CONSTRUCTION INDUSTRY COUNCIL
建造業議會

BIM

Appendix 2

# User Guide for using BIM in generation of MEP digital drawings for statutory submissions

## BricsCAD

2021

## Disclaimer

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**Document Revision Tracking**

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| | |

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# 1 Hardware / System Requirements

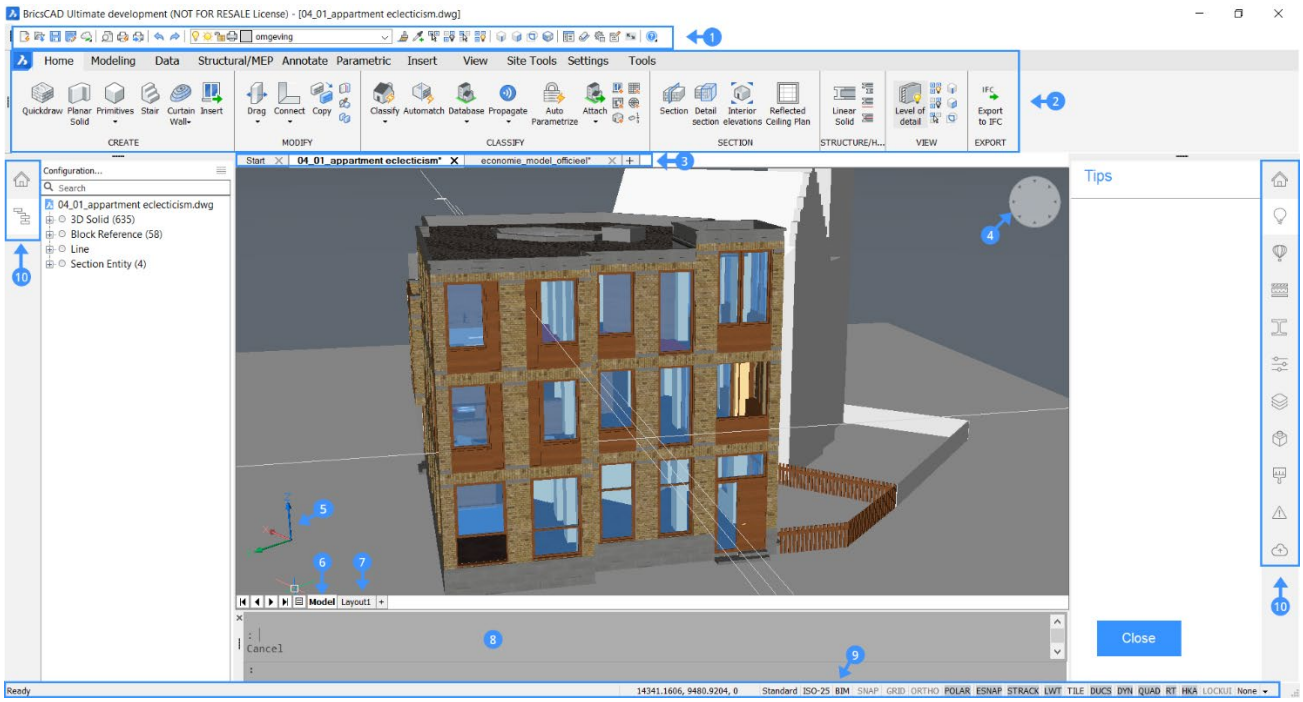
## 1.1. General

Hardware / system requirements for modelling, coordination and visualisation on desktop/notebook computers and mobile devices should be determined by the BIM managers for different projects on a case by case basis. The minimum requirement varies for different applications, project sizes and operating systems.
https://help.bricsys.com/hc/en-us/articles/360015498939-Minimum-system-requirements-and-recommendations

# 2 BricsCAD Basics

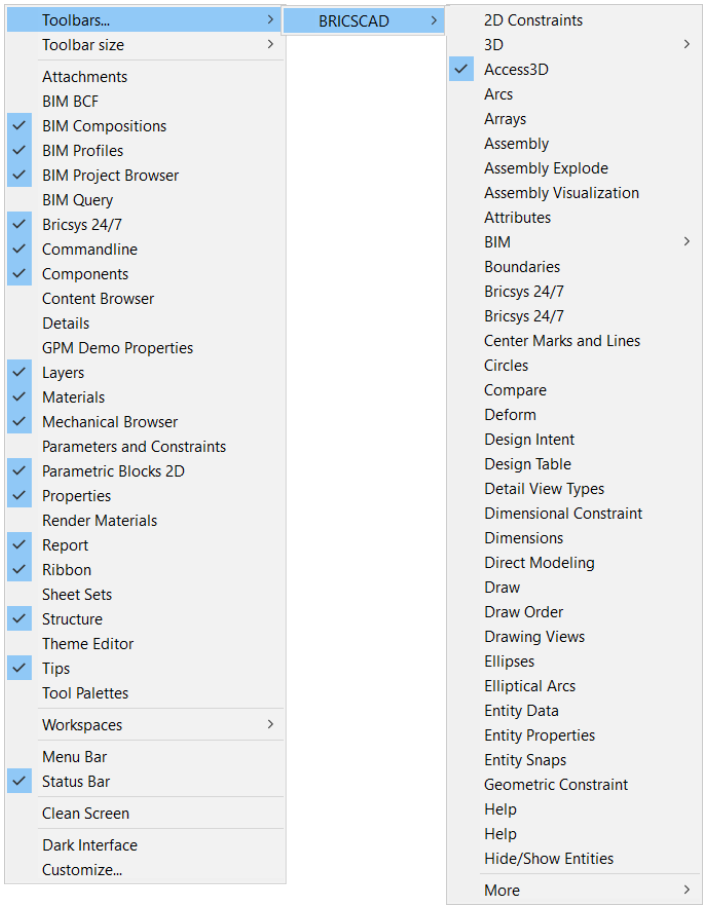
## 2.1. User Interface

The BricsCAD BIM interface includes all tools, commands, and settings required to create and edit building elements. Start by creating building elements, opening an existing drawing or importing a building model. The user interface can be customised to support the way Users work.

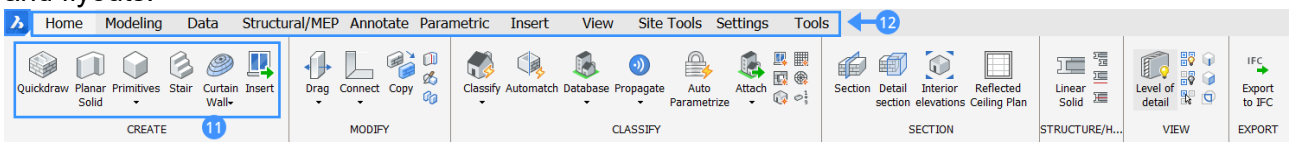



**Toolbar (1)**: In BricsCAD, toolbars are arranged in collections of similar functions within a bar of tools. Each function is displayed with an icon and is categorized by topic. Toolbars are available for all command categories. For example, a BIM toolbar is one of the tool categories available in BricsCAD BIM. This toolbar includes the most used BIM tools for modelling. It is possible to customize existing toolbars or create your own custom toolbars. By default, the Access 3D Toolbar is shown on top of the screen.


**Note:** To open more toolbars you can right-click, choose toolbars and check the topics you want.

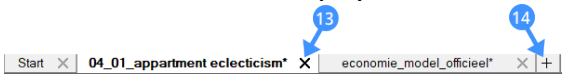



**BIM Ribbon (2)**: A ribbon organizes tools in a series of panels (11) which are grouped in different tabs (12). Each tab is separated by a series of panels, and each panel contains a group of buttons and flyouts.

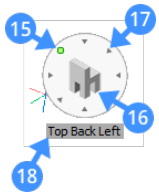



**Document Tabs (3)**: allows you to

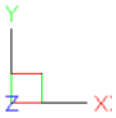
- Easily switch between all open drawings
- Drag and drop the tabs to change their order.
- Click the **X icon (13)** at the right-hand side of the tab to close it.
- Right-click on a document tab to display a context menu.
- Click the **+ icon (14)** at the end of the document tab to open a new drawing.




**Look from Widget (4)**: The Look From Widget appears in the upper right corner of the drawing area. When you hover the cursor over the widget, a small green rectangle appears **(15)**, as does the preview of a chair **(16)**. Clicking the cursor over one of the triangle shapes **(17)** shows what the 3D view will look like **(18)**. The default location of the widget is the top right corner of the drawing area.



**UCS Icon (5)**: UCS stands for a User-defined Coordinate System. The UCS icon shows the nature of the current coordinate system. The display of the icon is controlled through the UCS icon system variable and the position of the UCS icon is defined by the UCS icon position system variable.

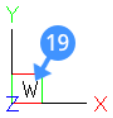



**Model Tab (6)**: When you start a drawing session, your initial working area is called Model Space. Model Space is an area in which you create two-dimensional and three-dimensional entities based on either the World Coordinate System (WCS) or User Coordinate System (UCS). You view and work in model space while using the Model tab.

**Layout Tab (7)**: Each drawing has at least one layout and each layout is composed of one or more viewports. Each viewport can show a different part of the drawing at a different scale.

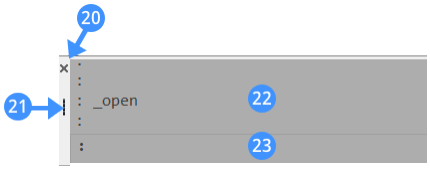
Paper space is a work environment that provides the model space view at a given scale, depending on the size of the paper. In each layout, you can add the entities needed to complete a printed copy of the drawing; title blocks, legends, frames, etc. These entities are only visible in the layout when you add. They are not visible in the other layouts or in the model space.

UCS in Layout Mode
In paper space of layout modes, a W (19) letter appears in the UCS icon, which means the WCS is active.




**Note:** WCS stands for World Coordinate System.

**Command Bar (8)**: The command bar consists of two fields. In the lower field, you can type the commands and BricsCAD shows prompt, options and other information regarding the execution of commands here. If the command bar is closed, this information shows in the Status Bar.
The command history displays in the upper field of the command bar.

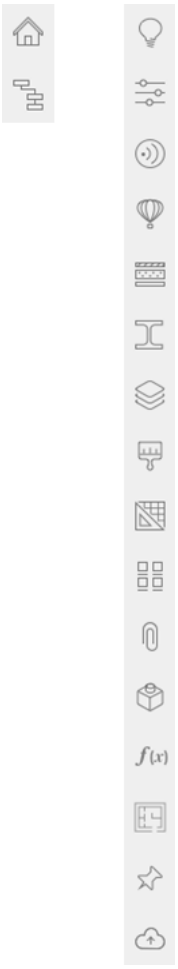



**Status Bar (9)**: The Status Bar sits along the bottom edge of the BricsCAD application window. It contains a lot of information about the settings in the current drawing. The status bar consists of 16 fields. All of these fields are optional, except for the **Status field (24)**. If you click the small black down arrow button at the right end of the status bar **(25)** a list of all field displays. Click a field to toggle its display.
Right-click a field to display an options menu for this field.


- **Status field (24)**: Displays the status of the software
- **List button (25)**: Click the arrow to display a list of available Status Bar fields
- **Fields (26)**: Click a field to toggle it ON/OFF. Right-click to display a context menu

**Tool Panel (10)**: In BricsCAD BIM, the Tool Panel is displayed on both sides of the workspace. The Tool panel consists of BIM panels. The BIM panels are dockable and thus they are movable. The panels can be moved to another docked panel using the drag and drop method.

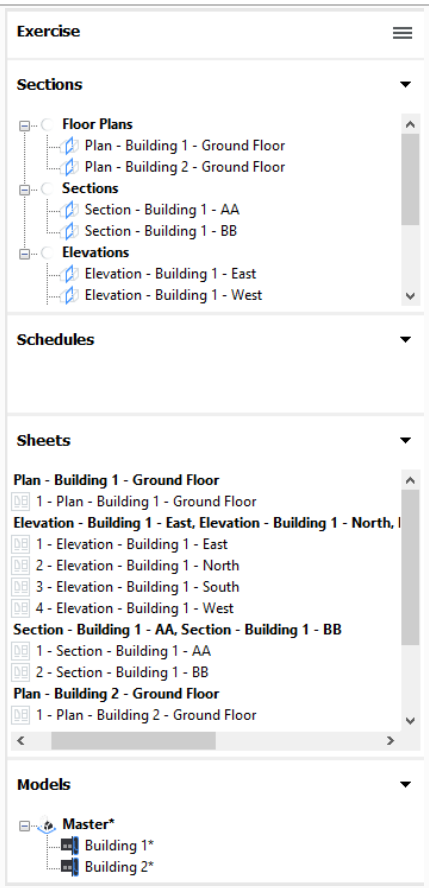
The Tool Panel looks like the image below: on the left-hand side it displays the Structure Browser and the Project Browser and on the right-hand side it displays Tips, Properties, Details, Library, BIM Compositions, BIM Profiles, Layers, Render Materials, Sheet Sets, Tool Palettes, Attachments, Mechanical Browser, Parameters and Constraints, Drawing Customizations, BIM BCF, Bricsys 24/7. You can drag each panel and dock at your desired placement.



