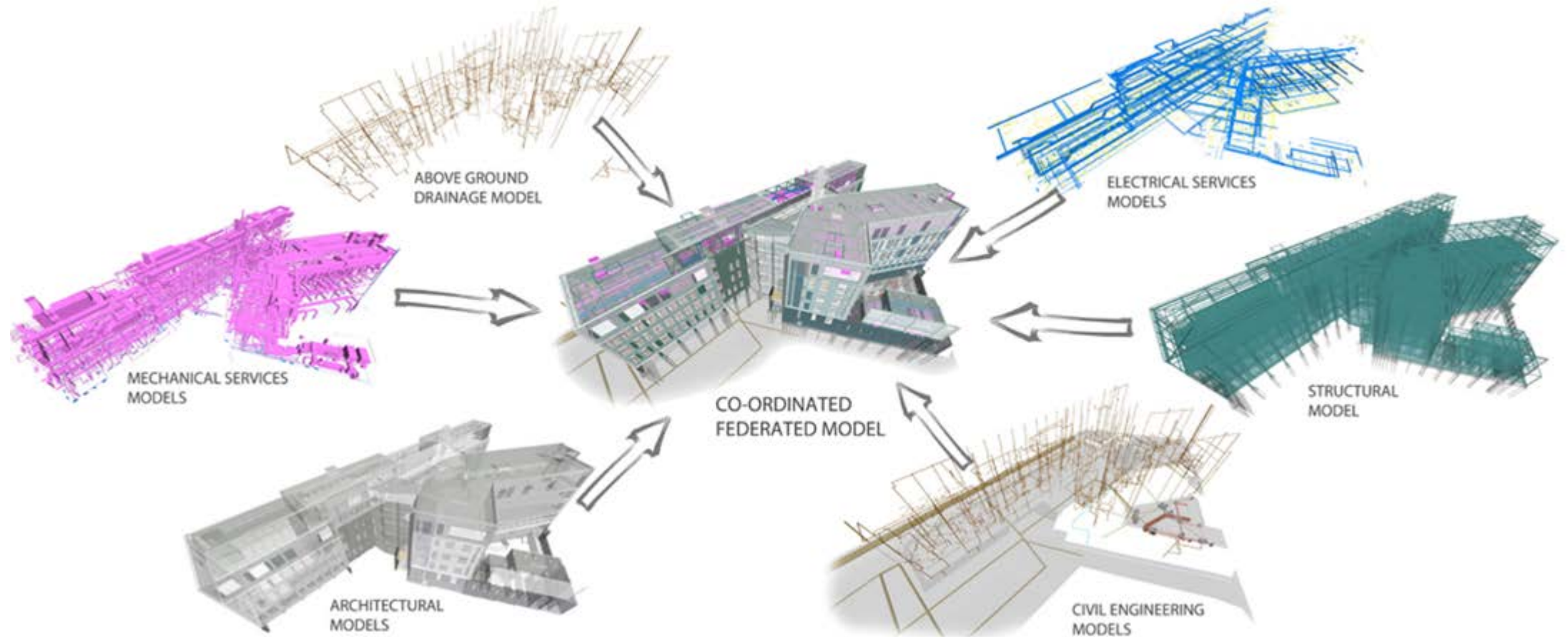


Working with Digital Technologies & BIM



Assessment 2

Submission
deadline:

4th May 2020

PART 1 Essay: (weighting 20%)

What is BIM and how is it used within the Construction Industry?

Explain your understanding of the digital processes that are used as part of a CDE?

The essay can incorporate the use of diagrams and figures to illustrate the text.

A list of references is required and all referencing is to be clearly indicated throughout the essay.

Assessment 2

Submission
deadline:

4th May 2020

PART 2 Drawings A1 Digital Submission: (weighting 80%)

Scenario:

You have been approached by a client who wishes to extend their house. They have provided you a set of 2D CAD drawings prepared when they purchased the house and have asked you to design a two storey extension to the side of the property.

They would like you to consider providing:

- A new double bedroom
- ensuite bathroom
- dressing room
- small study / sun room with views to the garden.

Convert the 2D drawings into a 3D model using Revit.

Assessment 2

Submission
deadline:

4th May 2020

PART 2 Drawings A1 Digital Submission: (weighting 80%)

Prepare a set of existing & proposed drawings of the property that includes.

Site Location Plan @1:1250

Existing Site Plan @ 1:500

Existing Floor Plans@ 1:100

Proposed Site Plan @ 1:500

Proposed Floor Plans@ 1:100

Proposed Elevations:@ 1:100

Proposed Long and Short Section @ 1:50

Proposed Section Callout Detail @ 1:5

Proposed Visualisation. (NTS)

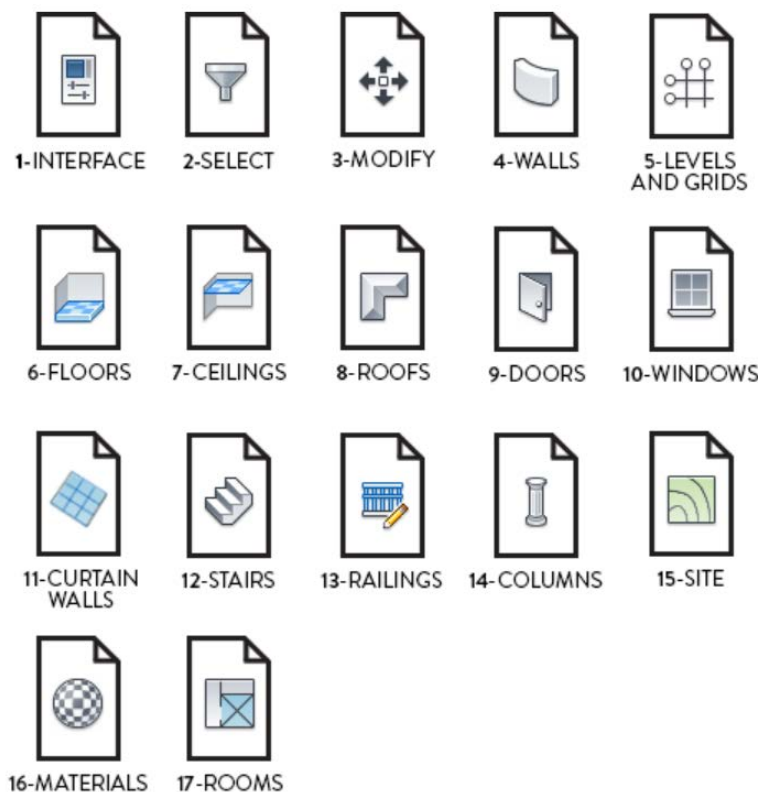
The project **must** include. Project Base point. Room names, Legends, Tags & Annotations, Dimensions, Levels, North Point. Project Phasing in Revit is recommended.

All Drawings must be appropriately scaled at A1 size and presented in the **uwtsd BIM titleblock format with the appropriate naming conventions. Digital Submission required in RVT and PDF format.**

