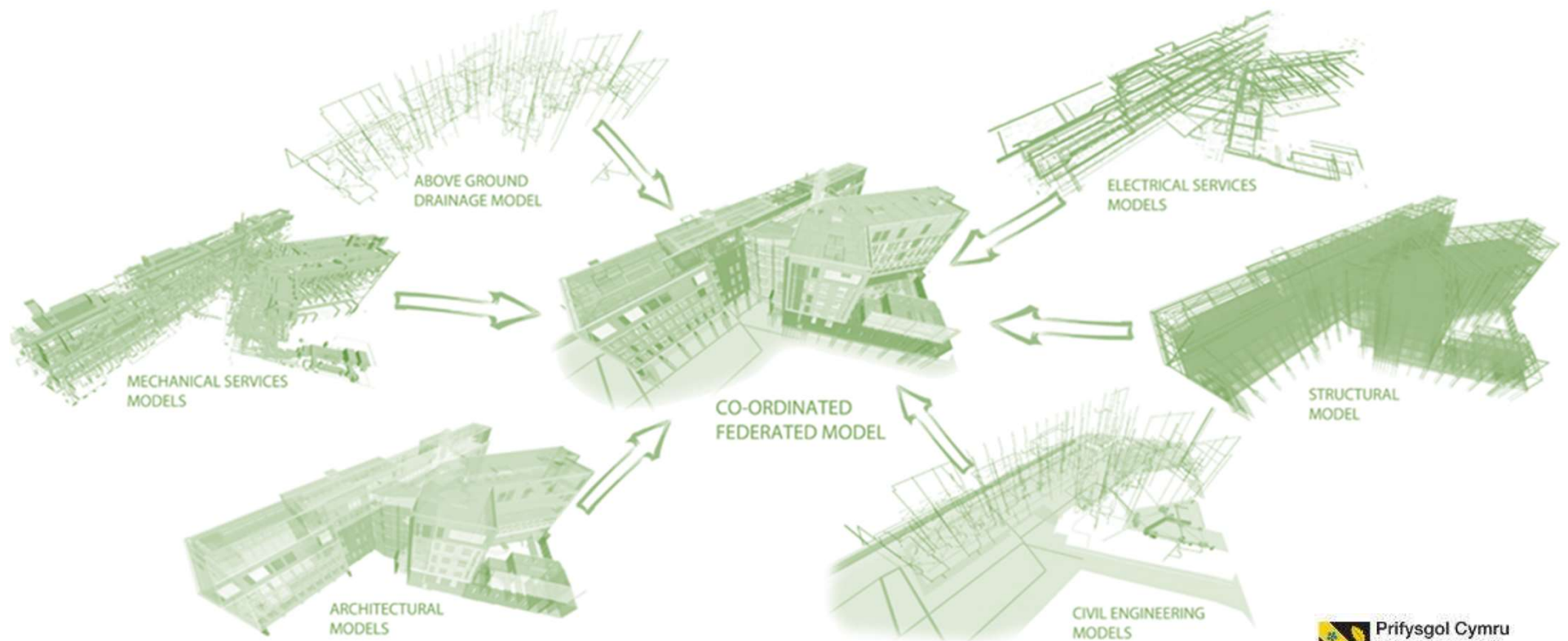


Building Information Modelling



www.onecreativeenvironment.com

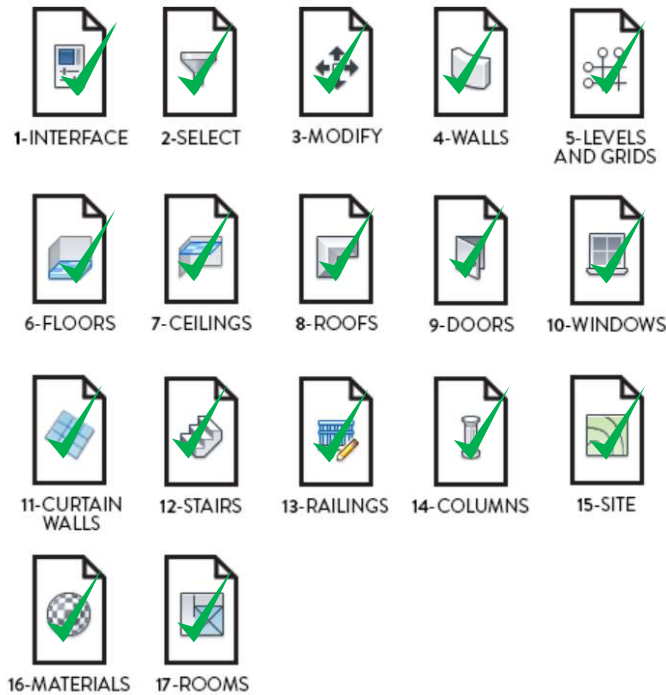
Week 20:

- Visualisation in Revit
- Introduction to Enscape
- Twinmotion
- Multi category Takeoff.
- Revit Workshop



AUTODESK® REVIT® the basics

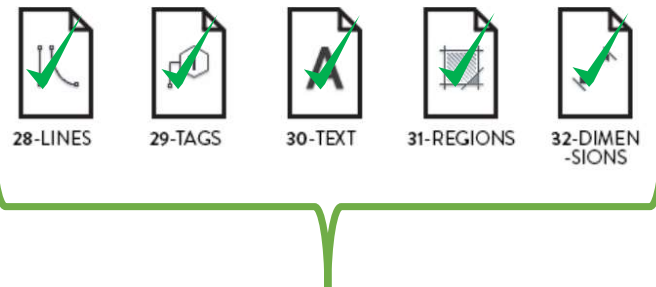
PART 1: MODEL



PART 2: VIEWS

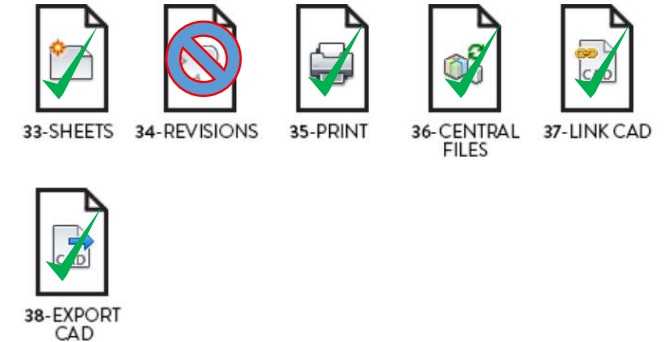


PART 3: ANNOTATE

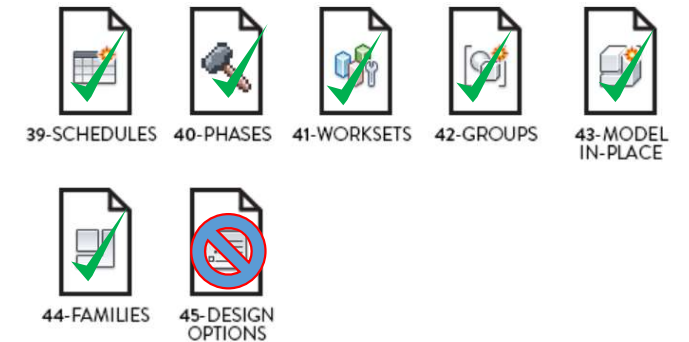


Covered in notes:

PART 4: PUBLISH AND COLLABORATE



PART 5: ADVANCED TOOLS



<https://revitpure.com/basics>
<https://academy.autodesk.com/>

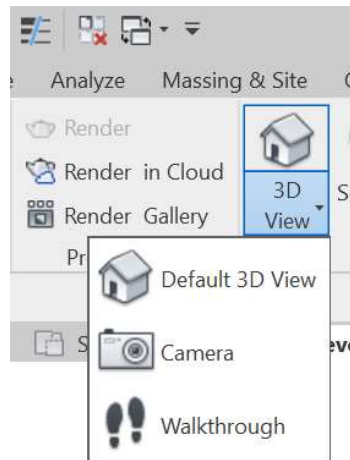
the basics: plus

PART 5: ADVANCED TOOLS



- Creating Schedules for pricing
- Phased Works
- Central Models / Worksets / Federated Models
- Families
- Advanced Modelling:
Sweeps Reveals and Model In Place
- *Collaboration and interoperability*
- *VR Visualisation*

