

3.3 Layers - Structure

Layers well-organized, clearly named, and only include what's necessary. Including a folder structure. The template defines layer settings for visibility, locking, and intersection priorities. Reviewing how layers are structured is essential for ensuring consistency in drawings.

Reviewer Comments:

The layers are divided into 3 folders, which is good. However, more subfolders could organise the structure better. For example, inside the folder Modelling, there's no subdivision. It could be restructured by categories.

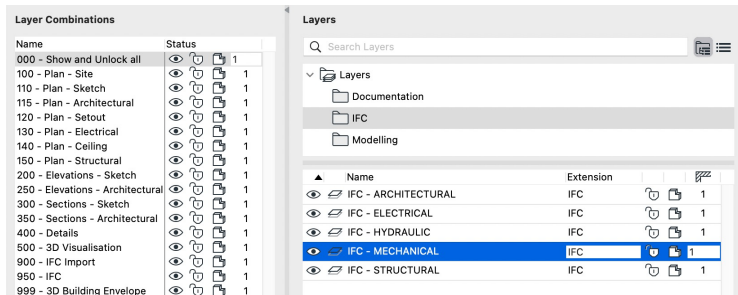
Suggestion for Modelling:

- 📁 Coverings & Finishes
- 📁 Primary Building Elements
- 📁 Services & Fixtures
- 📁 Site & Landscape
- 📁 Structural Elements
- 📁 Visualisation

Suggestion for Documentation:

- 📁 General
- 📁 Primary Views
- 📁 Services & Fixtures
- 📁 Site & Landscape
- 📁 Structural

Currently, IFC layers are visible in all combinations, including some that shouldn't, like Plan - Site, Plan - Setout and likely others. This needs to be reviewed to have it visible only in combinations where they're needed.



Modelling	
▲	Name
👁️	Beams - Exterior
👁️	Beams - General
👁️	Beams - Interior
👁️	Ceiling
👁️	Column - Exterior
👁️	Column - Interior
👁️	Columns - General
👁️	Coverings - Columns
👁️	Coverings - Roof
👁️	Coverings - Slab
👁️	Coverings - Wall
👁️	Electrical - General
👁️	Electrical - Services
👁️	Footings
👁️	Furniture - Fixed
👁️	Furniture - General
👁️	Furniture - Loose

Documentation	
▲	Name
👁️	2D - General
👁️	Detail Elements 1:10
👁️	Detail Elements 1:20
👁️	Detail Elements 1:50
👁️	Dimensions - Building
👁️	Dimensions - General
👁️	Dimensions - Internal
👁️	Dimensions - Levels
👁️	Dimensions - Setout
👁️	Dimensions - Site
👁️	Drawings - General
👁️	Figures - General
👁️	Fill - General
👁️	Grid - General
👁️	Labels - Doors and Windows
👁️	Labels - General
👁️	Labels - Surfaces
👁️	Labels - Walls

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Reviewer Comments:

There are 5 general layers visible in all Layer Combinations: 2D – General, Dimensions – General, Fill – General, Line – General, and Text – General. They could all be replaced for one unified layer: Annotations – General. Layers shouldn't be used to differentiate elements, the recommended way to do this is using Classifications.

The Annotation – General layer shouldn't be visible on the 3D combinations and should be carefully analysed its visibility on Setout and Site combinations (if those are generated from a Plan view).

Name	Status	Count
000 - Show and Unlock all		1
100 - Plan - Site		1
110 - Plan - Sketch		1
115 - Plan - Architectural		1
120 - Plan - Setout		1
130 - Plan - Electrical		1
140 - Plan - Ceiling		1
150 - Plan - Structural		1
200 - Elevations - Sketch		1
250 - Elevations - Architectural		1
300 - Sections - Sketch		1
350 - Sections - Architectural		1
400 - Details		1
500 - 3D Visualisation		1
900 - IFC Import		1
950 - IFC		1
999 - 3D Building Envelope		1

Search: general
Name
2D - General
Beams - General
Columns - General
Dimensions - General
Drawings - General
Electrical - General
Figures - General
Fill - General
Furniture - General
Grid - General
Hotlink - General
Labels - General
Line - General
Morph - General
Objects - General
Roof - General
Shell - General
Slab - General
Text - General

3.4 Layers - Naming Convention

A template will need a predefined set of layers. Each tool must have an assigned default Layer. It's important that the layers can be identified quickly and easily by anyone who needs to access or use the information.

