box. When the parameter you are looking for is not included, custom parameters or formulas can be created.
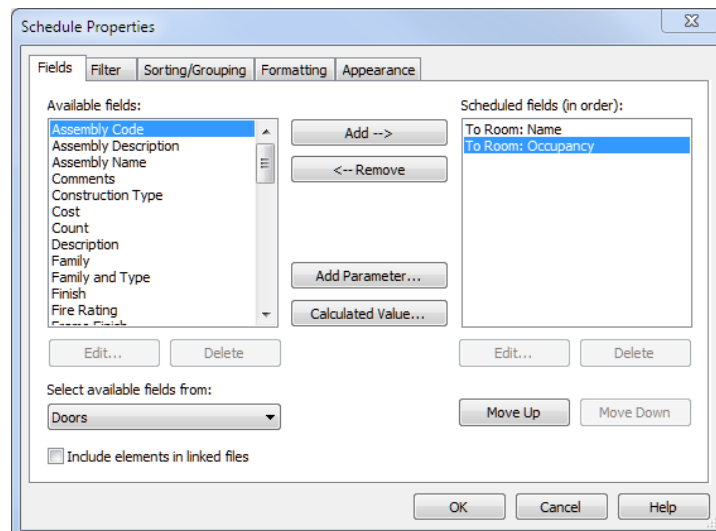
Formulas

New parameters can be created by using a formula. Formulas allow you to create parameters that depend on other parameters for their values. Formulas support the following arithmetic operations: addition, subtraction, multiplication, division, exponentiation, logarithms, and square roots. Formulas also support the following trigonometric functions: sine, cosine, tangent, arcsine, arccosine, and arctangent.

Parameter names in formulas are case sensitive. For example, if a parameter name begins with a capital letter, such as Width, you must enter it in the formula with an initial capital letter. If you enter it in a formula using lower-case letters instead, for example, width * 2, the software will not recognize the formula. It is recommended that you do not use a dash (-) when naming parameters, because Revit will recognize the dash as an arithmetic operation.

Inconsistent Units

Typically an error in units will come from breaking the rules required by some operation, meaning an operator or function. For example:

- Addition requires both inputs, as well as the result, to have the same numerical unit type.
- Multiplication can support any numerical unit type for the inputs, not necessarily the same, but the result units must be the product of the input units (e.g. length * area = volume).
- sine() requires the input to be an angle and the output to be a unit less number.
- if() requires the first argument to be Boolean (Yes/No). The other two arguments and the result can be numerical or not, but they must all be the same.

By far the most common error when working with formulas is **Inconsistent Units**. This error is caused by doing an arithmetic function on two parameters with different units. For example, in the schedule you already have "Area" and "Cost" but want to add a Calculated Value "Total Cost". To resolve this error, you will need to get the length value back to a whole number as opposed to feet. To achieve this, simply divide the length by 1'.

- Area * Cost = Inconsistent Units
- (Area / 1) * Cost = Total Cost

Another example of an error is trying to multiply two lengths to get a total length. You have to remember basic algebra. When you multiply a foot value by another foot value you will get a square foot value, which Revit deciphers as an area. If you want to get a total foot value instead of an area value, you will need to divide one of the lengths by 1' to keep the value in feet as opposed to area. Let's look at the example below.

- 100 ft * 100 ft = 10,000 ft²
- If you have a Length parameter, and try to use a (Length * Length) formula, you´ll get the "Inconsistent Units" error, because (Length * Length = Length Squared). The only way to resolve this is to neutralize the units on at least one of the parameters in the formula. The easiest way to neutralize a unit is to divide by 1 (one):
- 100 ft * (100 ft / 1 ft) = 10,000 ft
- Therefore 100 ft / 1 ft = 100 (unit less) and 100 ft * 100 = 10,000 ft

Shared Vs. Family Vs. Project Parameters

There are three types of custom parameters. In a project file, parameters can be either **Shared** or **Project**. In a family file, parameters can be either **Shared** or **Family**. We will look at parameters in a project file first.

In a project file, both shared and project parameters can be added to the project. Both types can be used to add additional information to the families in the project, and both can be included in a schedule.
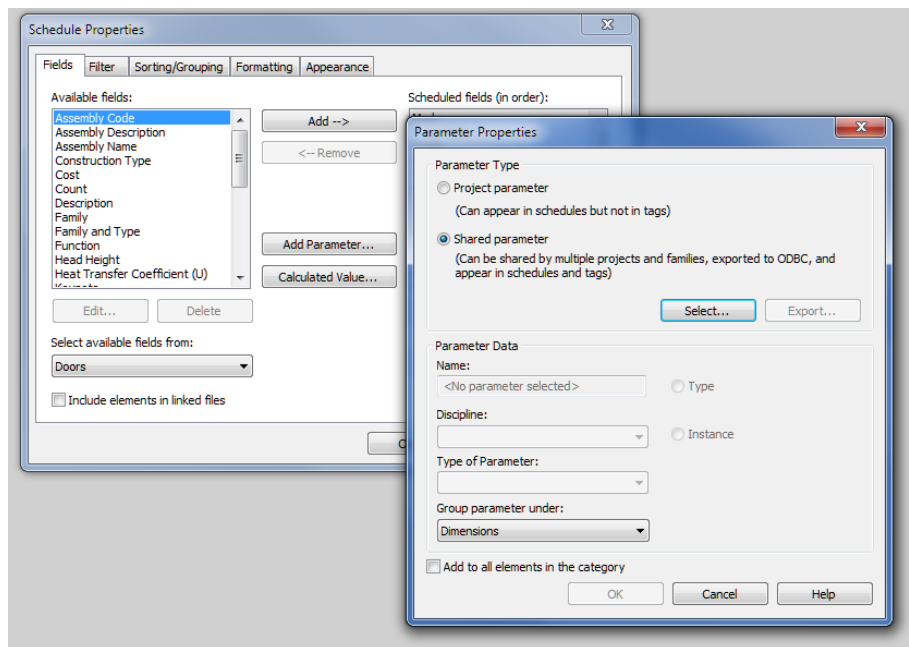
Project Parameters

Project parameters are parameters you define and then add to multiple categories of elements in a project. They are specific to the project and cannot be shared with other projects. You can then use those project parameters in multi-category or single-category schedules.

To create a project parameter, use the Project Parameter command in the Manage tab.

1. Click Manage tab ➤ Settings panel ➤ ▥ (Project Parameters).
2. In the Project Parameters dialog, click Add.
3. In the Parameter Properties dialog, select Project parameter.
4. Enter a name for the project parameter.
5. Select a discipline.
6. Select the Type of Parameter.
7. Under Group parameter under, select the heading under which the parameter should display in the Properties palette or Type Properties dialog.
8. Choose whether the parameter is stored by instance or type.
9. Select the element categories to which you want to apply this parameter.
10. Click OK.

Shared Parameters

Shared parameters are parameters that you can add to families or projects and then share with other families and projects. They give you the ability to add specific data that is not already predefined in the family file or the project template.

