

Session 61

Architect's Next Topmodel

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Class Description

Can your Revit model be smart AND sexy? Is BIM the end of 2D drawings?

In this session you will learn how to create stunning views of your model – for presentations, publications and competitions.

What this session is NOT about: Rendering / Detailing. These topics are extensive and may be covered in future session.

Key Learning Outcomes:

1. Understand the logic of Revit's graphical settings and know how to use them effectively
2. Be able to create stunning 2D/3D views in Revit for your documentation and tag them with intelligent information
3. Learn how to create an awesome Revit template which will save you a lot of time on future projects



About the Speaker:

Lejla Secerbegovic is a digital enthusiast and a licensed architect in Germany with 8 years of work experience in architectural offices in Germany and Austria. Before joining Autodesk as a Technical Specialist for BIM in 2015, she was working as a BIM Manager for the Max Bögl Group where she was responsible for the Revit implementation throughout the company.

Lejla blogs and tweets regularly on following channels:

<http://twitter.com/archistar>

<http://bim-me-up.com>

<http://www.autodesk.de/bimblog>

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It's all about the I in the BIM

Nothing to discuss about: when it comes to BIM, it definitely matters most which information your model holds. This often implies that all information needed will be available to everyone in the model itself with no need to deliver 2D documentation.

So - is BIM the end of 2D documentation?

We are still requested to deliver documents which are displaying this information in a certain way. No matter whether we are talking about documents to be submitted at authorities, competition entries or presentations – we still need to deliver something which cannot be misunderstood or misinterpreted, something that is displaying exactly what we want and the way we want it.

So what's all the fuss about it? Architectural drawings are actually nothing more but a different representation of the model – the more our software is advancing, the easier it gets to create these.

Maybe it's about the term itself – *drawing* implies that it is created manually by drawing lines, which is of course not true anymore. Modern documents (*drawings*) are derived from the model and they display the information it contains.

The *drawings* (2D as well as 3D) are not going to disappear with BIM – they will evolve.

The first thing we learn at architecture schools is the art of presentation: it doesn't only matter how your building looks like, it matters how you represent it! We are not only engineers, we are also artists – of course we care about the information in our models, but who said that information can't be sexy?

Well the good thing is – it can! And in this session I will show you how you can produce stunning and appealing views of your model with Revit!

Controlling graphical representation in Revit

Revit is indeed not always that intuitive when it comes to controlling *if* and *how* you see a certain element, especially if you are new to the software. It has its own logic, which is based on the BIM method and is very different from what we are used to from CAD.

Categories vs. Layers

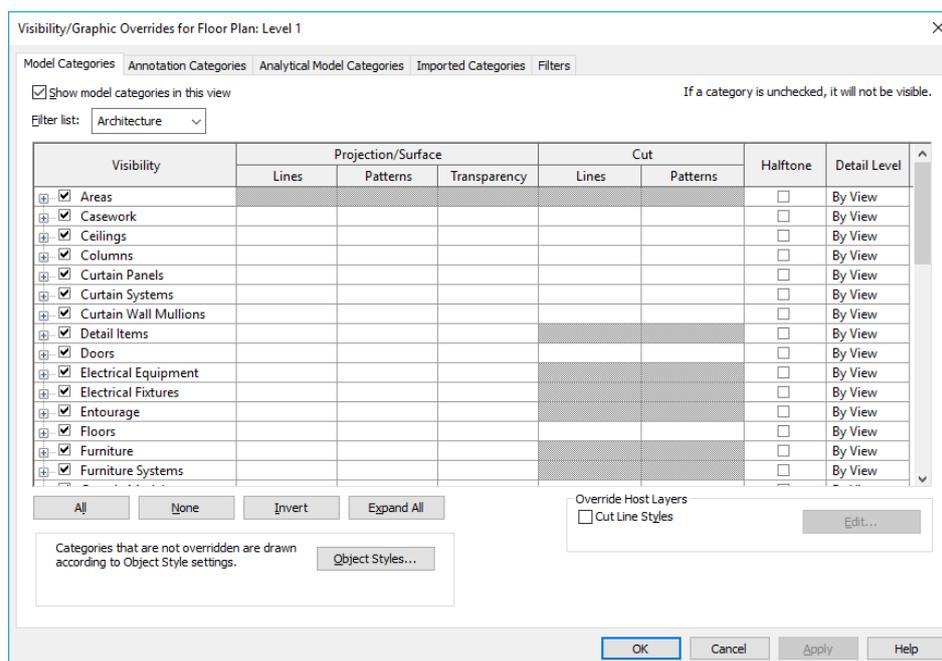
There is that certain moment when you are presenting Revit to a CAD-expert and you tell him: Revit has no Layers... It will make him speechless and terrified; finally the layer structure is one of the main CAD standards.

But BIM categories, on which the categories of Revit elements are based, offer a lot of advantages and a far easier handling. There are 3 main differences between Layers and Categories to be kept in mind:

1. Categories are predefined

You cannot define your own categories, these are based on the nature of the elements itself. Therefore, a wall will always be in the wall category, a door in the door category etc.

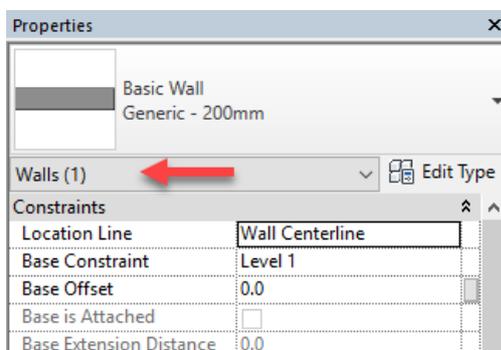
However, you can define Subcategories for certain elements on your own, which we will discuss later.



2. Categories define the nature of an element

Categories are not only useful for graphical representation – they define the nature of an element, they make sure that the wall knows it is a wall and that it has all necessary properties. Therefore, don't mess around with categories – there are ways to model objects in wrong categories, among which Generic Model is definitely the most famous one – please don't do it.

You won't only run into problems with graphical representation, but your model will lose its intelligence and will deliver wrong data!

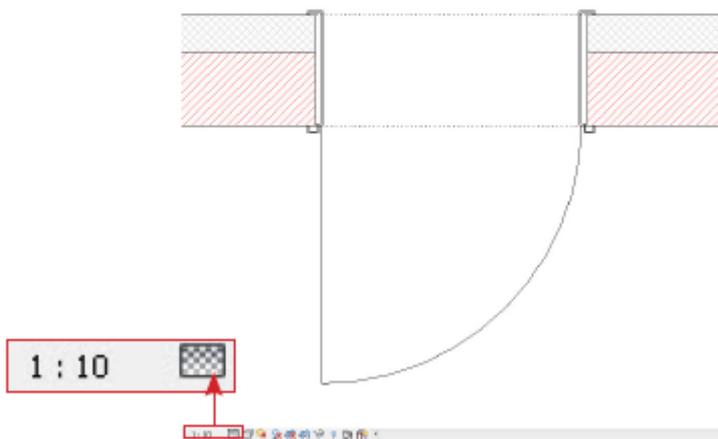
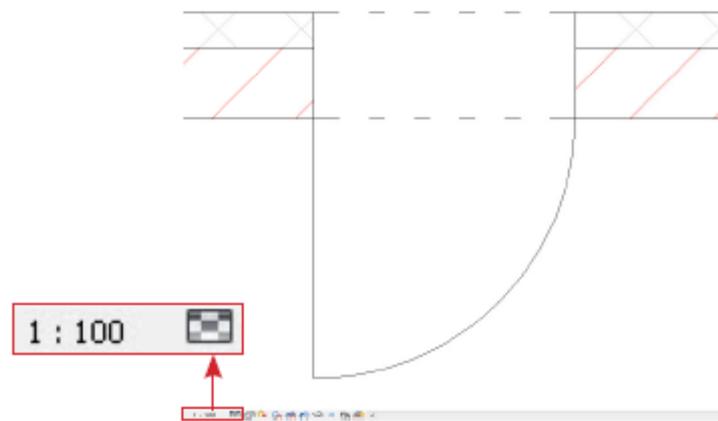
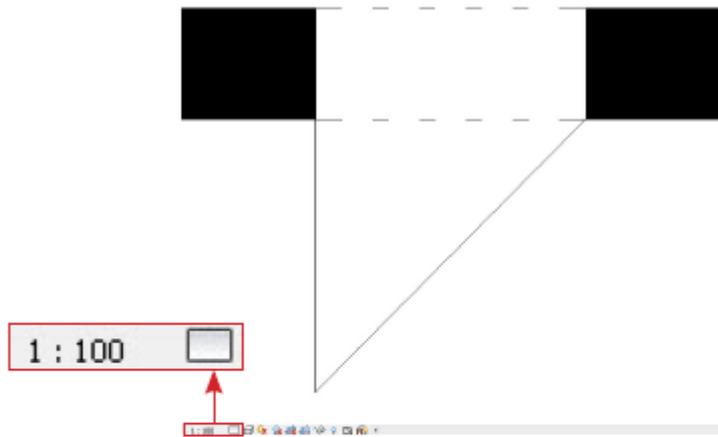


3. Hierarchical visibility per view

This is the most important difference for us when it comes to graphics: the way certain elements in Revit will display is not ruled globally by the layer settings, but can be altered using different settings, which will influence each other according to their hierarchy. Also, some of these settings are project wide and some only valid per view.

On the next page you will see 3 screenshots showing the same door just with different detail level and scale settings – this illustrates quite well the power and the complexity of the visual settings in Revit.

At the end of this session you will know exactly what you need to set where in order to reach exactly what you want.

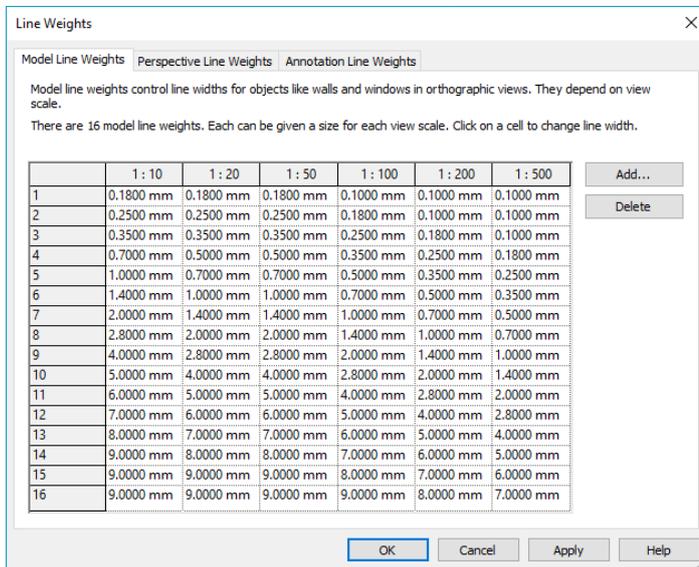


Different representations of the same element in Revit

General settings

When setting up the project template, there are some general settings which should be reviewed and set up first. These define line styles, line patterns and fill patterns.

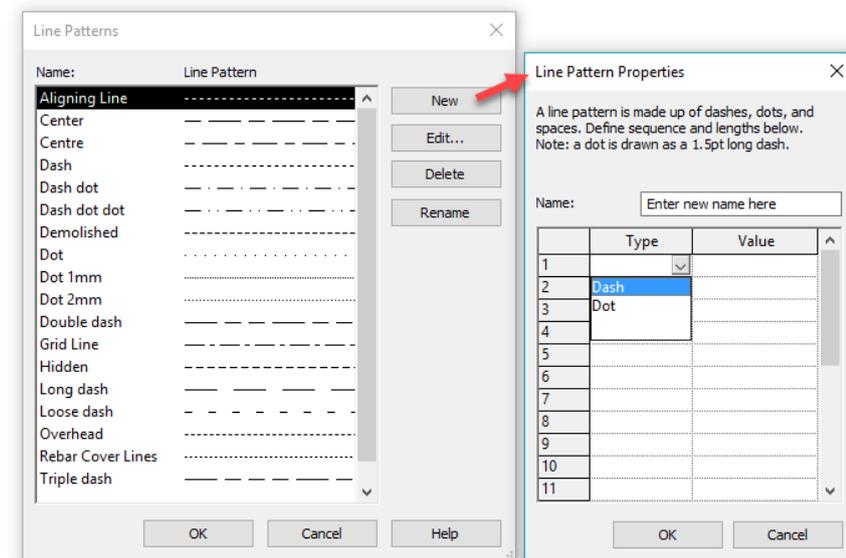
Line Weights in Revit are already built in and usually don't require any further adaptations. There are 16 predefined weights, 1 being the thinnest and 16 the thickest line. These are set up in such a way that they scale with the drawing scale and keep your drawing readable.



Line Weights dialog box showing Model Line Weights for various view scales. The table below represents the data shown in the dialog.

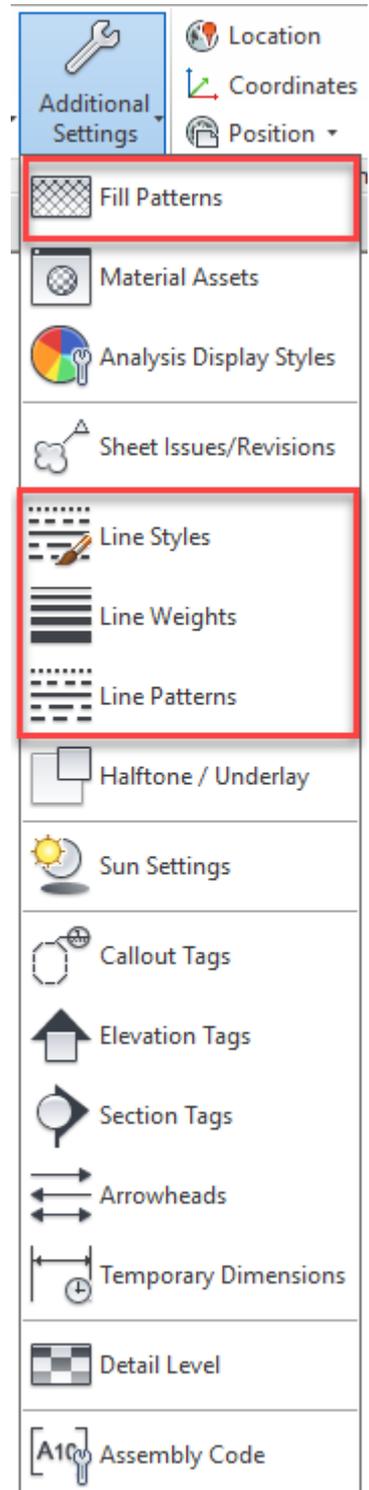
	1 : 10	1 : 20	1 : 50	1 : 100	1 : 200	1 : 500
1	0.1800 mm	0.1800 mm	0.1800 mm	0.1000 mm	0.1000 mm	0.1000 mm
2	0.2500 mm	0.2500 mm	0.2500 mm	0.1800 mm	0.1000 mm	0.1000 mm
3	0.3500 mm	0.3500 mm	0.3500 mm	0.2500 mm	0.1800 mm	0.1000 mm
4	0.7000 mm	0.5000 mm	0.5000 mm	0.3500 mm	0.2500 mm	0.1800 mm
5	1.0000 mm	0.7000 mm	0.7000 mm	0.5000 mm	0.3500 mm	0.2500 mm
6	1.4000 mm	1.0000 mm	1.0000 mm	0.7000 mm	0.5000 mm	0.3500 mm
7	2.0000 mm	1.4000 mm	1.4000 mm	1.0000 mm	0.7000 mm	0.5000 mm
8	2.8000 mm	2.0000 mm	2.0000 mm	1.4000 mm	1.0000 mm	0.7000 mm
9	4.0000 mm	2.8000 mm	2.8000 mm	2.0000 mm	1.4000 mm	1.0000 mm
10	5.0000 mm	4.0000 mm	4.0000 mm	2.8000 mm	2.0000 mm	1.4000 mm
11	6.0000 mm	5.0000 mm	5.0000 mm	4.0000 mm	2.8000 mm	2.0000 mm
12	7.0000 mm	6.0000 mm	6.0000 mm	5.0000 mm	4.0000 mm	2.8000 mm
13	8.0000 mm	7.0000 mm	7.0000 mm	6.0000 mm	5.0000 mm	4.0000 mm
14	9.0000 mm	8.0000 mm	8.0000 mm	7.0000 mm	6.0000 mm	5.0000 mm
15	9.0000 mm	9.0000 mm	9.0000 mm	8.0000 mm	7.0000 mm	6.0000 mm
16	9.0000 mm	9.0000 mm	9.0000 mm	9.0000 mm	8.0000 mm	7.0000 mm

The **Line Patterns** in Revit are combined out of Dots, Lines and Spaces:



Line Patterns dialog box showing a list of predefined patterns. The Line Pattern Properties dialog box shows the configuration for a selected pattern.