**Note**: You can always add or remove panels in the Tool Panel by right-clicking and checking those you want.

Functions of the different dockable Panels from the Tool Panel:

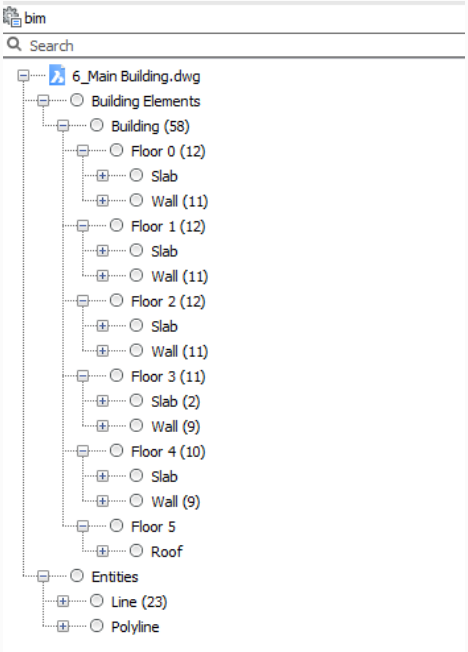
**Project Browser**



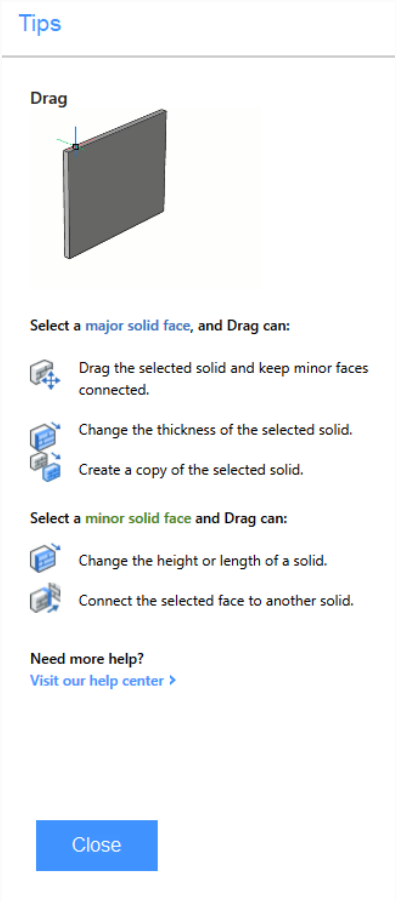

The BIM Project Browser allows you to easily navigate through the entire content of a project: models, sections, drawings, and schedules.

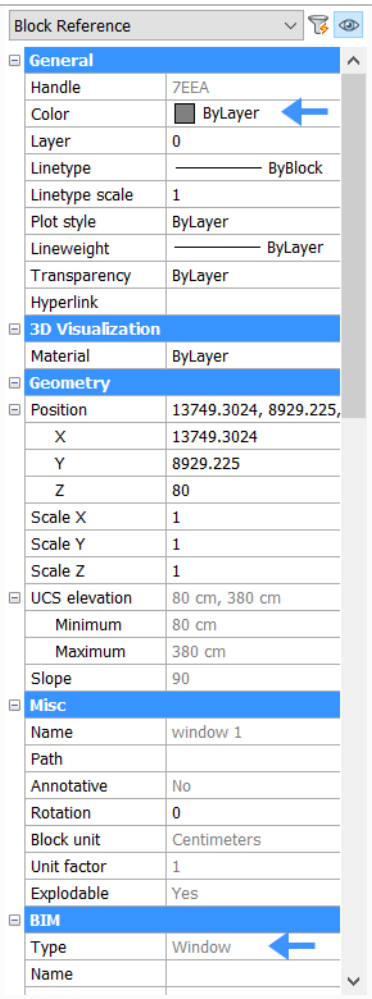
See the **BIM Project Browser** article on how to use this panel.

**Structure Browser**




The structure browser is an interactive tree that displays the entities in the current model. Using the configurable structure tree on the

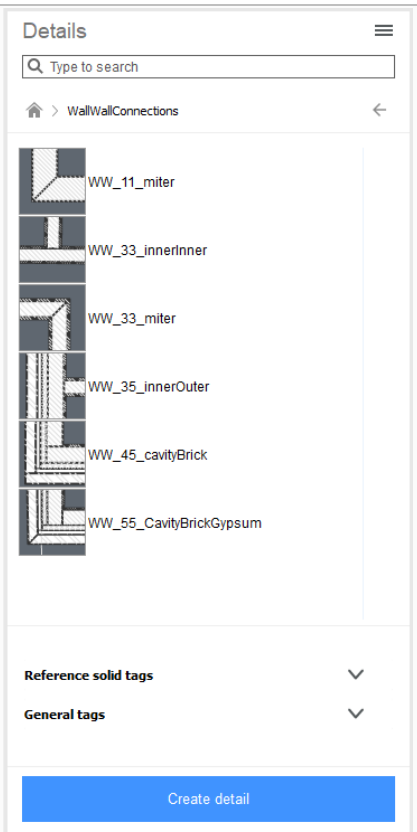
| | |
|---|---|
| | Structure Browser the BIM model can be organized in a way that you want to view the elements.<br><br>Once you configured the tree, you can easily save this structured tree as a .cst file. By default, the .cst files are stored in the **Support Folder**.<br><br>See the **Structure Browser** article on how to use this panel. |
| **Tips** | Tips Panel gives general information about the tools and commands. The tips can change depending on the active command. The tips can only be seen when the panel is open.<br><br>The following illustration shows the Tips Panel when the DRAG command is active:<br><br>  |
| **Properties** | The **Properties Panel** shows all the properties of a selected element. You always have some general info first, the other different tabs within this panel depend on the type of element that is selected. |




for example, here we can see that the selected item is a window and is coloured by layer. You can adjust the properties as you like.

See the **Properties** article to see how to work with this panel in more detail.

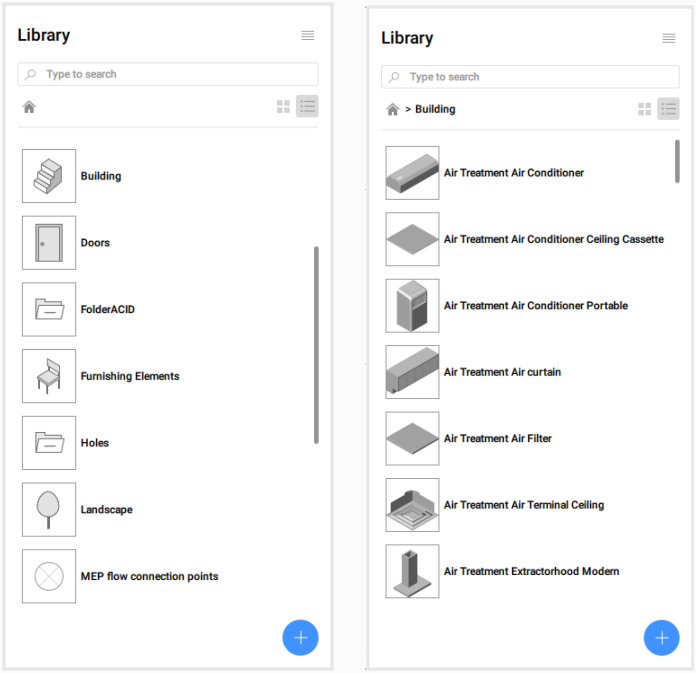
**Details**



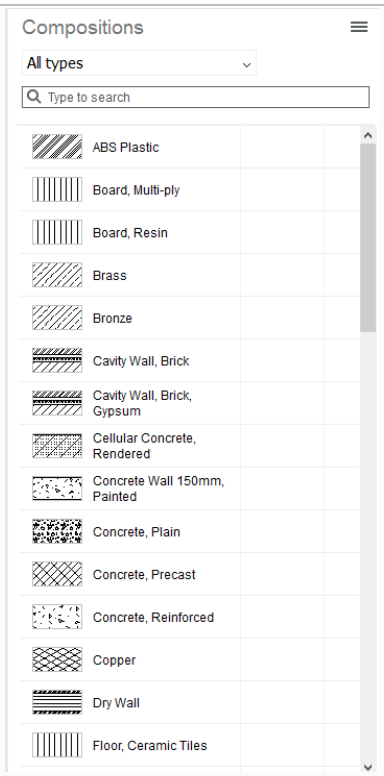

In the **Details** panel you can:

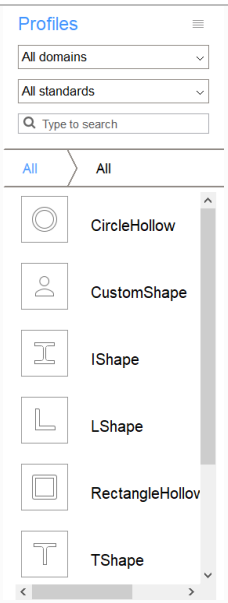
- View saved details
- Organize saved details
- Propagate details
- Open details and adjust them in the model space

**Library**




In BricsCAD BIM, the **Library** panel is used to access your Bricsys BIM library. BricsCAD comes with a standard BIM library, but you

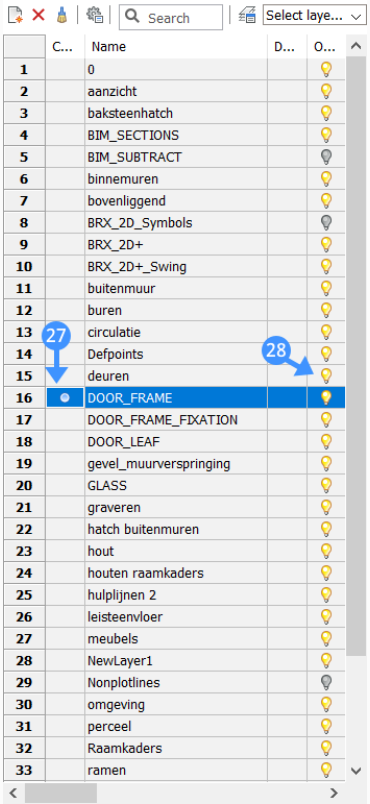
| | |
|---|---|
| | can also create your own.<br><br>The Library panel is a quick way to keep your BIM components at your fingertips or access predefined ones. You can add any CAD model to the Library. You can also fully customize the name and category to make it easier to find. You can then insert a component in your drawing by dragging and dropping. |
| **BIM Compositions** |  <br><br>In the **BIM Compositions Panel**, you find a library of predefined composition that you can assign to various solids of the BIM model by dragging them on.<br><br>Assigning compositions to the elements in your model is a core step to increase the BIM model accuracy. Compositions can contain either multiple materials or a single ply. See The **BIM Compositions** article on how to use this panel in more detail. |
| **BIM Profiles** | The **BIM Profiles Panel** shows a library of predefined profiles that you can assign to linear solids by dragging them on. |




See the **BIM Properties** article to see how to work with this panel in more detail.

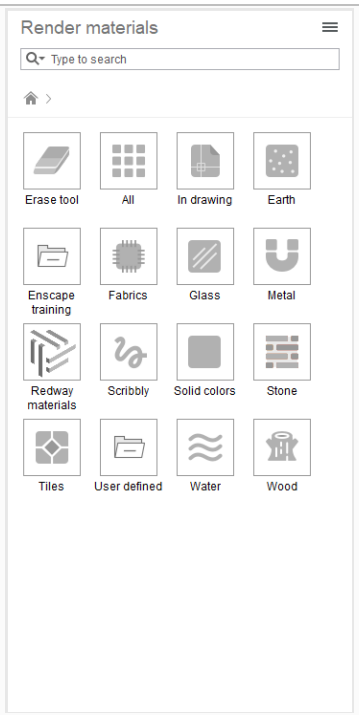
**Layers**

The **Layer Panel** shows all the layers of your drawing. It shows you the current layer **(27)**, you can change it by clicking left of another layer. It also shows if a layer is **ON** or **OFF** by the state its lightbulb icon **(28)**. Other layer properties such as colour, line type,... can be found and adjusted by scrolling to the right.




In this example the current layer is **'DOOR_FRAME'** and it is turned **ON**.

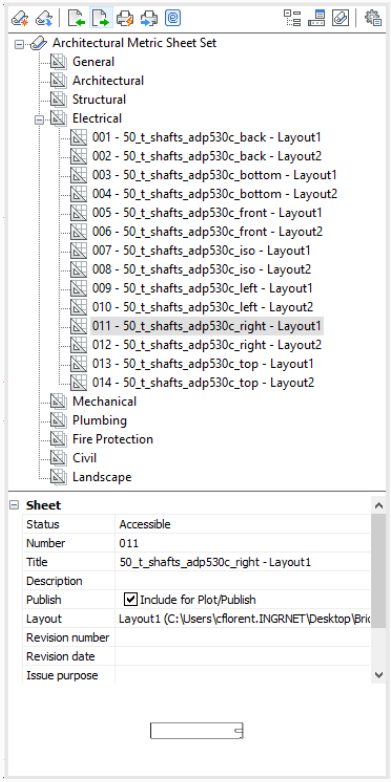
**Render Materials**



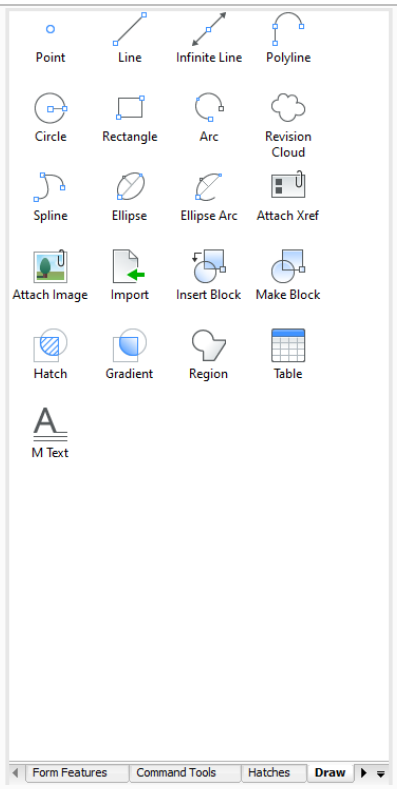
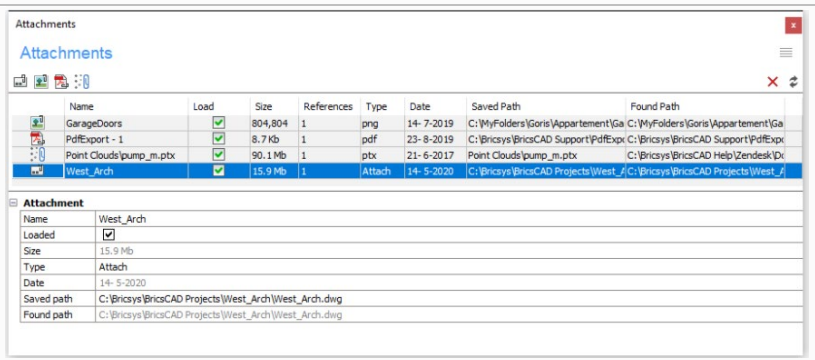

The **Materials Panel** a library of predefined materials that you can assign to solids by dragging them on.