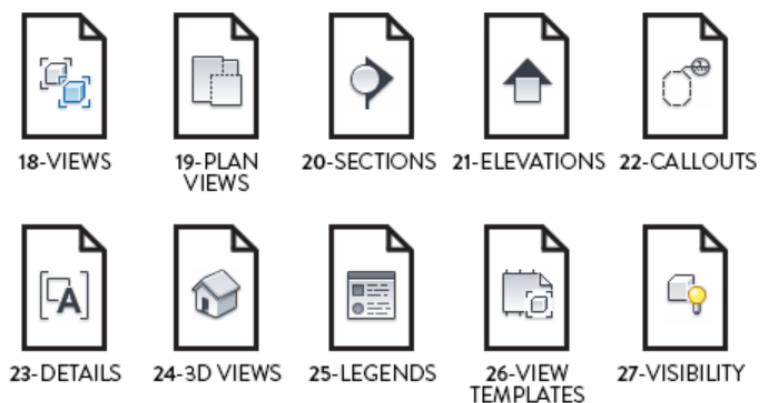


AUTODESK®
REVIT®

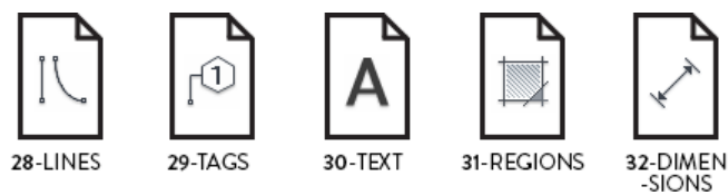
PART 1: MODEL



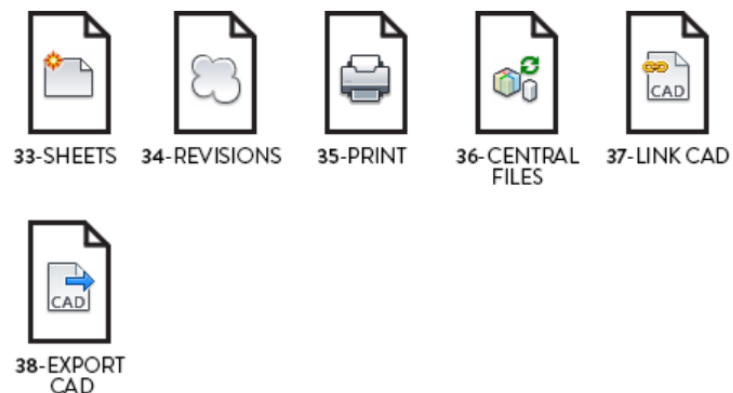
PART 2: VIEWS



PART 3: ANNOTATE



PART 4: PUBLISH AND COLLABORATE

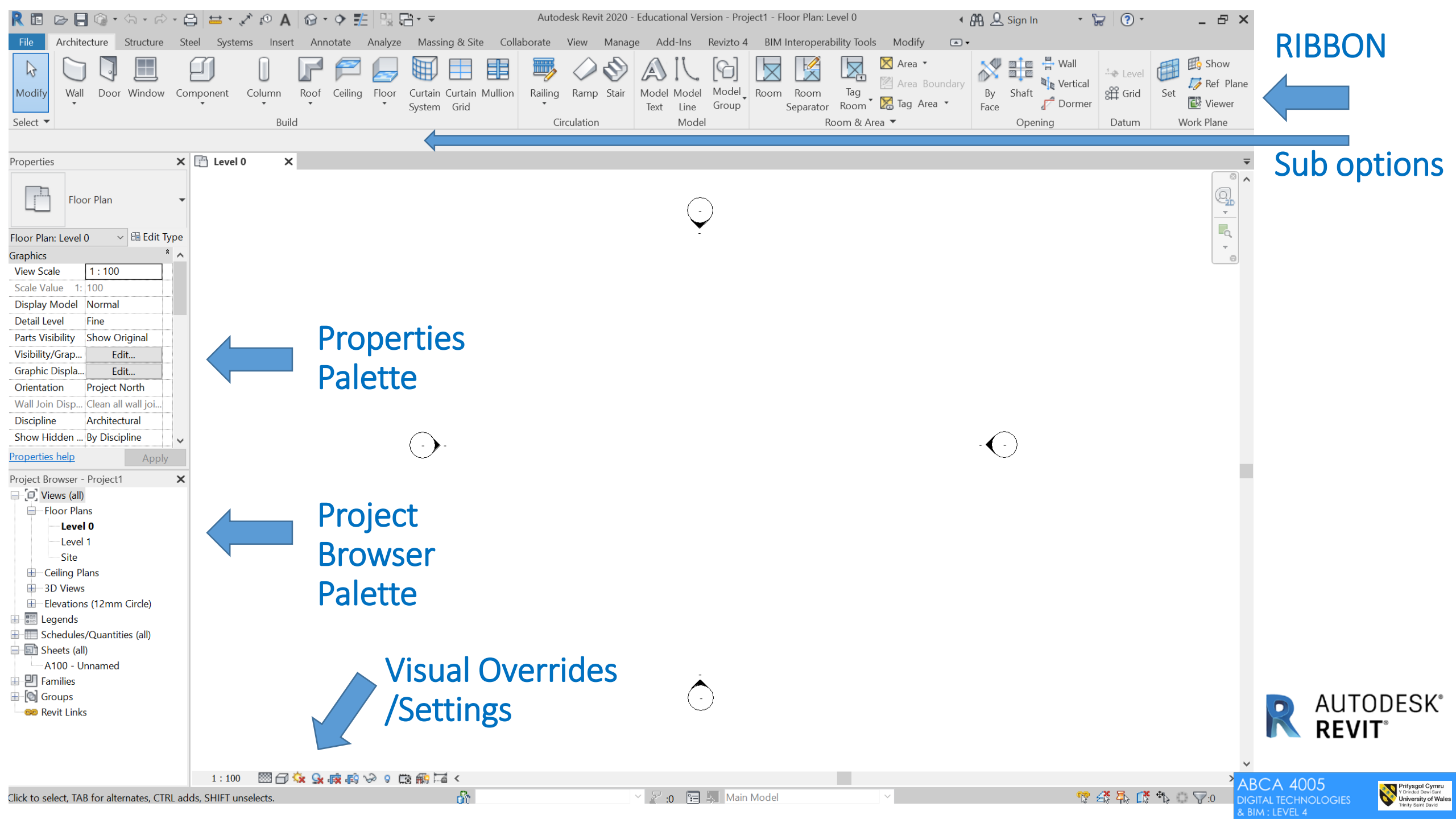


PART 5: ADVANCED TOOLS



<https://revitpure.com/basics>

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



RIBBON



Sub options

Properties
Palette

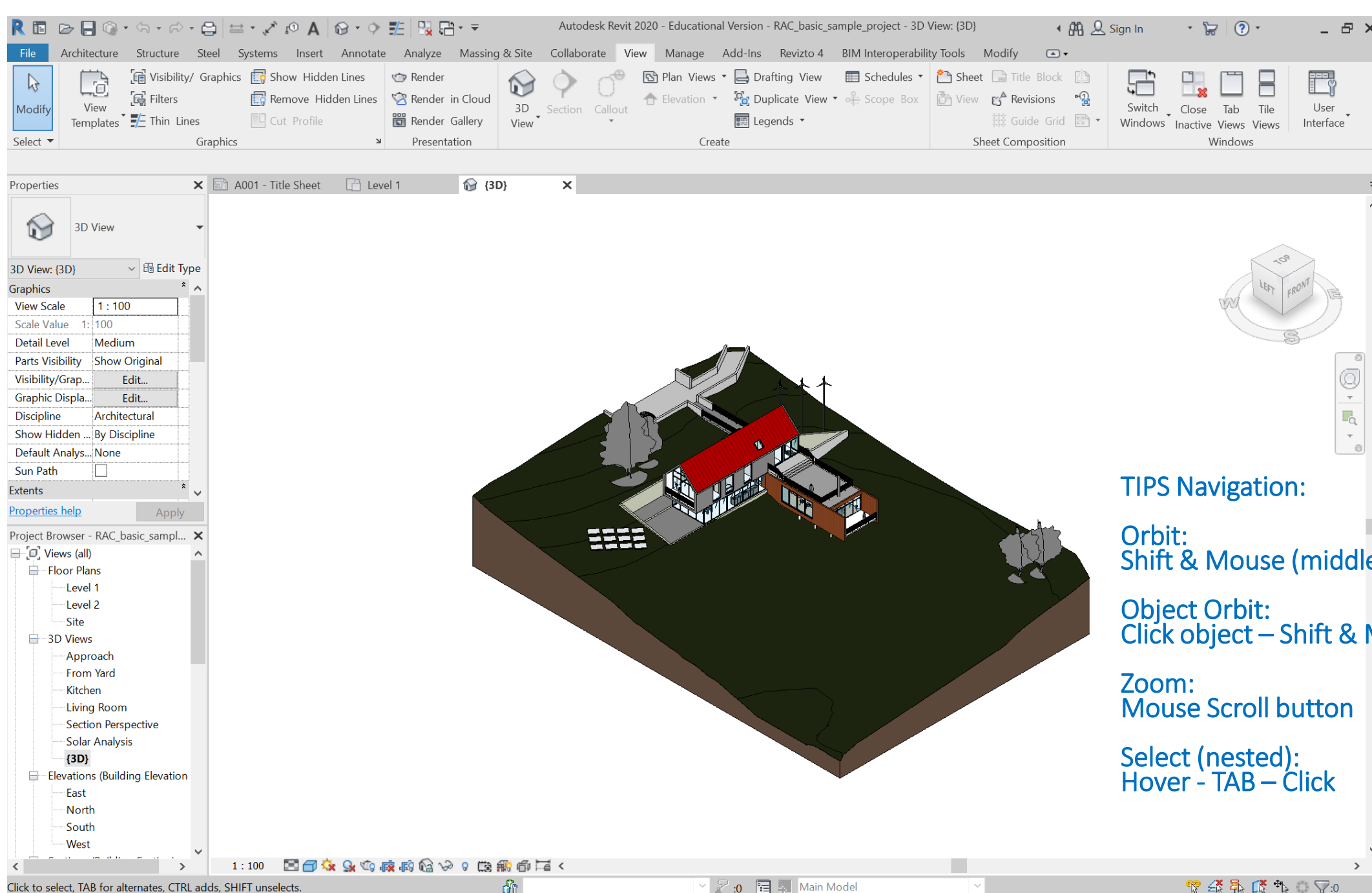


Project
Browser
Palette



Visual Overrides
/Settings





1-INTERFACE



2-SELECT



3-MODIFY

TIPS Navigation:

Orbit:
Shift & Mouse (middle button)

Object Orbit:
Click object – Shift & Mouse (middle button)

Zoom:
Mouse Scroll button

Select (nested):
Hover - TAB – Click

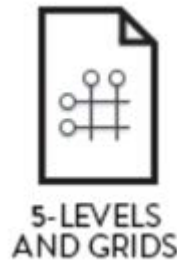


Exercise 2

Draw a 2 storey House.

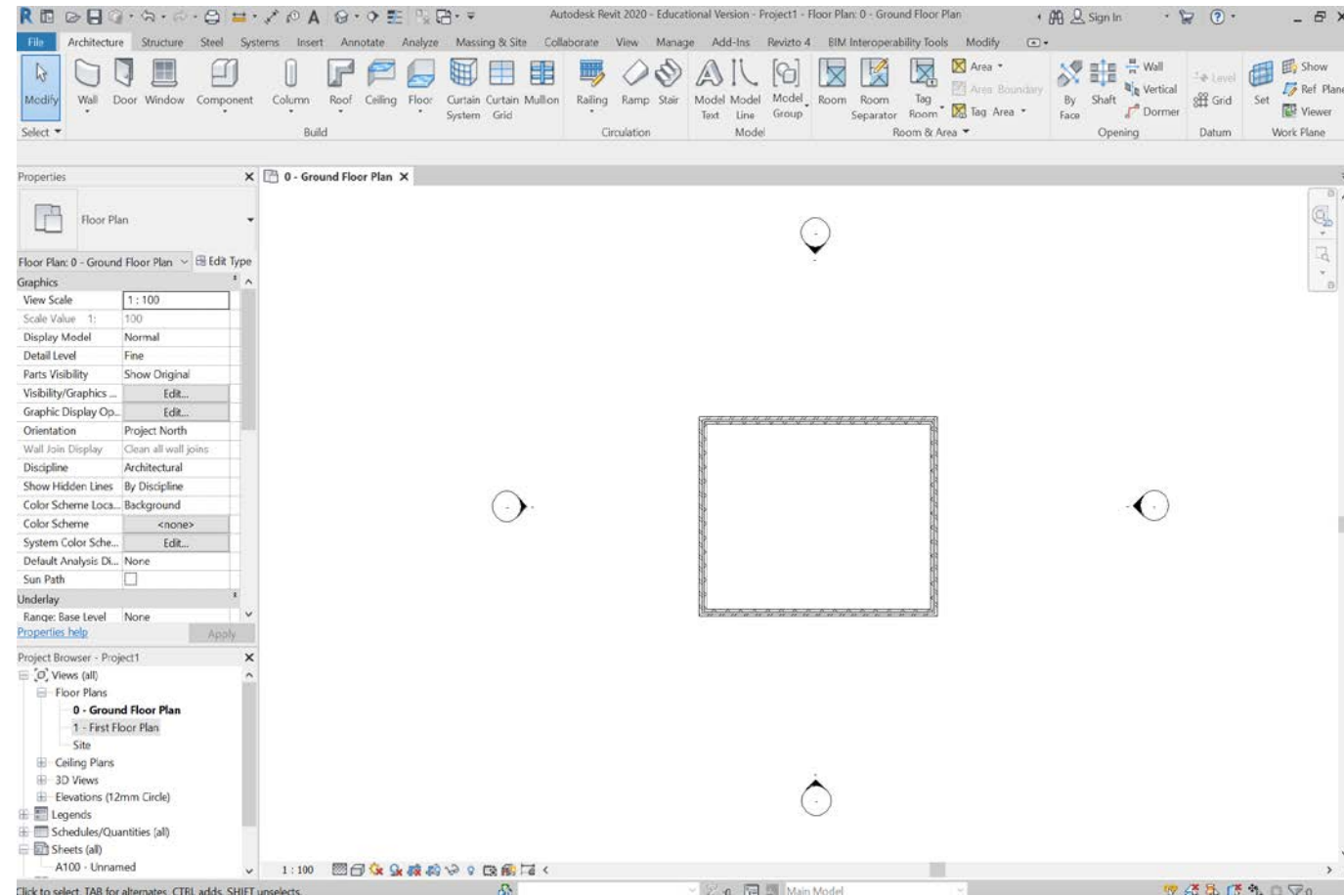
Set up your levels in Elevation view.
Distance between levels of 2700mm

Rename your levels.
0 – Ground Floor Plan
1 – First Floor Plan



Draw a plan 10m wide by 8m deep, select or create your own wall type.

- Add internal walls to create rooms to the ground floor, such as Lounge, Kitchen diner, hallway, WC.
- Add internal walls to create rooms to the first floor, bedrooms, bathroom, landing – (make sure you leave some room for a staircase)
- Add, floors, ceilings, windows, doors and a roof.