Type	Value
1	
2	Dash
3	Dot
4	
5	
6	
7	
8	
9	
10	
11	



Additional Settings menu showing various options. The following options are highlighted with a red box:

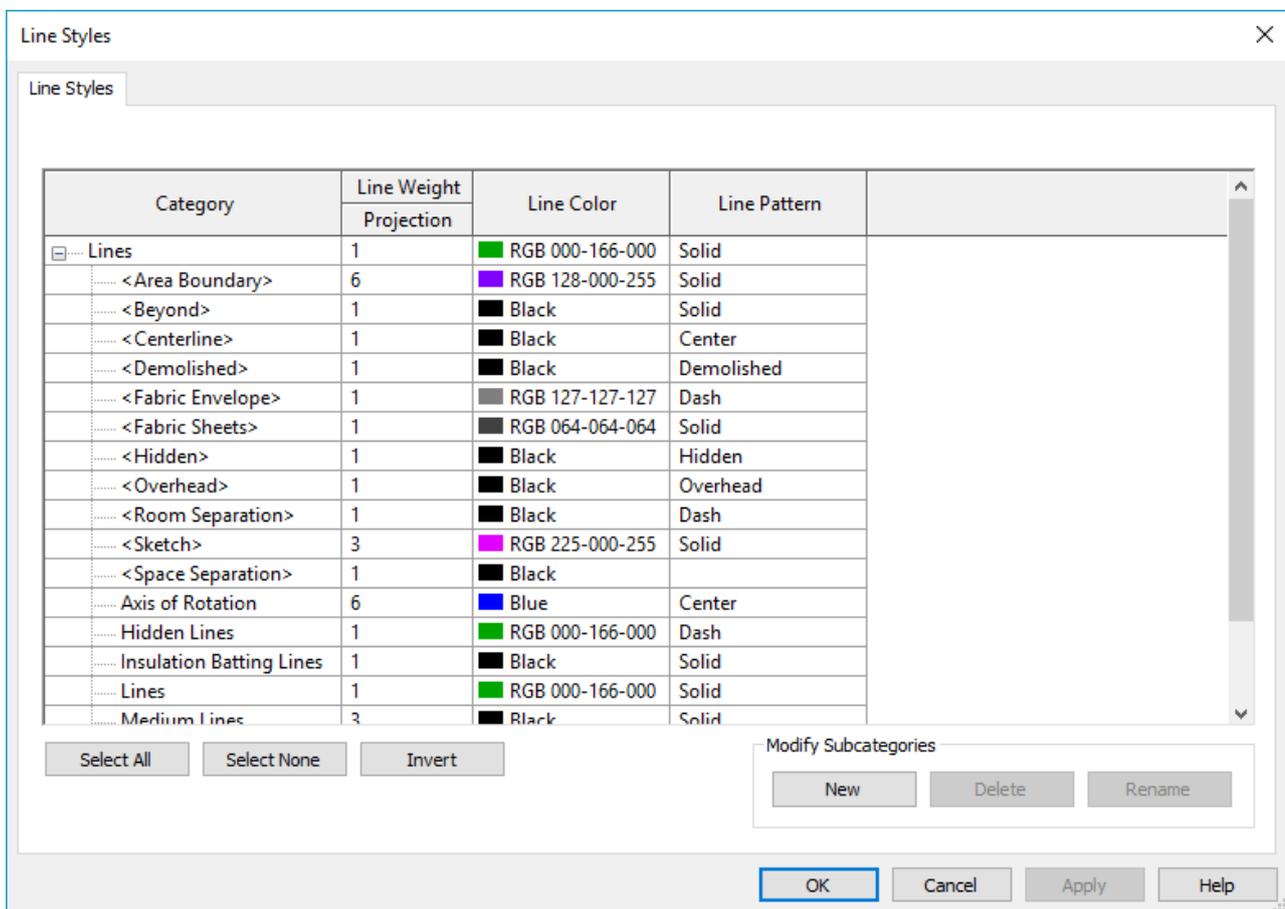
- Fill Patterns
- Line Styles
- Line Weights
- Line Patterns

Other visible options include: Location, Coordinates, Position, Material Assets, Analysis Display Styles, Sheet Issues/Revisions, Halftone / Underlay, Sun Settings, Callout Tags, Elevation Tags, Section Tags, Arrowheads, Temporary Dimensions, Detail Level, and Assembly Code.



Create non-standard Linestyles like the X-Line (---X---X---X) by following this simple workaround: create a Detail Family containing only the Symbol "X". Finally, use Annotate > Component > Detailed Component to repeat the detail family along a line!

Line Styles are combined out of Line Weights, Line Patterns and a color:

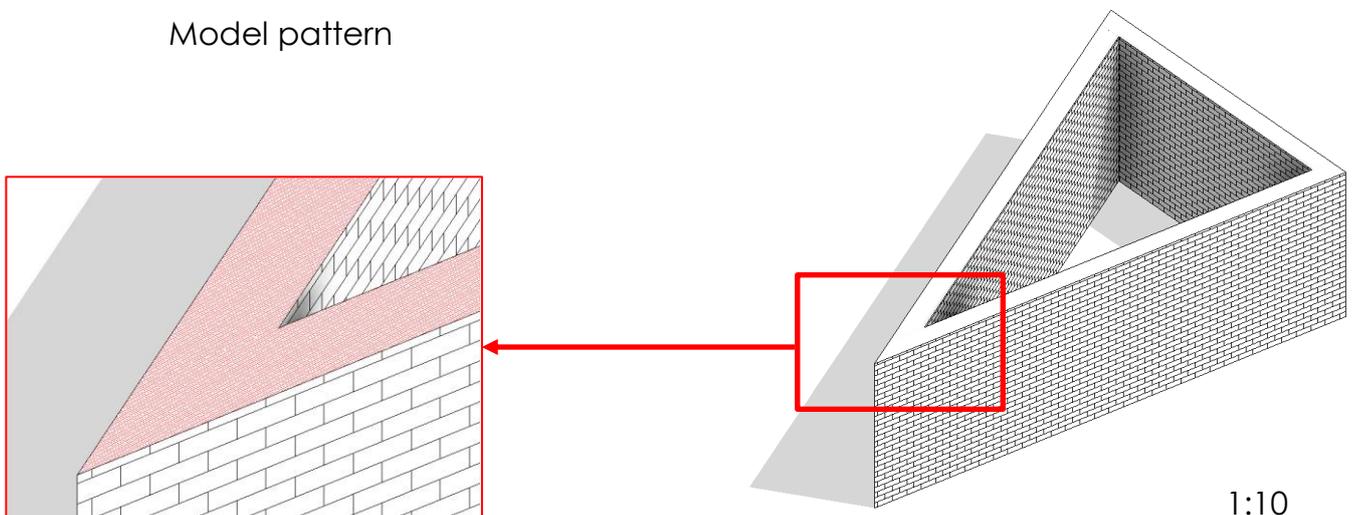
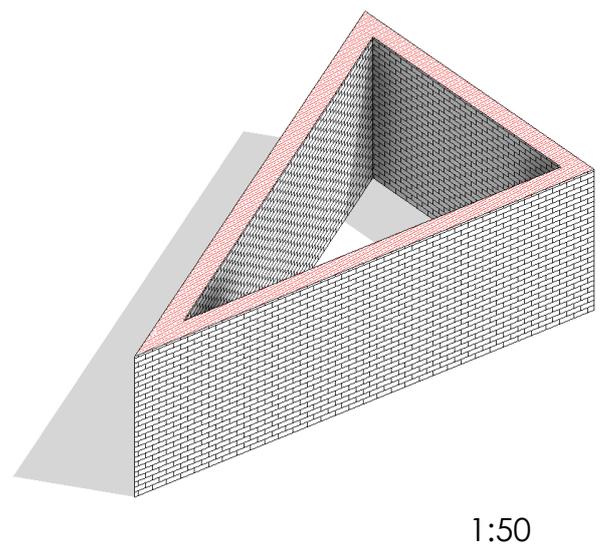
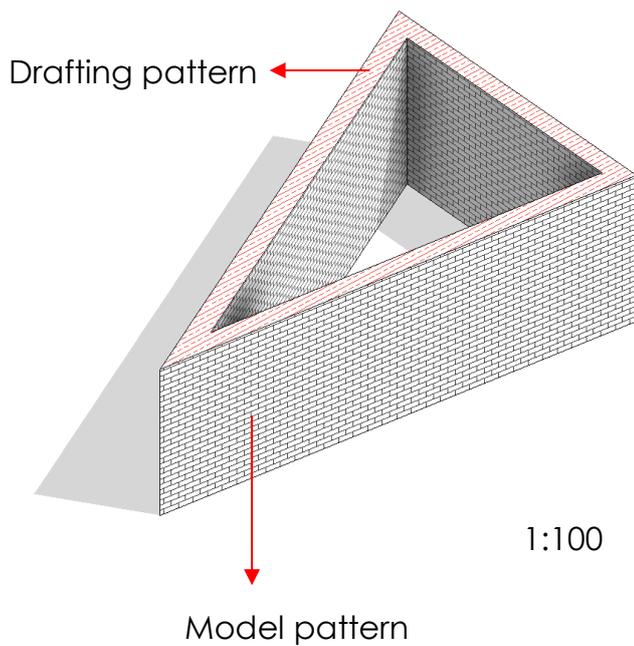
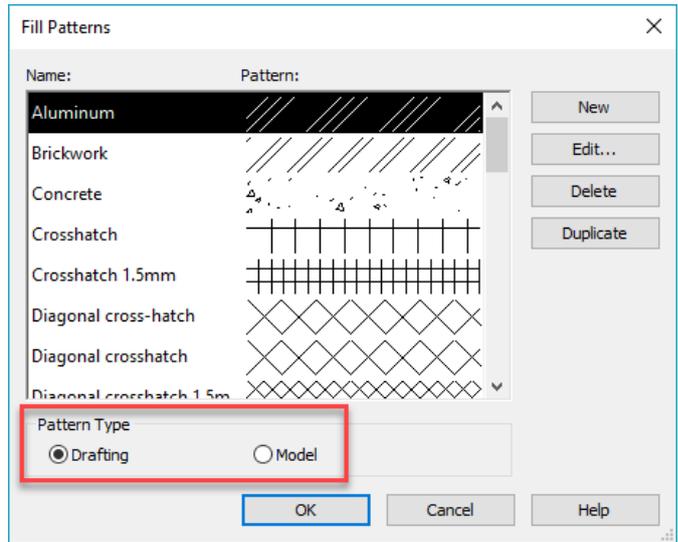


You may notice there are some styles with brackets <...> - these line styles are hardcoded and used by the system, therefore they can't be removed or renamed. However, you can change their properties, e.g. if you wish you area boundaries to be displayed in a different way by default.

Fill Patterns in Revit can either be Drafting or Model Patterns.

Drafting patterns will scale with the view scale, in order to stay readable. These are the patterns you typically use as cut patterns.

Model Patterns however will always keep their sizing and are typically used for surfaces like tiles etc.

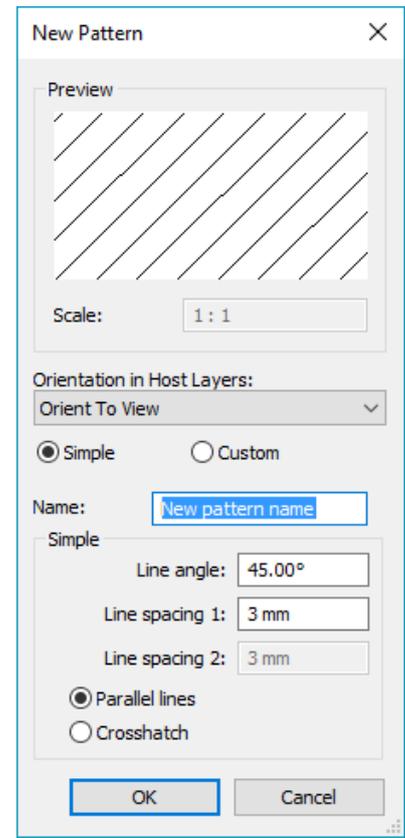
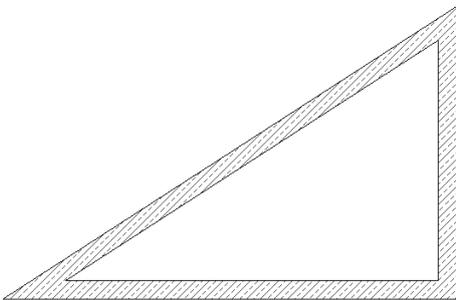


In order to create a new pattern, existing patterns can be adapted using the pattern editor. Simple patterns can also be created from scratch using the editor.

Note that only solid lines can be used in order to create either parallel lines or a crosshatch. The behavior and the orientation of the pattern can be controlled using the following options:

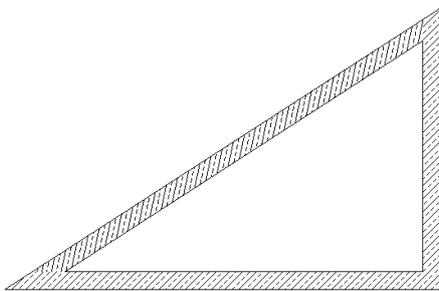
Orient to View

Keeps the pattern always oriented to the view according to its angle:



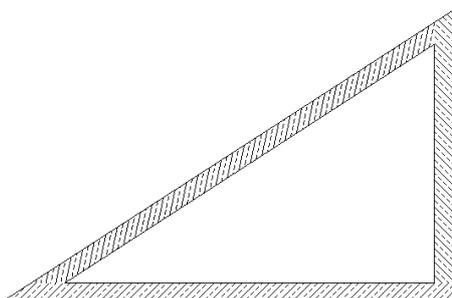
Keep readable

Will orient the pattern depending on the view and the angle of the element itself, attempting to find the best option:



Align with Element

Will orient the pattern according to the alignment of the element only





For more complex patterns, load any CAD pattern using the .pat file format!

More complex patterns can be created by clicking *Custom* in the Pattern editor and loading a pattern file (*.pat).

These files can be created very easily with AutoCAD or with a text editor. A .pat file can contain several patterns and needs to be prepared in text editor for use in Revit.

Before editing the file however, it is important to understand the structure of a .pat file:

1. Line: Title – starts with a * and can contain max. 31 letters and an optional description
**Name, Description*
2. Line and following (until the next title): Definition – describes the pattern by using angles, coordinates and line types
Angle, x-origin, y-origin, delta-x, delta-y, dash-1, dash-2, ...

With AutoCAD installed on a machine, the default pattern files can be found in the following folder:

C:\Program Files\Autodesk\AutoCAD 2017\UserDataCache\en-us\Support
Eventually, en-us must be changed to match the installed language.

This is an excerpt from the German acadiso.pat file:

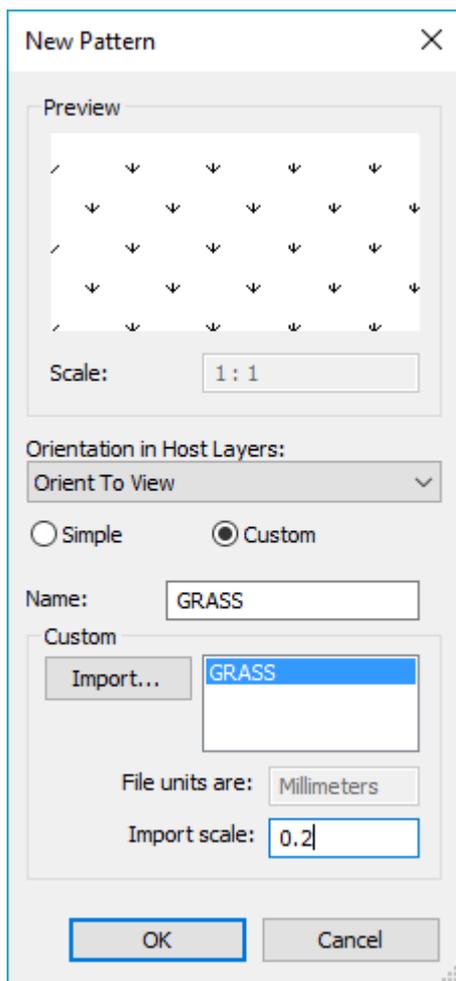
```
*GOST_GROUND,Boden
45, 0, 0, 10, -10, 20
45, 3, 0, 10, -10, 20
45, 6, 0, 10, -10, 20
*GRASS, Grasfläche
90, 0, 0, 17.96051224, 17.96051224, 4.7625, -31.15852448
45, 0, 0, 0, 25.4, 4.7625, -20.6375
135, 0, 0, 0, 25.4, 4.7625, -20.6375
*GRATE, Gitterfläche
0, 0, 0, 0, 0.79375
90, 0, 0, 0, 3.175
```

In order to load the Grass pattern in Revit, the highlighted lines above are copied into a new textfile and following lines are added:

```
:%UNITS=MM  
*GRASS, Grasfläche  
:%TYPE=DRAFTING  
90, 0, 0, 17.96051224, 17.96051224, 4.7625, -31.15852448  
45, 0, 0, 0, 25.4, 4.7625, -20.6375  
135, 0, 0, 0, 25.4, 4.7625, -20.6375
```

The first line describes the units, in which the pattern file has been created. The type describes the Revit-type of the pattern, which can either be Model or Drafting. This file can now be saved with the extension .pat and loaded in Revit.