Shared parameters are particularly useful when you want to create a schedule that displays various family categories; without a shared parameter, you cannot do this. If you create a shared parameter and add it to the desired family categories, you can then create a schedule with these categories. This is called creating a multi-category schedule in Revit.

Shared parameters are stored in a file independent of any family file or Revit project; this allows you to access the file from different families or projects.
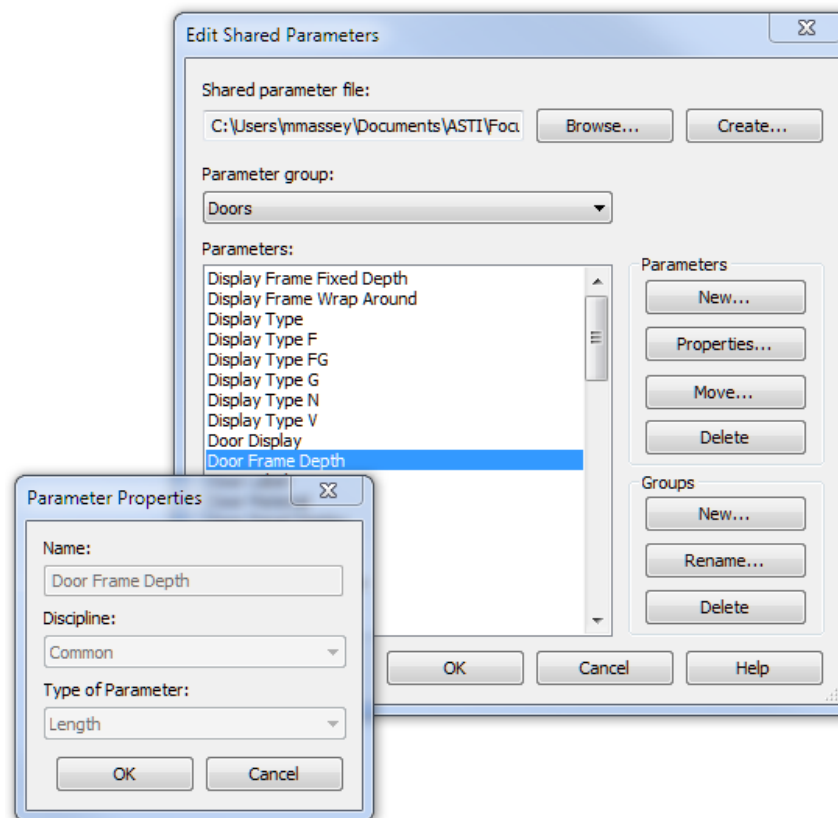
Family Parameters

In a family file, there are a number of Revit parameter types.

- Shared Parameters can be thought of as user-defined variables.
- System Parameters are variables that are hard-coded in Revit.
- Family parameters are variables that are defined when a family is created or modified.

Created family parameters cannot appear in tags or schedules. Family parameters are used if the parameter only needs to be seen in the properties of the family. If you need to use the parameter in a schedule or tag, you must use a shared parameter.

If a parameter is a family parameter and you wish to change it, you can modify it in the Family types dialog. If you click the Modify button in the Family Types dialog, the Parameter Properties dialog opens. You can replace a shared parameter with a family parameter or a family parameter with a shared parameter. Family parameters are specific to one family. You can also replace one shared parameter with another.

Creating Shared Parameters

You can create shared parameters in the project environment or in the Family Editor. Shared parameters are saved in a text file; you can then place this file in a shared area on your network to allow others to access it.

Shared parameters are organized in groups that you create to assist with categorization. For example, you might create a group called electrical for specific electrical parameters or a hardware group for specific hardware parameters. You can create as many groups and parameters as desired.
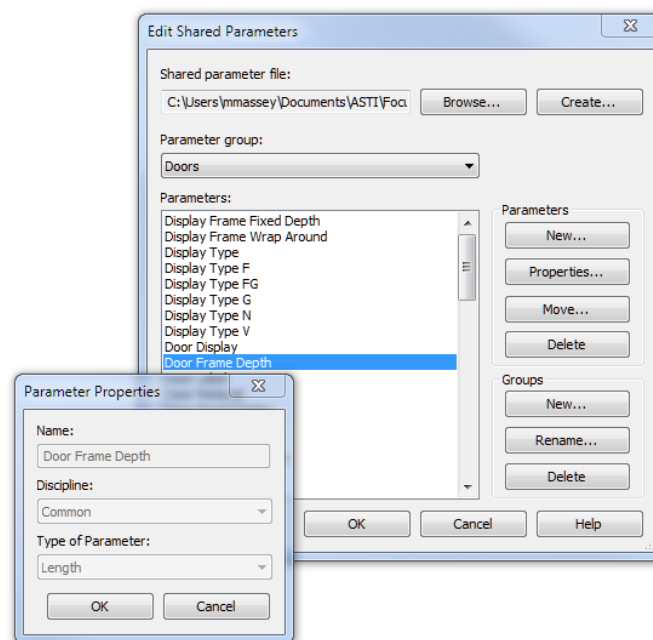
Your session of Revit can reference only one shared parameter file at a time. If there are other shared parameters in a different file that you want in the active shared parameter file, you need to export the parameters to the active file.

Typically, most offices will have one master shared parameter file. This file will be shared on the network with all Revit workstations pointing to the same shared parameter file.
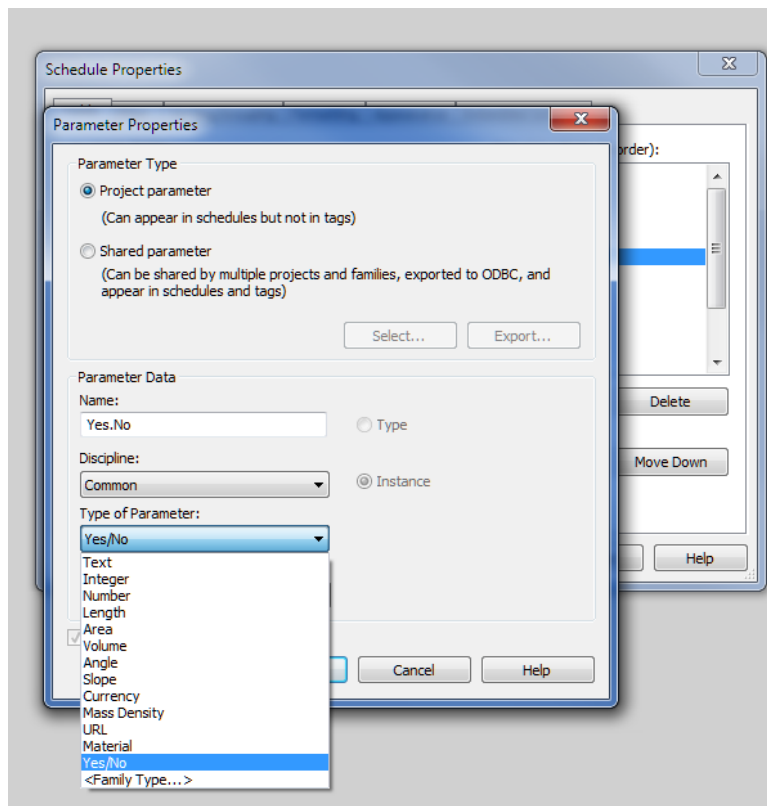
Special Characters
Revit does not allow for graphics to be included in a schedule. However, Revit does allow for special characters to be used. Special characters can be used as long as the character is of the same font style as the font defined in the body font style of the schedule. One example of the use of special characters would be to create a 'dot matrix' type of schedule where you want to show a special character as the dot.