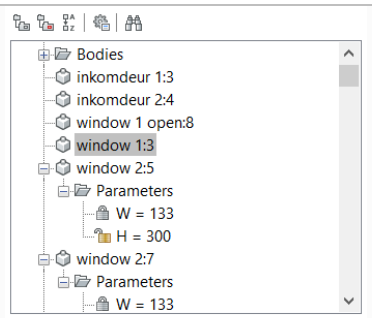
You can also see a list of all the materials that you are currently using in your drawing.
See the **Materials** article to see how to edit and create materials.

**Sheet Sets**




Opens an existing **Sheet Set** through a panel for management and easy access to import and export as XML, plot, publish, and eTransmit. You can view information for each sheet and edit accordingly.

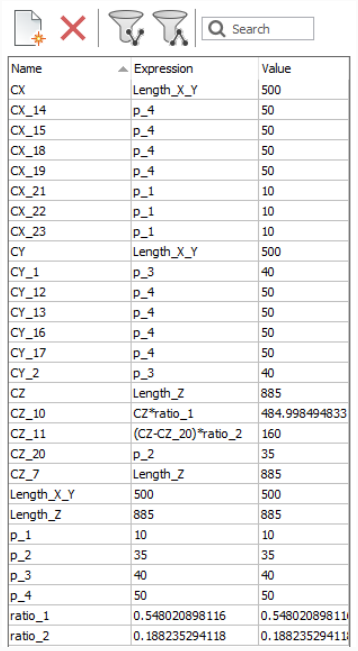
| | |
|---|---|
| **Tool Palettes** |  <br>On a **Tool Palette** you can add blocks, hatches and commands in a tabbed window. Dragging a tool from the palette to the graphic screen will launch the related tool. |
| **Attachments** |  <br>The **Attachments Panel** manages external references (DWG), raster images, PDF files, and point clouds that are attached to the current drawing. |
| **Mechanical Browser** | The **Mechanical Browser Panel** displays the hierarchy of components, features, arrays, parameters, and constraints for the current drawing.<br><br>They are displayed in a tree-like form: you can expand and collapse every node to see its child nodes (for example, nested components). |




| Component insert | |
|---|---|
| Name | window 1:3 |
| Component name | window 1 |
| Description | |
| Visible | Yes |
| Sectionable | Yes |
| Standard component | No |
| BOM status | Regular |
| Visual style | By parent component |
| File | |
| Material | <Inherit> |

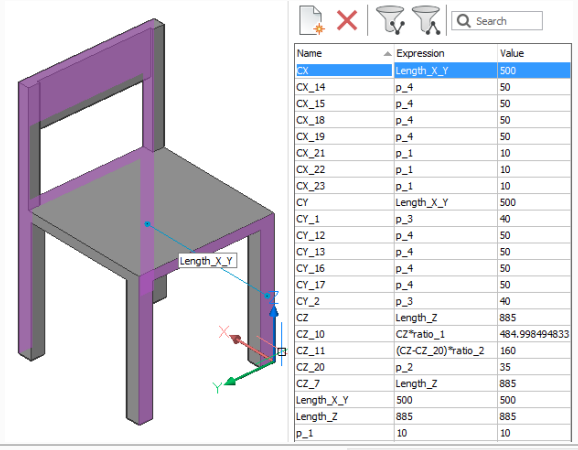
The **Mechanical Browser** allows you to edit properties of a particular node, displayed at the bottom of the panel and calls different tools depending on what type is available in the context menu by right click on a particular node. For example in the image above you could add a description for the selected window.

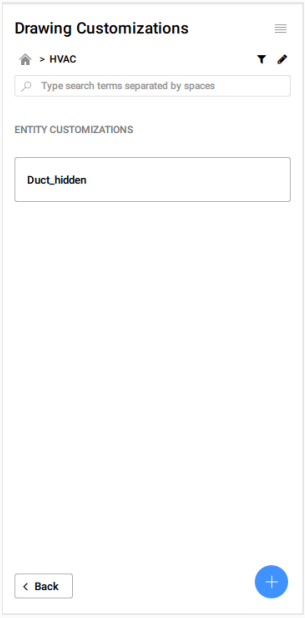
**Parameters and Constraints**

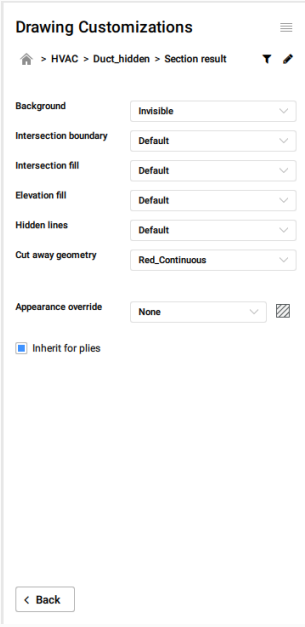



| Name | Expression | Value |
|---|---|---|
| CX | Length_X_Y | 500 |
| CX_14 | p_4 | 50 |
| CX_15 | p_4 | 50 |
| CX_18 | p_4 | 50 |
| CX_19 | p_4 | 50 |
| CX_21 | p_1 | 10 |
| CX_22 | p_1 | 10 |
| CX_23 | p_1 | 10 |
| CY | Length_X_Y | 500 |
| CY_1 | p_3 | 40 |
| CY_12 | p_4 | 50 |
| CY_13 | p_4 | 50 |
| CY_16 | p_4 | 50 |
| CY_17 | p_4 | 50 |
| CY_2 | p_3 | 40 |
| CZ | Length_Z | 885 |
| CZ_10 | CZ*ratio_1 | 484.998494833 |
| CZ_11 | (CZ-CZ_20)*ratio_2 | 160 |
| CZ_20 | p_2 | 35 |
| CZ_7 | Length_Z | 885 |
| Length_X_Y | 500 | 500 |
| Length_Z | 885 | 885 |
| p_1 | 10 | 10 |
| p_2 | 35 | 35 |
| p_3 | 40 | 40 |
| p_4 | 50 | 50 |
| ratio_1 | 0.548020898116 | 0.54802089811 |
| ratio_2 | 0.188235294118 | 0.18823529411 |

The **Parameters and Constraints Panel** allows navigation on the list of parameters, change parameters values and expressions. It also allows to animate parameters. When a parameter is selected, the controlled geometry is highlighted in the model.



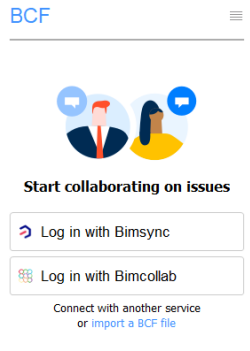
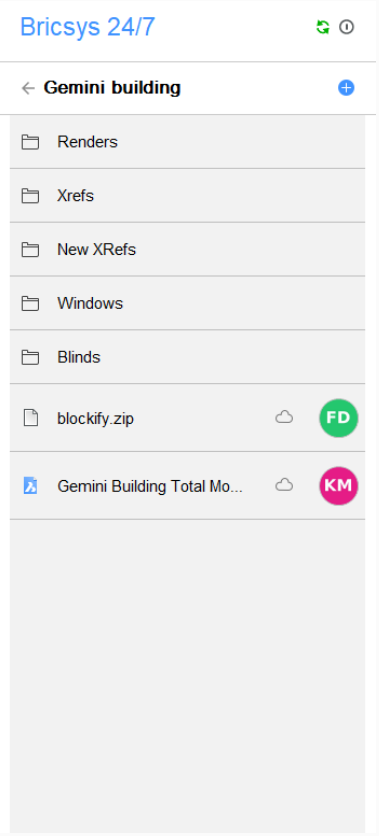

**Drawing Customizations**

**Drawing Customization** allows you to create bespoke templates for drawing types based on a set filter parameter rule against an entity type's value or property within the 3D BIM model. This is especially helpful for customizing graphics of model entities independent of their assigned layers or layer states, therefore transferable and usable on other projects with similar entity properties.

The Drawing Customizations tool is operated by 3 principles – **Entity Customizations, Filter Rules & Styles** – and is only accessible from the panel.

**BIM BCF**

Here you can import **BCF (BIM Collaboration Format) files** and connect to a BCF server. The BCF topics are listed in this panel.

| | |
|---|---|
| |  <br>The top part of the BCF panel shows all the topics and can look similar to the Components panel. The lower part of the new BCF panel shows the currently active topic, with a bigger snapshot and the most common metadata: comment, author, status, etc. Double-clicking on an issue activates the topic. |
| **Bricsys 24/7** | Login to your **Bricsys 24/7** account here to collaborate on your project in the cloud. The Bricscad 24/7 makes project management, a collaboration between project teams, cloud computing security, and task automation possible.<br><br>When logged on, you can see an overview of your in the cloud Projects, Folders and Documents as shown in the image below:<br>  <br>See the Bricscad 24/7 Panel article to see in detail how this panel works. |
| **Report** | Some commands use the **Report** panel to report the command output; e.g. all SheetMetal (Sm*) commands, DmAudit and DmStitch. |

## 2.2. File Format

It will eventually become necessary to save our work and share our progress with others in the model.

- **DWGs** are working project files. Both files can be generated from BricsCAD projects. The difference is that the template is used when you start a new project.
- Components are also in **DWG** file format and can be loaded into the User's Component Library.
- **DWTs** are project template files.
- **DSTs** are sheet set templates and can be added into the Sheet Set list.
- **XTPs** are tool palettes.
- **LSPs** are lisp routines that can be loaded into BricsCAD and can be edited through BLADE – BricsCAD's built-in lisp editor.

## 2.3. Types of Elements

### 2.3.1. Directly-modelled Building Elements

BricsCAD uses direct and parametric modelling of 3d entities. These can be extruded forms that can be turned into classified BIM elements through BIMClassify command, following IFC classification standards.

### 2.3.2. Components

A component is a named group of entities, that can be inserted in a drawing with the BmInsert command. Components can be parametric: e.g. windows and doors. Any DWG file can be used as a component.

BricsCAD components can also be converted to mechanical assemblies which can be designed with a top-down or bottom-up approach.

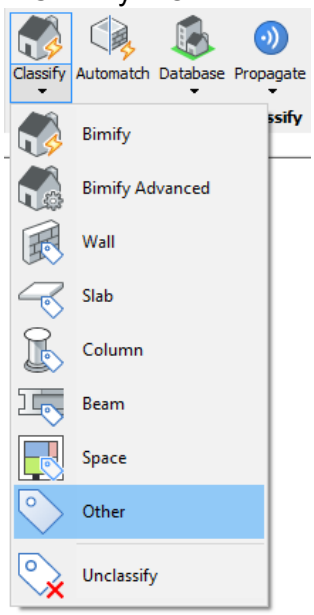
## 2.4. Categories and Types

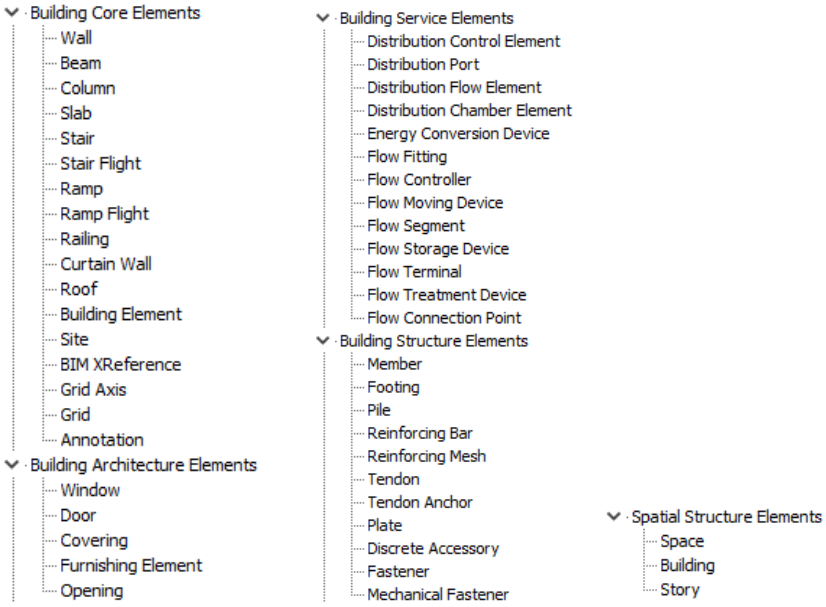
Entities can be classified to the corresponding building element type through BIMClassify or Bimify command. Elements can also be unclassified. Classifications are based on IFC standards. IFC stands for Industry Foundation Classes, a standardized, digital description of the built asset industry. It is an open, international standard (ISO 16739-1:2018).