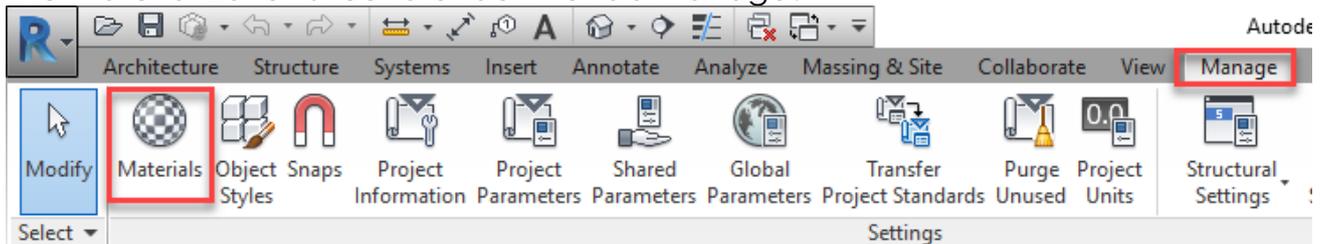
Once the pattern file has been prepared for Revit, it can be loaded into the pattern editor and even scaled if necessary:



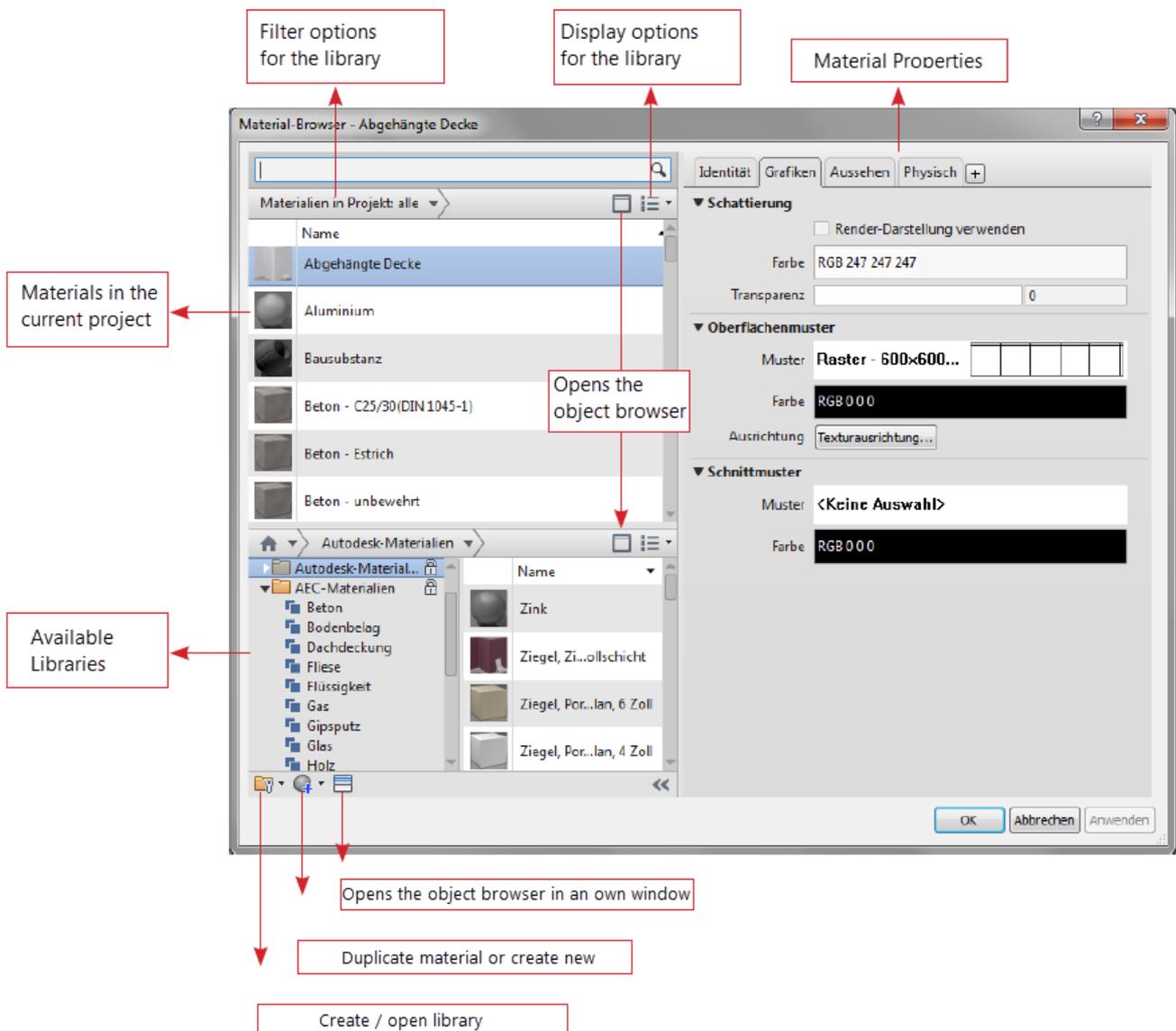
Materials

Materials in Revit are very powerful – they don't only define the graphical representation of the elements, but they also carry physical and thermic properties which are relevant for calculations and simulations.

The Material Editor is found under the tab *Manage*:



The main functions of the editor are:



Every material has tabs Identity, Graphics and Appearance by default. Tabs Physical and Thermal can be added if needed.

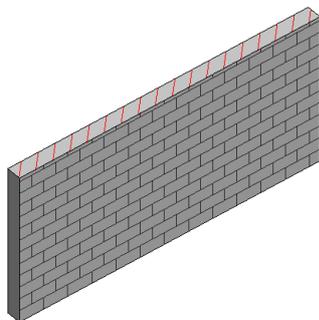
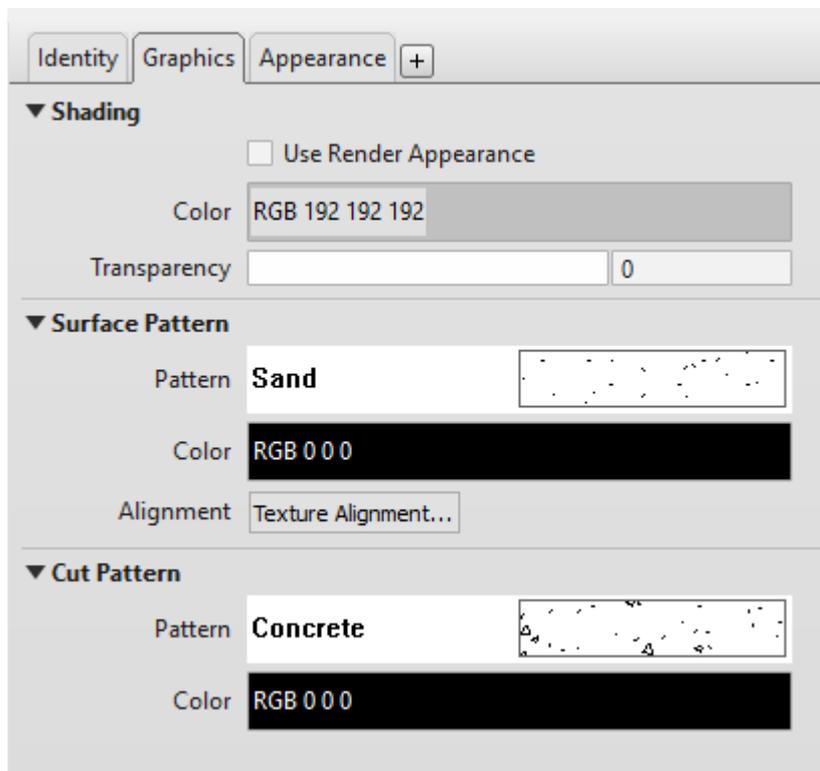
The tab *Identity* holds all information about the material, like description, comments, tags or information about manufacturer, costs etc.

The tab *Graphics* define the graphical representations of elements which have this material assigned:

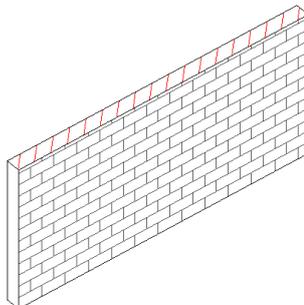
Shading defines how the material will display in shaded views using a color / transparency. Alternatively the Render appearance can be used for shaded views as well by checking the checkbox, which will override the color and the transparency set in this dialog.

Surface pattern is the pattern which will be used in addition to the shading color chosen above for shaded views, but also for wireframe and hidden line view options.

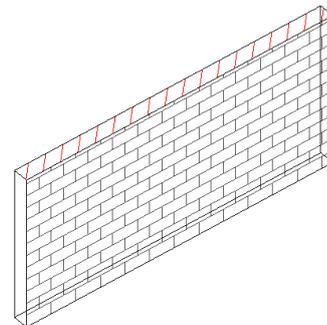
Cut pattern will be used for all surface in a view that are cut, e.g. walls in a ground view.



 Shaded



 Hidden Line



 Wireframe

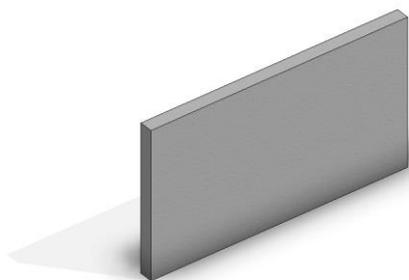
The tab *Appearance* defines the representation of the material when rendered or displayed in a realistic display mode.

While the properties for Identity and Graphics are stored in the project file only, the properties found in the appearance tab can be loaded from the object library. This is why additional information, description and keywords can be added in this tab as well.

For shared tabs as this one it is important to notice that these are stored once in the library and can be reused for different materials. Changing one value in the tab may therefore affect other materials as well.

Depending on the material loaded, the properties available in this tab may vary. In general, they offer the possibility to define a color by either choosing an explicit RGB value or by an image.

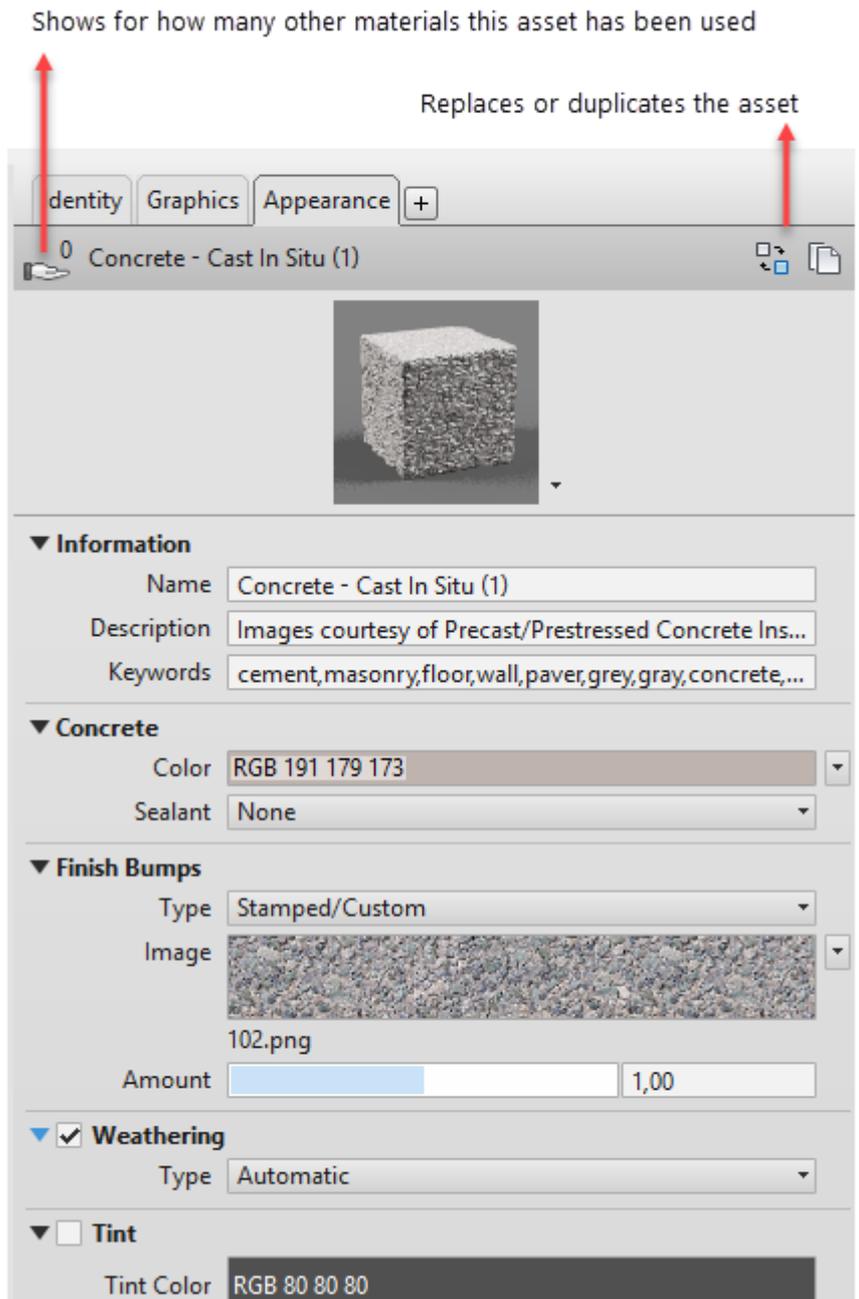
In addition, an image for the finish bump can be added as well. This is typically the same image defining the color, but reduced to black/white colors which define the embossment. The file for the finish bumps is typically created in a photo-editing tool like Adobe Photoshop or Autodesk Pixlr.



 Realistic

Shows for how many other materials this asset has been used

Replaces or duplicates the asset



identity Graphics Appearance +

0 Concrete - Cast In Situ (1)

Information

Name Concrete - Cast In Situ (1)

Description Images courtesy of Precast/Prestressed Concrete Ins...

Keywords cement,masonry,floor,wall,paver,gray,concrete,...

Concrete

Color RGB 191 179 173

Sealant None

Finish Bumps

Type Stamped/Custom

Image 

102.png

Amount

Weathering

Type Automatic

Tint

Tint Color RGB 80 80 80

Visual settings in Revit

After setting up the line styles, patterns and materials, it is time to have a look where these can be used in the Revit project.

Revit offers a wide range of settings, which will also override each other according to their hierarchy – which is probably the reason, why newbies find it so hard to set up their views the way they want it.

ELEMENTS HIGHER IN THE HIERARCHY
WILL OVERRIDE ALL LOWER SETTINGS

- PROJECTWIDE
- VIEW SPECIFIC
- ELEMENT SPECIFIC

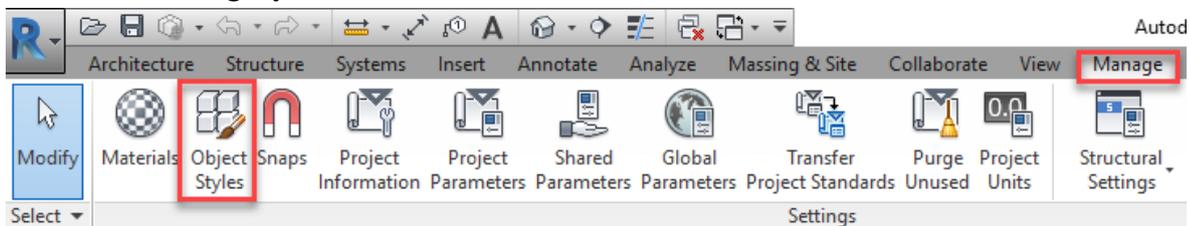


By following the pyramid from the previous page and making sure to start from the bottom and work through towards the top, the visual settings can be set up in the most efficient way.

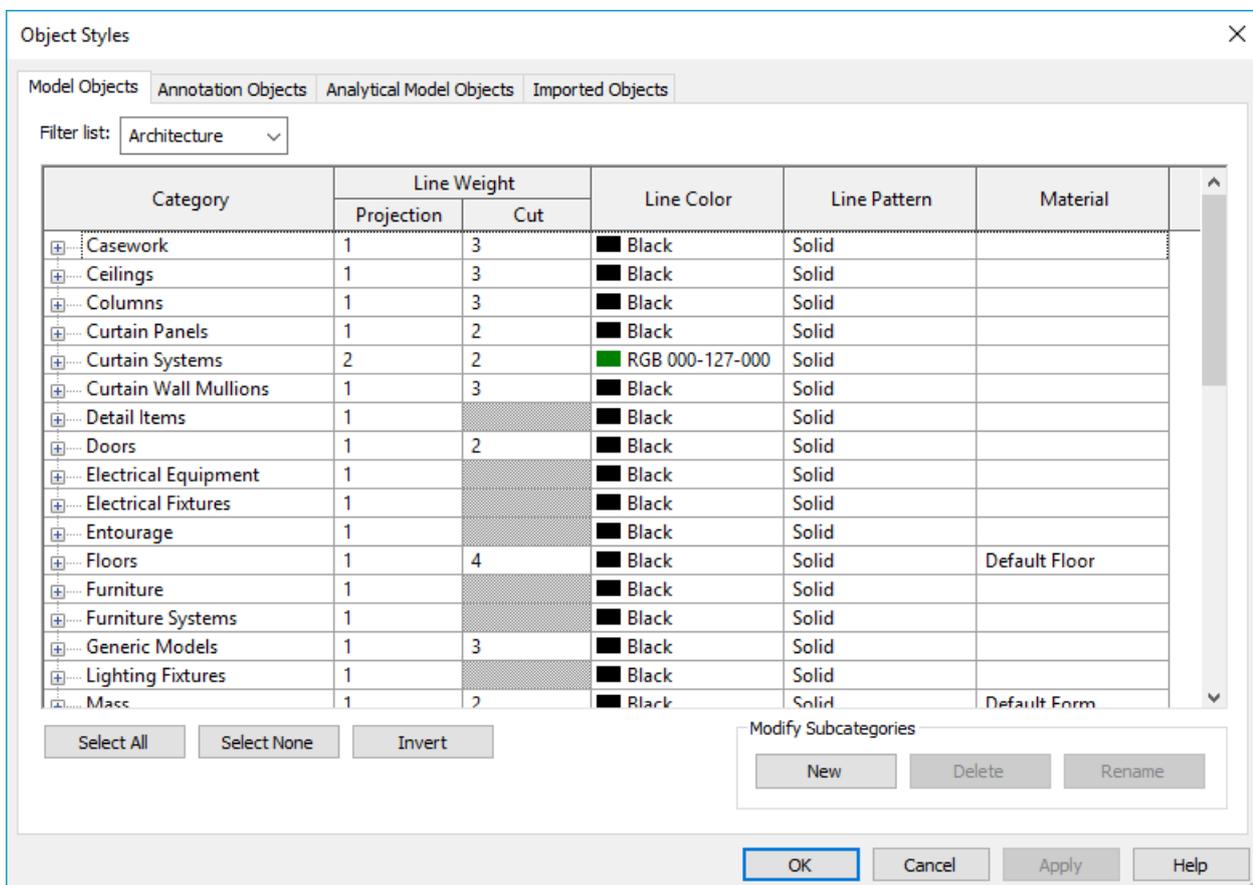
Take care to use project-wide settings where possible, then move the view specific settings and store them in view templates. Finally, use element specific overrides only if absolutely necessary!

Object Styles

Object Styles belong to the project-wide settings, which means you should use them for everything that is valid throughout the project. The Object Styles can be found under the tab Manage just next to the Materials:



The dialog offers separate settings for Model, Annotation, Analytical Model and Imported Objects and is limited to Line properties and Material overrides:





Set up everything valid for most of the views in Object Styles. All other settings will override these if needed!

As already mentioned, the categories in Revit are hardcoded any cannot be changed. There is no way to create own categories, however own subcategories can be created for all loadable families.