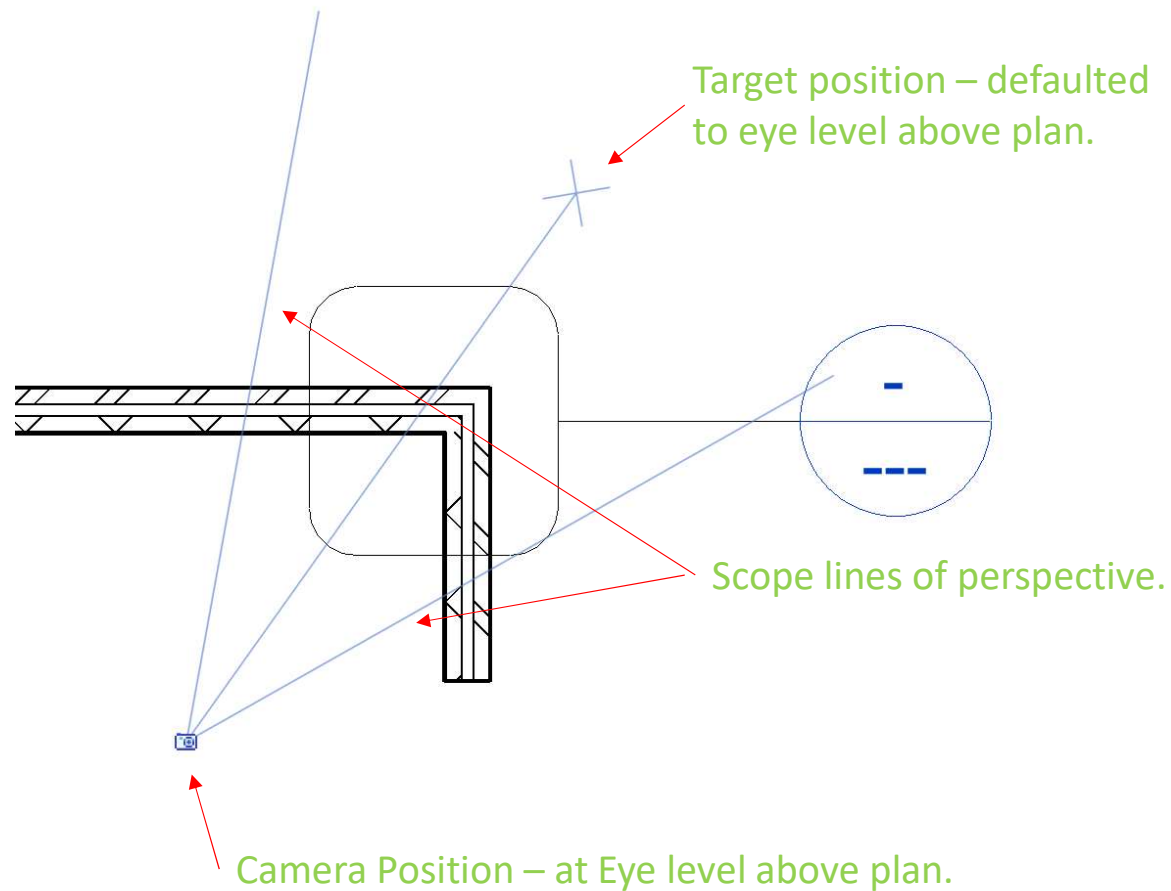




Place Camera Views in PLAN

Click to place camera and drag to show the scope of the perspective view.

A new view will appear in the Project Browser Palette





Properties

Floor Plan

Floor Plan: Level 0

Graphics

View Scale	1 : 100
Scale Value 1:	100
Display Model	Normal
Detail Level	Fine
Parts Visibility	Show Original
Visibility/Graphics Ov...	Edit...
Graphic Display Opti...	Edit...
Orientation	Project North
Wall Join Display	Clean all wall joins
Discipline	Architectural
Show Hidden Lines	By Discipline

Properties help

Apply

Visibility/Graphic Overrides for Floor Plan: Level 0

Visibility Properties

Model Categories

Annotation Categories

Analytical Model Categories

Imported Categories

Filters

☒ Show model categories in this view

Filter list: <show all>

Visibility	Projection/Surface			Cut		Halftone	Detail Level
	Lines	Patterns	Transparency	Lines	Patterns		
☒ Air Terminals	Override...		Override...			☐	By View
☒ Areas						☐	By View
☒ Cable Tray Fittings						☐	By View
☒ Cable Trays						☐	By View
☒ Casework						☐	By View
☒ Ceilings						☐	By View
☒ Columns						☐	By View
☒ Communication Devices						☐	By View
☒ Conduit Fittings						☐	By View
☒ Conduits						☐	By View
☒ Curtain Panels						☐	By View
☒ Curtain Systems						☐	By View
☒ Curtain Wall Mullions						☐	By View
☒ Data Devices						☐	By View
☒ Detail Items						☐	By View
☒ Doors						☐	By View
☒ Duct Accessories						☐	By View
☒ Duct Fittings						☐	By View
☒ Duct Insulations						☐	By View

AllNoneInvertExpand All

Categories that are not overridden are drawn according to Object Style settings.

Object Styles...

Override Host Layers

☐ Cut Line Styles

Edit...

OK

Cancel

Apply

Help

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

Graphic Display Options

▼ Model Display

Style: Hidden Line

☒ Show Edges

☐ Smooth lines with anti-aliasing

Transparency: 0

Silhouettes: <none>

▼ Shadows

☒ Cast Shadows

☐ Show Ambient Shadows

▼ Sketchy Lines

☐ Enable Sketchy Lines

Jitter: 0

Extension: 0

▼ Depth Cueing

☐ Show Depth

Fade Start/End Location: 0 100

Near Far

Fade Limit (%): 0

Light Dark

▼ Lighting

Scheme: Exterior: Sun only

Sun Setting: Sunlight from Top Right

Artificial Lights: Artificial Lights...

Sun: 30

Ambient Light: 0

Shadows: 50

► Photographic Exposure

▼ Background

Background: Gradient

Sky Color: RGB 189-209-208

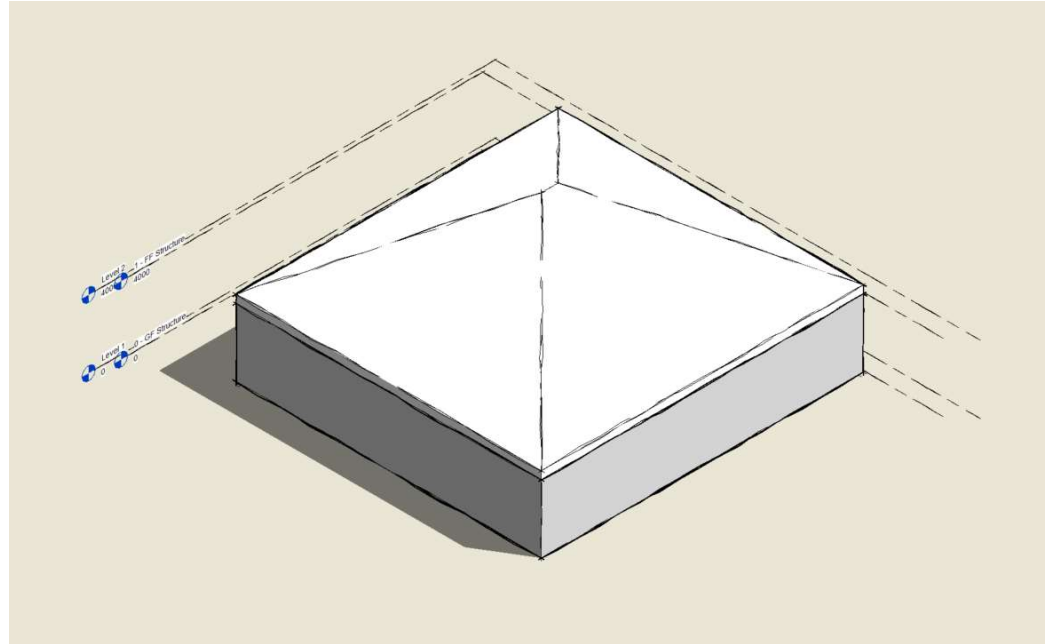
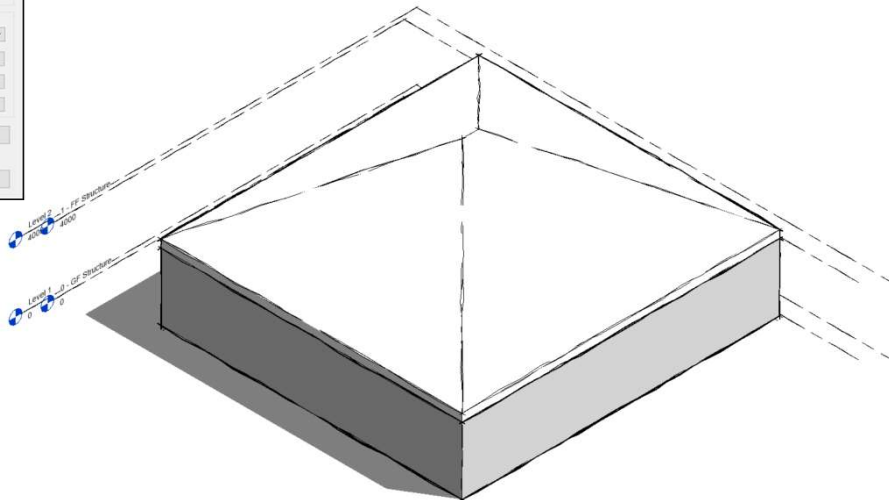
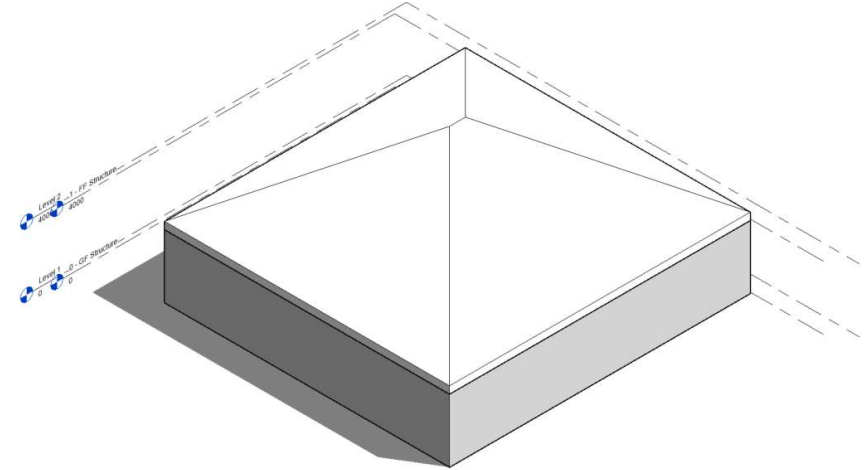
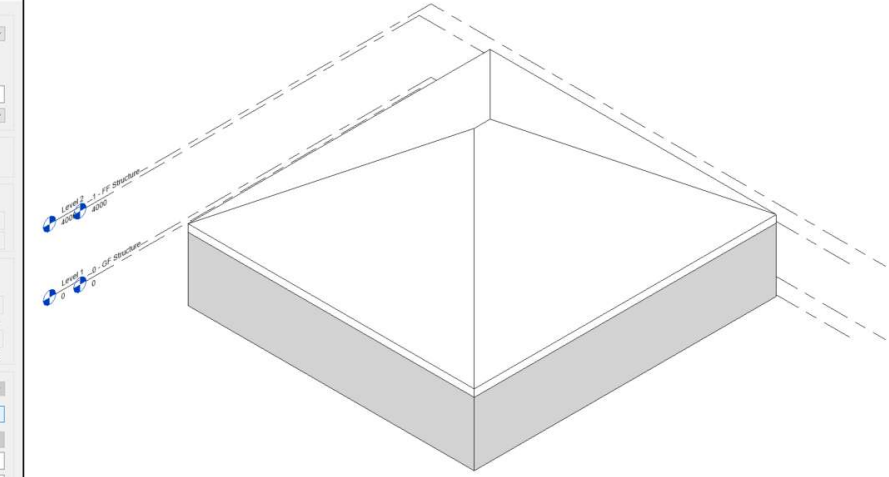
Horizon Color: RGB 242-242-242