The classification types are grouped into the following categories:

- Building Core Elements
- Building Architecture Elements
- Building Service Elements
- Building Structure Elements
- Spatial Structure Elements

A list of classifications under each category can be seen when going to Home tab > Classify panel > Classify > Other



## 2.5. Adding Data

### 2.5.1. Properties

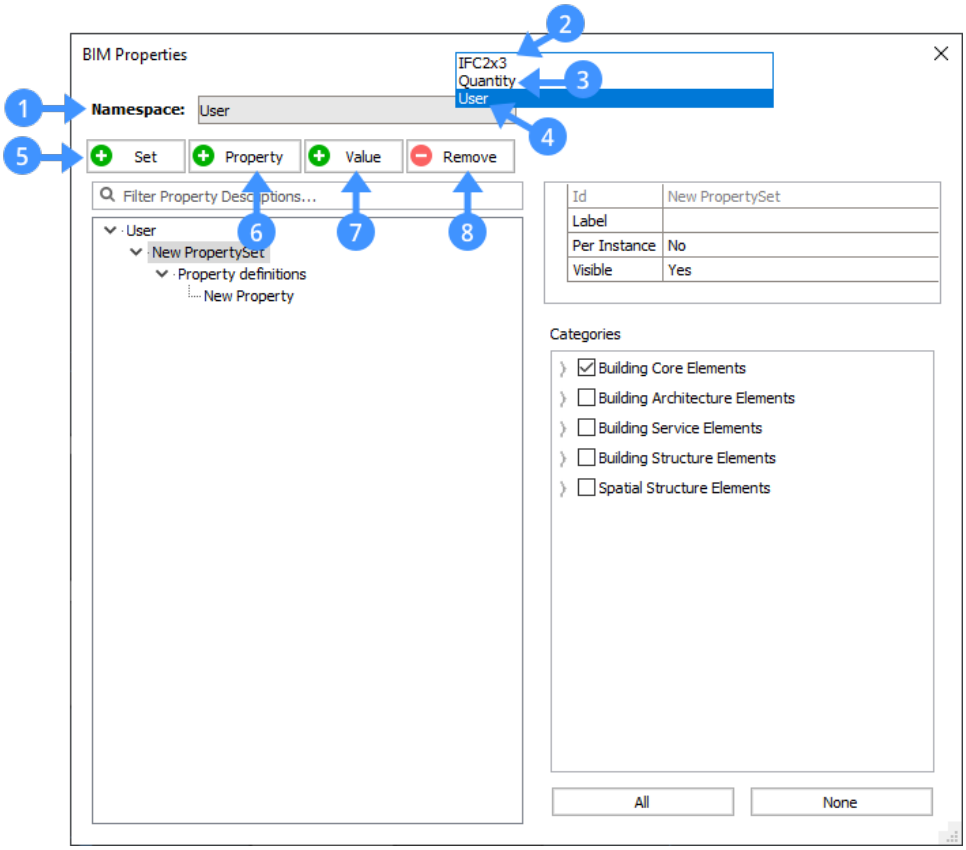
BricsCAD provides a way to assign your own properties to desired building elements in a single command. This is called assigning custom properties. The approach is first to create a custom property set, then assigning it to the building elements to which the property set is to be applied. The method is carried out by the BIMPROPERTIES command, which allows you to create, edit, and delete the custom property set in a dialog box. This dialog box also allows you to add properties to the currently selected property set. Important to note is that these custom properties are also included in IFC export.

Using the BIM properties dialog box:

1. Open the BIM Properties dialog box by typing BimProperties in the command line.

   The dialog box displays for specifying and editing properties of BIM projects.

   The following illustration shows the dialog box.

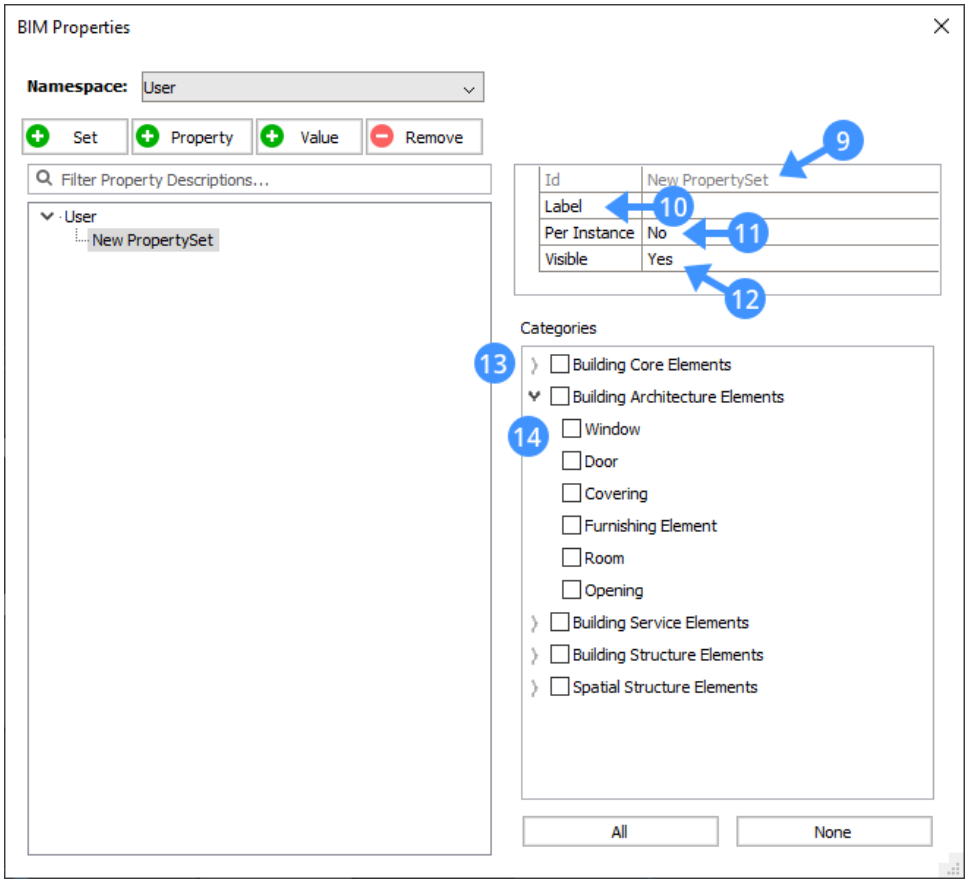



| | |
|---|---|
| **(1) Namespace** | Groups property sets in namespaces. |
| **(2) IFC 2X3 namespace** | Shows the IFC2x3 properties. |
| **(3) Quantity namespace** | Shows some hardcoded quantities (Note: these have been deprecated and replaced by the Quantities in the IFC2x3 namespace). |
| **(4) User namespace** | Shows the custom properties. |

| | |
|---|---|
| **(5) Add property set button** | Creates a new property set. |
| **(6) Add property button** | Creates a new property definition. |
| **(7) Add value button** | Creates a new value definition. |
| **(8) Remove button** | Removes the selected property set, property definition or value definition. |

2. To create a custom property set, select the **User** option in the namespace drop-list, then click the **Add Property Set**. A new property set is added to the User space. To edit the property set do the following:
   - Type a name in the Id (9) field.
   - Type a name in the Label (10) field.

The Label name appears in the properties tree. If the Label name is not defined, the Id name displays. The Id must be unique.
Optionally, you can choose to have the custom property be only applied to specific instances (11), and choose the visibility (12).
Select the building element categories (13) the property set applies to.
When you expand one of the categories, a different type of building elements (14) displays, check the box next to its name to associate with the property set. The following illustration shows the BIM properties dialog box after inserting a new property set.

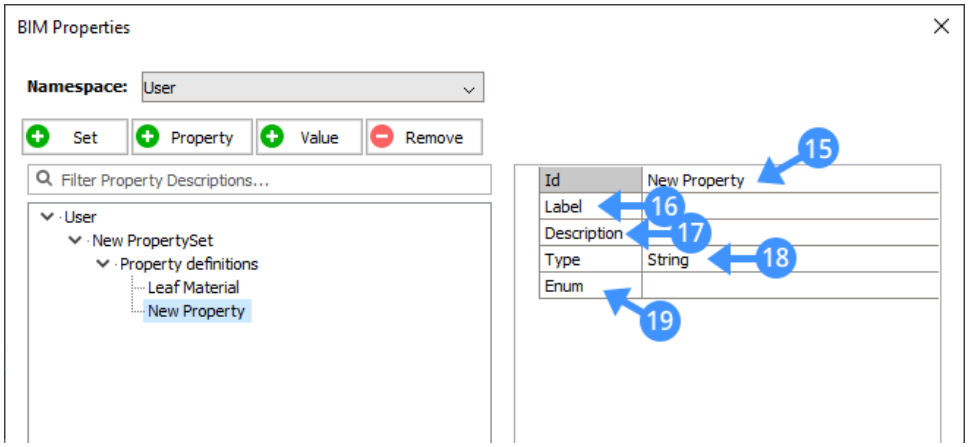


3. To add a property to the currently selected property set, first, select a property set, then click the Add Property button to add a new property.

   To edit the property do the following:

   - Type a name in the Id (15)
   - Type a name in the Label (16)
   - Optionally, type a description in the Description (17)
   - Select the property type. The options are Boolean, Integer, Real, and String (18)
   - Optionally, define enumerated values

The following illustration shows the BIM properties dialog box after inserting a new property.

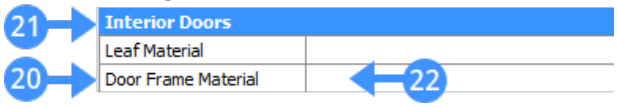



4. To remove the property set/property, select a property set/property in the tree, then click the **Delete** button to remove.

5. Press **OK** button to accept it.

   Now if you select a building element, which is associated with the property set, you will see its newly assigned properties **(20)** are placed in a new category **(21)** in the properties panel. To assign a value to your custom property, select it in the properties panel, then type a new value in its field **(22)**.

The following illustration shows the custom properties in the properties panel.

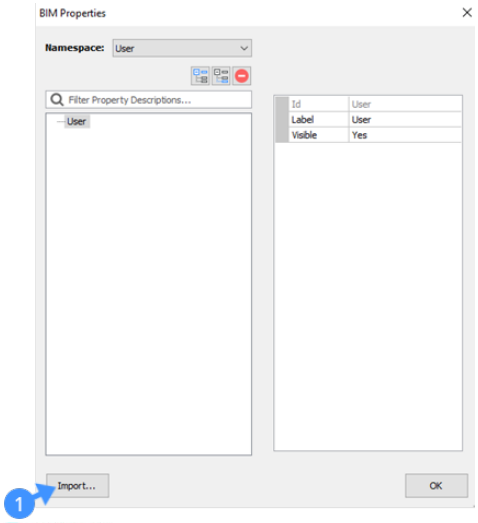


## 2.5.2. Classification Codes

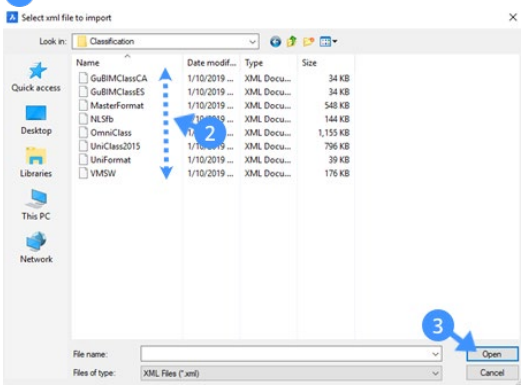
In BricsCAD, you can organize your BIM models with standard classification codes that are used in the construction industry. These codes can classify elements according to national or company standards.
A set of pre-installed classification systems is available to attach to the BIM.
Multiple classification systems can be used in the same BIM.

Assigning classification codes organizes the BIM and increases the level of detail. For instance, they allow to organize library materials and project reports, estimate project costs and define product specifications. GUBIMClassCA, GUBIMClassES, Master Format, NLSfb, OmniClass, UniClass2015, Uniformat, and VMSW are available classification systems in BricsCAD.

1. Open the BIM Properties dialog box from the Quad (**BIM:** Model tab).
   Note: Quad should be in 'No Selection' state.
   A dialog box displays



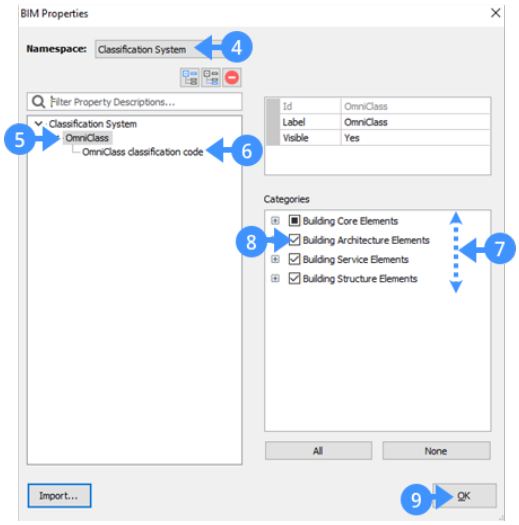

2. Click the Import (1) button at the bottom-left corner of the dialog box.
   A file dialog displays:



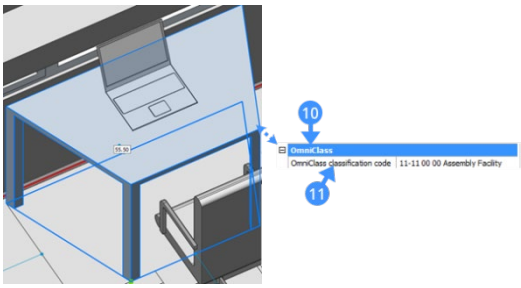

3. Choose the classification system on the list (2), and click Open (3) to import it into the BIM.

**Note:** If the file dialog does not show the Classification folder, you should manually enter this path in the address bar:
C:\Users\<User>AppData\Roaming\Bricsys\BricsCAD V19x64\en_US\Sup Support\Bim\Classification.

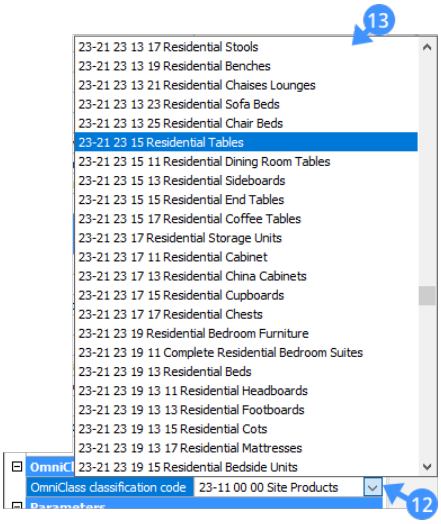
4. The classification system is added to the **namespace (4)**, the selected classification system is added as a **property set (5)**, and the **classification code (6)** is attached to this property set.
   By default, the classification system is applied to all sorts of **building elements (7)**.
   **Optional**: Deselect the categories of building elements to which the classification system is applied.
   To do so, check the box next to the **category name (8)** (all elements in this category will be excluded), or expand the list and check the box next to the element type only.
   Click the **OK button (9)** to finalize the procedure.
   Or import another classification system following the previous steps.



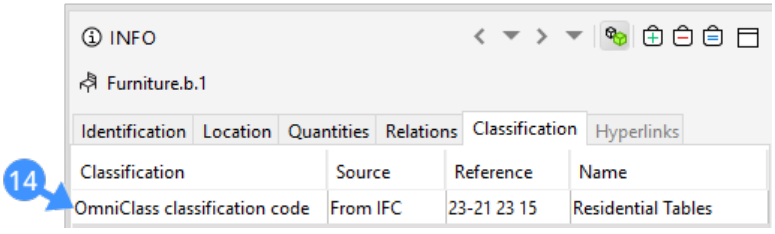

5. Select the element to which you want to assign a classification code, and open the properties panel.
   The **classification system (10)** and **code (11)** should be available in the properties panel.




