

Session 3.1

VISIBILITY GRAPHICS

Winning the Game of Hide and Seek with Revit

TADEH HAKOPIAN, HKS



Class Description

Learn how to uncover common visibility issues in your Revit model with filters, worksets, line styles, view templates and other methods of controlling your views

About the Speaker:

Tadeh is a BIM Coordinator and design technology specialist at HKS inc, an Architecture firm working out of their Los Angeles office. He graduated with a degree in Architecture and experience throughout the AEC field working for Engineers, Contractors and Architects for the last 8 years. Along the way he experienced first hand the spectrum of BIM expanding to provide solutions to common project problems. To that end he has researched new methods and technologies, authored in house workshops, provided model efficiency insights and been active in promoting best practices amongst design teams. Course authoring includes Navisworks basics and advanced topics, Revit fundamentals and add in training. His associations include the Autodesk user feedback group, LA Revit users group and

Session Description

Learn how to uncover common visibility issues in your Revit model with filters, worksets, line styles, view templates and other methods of controlling your views

Learning Objectives

At the end of this session, participants will be able to:

1. Become knowledgeable of Revit Graphic overrides and Learn how to uncover common visibility settings affecting your views
2. Develop a unique project graphic guide document to help your team fix graphics problems
3. Create View templates to recover your settings and train other users to do the same
4. Understand how hardware like graphics card effects the model performance and how you can optimize computer performance by optimizing your hardware configuration

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DEFINE THE PROBLEM



why is revit



Remove

why is revit visibility so complicated

why is revit so expensive

why is revit so bad

why is revit important to interior design

why is revit so slow

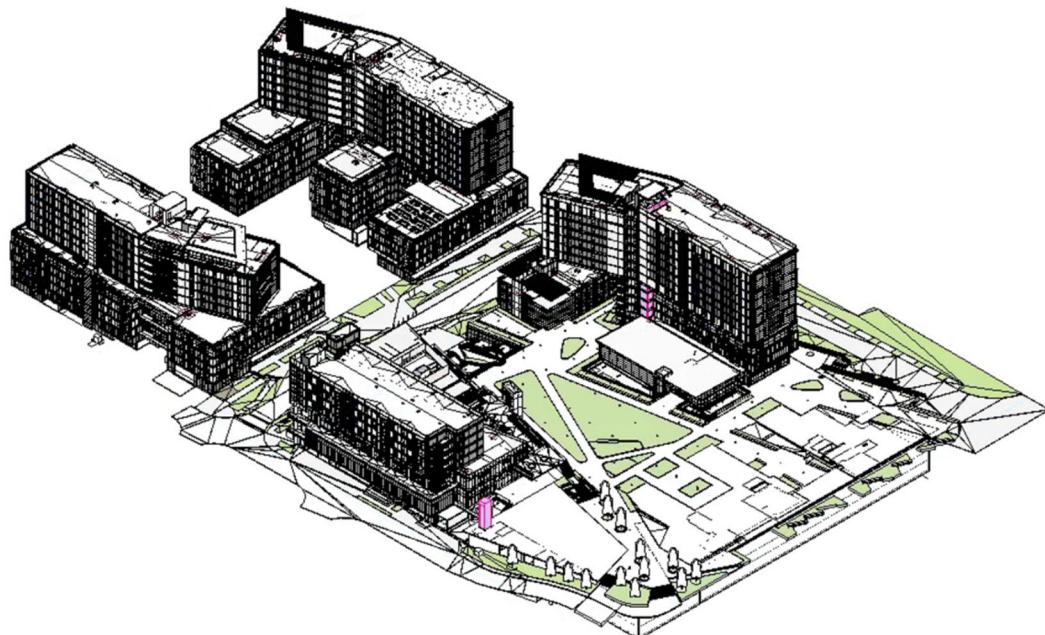
why is revit in viewer mode

why is revit not backward compatible

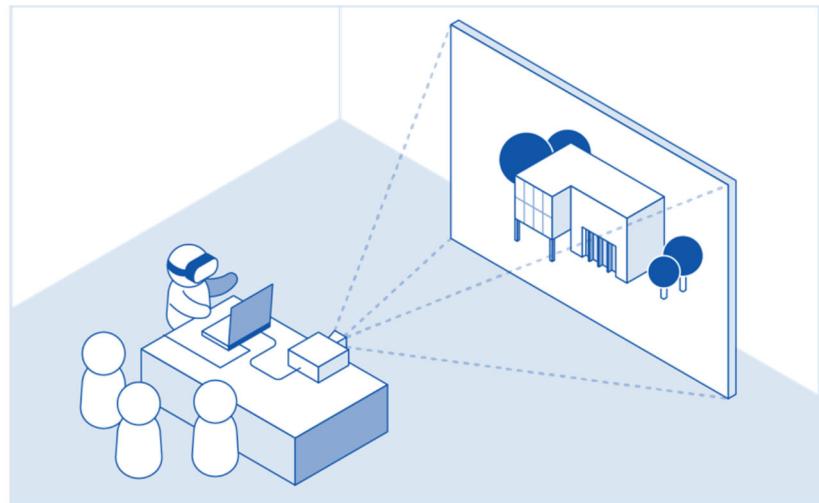
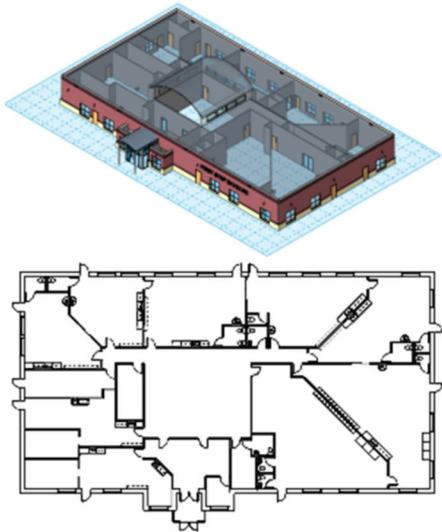
why is revit better than cad

why is revit so hard to use

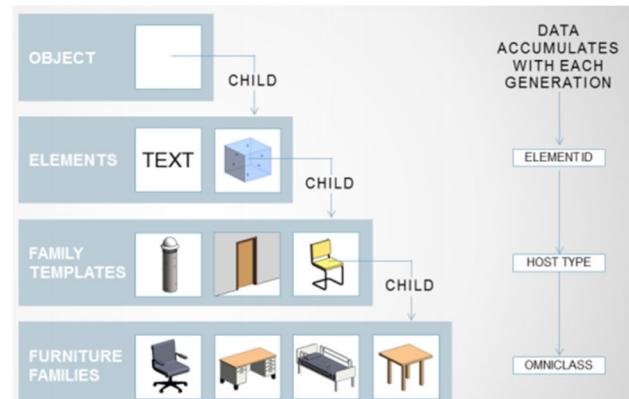
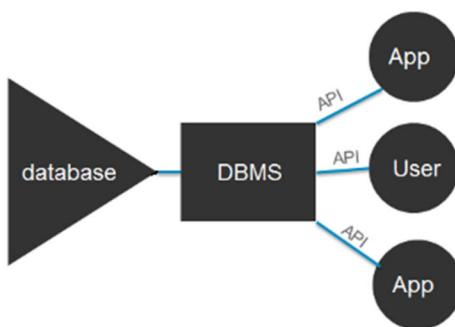
- Why is it a problem? – Can't see things in the model which takes times to resolve
- What is the issue in particular? – Don't know how to control visibility in Revit since there is no central way to access these settings or review them
- How can you resolve it? – Learn about the system behind visibility and Revit as a system



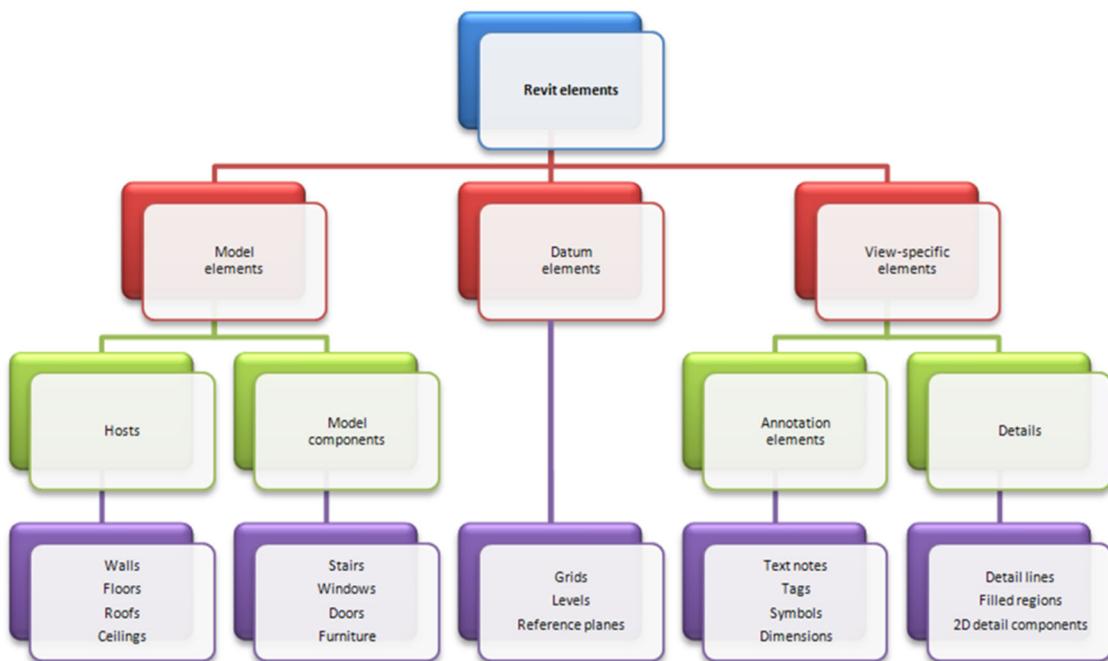
- Large College project with multiple buildings and models linked together
- 25 Architects and Designers worked in 12 models with over a million square feet
- Concept design models went to Schematic to Design Development to Construction Documents with minimal clean up
- What could go wrong ?



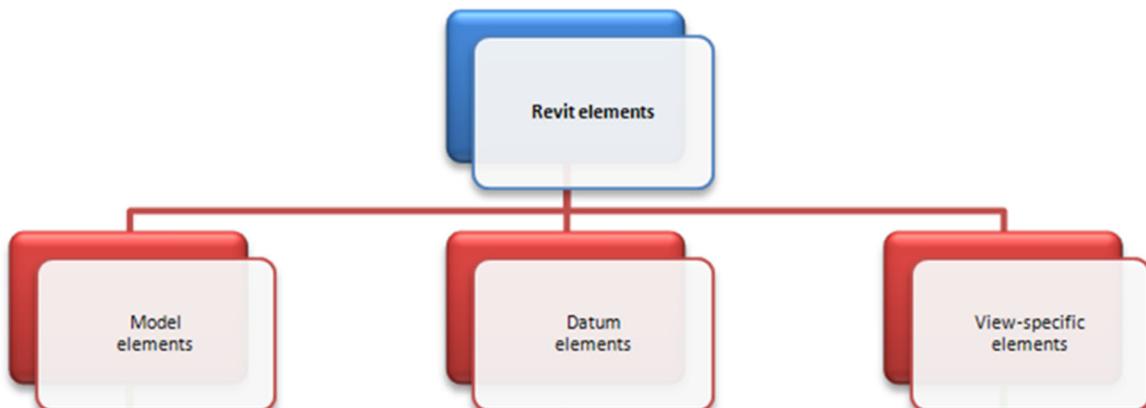
- Everything you see with plans is a 3D model made into 2D views
- If your 3D model isn't correct your 2D model isn't correct
- Avoid 'drawing lines' and making things up as you go because you are digging yourself into a deeper hole



- Revit is a Database Management System meaning everything relates to each other in single source, the .rvt file
- DBMS allows users a way to make, retrieve, change and manage data in a single database
- Effectively serves as a middle man between users and a database
- With Revit that means any change one user makes propagates to all users
- Revit is built with VB.Net and C# meaning it is OOP
- OOP allows for inheritances of classes like types within a family
- What is started on the highest category of a class is inherited in all childs of that class



- Revit treats different classes of elements in different ways so know what you're starting off with
- Datum Elements effectively host or orient most of the other model elements
- Pay attention to where your Datum Elements are so your model elements are in good order

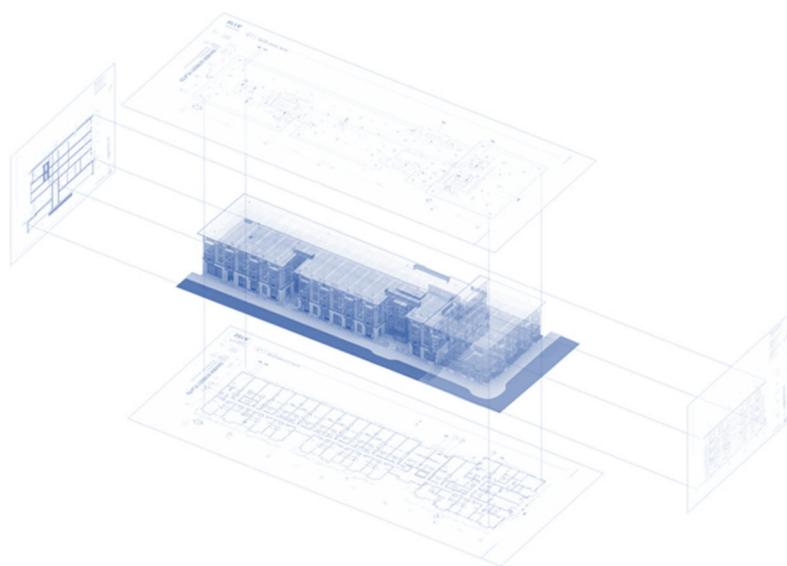


Project Settings – Several Categories – Modifications to the entire model
View Settings – One Category – Affects how the view is presenting the 3D content
Visibility Graphics – One Category – Affects superficial graphics settings not the modeling itself

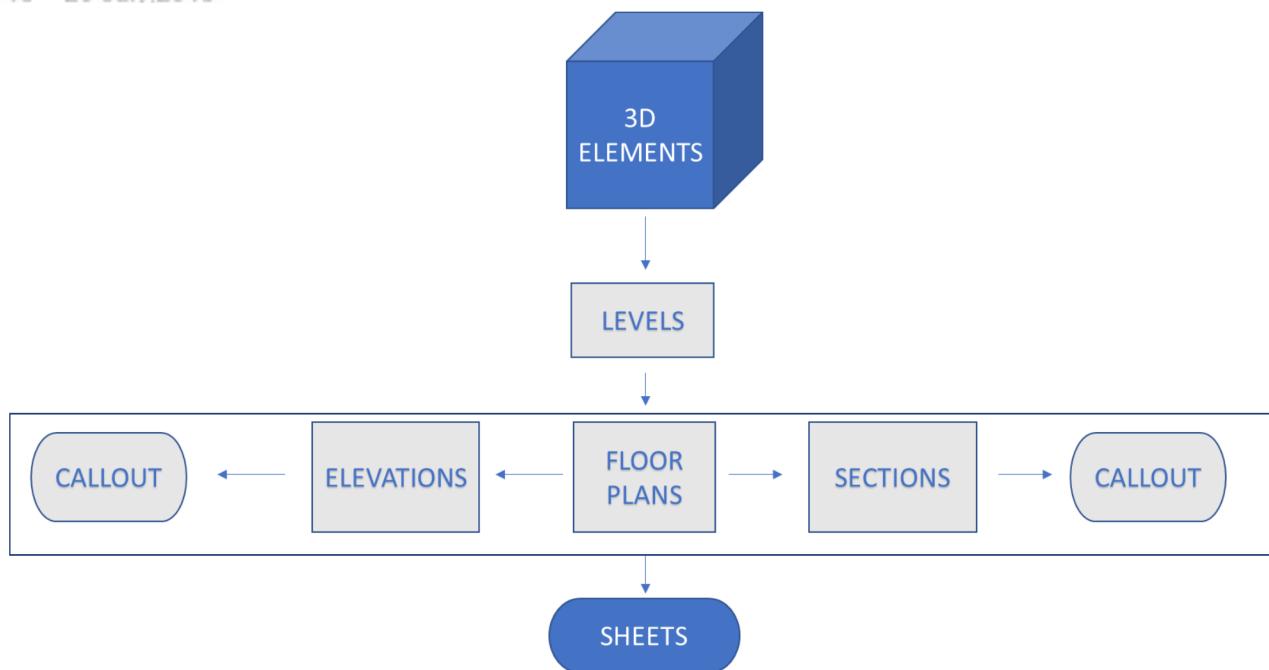
RECAP

- Revit is not a powerpoint file with content loaded into it like a scrap book
- Content and modifications in Revit inherit properties set in the model template
- Certain changes can affect the entire project or many parts of the project
- Understanding how Revit prioritizes certain settings and options over others in your team is essential for good model management
- Understanding high level functions of Revit will make reviewing graphic problems much easier
- FYI Visibility Graphics only applies to elements already modeled the other settings that can affect your ability to see content are in the view, model and project settings

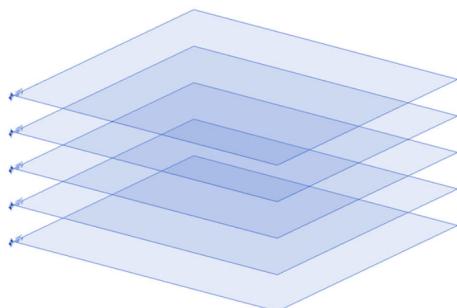
VIEW SETTINGS



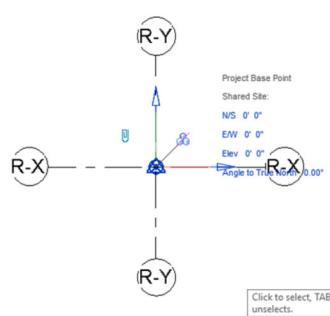
- Views in Revit are any element that can provide graphic visibility to your project
- Includes Plan views, Elevations, Sections, 3D views, Schedules, Legends, Drafting Views
- Views can be applied to sheets
- Any view can be controlled by view templates
- Understanding views lets you understand the visibility settings so start here



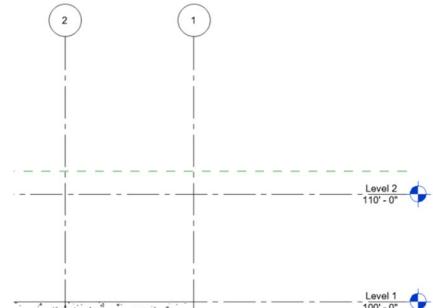
- Projects start in empty space where a 3D model is created
- Levels and Reference Planes are added to help organize and host content
- Additional views are created based on these levels then placed on sheets



LEVELS

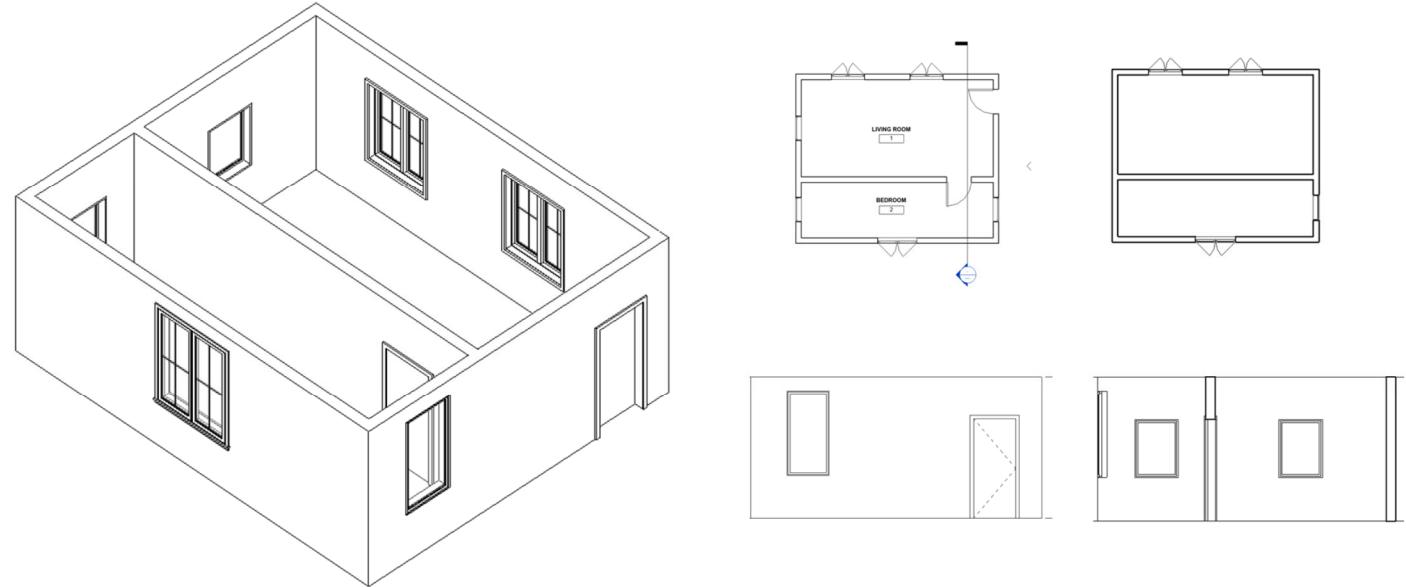


GRIDS

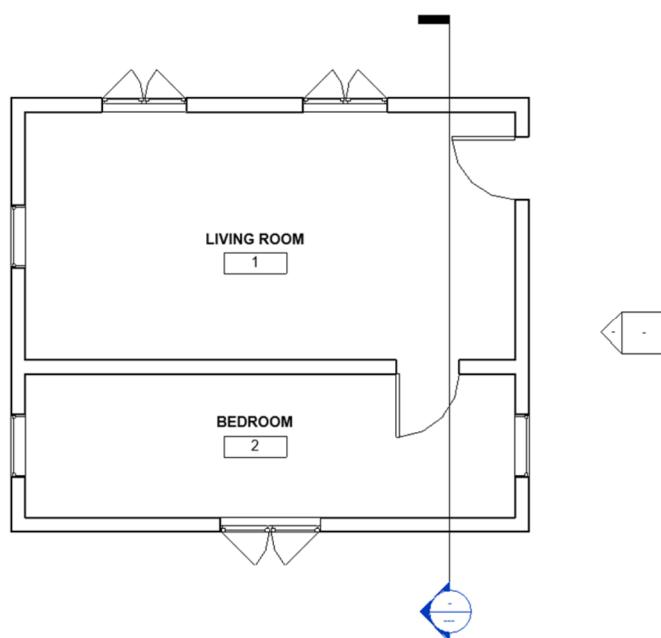


REFERENCE PLANES

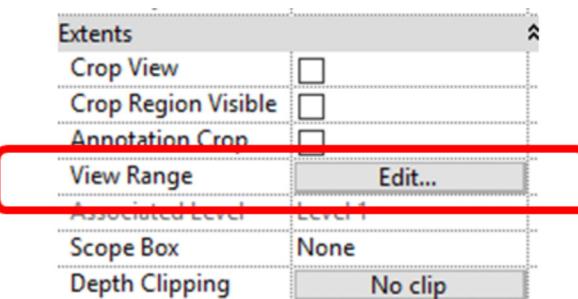
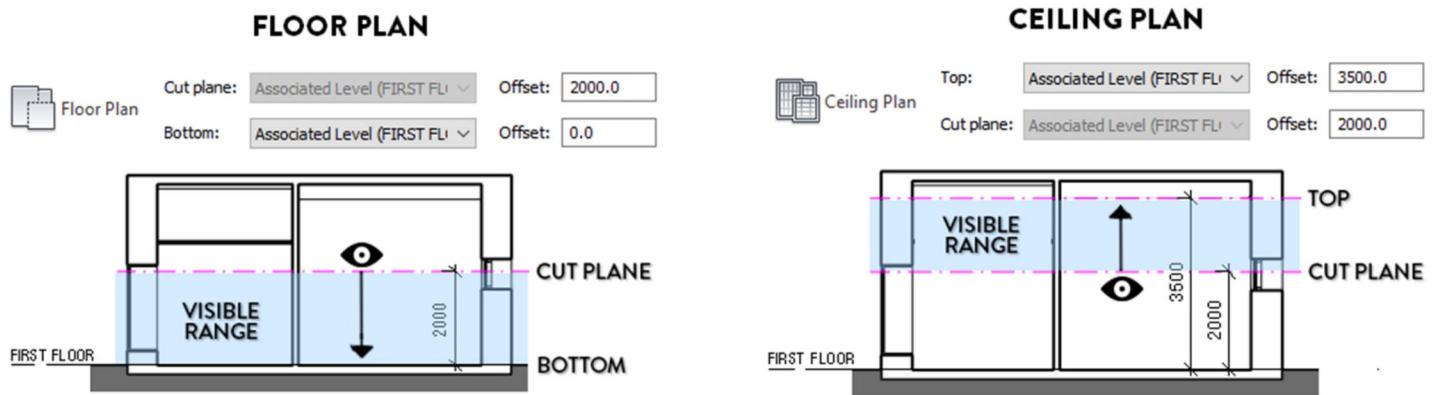
- The 3D model becomes a building model with hosts in the form of levels and reference planes
- Without these hosts for your elements you can't create views



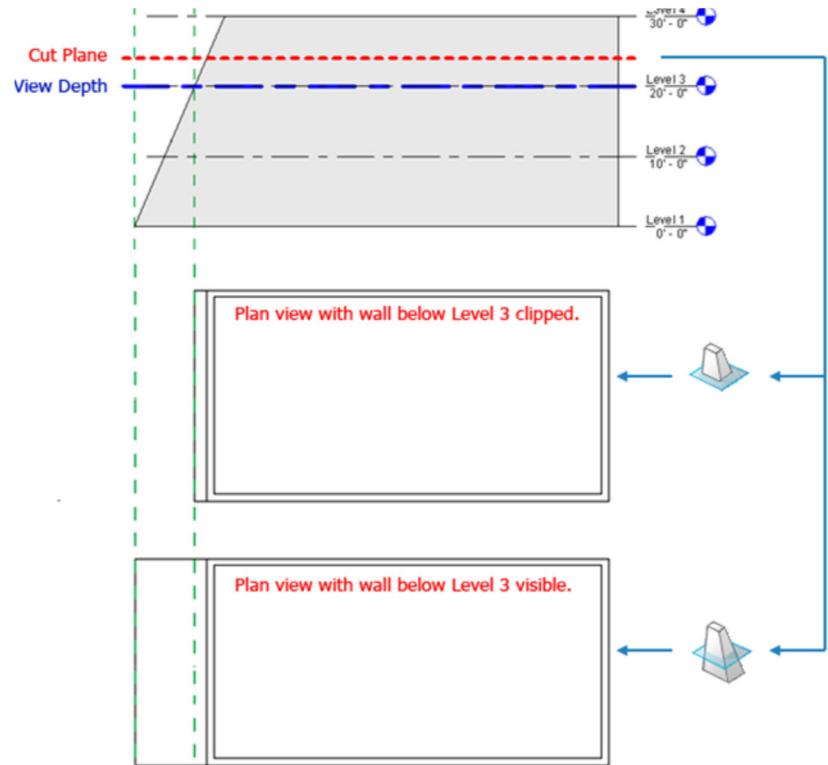
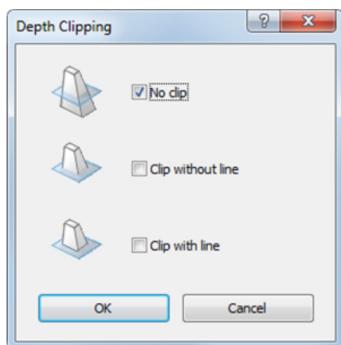
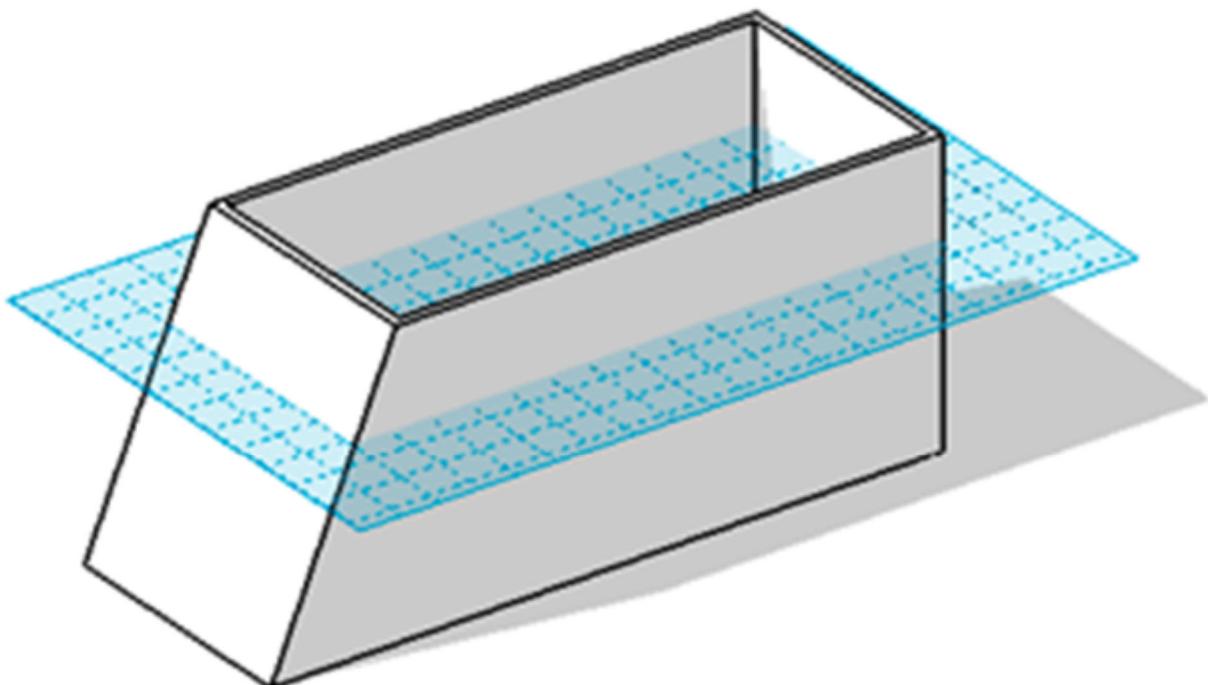
- You model in 3D and the project is a 3D object as part of the database
- All 3D views are rendered into 2D views
- The 2D to 3D transition is where the awkwardness begins because we have a 'slice' of the model not the whole thing



- Floor plans are a representation of the 3D model at a given plane
- All controls for floors start from the 3D environment
- Very simple but there are many modifiers – view range, depth clip, crop, scope box, etc

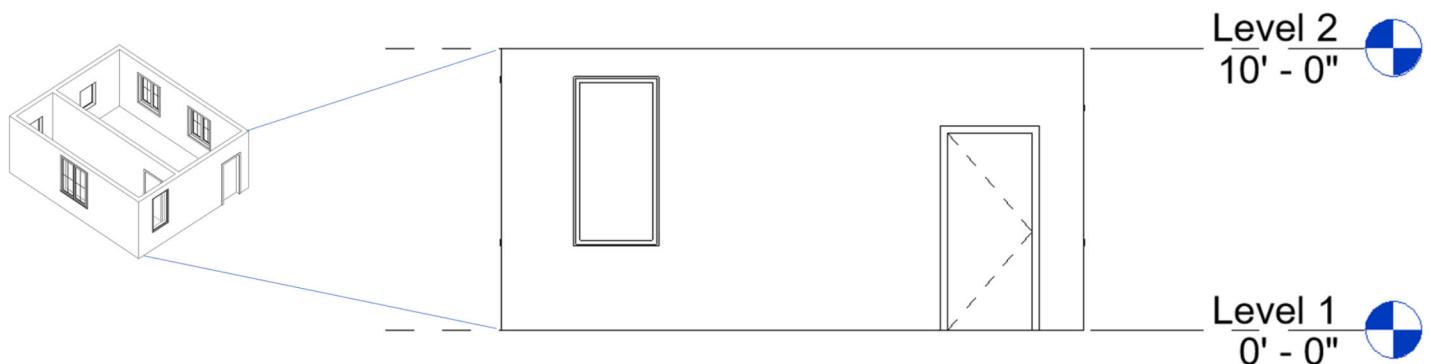


- Starts from the cut plane which can be manually changed per range
- Cut plane is default hosted to the level of the view
- If you are in a floor plan then you are looking down from the cut plane
- In a ceiling plan you are looking up
- Depending on the cut plane and offset you can adjust what is visible in the view



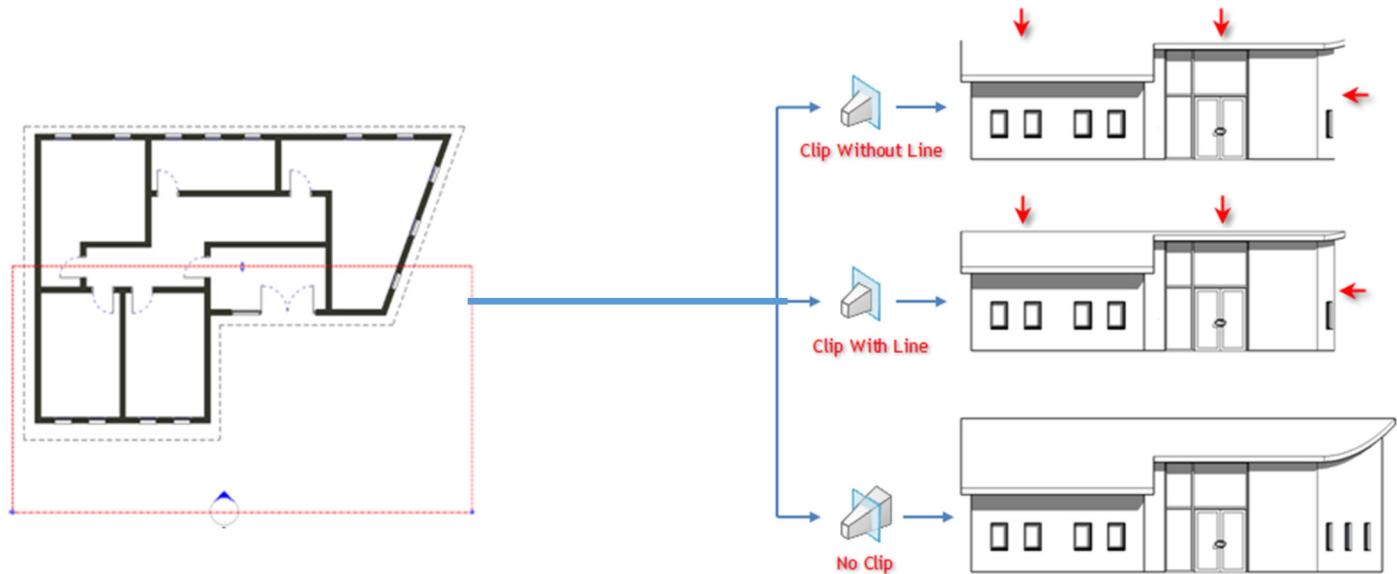
Extents	
Crop View	<input type="checkbox"/>
Crop Region Visible	<input type="checkbox"/>
Annotation Crop	<input type="checkbox"/>
View Range	Edit...
Associated Level	Level 1
Scope Box	None
Depth Clipping	No clip