To set up the schedule to show a special character, three (3) custom parameters will need to be created. The first needs to be a simple Yes/No parameter; the second two will be created by using a calculated value.

*Creating the Yes/No Parameter*
In the **Schedule Properties, Field tab**, click on the **Add parameter** button to create the parameter. Give the parameter a **Name** and define the **Type** as **Yes/No**. This parameter will be used to initially define whether the special character should or should not be shown. This parameter will also be used in the calculated value parameters that will be created.
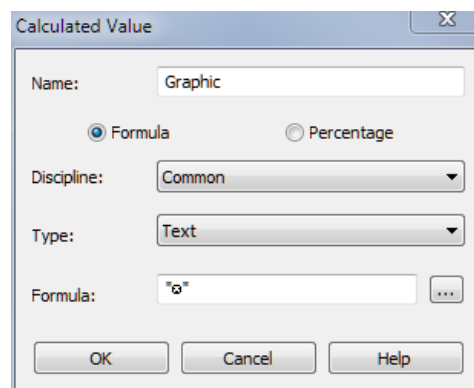
Creating the Graphic Parameter

The next parameter can be created by clicking on the **Calculated Value** button in the **Fields** tab of the **Schedule Properties**. Prior to creating this parameter, you will need to select your special character. The easiest way is to open the **Windows Character Map**. This can be found by going to the **Windows Start** button, clicking **All Programs, Accessories**, and **System Tools**. In the **Character Map** dialog, ensure that the correct font is selected, and browse through the characters to select the desired character. Once the character is selected; you can click the **Select** button and then the **Copy** button to place the character in the Windows clip board.
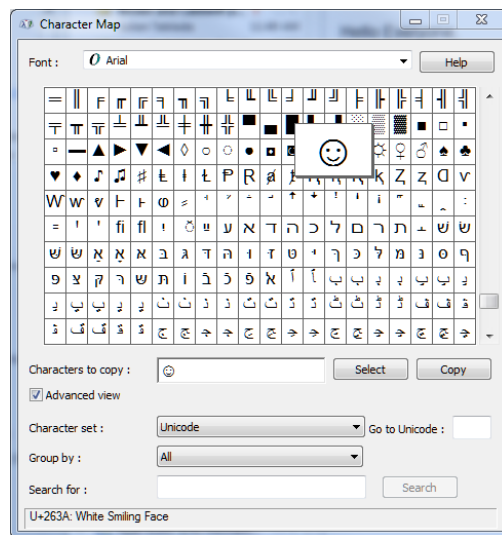
Once the special character has been copied onto the clip board, you can create the **Calculated Value** parameter in the Revit schedule. Give the Parameter a **Name** (like Graphic), and assign the **Type** to be **Text**. The formula is simply an open quotation mark, the symbol, and closed quotation mark, similar to the image below.

Creating the If/Then Parameter

The last parameter will be a **Calculated Value** parameter using an **If/Then** statement. This will be the parameter that will display the special character that is defined in the **Graphic** parameter if the **Yes/No** parameter is set to yes.

The **If/Then** parameter can be created by clicking on the **Calculated Value** in the Revit schedule. Give the parameter a **Name**, assign the **Type** to **Text** and type in the following formula.

> if((*yes/no parameter name*), *graphic parameter name*, "")

This formula is telling Revit, if the **Yes/No** parameter is set to yes, then show the **Graphic** parameter. If the **Yes/No** parameter is set to no, then show a blank. The blank is indicated by the set of quotation marks at the end of the formula with nothing inside of the quotation marks.
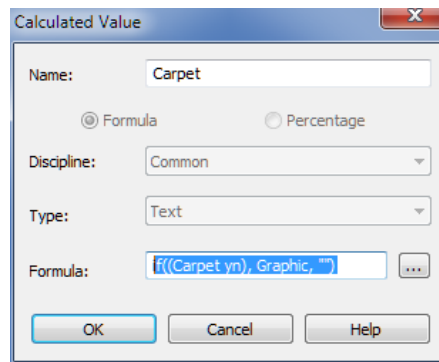

Once the schedule information is filled out, hide the **Yes/No** and the **Graphic** parameter in the schedule to show only the special character.

Room Finish Schedule								
			FLOOR FINISH					
Room Number	**Room Name**	**Area**	**Carpet**	**Tile**	**Vinyl**	**Wood**	**Concrete**	**Comments**
Basement								
1	*Living/Kitchen*	*470 SF*				●		
2	*Dining*	*194 SF*				●		
3	*Guest Bedroom*	*142 SF*				●		
5	*Hot Tub*	*104 SF*	●	●				
6	*Basement*	*48 SF*	●					
7	*Closet*	*110 SF*				●		
8	*Master Bedroom*	*260 SF*				●		
25	*Mech*	*51 SF*					●	
27	*Storage*	*48 SF*					●	
28	*Closet*	*17 SF*				●		
34	*Bath - DS*	*95 SF*		●	●			

Editing All Cells

Editing cells in a Revit schedule can be long and monotonous, especially if the majority of the cells for a parameter are the same though out the schedule. Revit does not allow you to highlight multiple cells in a schedule to change the value of multiple cells in one step. A tip to assist in editing multiple cells all at once is to change two properties in the schedule. On the **Sorting /Grouping** tab of the **Schedule Properties**, change the sorting to be sorted by the parameter that you are trying to change. Then uncheck the **Itemize Every Instance** check box. This will collapse all the fields together into one row and you can simply change the value of the field and it will change it for all items. Then go back and reapply the desired sorting method and re-check the **Itemize Every Instance** check box.
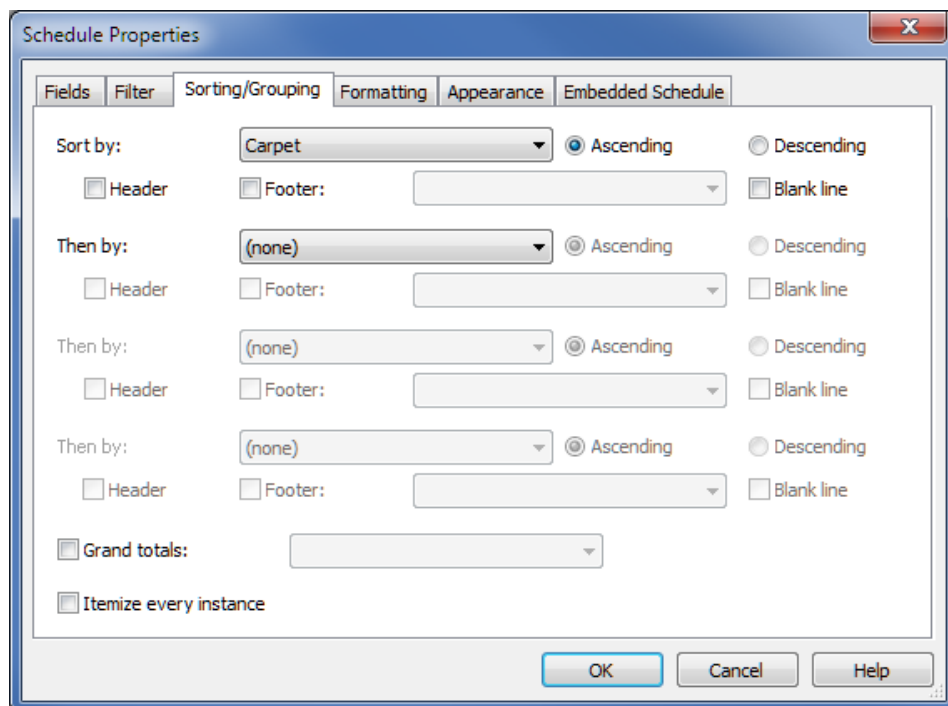