6. Click the arrow icon on the right-hand side **(12)**, and select the classification code for the selected element in the **context menu (13)**.

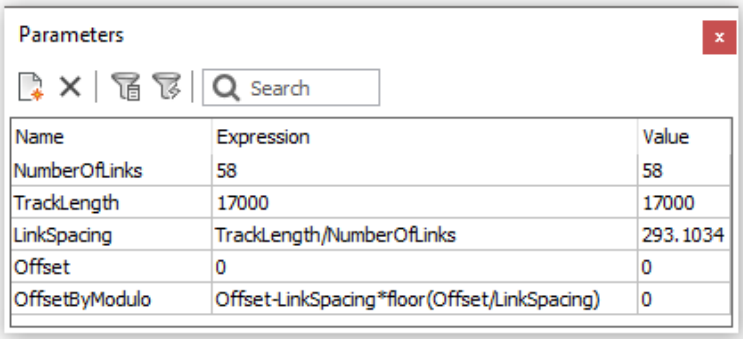



**Note:** Exporting the BIM to an IFC file contains the classification system for each element with assigned classification codes. These properties are exported with proper labels and descriptions. The following image shows the **OmniClass Classification (14)** in Solibri after exporting and importing BIM with the OmniClass Classification code from Bricsys to Solibri.



## 2.5.3. Parameters

The Parameters Manager (a.k.a. Parameters panel) allows you to browse and manage global parameters of your model in tabular form. Every row in this table corresponds to one global parameter, while every column represents a particular property of a parameter - name, expression, value.

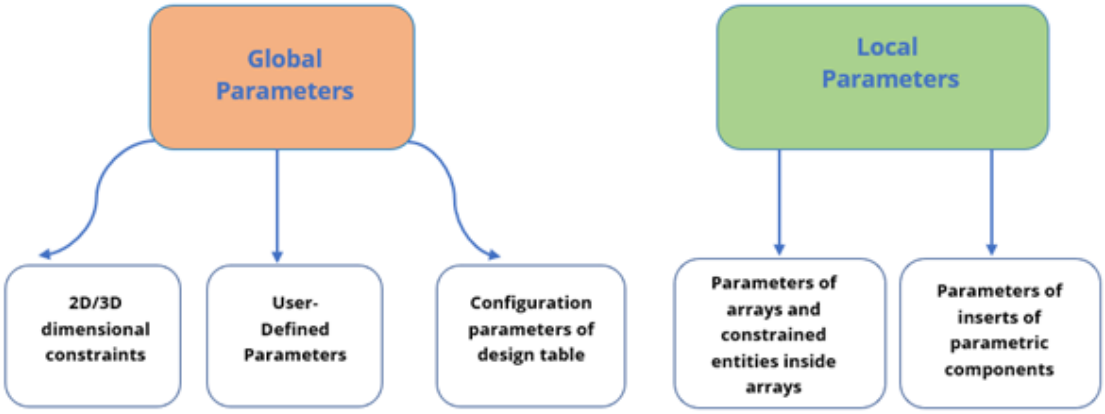



| Name | Expression | Value |
|---|---|---|
| NumberOfLinks | 58 | 58 |
| TrackLength | 17000 | 17000 |
| LinkSpacing | TrackLength/NumberOfLinks | 293.1034 |
| Offset | 0 | 0 |
| OffsetByModulo | Offset-LinkSpacing*floor(Offset/LinkSpacing) | 0 |

**Parametric Modelling**

In BricsCAD, parametric modelling is done through the use of geometrical and dimensional constraints. A rich toolset controls the 2D and 3D geometric model with a set of parameters. Each parameter will be displayed with a value in the Mechanical Browser. The value from the different parameters can be linked together via expressions. When one of the parameter values is changed, the geometric model is updated automatically. The toolset allows BricsCAD users to add parametric behaviour to any geometry and easily explore design intent.

**Note**: In BricsCAD, there are no parent-child dependencies between geometric elements. For instance, if you change a sketch used to create an extruded 3D solid, the solid is not changed accordingly. Any kind of dependencies can be created using the parameters and expressions.
There are two types of parameters: Local parameters are attached to a particular entity. Global parameters are not attached to a particular entity.



**Working with Constraints**

If you create some components (e.g. windows, doors,…) in your BIM model, you can parametrize them by applying 3D constraints. Defining constraints allows you to control the shape and size of the elements. Together with constraints, parameters determine the positions of entities through an expression.

There are two types of 3D constraints in BricsCAD: one specifies the size of the entities, the other locate their positions.

**Geometrical Constraints**


Geometric constraints allow you to control the position of 3D entities with respect to each other.

**Dimensional Constraints**


Dimensional constraints allow you to control the sizes of 3D entities in drawings, and the distances between them.

## 2.6. Coordinates, Grid and Storeys

### 2.6.1. Coordinates

Survey Point is an absolute and true coordinates of a project surveyed by a land surveyor. Commonly, it is typically set at a point in the boundary line. The value should match exactly as the survey information.

### 2.6.2. Grid

Grid is an annotation element help to determine whether grids appear in each plan view that you create for a project.

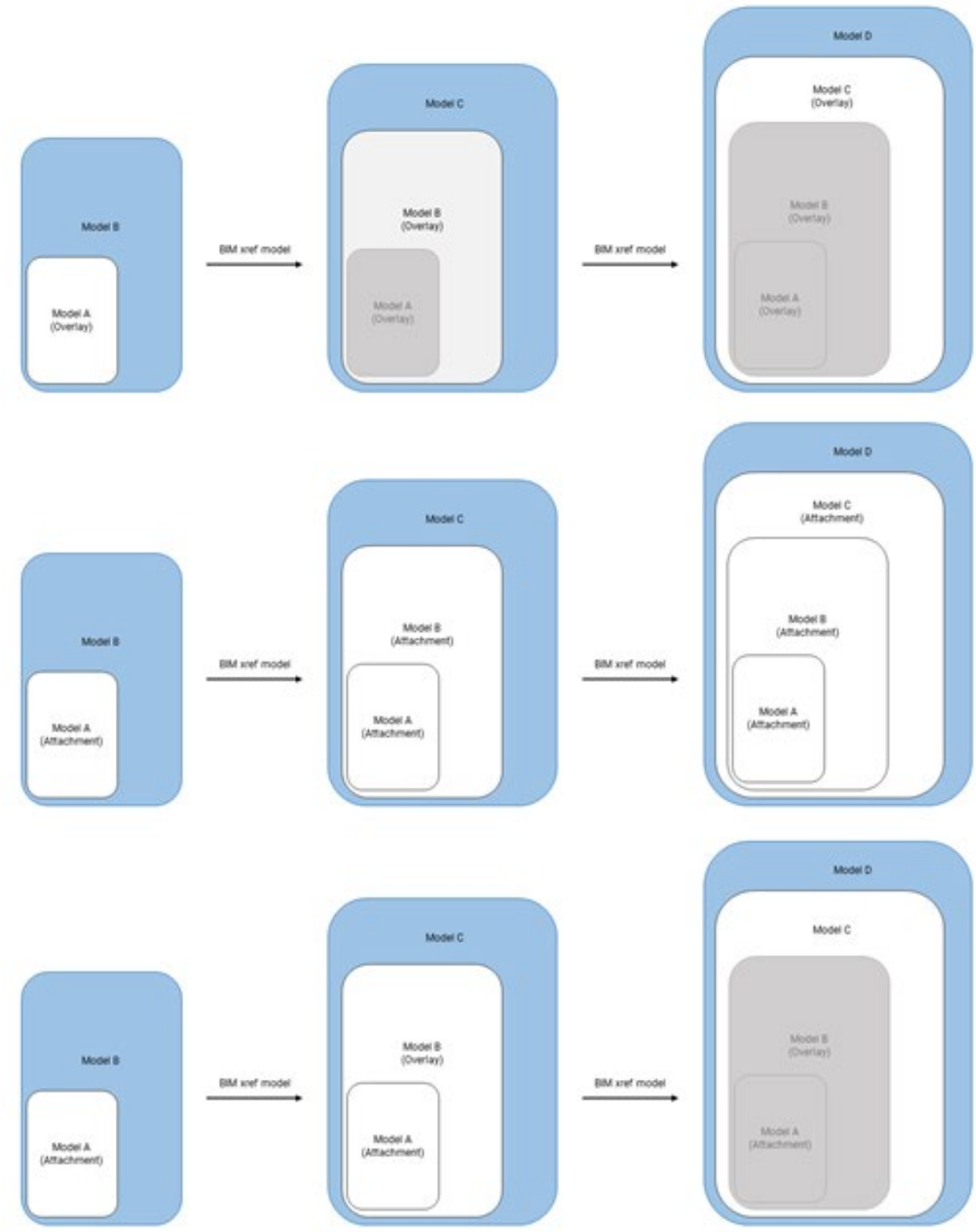
### 2.6.3. Storeys

Storeys can act as a reference for level-based elements for floor levels or reference plane within a building. In a section view or elevation view, it is shown as a plan section in a model and create an associated floor plan in the sheet layout.

## 2.7. Reference File Type

Models can be xref-ed into other models. Two ways of doing this are:

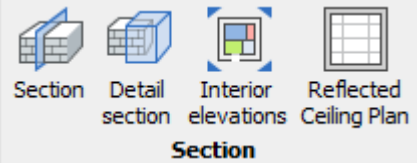
- Overlay - load the link in the host model only
- Attachment - load the link as nested in the host model



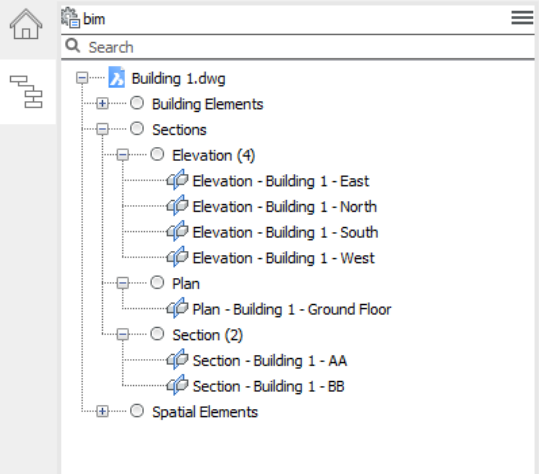
# 2.8. Generated Sections and Sheets

## 2.8.1. Generated Sections

Generated sections are reflected on sheets and are linked to specific sections such as plan, elevation, section, detail section, and ceiling plan. A new section can be created from the Section panel on Home tab of the ribbon, or through the Bimify command.




Sections created are listed in the Structure Browser

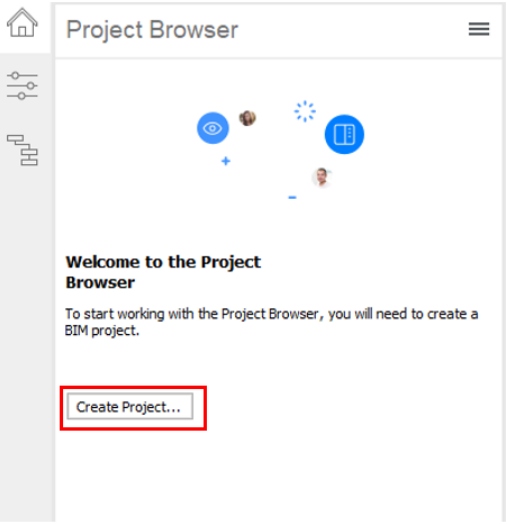



Sections need to be generated in order to see them on sheets. This can be done through the Sheetset Setup.

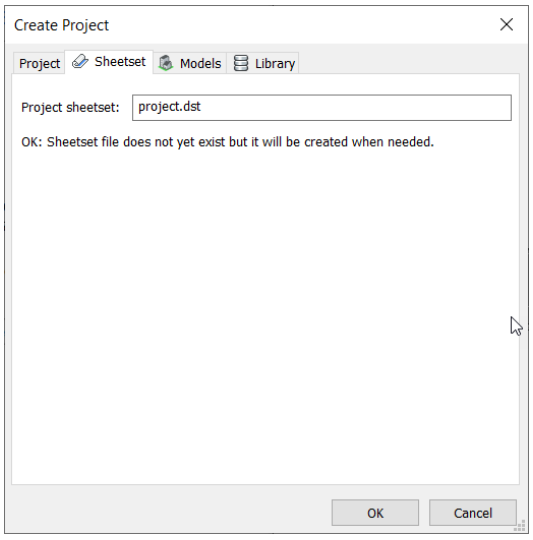
## 2.8.2. Sheets

Sheets are used for documentation. Sheets can be created through the Sheetset Setup dialog in the Project Browser as below:

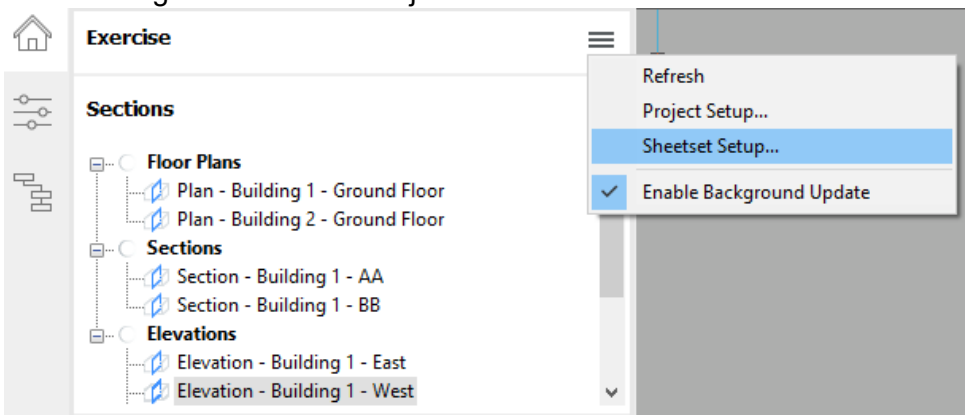
When creating a project, navigate through the Project Browser



In the Sheetset tab, a project sheet set can be named and created. This will be a DST file.