- Like View range but hosted from a given workplane usually the Level
- Each setting determines how much beyond that plane you can see
- If you have no clip then everything beyond that plane can be seen
- Clip without line stops the depth at the plane but has no outline just surfaces
- Clip with line stops at the depth at the plane and keeps the outline

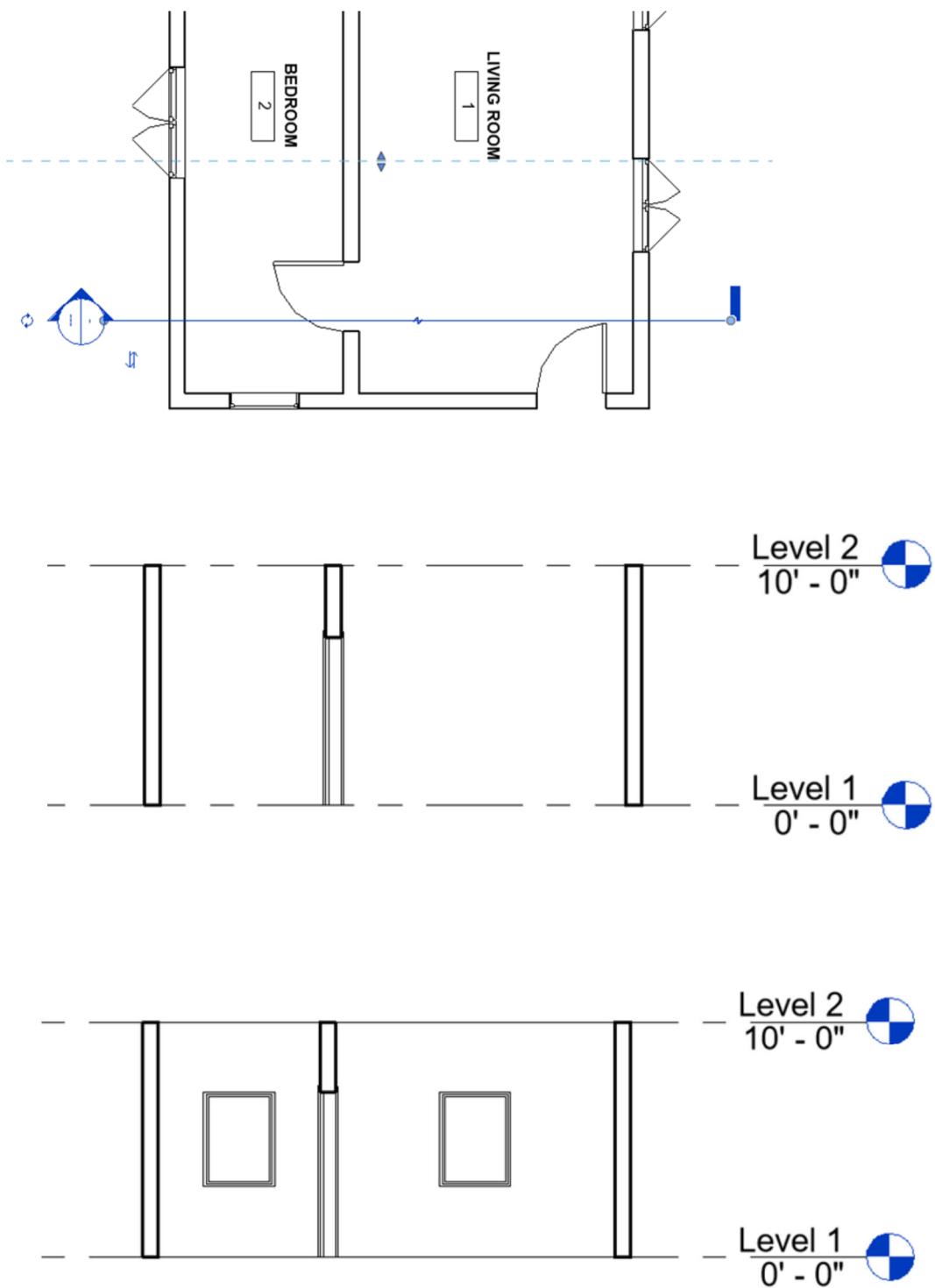


Elevations are a view from the outside of the model orthogonal to the surface

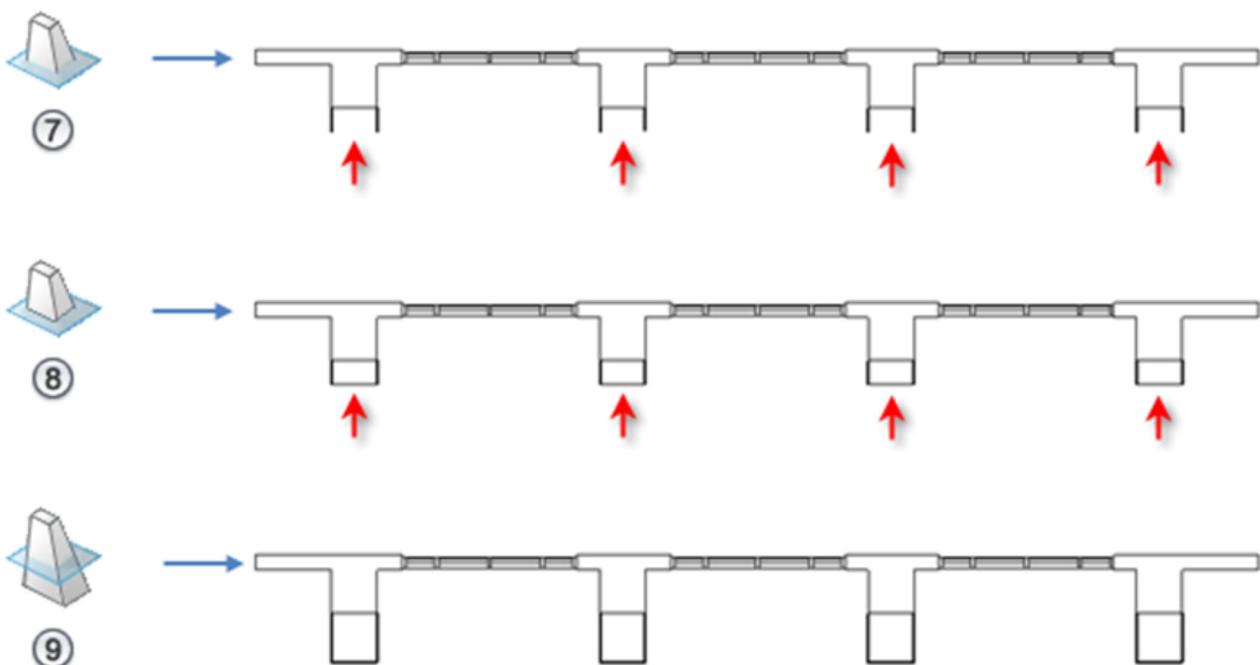
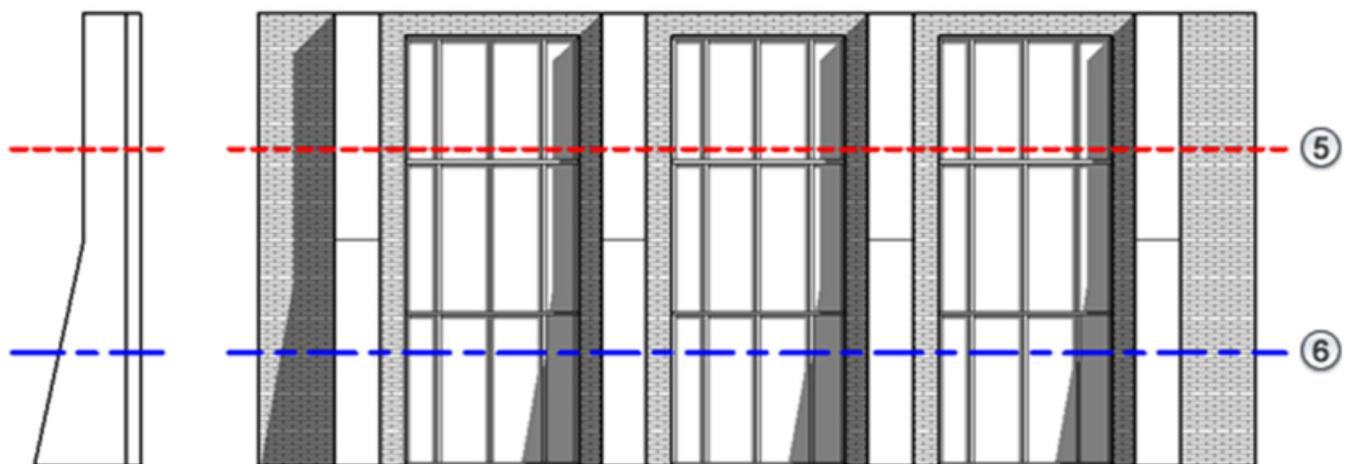
View depth and clipping are important parameters to control



Depth clip in elevation functions the same as in plan
No line, Line with nothing showing beyond and everything in the view

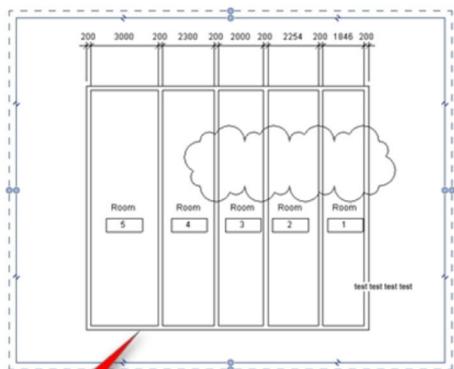


- Sections are orthogonal views through a given plane within the model
- Clipping options are prominent in effect with sections

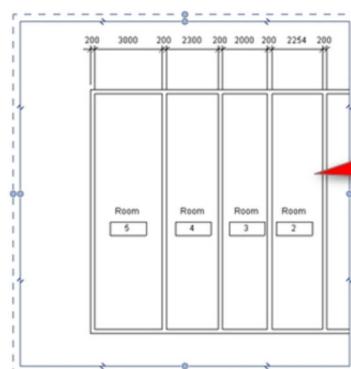


- Depth Clip in section functions the same as in plan or elevation
- View depth is more important with sections because you may want to see something in the background

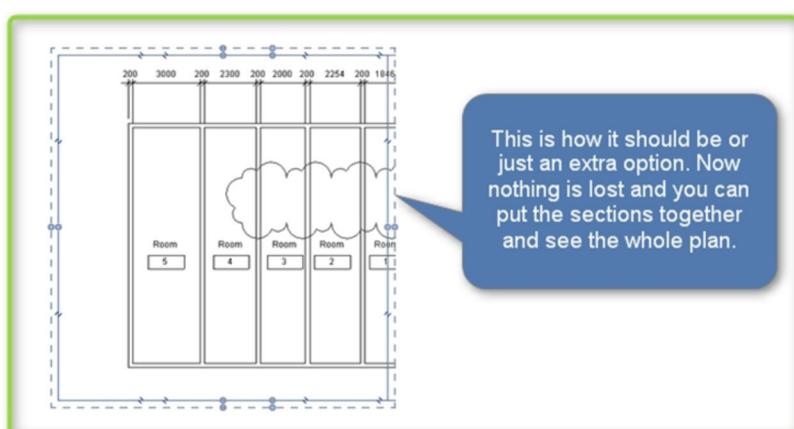
Extents	
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Crop Region Visible	<input type="checkbox"/>
Annotation Crop	<input type="checkbox"/>
View Range	Edit...
Associated Level	Level 1
Scope Box	None
Depth Clipping	No clip



Without crop view over the model.



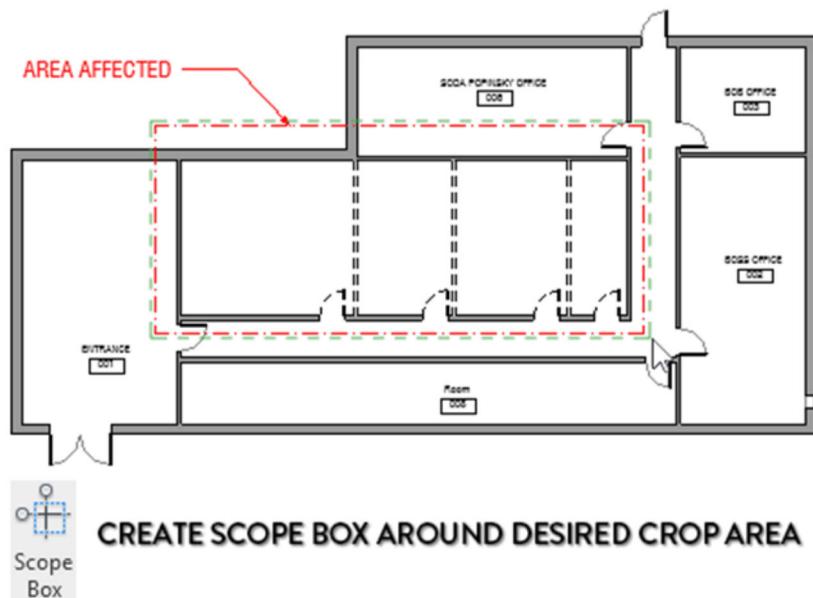
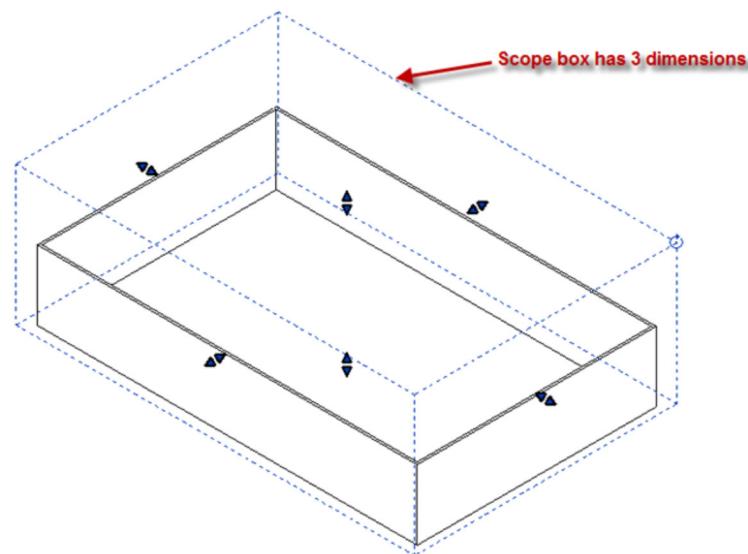
revision,
roomtag
and
dimensions
not visible



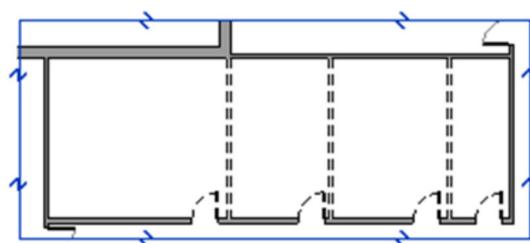
This is how it should be or just an extra option. Now nothing is lost and you can put the sections together and see the whole plan.

- Crop / Annotation Crop
- Always make sure if your crop options are active which hides a lot
- If any annotation content is touch the crop boundary then you cannot see them either

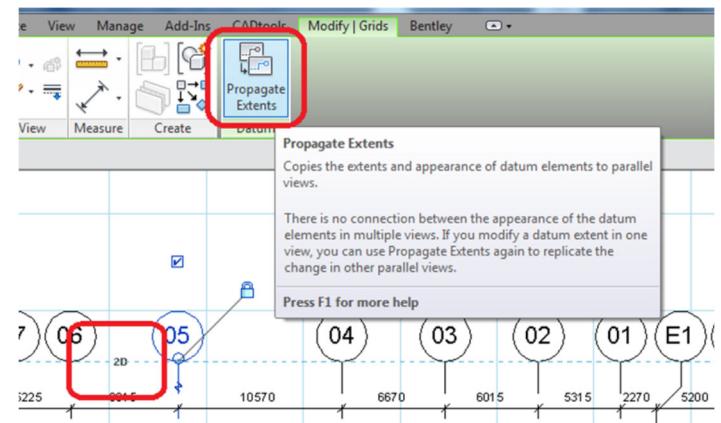
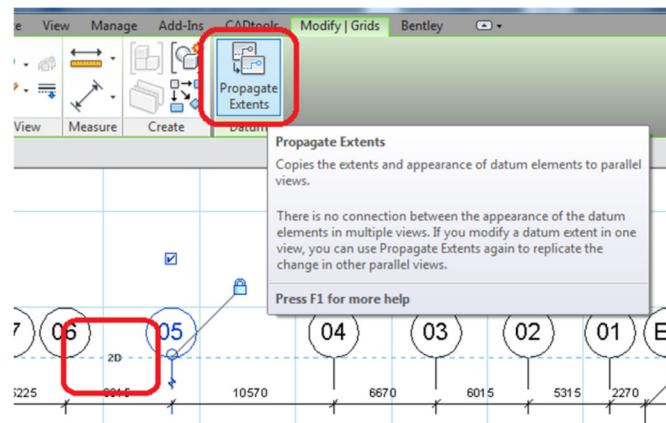
- Scope boxes are 3D elements in the annotation categories to help set crops for a given portion of the model
- If applied they can crop the view and limit what you can see like a regular view
- Not always obvious if a scope box or a view crop is being used which can lead to a lot of troubleshooting



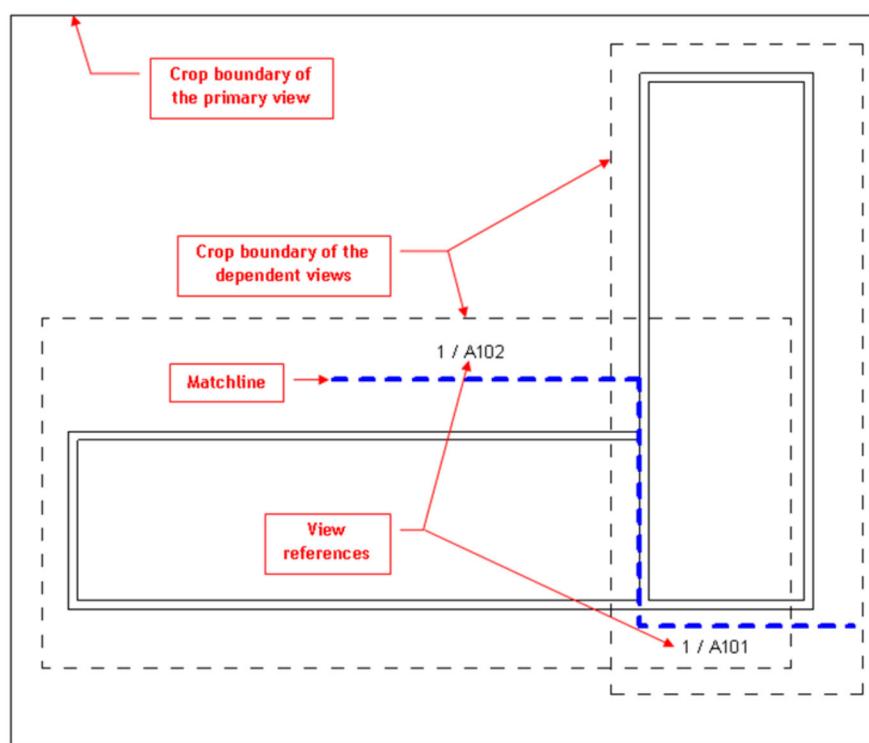
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Associated Level	LEVEL 1
Scope Box	None
Depth Clipping	None
Identity Data	Intervention Zone



THE VIEW CROP MATCHES THE SCOPE BOX



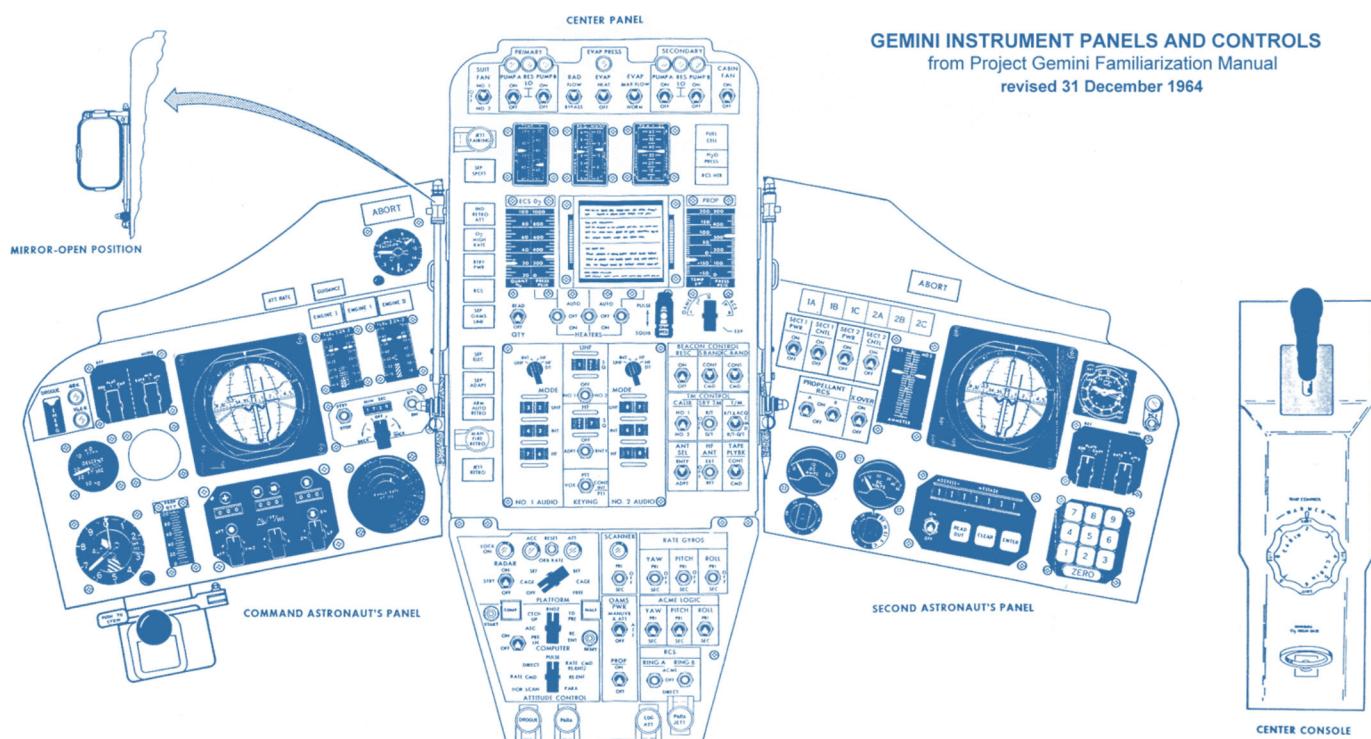
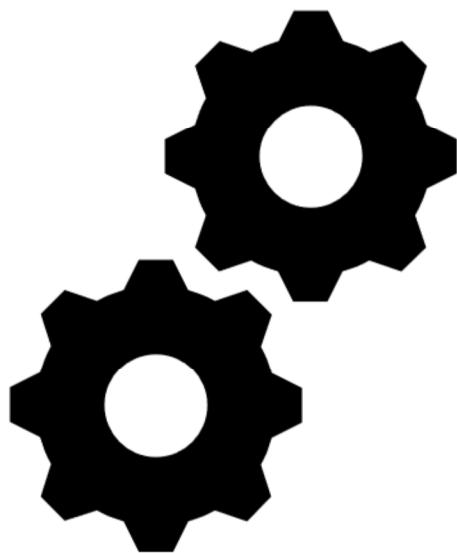
- Propagate Extents can help display the grids in all your views
- Aligns your grids after you positioned them
- More of a fix to grids overlapping or being offset from each other



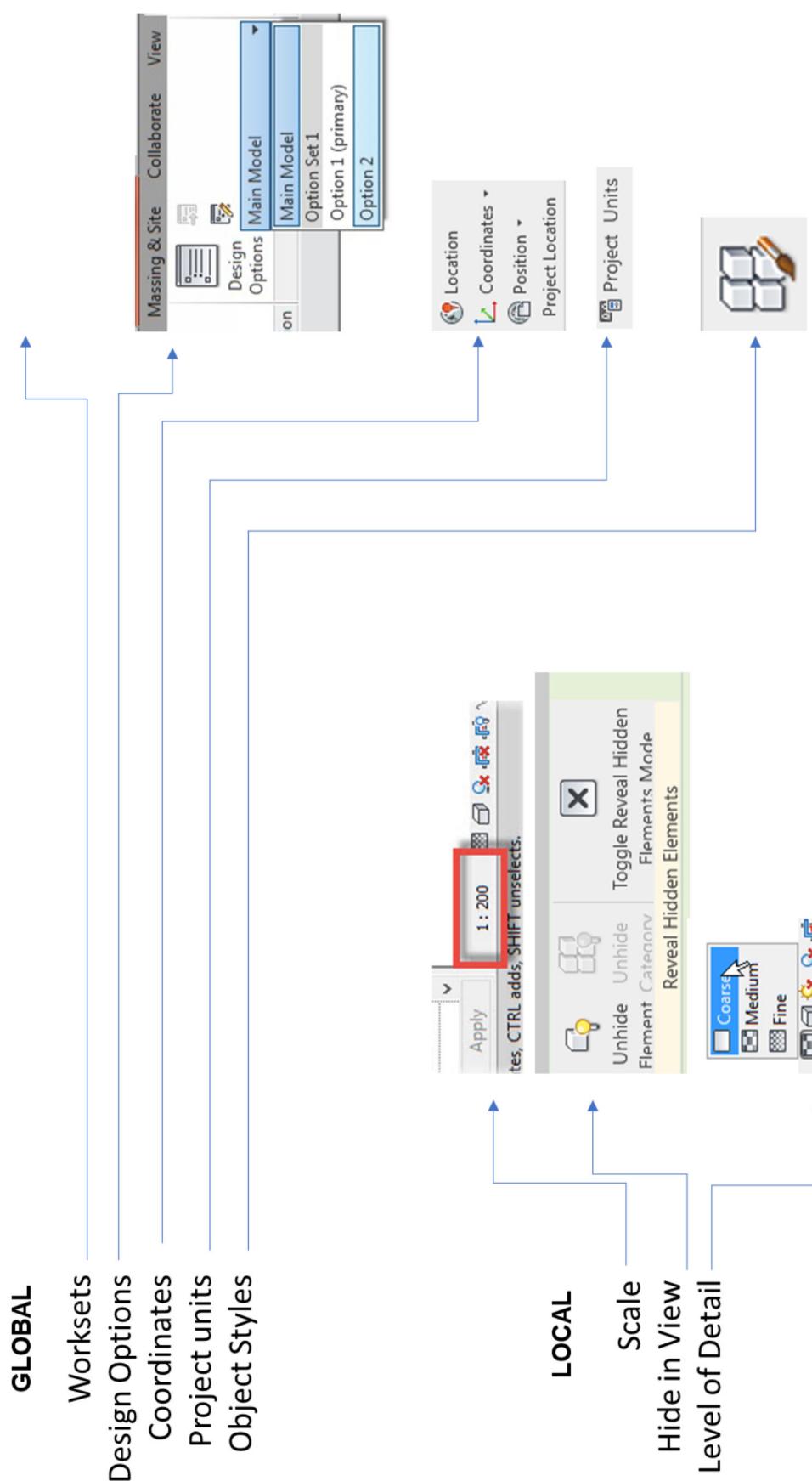
- Sheet Settings are where your project views are displayed for printing
- Without sheet views you can't print to paper or PDF with Revit
- Be mindful of how sheet settings and organization can affect view layout

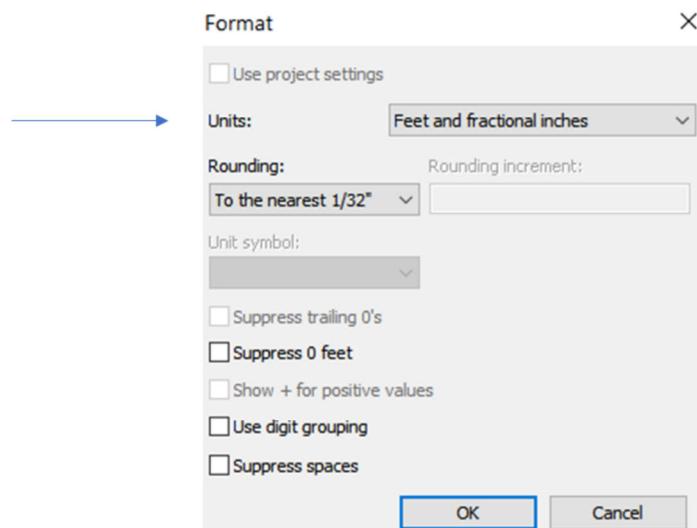
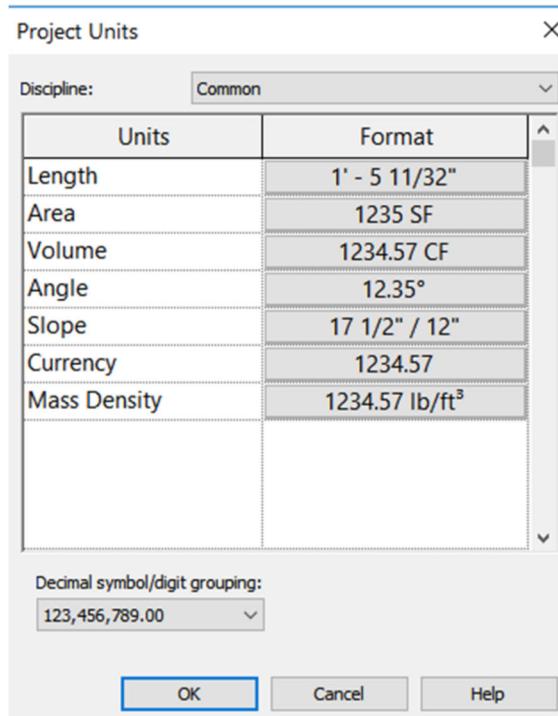
- RECAP
-
- The Revit model is 3D with controls for different view settings
- Revit configures views from the level workplanes
- Level workplanes host the elevations, sections and callout views
- Each view has its own settings like view depth and clipping
- Keep it simple with view settings and modify when necessary
- Common problems in views include view range issues and annotation crops
- Best solution is to duplicate your target view, adjust the view settings and see if that resolves your problem

PROJECT SETTINGS

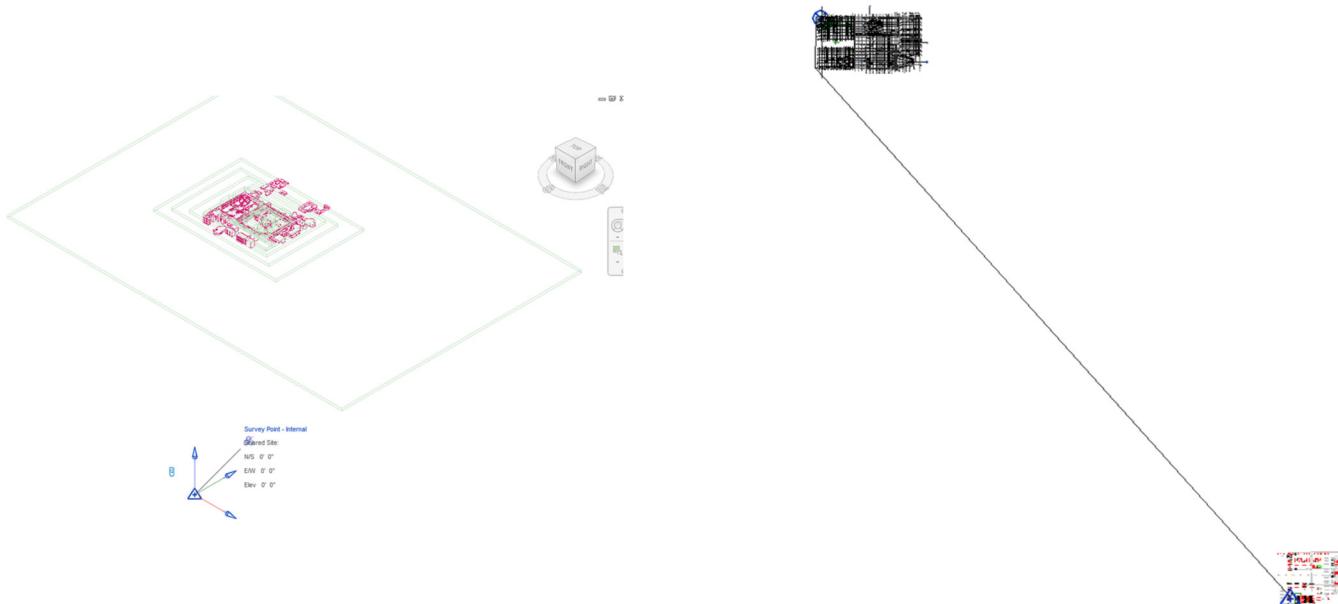


- Think of these tools as your system control like a cockpit
- Some settings have impact on the entire project and others just on a view



