Essential Project Template Techniques
with Revit® Architecture

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AB110-6   A collection of must-see techniques for creating the best-possible project templates with the Revit suite of products. Though this session will focus on Revit® Architecture, all of these tips can be used in Revit Structure and Revit MEP.

About the Speaker:
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Overview

This session is designed to give you ideas for creating project templates for your company in Revit Architecture, Structure, and MEP. These techniques include: organizing your Views and Sheets, a method for sheet and project notes, some tips for titleblocks, and a few miscellaneous items.
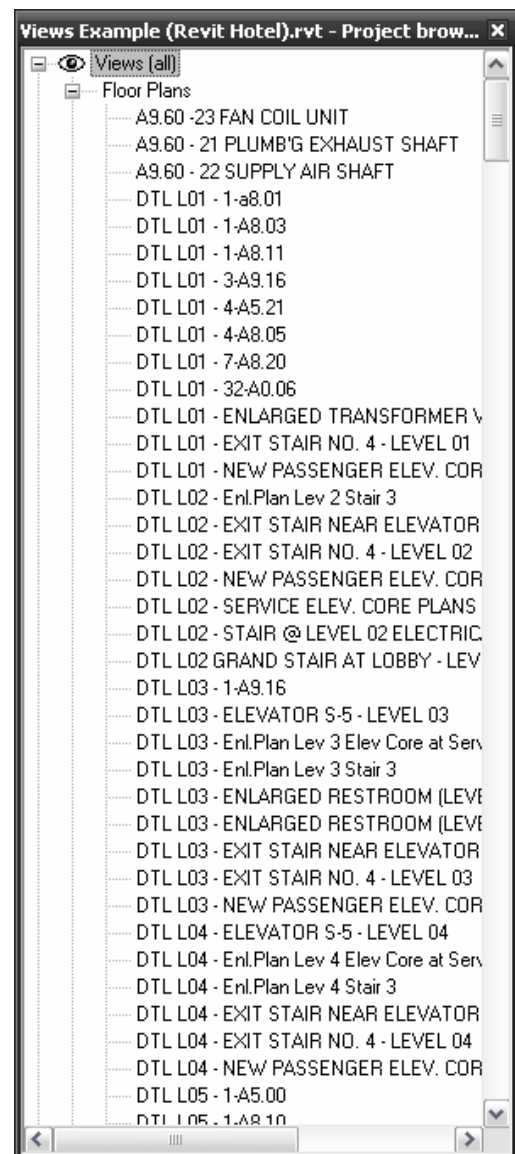
View and Sheet Organization

Issue

One of the biggest issues Revit users face is the multitude of Views and Sheets that are created for each project and how to organize them. The best way to do this is to create Project Parameters that you can use for the "Browser Organization".

Views

Out of the box, Revit will organize Views by their family/type, discipline, phase, and whether or not it's on a Sheet. These are all great ways to organize views, but you will want to add more methods. One way to organize your views by their use. Generally, there are three uses for a View:

- **Working** – A View that users can model their geometry in and not worry about View settings, except for when it helps them to model

- **Printing** – A View that is meant to be placed on a Sheet for printing

- **Exporting** – A View that is meant to be exported to CAD for consultants

Another method for organizing Views is by the design phase (schematic, design development, construction documentation) which is different than the construction phase (new, demo, existing) organization that comes standard.


Views Example (Revit Hotel).rvt - Project brow... ✕

- Views (all)
  - Floor Plans
    - A9.60 -23 FAN COIL UNIT
    - A9.60 - 21 PLUMB'G EXHAUST SHAFT
    - A9.60 - 22 SUPPLY AIR SHAFT
    - DTL L01 - 1-a8.01
    - DTL L01 - 1-A8.03
    - DTL L01 - 1-A8.11
    - DTL L01 - 3-A9.16
    - DTL L01 - 4-A5.21
    - DTL L01 - 4-A8.05
    - DTL L01 - 7-A8.20
    - DTL L01 - 32-A0.06
    - DTL L01 - ENLARGED TRANSFORMER V
    - DTL L01 - EXIT STAIR NO. 4 - LEVEL 01
    - DTL L01 - NEW PASSENGER ELEV. COR
    - DTL L02 - Enl.Plan Lev 2 Stair 3
    - DTL L02 - EXIT STAIR NEAR ELEVATOR
    - DTL L02 - EXIT STAIR NO. 4 - LEVEL 02
    - DTL L02 - NEW PASSENGER ELEV. COR
    - DTL L02 - SERVICE ELEV. CORE PLANS
    - DTL L02 - STAIR @ LEVEL 02 ELECTRIC
    - DTL L02 GRAND STAIR AT LOBBY - LEV
    - DTL L03 - 1-A9.16
    - DTL L03 - ELEVATOR S-5 - LEVEL 03
    - DTL L03 - Enl.Plan Lev 3 Elev Core at Serv
    - DTL L03 - Enl.Plan Lev 3 Stair 3
    - DTL L03 - ENLARGED RESTROOM (LEVE
    - DTL L03 - ENLARGED RESTROOM (LEVE
    - DTL L03 - EXIT STAIR NEAR ELEVATOR
    - DTL L03 - EXIT STAIR NO. 4 - LEVEL 03
    - DTL L03 - NEW PASSENGER ELEV. COR
    - DTL L04 - ELEVATOR S-5 - LEVEL 04
    - DTL L04 - Enl.Plan Lev 4 Elev Core at Serv
    - DTL L04 - Enl.Plan Lev 4 Stair 3
    - DTL L04 - EXIT STAIR NEAR ELEVATOR
    - DTL L04 - EXIT STAIR NO. 4 - LEVEL 04
    - DTL L04 - NEW PASSENGER ELEV. COR
    - DTL L05 - 1-A5.00
    - DTL L05 - 1-A8.10