11-CURTAIN
WALLS



12-STAIRS



13-RAILINGS



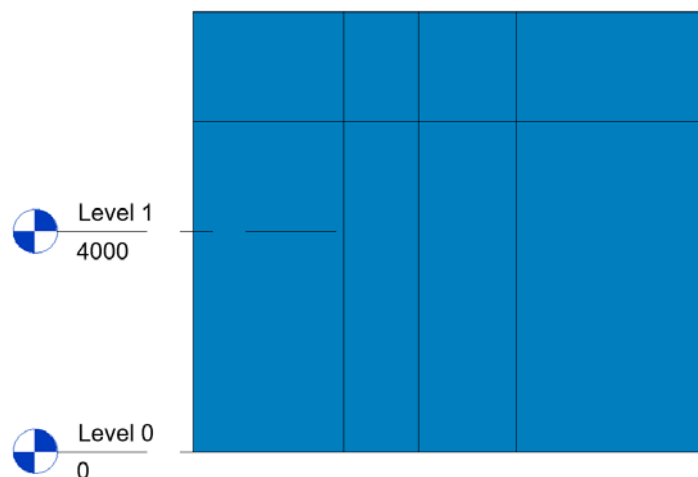
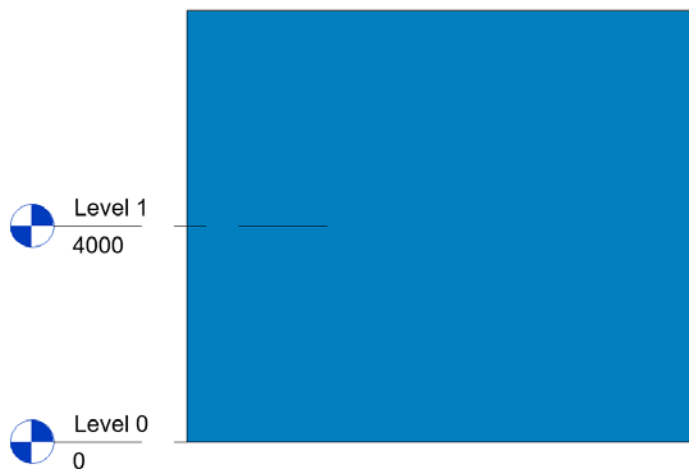
14-COLUMNS



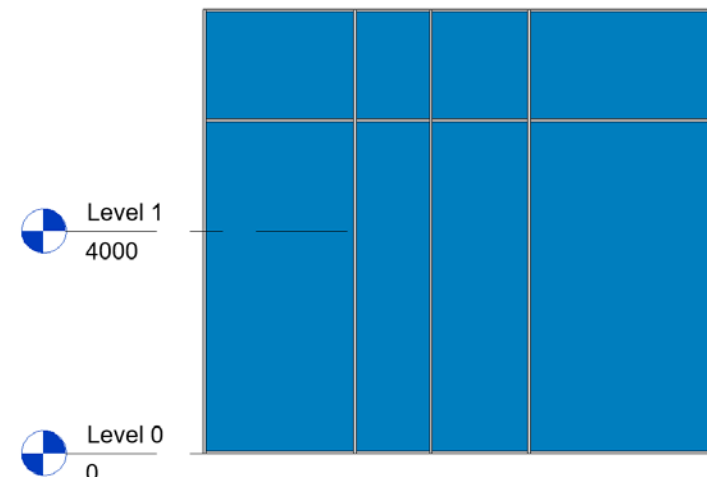
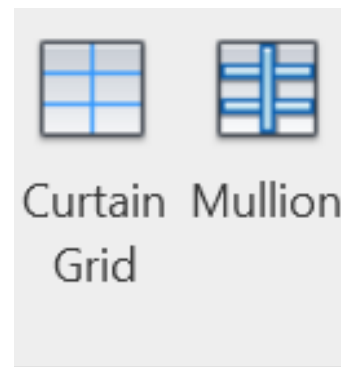
Curtain Walling – By Wall

Draw a wall to set height
(unconnected or to level)
Using Curtain Wall EMPTY

Go to elevation view – change
visibility to shaded



Add a Curtain Grid to your
curtain wall to required
horizontal and vertical
spacing.

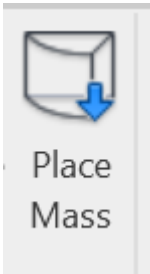


Change grid lines to Mullions by
clicking the mullion icon.

Load appropriate Mullion families.

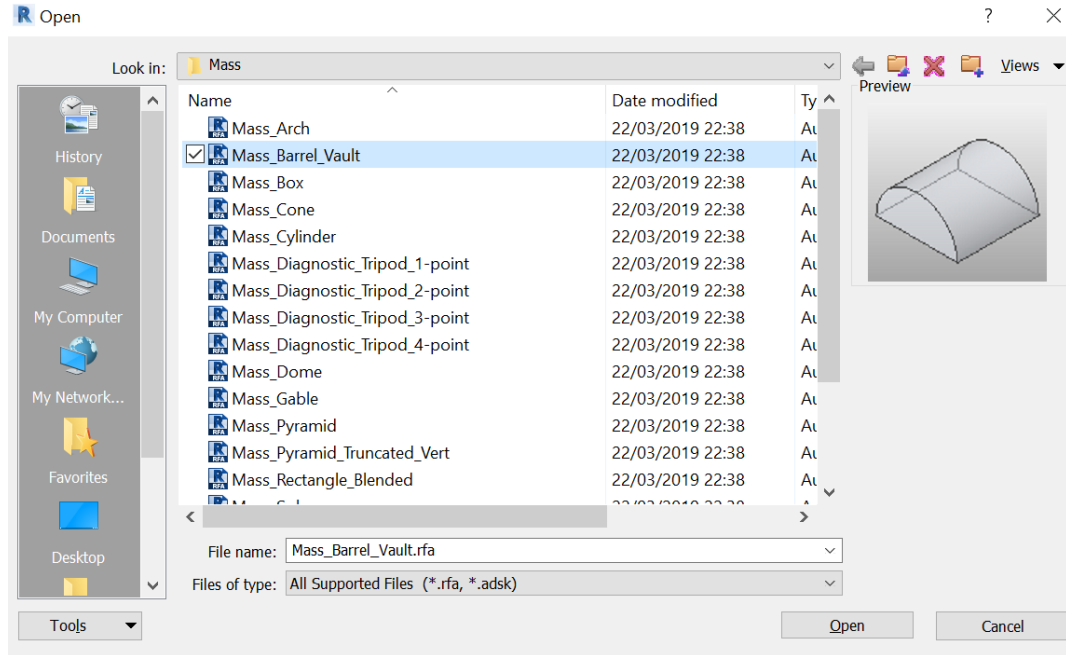


11-CURTAIN
WALLS

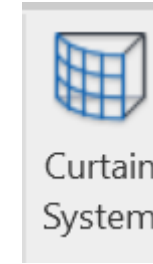
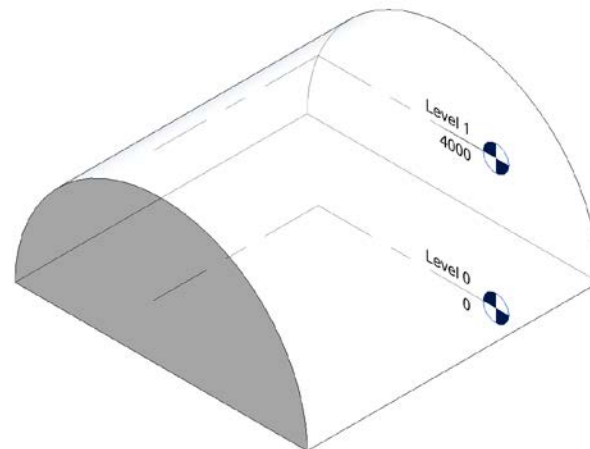


Place
Mass

Curtain System by Mass. Under Massing & Site selected Place Mass

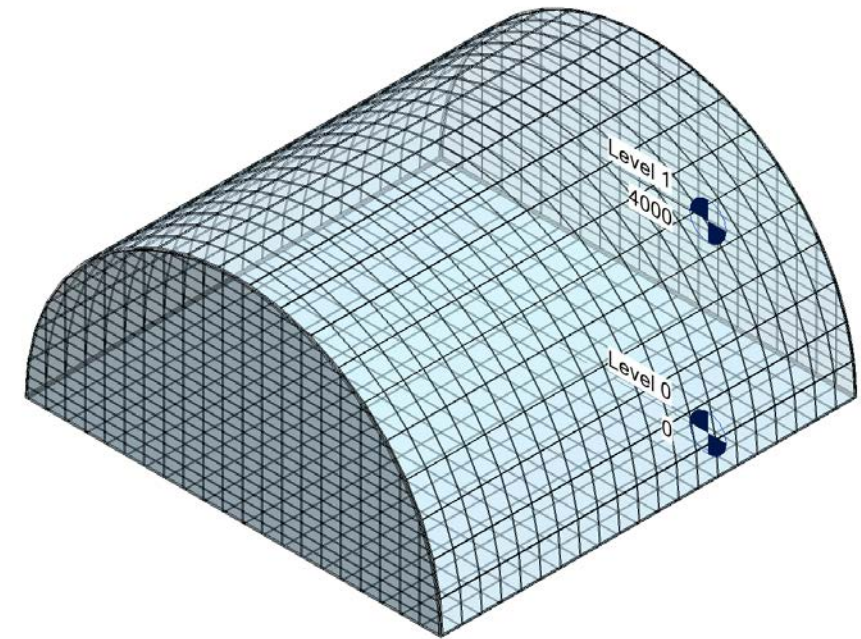


Place the Mass in the
appropriate Plan view.
Double Click the 3D view



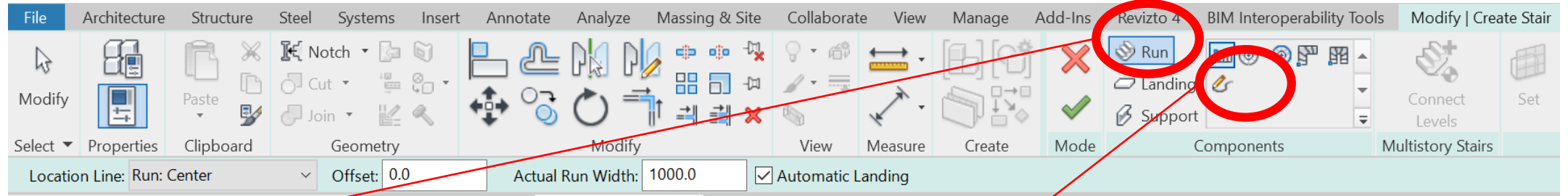
Curtain
System

Click 'Curtain System' Select all
faces of the mass. In the properties
palette change the number of grids
of the system. Once you have the
appropriate number of grids click
'Create System'





12-STAIRS



Create a Stair by Run.

Check Base level and top level in the Properties Palette.
Change stair type as appropriate.

Click to start run and click to finish run once 0 risers remain.