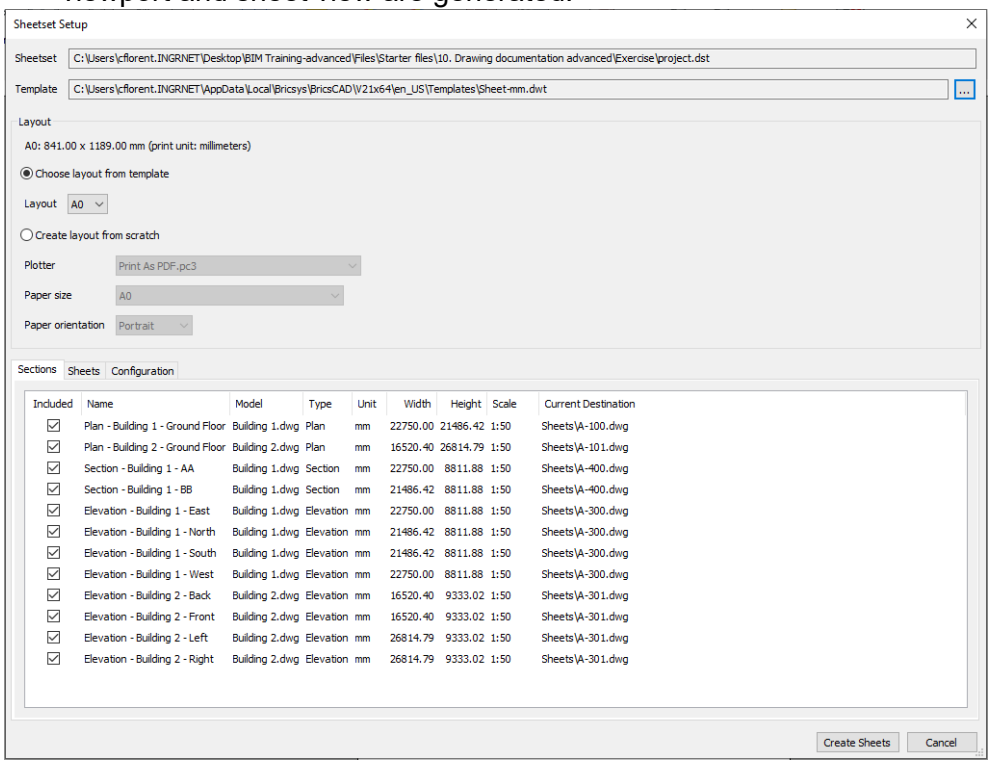



After the project and sheets are created, the Sheetset Setup can be accessed by right-clicking on the hamburger menu in the Project Browser

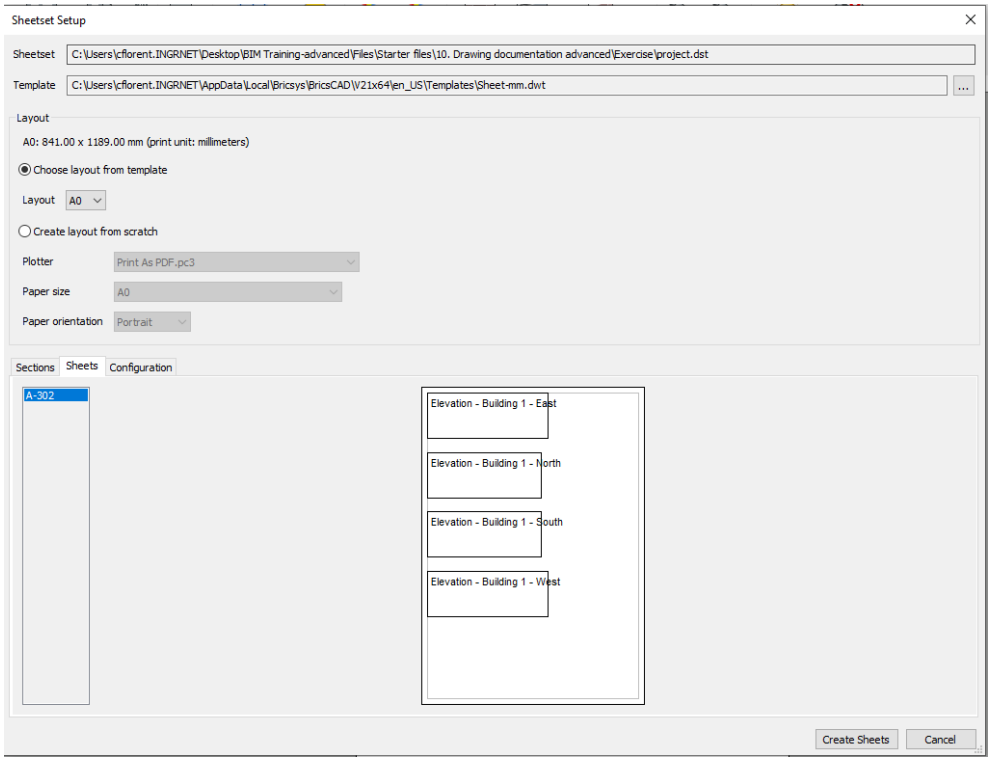


Through the Sheetset Setup dialog in Project Browser, DST templates can be used, paper size set. The sheet format can be managed through the different tabs:

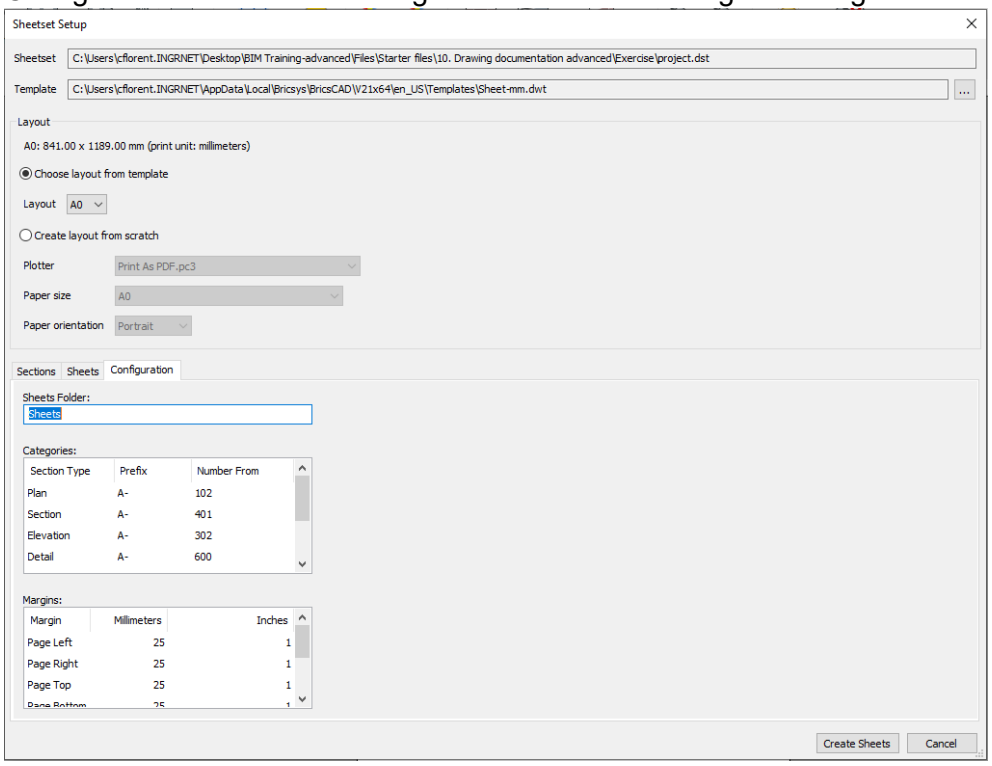
- Sections tab – lists all sections. For each section with an empty Current Destination field, a viewport and sheet view are generated.



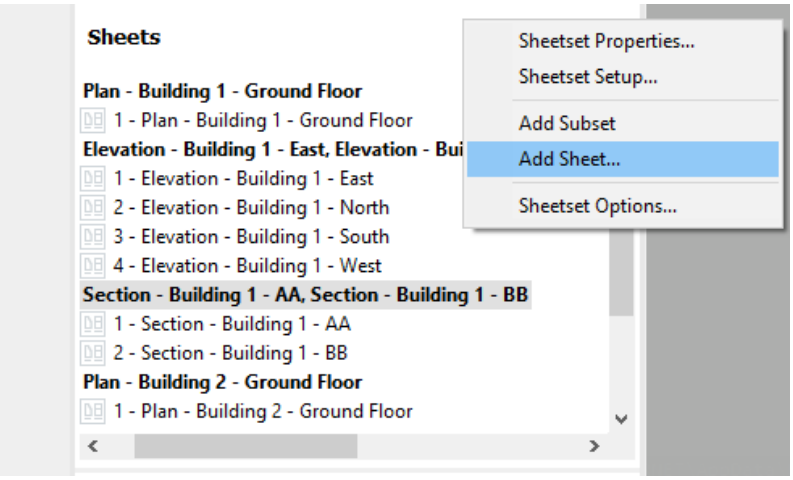

Sheets tab – shows a preview of section placement and if they fit on the sheet based on paper size selected



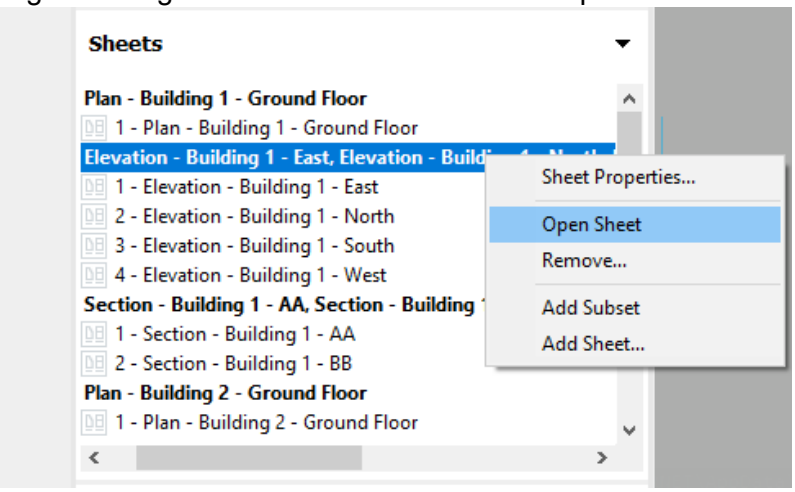
Configuration tab – allows configuration of sheet naming and margins



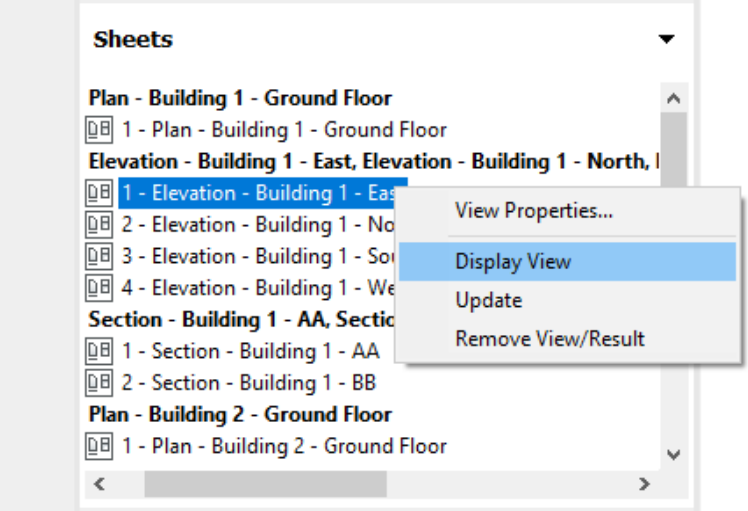
After the initial setup of the sheets, section views are listed under each corresponding sheet under Sheets in the Project Browser. Right-clicking on the Sheets heading will show options:




Right-clicking on the Sheet name will show options:




Right-clicking on the Section under the Sheet name will show options:




Generated sections can be updated through the BimSectionUpdate command.

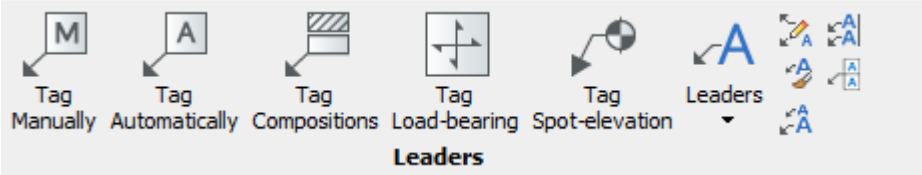
## 2.9. BIM Tags and Annotations

BimTags are tags that correspond to building entities in their associative 3D BIM model. They are created as multileader entities: a block containing a series of attributes. The Tag property of such attributes refers to a BIM entity property, (wall, column, window, etc.). As well as default BIM properties, a BimTag attribute any of the properties in the Properties panel (General properties, Mass quantities, Parameter values, and IFC properties). Use the BimProperties command to add user-defined properties and classification system codes in a BimTag.

The following source files are used to create BimTags in a generated BIM section drawing:
**_SectionTag.dwg**: contains the tag blocks and multileader styles.
**_TagTypeToStyle.xml**: links a BIM entity type to a multileader style.

Both files sit in the folder:
C:\Users\<UserName>\AppData\Roaming\Bricsys\BricsCAD\V19x64\en_US\Support\Bim\Sections

Note: when assigning tags, BricsCAD needs to access the 3D model. For this reason, it may take several seconds to place the first tag, if the 3D model is not currently opened, especially in large models. If you want to avoid this waiting time, consider having the 3D model open while placing tags.