Here are the steps to create a new Project Parameter for Views based on their use:

Step 1 - Create the Project Parameter

From the "Settings" pulldown, choose "Project Parameters", and then click the "Add" button:
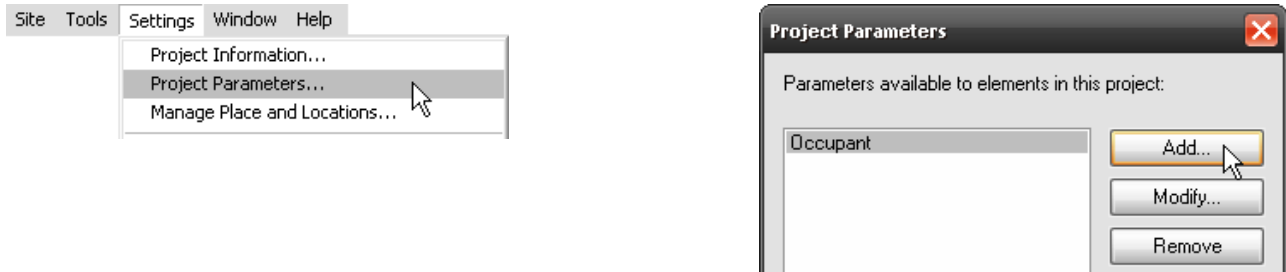
In the "Project Parameters" dialog box, use the following settings:
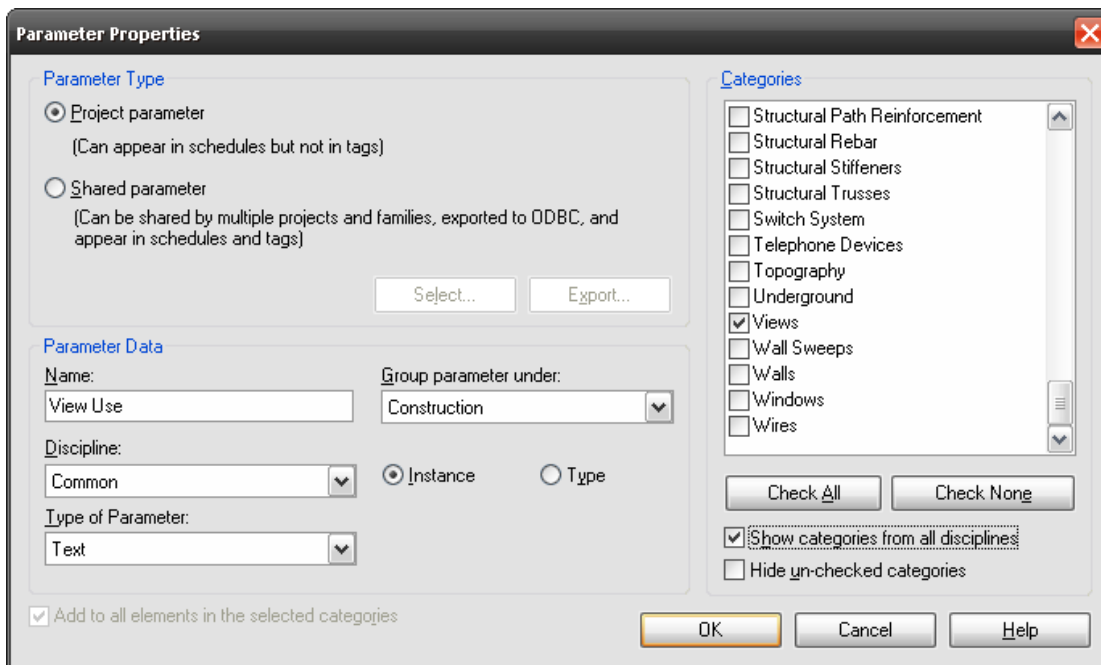
The "Group Parameter under" field is up to you. A suggestion would be to use either "Identity Data" (if you want the parameter grouped with similar ones), or "Construction" (if you want the parameter in its own group).

Step 2 - Set up your Browser Organization

Now you can organize your Views based on this new "View Use" parameter. To do this, go to the "Settings" pulldown again, then choose "Browser Organization..." Name it "Use", then use the following settings:

If you are an A/E firm or you are using Revit MEP, you may also want to add "Discipline" as the first "Group by" field, then "View Use" and "Family and Type".
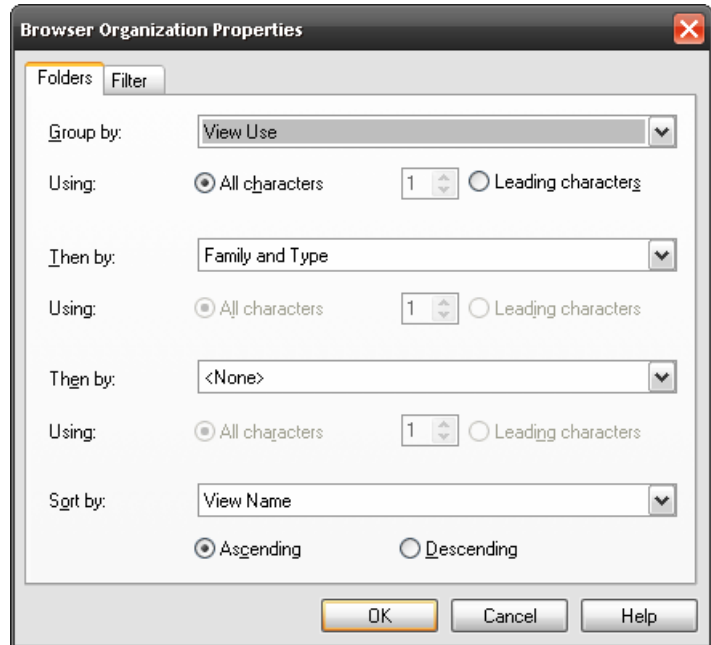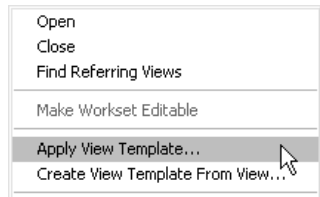
Step 3 - Modify your View Templates

You will want to modify your View Templates to incorporate these new project parameters. View Templates can be modified from the "Settings" pullown:
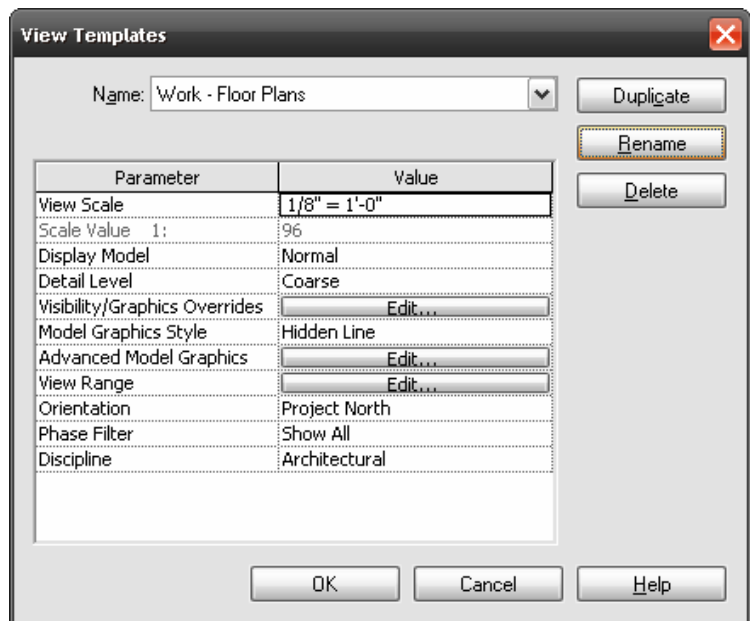
Step 4 - Apply those View Templates to your View

As new Views are created in a project, your standard View Templates can be applied so that they will automatically be organized.

| Open |
| Close |
| Find Referring Views |
| Make Workset Editable |
| Apply View Template... |
| Create View Template From View... |

Step 5 - Create a View List

A View list is a great way to quickly change view properties for all your Views in one place. Make sure to create one in all of your projects:

		VIEW DATA						SHEET DATA		PHASE	
USE	PLAN TYPE	NAME	TYPE	LEVEL	DETAIL	SCALE	NO.	NAME	TITLE	NAME	FILTER
Print	Finish	01 Finish - Print	Floor Plans	1st Floor	Coarse	96			1st Floor Finish Plan	New Construction	Show All
Print	Finish	02 Finish - Print	Floor Plans	2nd Floor	Coarse	96			2nd Floor Finish Plan	New Construction	Show All
Print	Finish	03 Finish - Print	Floor Plans	3rd Floor	Coarse	96			3rd Floor Finish Plan	New Construction	Show All
Print	Furniture	01 Furniture - Print	Floor Plans	1st Floor	Coarse	96			1st Floor Furniture Plan	New Construction	Show All
Print	Furniture	02 Furniture - Print	Floor Plans	2nd Floor	Coarse	96			2nd Floor Furniture Plan	New Construction	Show All
Print	Furniture	03 Furniture - Print	Floor Plans	3rd Floor	Coarse	96			3rd Floor Furniture Plan	New Construction	Show All
Print	Partition	01 Partition - Print	Floor Plans	1st Floor	Coarse	96			1st Floor Partition Plan	New Construction	Show All
Print	Partition	02 Partition - Print	Floor Plans	2nd Floor	Coarse	96			2nd Floor Partition Plan	New Construction	Show All
Print	Partition	03 Partition - Print	Floor Plans	3rd Floor	Coarse	96			3rd Floor Partition Plan	New Construction	Show All
Print	PowerComm	01 PowerComm - Print	Floor Plans	1st Floor	Coarse	96			1st Floor Partition Plan	New Construction	Show All
Print	PowerComm	02 PowerComm - Print	Floor Plans	2nd Floor	Coarse	96			2nd Floor Partition Plan	New Construction	Show All
Print	PowerComm	03 PowerComm - Print	Floor Plans	3rd Floor	Coarse	96			3rd Floor Partition Plan	New Construction	Show All
Print	RCP	01 RCP - Print	Ceiling Plans	1st Floor	Coarse	96			1st Floor Reflected Ceiling Plan	New Construction	Show All
Print	RCP	02 RCP - Print	Ceiling Plans	2nd Floor	Coarse	96			2nd Floor Reflected Ceiling Plan	New Construction	Show All
Print	RCP	03 RCP - Print	Ceiling Plans	3rd Floor	Coarse	96			3rd Floor Reflected Ceiling Plan	New Construction	Show All
Print	Sections & Elevations	East - Print	Elevations (Building Elevation)		Coarse	96			East Elevation	New Construction	Show All
Print	Sections & Elevations	North - Print	Elevations (Building Elevation)		Coarse	96			North Elevation	New Construction	Show All
Print	Sections & Elevations	South - Print	Elevations (Building Elevation)		Coarse	96			South Elevation	New Construction	Show All
Print	Sections & Elevations	West - Print	Elevations (Building Elevation)		Coarse	96			West Elevation	New Construction	Show All
Work	Work	01 Plan - Work	Floor Plans	1st Floor	Fine	96				New Construction	Show All
Work	Work	01 RCP - Work	Ceiling Plans	1st Floor	Fine	96				New Construction	Show All
Work	Work	02 Plan - Work	Floor Plans	2nd Floor	Fine	96				New Construction	Show All
Work	Work	02 RCP - Work	Ceiling Plans	2nd Floor	Fine	96				New Construction	Show All
Work	Work	03 Plan - Work	Floor Plans	3rd Floor	Fine	96				New Construction	Show All
Work	Work	03 RCP - Work	Ceiling Plans	3rd Floor	Fine	96				New Construction	Show All