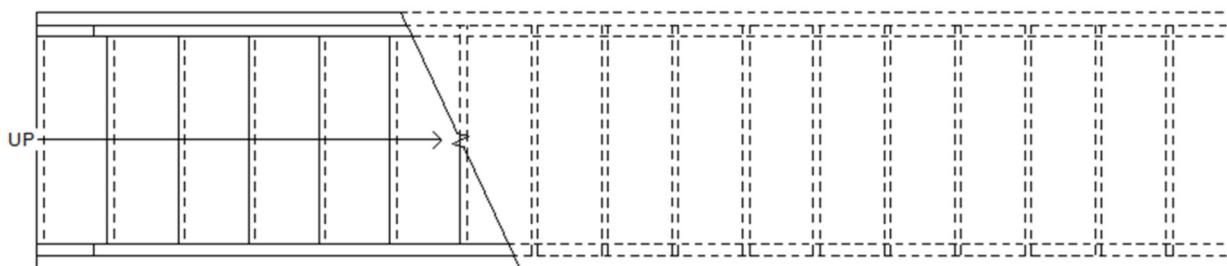


- Unit types and Tolerances
- Affects appearance of dimension information

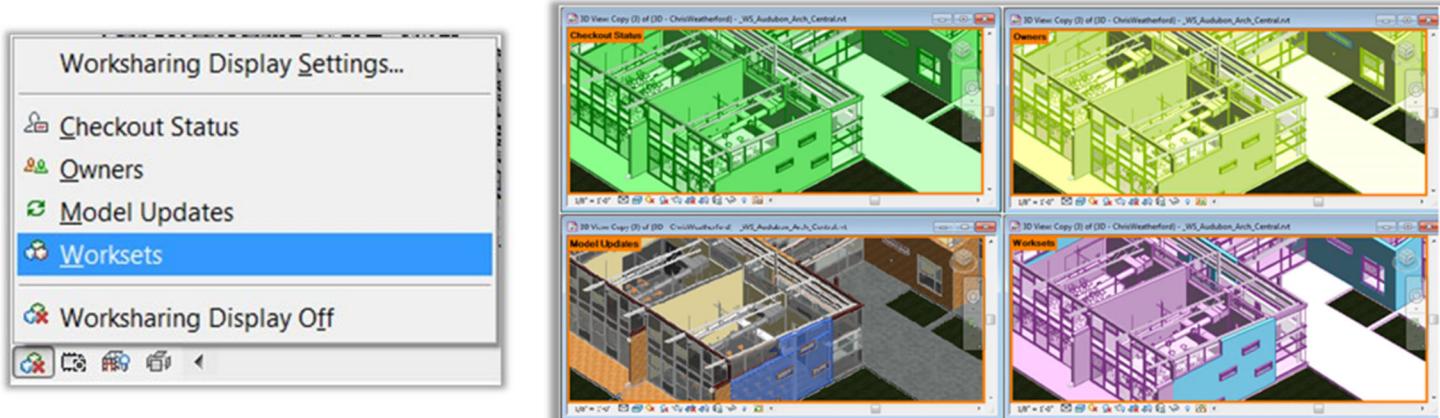


- Where your model is relative to Revit Origin
- Comes in handy for navigating 3D and linking models
- Don't take it for granted or you'll get lost

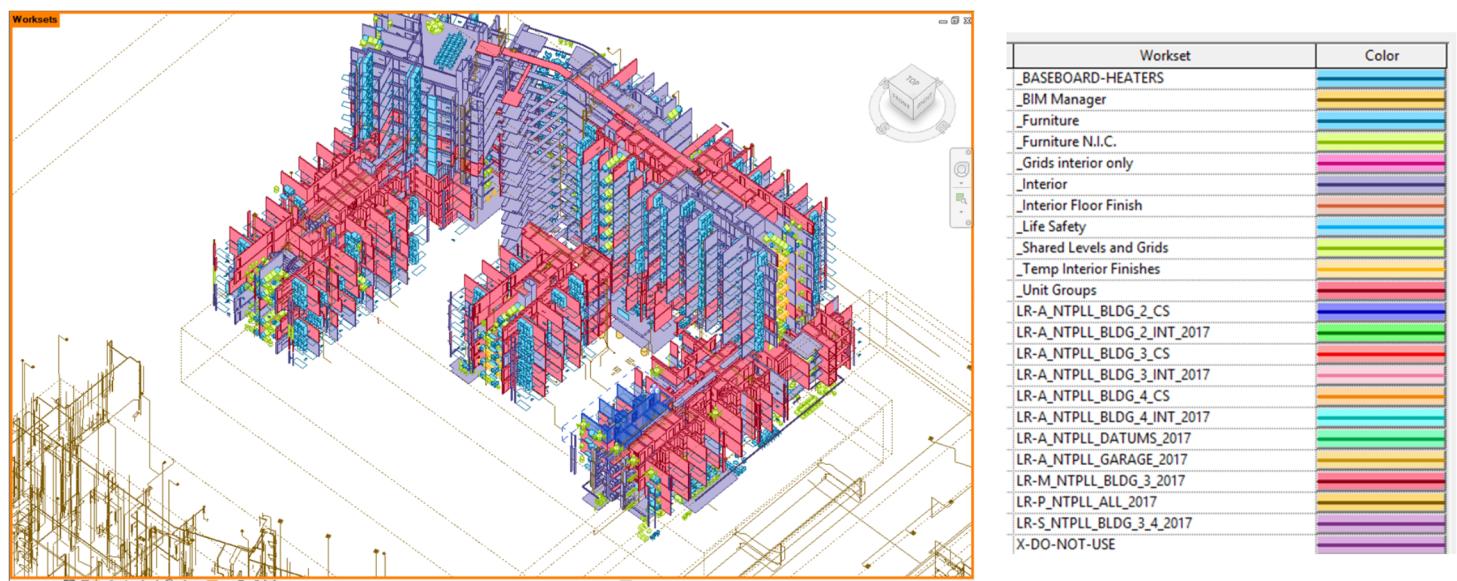
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<Above> Cut Marks	1	1	■ Black	Overhead 1/16"
<Above> Nosing Lines	1	1	■ Black	Overhead 1/16"
<Above> Outlines	1	1	■ Black	Overhead 1/16"
<Above> Riser Lines	1	1	■ Black	Overhead 1/16"
<Above> Supports	1	1	■ Black	Overhead 1/16"
Cut Marks	1	1	■ Black	Solid
Hidden Lines	1	1	■ Black	Dash
Nosing Lines	1	1	■ Black	Solid
Outlines	1	1	■ Black	Solid
Riser Lines	1	1	■ Black	Overhead 1/16"
Supports	1	3	■ Black	Solid
Treads/Risers	1	3	■ Black	Solid



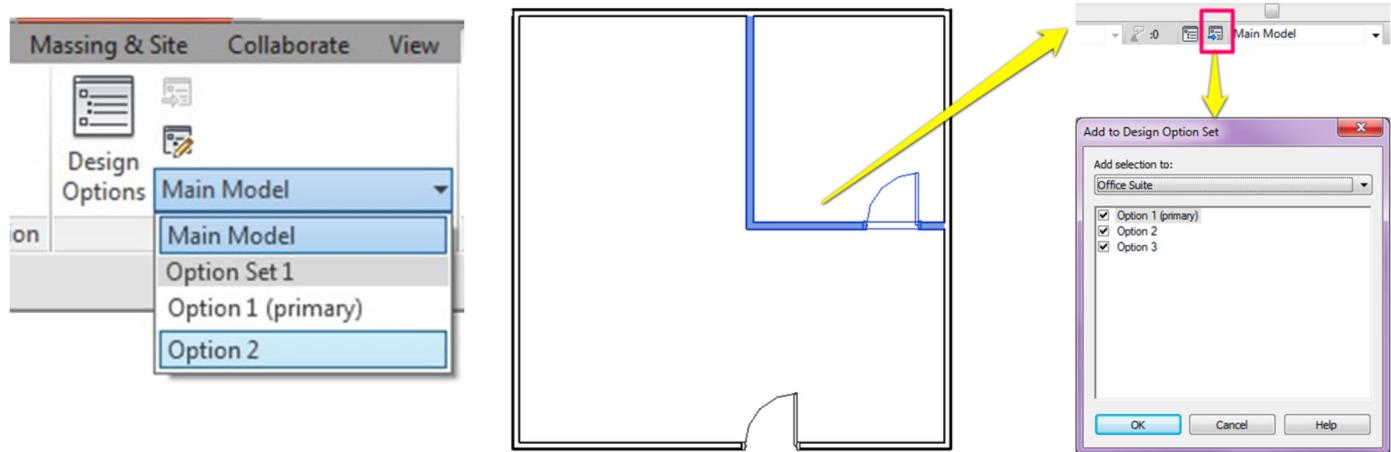
- All default graphics in all categories for your Revit project
- More on this in the next section



- Worksets are not Visibility controls – they are meant to control memory load in your model
- Revit is a database which uses a lot of memory and worksets give you some control over the memory usage by choosing to load them on startup or when the model is open
- There are user worksets and system worksets
- The user worksets are ones you make and are often mixed up with visibility controls

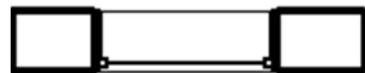


- Keep your worksets in good order by reviewing the display settings
- If one type of element – like interior walls – should be in a single workset then make sure they aren't in 10 different worksets



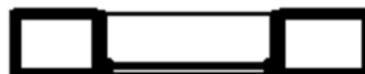
- Design Options are not Visibility Controls – meant to contain versions of design in your model
- Multiple designs and configurations can be modeled in the same place then switched on or off in different sets and sub sets
- It is a modeling feature not visibility controls

12" = 1'-0"
6" = 1'-0"
3" = 1'-0"
1 1/2" = 1'-0"
1" = 1'-0"
3/4" = 1'-0"
1/2" = 1'-0"
3/8" = 1'-0"
1/4" = 1'-0"
3/16" = 1'-0"
1/8" = 1'-0"
1" = 10'-0"
3/32" = 1'-0"
1/16" = 1'-0"
1" = 20'-0"
1/8" = 1'-0"



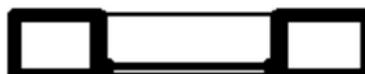
SCALE: 1:100
PROJECTION LINES: 1 (0.1mm)
CUT LINES: 3 (0.35mm)

	1 : 100
1	0.1000 mm
2	0.2200 mm
3	0.3500 mm
4	0.5000 mm



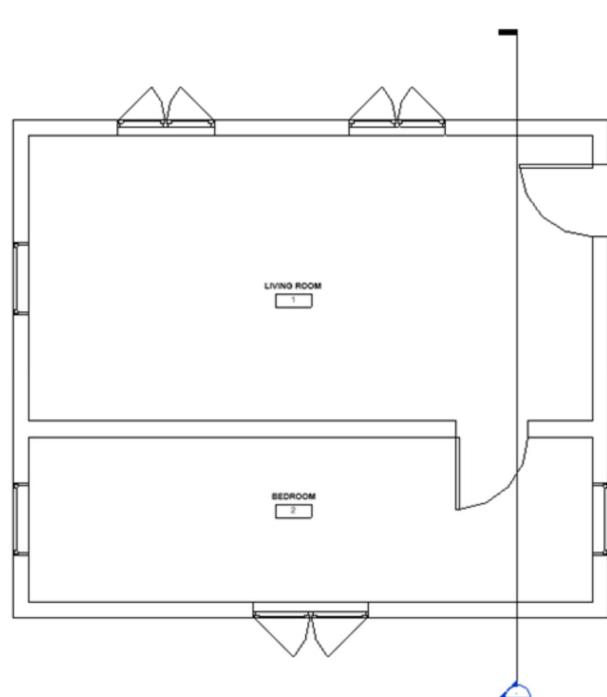
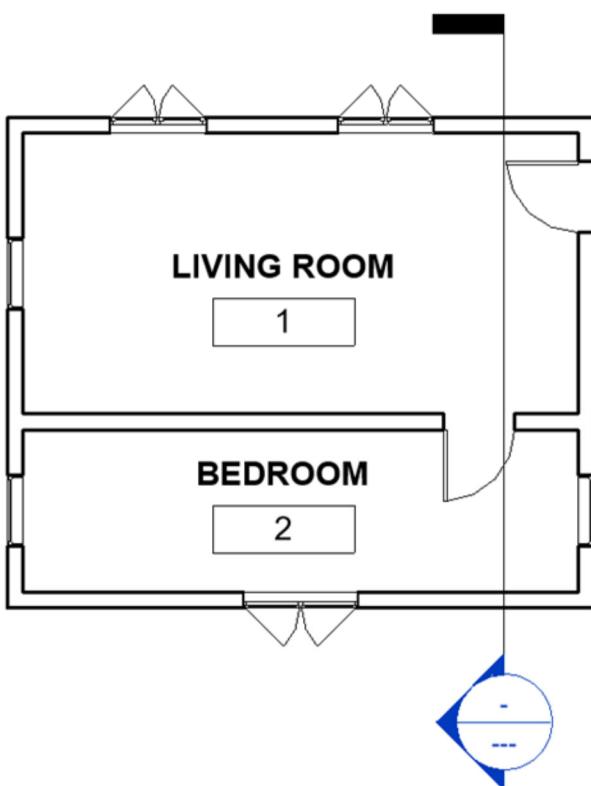
SCALE: 1:200
PROJECTION LINES: 1 (0.1mm)
CUT LINES: 3 (0.30mm)

	1 : 200
1	0.1000 mm
2	0.2000 mm
3	0.3000 mm
4	0.4500 mm

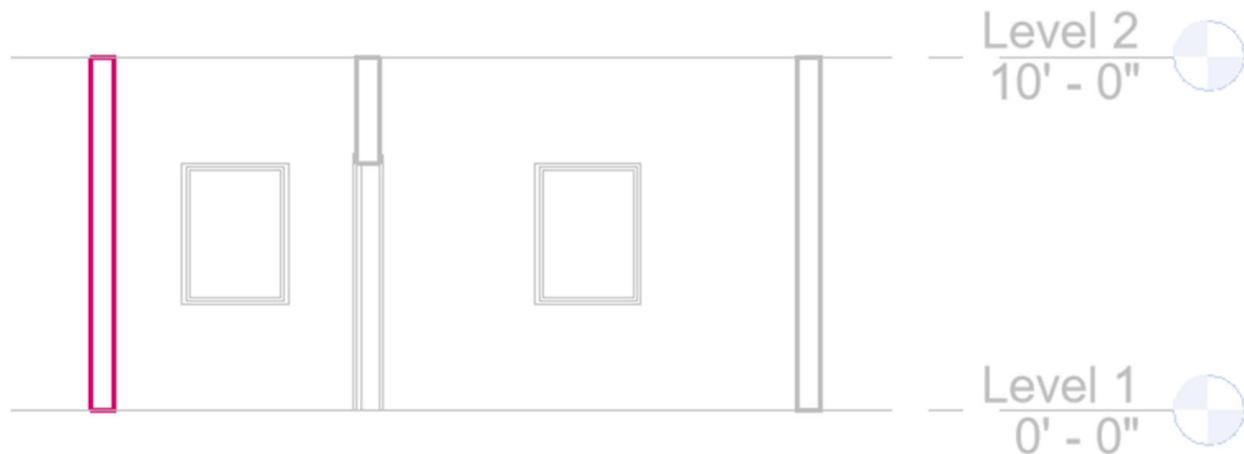
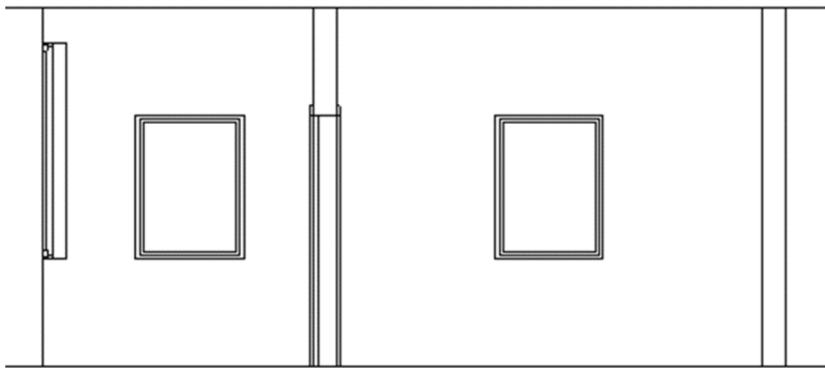
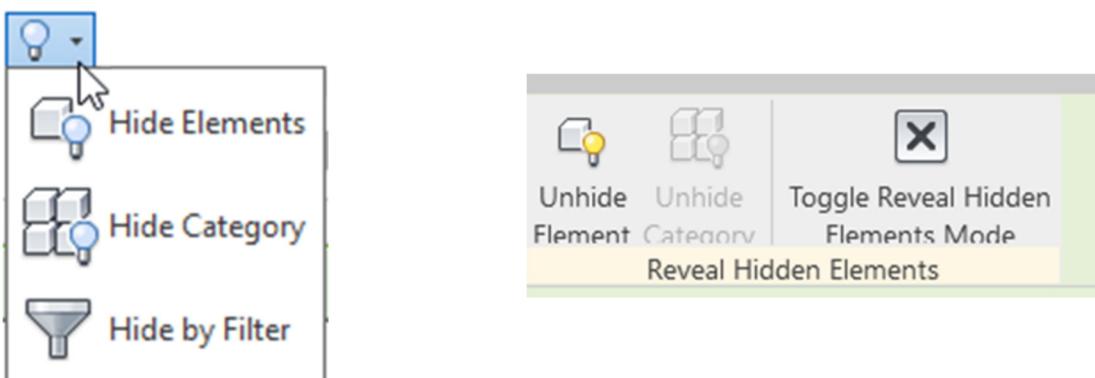


SCALE: 1:200
PROJECTION LINES: 1 (0.1mm)
CUT LINES: 3 (0.35mm)

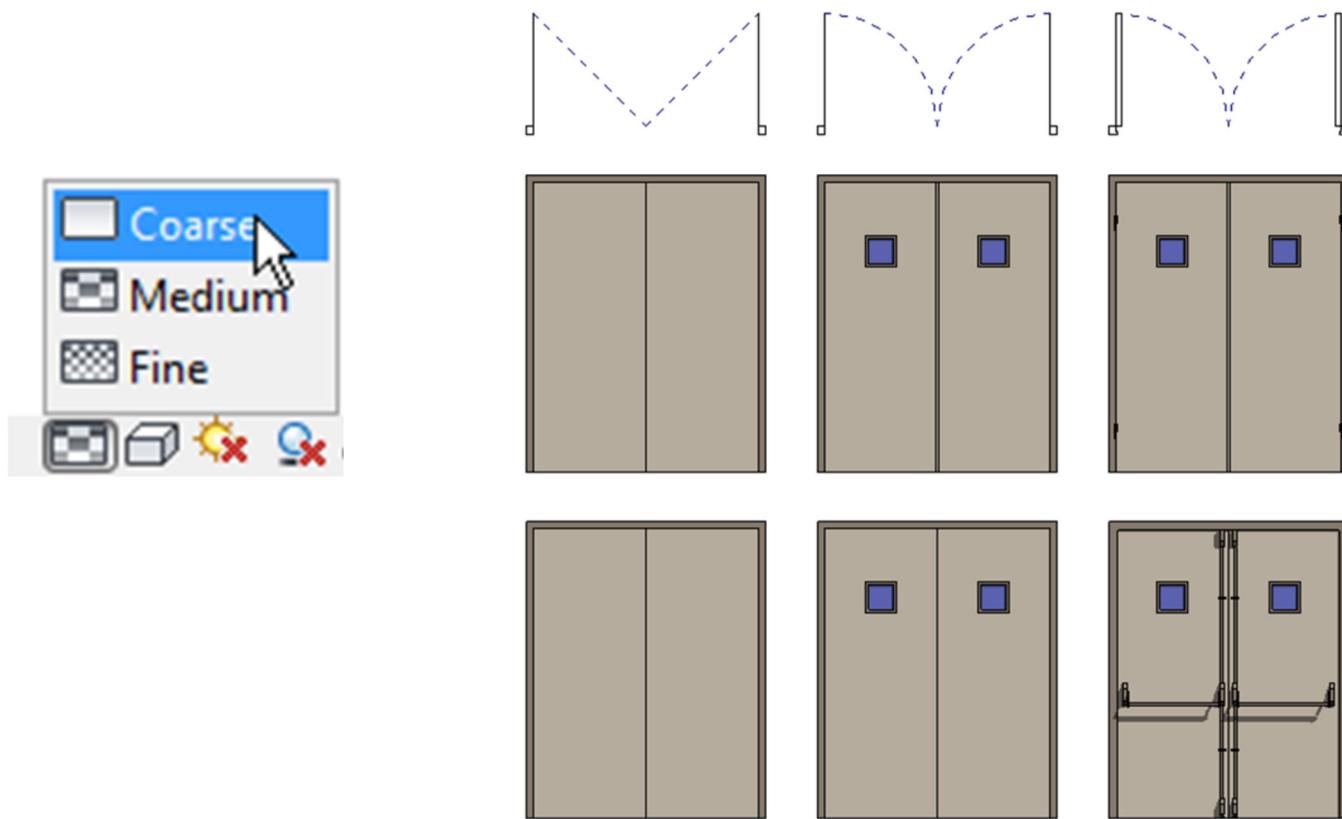
	1 : 200
1	0.1000 mm
2	0.2200 mm
3	0.3500 mm
4	0.5000 mm



- Scale changes - Manipulate the relative size of annotations, line thickness, patterns and text
- A result of how you set object styles and other visibility controls
- Inherent property of each object in your template



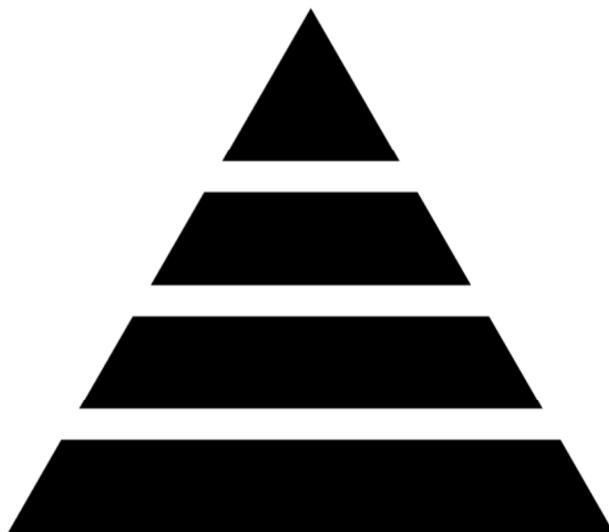
- Hide Elements conceals a given object in a specific view
- Reveal Hidden Elements show everything hidden in a view except closed worksets and hidden filters
- Can specifically hide elements with this method but must remember to use this tool to unhide them



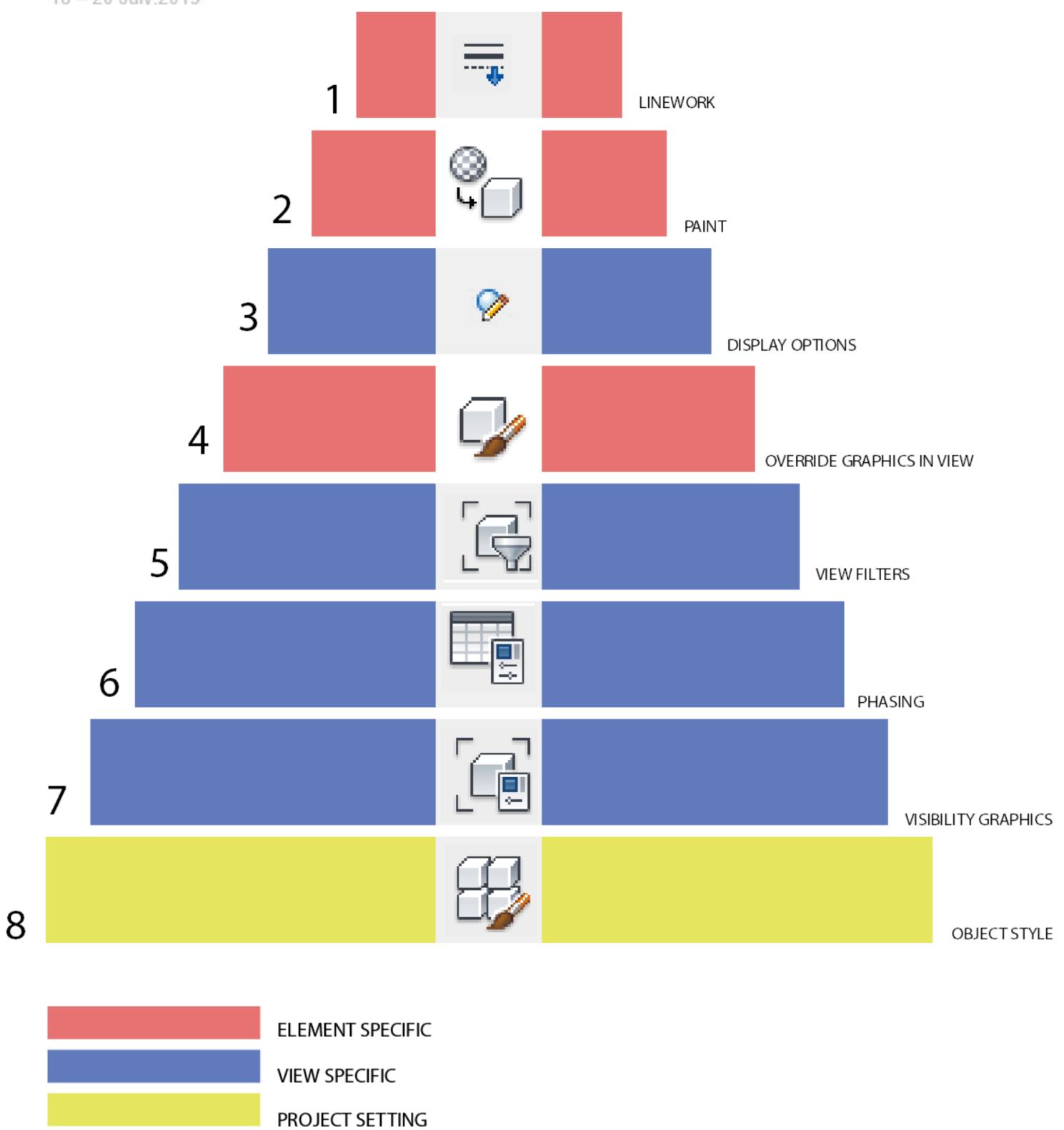
- Detail Level
- Changing the detail setting in your view can change your model elements appearance
- The model family will have the Coarse, Medium and Fine settings labeled

PROJECT SETTINGS

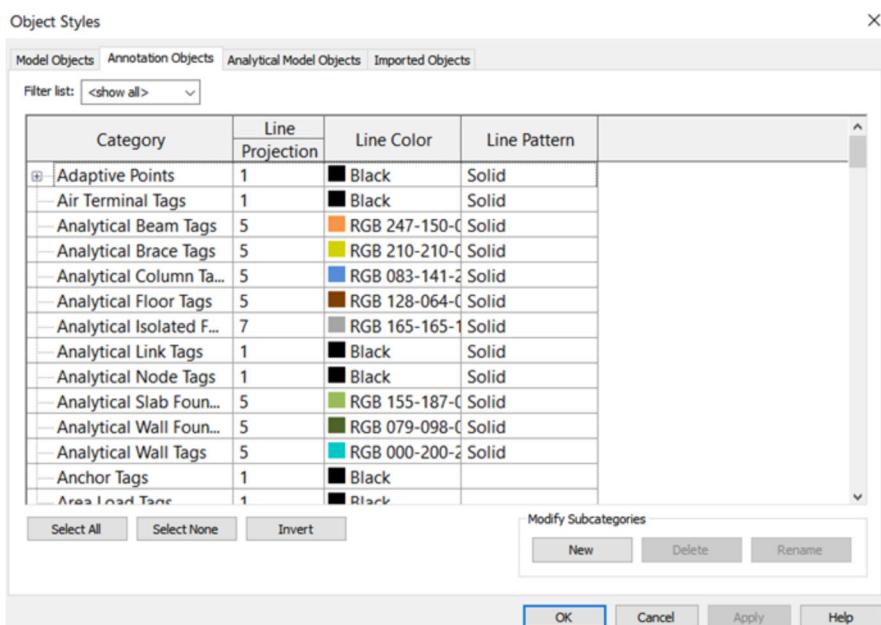
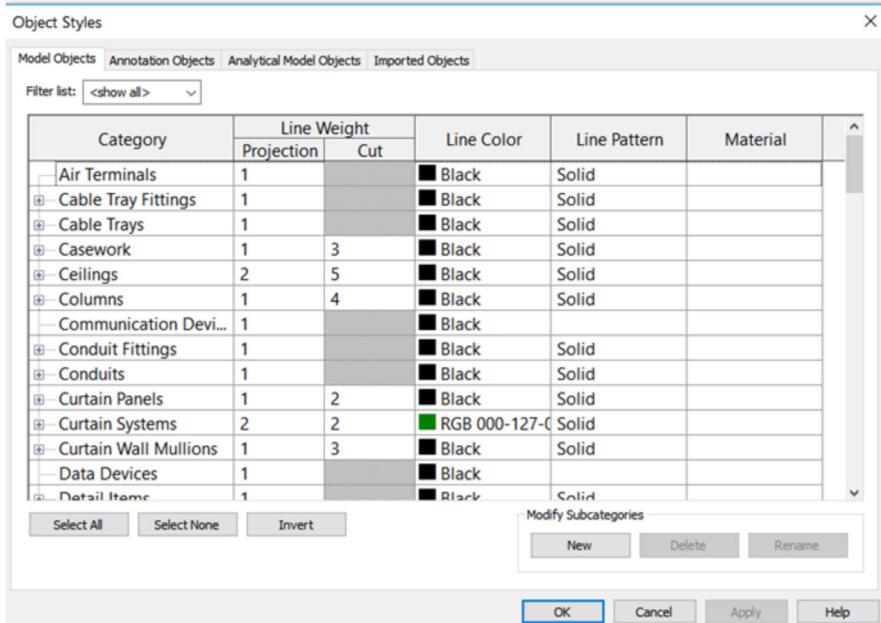
- There are many settings in Revit that can affect visibility but aren't necessarily visibility tools
- Worksets are meant to control memory so prioritize that function
- Hidden elements should be used sparingly as an exception to regular visibility controls
- Design options configure model content for review but is not meant for visibility control either
- Level of Detail and Scale changes are meant to affect content in views

VISIBILITY HIERARCHY

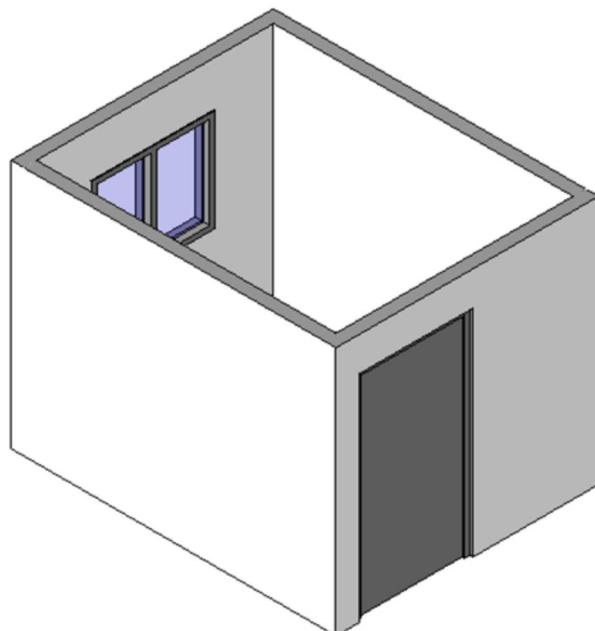
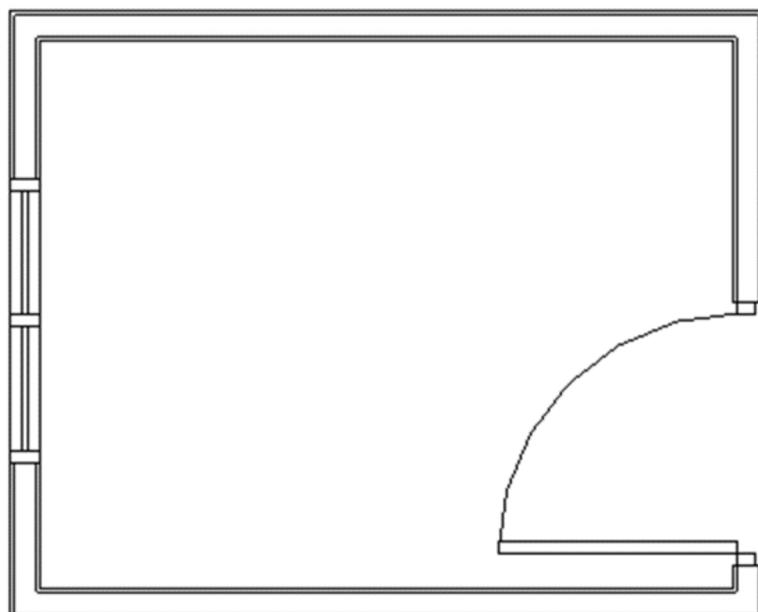
- Revit has a set of designated visibility graphic tools
- All these tools are meant to control the visibility properties of a given object
- Unlike other tools they do not create content just modify appearances which sets them apart



- Some VG settings override others as you apply them
- Visibility elements are ‘stacked’ such that you’ll see the top of the stack overrides before you see the bottom stack