Ground Color: RGB 173-168-155

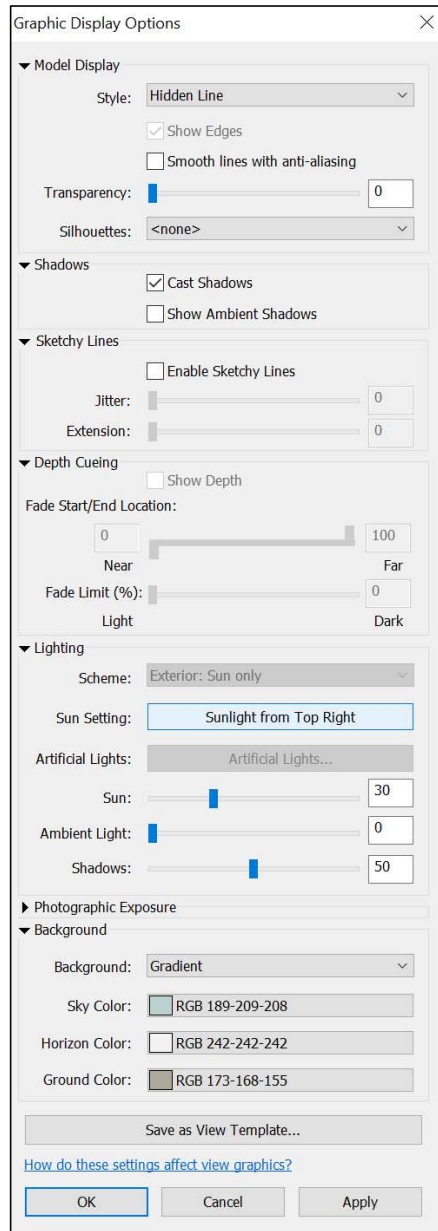
Save as View Template...

[How do these settings affect view graphics?](#)

OK Cancel Apply



Graphic display Options



Change transparency / emphasise lines

Cast shadows and add ambient shadows to view

Shows sketchy lines

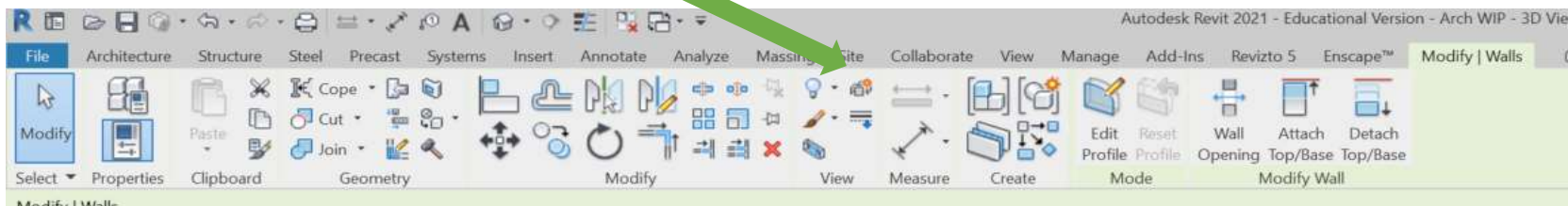
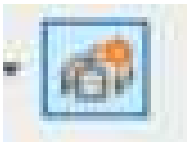
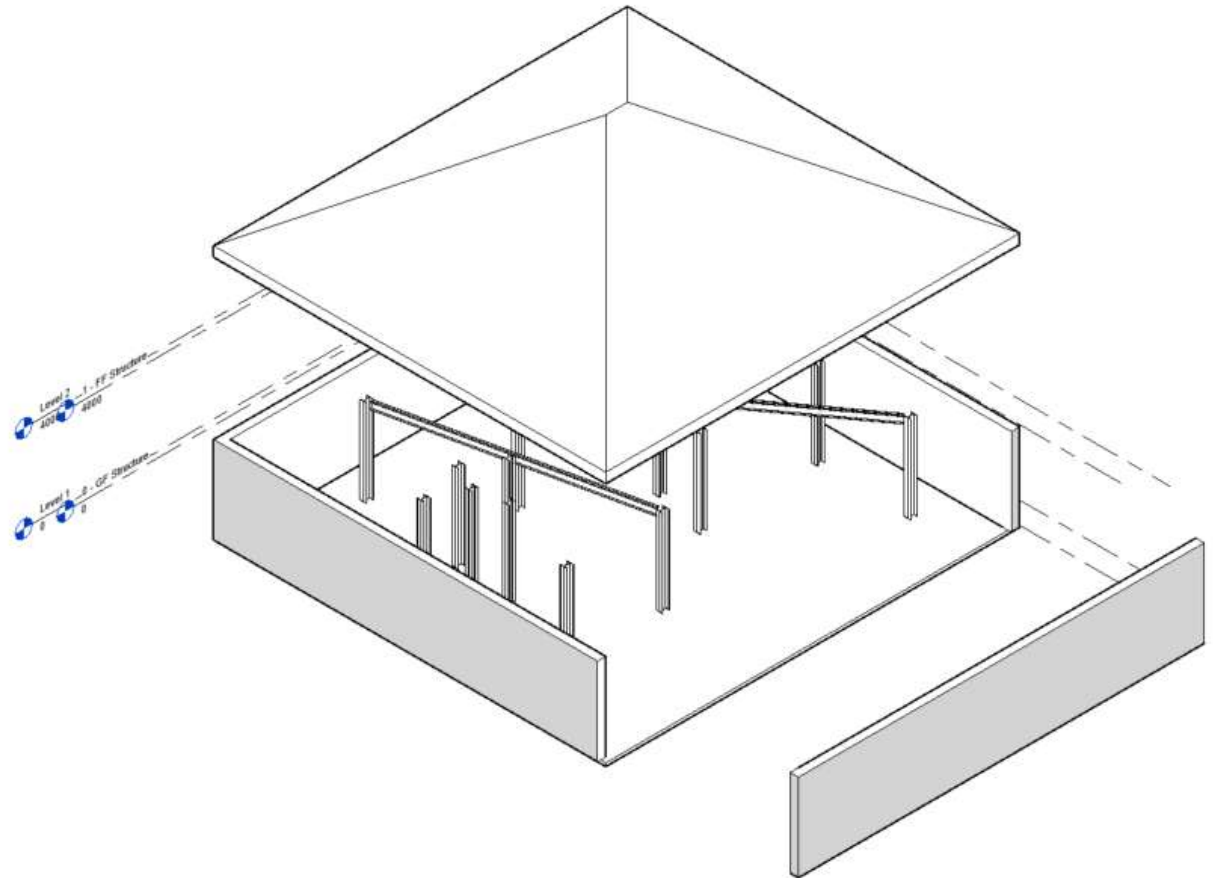
Adding Depth and Fade to view

Adjusting lighting and intensity of light

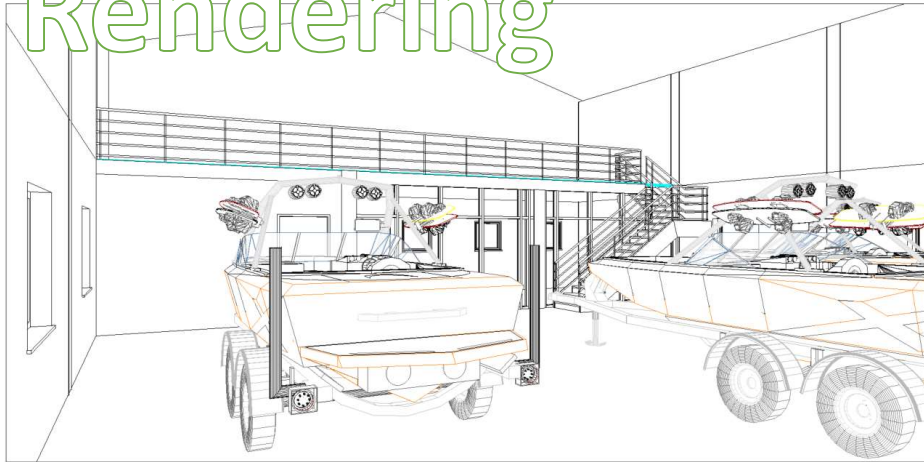
Add a generic background to view

Exploded Views

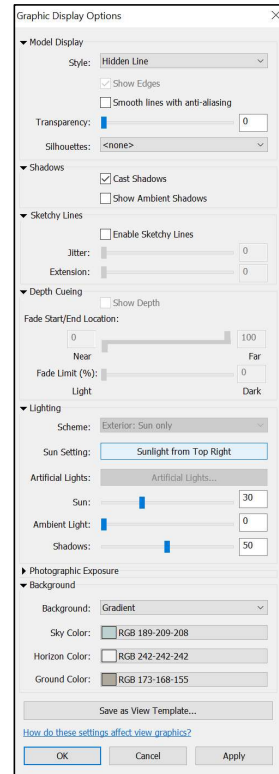
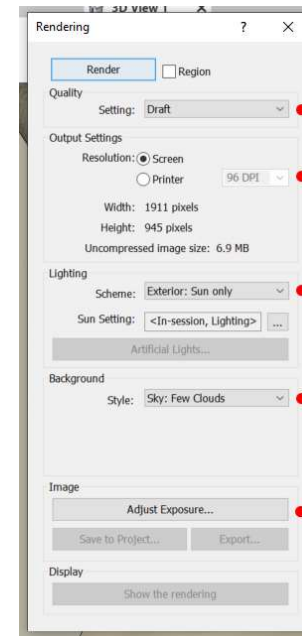
Right Click and duplicate the 3d View.
Rename 3d Exploded.
Select and element to move
When in the modify mode (ribbon goes green)
Use the Displacement tool to move an element
Move elements to show exploded view.