When and Where to use Key Schedules

Key Schedule

Schedules can be comprised of multiple items that have the same characteristics. For example, a room schedule might have 100 rooms with the same floor, ceiling, and base finishes. Rather than enter all this information manually for all 100 rooms in the schedule, you can define keys that automatically fill in information. If a room has a defined key, then as that room is added to a schedule, fields in the schedule automatically update, reducing the time required to produce the schedule.

Setting up the Key Schedule

Keys are defined using key schedules. Key schedules look very similar to component schedules, except that you define them to your specifications. When you create a key, it is listed as an instance property for the element. When you apply a value for the key, then the key's attributes are applied to the element.
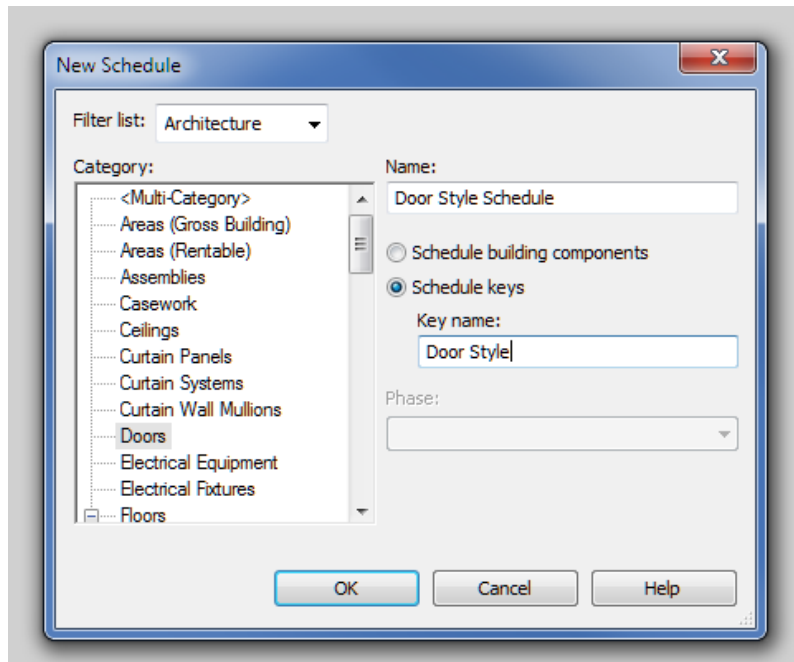
1. Click View tab ➤ Create panel ➤ Schedules drop-down ➤ 🖼 Schedule/Quantities.
2. In the New Schedule dialog, select the element category for which you want to schedule keys.
3. Select Schedule keys.
4. Revit automatically fills in the Key name. This is the name that appears among the element's instance properties. If desired, enter a new name.
5. Click OK.
6. In the Schedule Properties dialog, add the predefined fields for the style. For example, add ceiling finish, floor finish, and wall finish.
7. Fields or parameters from the selected category can be scheduled using keys. Additional project parameters can be added to the category and scheduled.
    NOTE: Shared parameters cannot be used in a key schedule.
8. Click OK.
9. The key schedule opens.
10. Click Modify Schedule/Quantities tab ➤ Rows panel ➤ ▤ New to add rows to the table.
11. Each row creates a new value for the key. For example, if you are creating a room key schedule, you can create key values for executive conference room, small conference room, large conference room, executive office, standard office, and so on.
12. Fill in the appropriate information for each of the key values.

Scheduling the Keys

To apply the schedule key to a component schedule, simply add the key name of the key schedule and the associated parameters that are associated with the keys.

1. Create a schedule for the appropriate element (such as a room schedule).
2. Include in the scheduled fields the key name you created. For example, if you created a key name called Room Style, add this key to the schedule.
3. In the schedule, select values for the newly added key. For example, if the key is called Room Style, you add values for it by selecting them from the menus that appear under the key heading.

Room Finish Key Schedule				
Key Name	Base Finish	Ceiling Finish	Floor Finish	Wall Finish
Palette A	CPT-2	ACT-1	CPT-1	PT-1
Palette B	RB-1	ACT-2	VCT-1	PT-2
Palette C	CPT-2	GWB-1	CPT-3	WC-1

Scheduled fields update automatically with the information you define in the key schedule. If you edit and modify any values in the key schedule, they update automatically in the component schedule. When you apply a key value to a schedule row, you cannot modify any fields defined in the key schedule.

How to Create an Embedded Schedule

An Embedded schedule is essentially a schedule inside of another schedule. For example if you wanted to list all the furniture in each room, you could embed a furniture schedule inside of a room schedule.

Embedded Room Schedule				
Number	Name	Level	Area	Department
Mark	Family and Type	Count		
101				
101	Lobby	Level 1	626 SF	General
	Chair-Task Arms: Chai	1		
	Credenza: 60" x 24"	1		
	Desk1: 60" x 30" 2	1		
	Sofa-Pensi: 65"	2		
	Table-End: 24" x 24"	2		
		7		

Available in Room Schedules

Embedded schedules have been available to Revit MEP users for the past several releases. Revit 2013 brought this capability to architects. In previous releases, when creating a schedule for spaces, duct systems, piping systems, or electrical circuits, you could create an embedded schedule to show information about components that are members of these systems. In 2013, an embedded schedule can be added to schedules for Rooms. Room schedules are the only architecture category that has the embedded schedule feature.