DES vs DOC ie Design tools vs Document tools

Reviewer Comments:

Layer Combinations:

The current numbering system associated with each layer combination can be effective if it follows clear logic. In the current structure: 0XX – General, 1XX – Plan, 2XX – Elevation, 3XX – Sections, 4XX – Details, 5XX – 3D, 9XX – IFC. This is a good division, but Layer Combination **999 - 3D Building Envelope** should be under **5XX**. Additionally, it should consider categories for **MEP, Area Calculation**, or any document set extracted from the model.

Layers:

Although divided into folders, which is a good practice, it would be beneficial to have a prefix like **DES** for Design, **DOC** for Documentation, etc. When selecting layers in a tool, this can help users quickly identify layers instead of checking the folder. Another alternative is to use the **Extensions**—currently, no layer has extensions apart from the IFC ones.

Layer Combinations					
Name	Status				
000 - Show and Unlock all					1
100 - Plan - Site					1
110 - Plan - Sketch					1
115 - Plan - Architectural					1
120 - Plan - Setout					1
130 - Plan - Electrical					1
140 - Plan - Ceiling					1
150 - Plan - Structural					1
200 - Elevations - Sketch					1
250 - Elevations - Architectural					1
300 - Sections - Sketch					1
350 - Sections - Architectural					1
400 - Details					1
500 - 3D Visualisation					1
900 - IFC Import					1
950 - IFC					1
999 - 3D Building Envelope					1

Layers

Search Layers

- Layers
 - Documentation
 - IFC
 - Modelling

Name	Extension				
Beams - Exterior					1
Beams - General					1
Beams - Interior					1
Ceiling					1
Column - Exterior					1
Column - Interior					1
Columns - General					1
Coverings - Columns					1

3.5 Layer Combination - Structure

Layer combinations used in views to ensure they reflect the correct visibility settings

Reviewer Comments:

Efficient existing layer combinations, but fewer layers than necessary.

The idea is to have ready Layer Combinations for all documents extracted from the model. Suggestions:

(Layer Combinations following the current numbering logic)

800 - 3D: MEP – Displays MEP-related layers, hotlinks and documentation

500 - 3D: Visualization ALL (rename) - Displays all Layers for the 3D visualisation of the Building

510 - 3D: Visualization Simple - Displays a simple fast generating set of Layers for the 3D visualisation of the Building in 3D

515 - 3D: Structural

600 - Key Plan - Displays layers for the production of a Key Plan which displays the building's external envelope and Sections, Elevations and Grids

260 - Interior Elevations - Displays Layers for interior room Elevations - Floor, Wall, Ceiling, and interior Fittings and Joinery

For Plan views (prefix 1XX):

Plan – Bracing - Displays the Walls, Columns, Floors, and Doc: Bracing which contains all bracing annotation and brace lines & braces if using the Ci Tools Bracing;

Plan – Finishes - Displays the Walls, Floors, Fittings, Wall trims, and Zones;

Plan – Fire - Displays the Walls, Floors, and Doc: Fire which contains all Fire Plan annotation and highlighting of Fire Walls;

Plan – Fittings - Displays the Walls, Floors and all Fittings Layers including Doc: Fittings which contains all fittings annotation;

Plan – Floor - Displays the elements for a typical Construction / General Arrangement floor plan, walls, roof overhangs, Detail, Elevation & Section markers;

Plan – Floor Framing - Displays the Floor Beams, Structural elements, Floors, Walls and Grids;

Plan – Foundation - Displays the Floor and Floor Foundations as well as Plumbing fittings and Walls (depending on your documentation style you may want to turn these off);

Plan – Plumbing - Displays the Plumbing Fittings and floors;

Plan – Furniture - Displays all of the Fittings Layers, Furniture Lamps, Presentation Bits, Site Furnishings Walls floor and Zones, this Layer Combination is designed for Sketch Design and Presentation Plans;

Plan – Roof - Roof Plan displays Roofs, Roof Beams, Roof Coverings;

Plan – Roof Framing - Displays Roofs, Roof Beams, Structural elements, Walls, Grids Section Markers;

Plan – Site Landscaping - Displays the Primary Building Elements and all of the Site Planting, Site Structures, Site Furnishing

3.6 Layer Combinations - Visibility for Different Views

Layers well-organized, clearly named, and only include what's necessary. Including a folder structure. The template defines layer settings for visibility, locking, and intersection priorities. Reviewing how layers are structured is essential for ensuring consistency in drawings.