Revit Structure and Revit MEP Views

When using the engineering version of Revit, each View is assigned a Discipline. This View parameter has a few advantages, a couple of which are:

- It can be used to help organize Views (as previously shown)
- Revit will automatically halftone any elements that are not considered to be part of that discipline (i.e. if the View has its discipline parameter set to Mechanical, all architectural Wall elements will grey out)

The problem is that Revit thinks that Detail Line elements are architectural, so if you draw Detail Lines in any view not set to either Architectural or Coordination, they will halftone, rendering them useless for engineers. I suggest that you set all of your Views to the Coordination discipline because:

- Coordination will show all elements, including Detail Lines, based on their Object Styles (i.e. no halftone)
- You can manually halftone any elements not part of your discipline using Visibility/Graphics overrides (which can be saved to View Templates)
- You can create your own discipline parameter for Views to organize them, giving you the ability to add other disciplines that are not available (like Plumbing)

Sheets

Sheets have the same issue as well as the same solution as Views – many get created through the lifetime of the project and they can be organized by creating a Project Parameter for Sheets that can be used in the "Browser Organization".

In the case of Sheets, instead of a parameter based on the use of the Sheet, create a parameter for the discipline. Also, as with Views, you may want to create a parameter based on the design phase (schematic, design development, construction documentation).

These are the steps for creating your own Project Parameter for Sheets and then using that parameter to organize them:
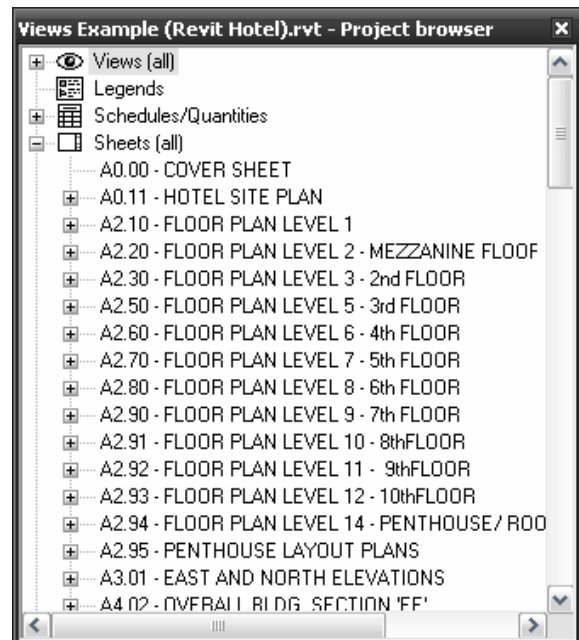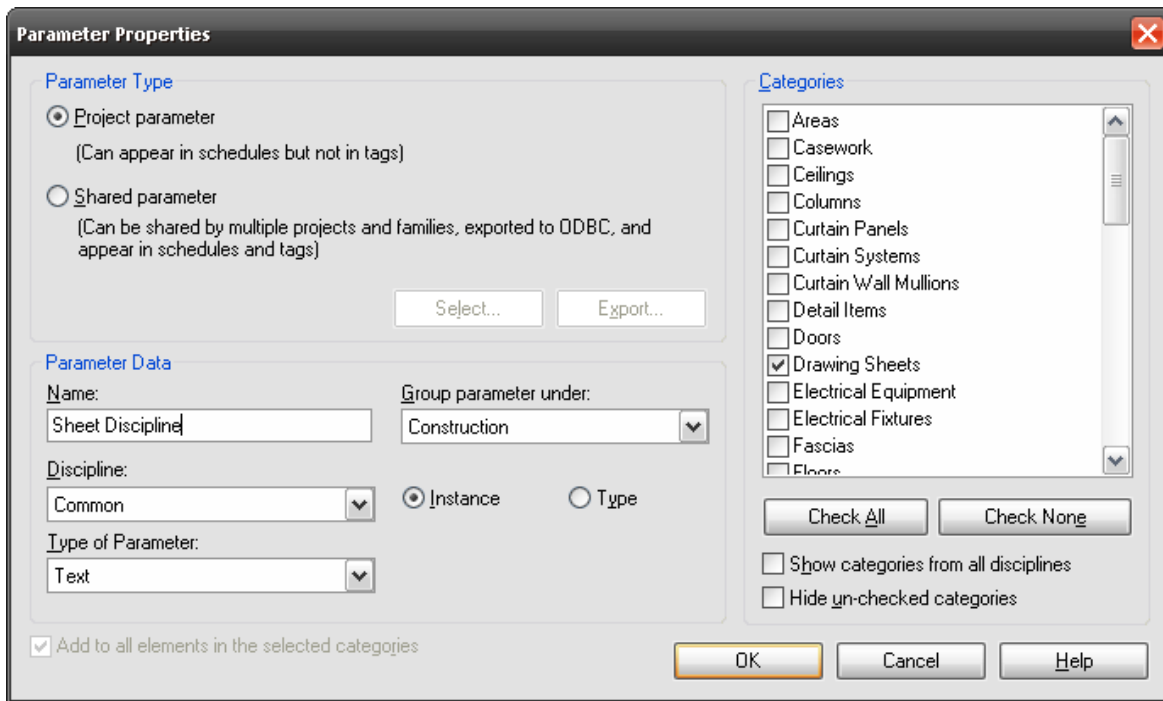
Step 1 - Create the Project Parameter