In order to create a new subcategory, follow these steps:

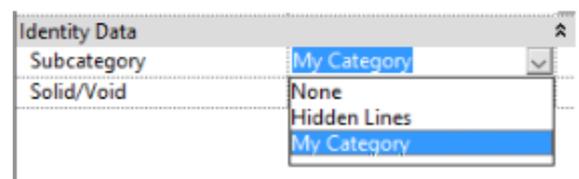
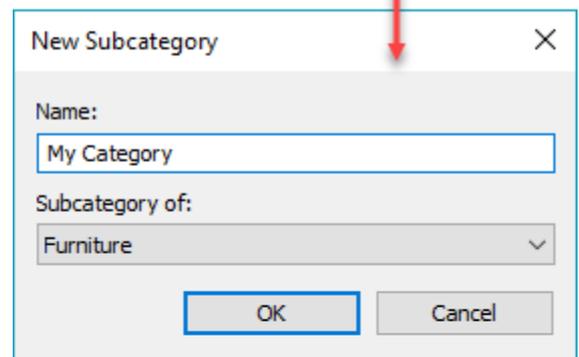
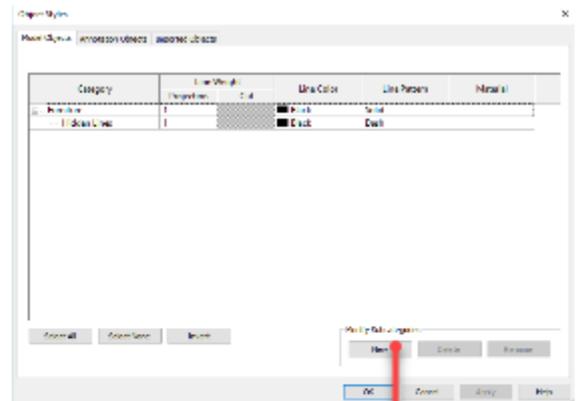
1. Open the family in the family editor
2. In the family editor, go to Manage > Object styles
3. Create a subcategory by clicking NEW on the lower right
4. Now, select an object that you want to assign to this category and change its property

Now, once you reload this family into the project, the subcategory will be automatically added.

Note: there is some confusion about subcategories, because in the Object Styles Dialog in the Project itself you can find the same dialog for creating / modifying of Subcategories in the lower right. This may seem as if you could create Subcategories for system families as well, which is NOT true.

This Dialog exists for these two reasons:

- When creating a project family, you are not using the family editor but the project environment and its Object Styles. Therefore, the dialog makes it possible to create own Subcategories for project families
- Custom subcategories created in linked file are not visible in the main project they are linked too. However, if you create the same Subcategory in your main project, you can drive the appearance of this Subcategory in the linked file as well

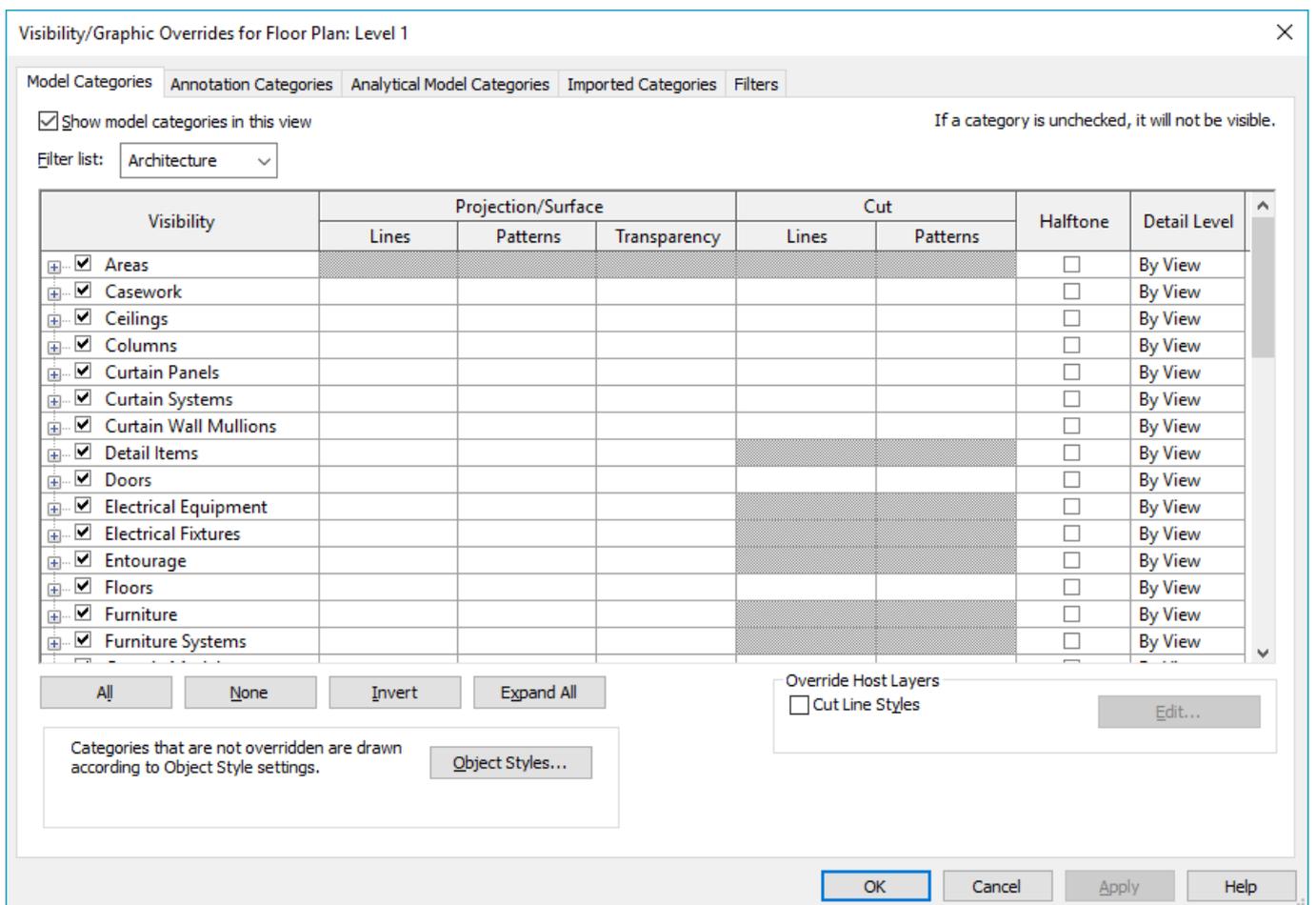
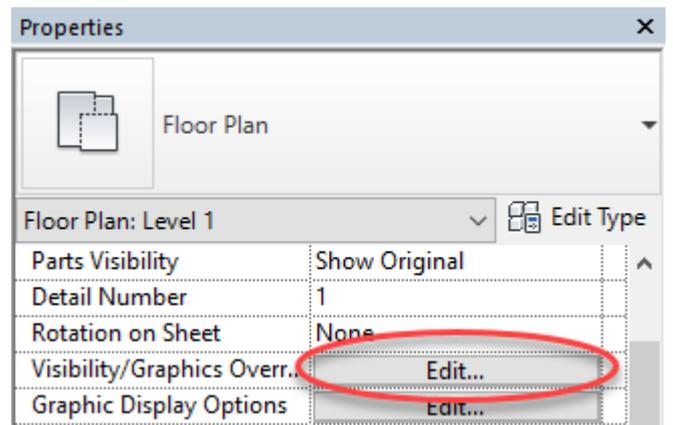
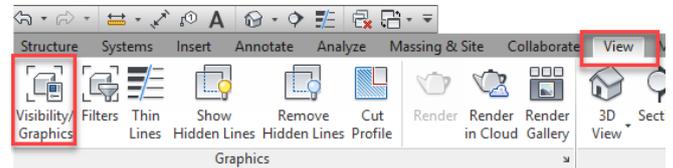


Visibility / Graphics Overrides

VV is probably the most used keyboard shortcut in Revit and opens the Visibility / Graphics Overrides dialog, which can also be found in the properties of the current view or by clicking on Visibility / Graphics in the Tab View.

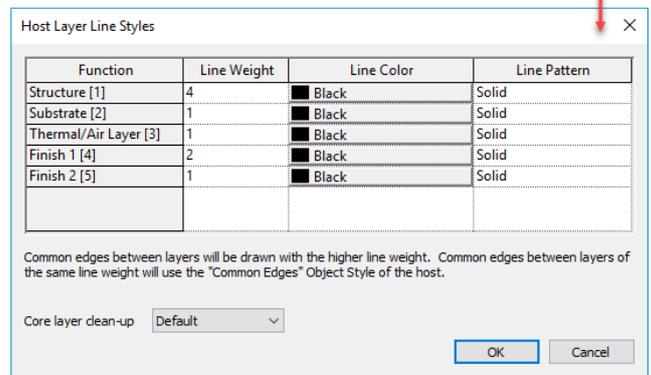
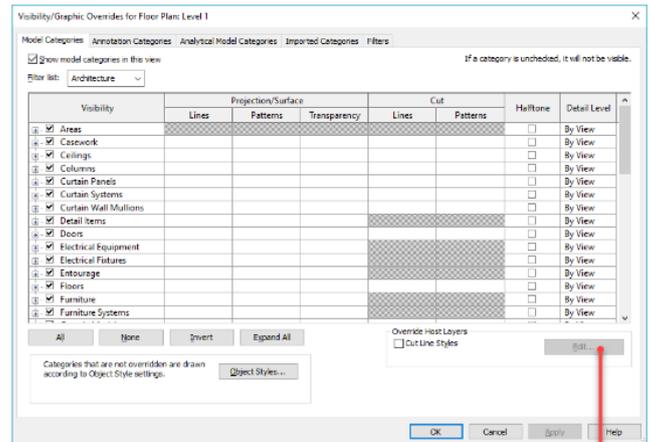
Its dialog box is very similar to Object Styles, however it offers some more settings, like patterns, transparency or an own detail level, which will override the view general detail level of the view.

You can also define filters, which will display certain elements in a different way according to their properties (e.g. often used for coloring fire-proof elements)



The *Cut Line Styles* are an often overseen and even more misunderstood feature.

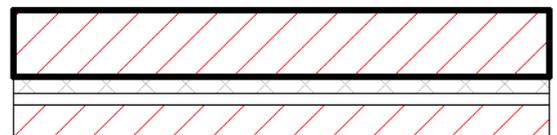
Thanks to this feature, it can be defined how the wall layers will behave, which layers will have thick lines and which will be displayed and how exactly they will be shown on joints.



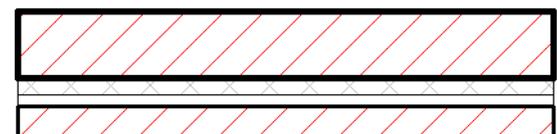
The functionality of this option is illustrated below using the following wall structure:

Layers			
EXTERIOR SIDE			
	Function	Material	Thickness
1	Finish 1 [4]	Brick, Common	11.5
2	Thermal/Air Layer [3]	Air	4.0
3	Thermal/Air Layer [3]	Insulation / Thermal Barriers	6.0
4	Core Boundary	Layers Above Wrap	0.0
5	Structure [1]	Concrete Masonry Units	24.0
6	Core Boundary	Layers Below Wrap	0.0

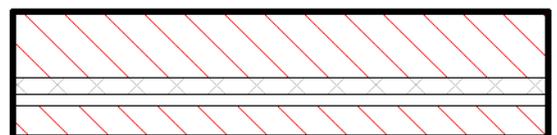
Standard setting as shown above:



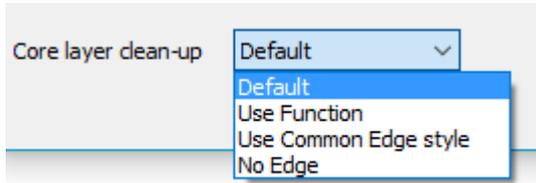
Line Weight for *Finish 1 [4]* changed from 1 to 2:



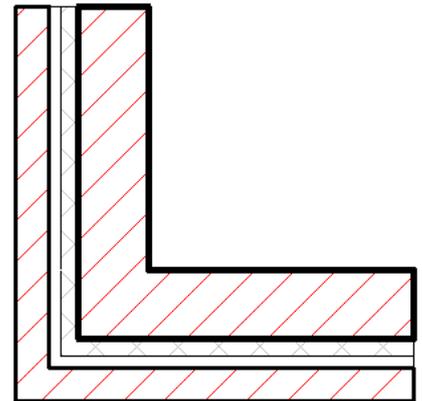
Cut Line Styles unchecked:



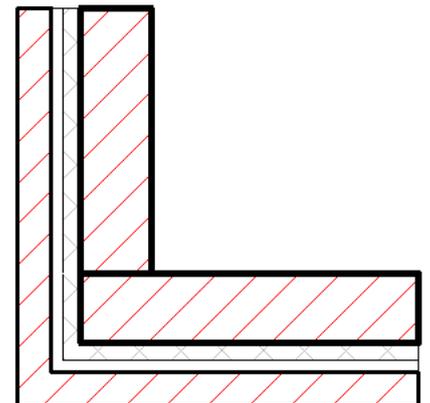
Note that the dialog offers not only the options for the Line Weights, Line Color and Line Pattern, but also for the Core layer clean-up:



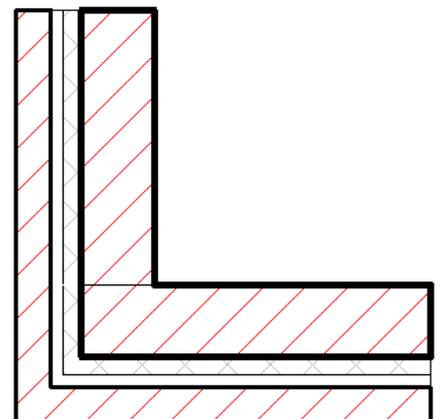
No Edge will always display the joints between layers using the same material / function without any separation line:



Use Function will force the display of the separation lines for the core. It determines the style of the separating line by the layer with the higher priority:



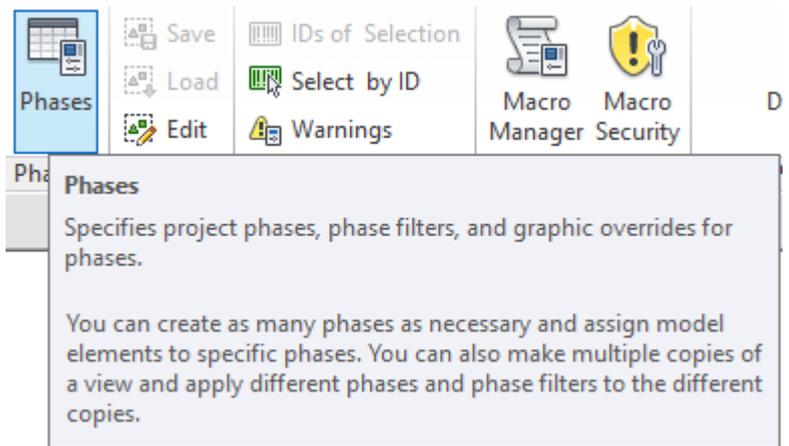
Use Common Edge Style will ignore function and material and will always display the Edge using the Common Edge Style.



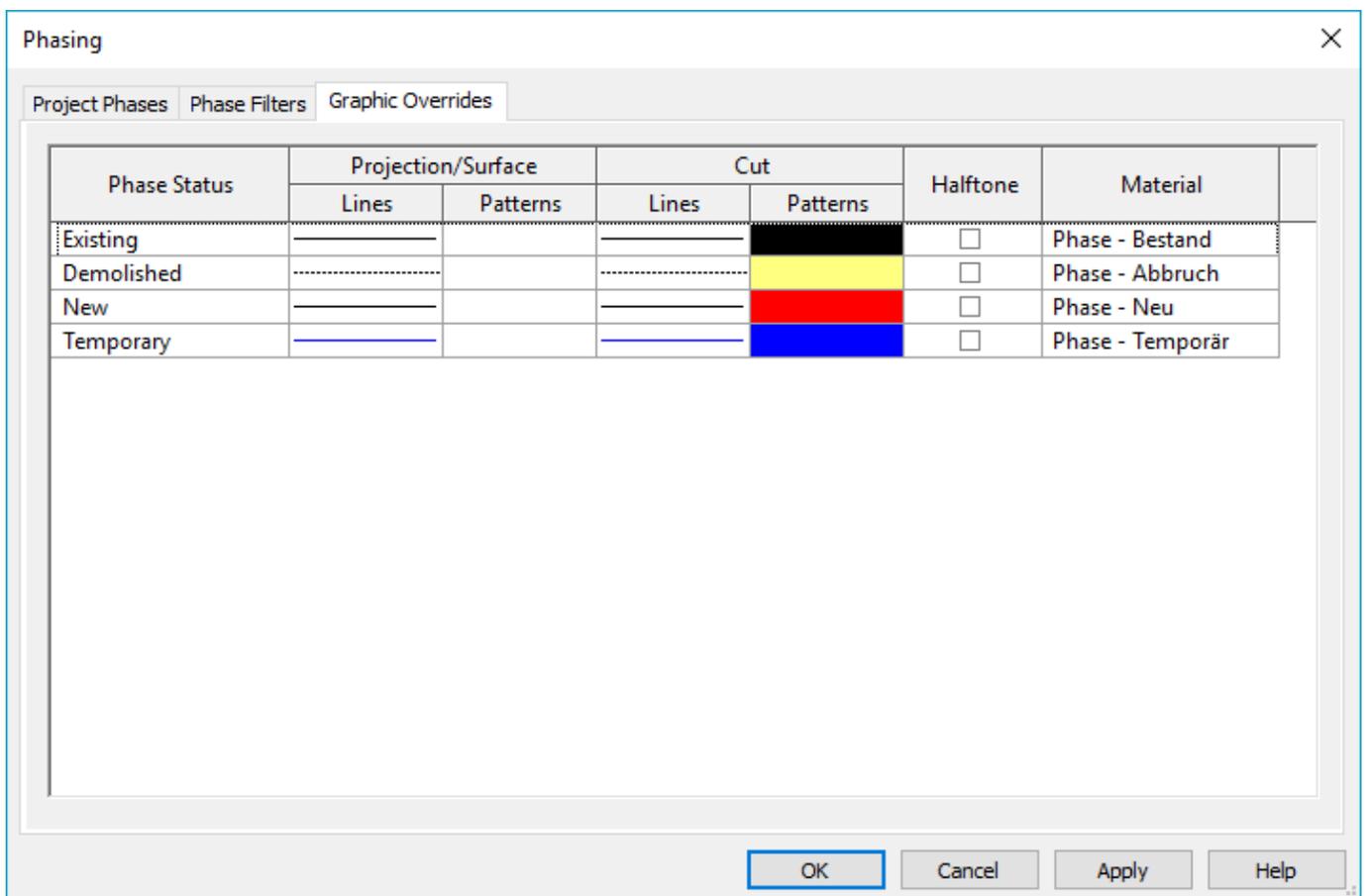
If the wall layers don't seem to display in the desired way, check *Cut Line Styles* in the Visibility / Graphics Overrides dialog (lower right)