Click the TICK



Properties	
Assembled Stair Private	
Stair Edit Type	
Constraints	
Base Level	Level 0
Base Offset	0.0
Top Level	Level 1
Top Offset	0.0
Desired Stair Height	2700.0
Dimensions	
Desired Number of...	16
Actual Number of ...	1
Actual Riser Height	168.8
Actual Tread Depth	250.0
Tread/Riser Start N...	1

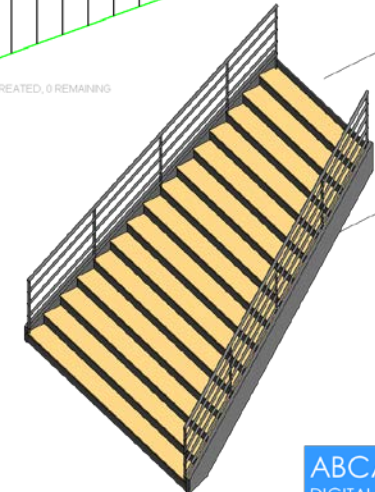
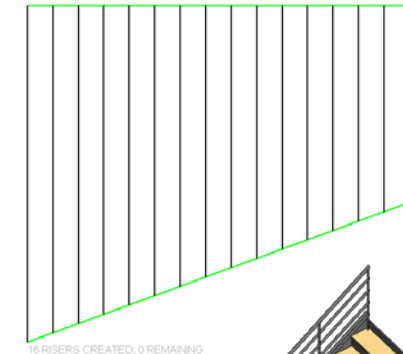
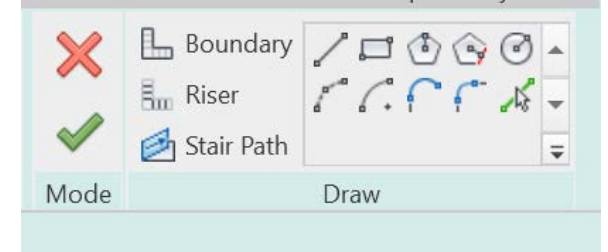
Create a Stair Sketch.

Check Base level and top level in the Properties Palette.
Change stair type as appropriate.

Click Boundary (green lines) and draw boundary lines.

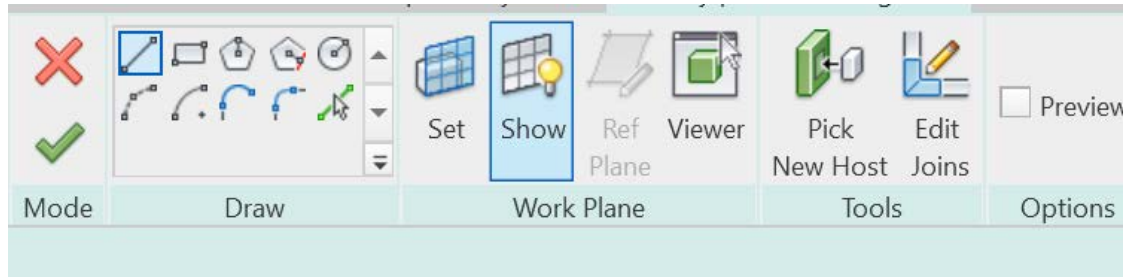
Click Riser (black lines) and draw risers until 0 risers remain.

Note: risers must touch boundary lines.





13-RAILINGS



Properties

Railing
900mm_Pipe

Railings

Constraints

Base Level	Level 0
Base Offset	0.0
Offset from Path	0.0

Dimensions

Length	0.0
--------	-----

Identity Data

Image	
Comments	
Mark	

Phasing

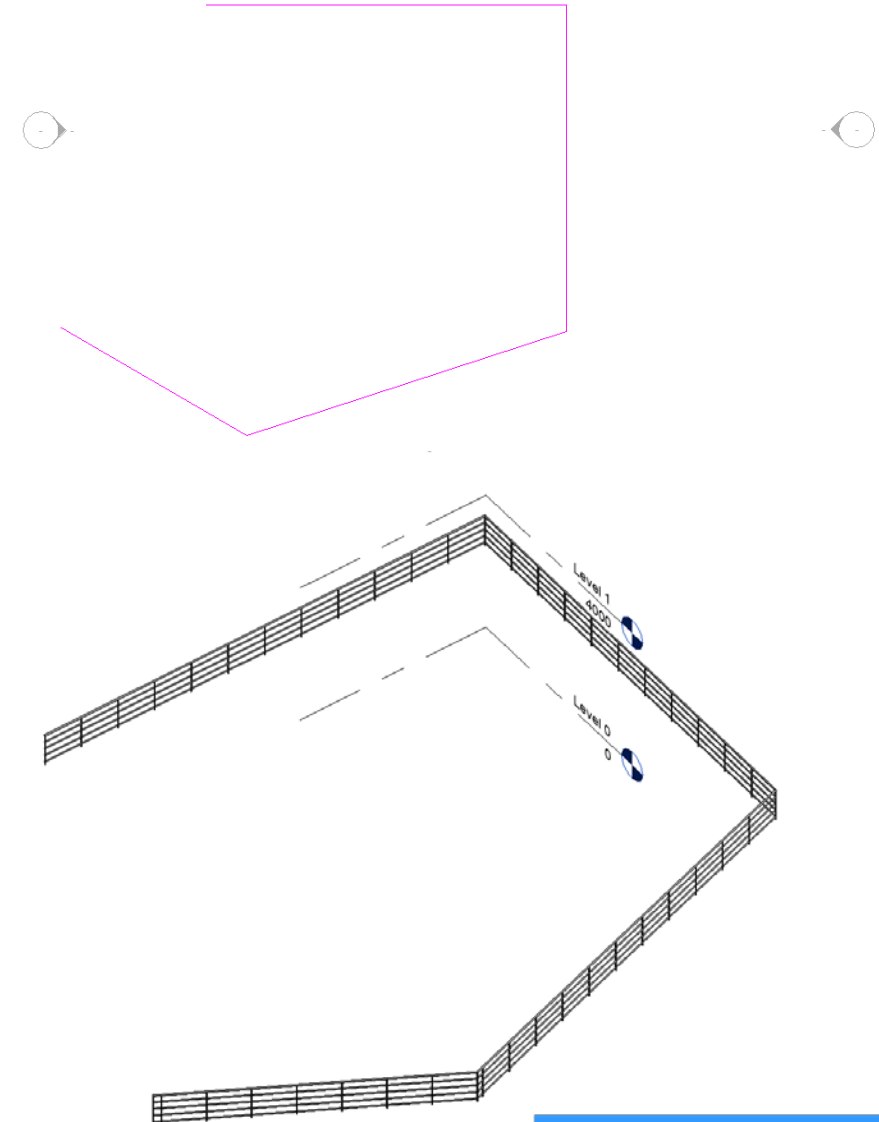
Phase Created	New Construction
---------------	------------------

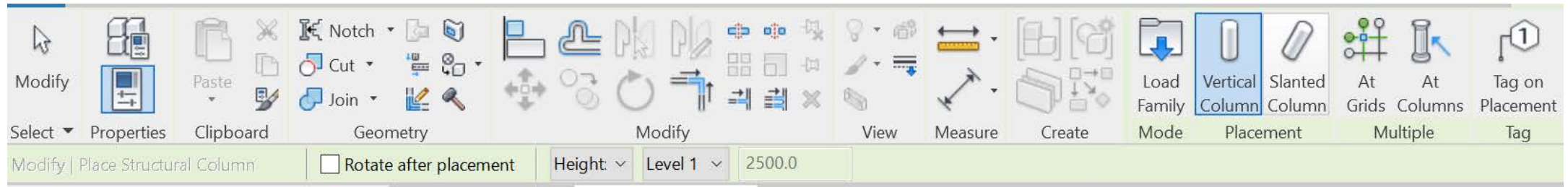
Create Railings by sketching lines

Check Base level in the Properties Palette. Change railing type as appropriate.

Draw a 'Chain' of lines in the sketch (magenta)

Click the TICK



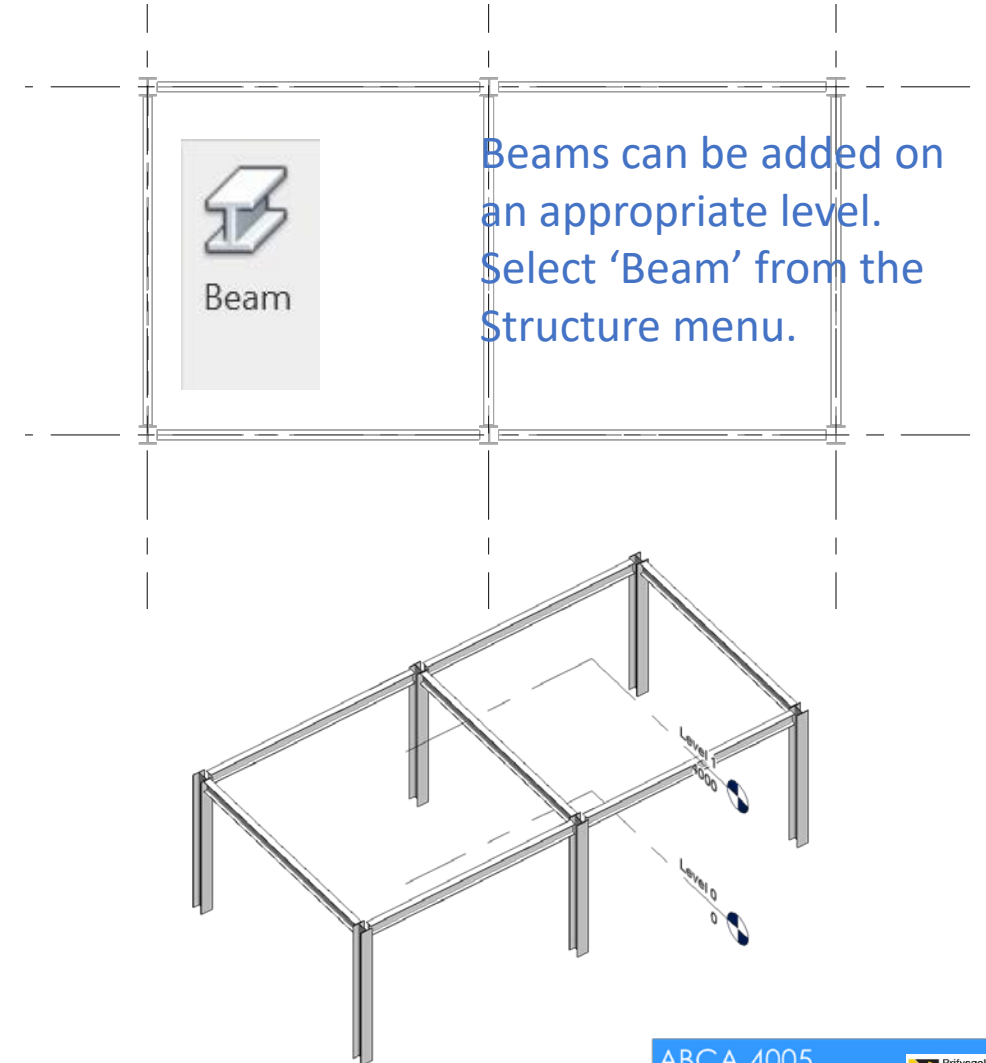
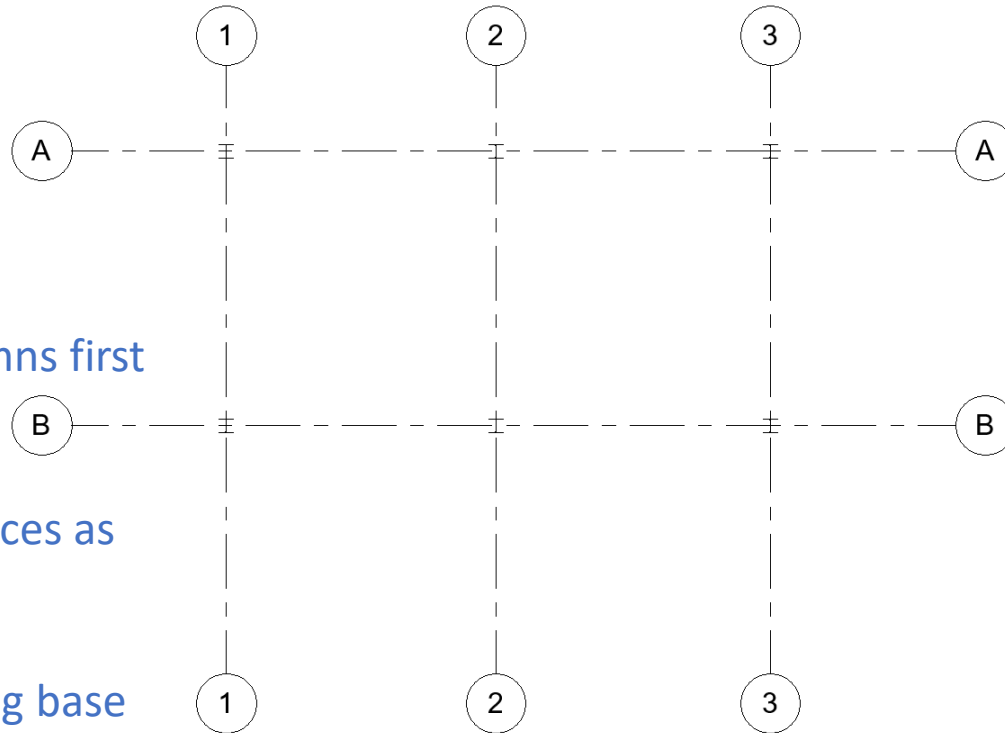