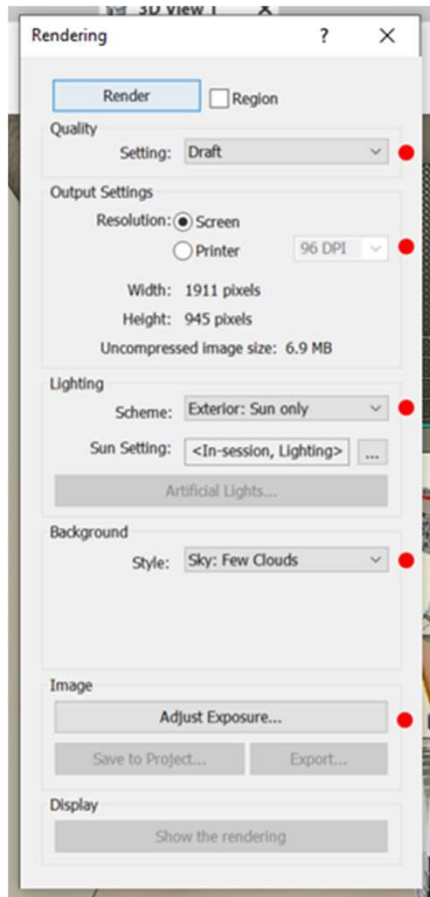


Rendering



As well as adjusting the Graphical Display, Revit has a decent render engine to produce realistic views. The Render icon (teapot) allows you to set the graphical controls for the render.



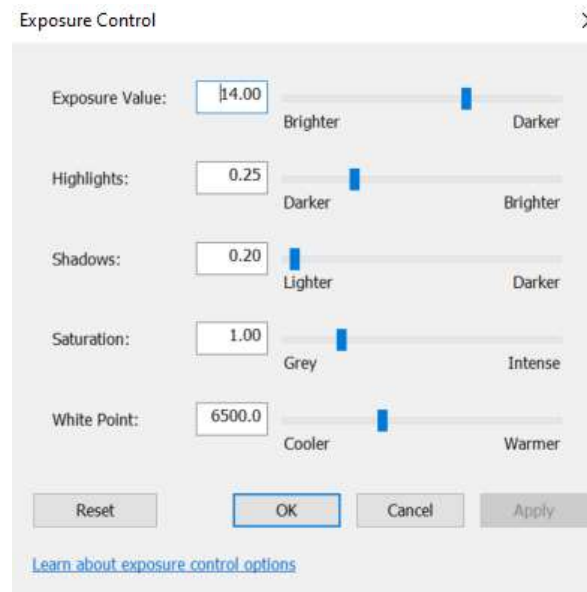


Speed / resolution

Resolution to Screen or DPI

Lighting – Exterior or Internal views

Type of Sky



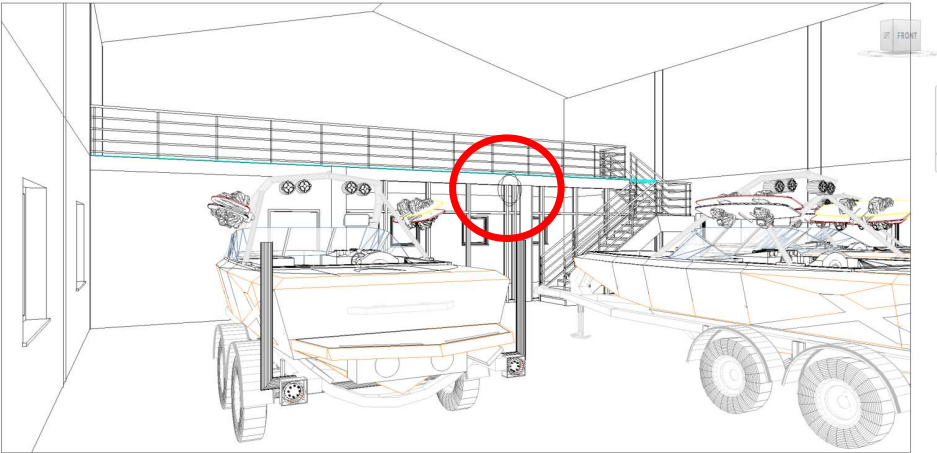
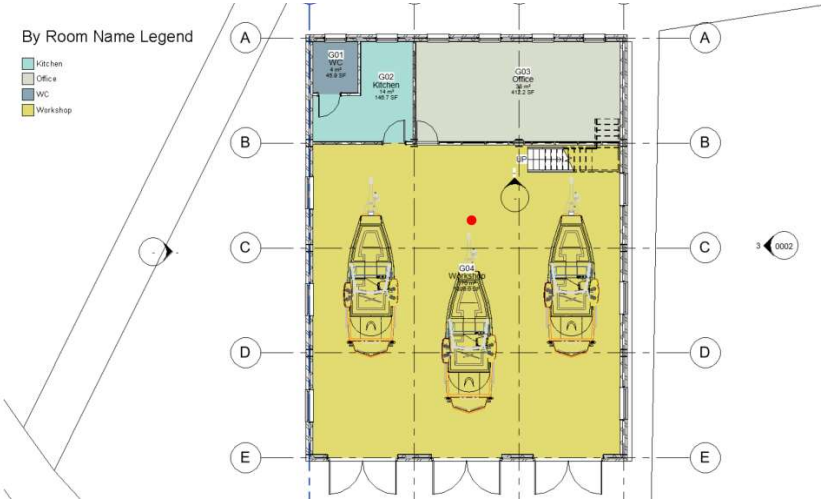
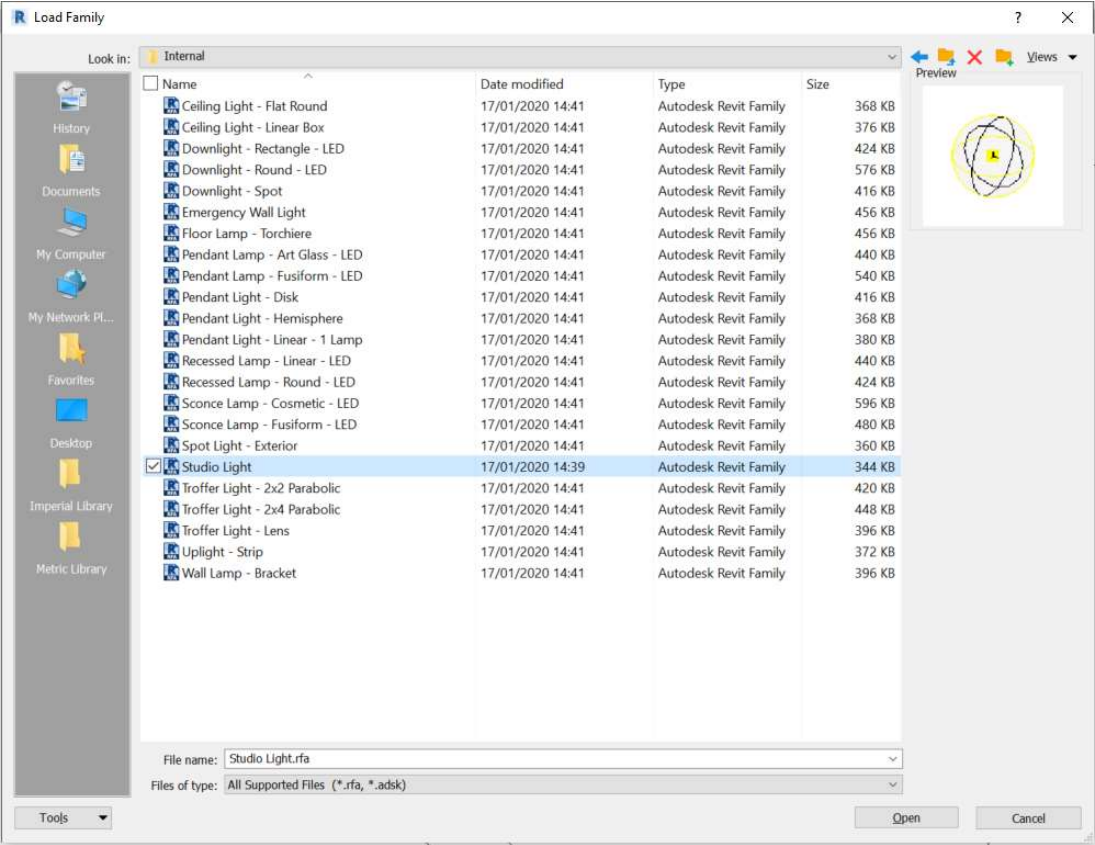
Exposure Values can be altered before or after a render whilst the dialogue box is open.