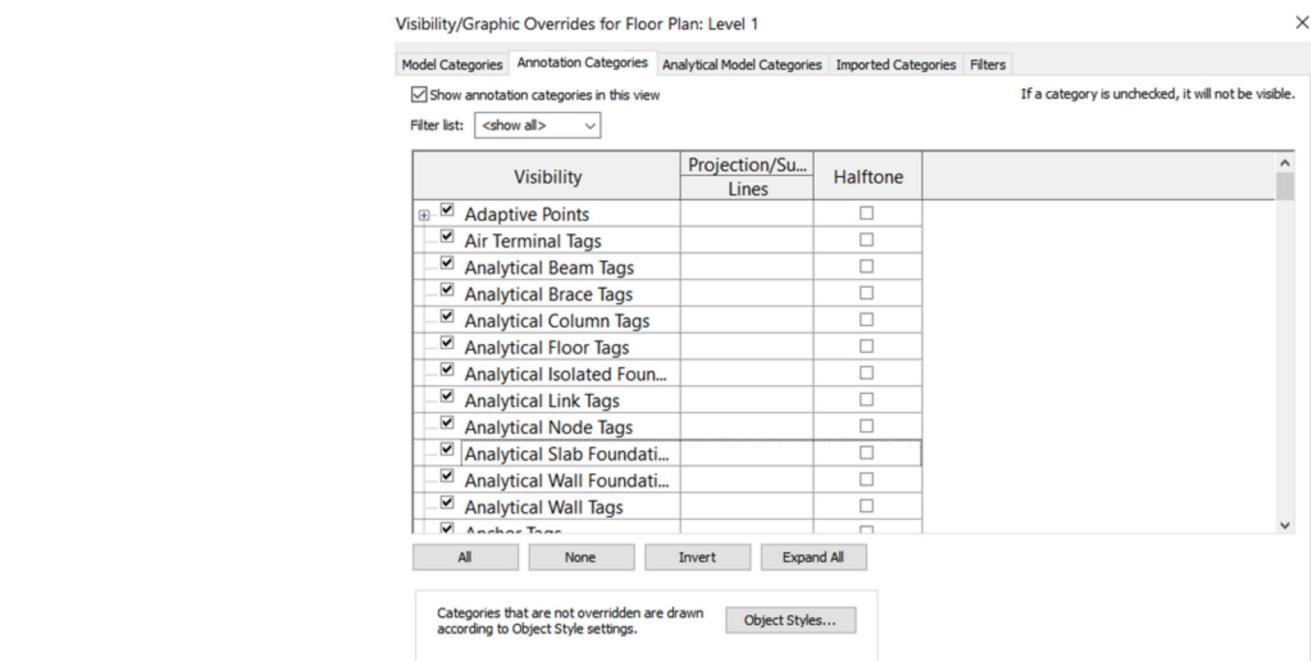
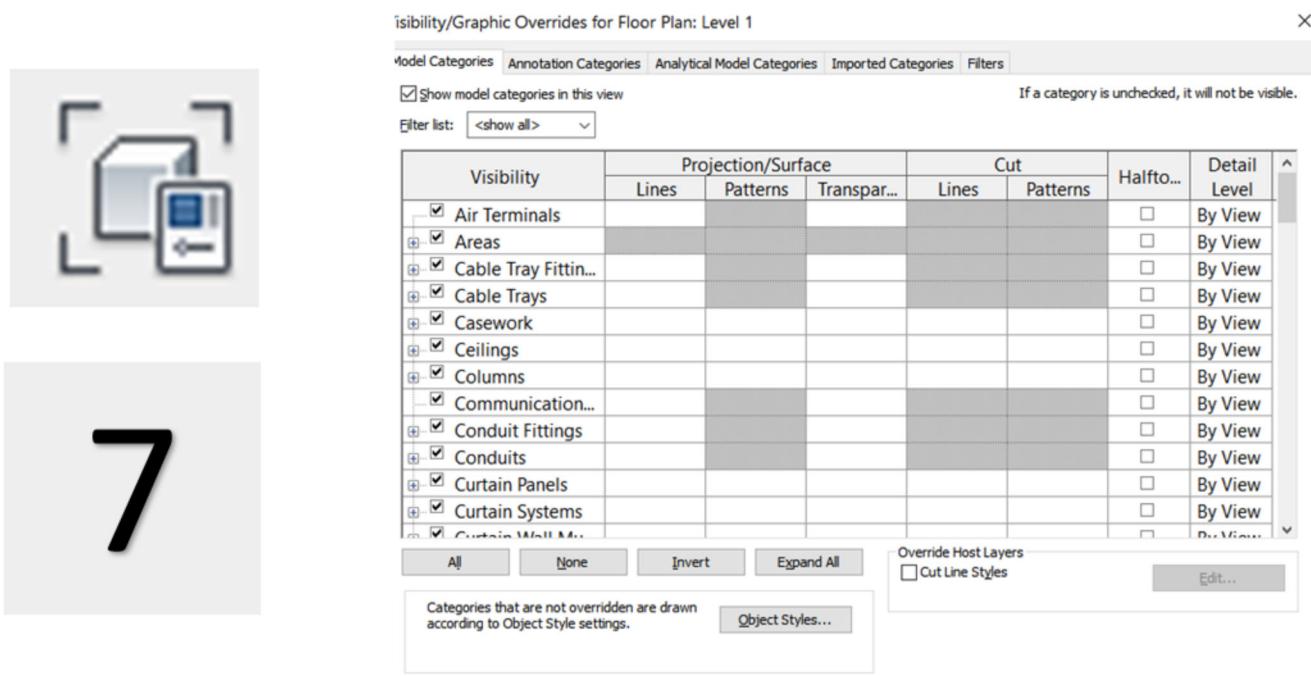


- Where graphics all starts in your Revit template
- Default graphics for your family elements based on your template
- Lowest priority meaning just about every tool can modify your object styles
- Main categories and sub-categories exist
- Specifies most element default graphic appearance
- Object Styles are a part of every template which controls default view appearances

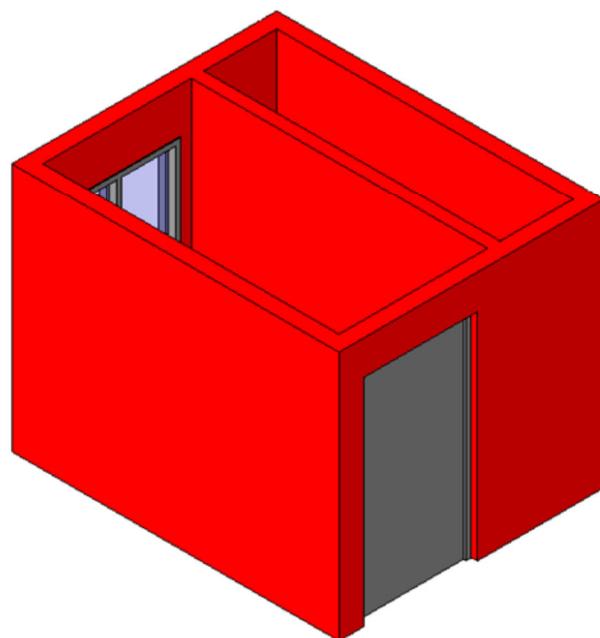
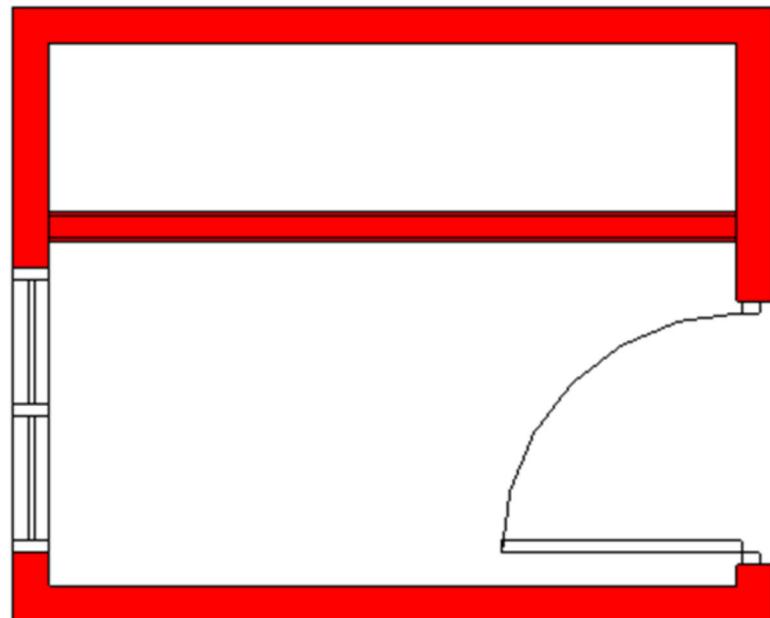


Object Styles

Category		Line Weight		Line Color	Line Pattern	Material
		Projection	Cut			
Data Devices	1			■ Black		
+ Detail Items	1			■ Black	Solid	
Doors	2	2		■ Black	Solid	
ADA Clearance	1	1		■ RGB 128-000-000	Dash	
Egress	4	4		■ Black	Solid	
Electronics	1	1		■ Black	Solid	
Elevation Swing	1	1		■ Black	Dash 1/16"	

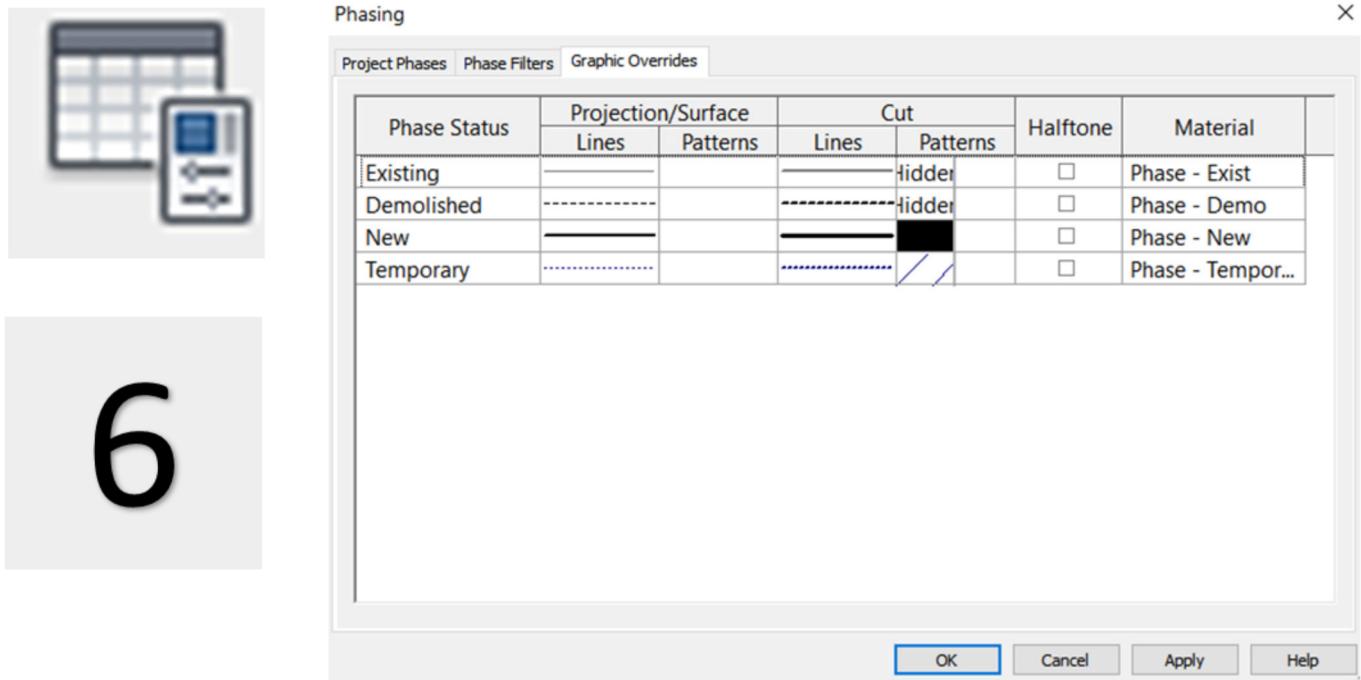


- Control category settings in each view
- Accessible through the Visibility graphics menu or through VG / VV shortcut key
- The starting point of most Graphic changes in Revit
- Essentially turn on or off certain categories like model and annotation content
- Modifying appearance through section cut and patterns also possible here
- Located low on the hierarchy meaning many settings above it can modify these settings further
- Consider keeping your options straight forward and simple as a consistent base across views

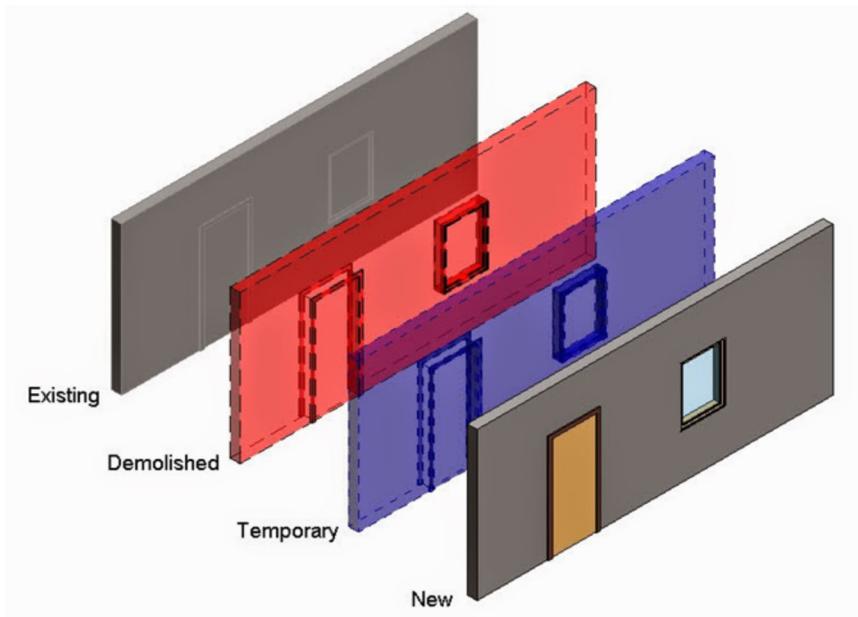


Topography	Override...	Override...	Override...	Override...	By View
<input checked="" type="checkbox"/> Walls					<input type="checkbox"/> By View
<input checked="" type="checkbox"/> Common Edges					
<input checked="" type="checkbox"/> Hidden Lines					
<input checked="" type="checkbox"/> Wall Sweeps - Cornice					

- Edit – Change Surface and Cut pattern to Solid Red



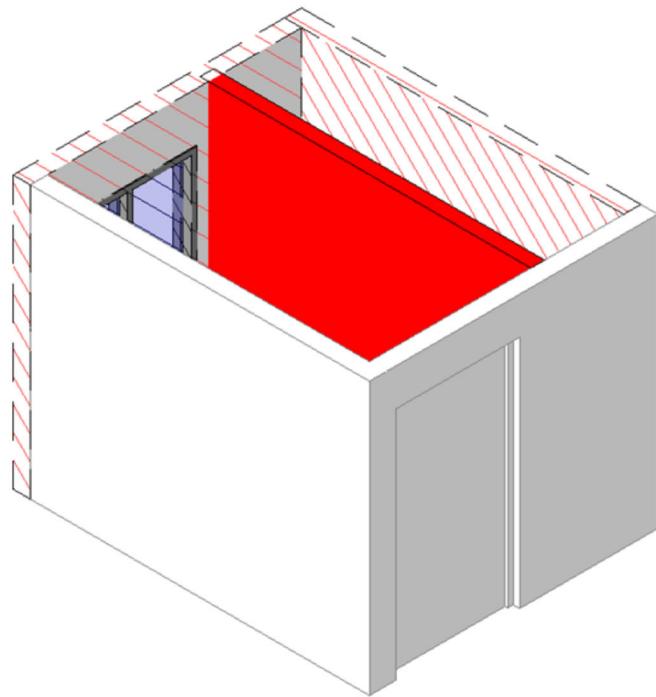
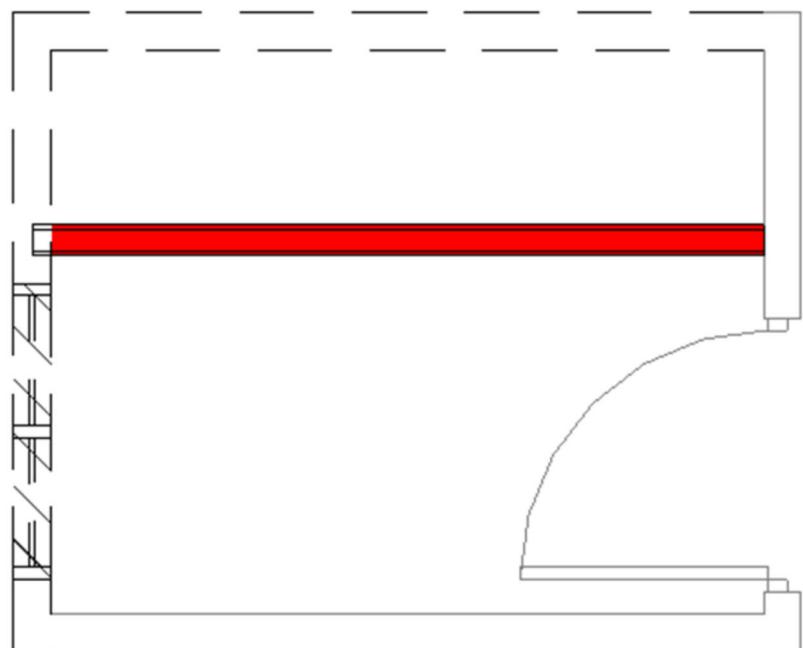
6



- Phase Filter can be used to control model layout and the graphics
- Set in your view properties
- Surface, Cut and halftone can be controlled through the phase filter
- The phase must be applied to views and elements so it won't be done automatically
- Usually very easy to get mixed up if you don't pay attention to your phases in the first place



6

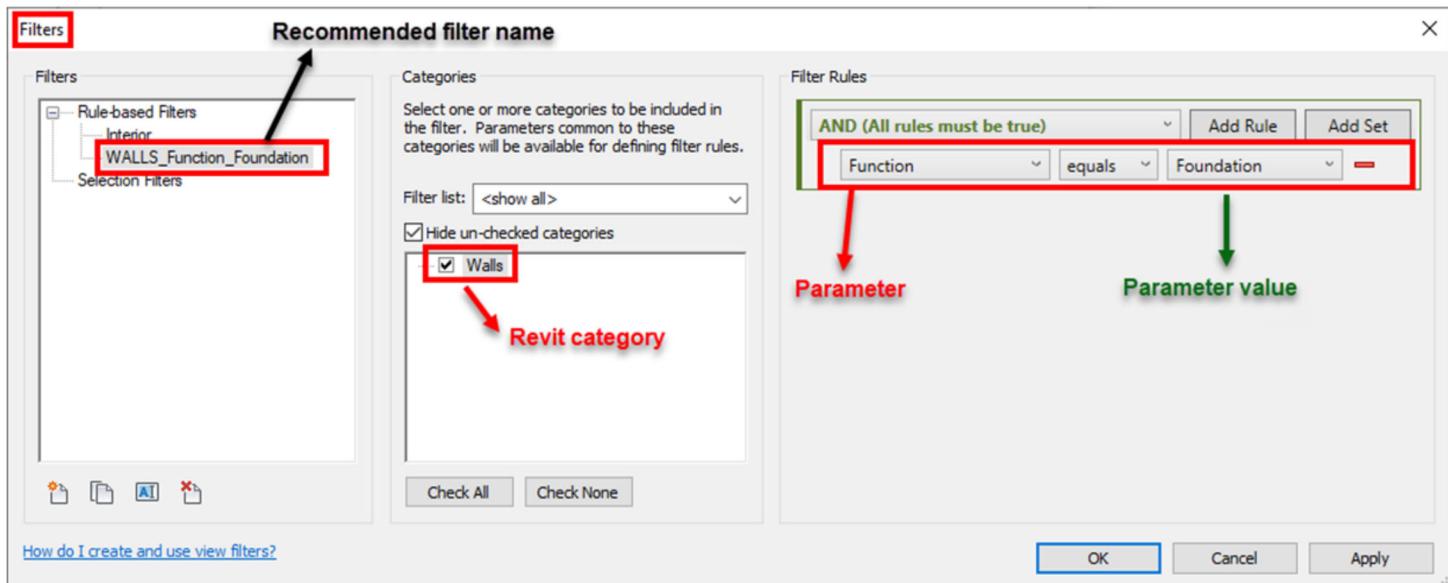
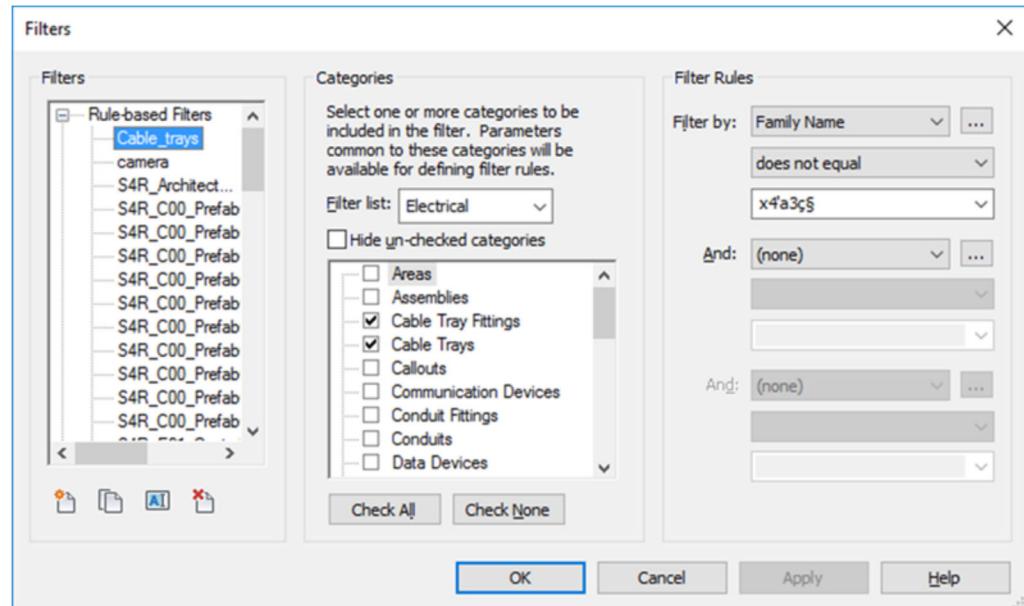
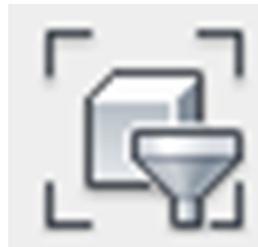


Phasing

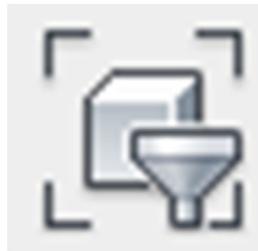
Phasing	
Phase Created	Demo
Phase Demolished	New Construction

Phase Status	Projection/Surface		Cut	
	Lines	Patterns	Lines	Patterns
Existing	—	—	—	Hidden
Demolished	-----	\\\\\\\\\\	-----	Hidden
New	—	—	—	—
Temporary

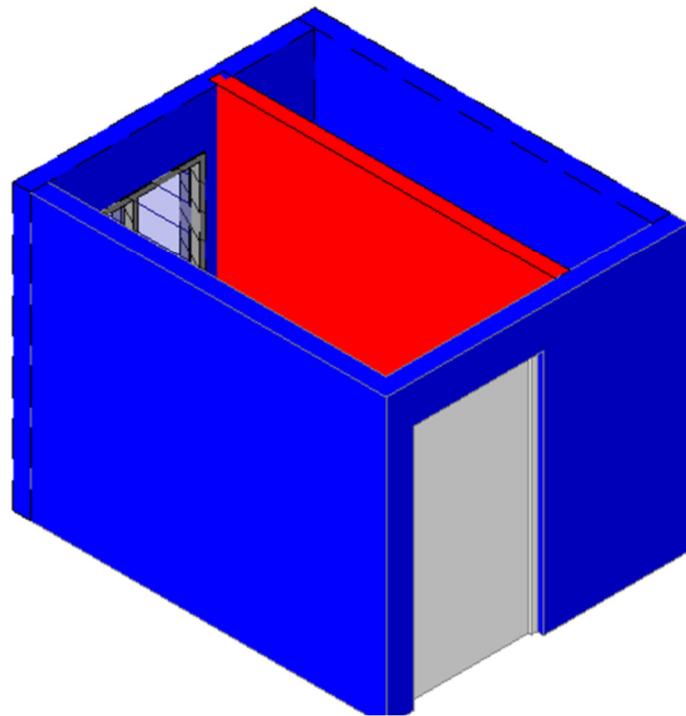
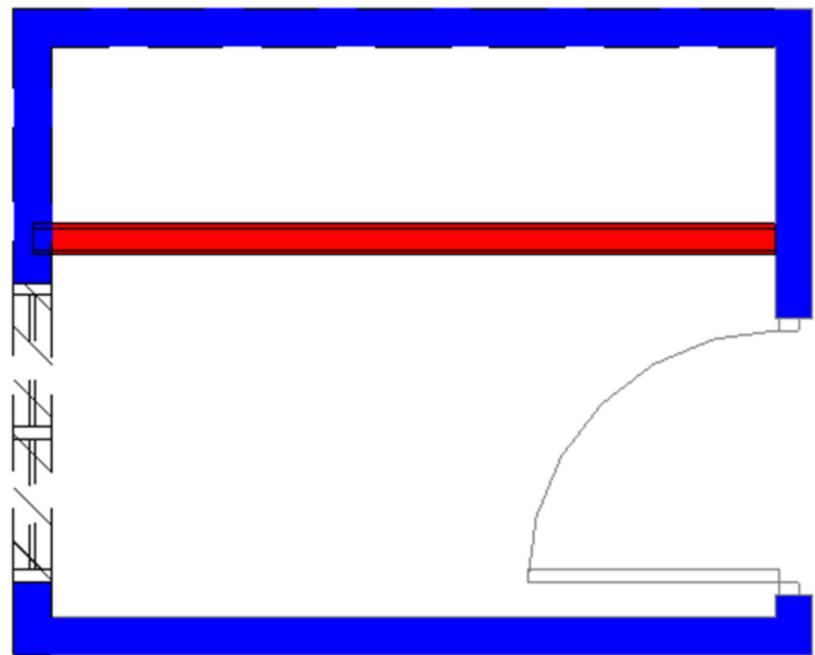
- Edit – Place west wall and east wall into different phases then set the view to the designated phase to activate the phasing override graphics



- Located in the View Override menu and has its own tool
- Like the Phase filter it can override graphics though it is based upon indexed categories not selected elements
- Visibility, Surface, Cut and halftone can be changed here
- Useful way to control specific content on a view without editing the elements directly
- No good way of knowing a filter is on except looking at view settings
- Be mindful of how you create filters and name them systematically
- Too many filters active can confuse users



5



Name	Visibility	Projection/Surface			Cut		Halftone
		Lines	Patterns	Transparen...	Lines	Patterns	
_FILTER_WALL	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>

- Edit – Add filter category for generic walls in view. The filter will change cut pattern and projection to blue

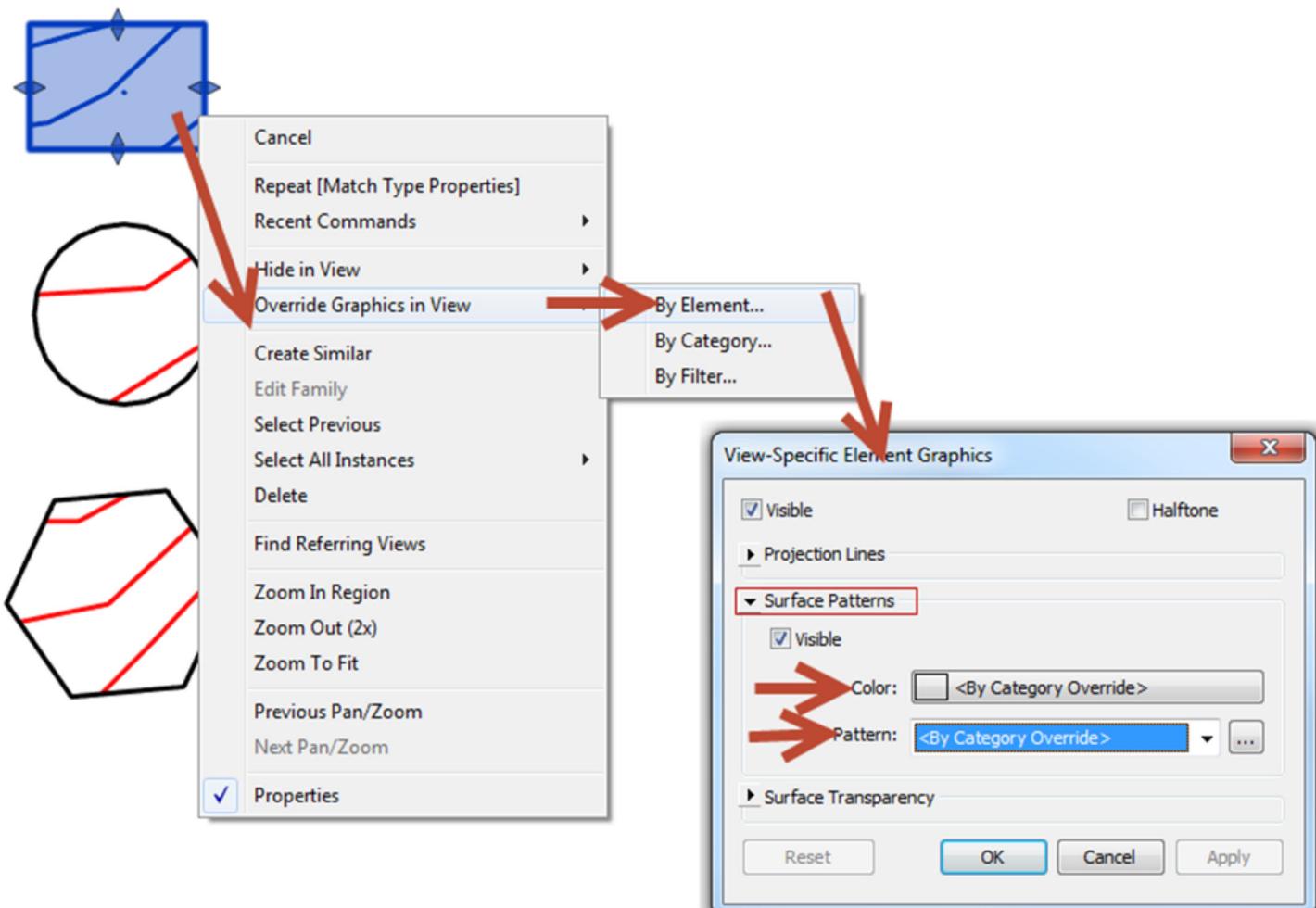


Override by Element

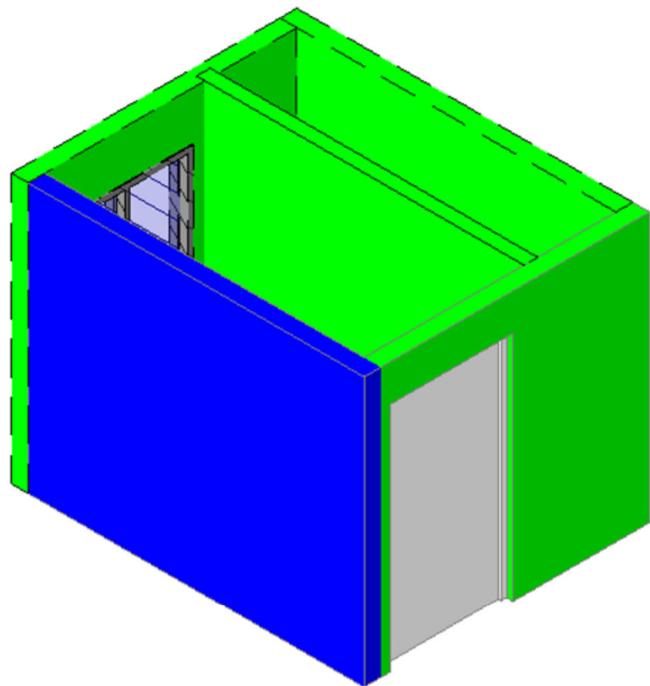
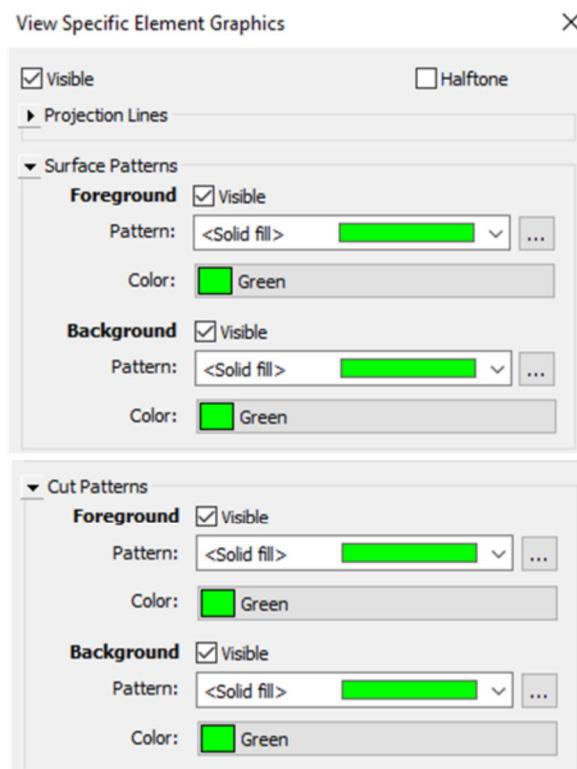
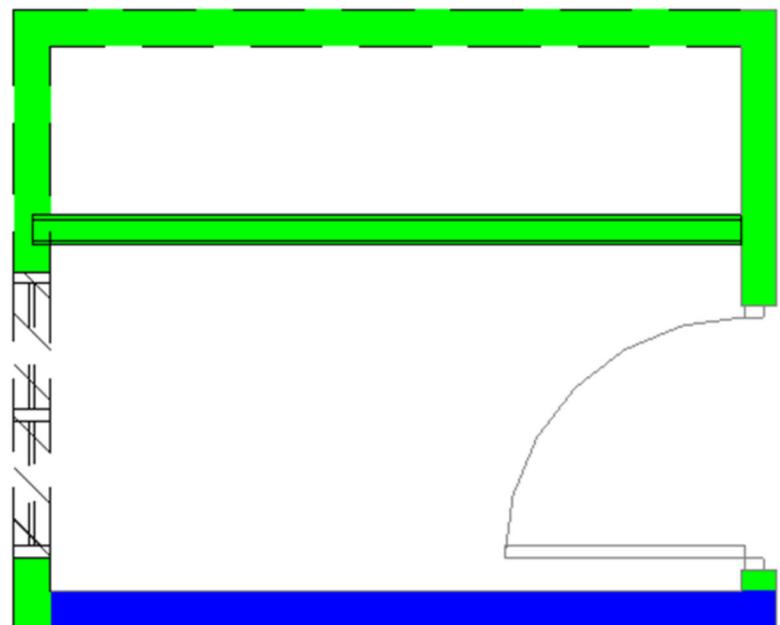