Before placing Columns first start with a GRID

Rename grid references as appropriate.

Click Column - noting base level in the properties palette.

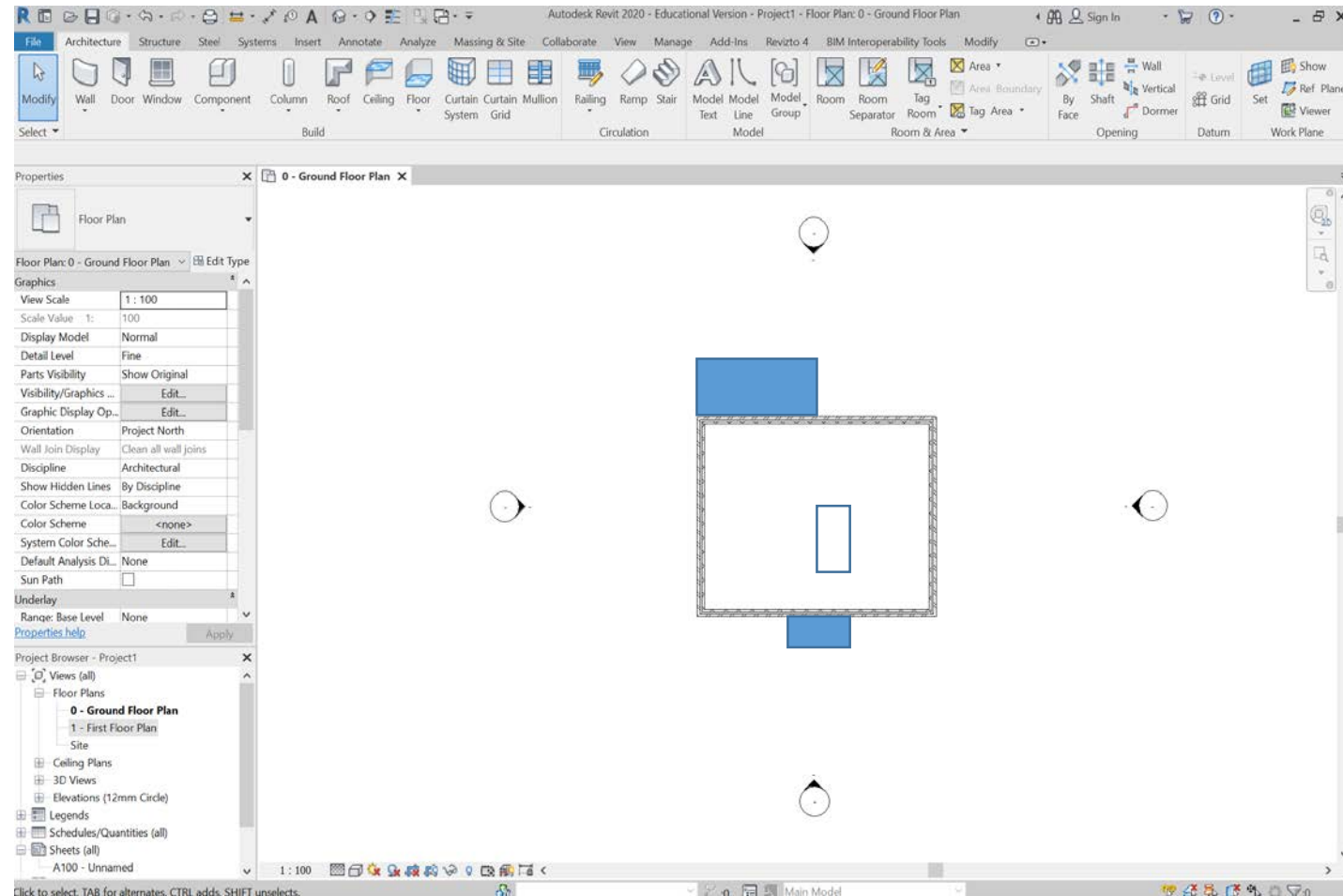
In the sub menu select 'Height' and Top Constraint (eg Level 1)



Exercise 3

In Your two storey house

- Add the staircase
- Add a porch with two columns and roof.
- Add a conservatory made from Curtain walls / Curtain roof





15-SITE



16-MATERIALS



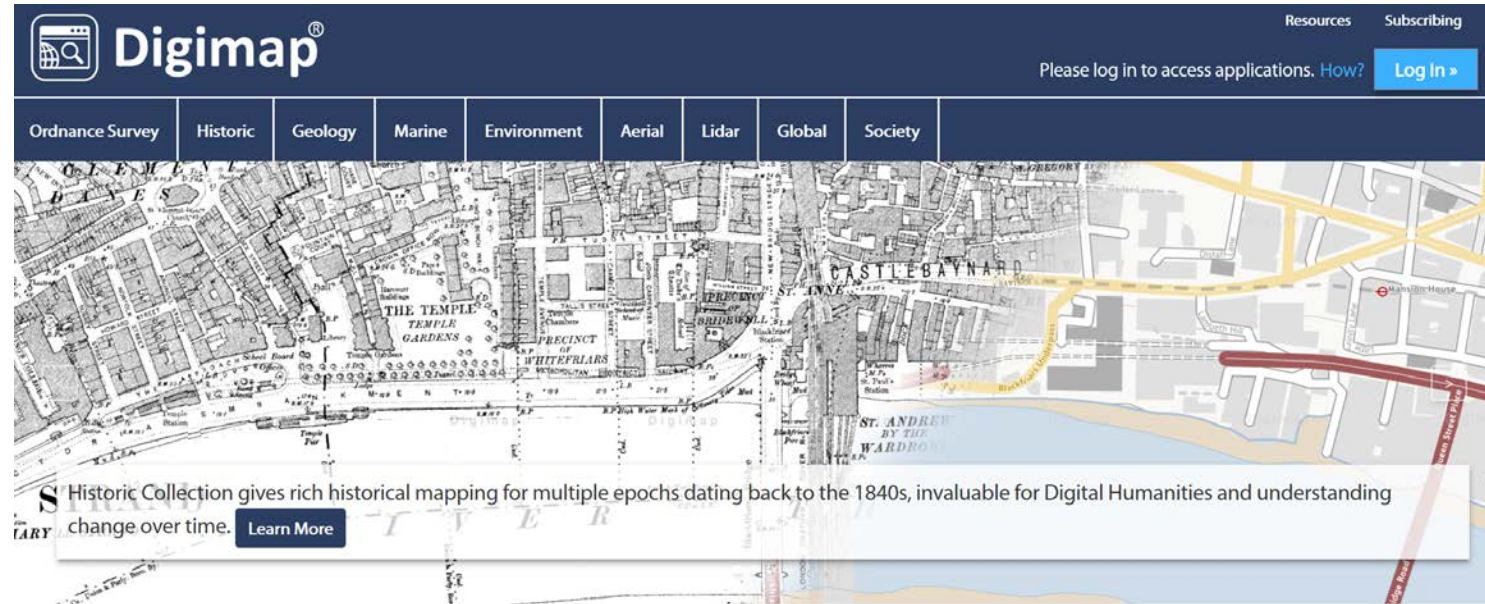
17-ROOMS

Topographical Surface – Use of Digimap



15-SITE

<https://digimap.edina.ac.uk>



What is Digimap?

Digimap is an online map and data delivery service, available by subscription to UK Higher and Further Education establishments. Operated by EDINA at the University of Edinburgh, Digimap offers a number of data collections, including Ordnance Survey, historical, geological, LiDAR and marine maps and spatial data.

What are we offering?

Digimap offers access to a range of datasets for the purposes of education and research. Create or interrogate a map online by selecting an appropriate base map, adding annotations and customising the content, use measurement and query tools to learn more about any study area. Download the raw spatial data in a wide range of formats for use in local GIS, CAD or image processing software.

Subscription Information

Digimap is available to members of subscribing higher and further education institutions in the UK. Individual registration is required, but the service is free at the point of use. More information about subscription fees can be found on our [website](#).



15-SITE

True North and Project North

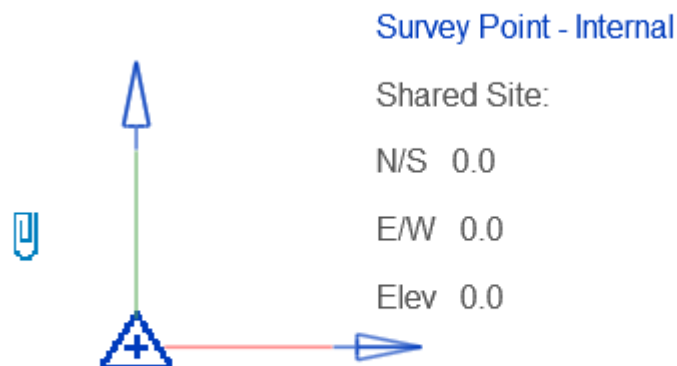
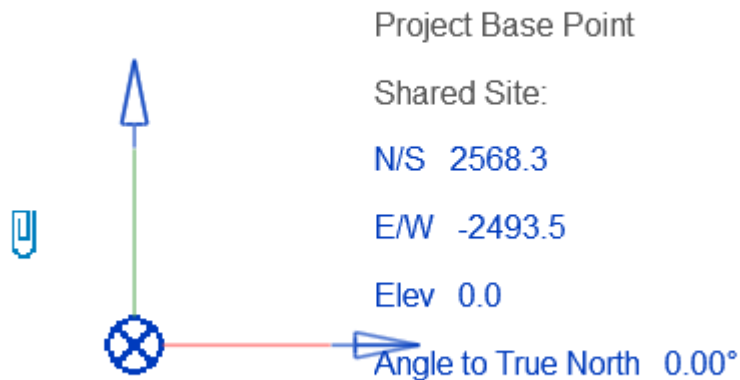


Understanding the use of the coordinate system in Revit is essential for BIM.