Room schedules have an additional tab called **Embedded Schedule** in the **Schedule Properties** dialog that other types do not have. To create an embedded schedule, click the **Embedded Schedule** tab in the **Schedule Properties** dialog, click **Embedded Schedule**, select a **Category**, and click the **Embedded Schedule Properties** button. You can then configure the embedded schedule properties just like other schedules. Once you have finished setting up the properties, the fields selected for the embedded schedule appear below each line in the parent schedule.
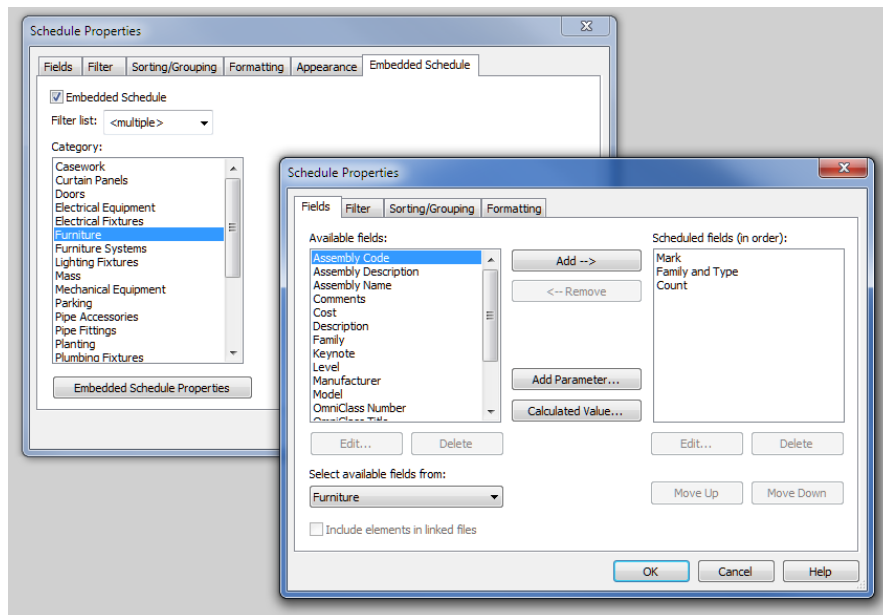
Specifying Room Information in Door Schedules

Another method of combining information from room schedules is to specify the room information inside a door schedule. You can include information in a door schedule about the room a door leads to and the room a door leads from. Typically, the door swing indicates the room the door is leading to or from. For example, in the following image door 56 leads from the hall to the bedroom.
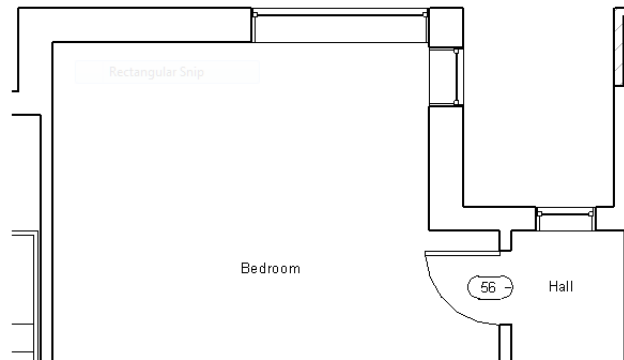
If you change the door swing after you place the door, this will not automatically be reflected in the schedule. The schedule retains the data of the initial door placement. Therefore the particular door opening for door 56, always (by default) leads from the hall to the bedroom regardless of the door swing. If you want door 56 to lead from the bedroom to the hall, you can change the door swing in plan view, and then edit the appropriate field in the door schedule.

To configure the room information, on the **Fields** tab, in the **Select available fields from** drop-down, select either **From Room** or **To Room**. This will give you a different list of fields to add to the schedule that are room related. You can select **Room Name** or **Room Number** for example.
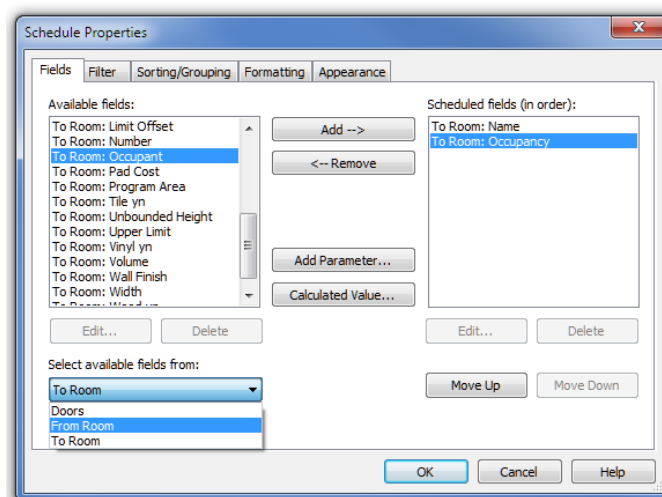
Using Conditional Formatting in Schedules

You can use conditional formatting in schedules to visually identify parameters that meet or do not meet design standards. For example, you can set a condition to indicate that an area has a square footage under a specified minimum.

Conditional formatting can be created by clicking the **Conditional Format** button on the **Formatting** tab of the **Schedule Properties**. Select the **Field**, **Test** and assign the **Value** to create condition. Select a **Background Color** to show up in the schedule view. The color will only show up in the schedule view and not on sheets.
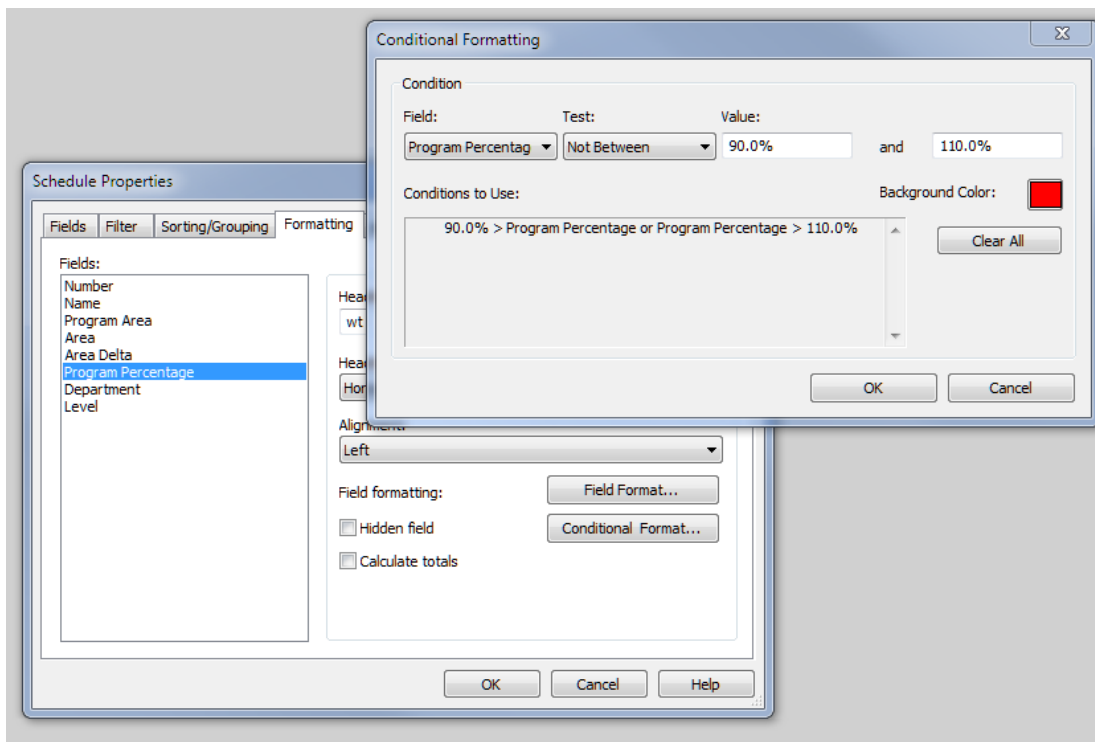