Override by Category

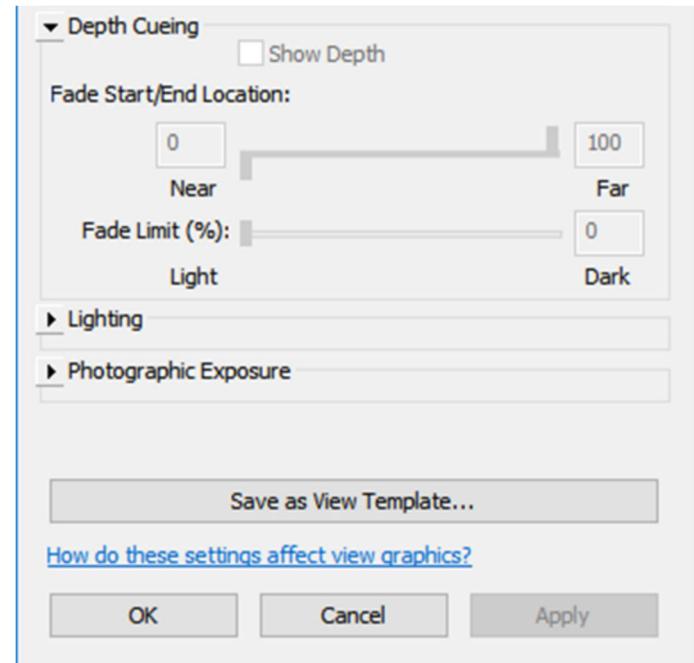
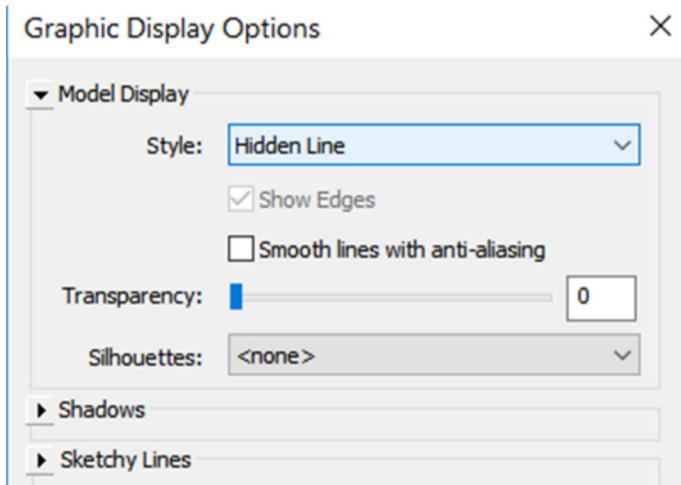
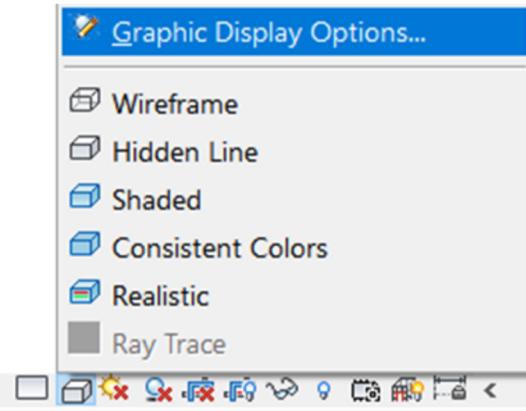
4



- Can be set to elements or categories
- Click on Any element then right click to change the override directly in that view
- Patterns and Transparency can be modified here
- Best choice is to use it for non-sheet views so you don't confuse other users with these edits
- Modify views with overrides sparingly and for specific reasons or these changes will be very difficult to track



- Edit – Right click on West, East, North and Center walls and change the element property colors to green

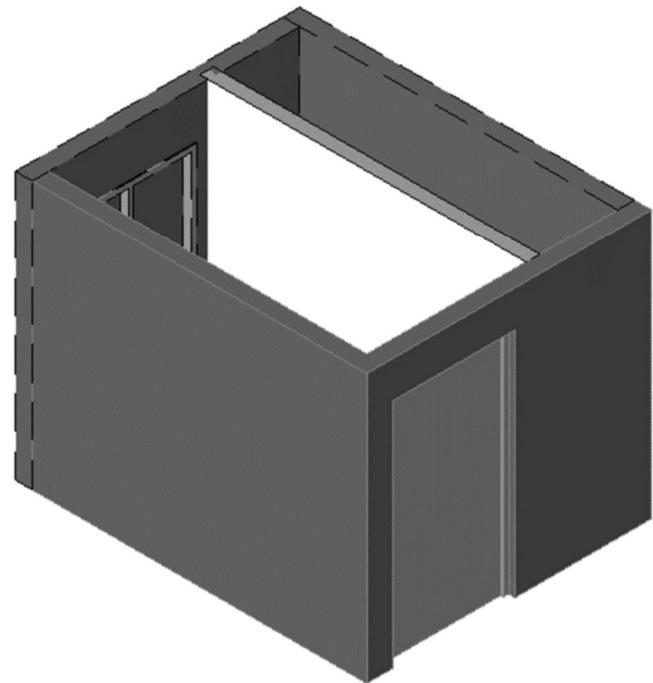
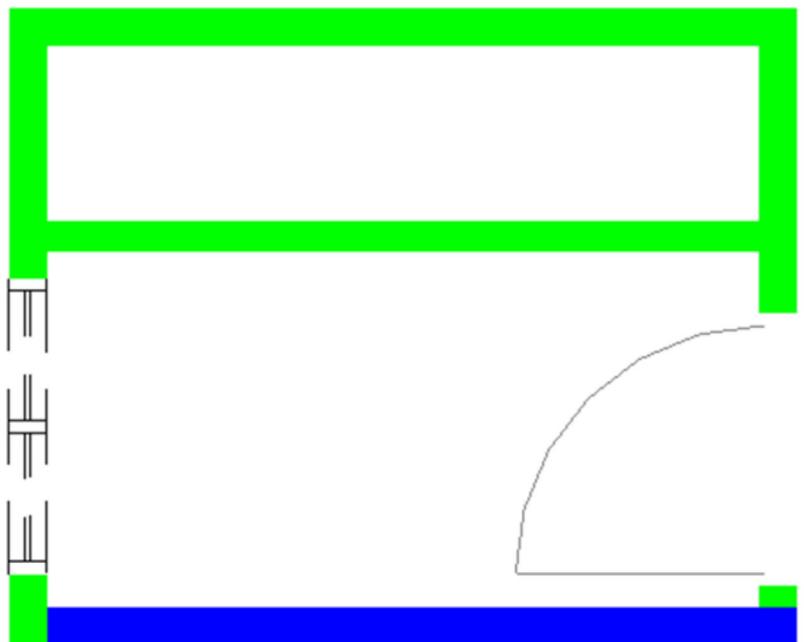


- GRAPHIC DISPLAY OPTIONS
- Tool at the bottom of a view
- Preset for different surface and line renderings available or you can create your own
- Stacked high on hierarchy and can ignore a lot of the other visibility controls
- More obvious effect in 3D view than 2D plan

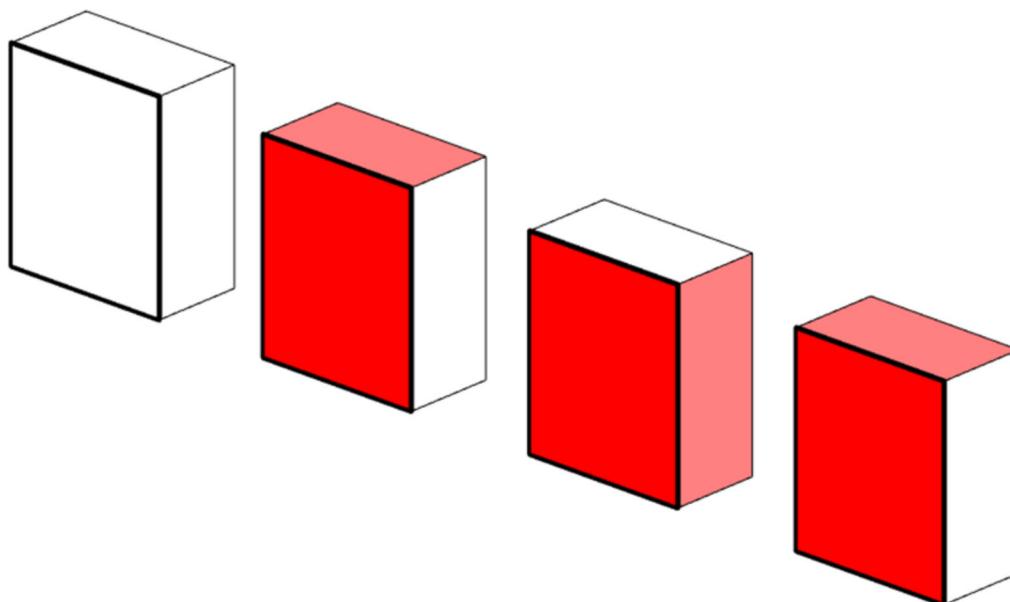
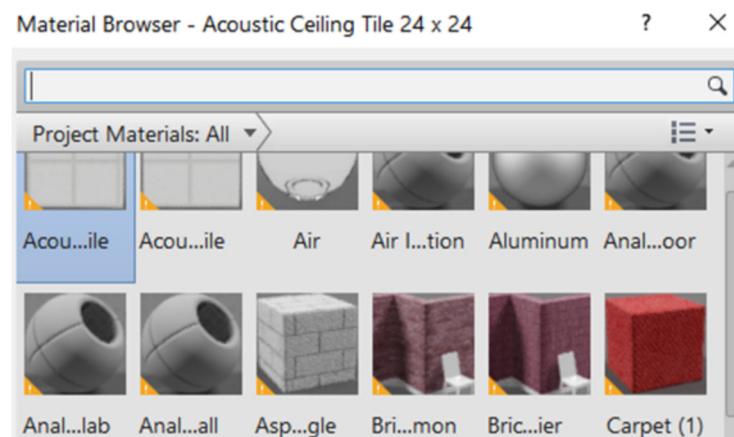
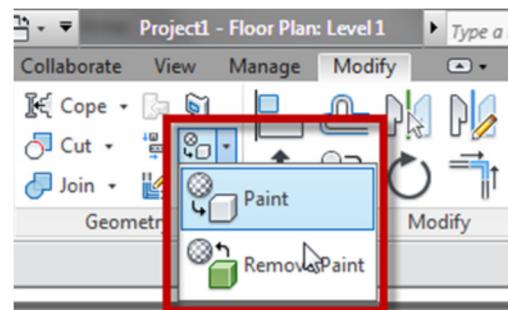
43



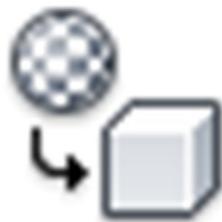
3



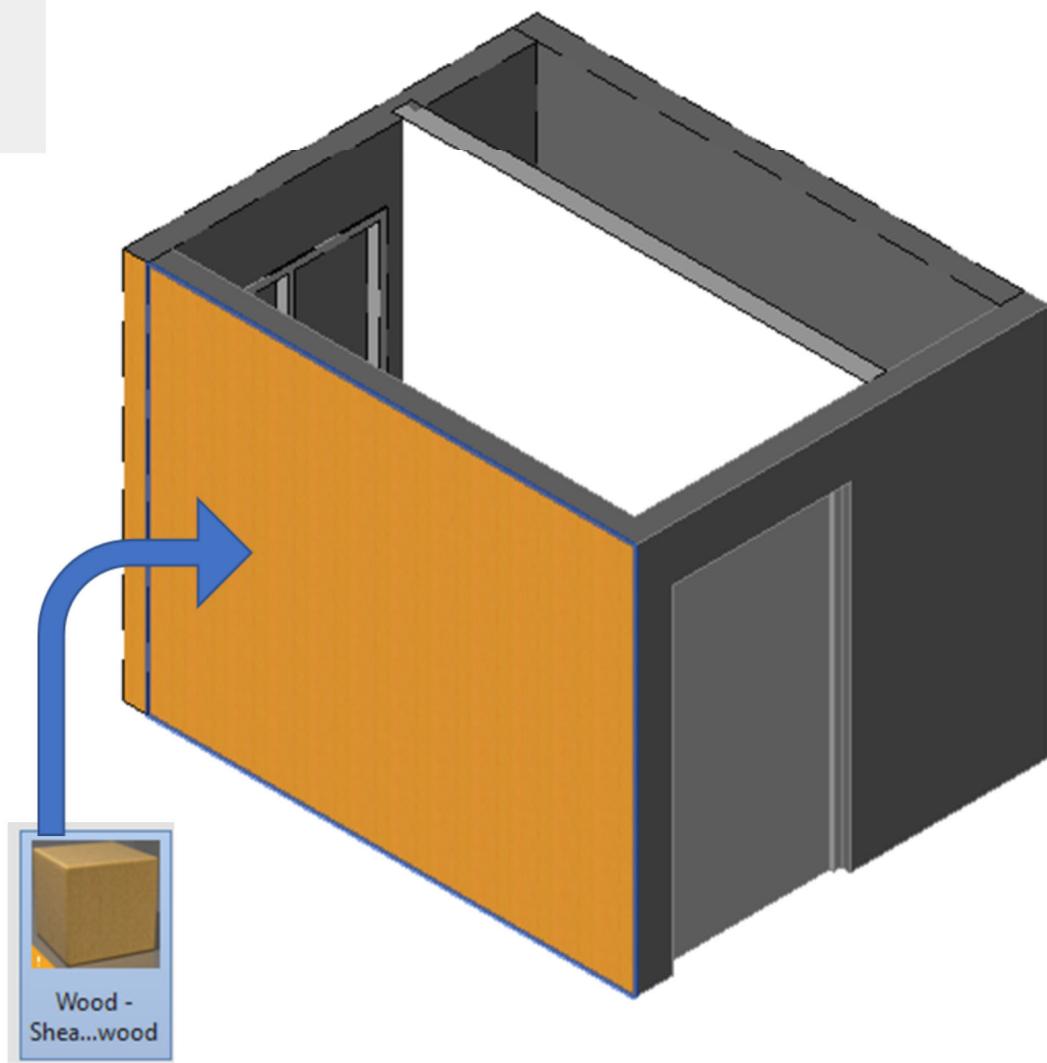
Edit – Set display option to realistic which affects the surface projection patterns but not the cut patterns except for the edges which are surfaces



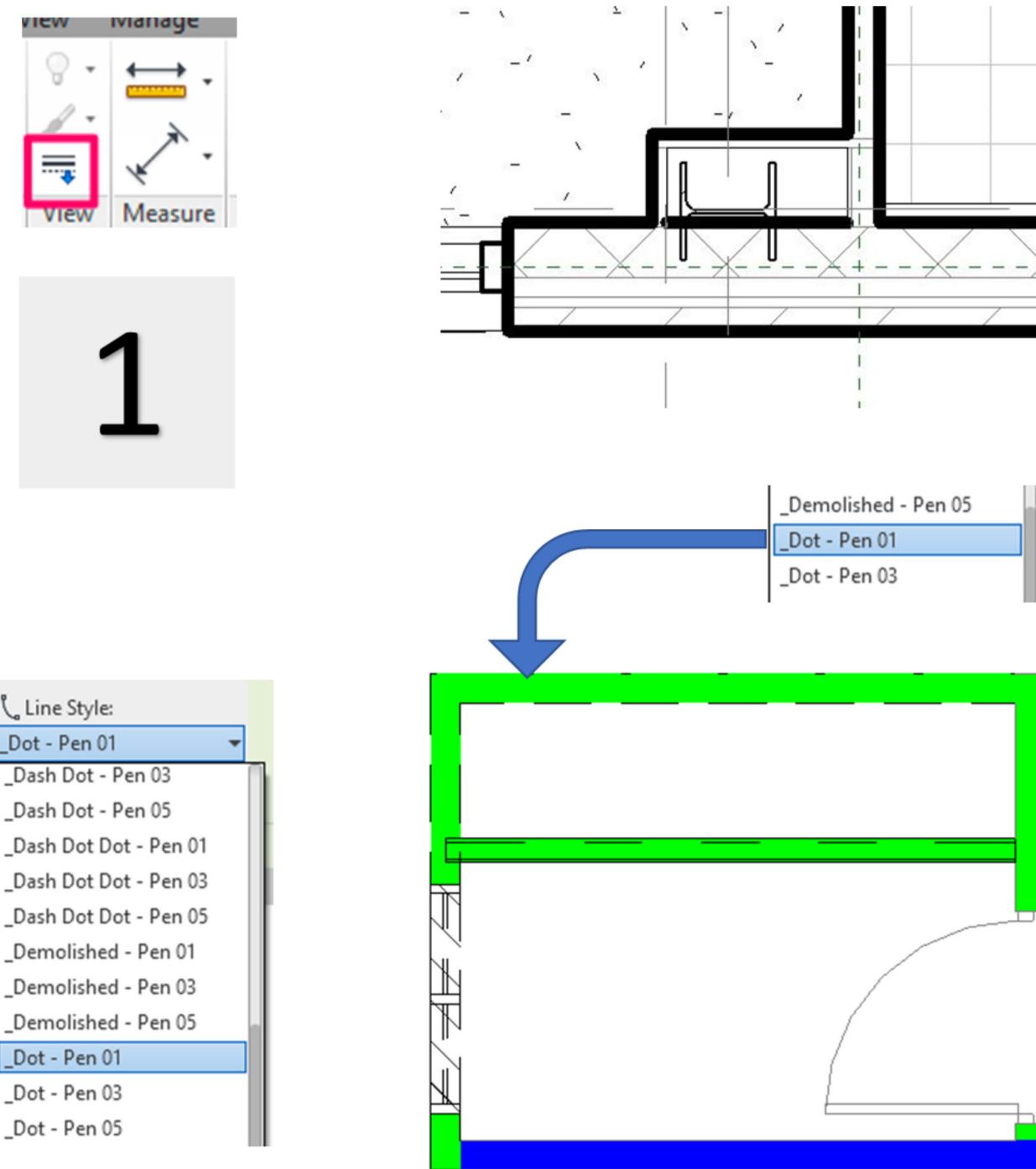
- Available on the Modify tab
- Change surface color and material in 3D display
- Can override any surface modification
- Easy to change and easy to forget how you made that change
- If you know it's painted then another tool can remove the paint
- Useful for render views with special textures
- Avoid using it for typical work since there's no control besides manual editing



2



- Edit – Apply wood color to south wall



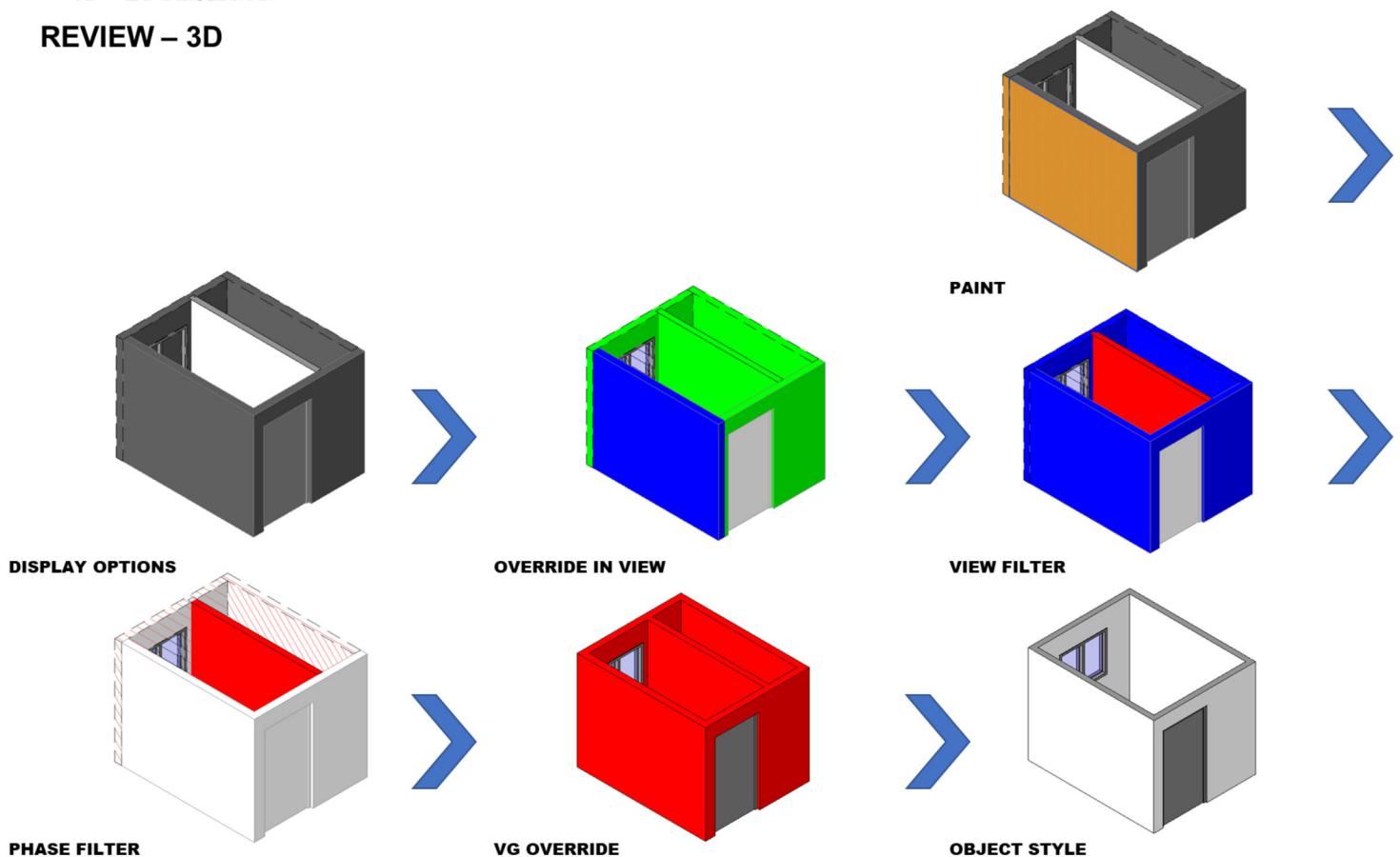
- LINEWORK
- Part of the Modify tab
- Will let you override line styles
- Highest on the visibility hierarchy meaning it will show up on the top of the stack
- Usually not too difficult to discern if they are active but shouldn't be used in anything other than detail or drafting views

The image displays a composite of three parts related to digital building modeling:

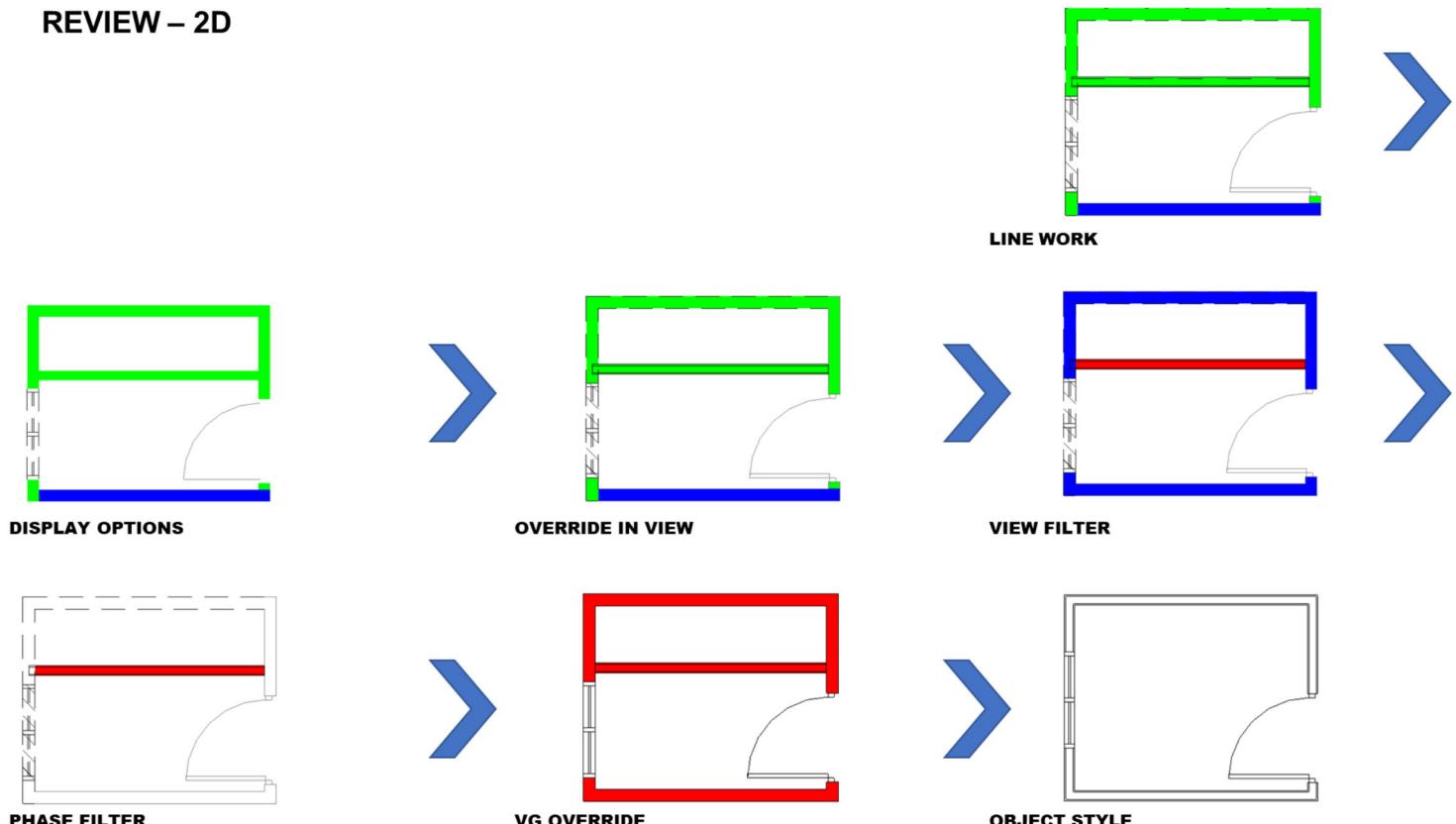
- CAD Interface:** A screenshot of a software interface titled "View Specific Element Graphics". It includes:
 - A checkbox for "Visible" and an unchecked checkbox for "Halftone".
 - A section for "Projection Lines".
 - A section for "Surface Patterns" with "Foreground" and "Background" options, both set to "Visible" with a green solid fill pattern and green color.
 - A section for "Cut Patterns" with "Foreground" and "Background" options, both set to "Visible" with a green solid fill pattern and green color.
- 2D Drawing:** A plan view of a building footprint. It features a large rectangular area outlined in green, a horizontal blue bar at the bottom, and a curved grey shape on the right side.
- 3D Model:** An isometric view of a building. The main structure has green walls, while the West, East, North, and Center walls are colored blue. A grey door is visible on one of the blue walls.

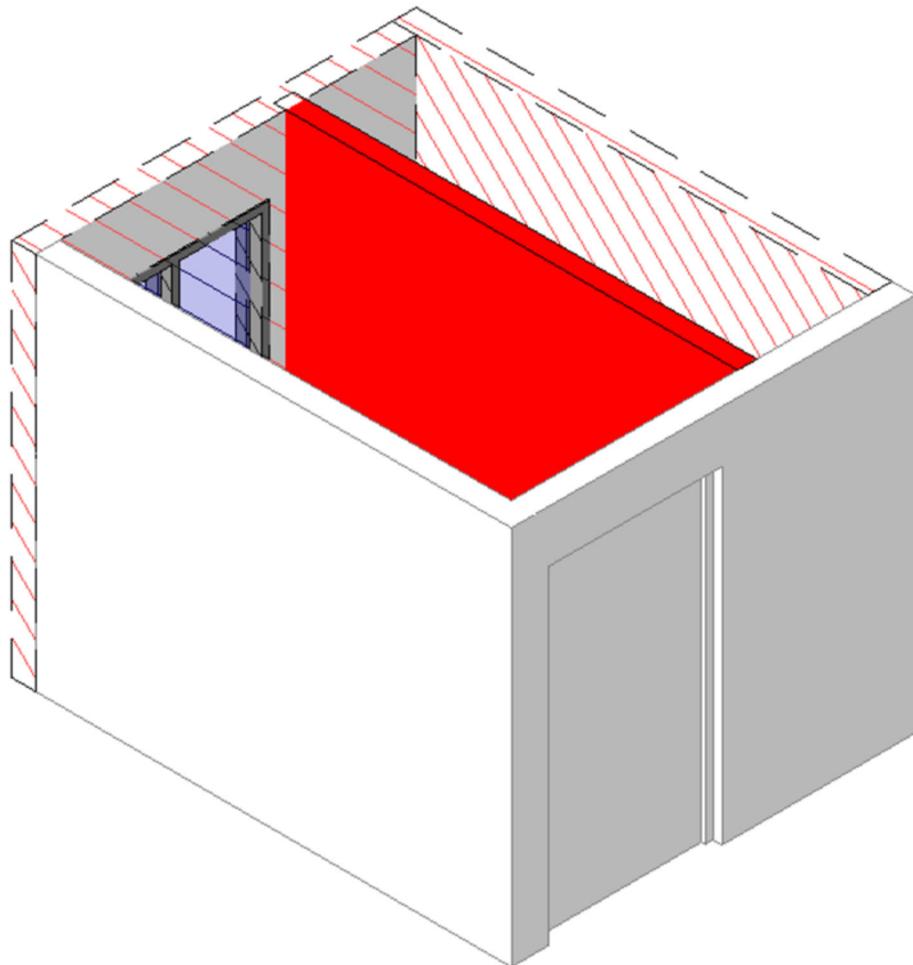
- Edit – Right click on West, East, North and Center walls and change the element property colors to green

REVIEW – 3D



REVIEW – 2D





- Different Overrides can be used together for different graphic effects
- The more overrides you use the more likely you will experience a visibility issue
- Keep track of how your overrides are organized and which ones you should be using
- If you need to reset then create a new view of the level then turn off the phase setting to go back to 'base' settings of object styles
- Same concept works for elevations, sections, 3D views and other views

1 LINERWORK

Part of the Modify tab
Will let you override line styles
Highest on the visibility hierarchy meaning it will show up on the top of the stack
Usually not too difficult to discern if they are active but shouldn't be used in anything other than detail or drafting views

2 PAINT

Available on the Modify tab
Change surface color and material in 3D display
Can override any surface modification
Easy to change and easy to forget how you made that change
If you know it's painted then another tool can remove the paint
Useful for render views with special textures
Avoid using it for typical work since there's no control besides manual editing

3 DISPLAY OPTIONS

Tool at the bottom of a view
Preset for different surface and line renderings available or you can create your own
Stacked high on hierarchy and can ignore a lot of the other visibility controls
More obvious effect in 3D view than 2D plan

4 VIEW FILTERS

Located in the View Override menu and has its own tool
Like the Phase filter it can override graphics though it is based upon indexed categories not selected elements
Visibility, Surface, Cut and halftone can be changed here
Useful way to control specific content on a view without editing the elements directly
No good way of knowing if a filter is on except looking at view settings
Be mindful of how you create filters and name them systematically
Too many filters active can confuse users

5 OVERRIDE GRAPHICS IN VIEW

Click on Any element then right click to change the override directly in that view
Patterns and Transparency can be modified here
Best choice is to use it for non-sheet views so you don't confuse other users with these edits
Modify views with overrides sparingly and for specific reasons or these changes will be very difficult to track

6 PHASING

Phase Filter can be used to control model layout and the graphics
Set in your view properties
Surface, Cut and halftone can be controlled through the phase filter
The phase must be applied to views and elements so it won't be done automatically
Usually very easy to get mixed up if you don't pay attention to your phases in the first place

7 OBJECT STYLE

Where graphics all starts in your Revit template
Default graphics for your family elements based on your template
Lowest priority meaning just about every tool can modify your object styles
Main categories and sub-categories exist
Specifies most element default graphic appearance
Object Styles are a part of every template which controls default view appearances

8 VISIBILITY GRAPHICS

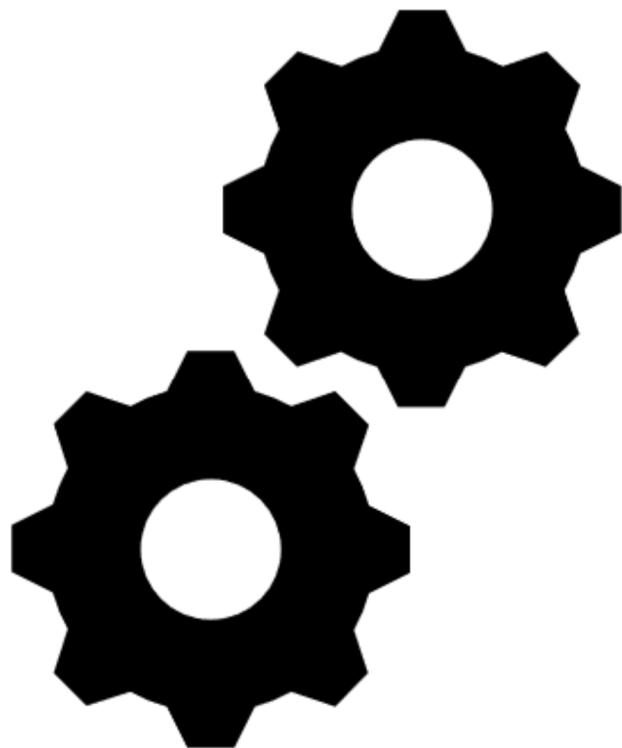
Control category settings in each view
Accessible through the Visibility graphics menu or through VG / VV shortcut key
The starting point of most Graphic changes in Revit
Essentially turn on or off certain categories like model and annotation content
Modifying appearance through section cut and patterns also possible here
Located low on the hierarchy meaning many settings above it can modify these settings further
Consider keeping your options straight forward and simple as a consistent base across views

If a category is unchecked, it will not be visible.