Shared coordinates / Project Base point from the outset enable consultants to coordinate information.

Although it helps coordination, it does not help presentation.

Revit can use True and Project North to orientate plans.





15-SITE

Properties

Floor Plan

Floor Plan: Site Edit Type

Graphics

View Scale	1 : 100
Scale Value 1:	100
Display Model	Normal
Detail Level	Coarse
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

Properties

Floor Plan

Floor Plan: Site Edit Type

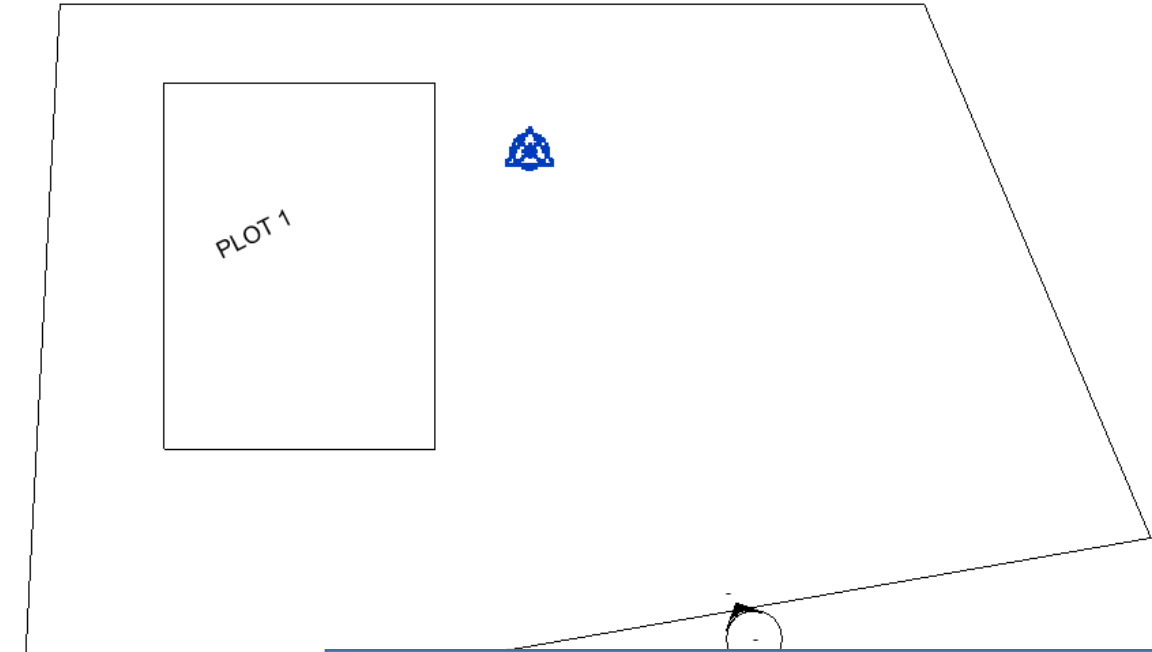
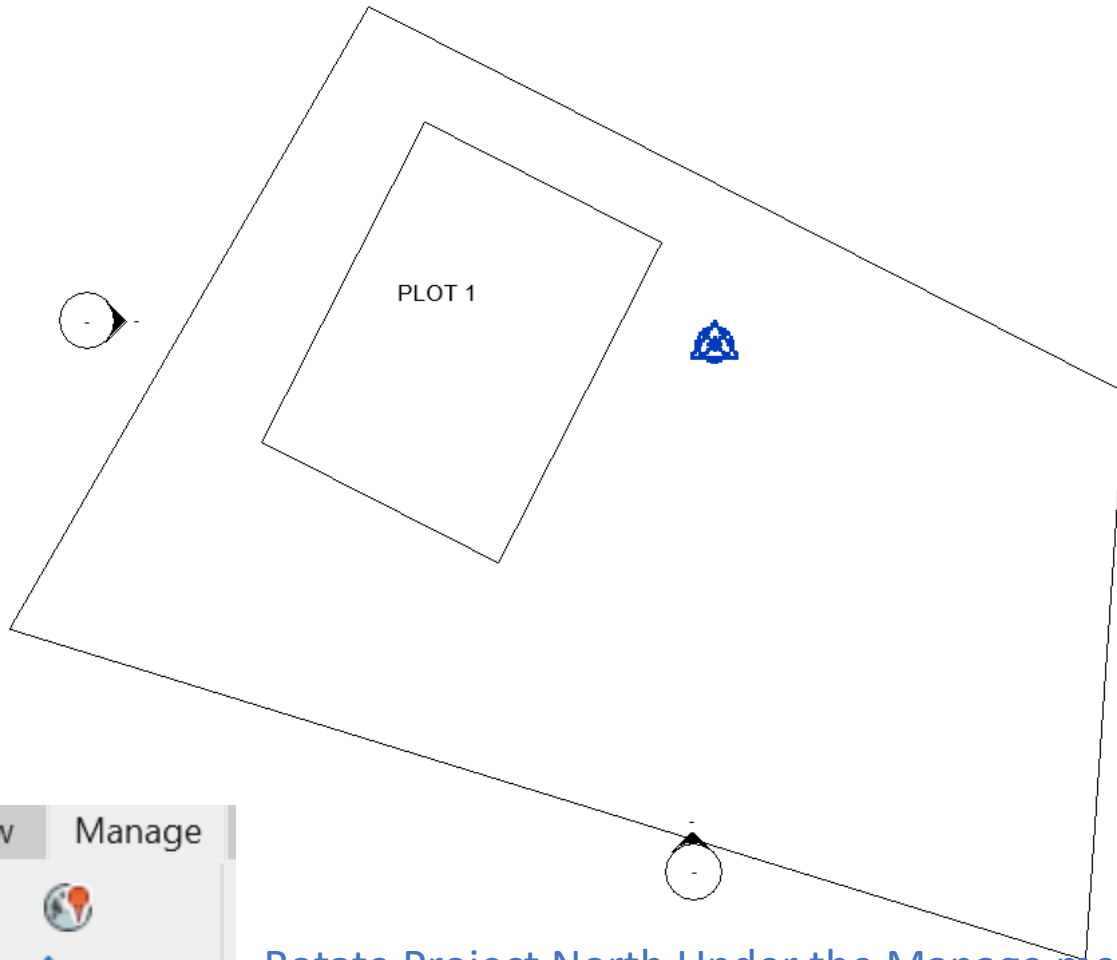
Graphics

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

[Properties help](#) Apply

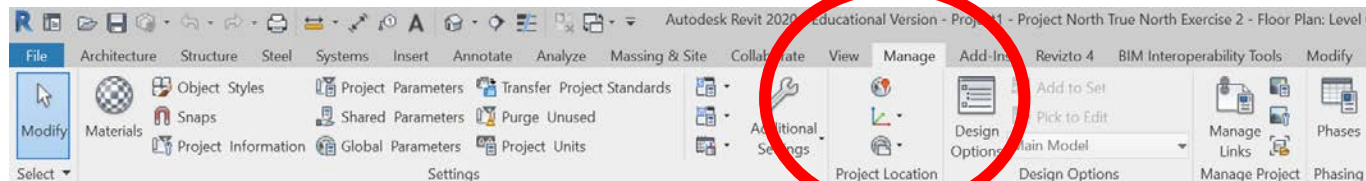
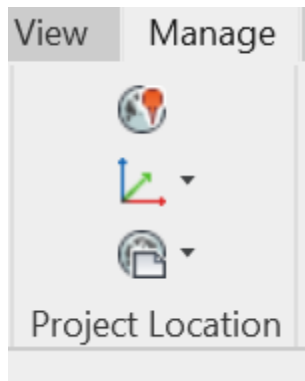
TRUE NORTH

PROJECT NORTH



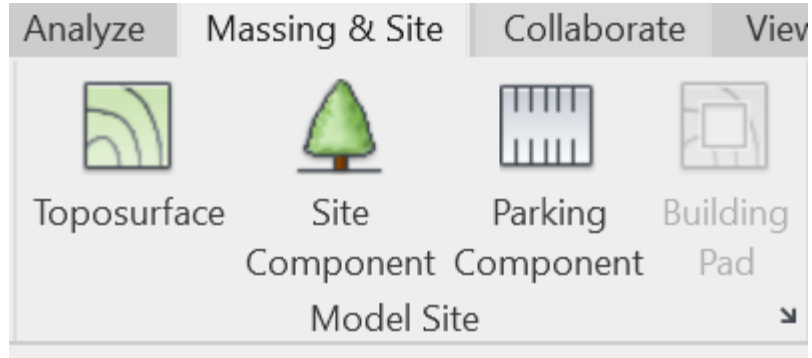
Rotate Project North Under the Manage menu

Download the Project North True North Exercise Projects 1 & 2 on Moodle



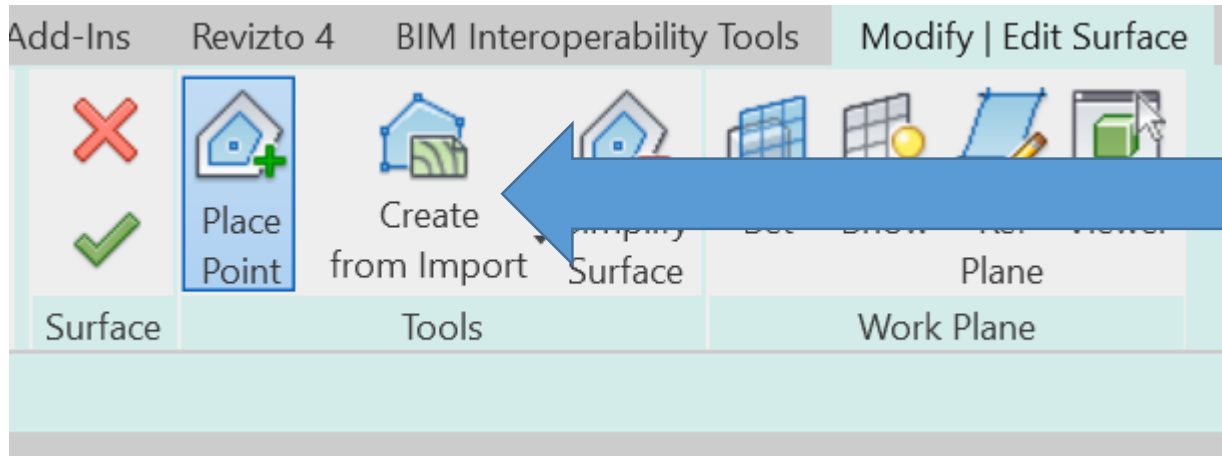


15-SITE



Topography can be created by placing points of the correct elevation value or from an imported site survey.