Reviewer Comments:

Views saved with the Layer Combinations are well applied in general, but it could be better by following the suggestions on the previous topic, "Layer Combination Structure". This will avoid Layer Combinations that are used for more than one purpose but do not completely match it.

A few examples:

Use the Plan - Roof Layer Combination for Roof views

Use The Plan – Foundation for Slab and Foundation Setout

Use the 3D: Structural for Loadbearing Structural 3D Elements.

Show All Plan	000 - Show and Unlock all
Show All 3D	000 - Show and Unlock all
Survey	115 - Plan - Architectural
Location Plan/Satellite Imagery	000 - Show and Unlock all
Site Plan	100 - Plan - Site
Roof	110 - Plan - Sketch
First Floor Presentation Plan	110 - Plan - Sketch
Ground Floor Presentation Plan	110 - Plan - Sketch
Presentation Section	300 - Sections - Sketch
Presentation Section	300 - Sections - Sketch
Presentation Elevation	200 - Elevations - Sketch
Presentation Elevation	200 - Elevations - Sketch
Presentation Elevation	200 - Elevations - Sketch
Presentation Elevation	200 - Elevations - Sketch
White Model Perspective	500 - 3D Visualisation
White Model Axonometry	500 - 3D Visualisation
Quick Render	500 - 3D Visualisation
Survey	115 - Plan - Architectural
Site Plan	100 - Plan - Site
Set Out	120 - Plan - Setout
Slab and Foundation Setout	120 - Plan - Setout
Roof	115 - Plan - Architectural
First	115 - Plan - Architectural
Ground	115 - Plan - Architectural
Roof	150 - Plan - Structural
First	150 - Plan - Structural
Ground	150 - Plan - Structural
Roof	140 - Plan - Ceiling
First Floor Ceiling	140 - Plan - Ceiling
Slab and Foundation Setout Plan	120 - Plan - Setout
IFC - Loadbearing Structural 3D Elements	950 - IFC
Zone and Morph Massing	000 - Show and Unlock all
Generic BIMx Model	500 - 3D Visualisation
Scalebar - 1:100	000 - Show and Unlock all
Titleblock - A1 Horizontal	000 - Show and Unlock all
Titleblock - A1 Vertical	000 - Show and Unlock all
Titleblock - A3 Horizontal	000 - Show and Unlock all
Titleblock - A3 Vertical	000 - Show and Unlock all
Window Schedule	000 - Show and Unlock all
Door Schedule	000 - Show and Unlock all
Window Types	000 - Show and Unlock all
Door Types	000 - Show and Unlock all
Wall Types	115 - Plan - Architectural
Wall Schedule	115 - Plan - Architectural
Massing Study	000 - Show and Unlock all
Room List	000 - Show and Unlock all
Object List	115 - Plan - Architectural
Quantity Takeoffs	115 - Plan - Architectural
Ceiling Plan Legend	140 - Plan - Ceiling
Electrical Symbol Legend	130 - Plan - Electrical

3.7 Layer Combinations - Locking Rules & Intersection Priorities

Reviewer Comments:

Locking Rules:

Currently, no Layers are locked in any combinations. In some situations, this might be required. For example, it could be a good idea to have IFC layers (in case the IFC was imported as editable) locked in all combinations except the IFC ones to ensure nothing is moved or edited. The same logic can be applied to Structural Elements in Architectural layer combinations.

It's also important to consider the efficiency of the lockers. It can become annoying for the users to be unable to edit an element because of the current layer combination, so this option must be used wisely.

Intersection:

Elements in Layers with equal numbers will interact with each other. Currently, all layers have the intersection defined as 1, except for the Layer "Hidden". Depending on the modelling practices applied in the office, it might be interesting to set up different numbers for certain layers. Although there are other tools to model cabinets and finishes, it's not uncommon to see the wall tool being used for this purpose. If the intersection number of these layers is kept the same as the Wall layer, they will intercept each other, which is not correct. Managing the intersection priorities will depend on the modelling workflows applied by the office.