NB: Remember to Save your Rendered View to the Model

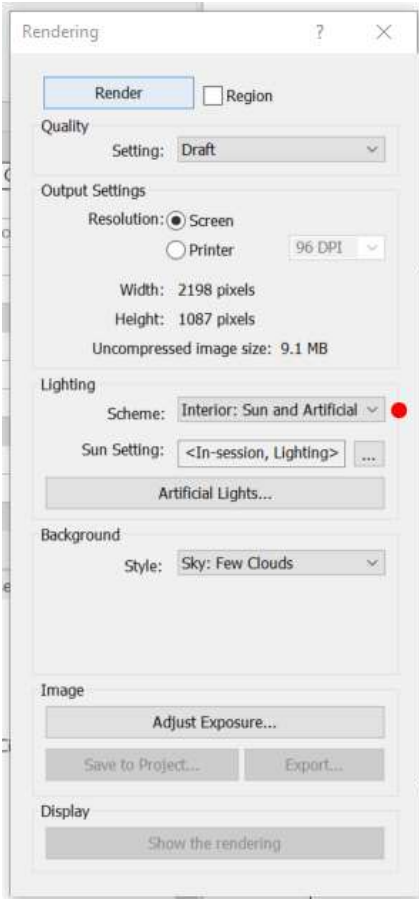


NB: Remember to Save your Rendered View to the Model

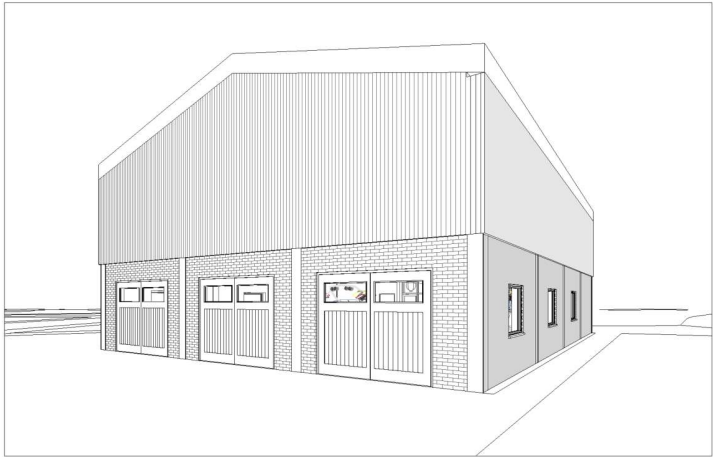
You can add Lighting families to your model such as a Studio Light



You can add then adjust your lighting settings to consider both the Sun and Artificial Lighting.
The more artificial lights you add the more time it takes to process the render.



Material Choices

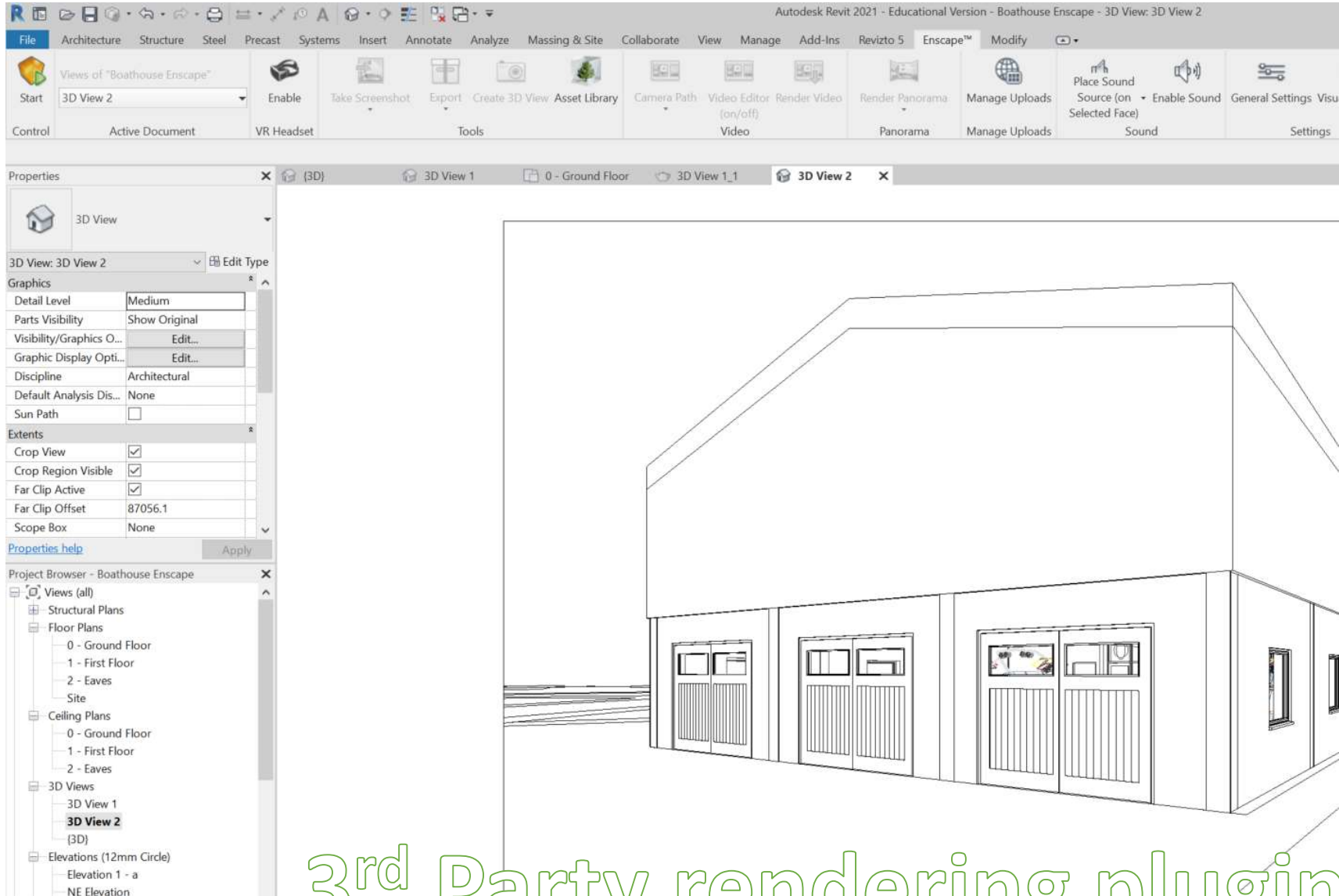


Materials Loaded within the project

Properties of the Material

Lecture notes materials



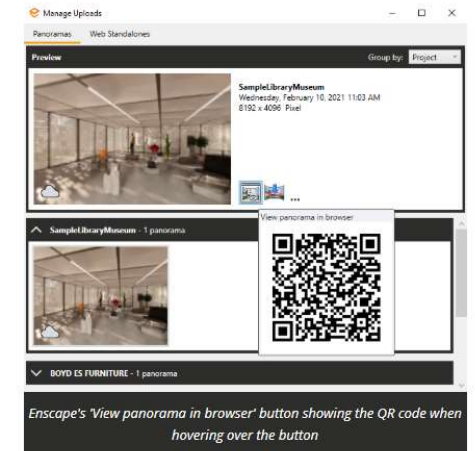


<https://youtu.be/qo-HRFXIHZM>

3rd Party rendering plugin



Once you have uploaded the panorama to the cloud, the **Upload panorama to cloud** button changes to the **View panorama in browser** button. Clicking on the button will directly open the panorama in your browser; hovering over this button will reveal a QR code that can be scanned with QR scanning software which will directly open the link to the panorama in the devices default browser.



Enscape can be linked to VR Technologies.
It can create Panoramic images for Google Cardboard

QR Codes can be generated to assist coordination and realisation of design drawings and ideas.



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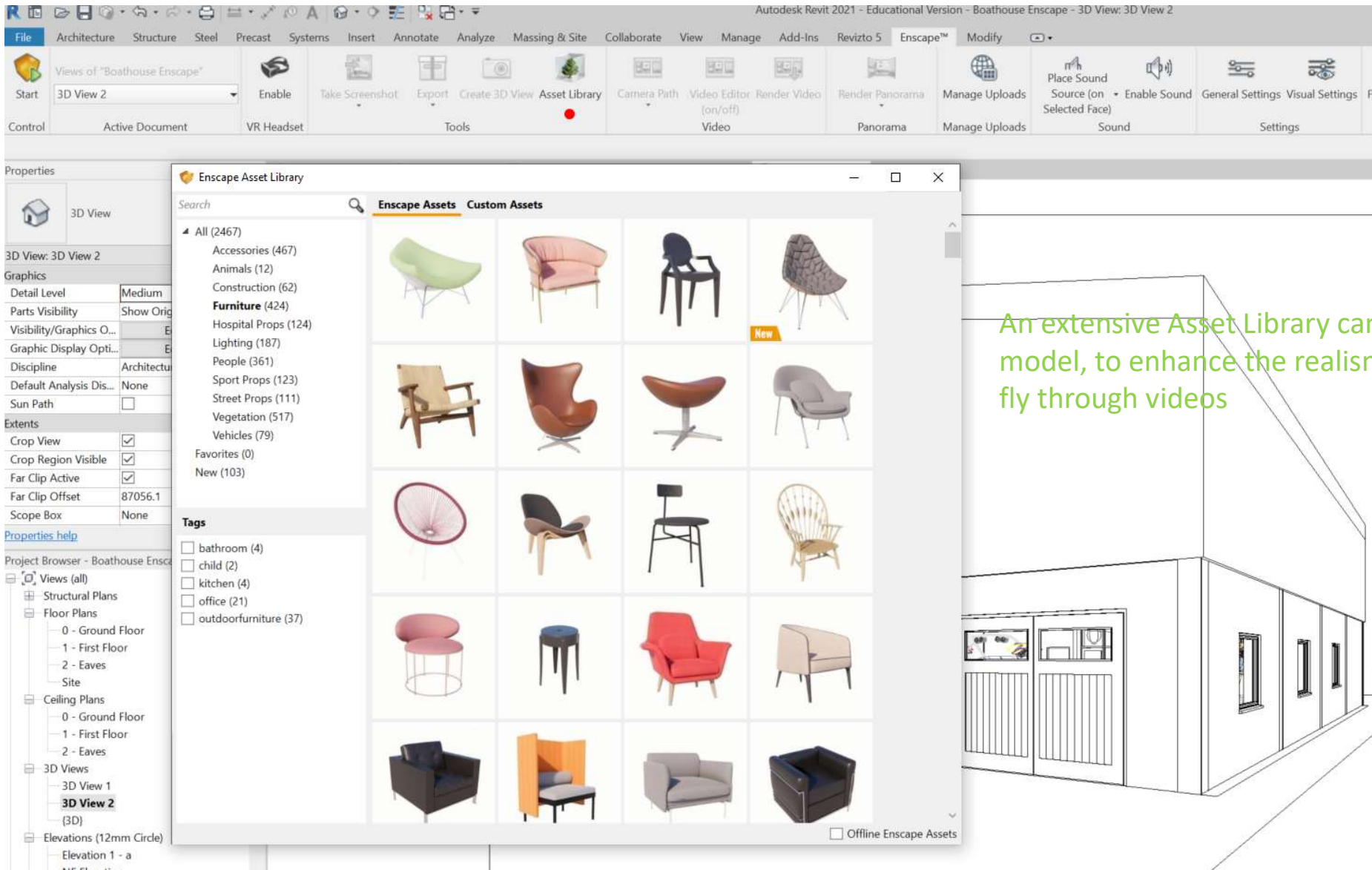
<https://youtu.be/HZhw1ln2rNk>