Use the digimap contours plan to create a toposurface for your house.





Material Browser - Roofing, Tile

Project Materials: All

Name

Roofing, Tile

Roofs

Sand

Shades

Site - Hardcore

Slabs on Grade

Sliding Doors

Home

Name

Identity

Graphics

Appearance

Physical

Thermal

Spanish Tile - Brown

Information

Generic

Color

RGB 255 255 255

Image

thermal_moisture.roof.tiles.spanish.brown.colour.png

Image Fade 100

Glossiness 20

Highlights Non-Metallic

Reflectivity

Transparency

Cutouts

Self Illumination

☒ Bump

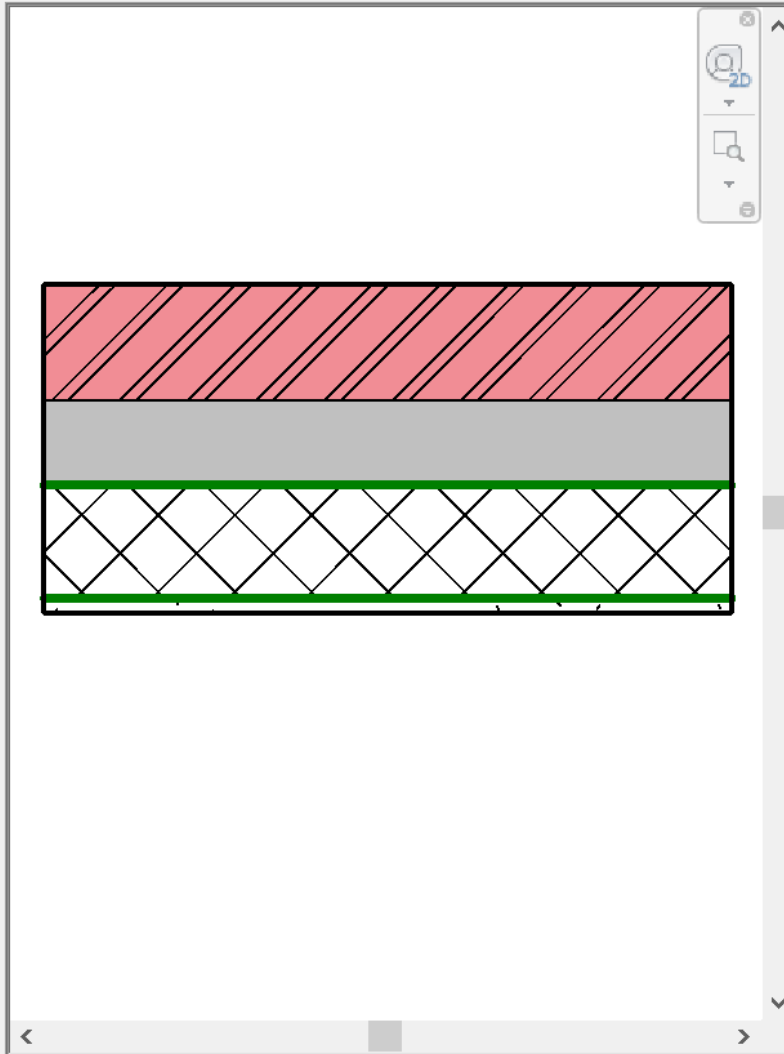
Tint

OK

Cancel



Edit Assembly



Family: Basic Wall
Type: Wall-Ext_102Bwk-75Ins-100LBk-12P 2
Total thickness: 290.0
Resistance (R): 4.2386 (m²·K)/W
Thermal Mass: 27.90 kJ/K

Sample Height: 6096.0

Layers

EXTERIOR SIDE

	Function	Material	Thickness	Wraps	Structural Material
1	Finish 1 [4]	Brick, Common	102.0	☒	☒
2	Thermal/Air Layer [3]	Fiberglass Batt	75.0	☒	☐
3	Core Boundary	Layers Above Wrap	0.0		
4	Structure [1]	Concrete Masonry Uni	100.0	☐	☒
5	Core Boundary	Layers Below Wrap	0.0		
6	Finish 2 [5]	Plaster	12.0	☒	☐

INTERIOR SIDE

Insert

Delete

Up

Down

Default Wrapping

At Inserts:

Both

At Ends:

None

Modify Vertical Structure (Section Preview only)

Modify

Merge Regions

Sweeps

Assign Layers

Split Region

Reveals

OK

Cancel

Help

View: Floor Plan: Modify type

Preview >>



18-VIEWS



19-PLAN
VIEWS



20-SECTIONS



21-ELEVATIONS



22-CALLOUTS



23-DETAILS



24-3D VIEWS



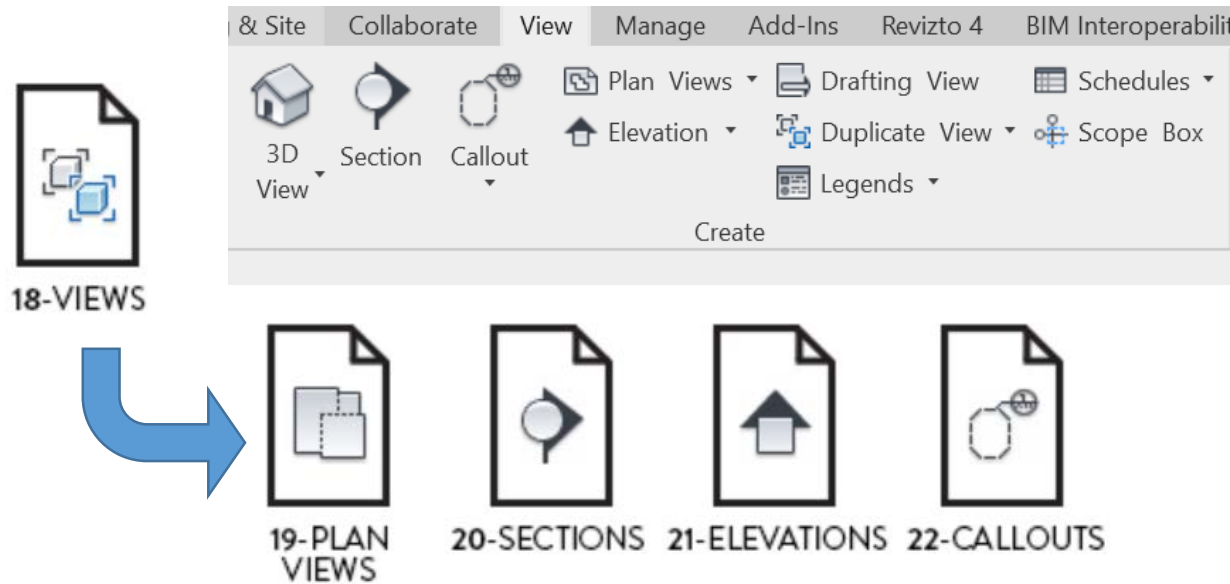
25-LEGENDS



26-VIEW
TEMPLATES



27-VISIBILITY



Revit allows you to create multiple views of your project. As you are working on one model, Revit coordinates all the information which can be presented in a varies levels of scale and detail.

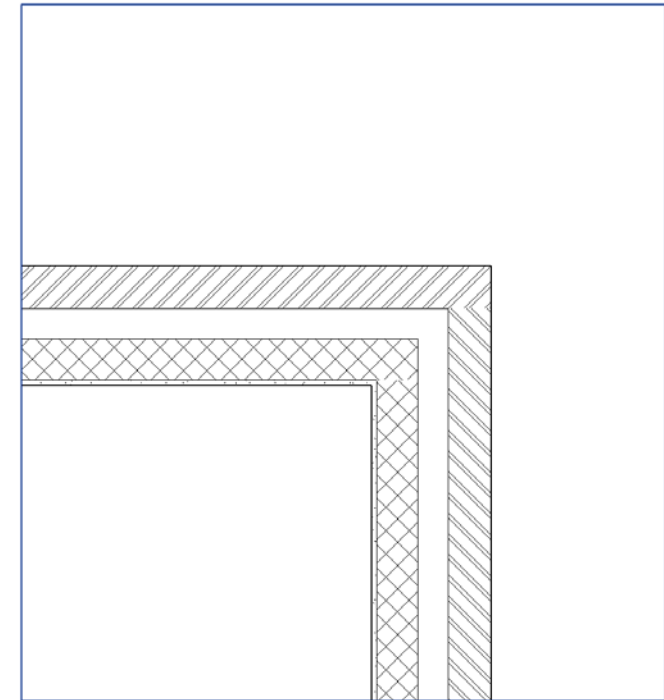
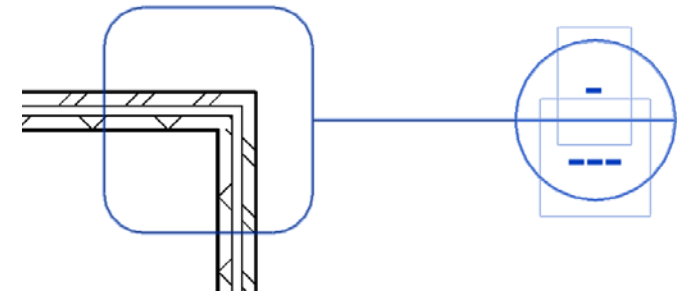
EG.

Ground Floor General arrangement plan 1:100

Ground Floor Setting out plan 1:50

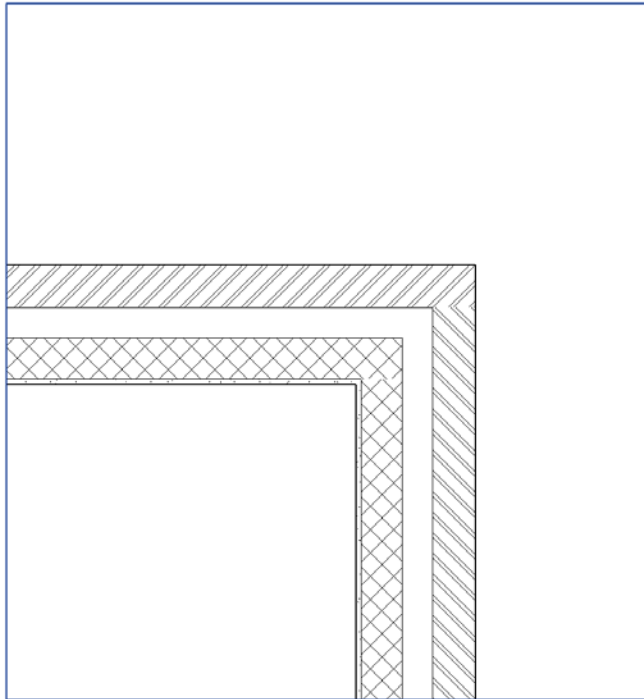
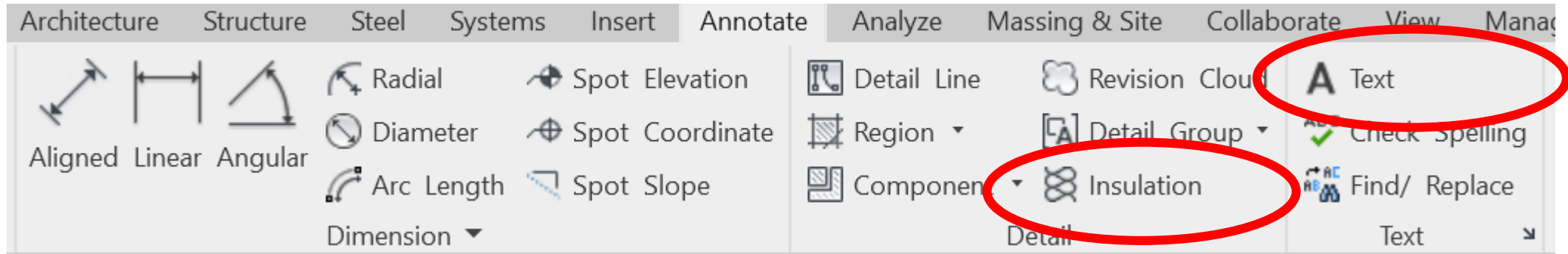
Callout detail of wall junction on plan 1:10

Views can be duplicated 'with detail' allowing multiple representations of the same view.