Phases

are a very important feature in Revit and offer very useful workflows when working on project with temporary constructions, renovations projects or big projects involving more construction stages. However, phases can also influence the way your project is displayed tremendously!
 Phases are set up using the dialog in the Manage Tab:



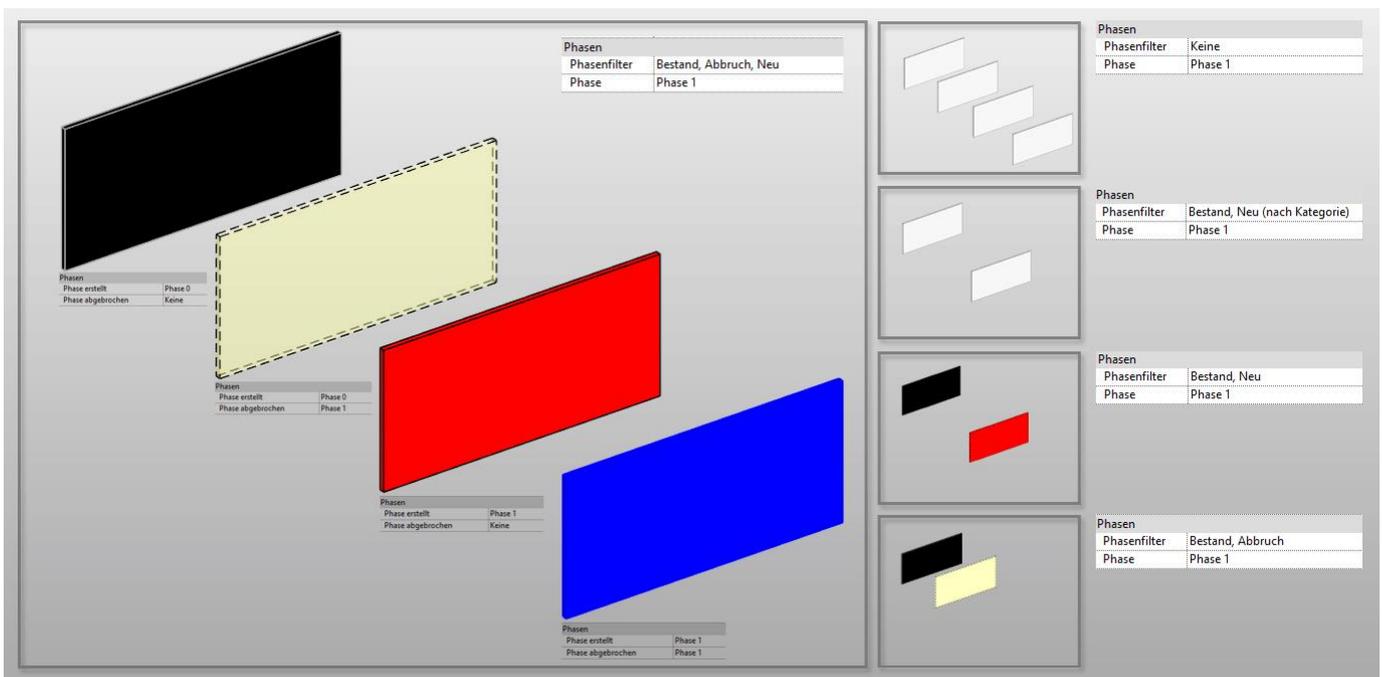
Apart from setting up the phases themselves, this dialog also offers the setup for the Graphic Overrides associate with the phases – note that these will override all settings we mentioned until now, including Object Styles and Visibility / Graphics Overrides:



All elements created in a project can then be assigned to a phase in its properties. Finally, phase filters can be applied to each view so that you can choose which stage of the project you are seeing and how the objects are highlighted:

Elements incl. phasing

Views with applied Phase Filters:



Phase filters can also be used for other purposes, for example for quickly overriding all materials in a project in order to create a homogenous rendering.

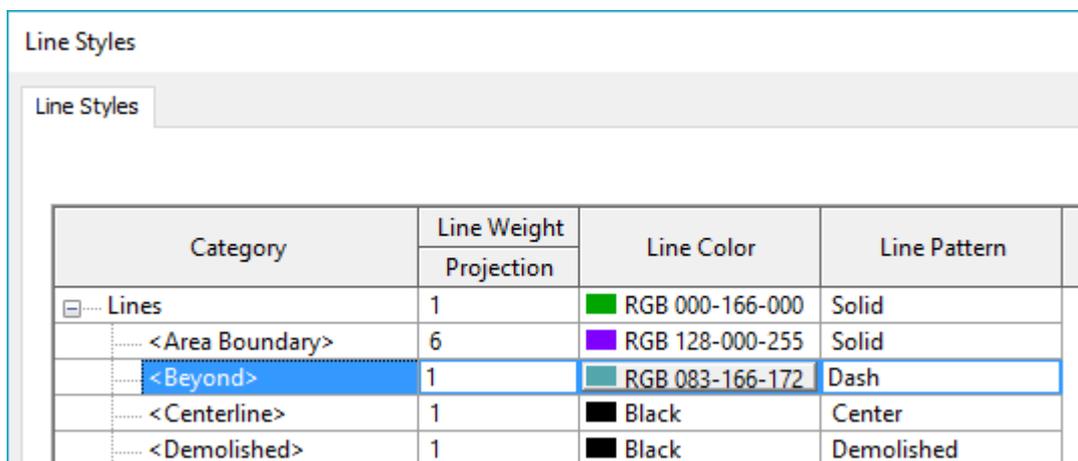


When looking for an object that actually should be visible but is not without any obvious reason, the reason is often the Phase Filter, as this is an often overlooked option in the view properties.

Line Style <Beyond>

This special Line Style is built in and used whenever you set the View Depth different from the Bottom of your Floor View. It often creates confusion because the elements in this area are not reacting to any changes in Object Styles or Graphics / Visibility Overrides. The reason for this is that the Line Style <Beyond> has a higher hierarchy – and therefore overrides all settings subjacent settings.

This Line Style can be edited in Manage > Line Styles.
This is also valid for some other Built-In Line Styles, therefore check these when something does not appear the way you'd expect it to.

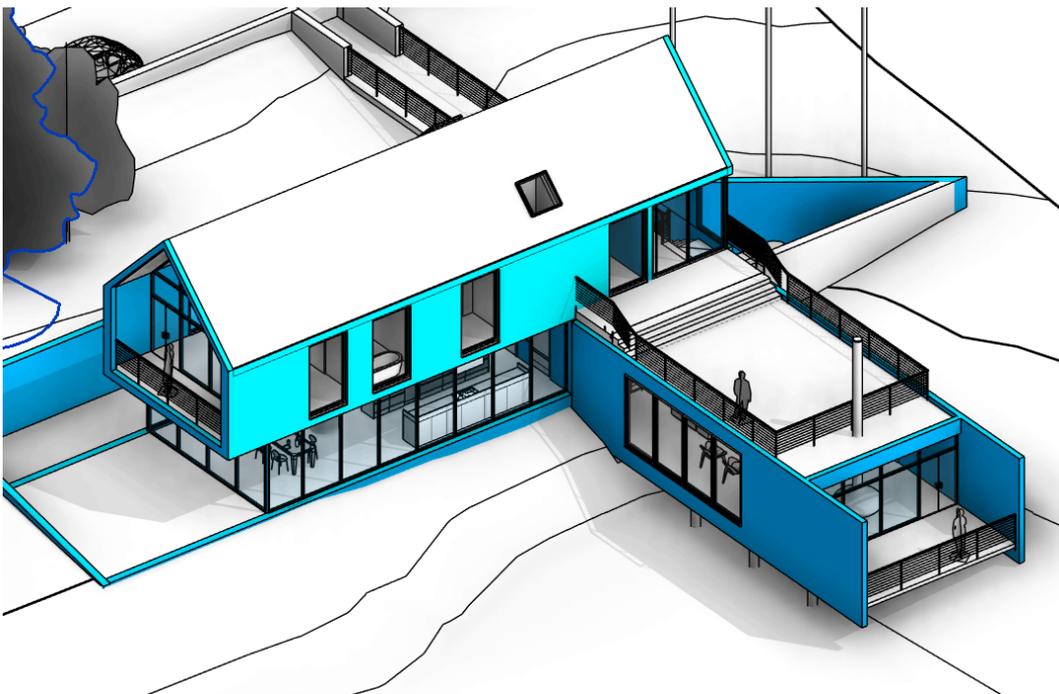
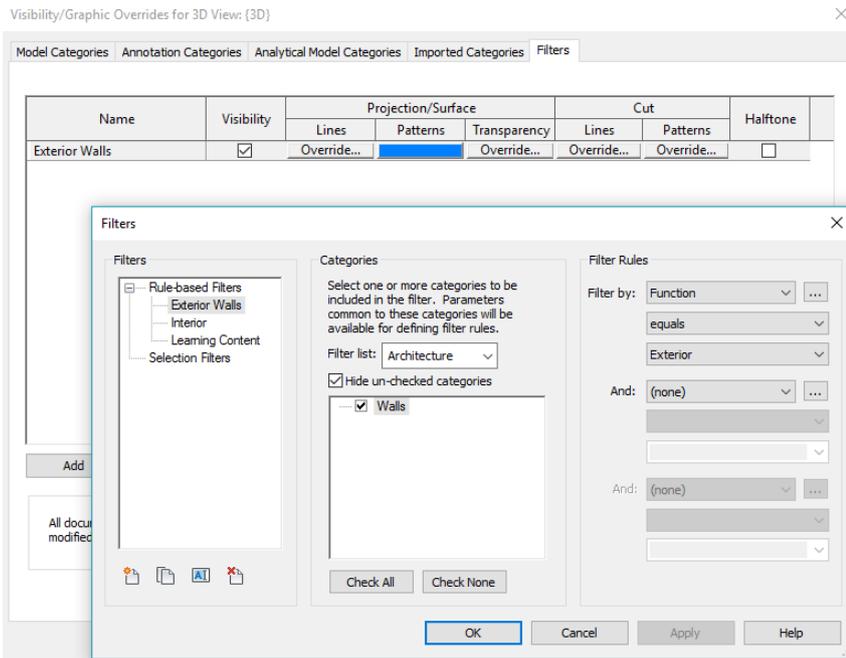


Category	Line Weight	Line Color	Line Pattern
	Projection		
Lines	1	RGB 000-166-000	Solid
<Area Boundary>	6	RGB 128-000-255	Solid
<Beyond>	1	RGB 083-166-172	Dash
<Centerline>	1	Black	Center
<Demolished>	1	Black	Demolished

Filters

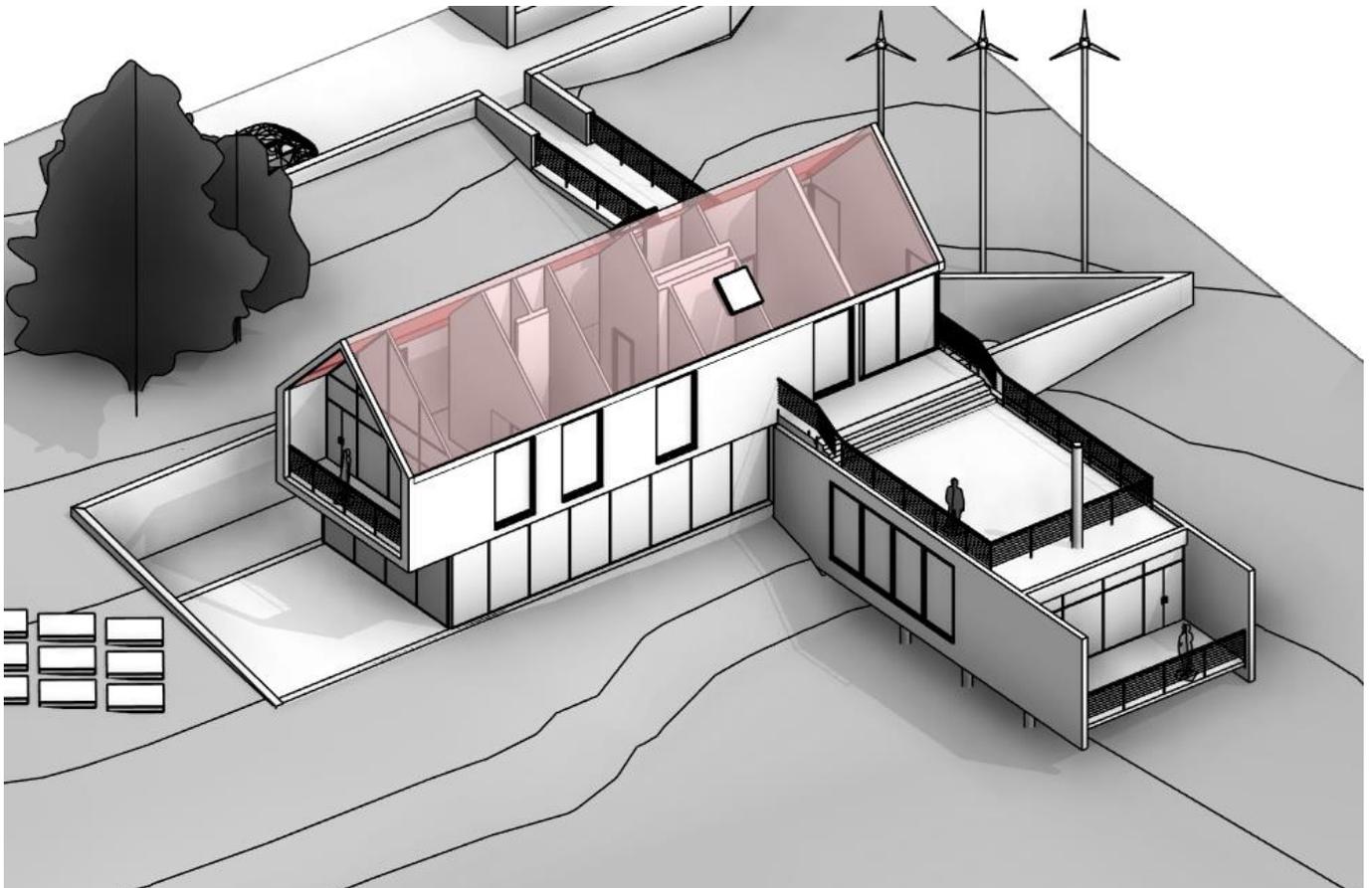
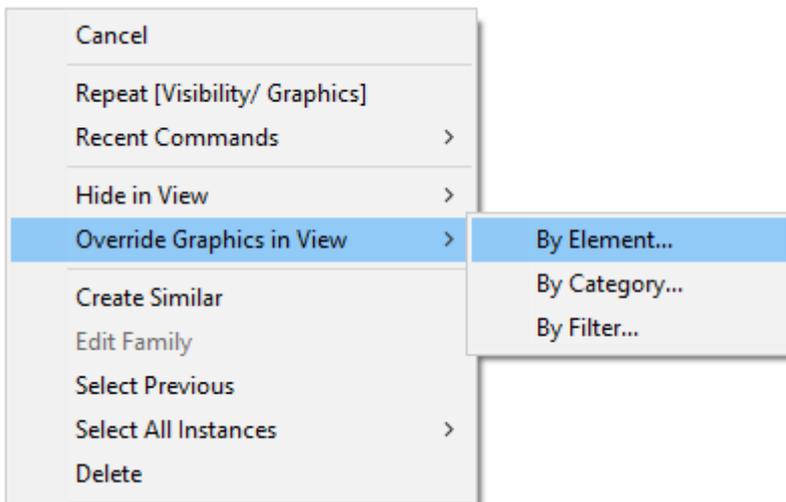
Filters in Revit are very useful and offer great possibilities for a customized display of certain elements based on their properties.

This is a simple filter collecting all exterior walls. The filter will override all subjacent settings!