Realtime Rendering updated directly to the Revit Model

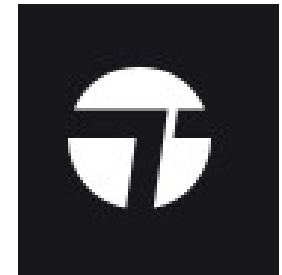
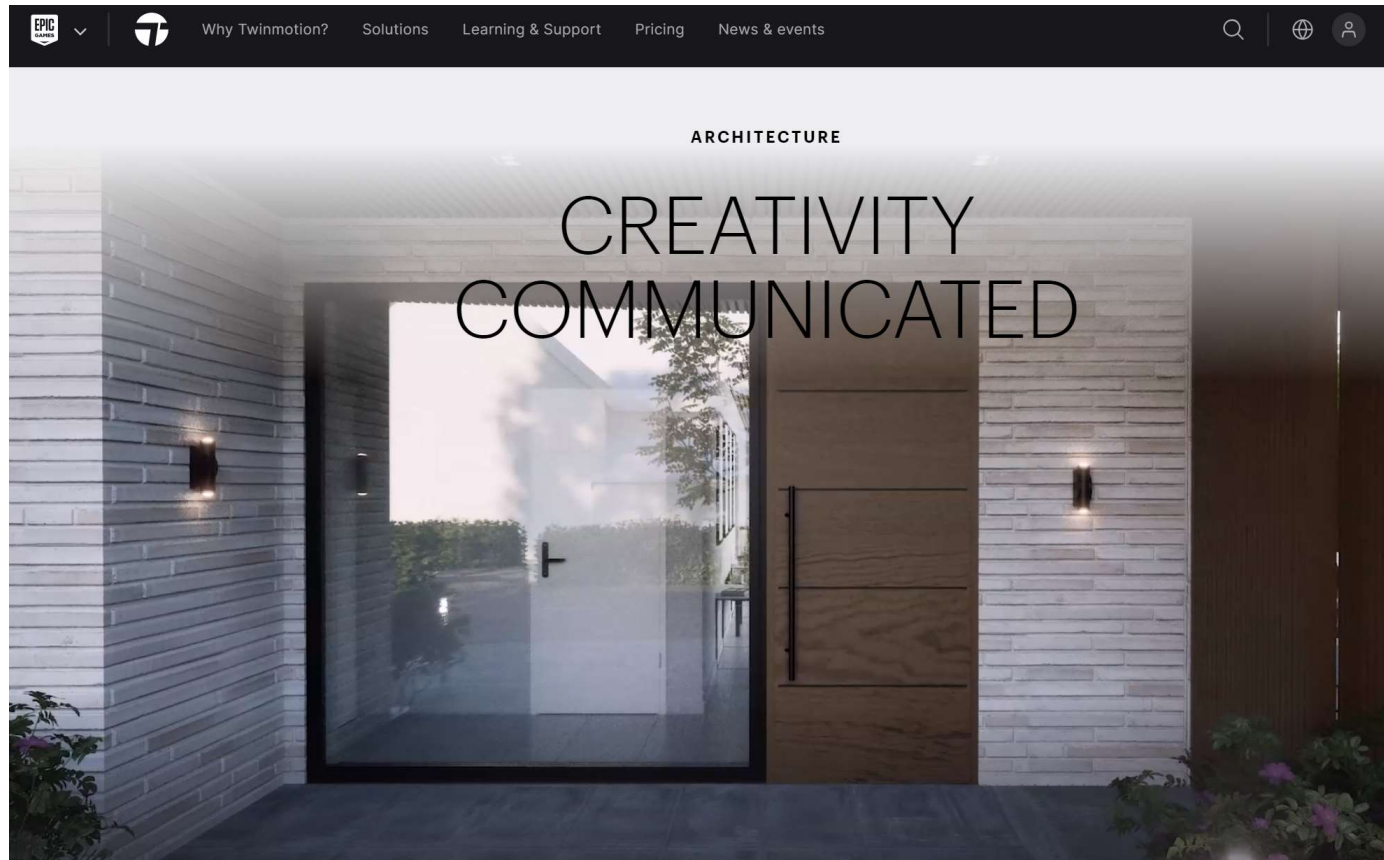


Interior views and materiality can be explored and updated within the Revit Model





An extensive Asset Library can be added to your model, to enhance the realism of you views and fly through videos

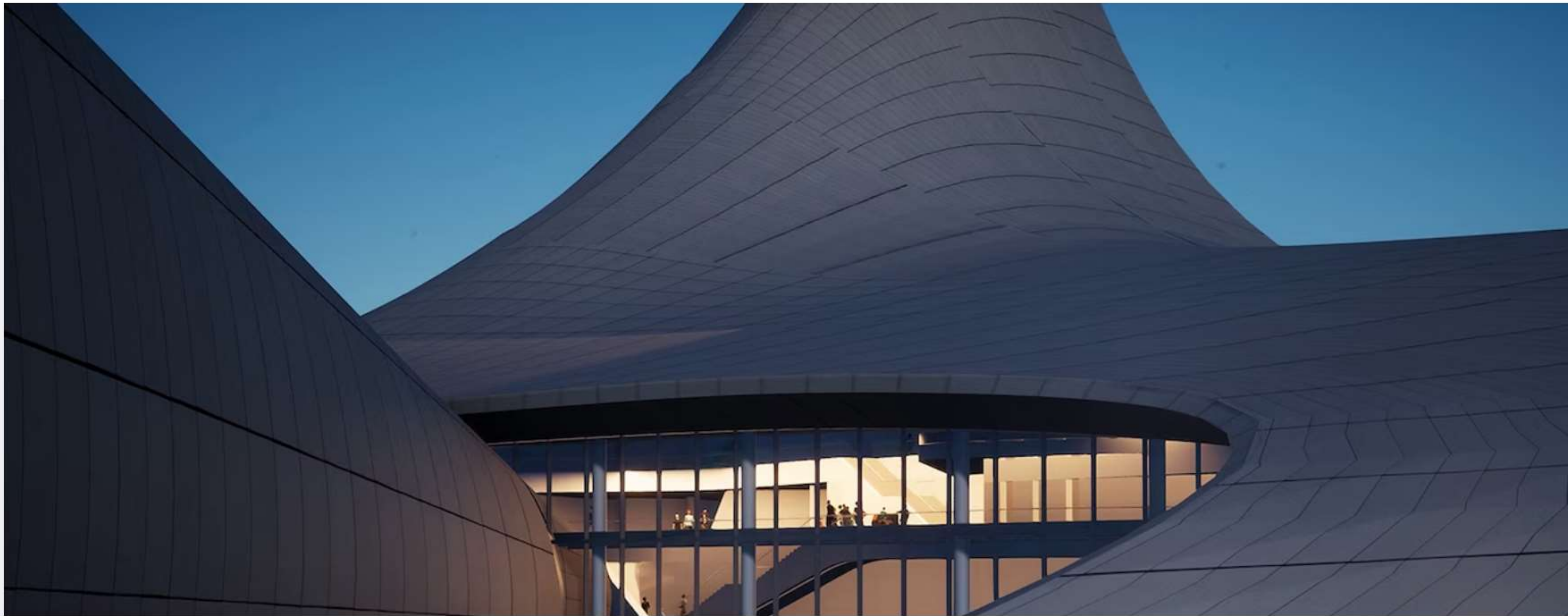


[Architecture Rendering & Visualization Solution - Twinmotion - Twinmotion](#)

3rd Party rendering plugin

Note: Twinmotion is free through Autodesk Subscription

ZAHA HADID ARCHITECTS TURNS TO TWINMOTION FOR EARLY DESIGN STUDIES

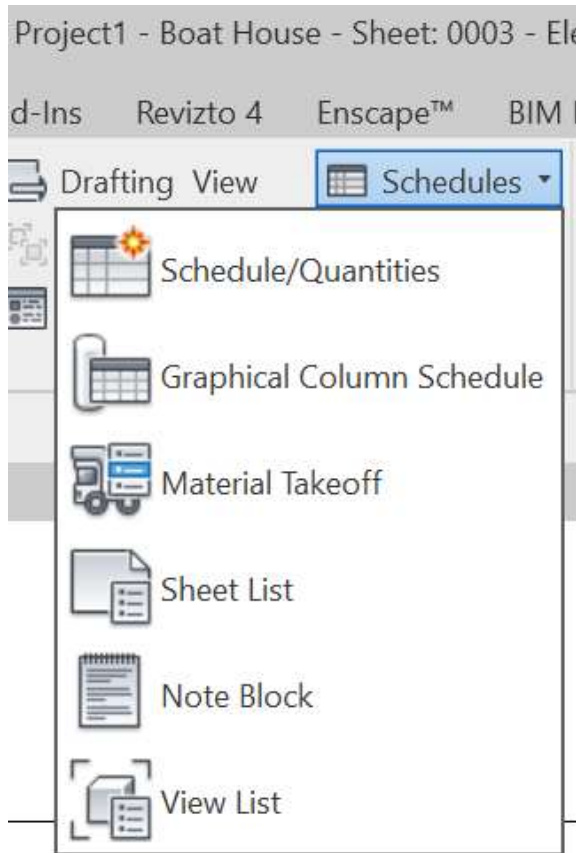
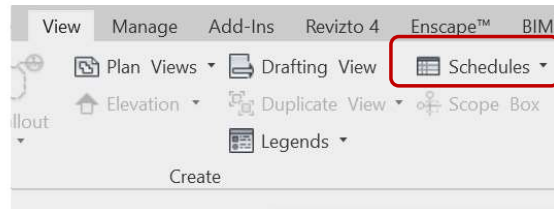