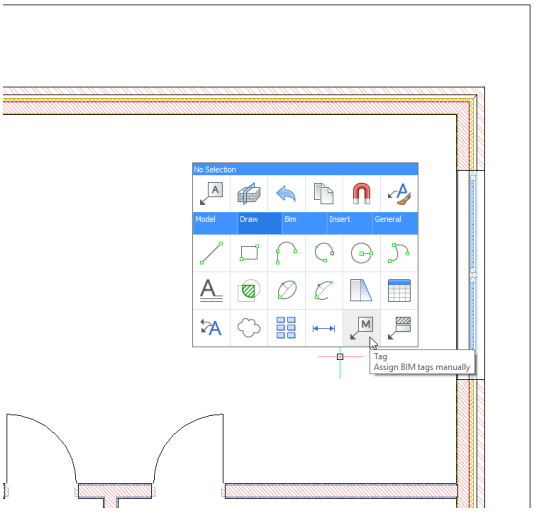



### 2.9.1. Assign BIM Tags manually

The BimTag Manual command allows you to select the BIM element that you wish to create a BIM tag for.

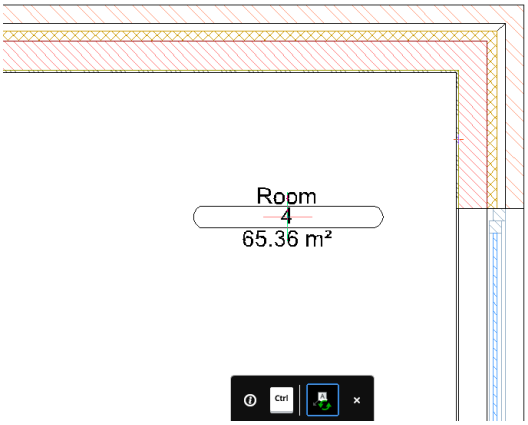
1. Open the section drawing for which you wish to create BIM tags.
2. With no selection select **Tag Assign BIM tags manually** from the Quad **or** enter **BIMTAG** followed by **M** into the commandline to choose the **manual** option.

   **You are prompted**: Pick point on a sectioned BIM element [Auto/Current mleader style/change Tag type]:



3. Select a point on a line of a BIM element to generate a tag for it. The tag will appear. If the point selected is shared between multiple BIM entities, you can use the CTRL key to cycle through the different possible tags.

   **You are prompted**: Place the tag [Next element]:




4. Move your cursor in order to adjust the position of the tag and left-click to place it.

   You are prompted: Pick point on a sectioned BIM element [Auto/Current mleader style/change Tag type]:

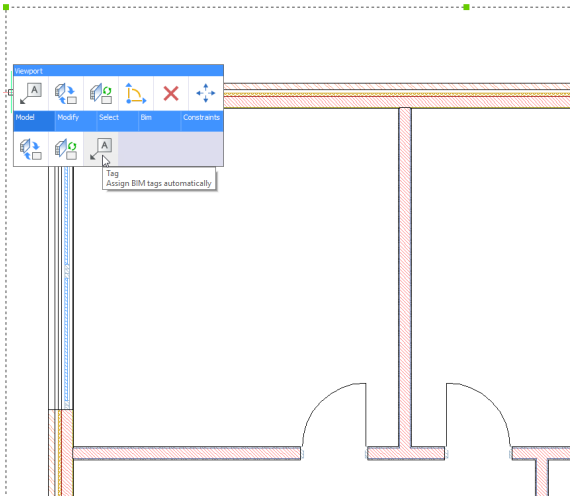
5. Repeat steps 3 and 4 for all of the entities you wish to be tagged. If you do not require more tags, press the **ESC** or **ENTER** key to complete the command. If you want all elements to be tagged, you can use the BimTag Select all entities command.

## 2.9.2. Assign BIM Tags automatically

If you want all BIM elements in a section drawing to be tagged it is easiest to use the BimTag Select all entities command. This command automatically assigns BIM tags to all BIM entities inside a viewport. If the model is altered or new elements are added, the BIM tags can be updated and new tags added.

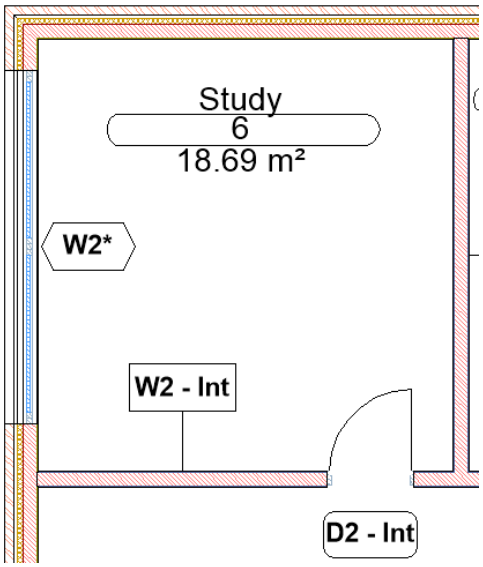
1. Open the section drawing on which you wish to create BIM tags.

2. Select a viewport containing the section which you will add BIM tags to.




3. Select **Tag Assign BIM tags automatically** from the Quad or enter **BIMTAG** into the commandline. The **BIM** tags have now automatically been generated for each of the BIM entities in the viewport.

   **You are prompted**: Select BIM section viewport [Manual]:



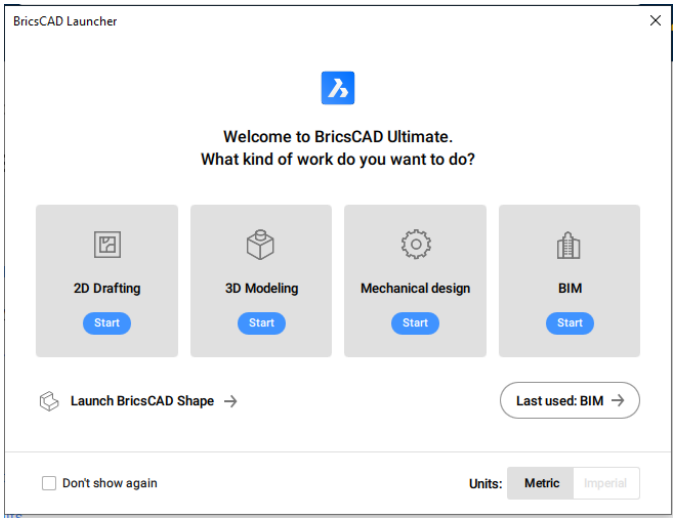

4. If you wish to automatically create BIM tags in another viewport on the sheet, select the viewport and these will be generated. If you do not require any further BIM tags, press Esc to complete the command.

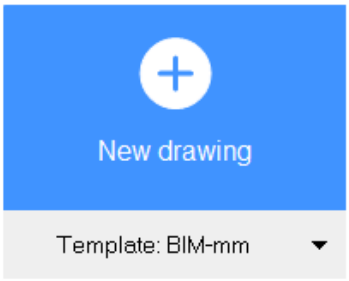
# 3 Getting Started

This chapter covers how to configure and manage standards through the development and use of a project template. The template can be rich with information that goes beyond the out of box content that Revit provides. Thus, the template setting is established, content explain how the reuse of work will increase productivity and standardise with each project for different statutory submission.

## 3.1. Open a new project in BricsCAD

Open BricsCAD ➜ choose “BIM” workspace ➜ choose a template from the drop down (CIC_Software 2 Template.dwt) ➜ click “New Drawing”

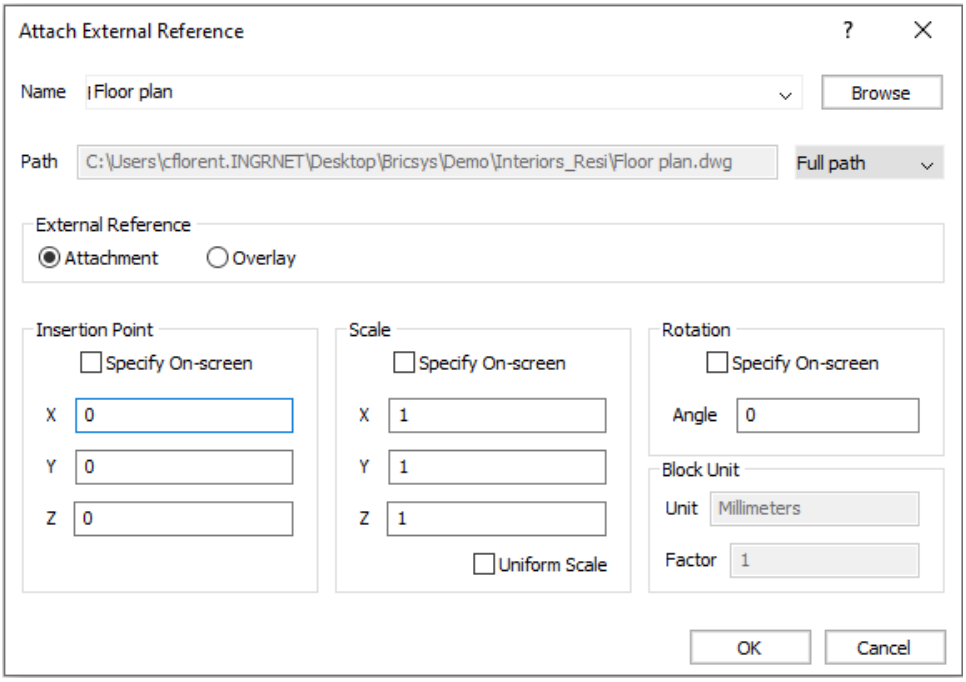


## 3.2. Set Project Coordinates

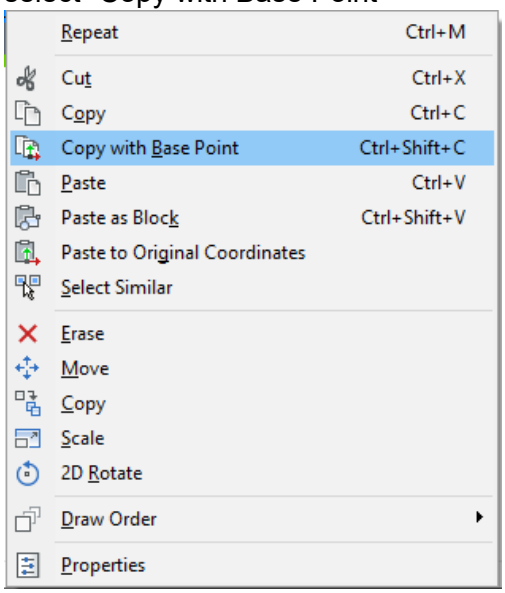
The coordinates shall be defined by the Architects or Surveyor. Architect's or Surveyor's models can be brought in by:

- X-referencing through the Attachments Panel

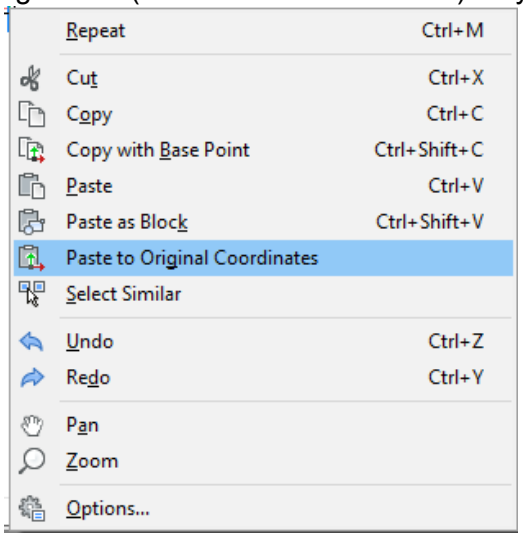



- Copying the model with a base point and pasting to original coordinates

Select the model from the Architect's or Surveyor's file, right click (Quad must be turned off) and select "Copy with Base Point"



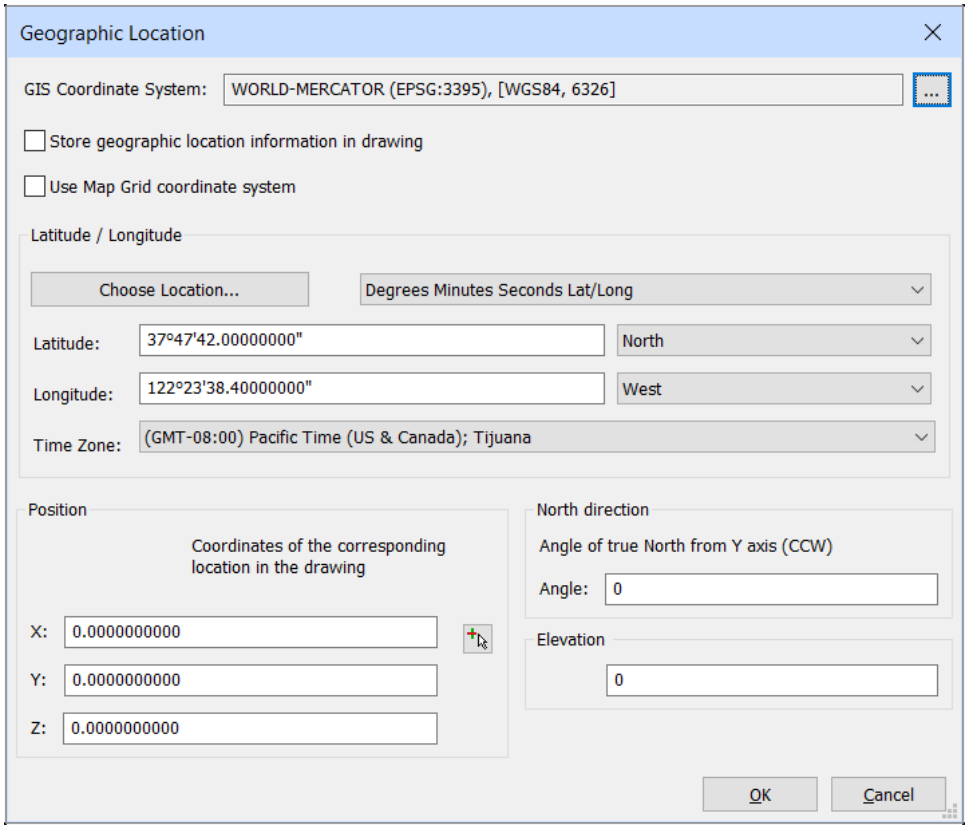
Right click (Quad must be turned off) on your file and select “Paste to Original Coordinates”