SUMMARY

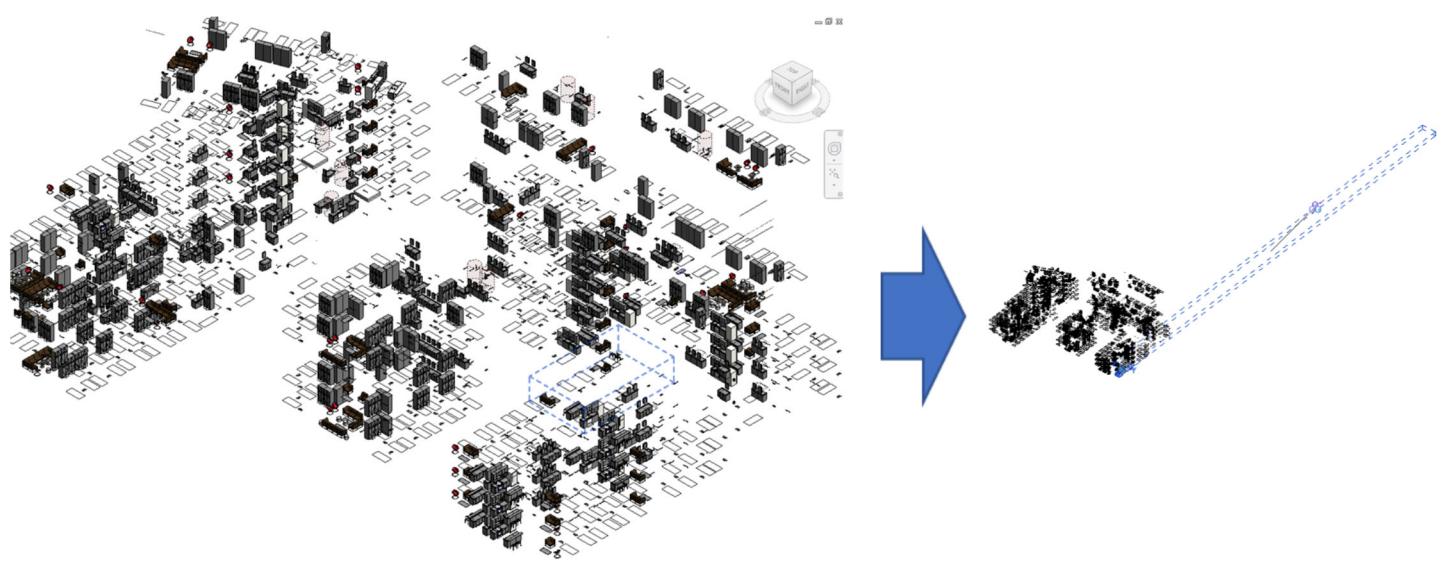
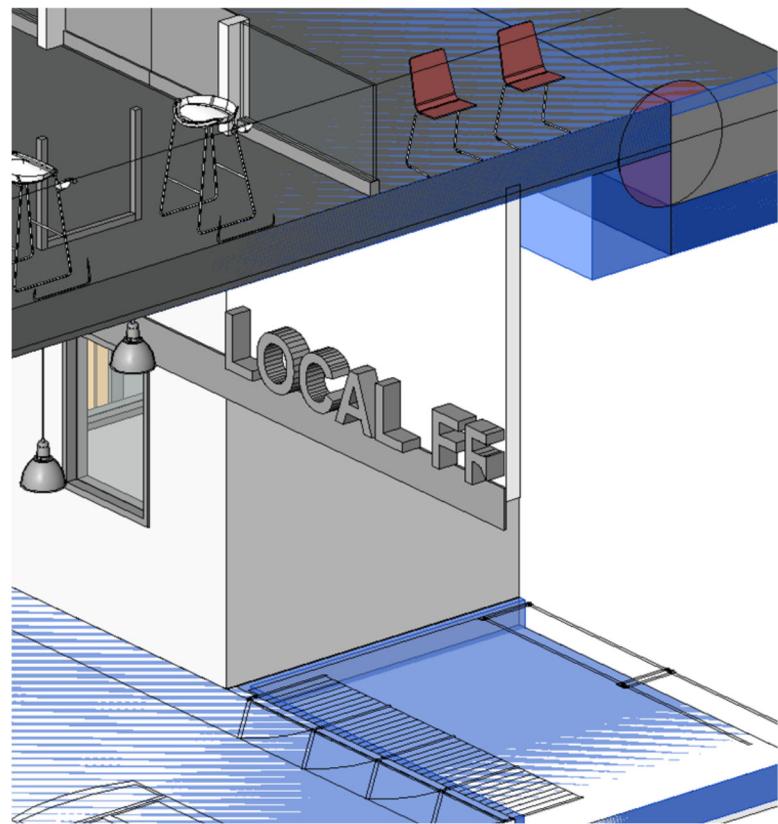
- Visibility Graphics specifically applies to a set of tools that modify the elements in your project
- VG graphics have override hierarchy to control view content
- Understanding the hierarchy and how it can affect a given view is crucial in achieving the graphics you want

MORE ISSUES

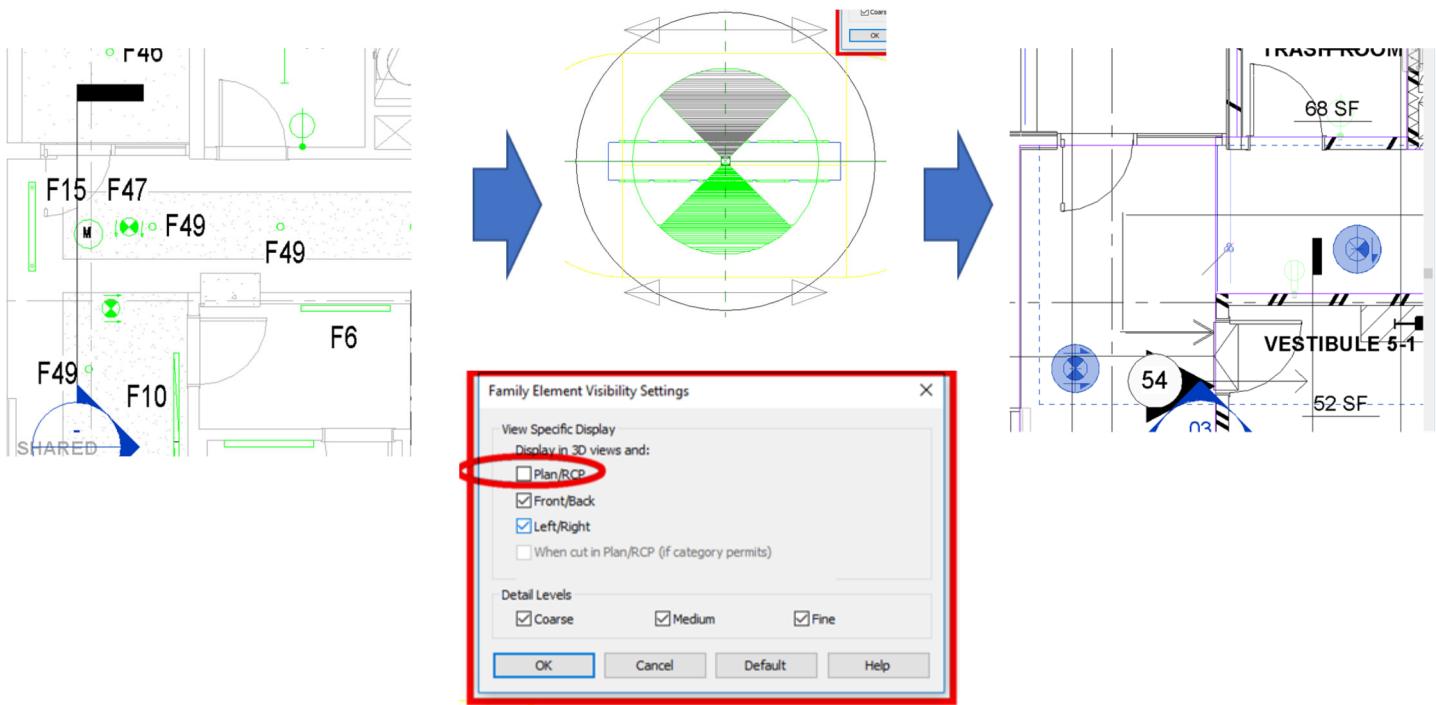


Puzzles within Puzzles
Sometimes you don't know where to start unraveling the issue

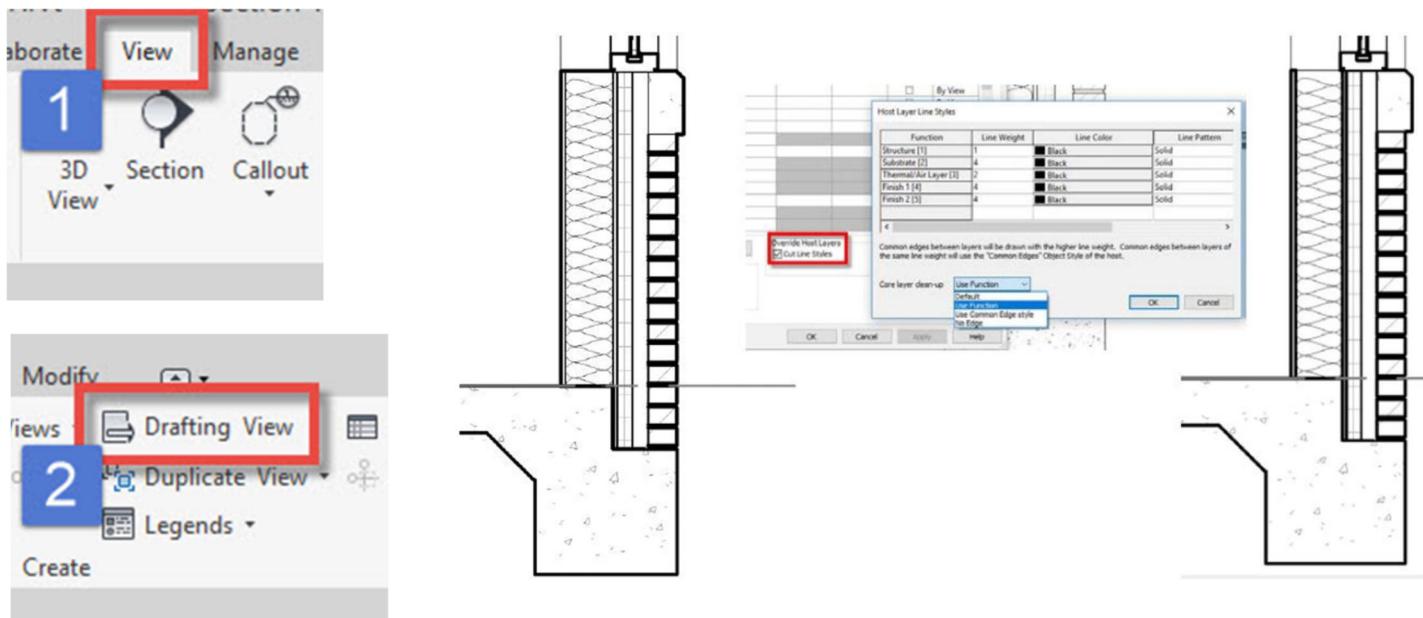
- Elements beneath elements
- 3D lines could be beneath content like floor finishes and effectively invisible
- Use 3D section models to see the lines and moving them above the objects
- Using wire frame mode can also help to uncover objects beneath each other



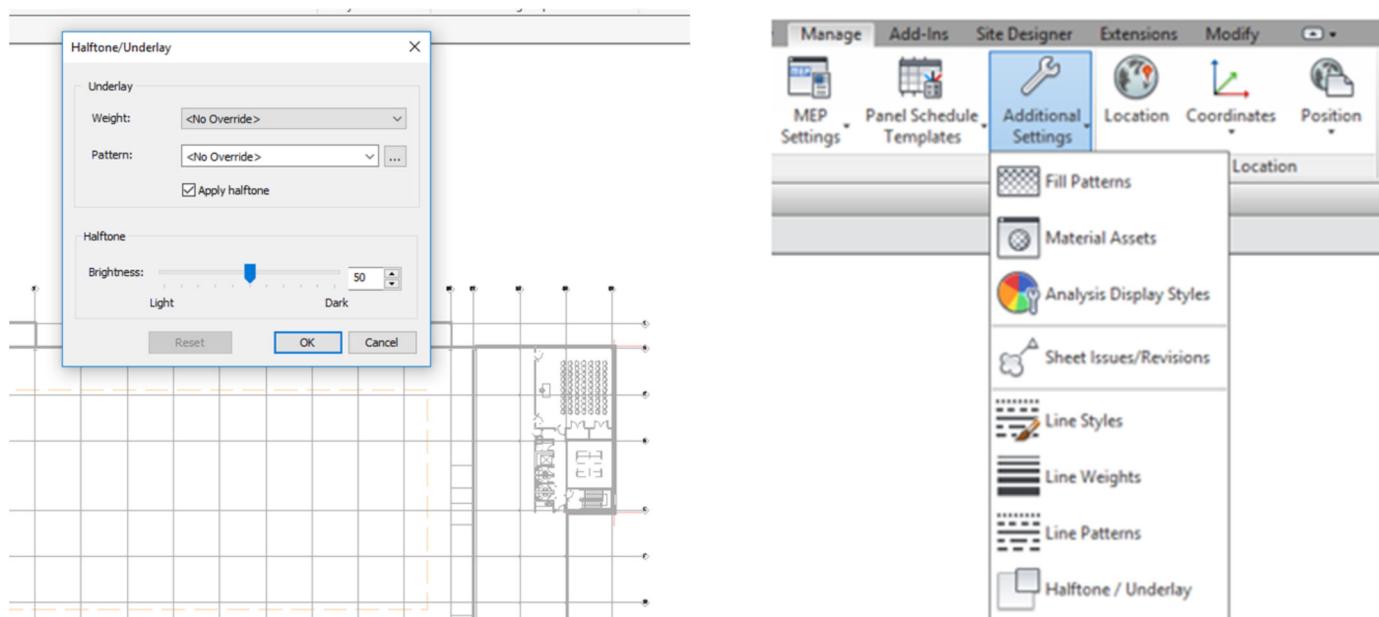
- If your element is in a group then your groups may be a liability
- Groups are not meant to last because they are not easy to keep track of and there's no parameters to control the group except naming it
- Avoid groups



- Family settings may be the problem
- Review the family Visibility Settings which include plan display options



- Drafting Views
- Hybrid detail views can combine detail elements and 3D elements
- Be mindful of how your detail views are organized



- Halftone / Underlay
- Options to change tone exist in additional settings

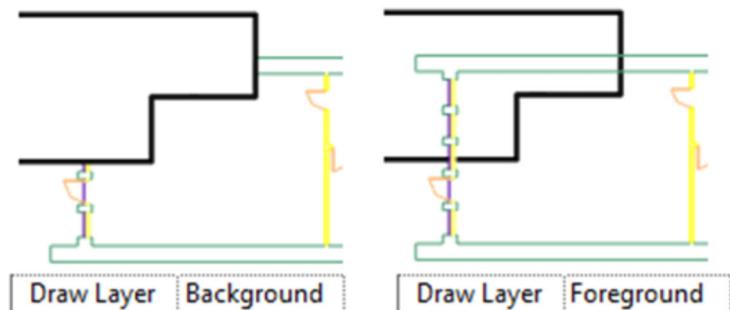
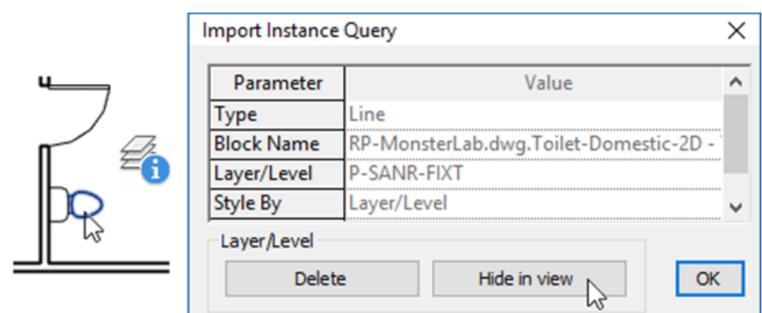
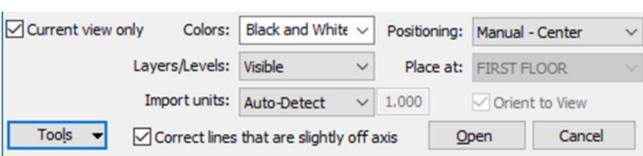
Manage Links						
Linked File	Status	Reference Type	Positions Not Saved	Saved Path	Path Type	
Zone - Podium.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Podium.rvt	Relative	
Zone - Spine.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Spine.rvt	Relative	
Zone - Wing A.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Wing A.rvt	Relative	
Zone - Wing B.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Wing B.rvt	Relative	
Zone - Wing C.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Wing C.rvt	Relative	
Zone - Wing D.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Wing D.rvt	Relative	
Zone - Wing E.rvt	Loaded	Overlay	<input type="checkbox"/>	Zone - Wing E.rvt	Relative	
Autodesk_Hospital_Imperial_Architect	Not Loaded	Overlay	<input type="checkbox"/>	Autodesk_Hospital_Imperial_Architect	Relative	
Autodesk_Hospital_Imperial_Electrical	Not Loaded	Overlay	<input type="checkbox"/>	W:\Autodesk Hospital Project_Imperi	Relative	
Autodesk_Hospital_Imperial_Plumbing	Not Loaded	Overlay	<input type="checkbox"/>	W:\Autodesk Hospital Project_Imperi	Relative	
Autodesk_Hospital_Imperial_Structural	Not Loaded	Overlay	<input type="checkbox"/>	.\16001-Hospital Dataset\Imperial	Relative	

Buttons at the bottom: Save Positions, Reload From..., Reload, Unload, Manage Worksets.

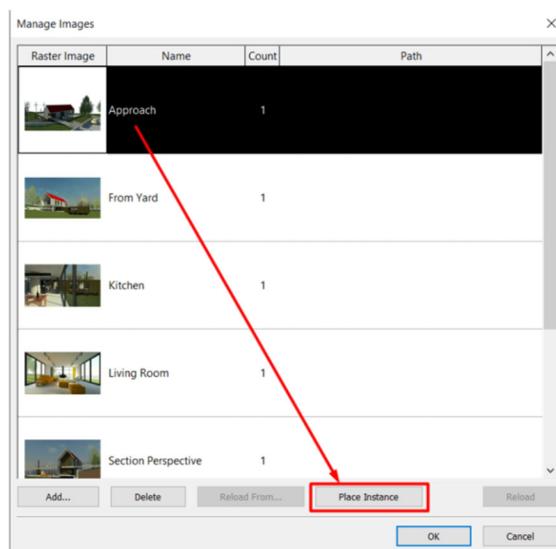
Visibility/Graphic Overrides for Floor Plan: FIRE PROTECTION BASEMENT PLAN				
Model Categories		Annotation Categories		Analytical Model Categories
Imported Categories		Filters		Worksets
Visibility		Halftone	Underlay	Display Settings
<input checked="" type="checkbox"/> 2016-11-012		<input checked="" type="checkbox"/>	<input type="checkbox"/>	Custom
<input checked="" type="checkbox"/> 13 (<Not Shared>)		<input type="checkbox"/>	<input type="checkbox"/>	Custom
<input checked="" type="checkbox"/> 14 (<Not Shared>)		<input type="checkbox"/>	<input type="checkbox"/>	Custom
<input checked="" type="checkbox"/> 16 (<Not Shared>)		<input type="checkbox"/>	<input type="checkbox"/>	Custom
<input checked="" type="checkbox"/> 17 (<Not Shared>)		<input type="checkbox"/>	<input type="checkbox"/>	Custom
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<input checked="" type="checkbox"/> 2016-11-012		<input type="checkbox"/>	<input type="checkbox"/>	Custom
<input checked="" type="checkbox"/> 15 (<Not Shared>)		<input type="checkbox"/>	<input type="checkbox"/>	Custom

Buttons at the bottom: Select All, Select None, Invert Selection, OK, Cancel, Apply, Help.

- Links follow the host, have their own properties or are somewhere in the middle
- If you can't see a model at all then it could be turned off or unloaded in the model



- Can't see the Link because it's only a single view not every view
- Multi Colors may be jarring, can be overwritten with link or VG override settings
- Too Big / Small due to scale changes
- Layers not showing because they are hidden or deleted



Manage Images

Sometimes your image links can be lost if the folder is changed

MORE TOPICS

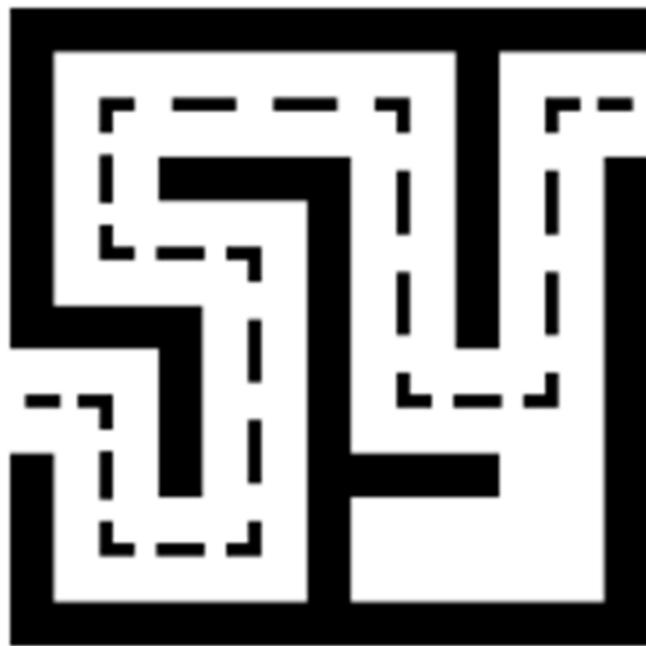
- Linked views 'hybrid' setting
- Phase mapping to families
- Floor plans and Area plans graphics
- Plan Regions
- View Underlay
- Modifying angled elevations
- Masking Regions
- Family masking regions
- Wall sweeps and reveals
- Wall stacking
- Linked CAD settings
- Origin and how that affects your model views
- Elements far away in the plan
- PDF print settings
- Digital Cartoon Sets
- Schedules for searching views and elements
- 2D wheel
- View Cube
- Family Visibility settings
- Mass elements
- Textures
- Materials



SUMMARY

- Before going into the nuanced options and settings make sure your regular setting discussed earlier are already reviewed
- Many settings can affect your model so keep in mind what kind of model you have and how it is organized
- Start from the options that have the biggest impact like scope boxes and narrow down the list of possibilities from there
- Every project is different and keeping a directory of common problems and fixes can go a long way to help users navigate through their own issues

TROUBLESHOOT

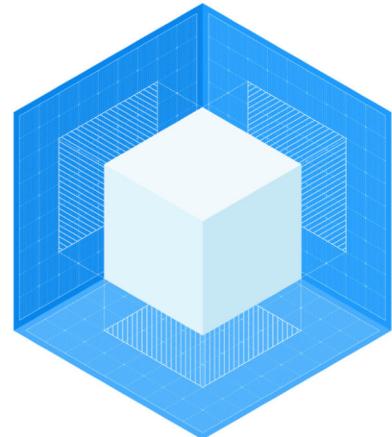


Navigate the maze

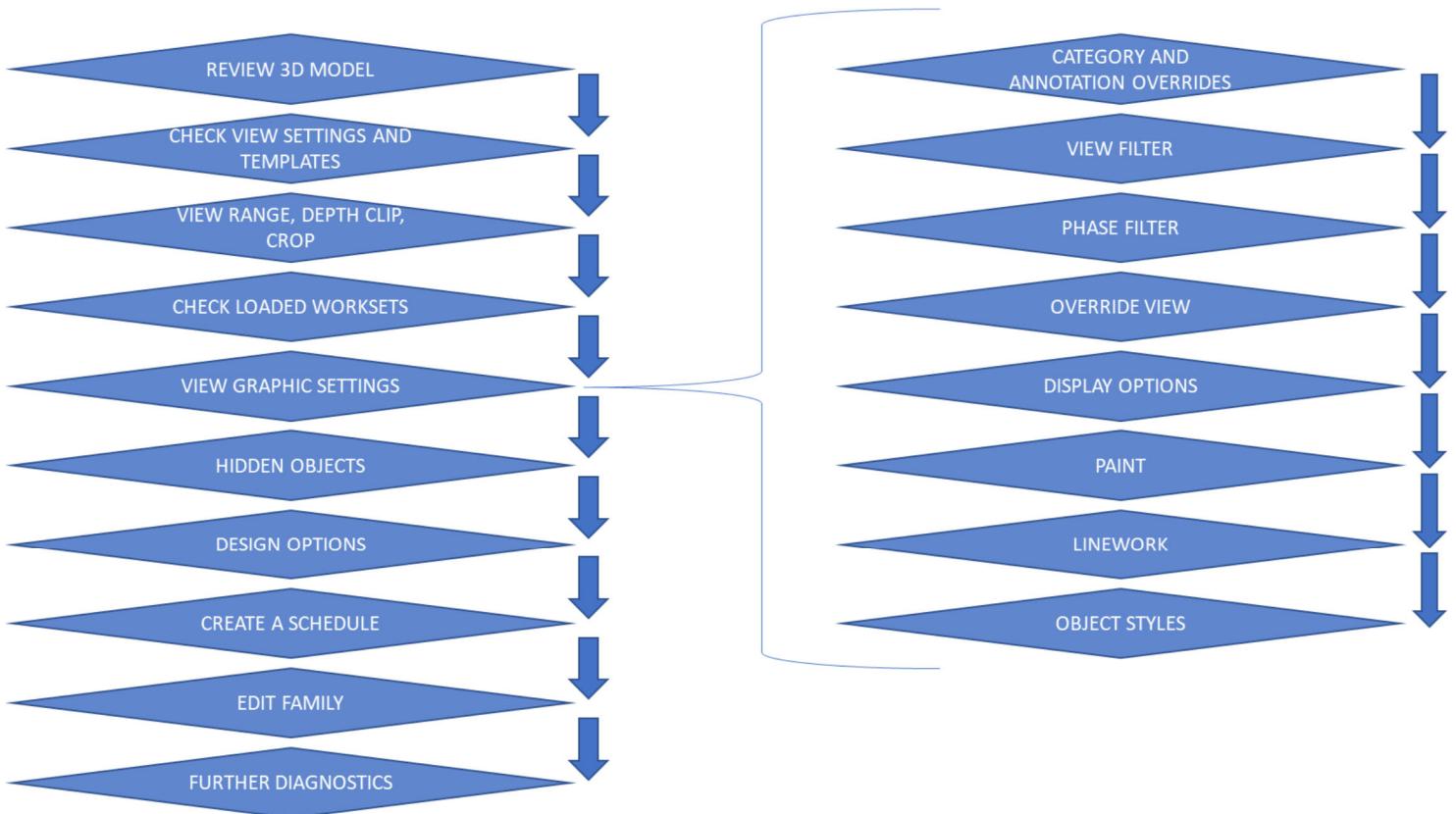
Methods to review your model and creating fixes

TROUBLE SHOOT

- Problem with troubleshooting is that it is not obvious where you start
- Are you aware how the model visibility and template works?
- If you are not familiar with the project then you have a trial and error troubleshoot
- Might save you some time to study the model and its settings
- Consider what you need to know to fix a given visibility setting
- Project Parameters
- Shared Parameters
- Full 3D view of the model
- Levels and Grids
- Worksets
- Design Options
- Filters
- Linked content
- List of view templates
- Browser organization

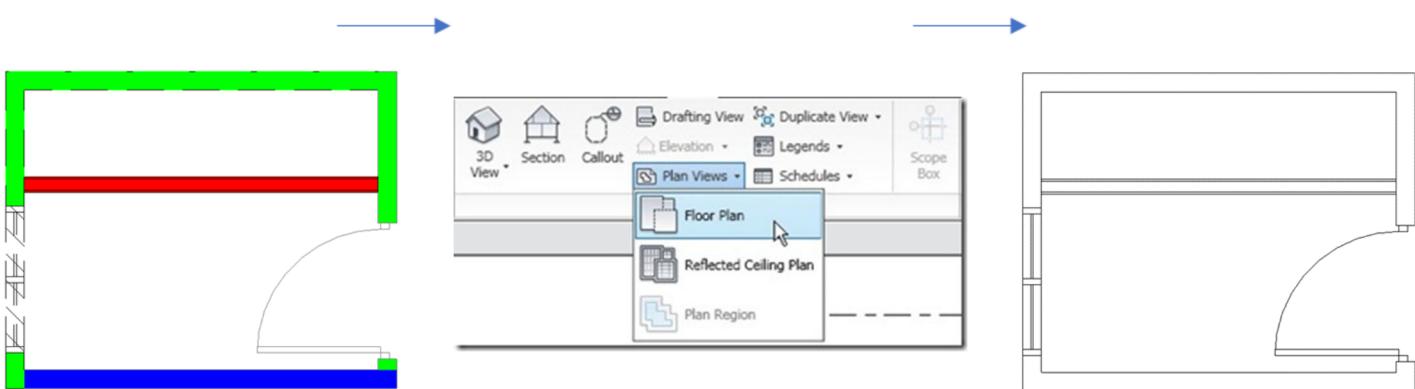
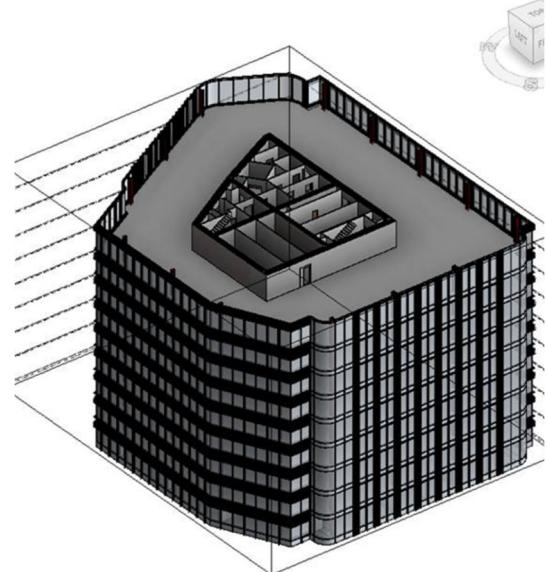


QUICK VIEW – PATH OF LEAST RESISTANCE



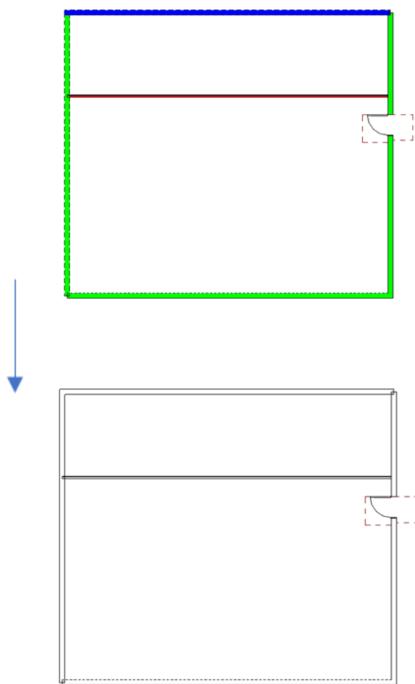
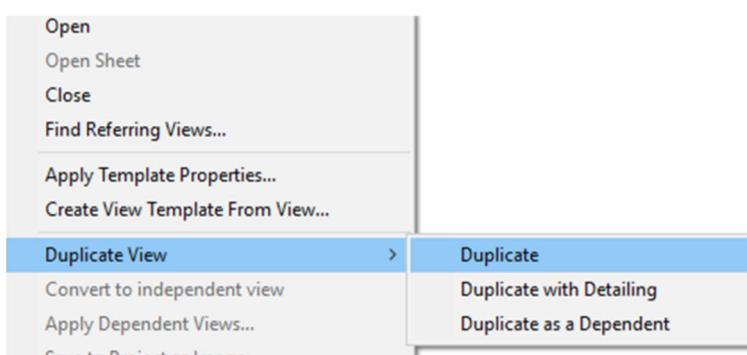
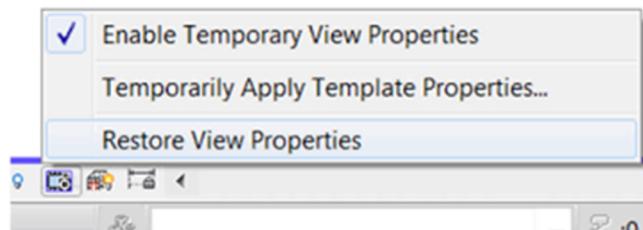
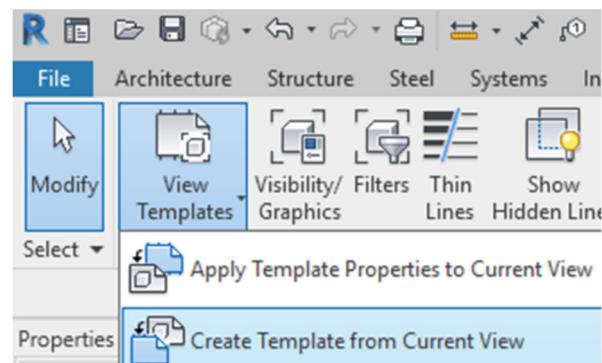
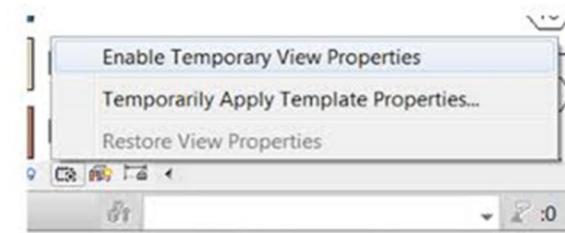
Note: The path of least resistance ordering of the visibility graphics overrides is not the same as the hierarchy discussed previously. The hierarchy describes which tools overrides another tool while this path chart shows you the most likely scenario you will encounter in troubleshooting.