From the "Settings" pulldown, choose "Project Parameters", and then click the "Add" button:

In the "Project Parameters" dialog box, use the following settings:

The "Group Parameter under" field is up to you. A suggestion would be to use either "Identity Data" (if you want the parameter grouped with similar ones), or "Construction" (if you want the parameter in its own group).

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Step 2 – Setup your Browser Organization

Now you can organize your Sheets based on this new "Sheet Discipline" parameter. To do this, go to the "Settings" pulldown again, then choose "Browser Organization…" Name it "Discipline", then use the following settings:
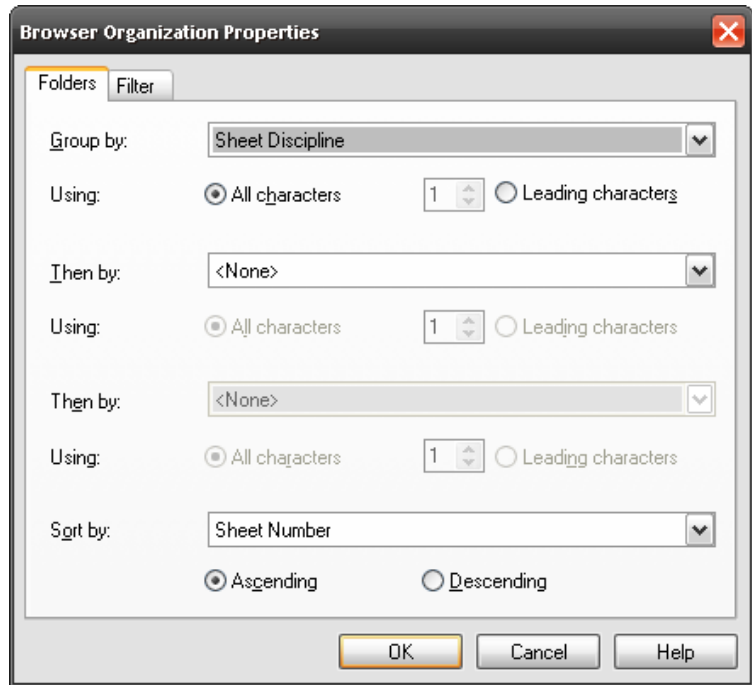
Step 3 – Create a Drawing List
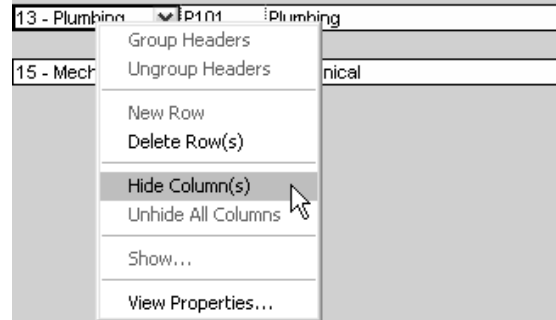
Create a Drawing List just as you normally would – adding the sheet numbers and names – but also add your new "Sheet Discipline" parameter as your first column:
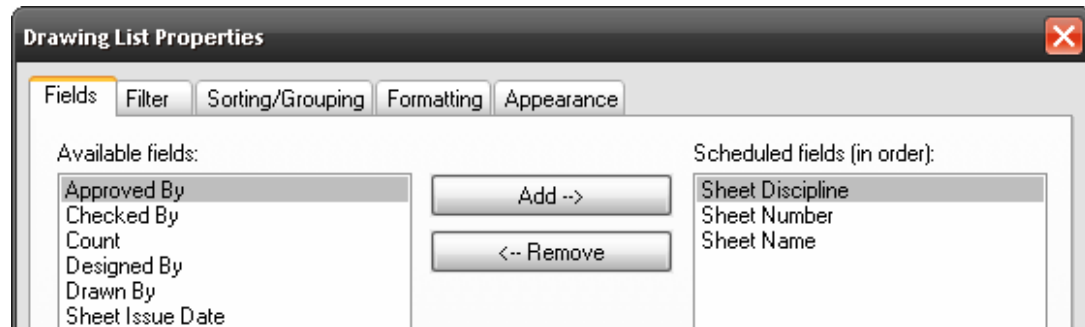
Make sure to sort your Drawing List by this "Sheet Discipline" parameter.