[Zaha Hadid Architects turns to Twinmotion for early design studies - Twinmotion](#)

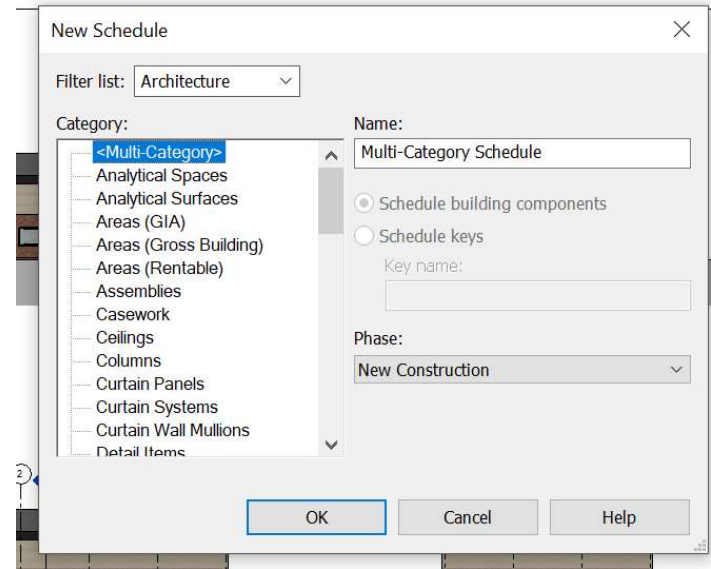


39-SCHEDULES

‘Multi Category Material Takeoff’

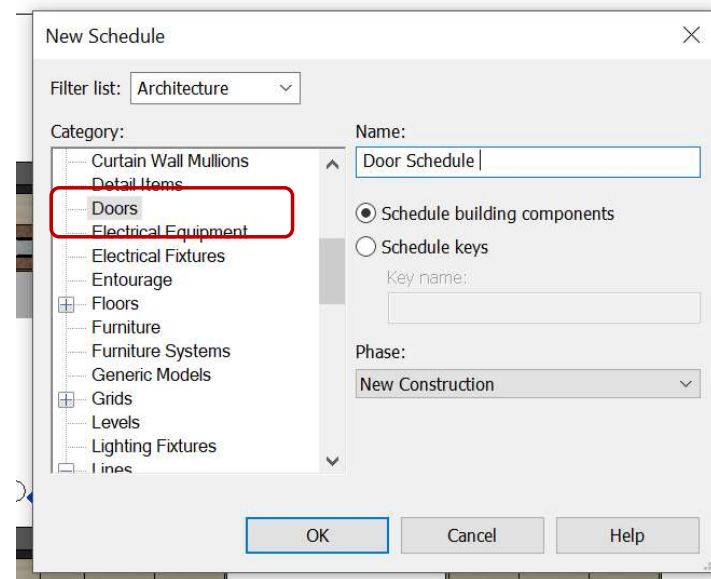


Schedule
types



Schedules can be
created from the
View Menu

Different type of
schedules can be
generated.



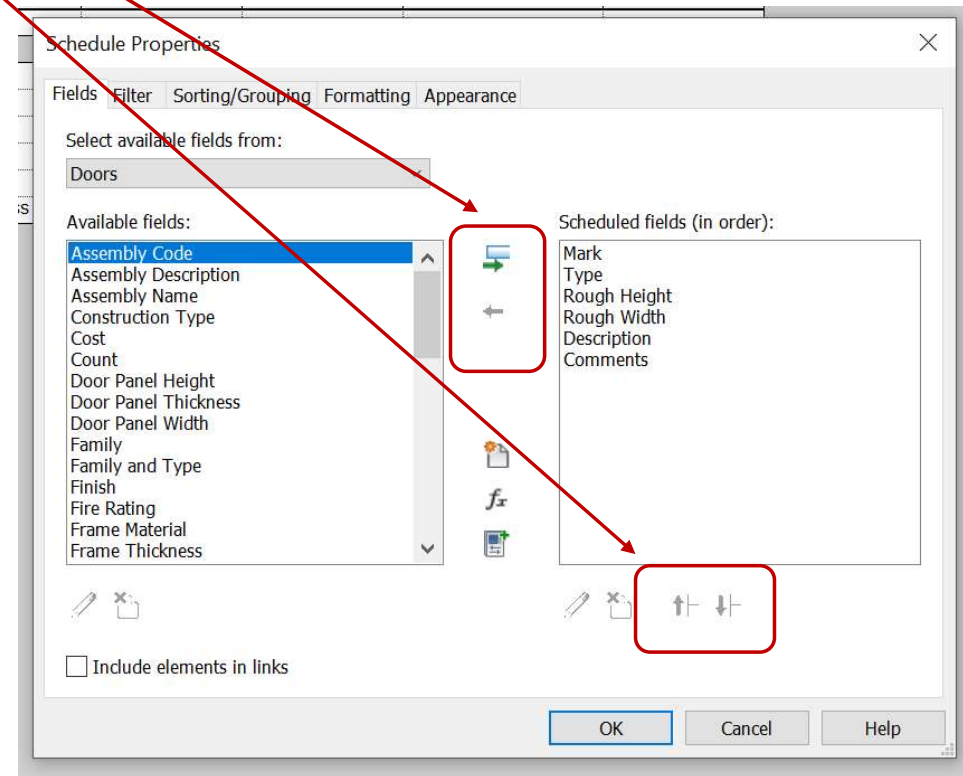
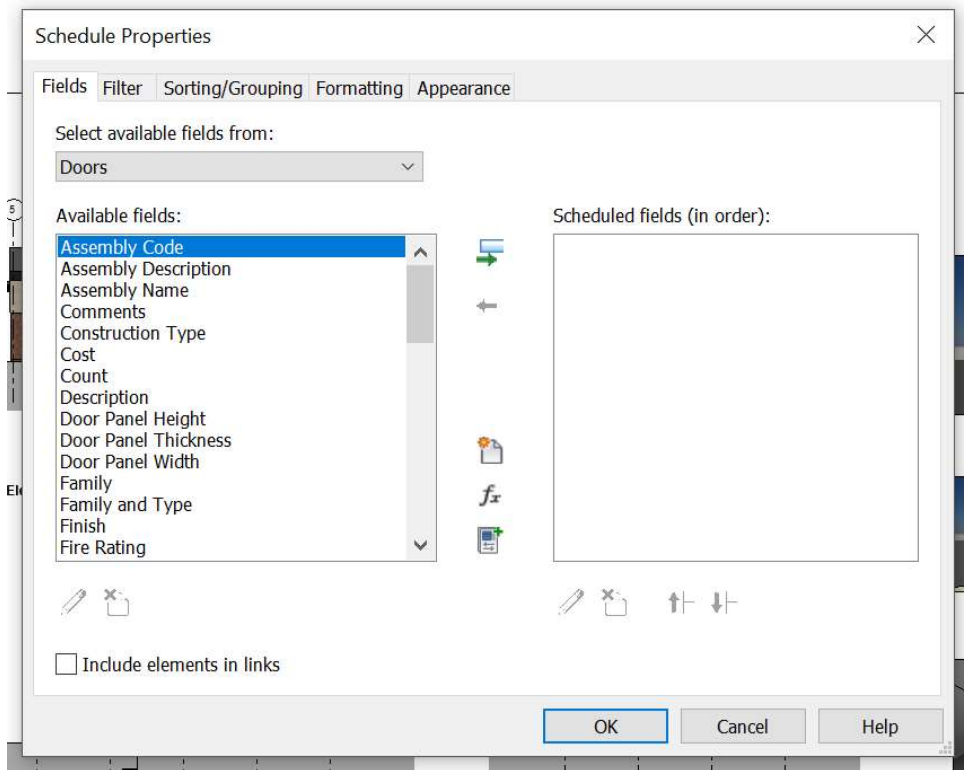
Select Schedule
/Quantities to
create a New
Schedule

In the Category
select your
schedule type



39-SCHEDULES

In the Schedule Properties Dialogue box 'Add' the Fields for the schedule.
Add and Remove Fields
Change order of the Fields





39-SCHEDULES

Edits and
formatting

Properties

Schedule

Schedule: Door Schedule Edit Type

View Name Door Schedule

Dependency Independent

Phasing

Phase Filter Show All

Phase New Construction

Other

Fields Edit...

Filter Edit...

Sorting/Groupi... Edit...

Formatting Edit...

Appearance Edit...

Properties help Apply

Project Browser - Project1 - Boat Ho...

- NW Facing Elevation
- SE Facing Elevation
- SW Facing Elevation
- Sections (Building Section)
 - Section 1
 - Section 1 - Callout 1
- Legends
- Schedules/Quantities (all)
 - Door Schedule**
 - Room Schedule
 - View List

0003 - Elevations & Views Door Schedule X

<Door Schedule>

A	B	C	D	E	F
Mark	Type	Rough Height	Rough Width	Description	Comments
DG01a	3000x2200mm 2	2200	3000		
DG01b	3000x2200mm 2	2200	3000		
DG01c	3000x2200mm 2	2200	3000		
DG02	1010x2110mm	2110	1010	Internal Single Door	
DG03	1010x2110mm	2110	1010	Internal Single Door	
DG04	Glass_Panel-12mm_Thickness				Glazed with manefe

Your Schedule will now appear in the Project Browser.