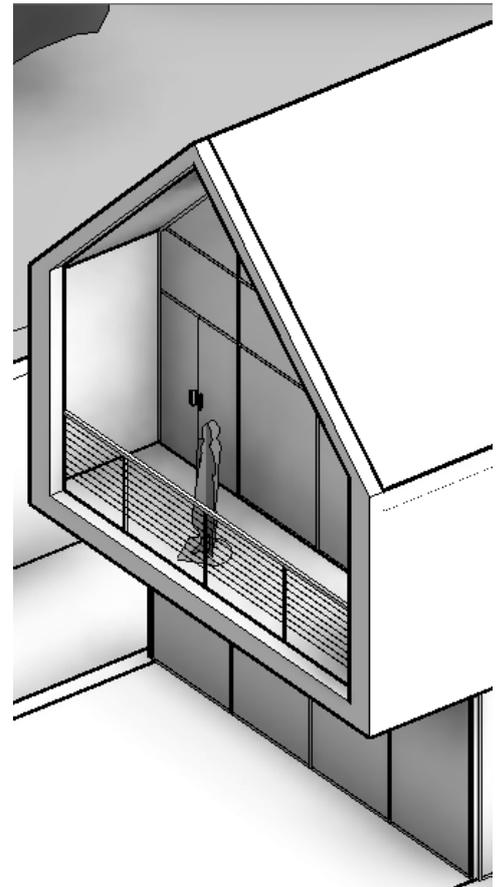
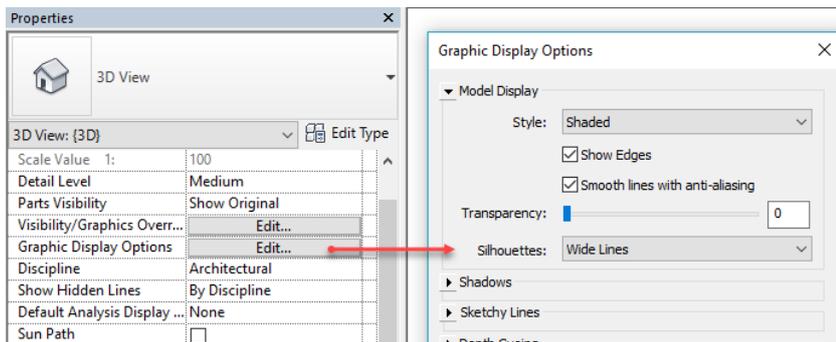
Override Graphics > By Element

This option shouldn't be used too often, as it is very hard to reproduce. Filter or other overrides are easier to recognize and should be used in the first line.



Silhouettes

This option, found in the Graphic Display Options of the view, will attempt to find all main lines of the building and will display them in the desired line style. As every automatism, this may work more or less the way you expect it to depending on the project.

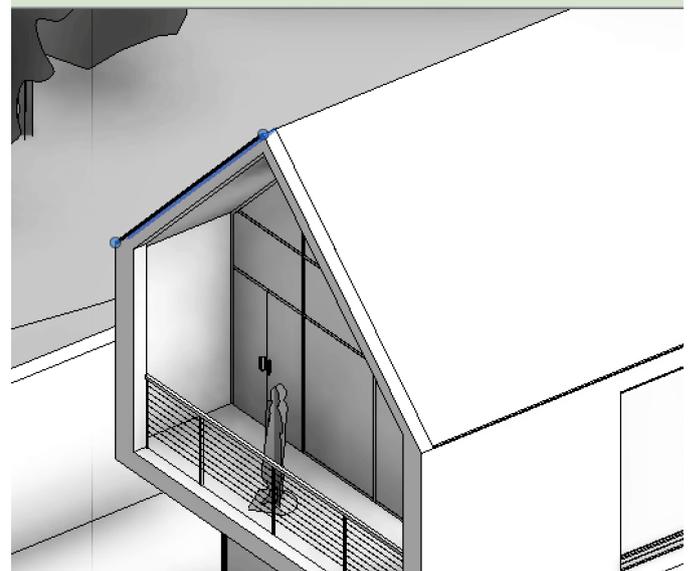
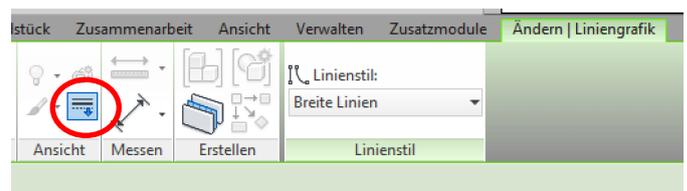


Linework

Finally, there is also a way to override the Line Style of certain lines in a view explicitly. This can be especially useful if the Silhouettes Option doesn't deliver the desired result in all areas.

After choosing the Linework tool from the Modify tab and selected the desired Line Style, all edges in the model can be selected one by one and overridden.

This option is view and element specific only and cannot be included in view templates.



Understanding Views in Revit

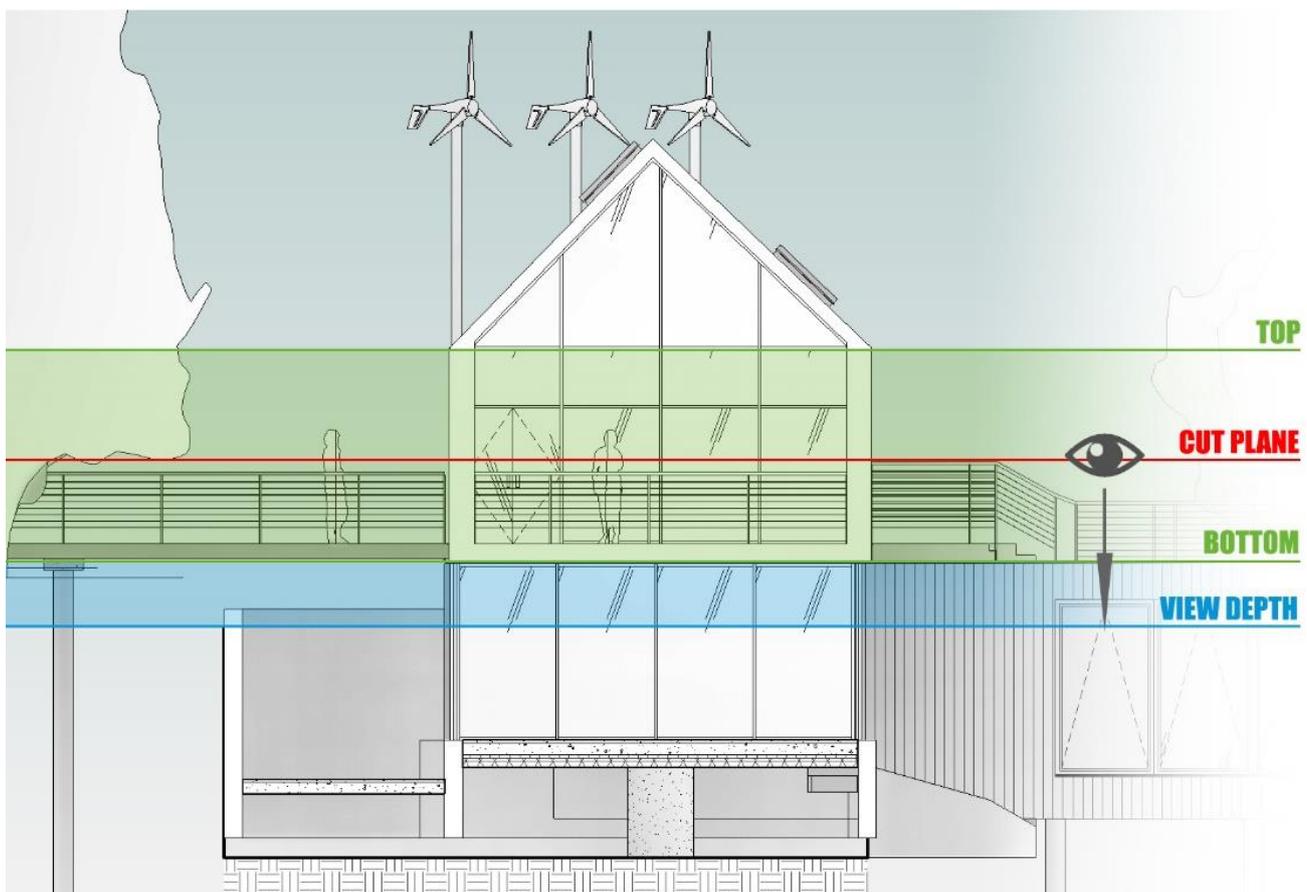
All Views in Revit are just a different representation of a 3D model – the best is to think of it as of taking the 3D model and slicing it up in such a way that you only see the elements you want to see.

Floor Plans

are horizontal slices of your model, cut at a certain height (Cut Plane), allowing you to see some elements above and some elements below which are between the Top and the Bottom level.

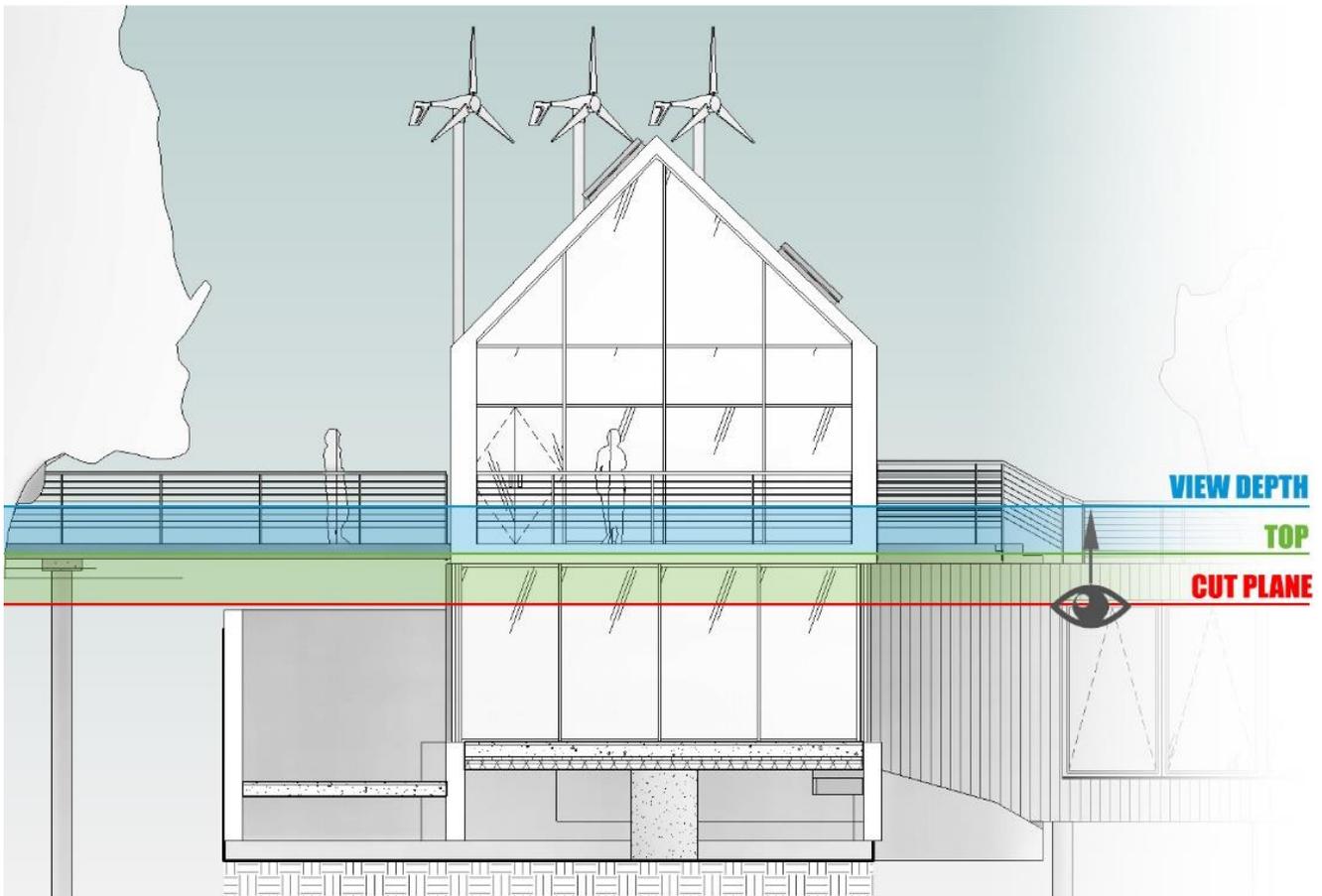
You can access these settings under *View Range* in the view properties.

Additionally, you can even see some elements which are between the Bottom level and the View Depth – this is often used to display the foundation in your basement view. All elements from this area are displayed using the Line Style <Beyond>.

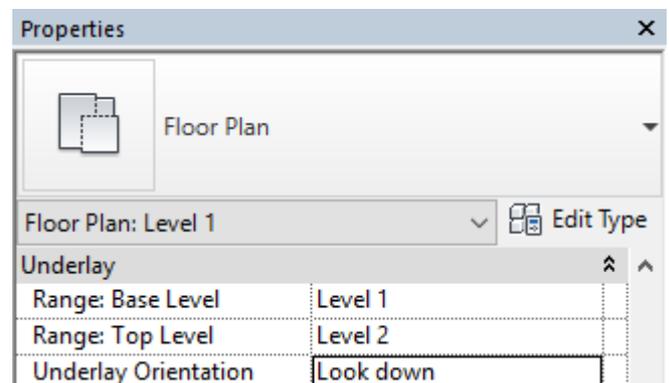


Reflected Ceiling Plan

Is very similar to the floor plan, except that you look UP from the Cut Plane (not down as with floor plans) and you don't see anything what is in your back (or below the Cut Plane).

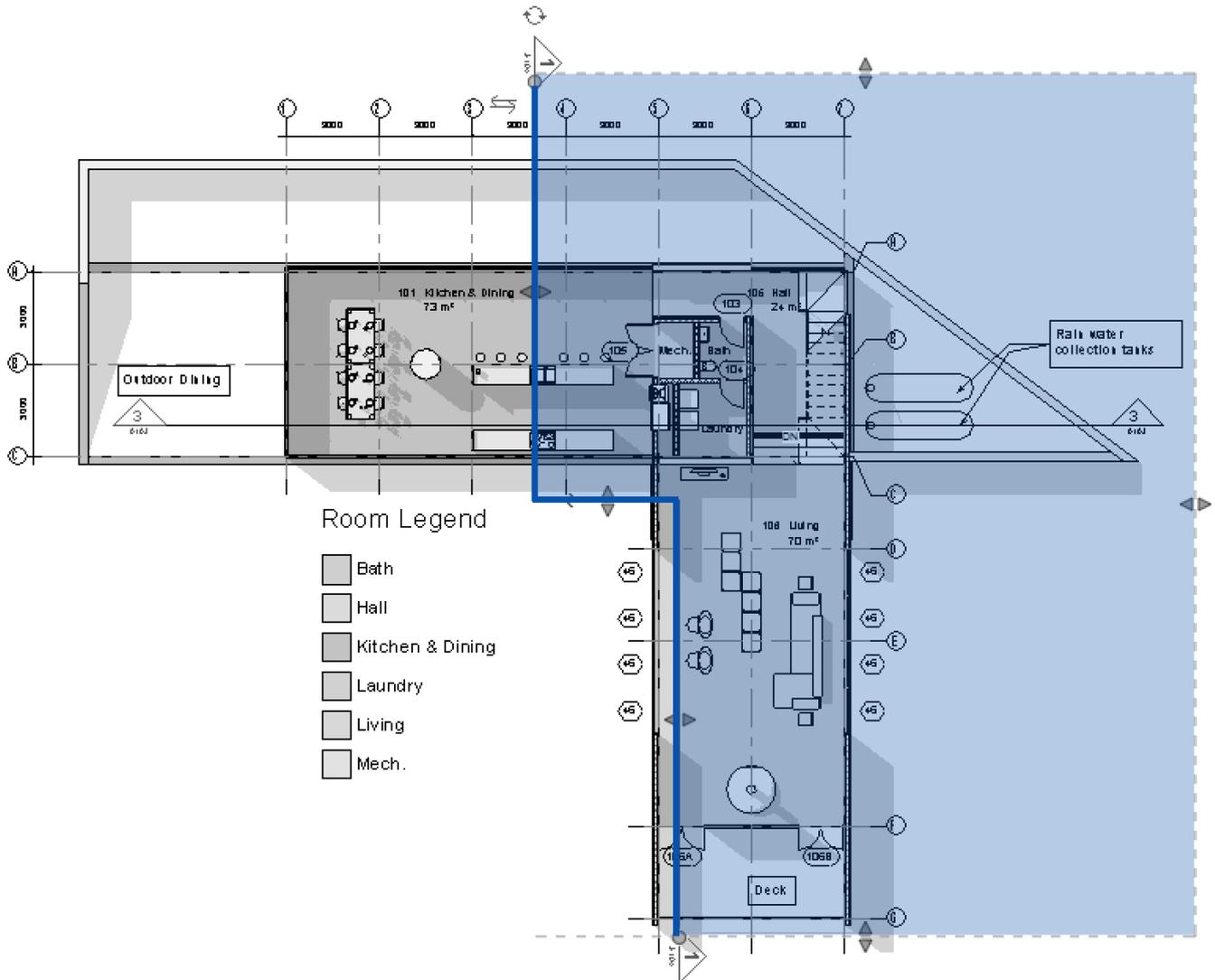


In addition to the View Range, you can also specify an Underlay Range. This Underlay can be seen as a second View Range, displayed as a ghosted object without the possibility to select anything. This feature is an analogy to the tracing paper, when you need to see what's beneath / above a certain level while working on your project.



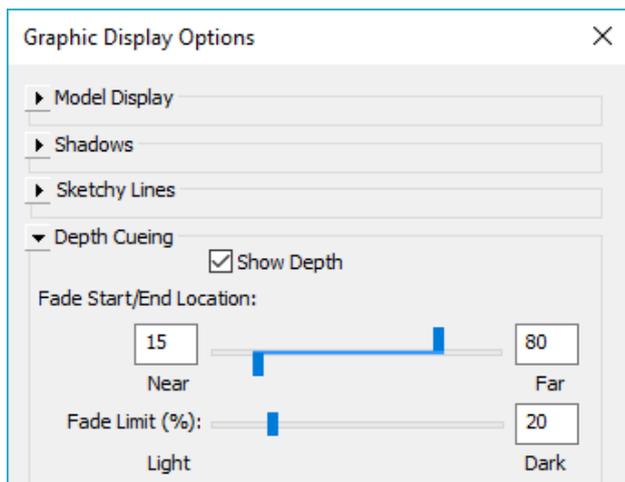
Sections

Sections are slightly different, they are defined by the Cut Plane and the crop area, which can be adjusted manually:



Since Revit 2017 there is also a new option called *Depth Cueing* available in the Graphic Display Options for Sections and Elevations.

This features creates a certain fading effect for elements which are further away from the cut plane. The Fade Start/End as well as the Fade Limit can be set in the dialog box:



Elevations

Are very similar to Sections and offer the same options for Far Clipping and Depth Cueing.