ROOM NO.	ROOM NAME	Program Area	Area	Area Delta	wt	Department	Level
			Room Area Schedule - Conditional Formatting				
107	CONFEREN	300 SF	283 SF	-17 SF	94.3%	Admin	Level 1
101	Lobby	600 SF	626 SF	26 SF	104.4%	General	Level 1
102	STAIR	200 SF	197 SF	-3 SF	98.7%	General	Level 1
110	OFFICE	180 SF	233 SF	53 SF	129.2%	Design	Level 1
111	OFFICE A	200 SF	216 SF	16 SF	107.9%	Accounting	Level 1
112	Women	50 SF	52 SF	2 SF	103.6%	General	Level 1
113	Electrical	25 SF	14 SF	-11 SF	55.4%	General	Level 1
114	Men	50 SF	42 SF	-8 SF	83.8%	General	Level 1
115	Jan	20 SF	20 SF	0 SF	97.5%	General	Level 1
Level 1: 9		1625 SF	1682 SF	57 SF			
Grand total: 9		1625 SF	1682 SF	57 SF			

16

Other Types of Schedules
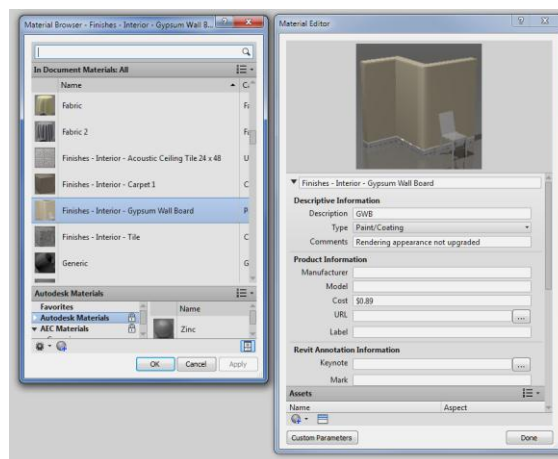
Material Schedule

Material schedules list the sub-components or materials of any Revit family. Material schedules have all the functionality and characteristics of other schedule views, but they allow you to show more detail about the assembly of a component. Any material that is placed in a component within Revit can be scheduled.
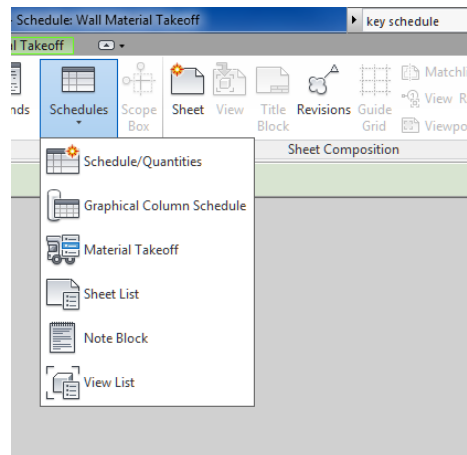
To create a Material schedule use the **Material Schedule** tool on the **View** tab. Material schedules are similar to component schedules. You must assign at least one Material parameter in the schedule (for example, Material: Name).

Assigning Cost to Materials

One of the available fields to add to a material schedule is **Material: Cost**. This is a field that you can assign a dollar value for the cost of **Material**. The **Material: Cost** parameter is stored in the **Material Library**. You can create additional materials with different cost values. Cost values can be used to create a material cost schedule.

Calculating Cost Totals

If you desire a material cost schedule, you will need to calculate the cost of the materials by the area of the material. This can be accomplished by creating a new **Calculated Value** parameter. You will need to remember to divide the **Material: Area** by **1'** to get the units back to whole numbers.

To get the schedule to properly show the total values, you will need to check the **Grand Totals** check box, and uncheck the **Itemize Every Instance** check box on the **Sorting/Group** tab. On the **Formatting** tab check the **Calculate Totals** check box for the **Material: Area** and the **Total Material** parameters.
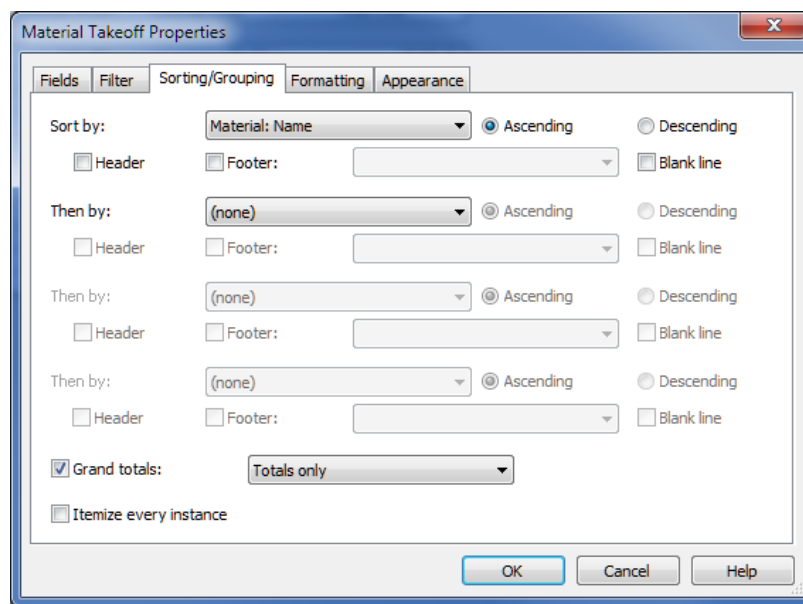

Wall Material Takeoff			
Material	Area	Cost / SF	Total Materail Cost
Fabric 2	121 SF	$0.99	$119.82
Finishes - Interior - Gypsum Wall Board	8056 SF	$1.23	$9909.24
Gypsum Wall Board	326 SF	$1.20	$390.86
Insulation / Thermal Barriers - Rigid insulation	952 SF	$0.75	$713.66
Masonry - Brick	4383 SF	$3.84	$16832.40
Masonry - Concrete Masonry Units	1714 SF	$3.00	$5142.40
Metal - Furring	1660 SF	$6.00	$9961.75
Metal - Stud Layer	5030 SF	$6.00	$30178.93
Vapor / Moisture Barriers - Damp-proofing	930 SF	$0.39	$362.52
Vapor / Moisture Barriers - Vapor Retarder	3509 SF	$0.40	$1403.70
Wood - Sheathing - plywood	3475 SF	$0.95	$3301.61
	30156 SF		$78316.89

Creating a Note Block Schedule

A Note Block can be used to create a numbered list of notes in your project.

The Note Block tool creates a unique kind of schedule that reads the parameters for a generic annotation family. The annotation family is placed into the project and populated with the information you want to track. The note block will sort and arrange the information that has been placed in the generic annotation elements.