Then, hide that column:

1 - General	G001	Cover
8 - Structural	S101	Structural
9 - Architectural	A101	Floor Plans
9 - Architectural	A201	Sections
9 - Architectural	A301	Elevations
13 - Plumbing ▾	P101	Plumbing
15 - Mech		nical

Group Headers
Ungroup Headers

New Row
Delete Row(s)

Hide Column(s)
Unhide All Columns

Show…

View Properties…

A Note About the Organization Listed Above

The National CAD Standard (NCS) has a suggested drawing set organization based on the different design disciplines involved in a project. Instead of allowing Revit to alphabetize your sheet disciplines (which would put your "General" sheets after your "Architectural" sheets), add a number before each discipline based on the NCS organization:

1. General (G)
2. Hazardous Materials (H)
3. Survey / Mapping (V)
4. Geotechnical (B)
5. Civil Works (W)
6. Civil (C)
7. Landscape (L)
8. Structural (S)
9. Architectural (A)
10. Interiors (I)
11. Equipment (Q)
12. Fire Protection (F)
13. Plumbing (P)
14. Process (D)
15. Mechanical (M)
16. Electrical (E)
17. Telecommunications (T)
18. Resource (R)
19. Other Disciplines (X)
20. Contractor / Shop Drawings (Z)
21. Operations (O)

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Key Schedules for Project/Sheet Notes

Issue

Every project requires large blocks of text – whether for project notes, specifications, or general sheet notes. Since Revit's text tool does not yet support tabbed spacing, you can use the following technique to create blocks of text where all lines of text align and it's easy to insert other items and have Revit automatically renumber them.

Creating a Key Schedule

Key Schedules are essentially nested schedules, but they allow you to create your own rows of data without having to model (they are the closest thing Revit has to being able to pre-build lists). Here's how you use this to your advantage...

Step 1 – Build the Key Schedule

Create a new schedule, and when you are picking which category of elements to schedule, make sure to check the "Show categories from all disciplines" box. This is because you want to choose an element that you would never schedule otherwise, so choosing one from a different discipline is a good way to do this:

- If you are using Revit Architecture, create an "Internal Point Loads" schedule

- If you are using Revit Structure or Revit MEP, create a "Door" or "Furniture" schedule

Next, give it an appropriate name (i.e. "Project General Notes" or "HVAC Plan Sheet Notes") and choose the "Schedule keys" option.
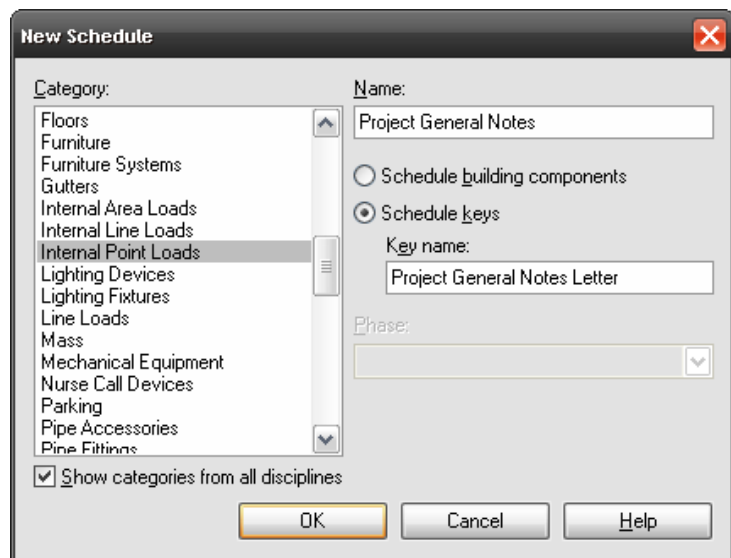
Finally, when asked for a key name, name is the same as the name you gave the schedule, but add either "Letter" or "Number" to the end.
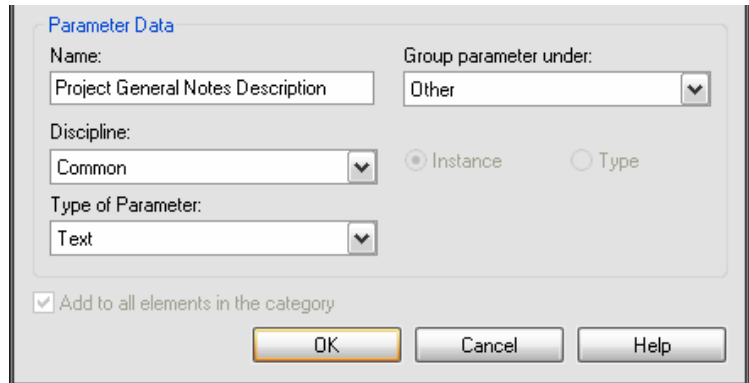
Step 2 – Add a Parameter

After clicking "OK", you will then need to add a parameter from the "Fields" tab using the...