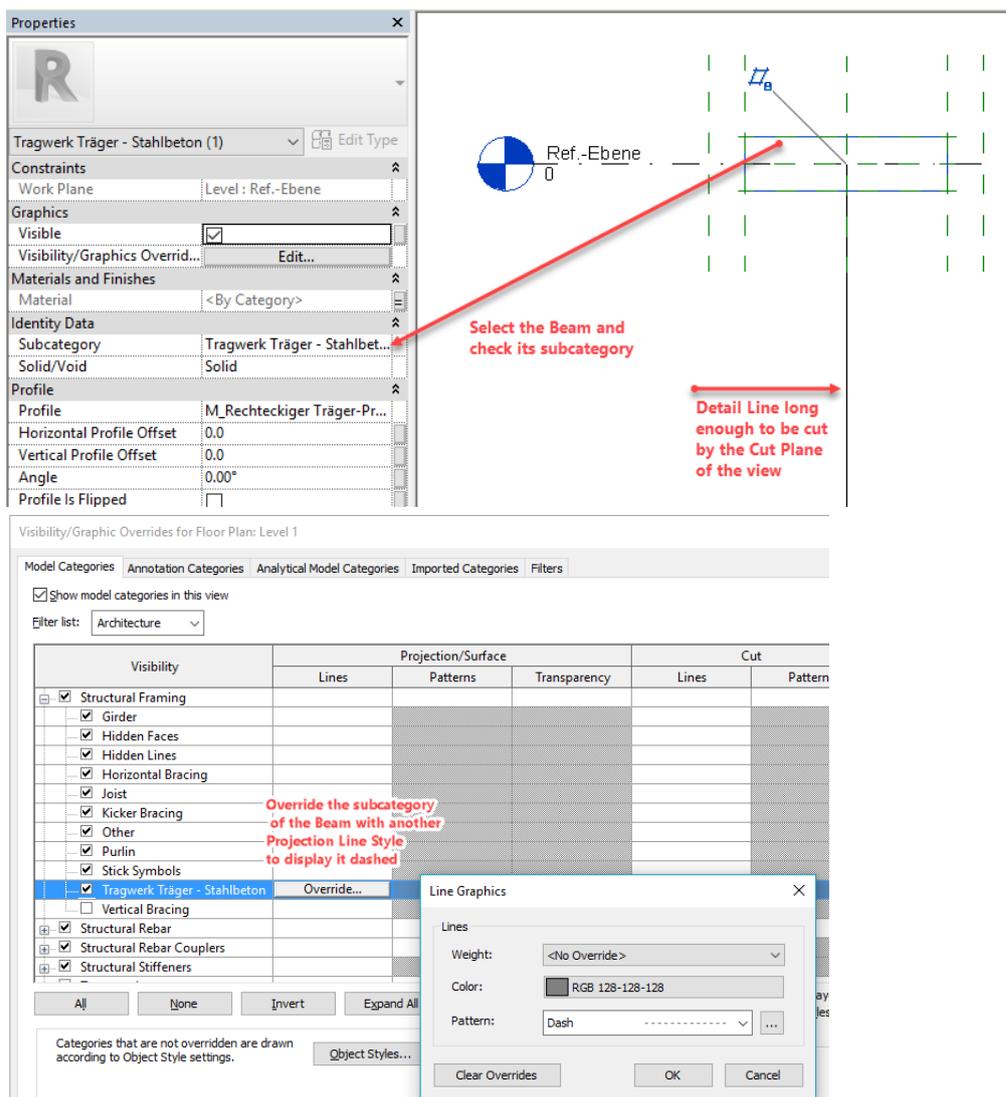
Exterior elevations may not have an active crop region by default, but only a cut plane. However, you can activate the crop region by selecting the elevation symbol and activating the checkbox "Crop Region Visible" in the properties.

Tips

Only elements really CUT by the Cut Plane will be visible in the floor plan view, even if they are below the Top plane. This is a kind of confusing and leads to a common problem that beams or ceiling transitions won't be visible in the floor view. There are two ways to deal with this:

Editing your families (e.g. Beams):

- open your beam family in the Family Editor and select the Front view
- draw a detail line on the Front/Back reference plane starting from the reference level / beam and going DOWN ca. 4 m. The line must be long enough so it is later cut by the Cut Plane. Set it to be visible in Plan Views only.
- When you reload your family back to the model it will be visible in the floor view. In order to change its appearance, check the subcategory of the beam in the family editor and then override its Projection Line settings in the Visibility / Graphics Overrides Dialog box.

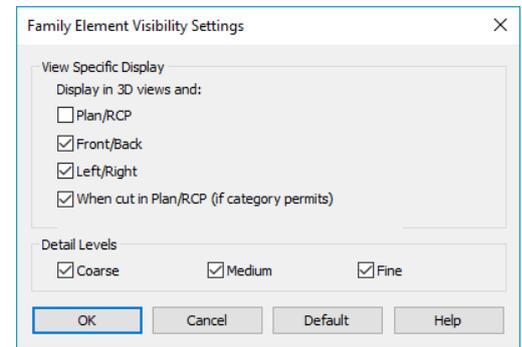


The image shows a Revit interface with three main components:

- Properties Panel:** Shows the 'Tragwerk Träger - Stahlbeton (1)' family. The 'Subcategory' is 'Tragwerk Träger - Stahlbeton...' and the 'Profile' is 'M_Rechteckiger Träger-Pr...'. A red arrow points from the 'Subcategory' field to the 3D view.
- 3D View:** Shows a beam in a front view. A red detail line is drawn from the reference level ('Ref.-Ebene') downwards. A red arrow points to this line with the text: 'Detail Line long enough to be cut by the Cut Plane of the view'. Another red arrow points to the beam with the text: 'Select the Beam and check its subcategory'.
- Visibility/Graphic Overrides Dialog:** Shows the 'Architecture' filter list. The 'Tragwerk Träger - Stahlbeton' subcategory is selected. A red arrow points to the 'Override...' button with the text: 'Override the subcategory of the Beam with another Projection Line Style to display it dashed'. The 'Line Graphics' dialog box is open, showing 'Weight: <No Override>', 'Color: RGB 128-128-128', and 'Pattern: Dash'.

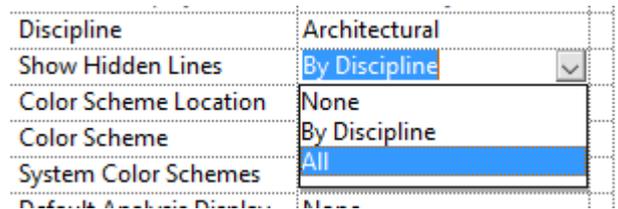
When dealing with more complex families, instead of overriding the category, you can also:

- In the family editor, set the 3D geometry completely invisible for Plan views
- create a symbol line in the plan view showing only the edges you wish to see
- assign the symbol line to a subcategory to be able to drive its appearance from the project environment



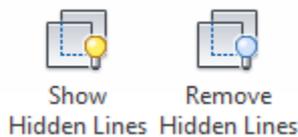
This will only work for loadable and cuttable families!

For all other cases, you can use the Hidden Line Option in Revit. You can turn these on for every view and they will behave differently according to the View Category.

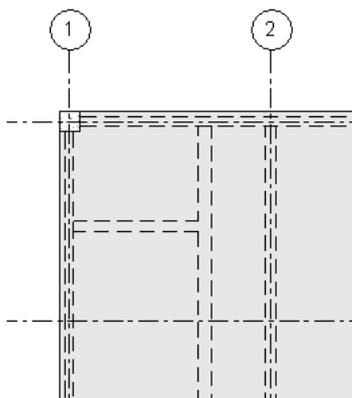


In most cases, *All* is not what you want and *By Discipline* may require some customizing. While the option is set to *By Discipline*, you may include / exclude objects which are displayed in the hidden lines style manually:

- switch your view temporarily to Wireframe
- Go to the View Tab and select Show / Remove Hidden Lines



- First, select an element that is hiding other elements which you want to display
- Then select the elements which are hidden – these will be then displayed with the Hidden Line Style

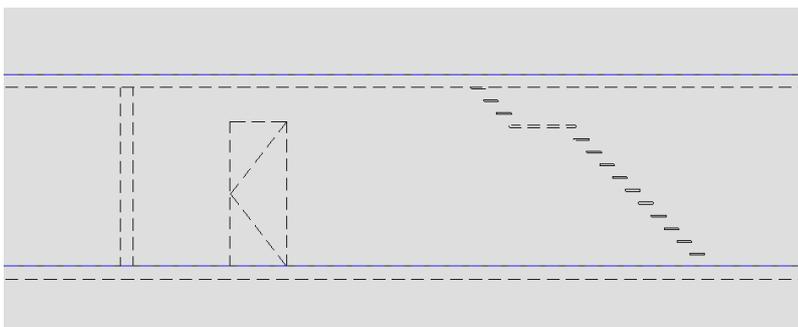
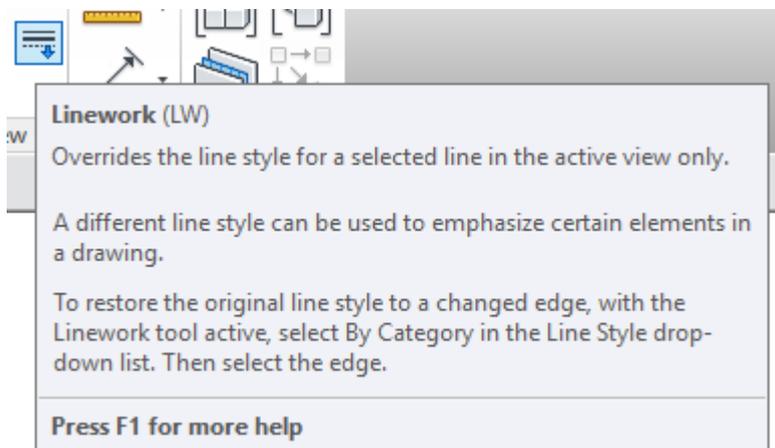


Sometimes, you may want to display just certain edges, e.g. the top of the stairs or just the doorframe without too many details. For this, there is a little workaround:

- Display the elements by either using another view as an Underlay (great for floor plans) or switching to wireframe mode and/or editing the View Range (useful for sections / elevations to display slab edges, stairs behind walls etc.)
- Then, use the Linework tool and click all the edges you want to be visible in your view
- Once you turn off the Underlay / wireframe mode, the edges that were overridden with the Linework tool will remain visible!

Note: the lines will still stay associated to the element – if you select the line, you are selecting the element. If you move the element in another view, the line will move.

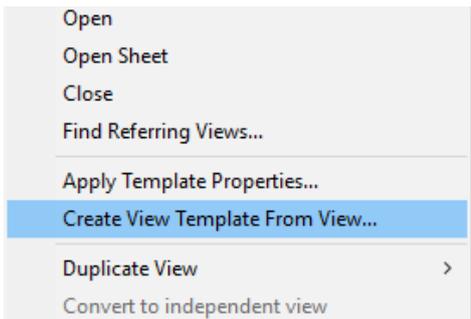
This is similar to the view option "Hidden Lines", but it works independently from it and is more customizable.



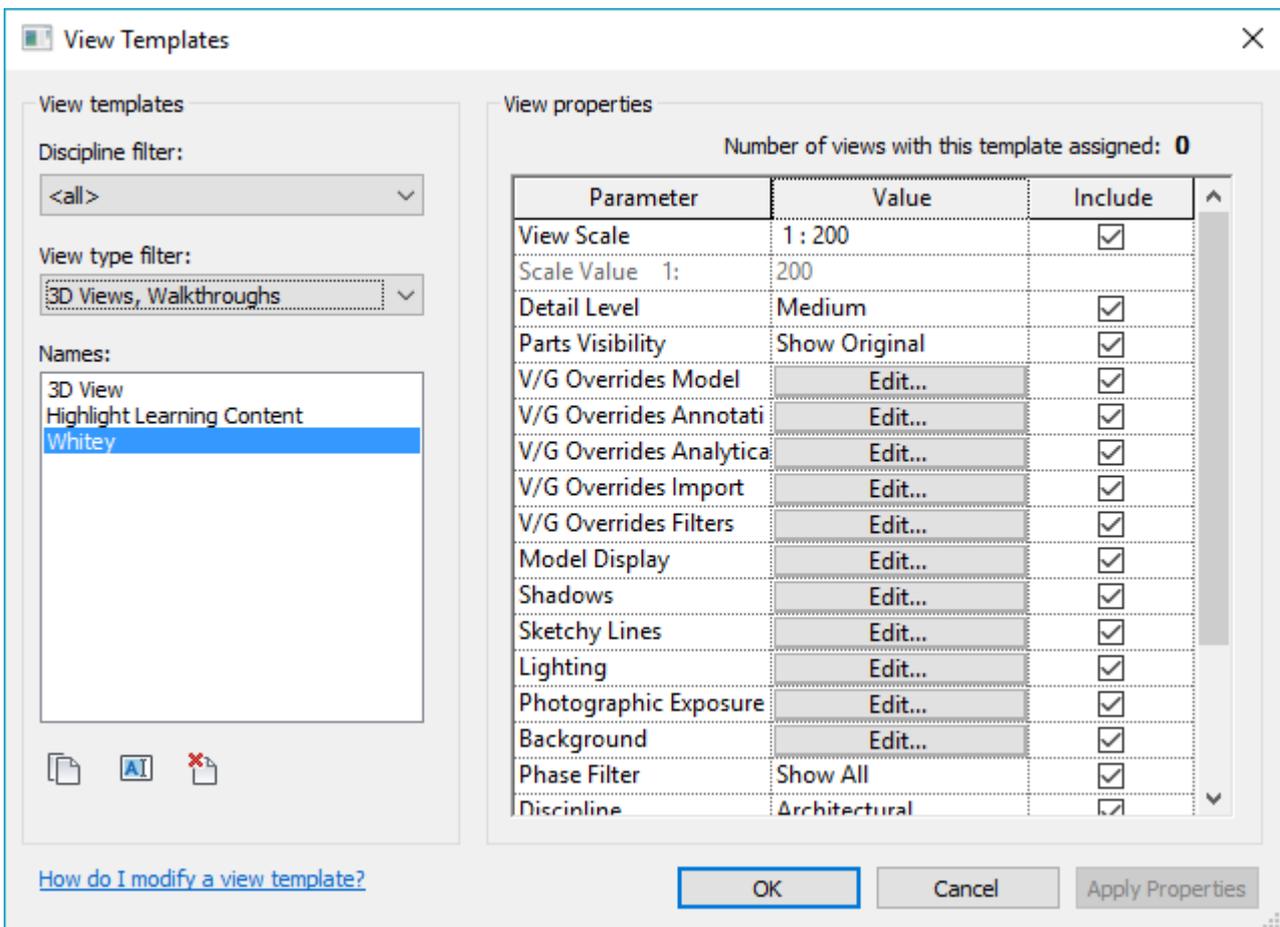
Templates

Using the settings discussed until now, it is possible to set up a View Templates and reuse all the settings very easily!

To create a view template from an existing view, go to the Project Browser, right-click the view and select Create View template from view.



In the following Dialog box you can uncheck certain categories which should not be included in the template:



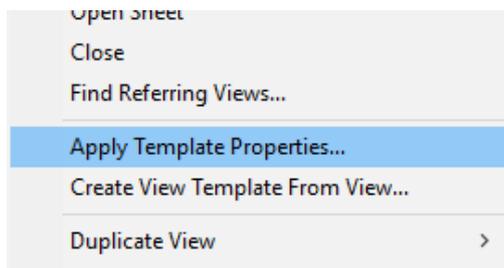
The view template can then be either assigned or applied.

Assigning a view template is done in the view properties and binds the template with the view. This means that all the settings ruled by the template will be greyed out and can be edited new in the view template itself.

In addition, as soon as a settings is changed in the view template, it will be automatically visible in all views this template it assigned to.

ASSOCIATED LEVEL	LEVEL 1
Scope Box	None
Depth Clipping	No clip
Identity Data	
View Template	Architectural Plan
View Name	Level 1
Dependency	Independent
Tab... Sheet	

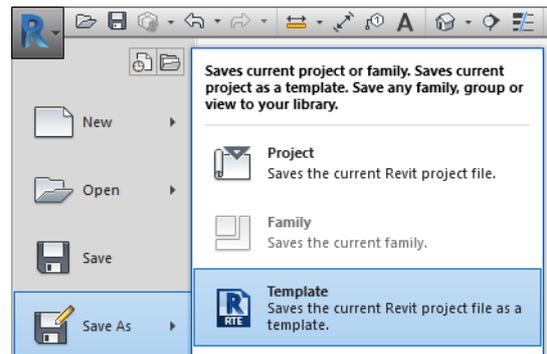
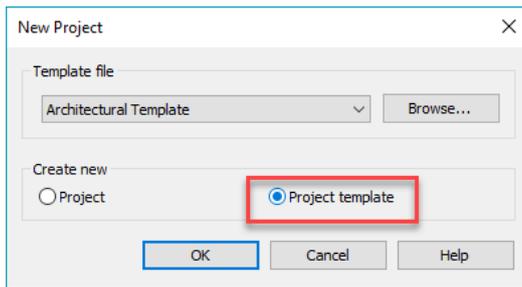
Applying a view template can be done by right-clicking the view in the project browser. This will override all view settings by the one of the template, however it won't create a connection between the view and the template. Changes in the view template won't be visible in the views, unless you re-apply it.



View templates are an important part of the Revit Project Templates.

The Project Template in Revit is nothing else but a project file without any modeled content saved as an .rte file.