Note Block	
Tag	Text

A	Generic Roof
C	Generic Window
B	Generic Wall
D	Generic Door
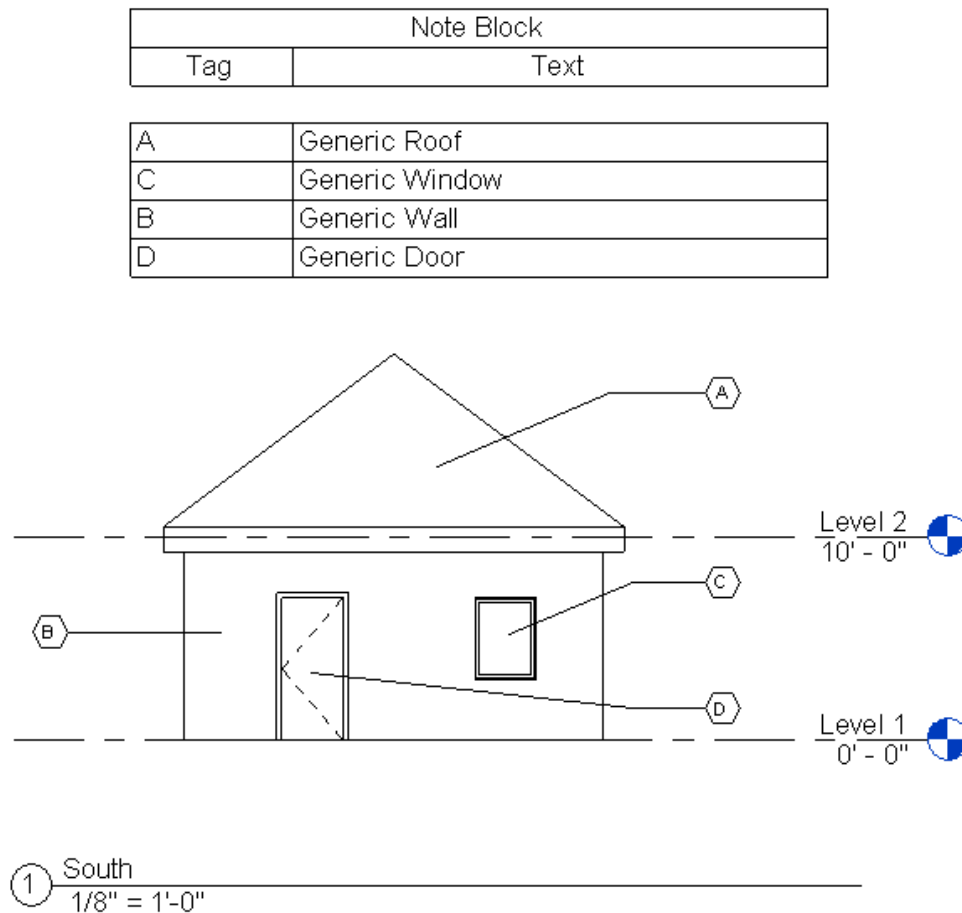
It is important to understand that the note block element is reading parameters assigned to the annotation element and not any other elements in the Revit model. In order to make a change, the annotation element properties must be changed.

Creating an Annotation Symbol

Revit does not come with an Annotation Symbol that can be used when creating a note block.
A new Annotation Symbol family must be created prior to creating the note block schedule.

The following steps outline how to create the Annotation Symbol family.

1. Click ![icon] ➤ New ➤ ![icon] (Annotation Symbol).
2. In the New Annotation Symbol dialog, select the Annotation Symbol template for the project, and click Open.
3. The templates are all very similar. Some may already have predefined properties and values.
4. Revit opens the Family Editor.
5. Click Create tab ➤ Properties panel ➤ ![icon] (Family Category and Parameters).
6. Click Create tab ➤ Text panel ➤ ![icon] (Label).
7. In the Type Selector, select the label type.
8. Select the vertical and horizontal justification.
9. In the drawing area, click to position the label.
    -   For example, in a generic model tag template, place the cursor at the intersection of the 2 reference planes.
10. Click the New Parameter to create parameter to add to the label.
11. Create a new parameter (named Number).
12. In the Edit Label dialog, under Category Parameters, select the parameter you want in the label, and click ![icon] to add the parameter to the label.
13. Click OK.
14. To modify the placement of the label, click Modify, select the label, and then drag it to the new location.
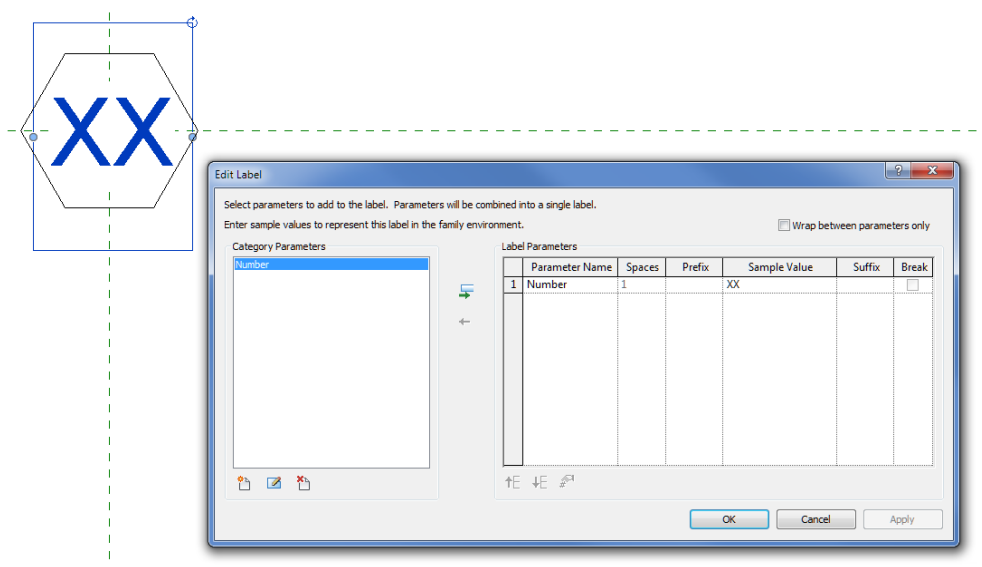
Using View Schedules

View schedules are schedules that can be used internally to help manage the views inside the Revit project. Managing views are critical to ensure that the correct views are being used on the sheets and that the views are graphically showing what is intended. View schedules will probably never be placed on a sheet to be plotted, but it is a great tool to use throughout the duration of the project. It provides a single view listing all the views and items such as level of detail, scale, and sheet information.