Add Parameter...

...button. Again, when naming this new parameter, name the same as the name of your schedule, but add "Description" to the end.

It doesn't matter what you group the parameter under and leave the type as Text.

Step 3 – Finish the Schedule Properties

Use the following settings for the remaining tabs:

- Sorting/Grouping – Sort by the "Key Name" parameter (which is the letter or number of the note) and, if you want, check the "Blank line" box to help separate each note.
- Formatting – No change.
- Appearance – Uncheck all the boxes, except "Title" and "Blank row before data", then modify the fonts and sizes to fit your company standards.
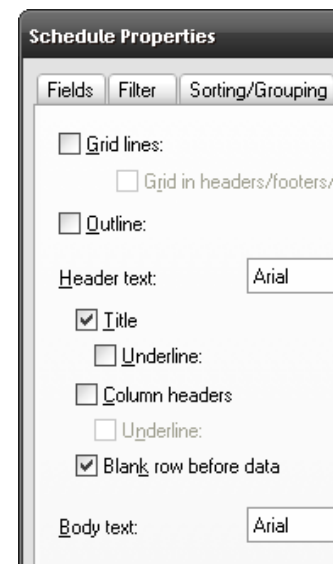
Step 4 – Add Your Data

You can now use the "New" button to create rows for your notes. Edit the first column to add either the letter or number of the note, then the second column contains the text:

When you place these schedules on a sheet, they look like this:

General Notes

1. The Construction Documents are to include AIA document A201"General Conditions of the Contract for Construction". Client Name shall be designated as "The Owner", Fox Architects PC shall be designated as "The Architect". Landlord Name shall be designated as "The Landlord". The AIA document shall also include the Agreement, Performance and Payment Bonds, General Conditions, Supplementary Conditions, the Specifications, the Drawings Addendum, and Contract Modifications, Building Rules and Regulations & any other documents required by the Owner

2. The General Contractor shall be both licensed and bonded in District of Columbia and shall provide documents upon the Architect's request.

3. The Work shall be done in accordance with all rules and regulations of all applicable safety and building codes. The General Contractor is responsible for securing and paying for all permits required for the Work and for the scheduling of all required inspections during the course of the Work.

4. The General Contractor shall review the existing conditions & Base Building Construction Documents from the Landlord and shall comply with all base building requirements and design criteria. The Contractor shall notify the Architect of all discrepancies, errors, inconsistencies or ambiguities discovered.

5. The General Contractor shall provide protection and be responsible for any existing finishes to remain and shall repair or replace any damaged areas as a result of the work. All existing finishes to remain shall be cleaned at the completion of construction.

Pro's and Con's

Here's a list of the pro's and con's of using Key Schedules for your project and sheet notes:

Pro's:

- As you can see from the finished product above, every line of text stays aligned.

- It's easy to add new lines and then renumber from the Key Schedule.

- Schedules can be split (using the break grip) to create multiple columns of the same set of notes – great for using the same notes on multiple sheet sizes.

- If you copy your text from another program (like Word or Notepad), it will remember line breaks and tabs. The effect is:

5. Stretched fabric panel system shall consist of continuous perimeter and mid-wall rigid polymer extrusions applied directly to substrate. Hinged type extrusions or prefabricated panels are not acceptable.
    a. Fabric Selections: Refer to Schedule of Finishes
    b. Panel Size: As indicated on Drawings
    c. Edge Configuration: Square
    d. Mid-Wall Configuration: Butt joint
    e. Acceptable Product: Novawall

6. Acoustical core shall be semi-rigid fiberglass board with a density of 6 pcf and a Noise Reduction Coefficient of 0.80 min. as determined by ASTM C423. Thickness as indicated on drawings. Tackable Core shall be 1/2" Mineral fiberboard with Fire Resistance: ASTM E84, NFPA 255, or UL 723. Complete panel assembly shall have a Class A rating.
    a. Flame Spread: 25 or less
    b. Smoke Developed: Not to exceed 450
   c. Flammability: Class A; ASTM E84, NFPA 255, or UL 723

Con's

- Obviously, one big drawback is the setup you have to go through initially (as outlined in the steps above), but after that's done, you get to reap the rewards.

- Revit schedules do not show multiple lines (a.k.a. word wrap) until they are on a sheet, so editing the text can be difficult. The best way is to copy the text to another program (like Word or Notepad), edit it there, and then copy it back.