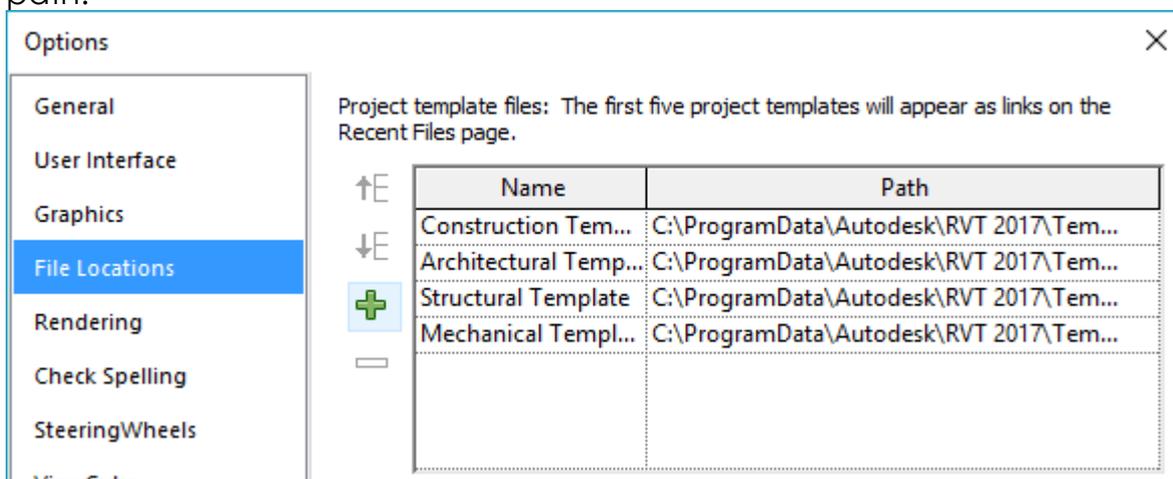
In order to create a template, you can either start from scratch by going to Revit > New > Template, or you can use an existing project where everything has been set up, then clean it up leaving only the bits intended for the template and going to Save as > Template.



The Revit Project Template contains in general:

- View Templates
- All general settings discussed here and not included in the View Templates like Line Styles, patterns, but also last used tool settings. For example, if you want your Structural Walls to be modelled UP and not DOWN like in the default template, change this setting, draw a wall in your template and then delete it. Revit will remember the last used settings and will store it with the file!
- Families: all loadable and system families – make sure to include only the ones that are necessary for the template, in order to avoid blowing it up.

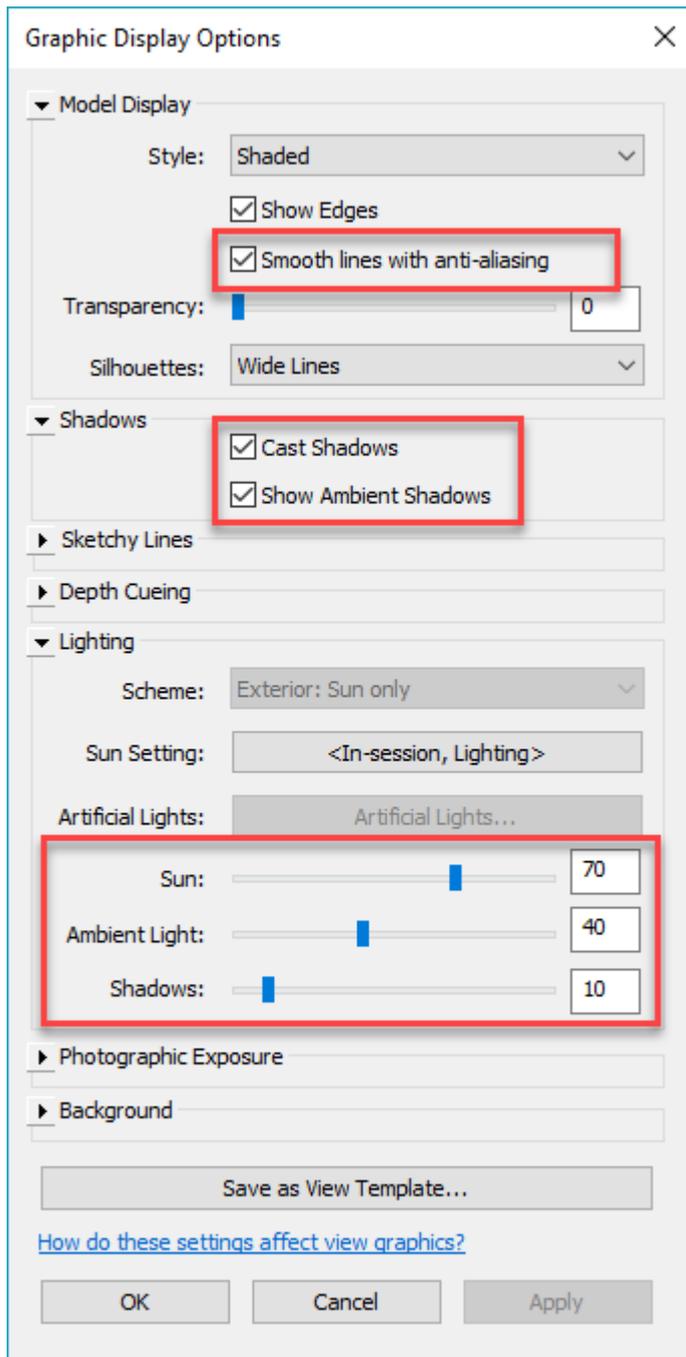
Once the template has been saved, go to Revit > Options > File Locations and add its path:



Power Tips

Appealing shading views

Use following settings to create nicely shaded views:



Activate anti-aliasing to reach a more smooth line style on your screen. This is especially useful when creating screenshots, but it will use some more computing power.

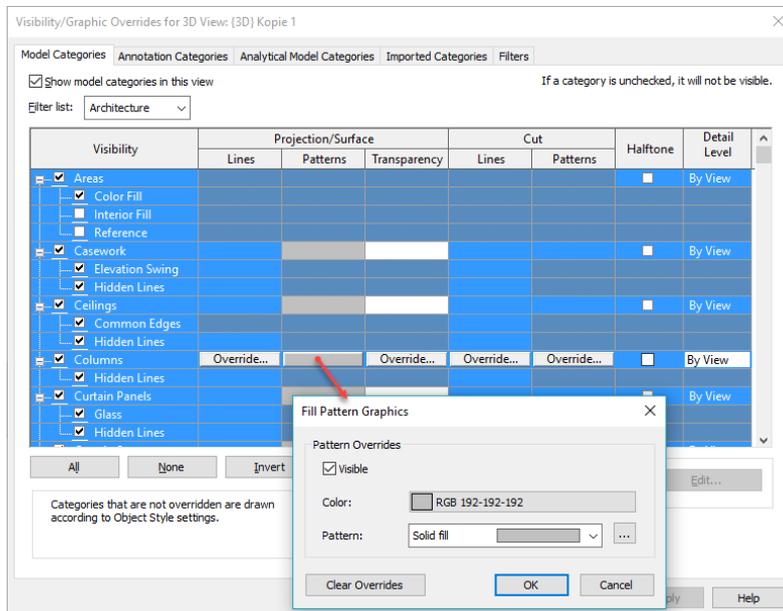
Activate ambient shadows to reach a smoother, more realistic look in your shaded views.

Change the default lighting settings to avoid too dark looking shadows. Depending on your project and materials, these may vary, but usually settings for Sun in the upper third, Ambient light around the middle and the Shadows in the lower third will deliver best results.

White cardboard model

Often we don't want all the materials and textures to be displayed. There is a nice little trick how you can quickly override (almost) all materials in a view:

- Open Visibility / Graphics Overrides dialog
- Click Select All
- Click Expand All to see the subcategories
- Click again Select All to select the categories as well
- Now click in one of the Projection/Surface Patterns and choose a light grey Solid fill

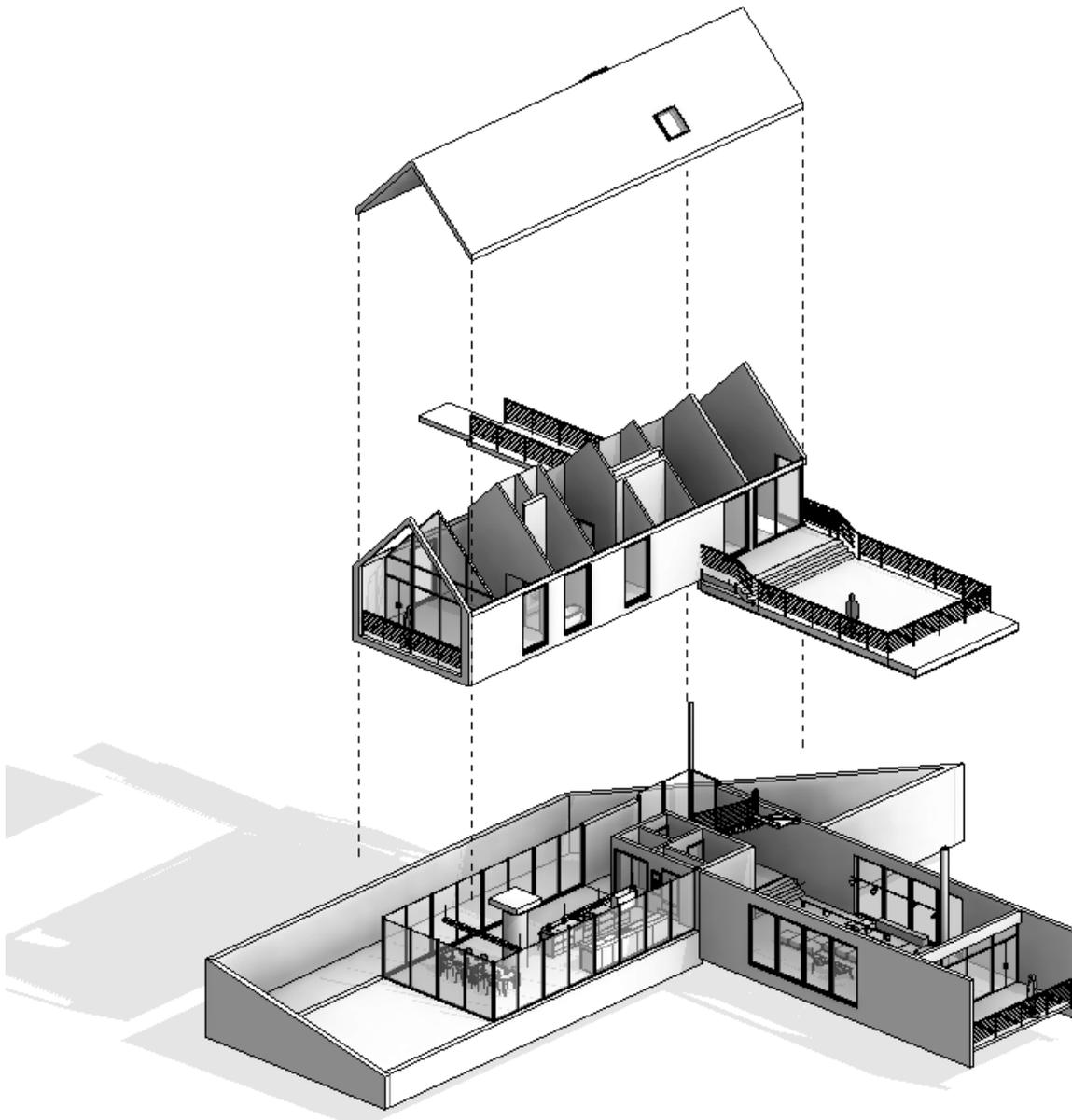
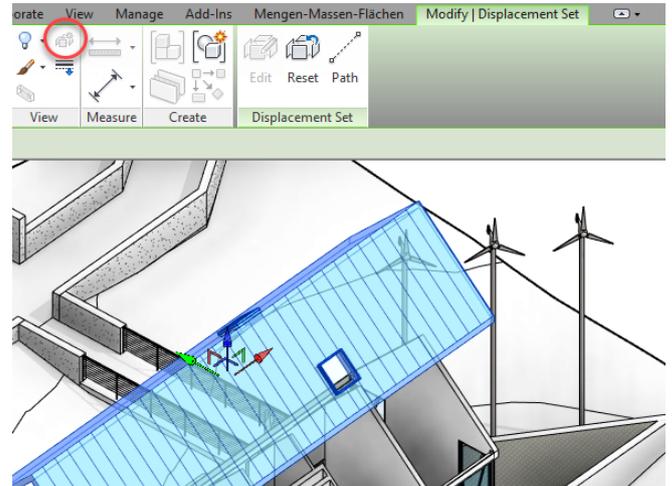


This will color everything in your view – except the Topography and Planting (for these, you need to (temporarily) assign another materials. Change the material for Topography in its Type Properties and override and Planting Material using Object Styles). In order to make it look more realistic, edit the transparency for Windows / Façade or turn off their Subcategories:



Exploded Views

Create Displacement sets in Revit in order to visualize more complex structures. With this function, it is possible to move objects in one view only – the model itself stays untouched:

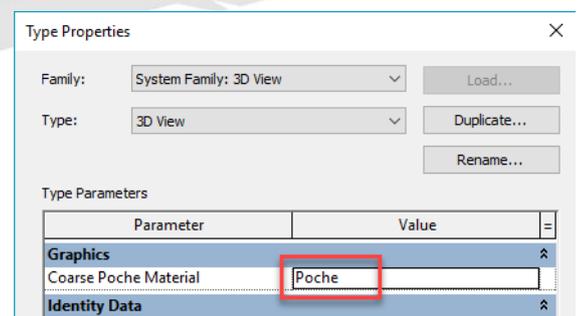
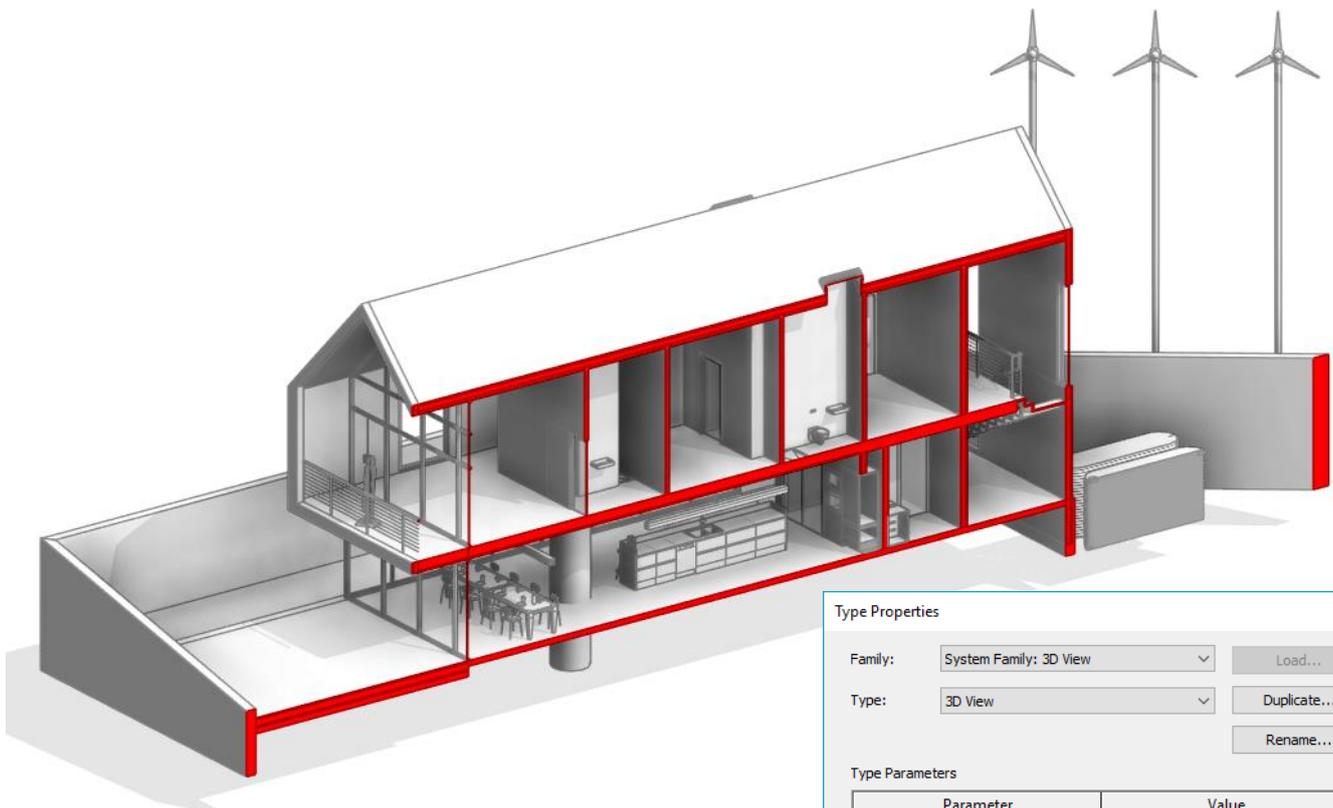
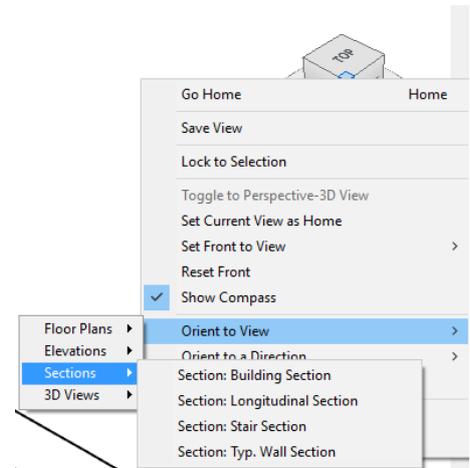


3D Sections

In a 3D View, right-click the ViewCube and select Orient to View > Sections > choose a section.

The View will now be oriented to the section and you can rotate it or crop it.

In order to override the Cut Patterns, go to Visibility / Graphics overrides (VV), select all Categories and Subcategories, click on Cut Patterns and assign a Solid color, e.g. red like in this example:



If using the coarse detailing, you can skip overriding the cut patterns in Visibility Graphics and just edit the *Coarse Poche Material* in the Type Properties of the view. Note that this doesn't work for Medium and Fine!

Of course, the same workflow can be used for Floor Views as well. By locking the view, dimension lines and text can be added.