You can add Schedules to sheet just like any other view



‘Multi Category Material Takeoff’ Schedules can be produced.
Cost of materials can be applied and totals calculated.

39-SCHEDULES

Schedule

Schedule: Multi-Category > Edit Type

Identity Data

View Template <None>

View Name Multi-Category ...

Dependency Independent

Phasing

Phase Filter Show All

Phase New Construction

Other

Fields Edit...

Filter Edit...

Sorting/Groupi... Edit...

Formatting Edit...

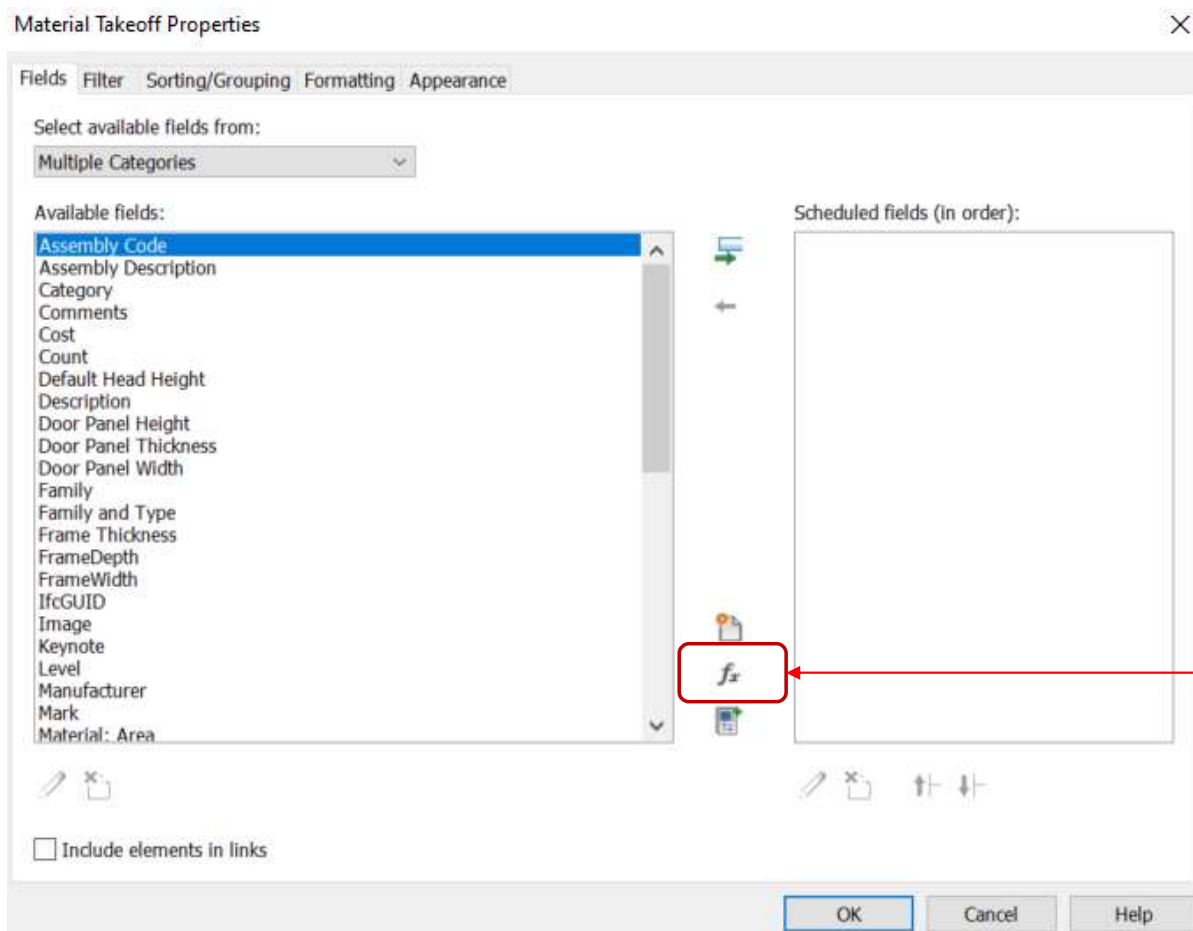
Properties help Apply

Project Browser - Project1 - Boat Ho...

- (3D)
- Elevations (12mm Circle)
 - NE Facing Elevation
 - NW Facing Elevation
 - SE Facing Elevation
 - SW Facing Elevation
- Sections (Building Section)
 - Section 1
 - Section 1 - Callout 1
- Legends
- Schedules/Quantities (all)
 - Door Schedule
 - Multi-Category Material Takeoff**

<Multi-Category Material Takeoff>								
A	B	C	D	E	F	G	H	I
Family and Type	Material: Name	Material: Description	Material: Manufactur	Material: Area	Material: Volume	Material: Cost	Material: Com	Cost of Materials
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Fiberglass Batt	Fiberglass batt insulation	Celotex	36 m²	2.73 m³	5.00		£182.01
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Plaster	Plaster	British Gypsum	36 m²	0.46 m³	4.00		£145.61
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Concrete Masonry Units _Low Density	Concrete masonry units	Forterra	36 m²	3.64 m³	1.00		£36.4
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Brick, Dark Blend, Running	Common Brick, Running, Dark	Instock Facing	36 m²	3.73 m³	20.00		£728.03
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Fiberglass Batt	Fiberglass batt insulation	Celotex	47 m²	3.56 m³	5.00		£237.15
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Plaster	Plaster	British Gypsum	47 m²	0.59 m³	4.00		£189.72
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Concrete Masonry Units _Low Density	Concrete masonry units	Forterra	47 m²	4.74 m³	1.00		£47.43
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Brick, Dark Blend, Running	Common Brick, Running, Dark	Instock Facing	47 m²	4.86 m³	20.00		£948.59
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Fiberglass Batt	Fiberglass batt insulation	Celotex	21 m²	1.55 m³	5.00		£103.5
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Plaster	Plaster	British Gypsum	21 m²	0.26 m³	4.00		£82.8
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Concrete Masonry Units _Low Density	Concrete masonry units	Forterra	21 m²	2.07 m³	1.00		£20.7
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Brick, Dark Blend, Running	Common Brick, Running, Dark	Instock Facing	21 m²	2.12 m³	20.00		£414
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Fiberglass Batt	Fiberglass batt insulation	Celotex	47 m²	3.49 m³	5.00		£232.8
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Plaster	Plaster	British Gypsum	47 m²	0.58 m³	4.00		£186.24
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Concrete Masonry Units _Low Density	Concrete masonry units	Forterra	47 m²	4.66 m³	1.00		£46.56
Basic Wall: Wall-Ext_102Bwk-75Ins-100LBik-12P	Brick, Dark Blend, Running	Common Brick, Running, Dark	Instock Facing	47 m²	4.77 m³	20.00		£931.19
Basic Wall: Wall-Int_12P-100Bik-12P	Concrete Masonry Units	Concrete masonry units	Forterra	10 m²	0.98 m³	36.00		£354.26
Basic Wall: Wall-Int_12P-100Bik-12P	Plaster	Plaster	British Gypsum	20 m²	0.25 m³	4.00		£78.73
Basic Wall: Wall-Int_12P-100Bik-12P	Concrete Masonry Units	Concrete masonry units	Forterra	12 m²	1.23 m³	36.00		£443.53
Basic Wall: Wall-Int_12P-100Bik-12P	Plaster	Plaster	British Gypsum	25 m²	0.31 m³	4.00		£98.56
Basic Wall: Wall-Int_12P-100Bik-12P	Concrete Masonry Units	Concrete masonry units	Forterra	6 m²	0.65 m³	36.00		£232.69
Basic Wall: Wall-Int_12P-100Bik-12P	Plaster	Plaster	British Gypsum	13 m²	0.16 m³	4.00		£51.71
Basic Wall: Wall-Int_12P-100Bik-12P	Concrete Masonry Units	Concrete masonry units	Forterra	3 m²	0.34 m³	36.00		£124.09
Basic Wall: Wall-Int_12P-100Bik-12P	Plaster	Plaster	British Gypsum	7 m²	0.09 m³	4.00		£27.58
Doors_Sgl_Glass_1: Glass_Panel-12mm_Thickness	Glass	Soda Lime Glass	Pilkingtons	3 m²	0.02 m³	29.00		£86.74
Doors_Sgl_Glass_1: Glass_Panel-12mm_Thickness	Metal - Aluminum		Senior Aluminium	2 m²	0.02 m³	1.00		£1.74
Doors_IntSgl: 1010x2110mm	Door - Panel		Leaderflush	4 m²	0.07 m³	14.00		£56.59
Doors_IntSgl: 1010x2110mm	Door - Handle		Dorma	0 m²	0.00 m³	34.00		£1.21
Doors_IntSgl: 1010x2110mm	Door - Frame/Mullion (1)		Leaderflush	2 m²	0.02 m³	56.00		£119.54
Doors_IntSgl: 1010x2110mm	Door - Architrave		Leaderflush	2 m²	0.01 m³	4.00		£7.02
Doors_IntSgl: 1010x2110mm	Door - Panel		Leaderflush	4 m²	0.07 m³	14.00		£56.59
Doors_IntSgl: 1010x2110mm	Door - Handle		Dorma	0 m²	0.00 m³	34.00		£1.21
Doors_IntSgl: 1010x2110mm	Door - Frame/Mullion (1)		Leaderflush	2 m²	0.02 m³	56.00		£119.54
Doors_IntSgl: 1010x2110mm	Door - Architrave		Leaderflush	2 m²	0.01 m³	4.00		£7.02

‘Multi Category Material Takeoff’ Schedules can be produced.
Cost of materials can be applied and totals calculated.



Add fields and 'Fx' calculated formula

Material Area * Material Cost/1m²

Or

Material Volume * Material Cost/1m³