Titleblocks

Visibility

When setting up your sheets, you often align your annotations (sheet notes, legends, etc.) along either the right side or across the bottom. You may also want guidelines for sheets that are setup for details. To help you be consistent on all your sheets, you can build these separation lines into your titleblocks so that you can turn them on and off just by picking a different titleblock type:

Side Guide   Bottom Guide   Detail Grid
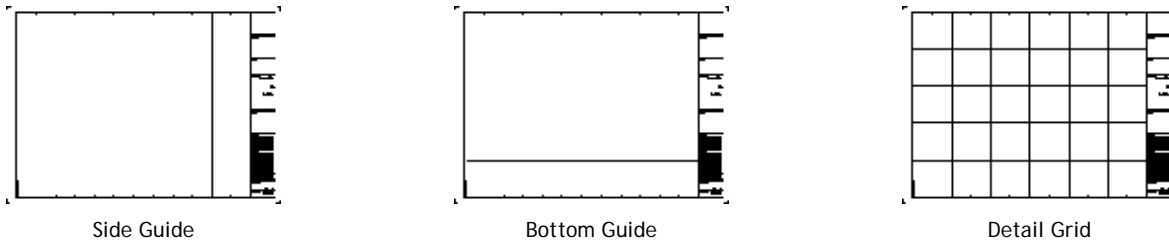
You do this by creating "Yes/No" parameters in your titleblock family and tying the visibility of these guidelines to those parameters. Here's how...

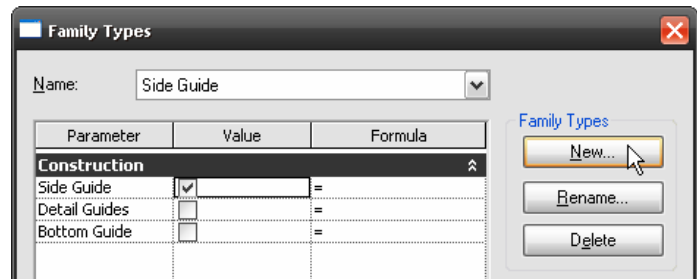### Step 1 – Create Parameters

First, create the Yes/No parameters, one for each layout method. For example:
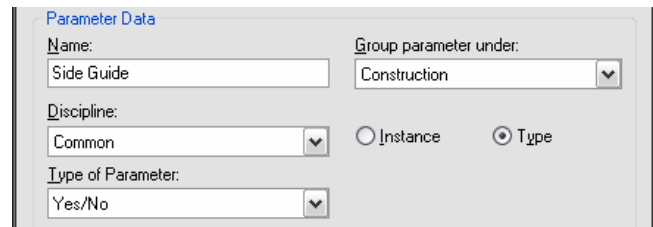
Step 2 – Create Family Types

Next, using the "New..." button, create a Family Type, again, one for each of the different layout methods.

Each Family Type will have its corresponding Yes/No parameter checked and all the others will stay unchecked:

Step 3 – Link the Visibility to the Parameters

Finally, draw the each guideline you need and then edit the properties of each. There is a "Visible" parameter for each that is checked by default. Click the (incredibly) small button to the right of that field, and then select the corresponding Yes/No parameter you created earlier. When finished, the button should have a "=" symbol in it:
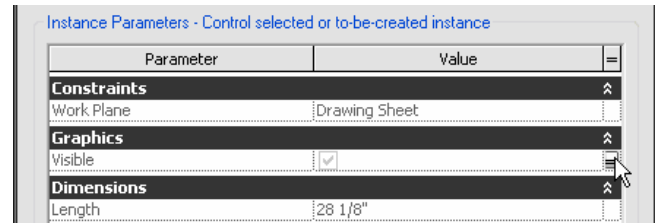
Now, when you load this titleblock into your Revit projects, you will have several types to choose from, depending on the guides you want to show.

Logos

Company logos of architects and engineers can be very complex. Sometimes Revit cannot import these logos because of the complex (and very small) geometry, so you may get missing solid fills or errors, such as "Line is too short."

Of course, we could import raster images as our logos instead. The problem with using a raster image in your titleblocks is that every time you print, you will have to print using raster processing instead of vector. So, creating logos in Revit (or importing AutoCAD geometry) gives you the flexibility to print with either type of processing.
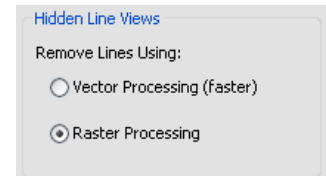
So, what's the answer? Simply scale your logo up in AutoCAD, either 10 or even 50 times, then import it into Revit and resize it back down. Revit will show all filled areas and lines, no matter how small or short.

Use the "Resize" tool

Miscellaneous

The following are a couple miscellaneous tips to help you with your Revit project templates.

Project Template Revision Tracking

Since you will be modifying your Revit project template(s) on a regular basis, but projects will be ongoing during this process, it is a good idea to track which project template revision a project is using. You can do this by creating a Project Parameter for the project template revision:

Other	
Project Issue Date	Issue Date
Project Status	Project Status
Client Name	Owner
Project Address	Edit...
Project Name	Project Name
Project Number	Project Number
Template Revision	Rev. 3 - 10/06/07

Show Categories from All Disciplines

Throughout Revit, you will see a checkbox labeled "Show Categories from All Disciplines". For the most part, every "flavor" of Revit (Architecture, Structure, and MEP) has the same underlying architecture so that they all read and understand each other's elements. In other words, Revit Architecture knows what a Duct is from Revit MEP. The difference between these Revit flavors is the toolset you get, as shown in the Design Bar. But, as the Revit products mature and as more and more architects and engineers use this software, sharing files will become more prevalent.

This check box allows you to see all categories of Revit elements in your flavor of Revit. It's a good idea whenever you see this checkbox to check it on so that as you are setting up your Revit project template, you will make sure to consider elements from other flavors of Revit. This is especially helpful for:

☑ Show categories from all disciplines

- Object Styles
- Visibility/Graphics Overrides
- Project Parameters
- Filters