						View List				
					Sheet			Phasing		
Use	Name	Level	Detail	Scale	No.	Name	Title	Phase	Filter	
Documentation										
Ceiling Plan: Ceiling Plan										
Documentation	Level 1	Level 1	Coarse	48	A2	First Floor Reflected		New Construction	Show All	
Documentation	Level 2	Level 2	Coarse	96				New Construction	Show All	
Elevation: Building Elevation										
Documentation	East		Coarse	96	A5	Elevations		New Construction	Show All	
Documentation	North		Coarse	96	A4	Elevations		New Construction	Show All	
Documentation	South		Coarse	96	A4	Elevations		New Construction	Show All	
Documentation	West		Coarse	96	A5	Elevations		New Construction	Show All	
Elevation: Interior Elevation										
Documentation	Elevation 1 - a		Coarse	24	A11	Interior Elevations		New Construction	Show All	
Documentation	Elevation 1 - c		Coarse	24	A11	Interior Elevations		New Construction	Show All	
Documentation	Elevation 1 - d		Coarse	24	A11	Interior Elevations		New Construction	Show All	
Documentation	Elevation 2 - a		Coarse	24	A11	Interior Elevations		New Construction	Show All	
Floor Plan: Floor Plan										
Documentation	Level 1	Level 1	Coarse	48	A1	First Floor		New Construction	Show All	
Documentation	Level 2	Level 2	Coarse	48				New Construction	Show All	
Documentation	Roof	Roof	Coarse	48	A3	Roof Plan		New Construction	Show All	
Documentation	Site	Roof	Coarse	120	C1	Site Plan		New Construction	Show All	
Rendering: Rendering										
Documentation	Cover Rendering			1	A0	Cover Sheet				
Section: Building Section										
Documentation	Section 1		Fine	48	A6	Building Sections		New Construction	Show All	
Documentation	Section 2		Fine	48	A6	Building Sections		New Construction	Show All	
Section: Wall Section										
Documentation	Callout of Section 1		Mediu	24	A8	Wall Sections		New Construction	Show All	
Documentation	Callout of Section 2		Mediu	24	A8	Wall Sections		New Construction	Show All	
Documentation	Section 3		Fine	24	A8	Wall Sections		New Construction	Show All	
Working										
3D View: 3D View										
Working	3D View 1		Mediu					New Construction	Show All	
Working	Cover		Mediu					New Construction	Show All	
Working	Realistic		Mediu	96				New Construction	Show All	
Working	Sun Study		Mediu	96				New Construction	Show All	
Working	{3D}		Mediu	96				New Construction	Show All	
Rendering: Rendering										
Working	Conference_1			1						
Working	Cover Rendering w/ Backgroun			1						
Working	Lobby			1						

Exporting/Importing Schedules

Typical schedules that are used on every project should be created in the Revit Template file. This will allow them to be available in all projects started with the template file. Schedules that are used occasionally should be saved and stored in a '**Master**' schedule file. This file is an empty project file on the network that is accessible by all users. Schedules can either be saved to a new file or inserted from another project to create this '**Master**' schedule file.

Saving to a Revit File

To save a schedule out to a new Revit file, simply **Right Click** on the schedule name in the **Project Browser** and click **Save to a New File**. This will export the schedule and all custom parameters used in the schedule to a new file.
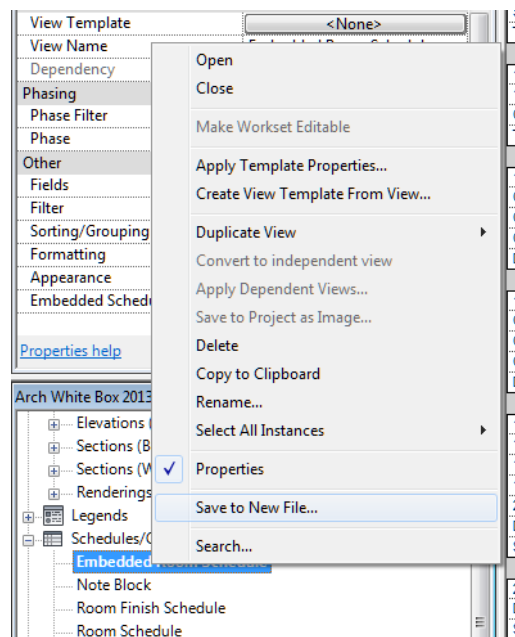

Inserting a View from another

If you need to import a schedule from one file to another, you can use the **Insert from File**, **Insert Views from File** tool on the **Insert** tab. This will allow you to browse to find the file that you are inserting the schedule from. Once the file is selected, you will see a list of all the available views to insert. Select the schedules to insert and click **OK**. This is a great way to insert schedules from a '**Master**' schedule file.
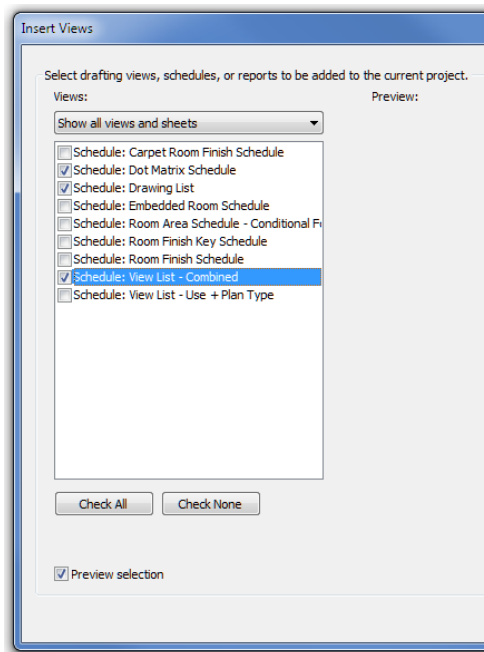
Exporting to Excel

Revit has the ability to export schedules to a **.txt - comma delaminated** file that can be opened in Excel. This is a one-way export, meaning once exported the .txt file will not be updated if the data changes in the Revit file, and if the .txt file is updated the Revit file will not be updated.

The export tool is found under the **Application Menu** (the big R). In the **Application Menu**, scroll down to **Export, Reports, Schedules**.
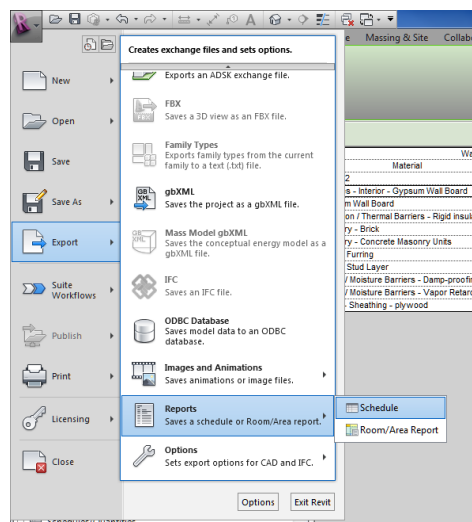
Conclusion

With the technology of Revit we are able to provide more information to the contractors than ever before. This added information helps provide a better all-around project. Schedules are a vital part of documentation. Understanding how to retrieve the data in the Revit models will ensure that projects are coordinated and accurate. The data is stored in parameters. Parameters are needed both on a project level and an office wide level. Custom parameters are needed along with calculated value parameters. The topics covered in this session will give you an infinite supply of knowledge to create the schedules needed for your next project.

In addition to creating schedules for documentation, schedules should be used throughout the project to assist in meeting design requirements. Take advantage of **Conditional Formatting** to see where the design is not meeting the requirements.

I want to thank you for attending my session Schedules: Beyond the Basics. I hope this session has brought you to a knowledge level that you feel comfortable creating parameters, formulas, and schedules to meet your project needs.