- First step is to evaluate your model
- Open a 3D view and check the settings in your model before going into views
- Check if your worksets are loaded
- Check View Range if it is a plan
- Check Crop and Annotation Crop options
- Review your View template for what settings are preset
- Objects can be on the wrong host object like ceiling instead of floor
- Check the Visibility Graphics Hierarchy and if one setting is overriding another

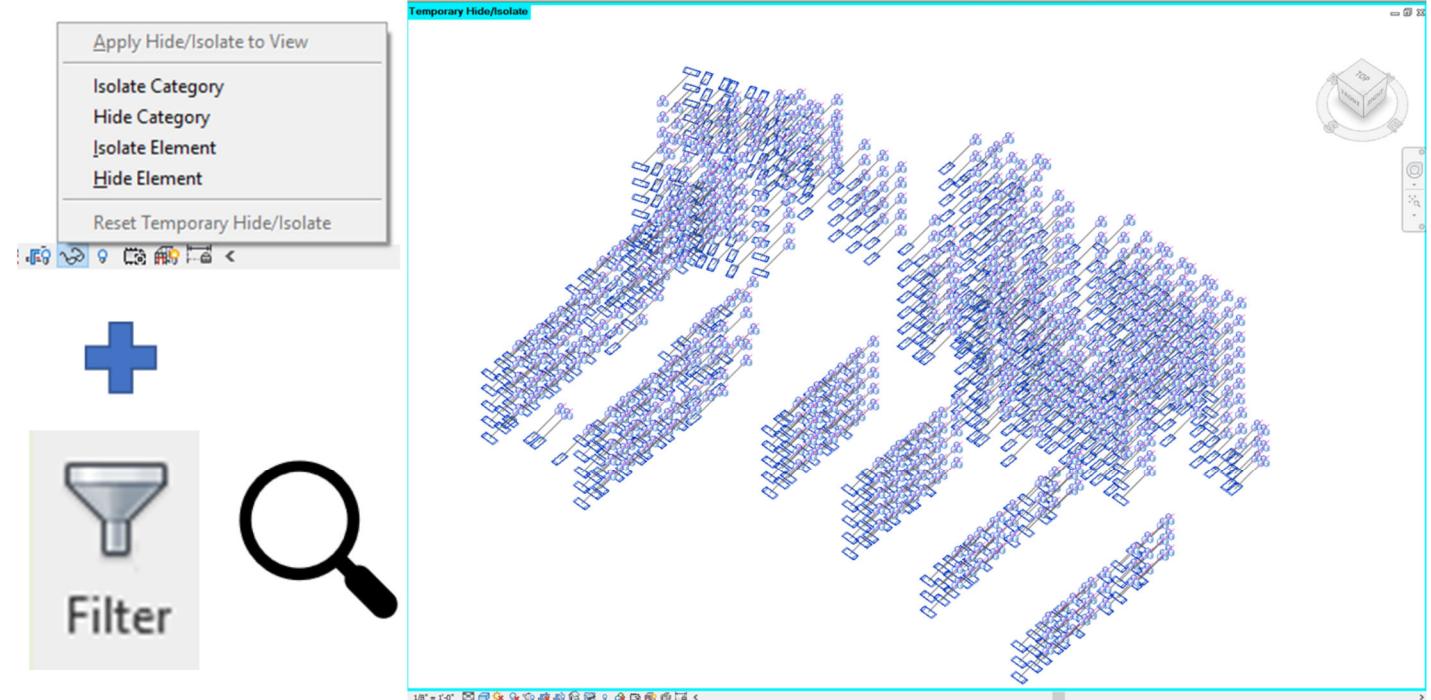


- Existing plans may have too many settings which obfuscates the graphics
- Easiest way to check a view is to create another one without all the modifications
- Start from a fresh copy and compare to the existing view
- Make notes of differences to make sense of the view content
- If the new view suits you better, then you can create a template from it and apply to your existing views

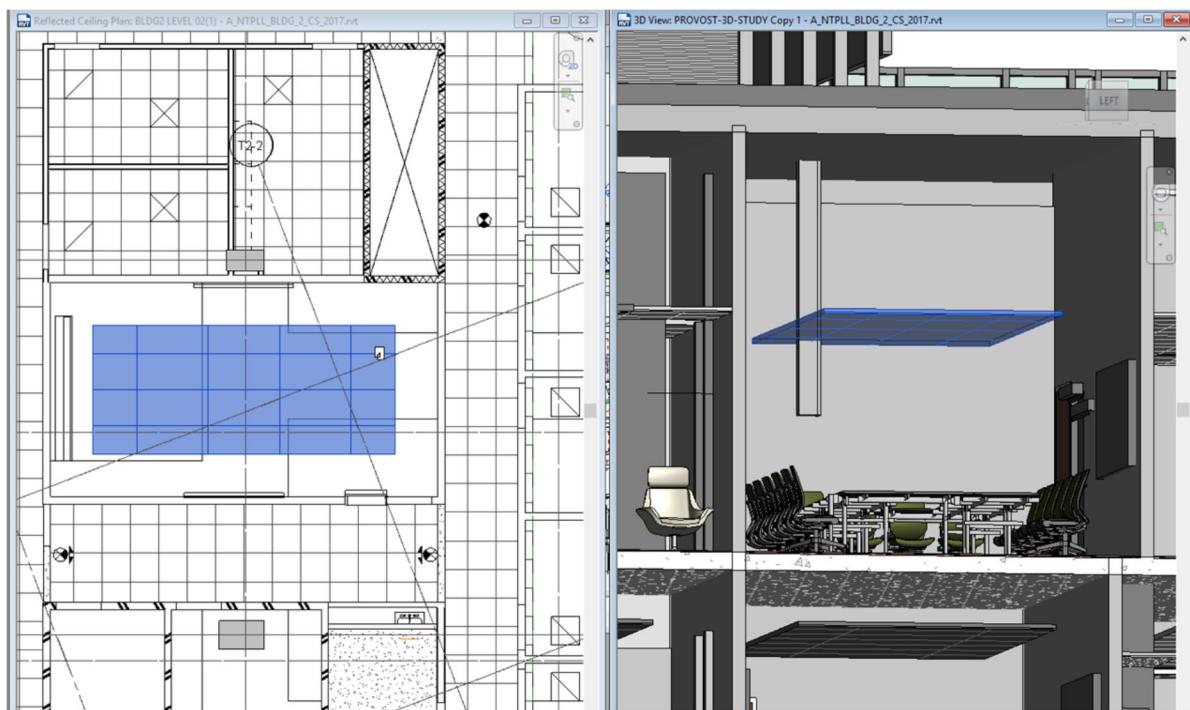
- Temporary views can bypass view templates without altering a given view
- Good way to modify your settings without making permanent changes
- Can either apply the temporary settings to the current view, save a template or restore original settings



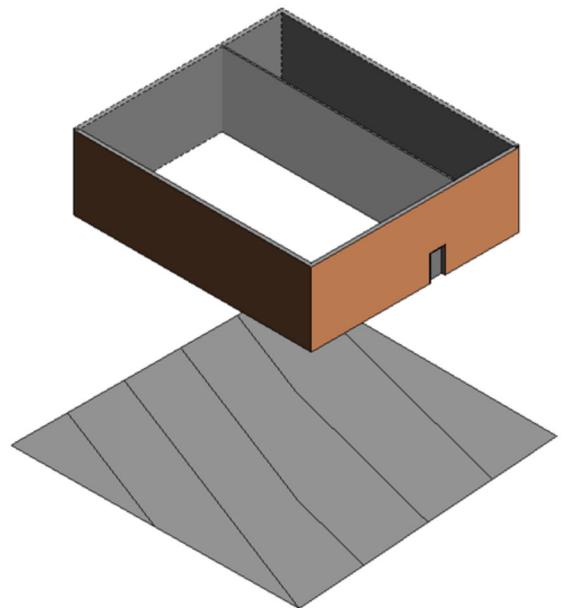
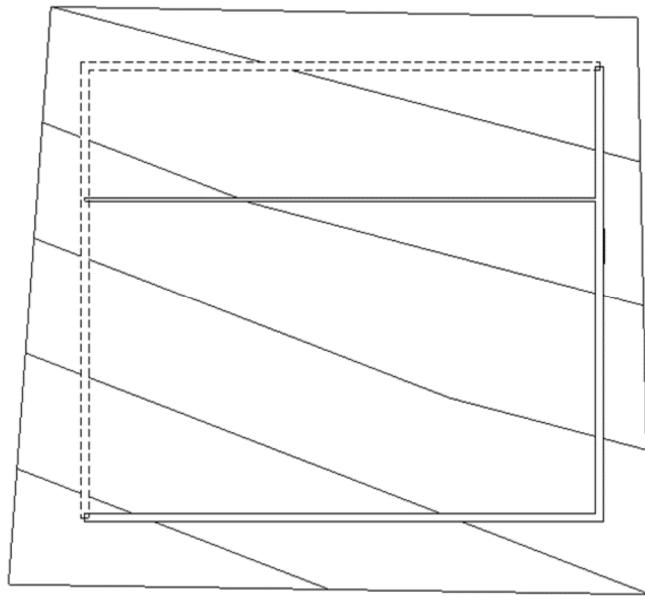
- Reproduce the view, assign to a working view group and compare to the trouble view
- Reverse engineer the steps and see what changes affect the settings
- Usually a default view will make clear what went wrong with the target view
- Start from scratch and try to rebuild the view and account for your visibility settings



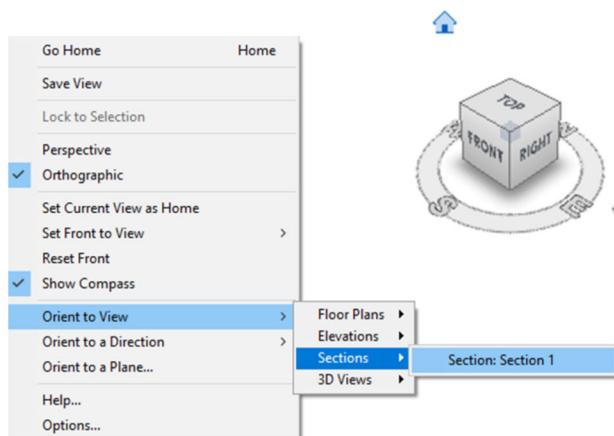
- Isolate Elements or Category in View is useful when you have a lot of something selected
- Can filter content then use isolate option to review content
- Can compare count in a view to a schedule count as a cross reference



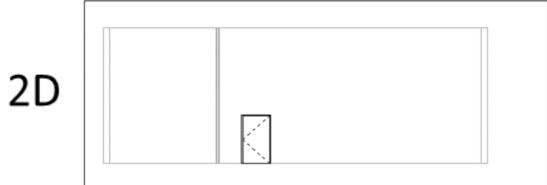
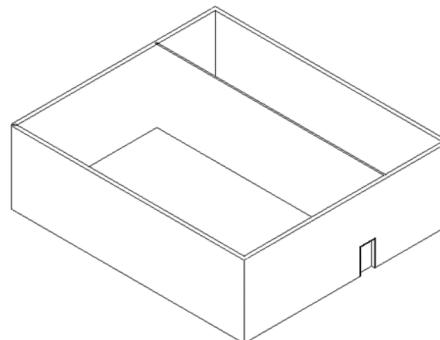
- Use multiple views of the same model to help review object orientation
- Plan, Section, 3D and other views should all be used together to help check the design
- What may not be obvious in one view can be in another view



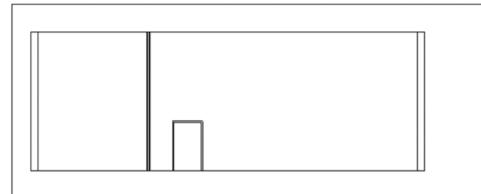
- Elements beneath elements
- 3D lines could be beneath content like floor finishes and effectively invisible
- Use 3D section models to see the lines and moving them above the objects
- Using wire frame mode can also help to uncover objects beneath each other



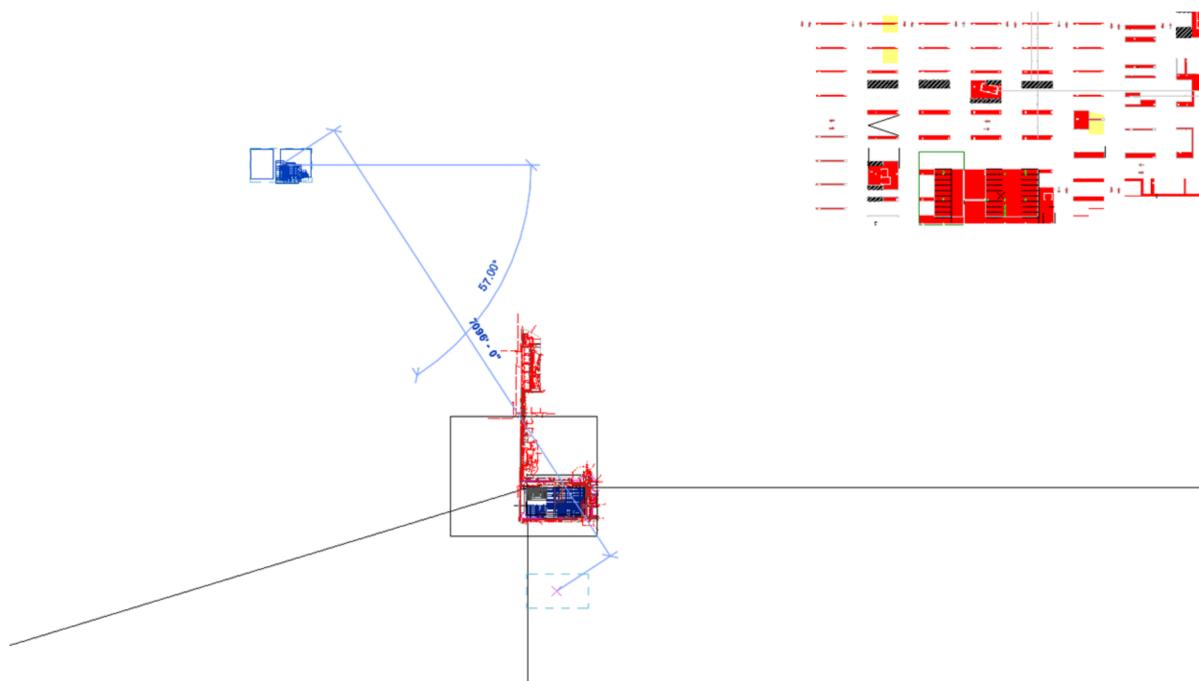
3D



3D



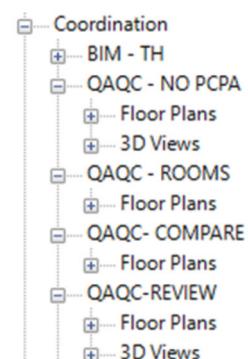
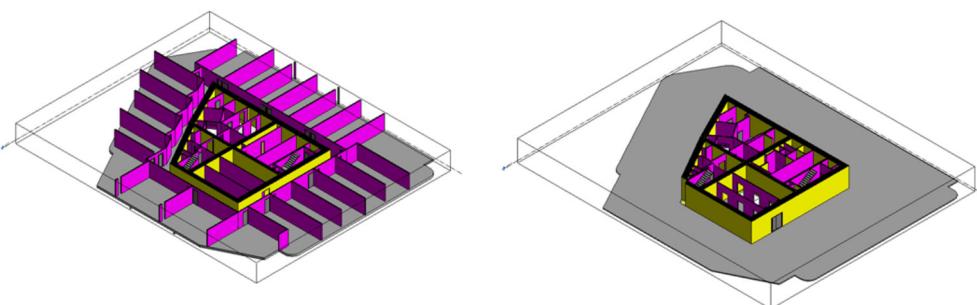
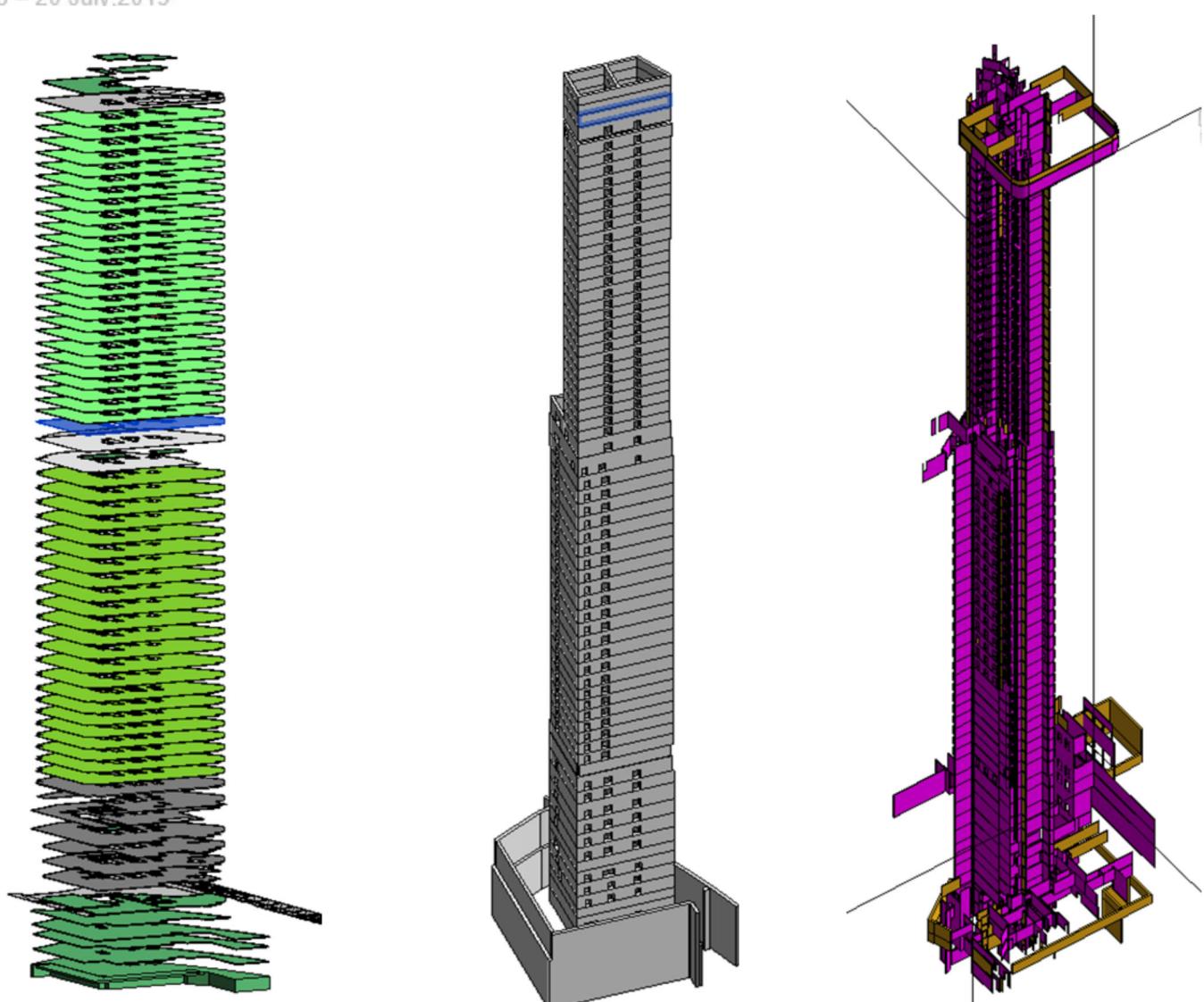
- The view cube has a lot of tools include orient to view to help align 3D to a given plan
- Since all plans reference the 3D model this tool can align your 3D model to a selected view
- Useful to compare what is showing in 3D to a 2D plan or section as a way to confirm graphics are accurately represented



Sometimes you need to review content in a different way
Show it with filters for different categories to help visualize your project assets

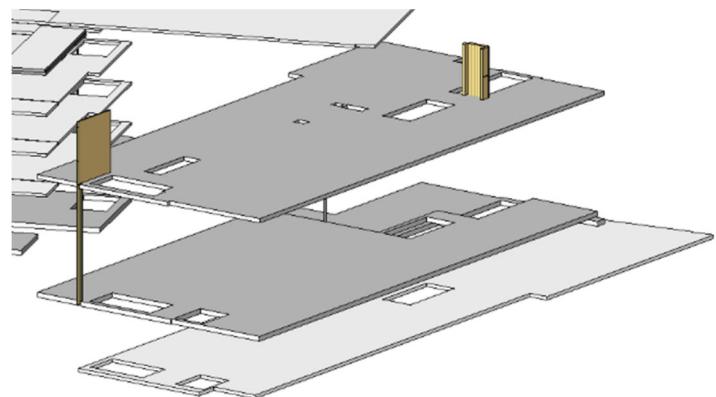
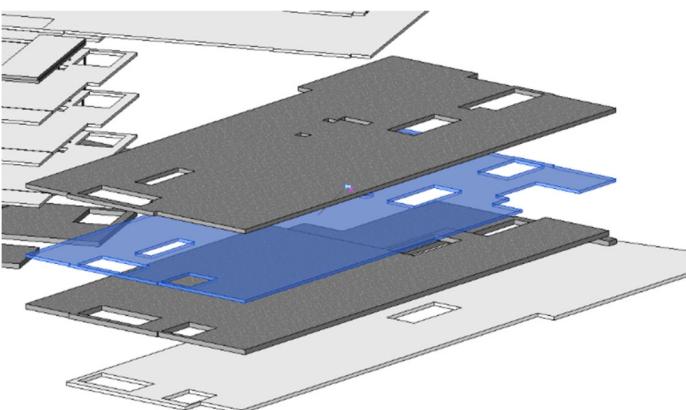
BMU ROOF-NO PCPA CO	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	BMU ROOF	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 1 Mezz.-NO PCPA	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 1 Mezz.	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 17-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 17	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 18-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 18	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 1-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 1	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level -1-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level -1	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 2-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 2	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level -2-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level -2	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 30-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 30	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 31-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 31	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 32 Mezz.-NO PCPA	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 32 Mezz.	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 32-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 32	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 33-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 33	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 34-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 34	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 3-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 3	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level -3-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level -3	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 4-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 4	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level -5 Stacker Pl-NO P	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level -4 Stacker Pl	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 5-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 5	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level -5-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level -4	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 60-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 60	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 61 Mech Cooling To	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 61 Mech Co	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 61 Mezz. Elev mach	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 61 FSAE Ele	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 61 ROOF-NO PCPA	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 61 ROOF	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 61-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 61	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 6-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 6	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 7-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 7	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
Level 8-NO PCPA CORE	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	Level 8	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction
TOP OF PARAPET-NO PC	QAQC - NO PCPA	_QAQC_NO_PCPA	Coordination	Floor Plan	TOP OF PARAPET	Floor Plan	Floor Plan	Floor Plan: Floor Pl	Show New	Architectural	New Construction

- Schedule the views and show the categories to help you sort out the content
- View name, group, discipline, level, view type, phase filter, etc
- Some categories like view filter and element ID are hidden but exports to spreadsheets can report those fields



FILTERS

Sometimes you need to review content in a different way
Show it with filters for different categories to help visualize your project assets



Maybe what you're looking for has been deleted

If you have tools to compare element IDs in Revit then you can compare archive copy to current copy to confirm if content has been deleted

Autodesk Revit 2017

Warning Dialog

Messages

- 17 Warnings (may be ignored)
 - Highlighted elements are joined but do not intersect.
 - Warning 1**
Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other.
 - Warning 2
A Corner Mullion has been placed at the end of a Curtain Wall that is not joined to another Curtain Wall. The angle of the Corner Mullion will default to 90 degrees.
 - Warning 3
 - Warning 4
 - Warning 5
 - Warning 6
- Some columns in the project are excluded from the graphical column

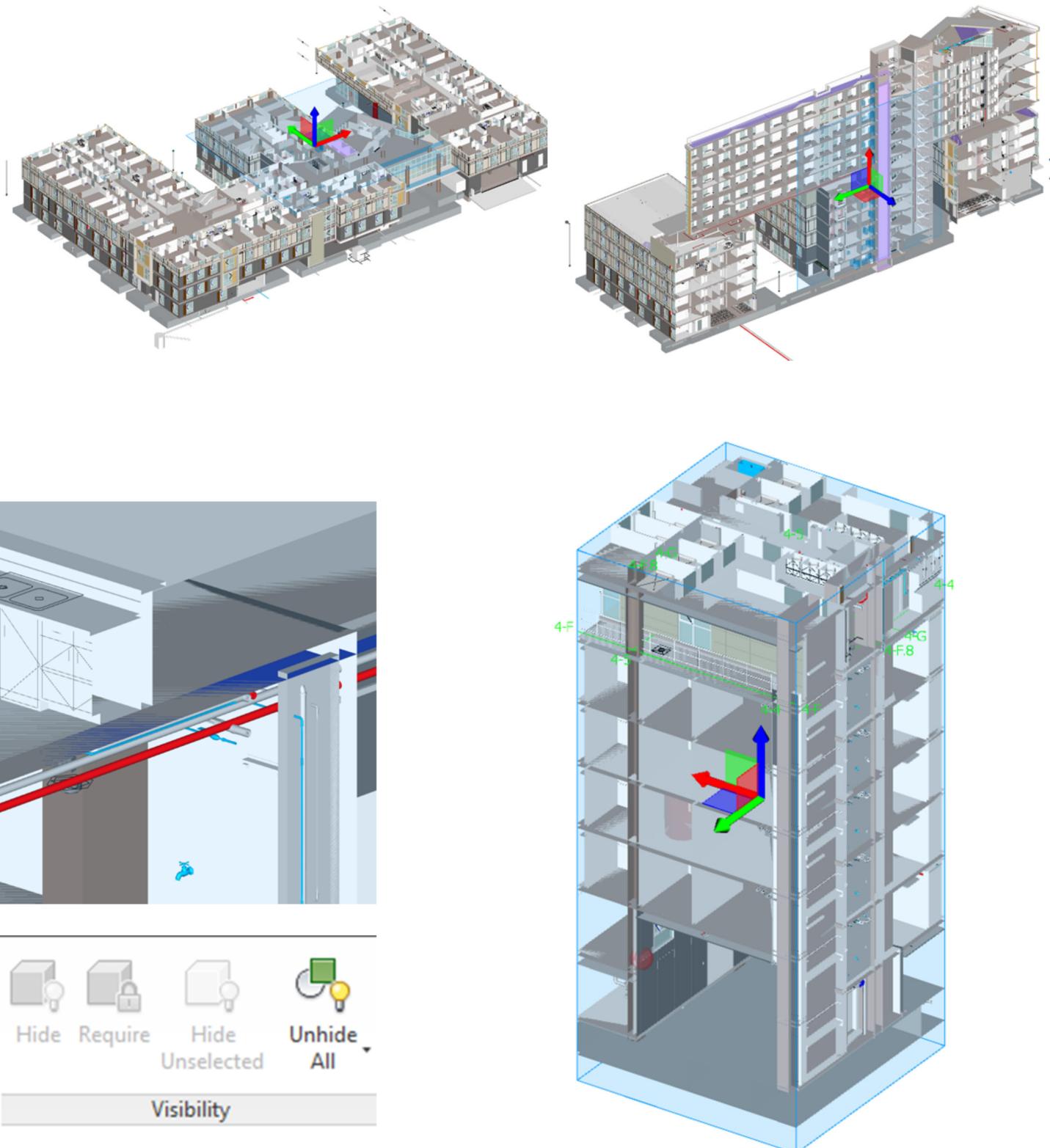
Show **More Info** **Delete Checked...**

To highlight an element in the graphics window, select it in this tree.

Most standard view commands work without exiting this dialog.

Unjoin Elements **Export...** **Close**

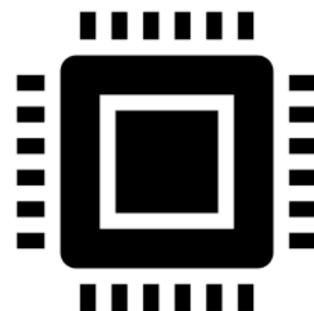
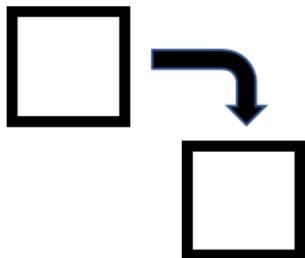
- Warning messages are a list of what could be problems in your model
- Check your warnings by category to see the specific notes as part of routine cleanup
- Keep your warnings down to the low hundreds as a rule of thumb
- Warnings pertaining to reference planes are ones that can affect view settings



- Navisworks can be a great tool for reviewing model graphics because it is much faster to load and indexes all the content for searching better than Revit (note that Navis only reads content you export from a Revit view)
- Sections and equipment review is much easier to do with large models
- Hide / Unhide tool along with Naviswork's own search system is a good way to find content

- Detach a model copy - Take it apart

- Hardware - Graphics Card, RAM, CPU, Battery

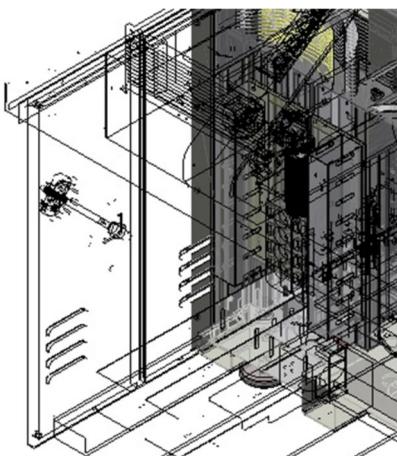


- Software - OS, Revit upgrade, Drivers

- Backend - Synchronize issues, server, cloud, internet



HARDWARE



GPU in Revit – Renders images as you zoom and pan in views
 Faster GPU clock speed helps with rendering shadows
 Multi-monitor displays make use of the graphics cards features
 Revit is not a PC game and won't use a lot of texture mapping so GRAM can be lower
 CPU in Revit – Managing all elements of the Revit database, look for faster clock speeds
 Rendering in Revit done with CPU
 RAM – Loads all your content in memory, more memory is preferred
 Storage media – faster the better, SSD > HDD

- Note that sometimes your hardware and software can make a difference
- Usually the last place to troubleshoot but can affect your model
- Work with your SysAdmin and Equipment experts to get ahead of issues with computers

HARDWARE - GRAPHICS CARDS

2. * For which product(s) or suite
 * Product(s) (3 maximum)
 Autodesk Maya LT
 Autodesk Motionbuilder
 Autodesk Mudbox
 Autodesk Navisworks
Autodesk Revit

Or a Design Suite
 Select one

Suite Edition
 * Product or Suite Release
 2017

3. * For which operating system and manufacturer?
 Operating System
Windows 10 64-bit
 Graphics Card Manufacturer
NVIDIA

Which results would you like to see? Recommended Certified All

Find

The hardware below meets the criteria you provided. Select a Card for detailed information.