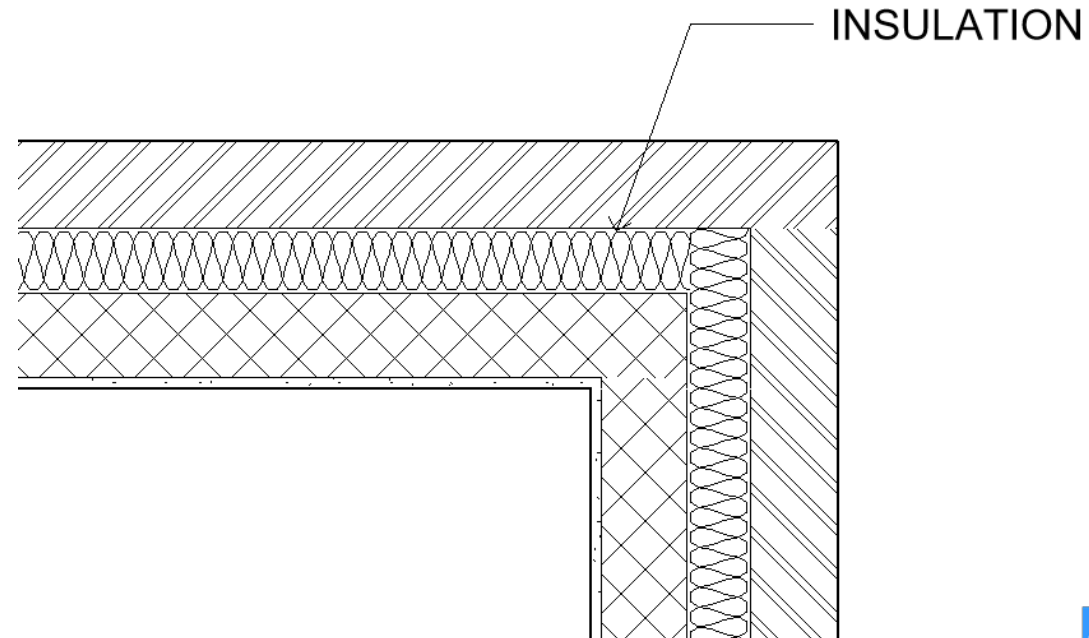




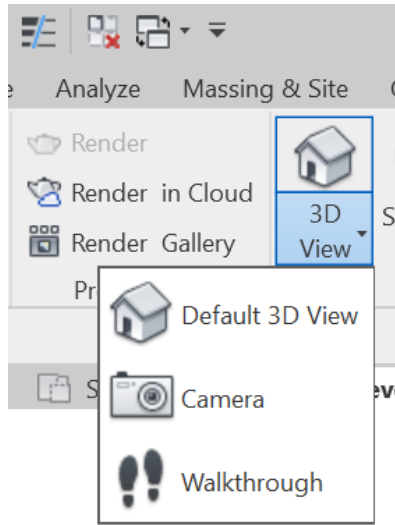
23-DETAILS



Create a Callout Detail for your house and add some annotations.



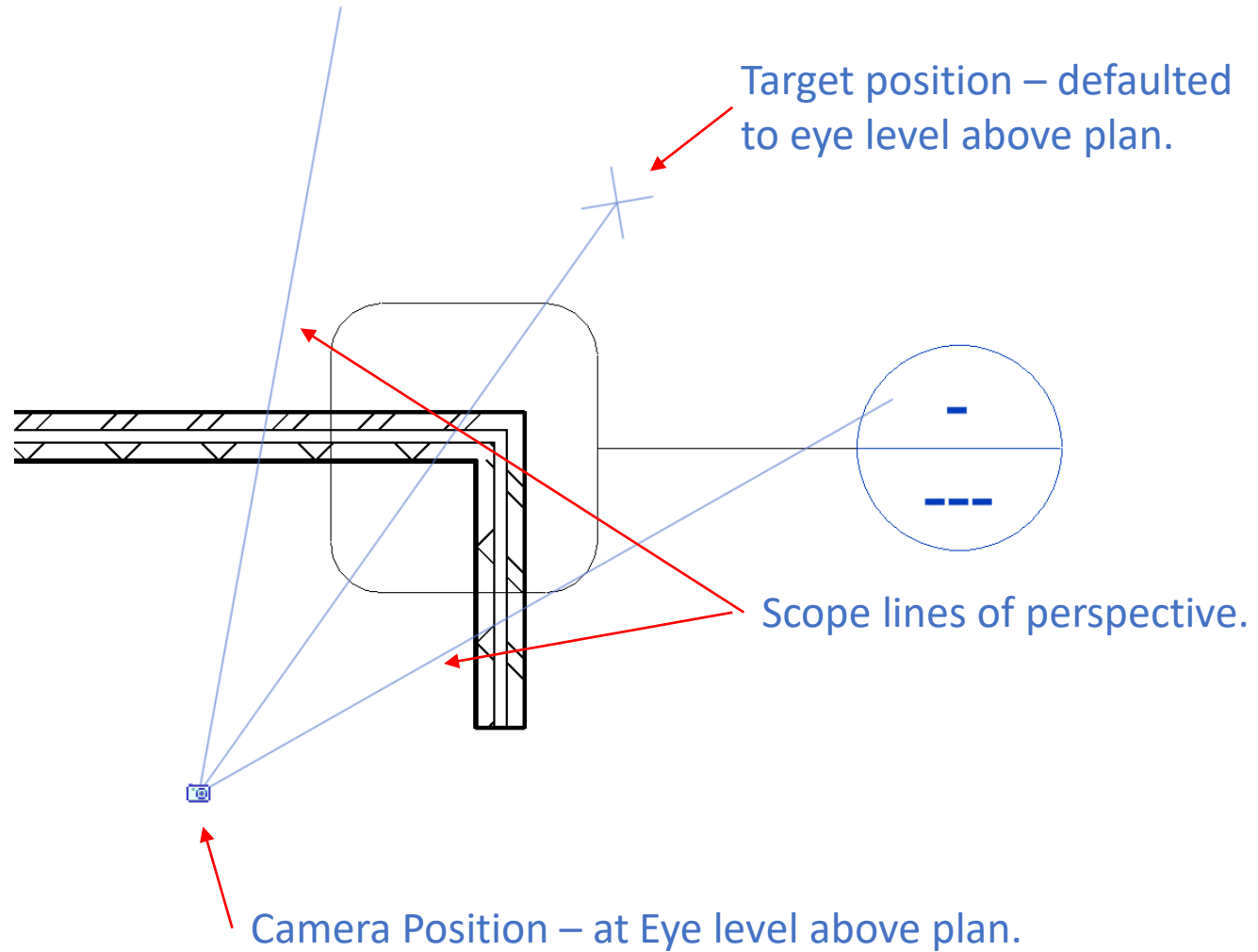
Adding further information to Details



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

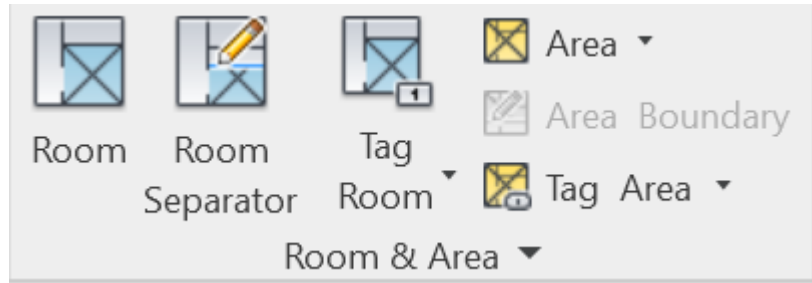




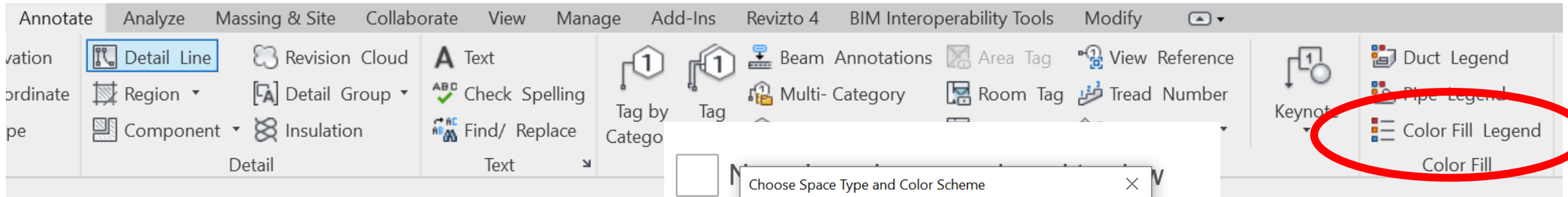
17-ROOMS



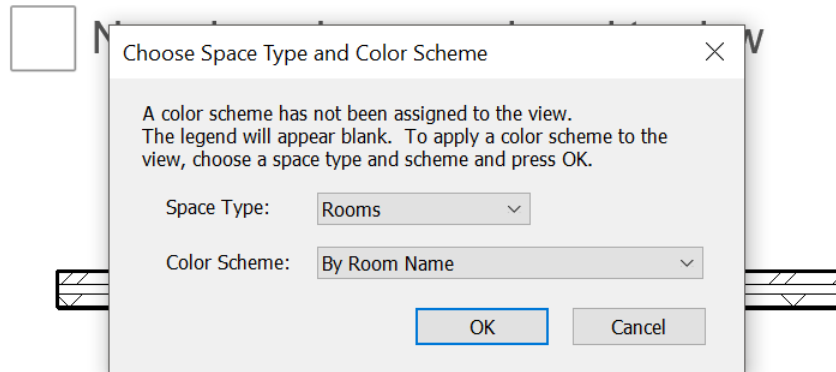
25-LEGENDS



Add rooms to your House Plan from the Architecture Menu



Add a colour fill legend to your house Plan from the Annotate Menu





Properties

Floor Plan

Floor Plan: Level 0 Edit Type

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

Model Categories Annotation Categories Analytical Model Categories Imported Categories Filters

☒ Show model categories in this view If a category is unchecked, it will not be visible.

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

All None Invert Expand 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

PART 3: ANNOTATE



28-LINES



29-TAGS



30-TEXT



31-REGIONS



32-DIMEN
-SIONS