Selected Product(s): Autodesk Revit 2017
 Operating System: Windows 10 64-bit
 Graphics Card Manufacturer: NVIDIA

Rating	Card	Generation	Memory (MB)	Type	Manufacturer
★ 🌟	NVIDIA Quadro M200	Maxwell	4096	Mobile	NVIDIA
★ 🌟	NVIDIA Quadro M620	Maxwell	2048	Workstation	NVIDIA
★ 🌟	NVIDIA Quadro P2000	Pascal	5120	Workstation	NVIDIA
★ 🌟	NVIDIA Quadro P4000	Pascal	8192	Workstation	NVIDIA
★ 🌟	NVIDIA Quadro P5000	Pascal	16384	Workstation	NVIDIA
★ 🌟	NVIDIA Quadro P6000	Pascal	24576	Workstation	NVIDIA

General

User Interface

Graphics

File Locations

Rendering

Check Spelling

SteeringWheels

ViewCube

Macros

Warnings

Older video card driver

The installed video card driver is older than those certified by Revit.
 Card: NVIDIA Quadro K4100M; current driver: 9.18.13.3221
 Certified drivers: 9.18.13.3356

You may continue to use Hardware Acceleration.
 If you experience graphics display issues, you should:

- Turn off Hardware Acceleration; or
- Install driver that is recommended for use with Revit

[Get information on supported hardware](#)

Graphics Mode

Use Hardware Acceleration (Direct3D®)

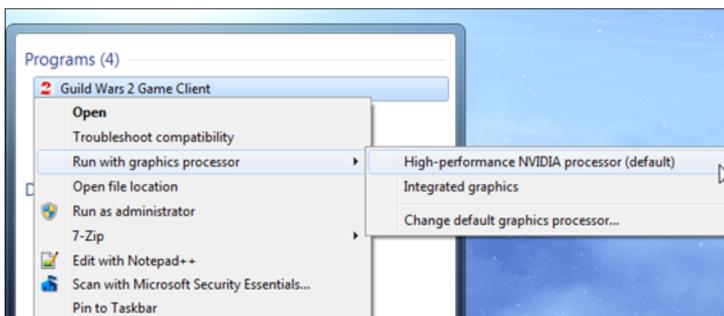
Draw visible elements only

Allow navigation during redraw (reopening models is required)

Smooth lines with anti-aliasing

Allow control for each view in the Graphic Display Options dialog

Use for all views (control for each view is disabled)



- Make sure your Graphics card is certified with Autodesk products - <https://knowledge.autodesk.com/certified-graphics-hardware>
- Try running with graphics processor set to high performance from shell menu
- Some items may not render correctly without Hardware acceleration on

Resource Management

Check your task manager

Too many programs hold up CPU and RAM resources

Have software up to date

Drivers

Revit Patches

OS updates

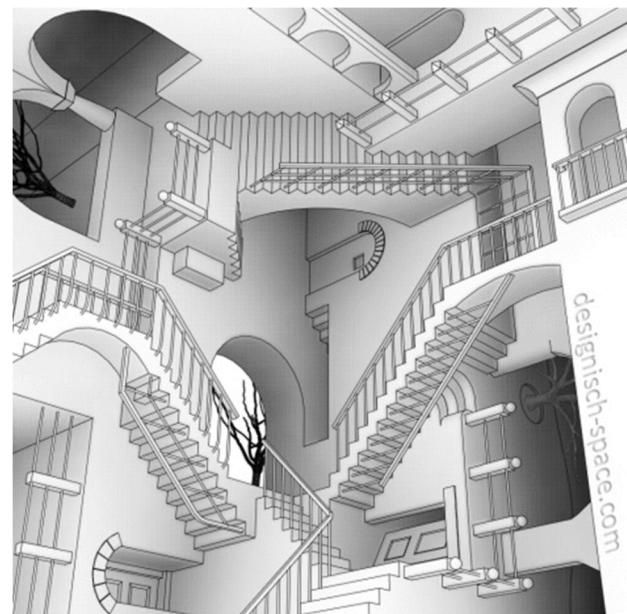
Hardware control

Keep your Storage media with enough free space to avoid problems

Power settings - Laptops may be on reduced power mode which slows CPU performance



- Is that even possible?
- Some things you just can't do within Revit
- Consider your choices as a cost benefit analysis of achieving desirable results with reasonable input
- Use Photoshop or Render plugins to create your visualizations as a last resort



OTHER ISSUES

- No standard templates
- Users Aren't communicating what is edited
- New content is added to the model
- Changes and methods aren't known
- Start with the settings that will most likely affect visibility controls
- Worksets loaded or hidden in the collaborate menu
- Linked models loaded or correctly linked
- VG overrides
- Filters hiding content
- View Range and depth clipping
- Crop and Annotation Crop
- Create a copy of the problem view and edit it
- Create a new version of a preset view like a floor plan and compare to the problem view
- Start Every project with the same template
- Have regular call ins to talk about changes
- One point of contact to add new content to each project model
- Create a project resource like onenote or slack to document information for anyone to see
- Remember that worksets can manage what Revit loads
- If the model is becoming too large then consider splitting into several models
- Don't use large complex families if you don't need them
- If you are using BIM 360 cloud then make sure your internet connection is fast enough



REVIT VISIBILITY MATRIX

The higher the number the greater the correlation between the element you are trying to find and the setting to use

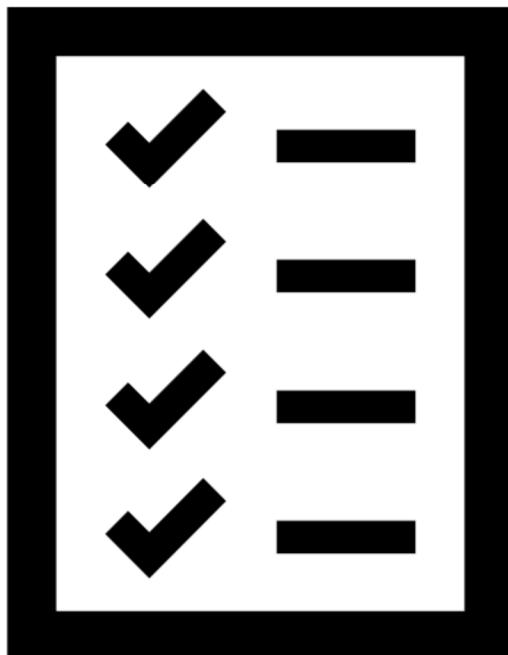
	0	1	2	3	4	5
--	---	---	---	---	---	---

	PLAN VIEWS	3D VIEWS	SINGLE ELEMENT	MULTIPLE ELEMENT ANNOTATIONS	LINKS	
MODEL SETTINGS						
Worksets		1	2	1	4	1
Design Options	1		2	2	3	2
						1
VIEW PROPERTY						
View Range	4		1	1	3	1
Crop Region	4		1	2	3	1
Annotation Crop	4		1	1	1	5
Depth Clip	4		1	2	3	1
Scope Box		3	3	1	1	2
						2
VISIBILITY GRAPHICS						
Linework	1		1	2	1	2
Display Options	2		2	1	2	1
View Filters	3		2	2	4	5
Phase Filters	3		1	3	4	2
VG overrides	4		4	2	5	4
Object Styles	1		1	1	1	2
						1
FAMILY MODEL						
Level of Detail	2		1	2	3	2
Visible in (X) View	1		1	3	3	1
Yes / No parameter	1		2	3	4	2
						1
OTHER						
Image Links						
Hidden object	2		2	4	2	3
						2
SOFTWARE						
Revit Update	2		2	1	1	1
OS Update	2		2	1	1	1
Driver Update	2		2	2	2	1
3rd Party tool update	1		1	1	2	1
						2
HARDWARE						
Slow CPU	1		3	1	2	1
Not enough RAM	1		3	1	2	1
Graphics Card not compatible	2		3	1	2	1
Monitor problem	2		2	1	1	1
						1

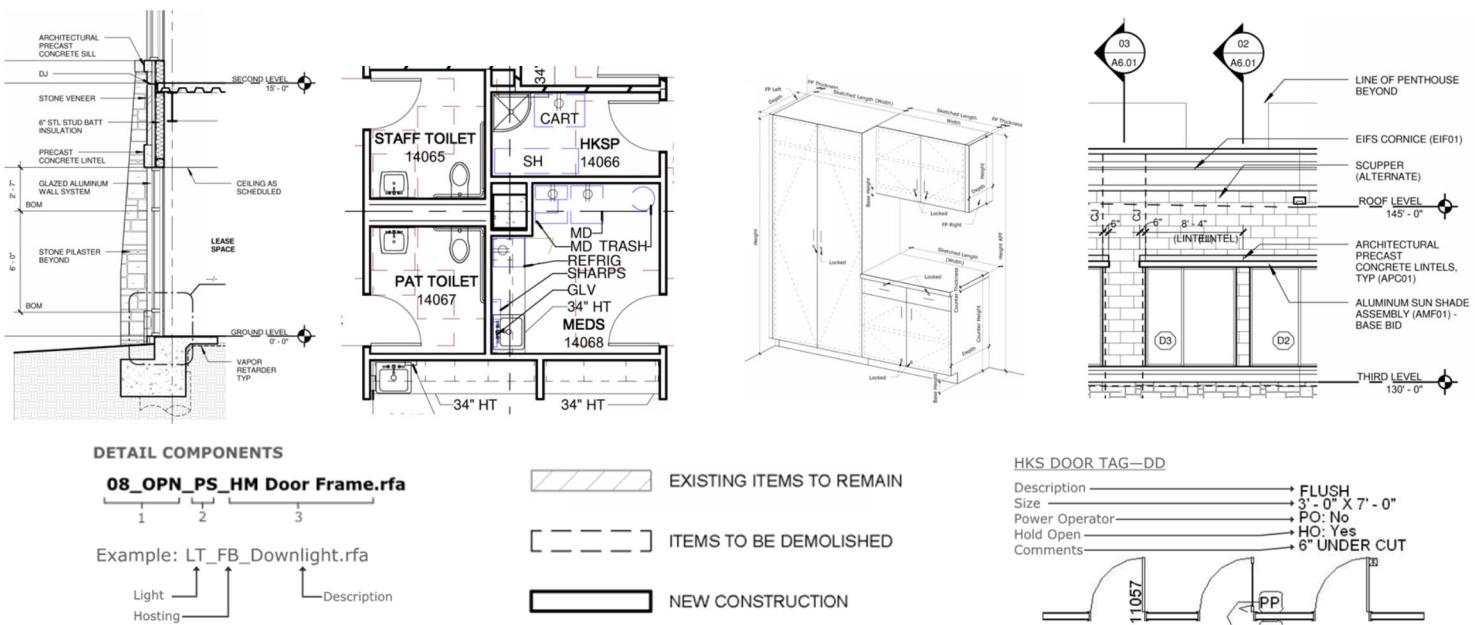
SUMMARY

- There are many ways to determine solutions to your visibility problems
- Add up your solutions to a central location like a onenote cloud file or wiki page
- Create easy to read charts for your team to review where they should start and what's relevant

TEMPLATES



- Clearly detail what each project should have as standard requirements

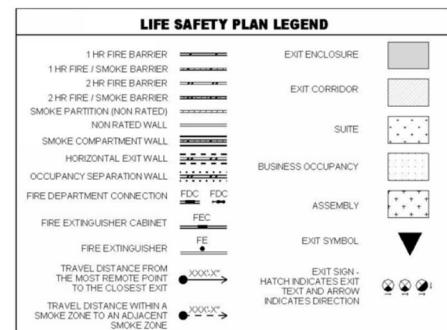


- Projects should be based on a Style Guide, line weights and references to graphic guides
- A project Template must have View organization, parameters and families for the company
- Create a 'reset view' template for each project following the guide

DRAWING SYMBOLS

Symbol	Identification	HKS Content Name
ROOM NAME XXXXX	Room (Name/Number)	F HKS Room Tag T Room Tag
	Existing Column Centerline	F HKS Grid Head T Existing Construction
	Column Centerline	F HKS Grid Head T New Construction
	Accessory	F HKS Accessory Tag T Type
	Demolition Numbered Notes	F HKS_Demo Note
	Building Wall Section	S Section Tag T Section Head—Filled Section Tail—Filled
	Section Detail	S Section Tag T Section Head—No Fill No Tail
	Interior Section	S Section Tag T Interior Section Tag
	Elevation	S Elevation Tag T HKS Elevation Tag
	Dummy Section Detail	S Elevation Tag T HKS Interior Section
	Plan, Blow-Up Detail	S Callout Tag T HKS Callout

	1 Hour Fire Wall S Material Type T Rating - Fire (1 hr) (Wall Type with suffix—Fire (1-hr))
	2 Hour Fire Wall S Material Type T Rating - Fire (2 hr) (Wall Type with suffix—Fire (2-hr))
	3 Hour Fire Wall S Material Type T Rating - Fire (3 hr) (Wall Type with suffix—Fire (3-hr))
	4 Hour Fire Wall S Material Type T Rating - Fire (4 hr) (Wall Type with suffix—Fire (4-hr))
	Non-Rated Smoke Wall S Material Type T Rating - Smoke (0 hr) (Wall Type with suffix—Smoke (0-hr))
	1 Hour Smoke Wall S Material Type T Rating - Smoke and Fire (1 hr) (Wall Type with suffix—Fire and Smoke (1-hr))
	2 Hour Smoke Wall S Material Type T Rating - Smoke and Fire (2 hr) (Wall Type with suffix—Fire and Smoke (2-hr))
	1 Hour Shaft Wall S Material Type T Rating - Shaft (1 hr) (Wall Type with suffix—Shaft (1-hr))
	2 Hour Shaft Wall S Material Type T Rating - Shaft (2 hr) (Wall Type with suffix—Shaft (2-hr))



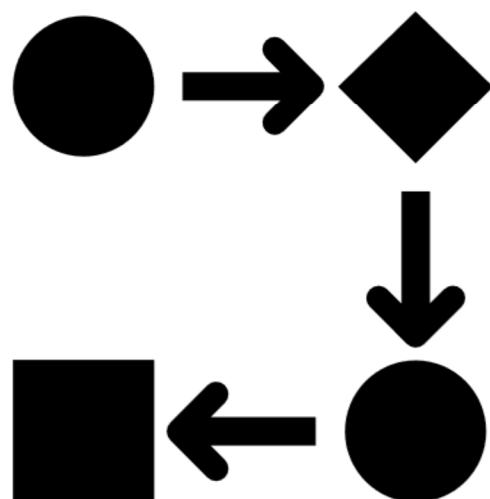
Every project begins with a template

Having the right information embedded within can allow a lot of control of your model

- Set your view browser organization
- Have a standard naming scheme
- Set line thickness object styles
- Set Line Styles
- Fonts and text sizes
- Project units and dimensional tolerances
- Starting view with project information and standards
- Reference a graphic standards legend view
- Identify origin
- Use view templates but keep to a minimum
- Don't overstrain view properties in the template
- Schedules for essential categories
- Essential families to be loaded
- Object Styles - Essentials of line type, patterns, etc
- Phase Settings - Patterns for graphic overrides
- Filter Settings
 - Loaded set of filters for your views
 - Standard naming
 - Standard patterns and colors
- View Properties
- Some are best unchecked to avoid limited adaptability

- Control View Template
- Not your sheet views or template views but a control group like an experiment
- 'Source' views with controlled content which has minimal graphic adjustments
- Can be plan and 3D sets
- Useful as a set of non-modified views that can be used as a comparison with edited views
- Instead of creating new views constantly just have them available all at once
- Set them aside in your browser as a separate category
- Train your teams about where this content is located and what it is for
- Example with arch views ...
- I want to see walls, object style graphics, patterns, extent of the modeled space
- Add an alignment view with coordinates

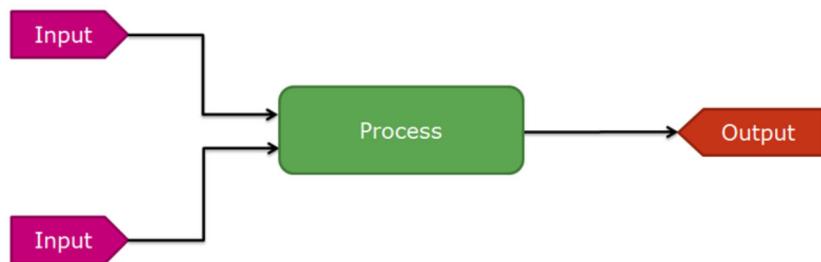
WORKFLOWS



Design is an evolution in process

Creating workflow that suits that process is also an evolution of testing the options available and improving upon them

AUTOMATION

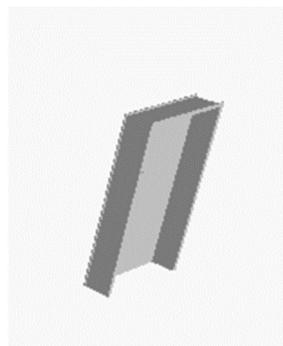
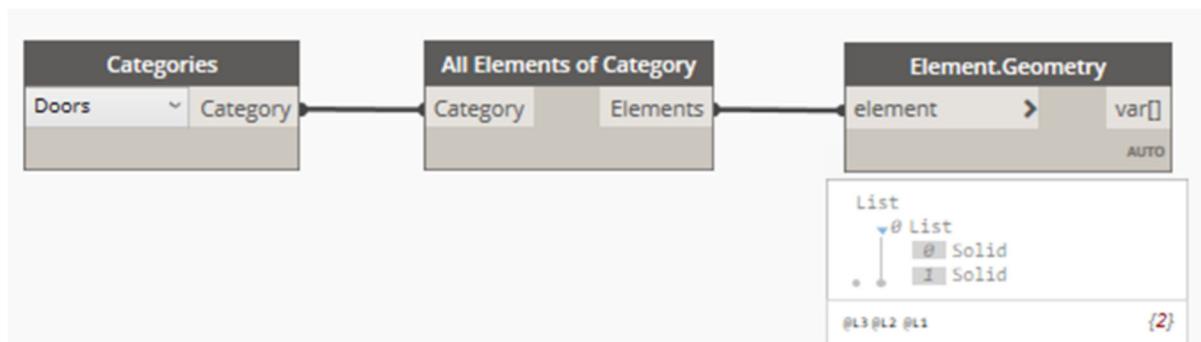
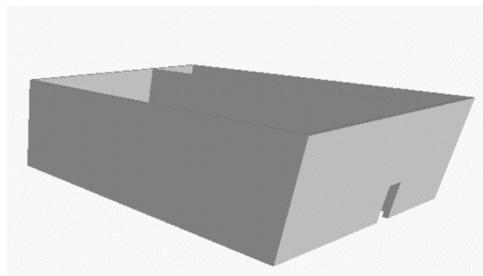
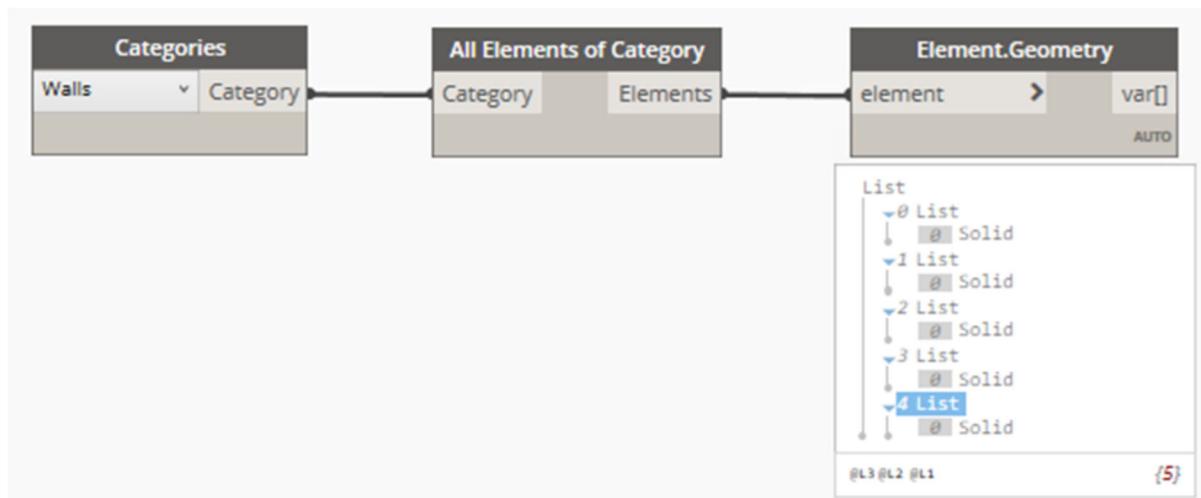


Dynamo

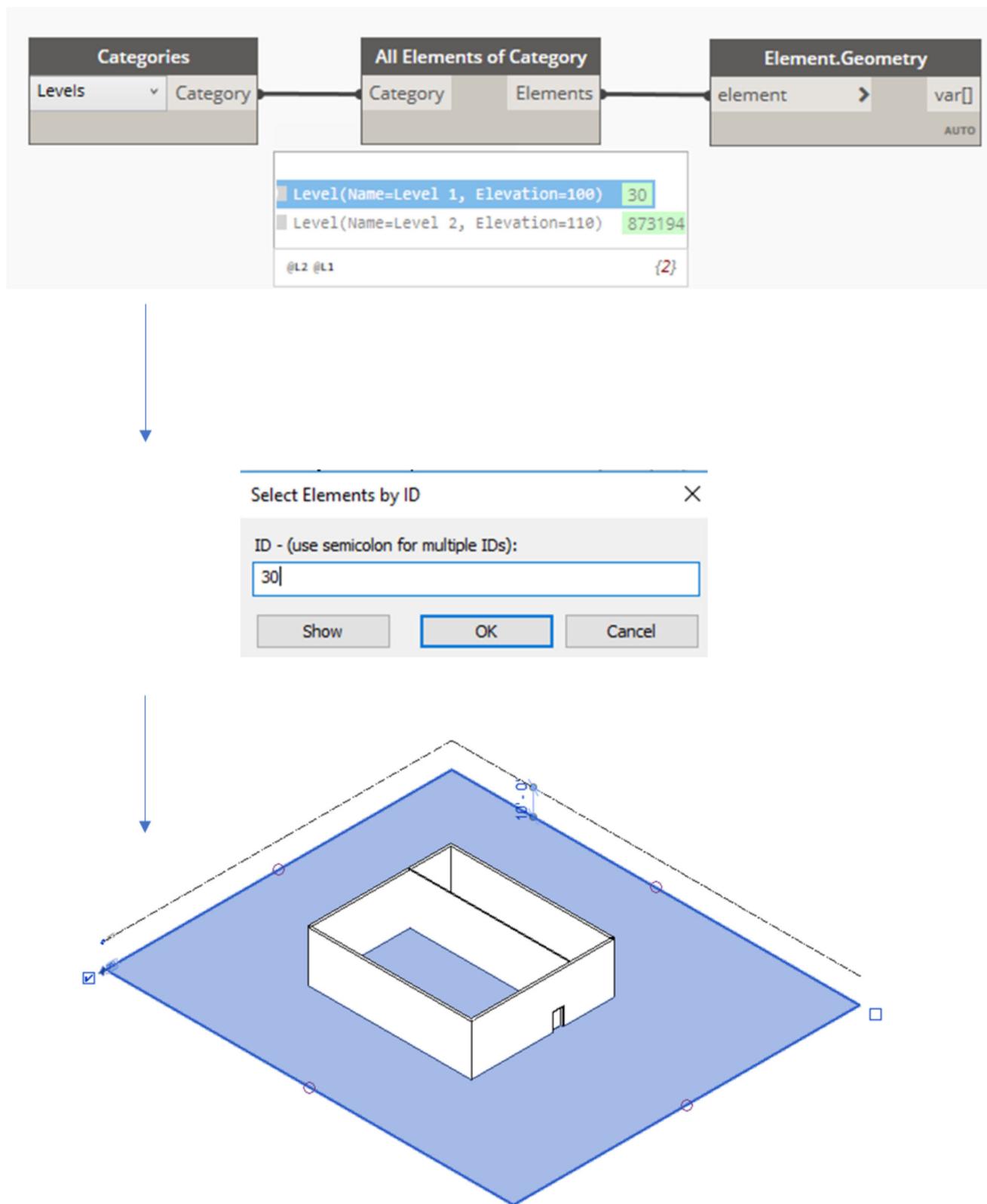
Inputs to a process leads to an output

All projects can be considered a result of this workflow

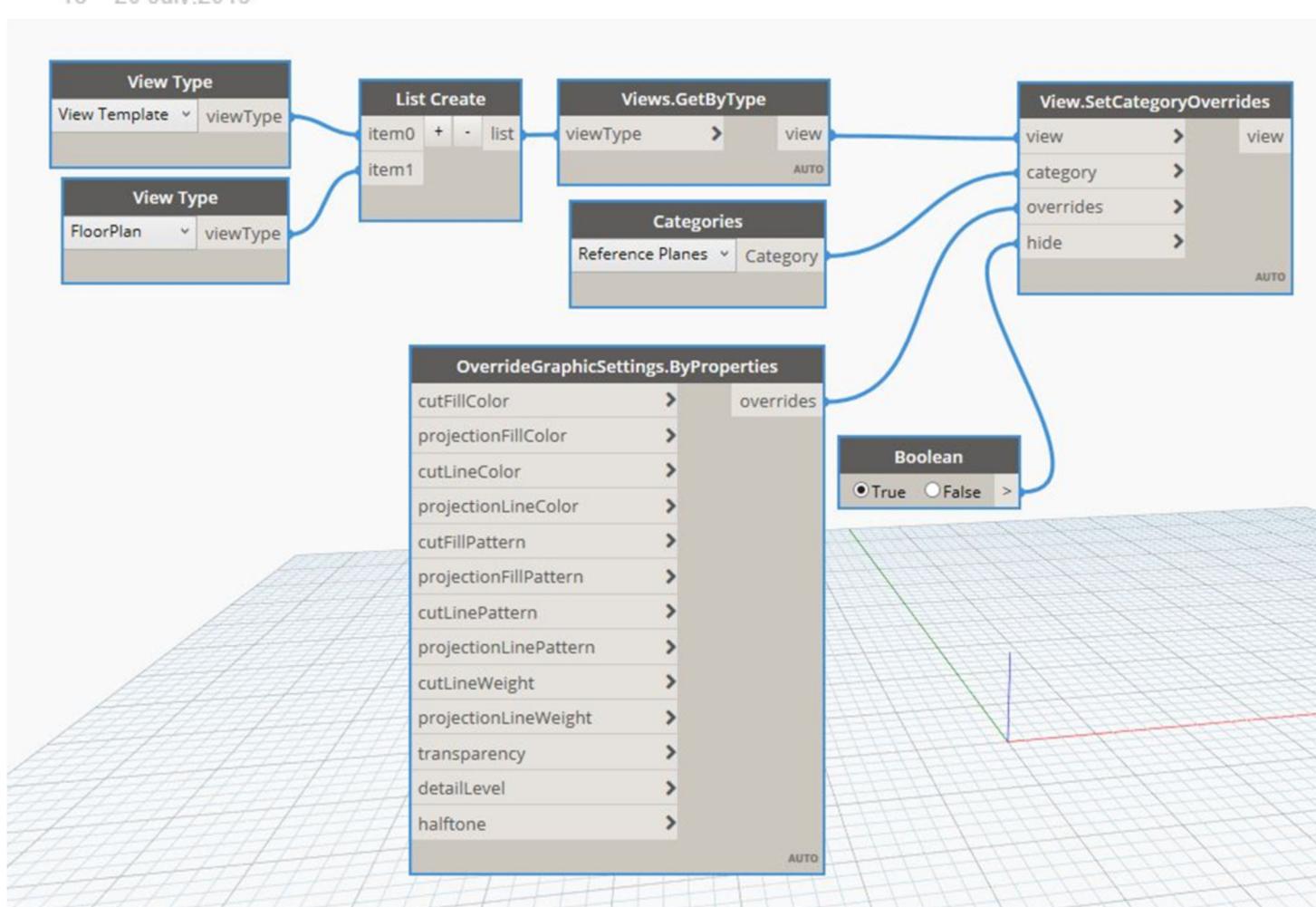
For Revit users Dynamo can facilitate that thinking in a model environment



Preview with the model with Dynamo Scripts to see Revit geometry without configuring views in Revit
This applies to worksets or any other content in Revit that can be made into a three dimensional solid for preview



- The “All elements” node shows the element ID that can be used for finding that specific element in Revit



Element.Delete – deletes element from a model.

View.AddFilter – add View Filter to View.

View.Filters – returns all View Filters applied to a View.

View.GetByType – collects all Views by View Type like Floor Plan, Ceiling Plan, Schedule etc.

View.IsViewTemplate – returns a Boolean True/False if View is a View Template.

View.OverrideGraphicsSettings – Graphics Settings for View Filter or Category overrides.

View.RemoveFilter – removes View Filter from a View.

View.RemoveViewTemplate – removes View Template from a View.

View.SetCategoryOverrides – sets Category Override Settings for a View.

View.SetFilterOverrides – sets View Filter Override Settings for a View.

View.SetFilterVisibility – controls if a View Filter is hiding or showing filtered Elements.

View.SetViewTemplate – applies View Template to View.

View.ViewTemplate – returns a View Template applied to View or null.

ViewFilter.CreateFilter – creates a new View Filter.

ViewFilter.CreateRule – creates a new View Filter Rule.

ViewFilter.OwnerViews – returns all Views that View Filter is applied to.

Fill Patterns – lists all Fill Patterns available in a model.

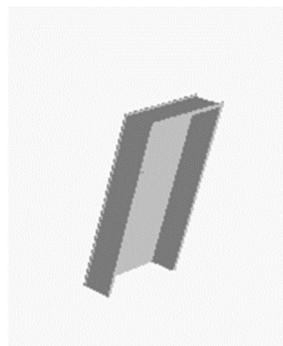
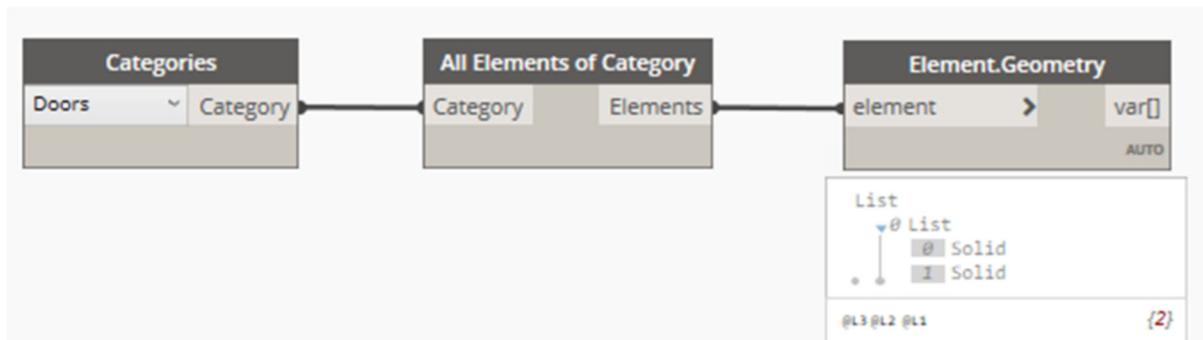
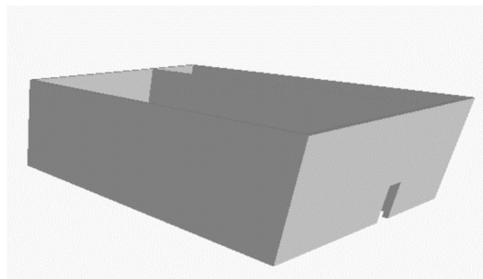
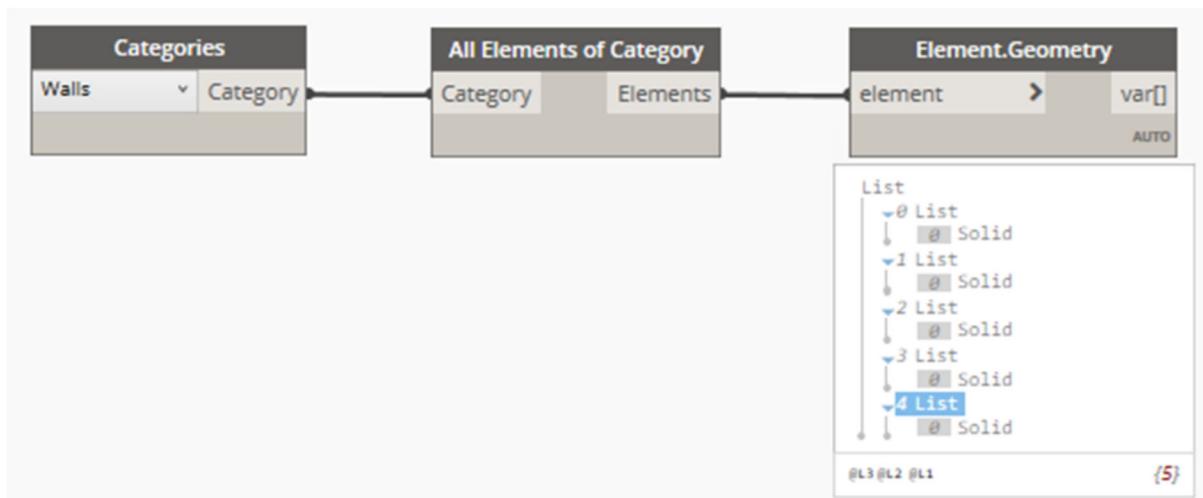
Line Patterns – lists all Line Patterns available in a model.

View Detail Level – lists all View Detail Levels available in a model.

View Type – lists all View Types available in a model.

Rule Types – lists all View Filter rules available in a model.

View Templates – lists all View Templates available in a model

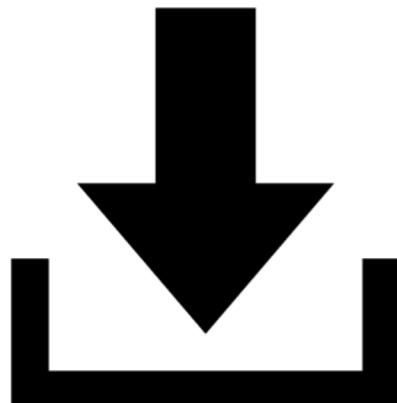


Preview with the model with Dynamo Scripts to see Revit geometry without configuring views in Revit
This applies to worksets or any other content in Revit that can be made into a three dimensional solid for preview

SUMMARY

- With so many settings and parameters to control the more you can automate the management the better
- Create your own scripts to help you manage the model
- Build towards tools that can take away as many keystrokes as possible
- Coding is a progressive learning code so start from the low hanging fruit and build up from there

TAKEAWAYS



PUTTING IT ALL TOGETHER

- Understand how Revit Works
- Be Prepared before starting a project
- Think about your project requirements
- Start from simple options
- Automate as much as you can
- Consider alternative methods
- Document solutions and processes

BEST PRACTICES

Use a consistent naming system in your template

Start from a template that works for your projects

Use filters to control visibility and demonstrate use with your team

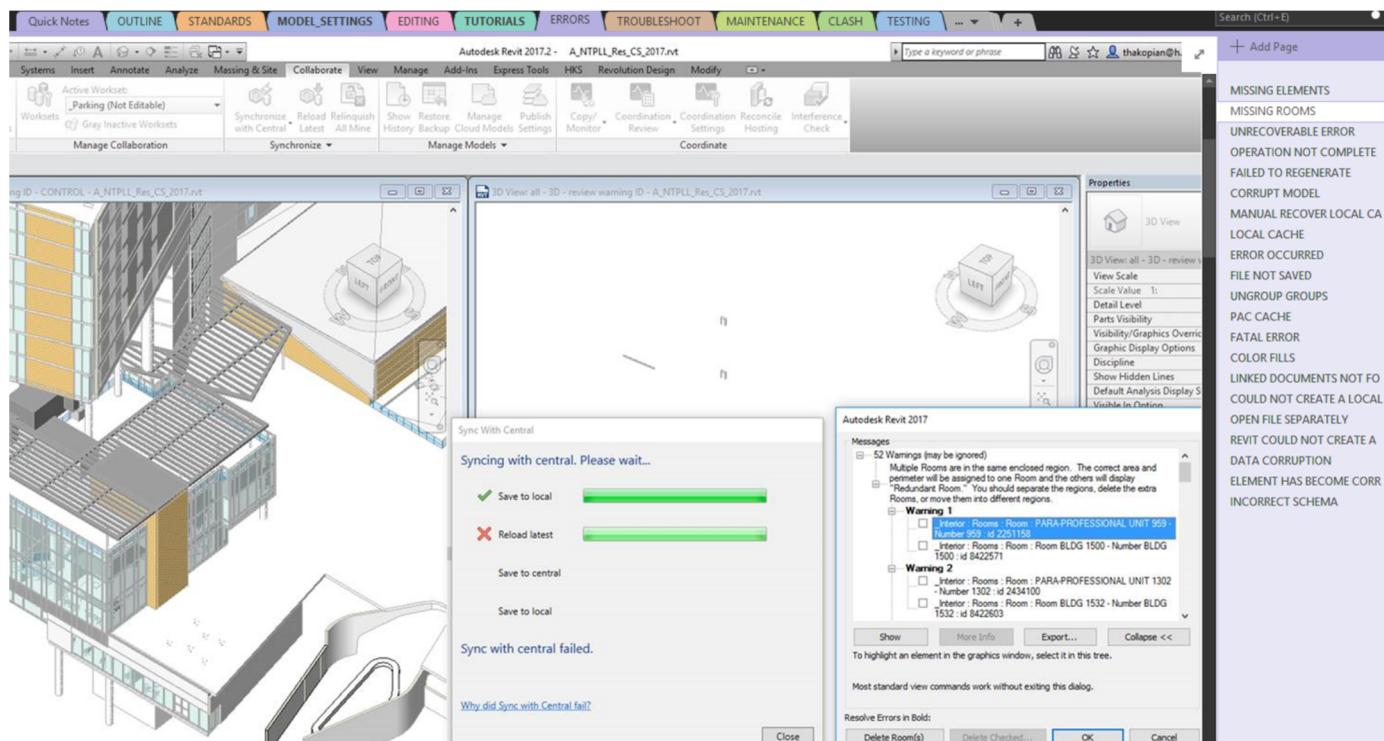
Don't use project settings to control visibility

Have periodic model health checks to review warnings and settings that can be a problem

Create a troubleshoot guide for your common issues and place it on a cloud document for easy access

If there are many views to correct or the model is complex then automate with scripts and third party software – it's worth the effort by saving time and frustration

Share your solutions and notes to a cloud based document like OneNote for everyone to access



- Sharing is caring – create a database that can be searched and edited by all users
- The more useful information about fixing visibility problems in your projects the less time you have to research them

Train the users about the settings in your template and how to control the model views

Train the users

Train the users

TRAIN THE &%^#\$/^ USERS

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Questions?

Visibility Graphics:
Winning the Game of Hide and Seek with Revit

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