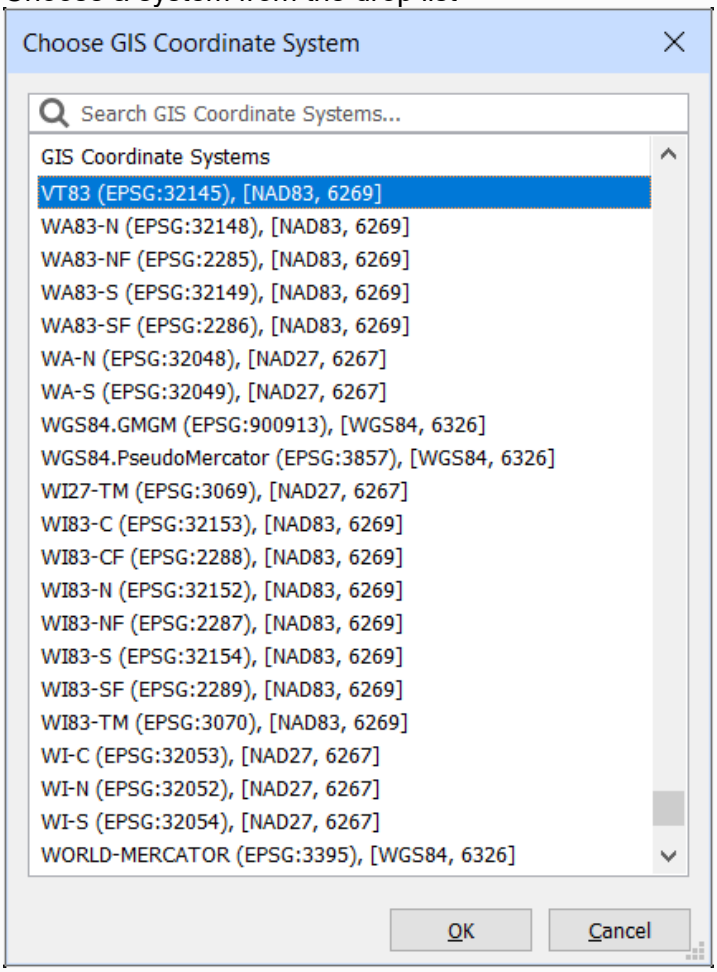


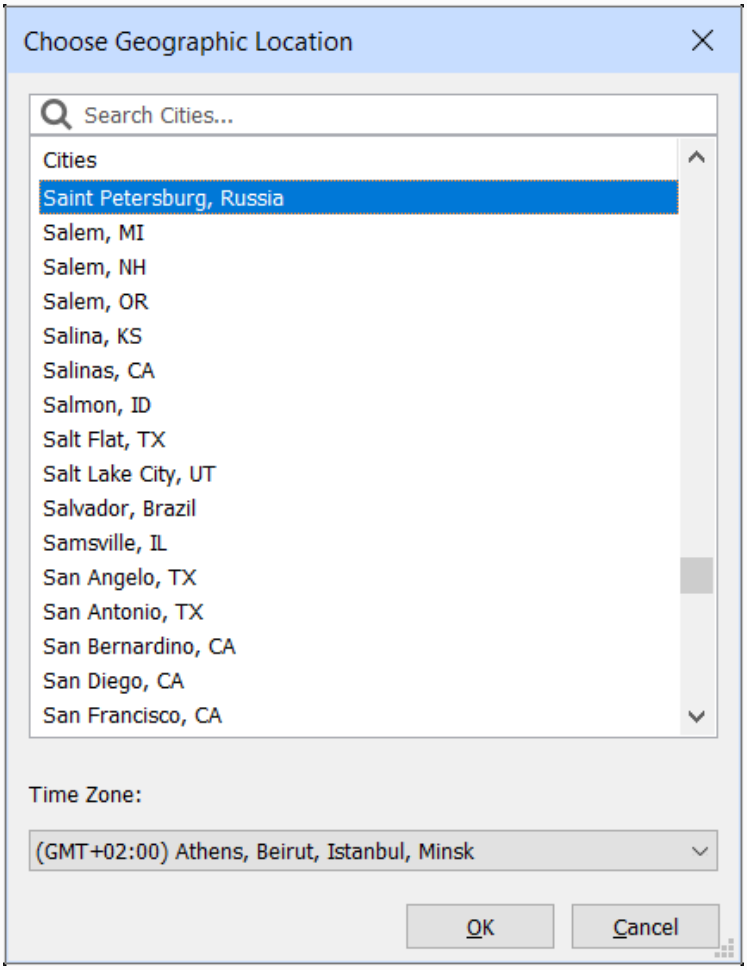

## 3.2.1. Setting the Geographic Location

Prompting the Geolocation command allows you to set the geographic location of the drawing by applying longitude and latitude to a point in the drawing. **Note**: This command cannot be used in a unitless drawing; first use the **INSUNIT** variable to set the units.

Select location, time zone and set the position by selecting coordinates corresponding location in the drawing.



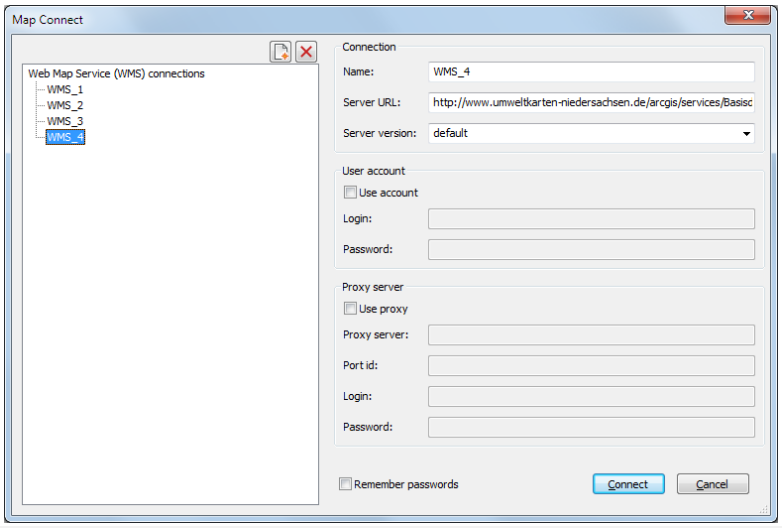
| Option | Description |
|---|---|
| GIS Coordinate System | Reports the GIS system being used by the drawing. To change the system<br>1. Click the **Browse** button<br>2. Choose a system from the drop list<br>  <br>3. Click **OK** |
| Store geographic location information in the drawing | When checked, a red dot indicates the position in the drawing; see Position option.<br>  |
| Use Map Grid coordinate system | Uses the location data from the GIS Coordinate System, and so grey out all other options in this dialog box. |

| Option | Description |
|---|---|
| Choose Location | Displays the Choose Geographic Location dialog box:<br><br>1. Choose a city from the droplist Optionally, also choose a time zone Click OK<br>  <br><br><br>The program asks you if it is okay to change to the new time zone. Click Yes or No.<br><br>You can also set the time zone independently in the Time Zone drop list; see below. |
| Location Format | Choose a format for the coordinates from the drop list:<br>▪ Degrees Minutes Seconds<br>▪ Decimal degrees |
| Latitude | Sets the latitude in either Degrees/Min./Sec. or decimal format. The valid range is 0 to 90.<br>Choose **North** or **South** from the latitude option button. The value is saved to the LATITUDE system variable. |

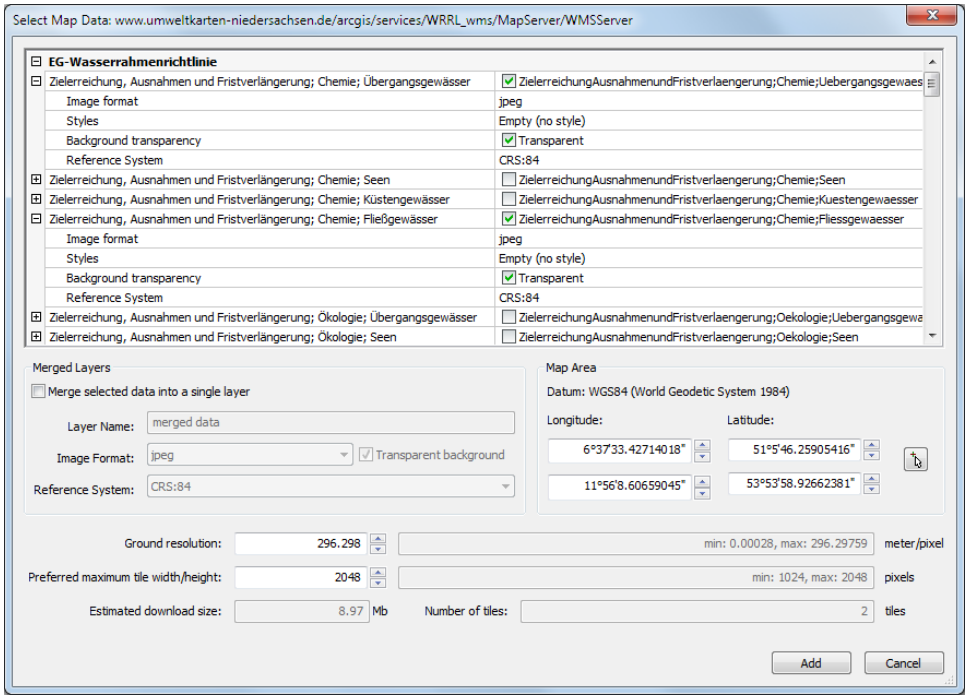
| Option | Description |
|---|---|
| Longitude | Sets the longitude of the drawing in either Degrees/Min./Sec. or decimal format. The valid range is 0 to 180.<br>Choose **East** or **West** from the longitude option button. The value is saved to the LONGITUDE system variable. |
| Time zone | Choose a time zone from the Time Zone drop list:<br>(GMT+02:00) Athens, Beirut, Istanbul, Minsk<br>(GMT+02:00) Bucharest<br>(GMT+02:00) Cairo<br>(GMT+02:00) Harare, Pretoria<br>(GMT+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius<br>(GMT+02:00) Jerusalem<br>(GMT+03:00) Moscow, St. Petersburg, Volgograd<br>(GMT+03:00) Kuwait, Riyadh<br>(GMT+03:00) Baghdad<br>(GMT+03:00) Nairobi<br>(GMT+03:30) Tehran<br>(GMT+04:00) Abu Dhabi, Muscat<br>(GMT+04:00) Baku, Tbilisi, Yerevan<br>(GMT+04:30) Kabul<br>(GMT+05:00) Ekaterinburg<br>(GMT+05:00) Islamabad, Karachi, Tashkent<br>(GMT+05:30) Chennai, Kolkata, Mumbai, New Delhi<br>(GMT+05:45) Kathmandu<br>(GMT+06:00) Almaty, Novosibirsk<br>(GMT+06:00) Astana, Dhaka<br>(GMT+06:00) Sri Jayawardenepura<br>(GMT+06:30) Rangoon<br>(GMT+07:00) Bangkok, Hanoi, Jakarta<br>(GMT+07:00) Krasnoyarsk<br>(GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi<br>(GMT+08:00) Kuala Lumpur, Singapore<br>(GMT+08:00) Taipei<br>(GMT+08:00) Irkutsk, Ulaan Bataar<br>(GMT+08:00) Perth<br>(GMT+09:00) Osaka, Sapporo, Tokyo<br>The setting is saved to the TIMEZONE system variable. |
| Position | Specifies the position of the location in the drawing:<br>**X, Y Z** - *(enter the coordinates; the z is optional and can remain 0.)*<br>**Pick Point**  - *(click the button, and then pick a point in the drawing.)* |
| North Direction: Angle | Specifies the angle of the sun from north, in the context of the world coordinate system. The setting is saved to the NORTHDIRECTION system variable. |
| North Direction: Elevation | Enter an elevation for the long-lat point; the value can be positive or negative. |

## 3.2.2. Connecting with a Web Map Service

Prompting the MapConnect command allows you to set up a connection with a Web Map Service. Note: Before adding map data to a drawing with this command, you must run the GeographicLocation command to define the geographic location of the drawing.




| Option | Description |
|---|---|
| Name | (Optional) Names the connection. Type a name to replace the default WMS<x> name. The ten most recently used connections are saved. |
| Server URL | Specifies the URL of a Web Map Service. |
| Server version | Specify a server version, or else select one from the drop list. |
| | |
| **User Account Option** | **Description** |
| Use Account | **Off** - no login or password needed<br>**On** - the Web Map Service need a valid login and password to access it |
| Login | Specifies the login information |
| Password | Specifies the password |
| | |
| **Proxy Server** | **Description** |
| Use Proxy | **Off** - a proxy server is not being used<br>**On** - specify a proxy server to connect to the Web Map Server |
| Proxy server | Specifies the URL of the proxy server |
| Port Id | Specifies the port to use for the connection |
| Login | Specifies the login for the proxy |
| Password | Specifies the password for the proxy login |
| | |
| Remember passwords | **Off** - the program does not remember your passwords for greater security<br>**On** - passwords will be remembered for future use |
| Connect | Connects to the map server and then displays the Select Map Data dialog box |




**Do the following:**

1. Select one or more data layers.
2. Specify the desired ground resolution and the preferred maximum dimensions of a tile.
3. An estimate of the download size displays in the Estimated download size field.
4. Press the Add button.

The program stores downloaded map tiles as regular image files in the folder in which the drawing is saved.
The definition of the supported Coordinate Reference Systems (CRS) is stored in the new geodatabase.xml file located in the folder pointed to by the ROAMABLEROOTPREFIX variable, such as C:\Users\John\AppData\Roaming\Bricsys\BricsCAD\V15x64\en_US\Support
The geodatabase.xml files lists cities and their WGS84 geo coordinates used by the Choose Location function of the Geographic Location dialogue box.

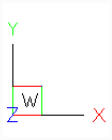
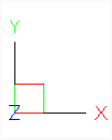
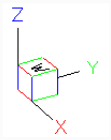
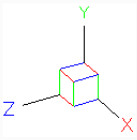
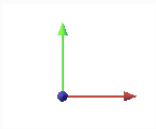
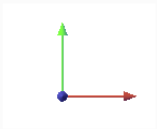
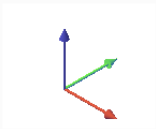
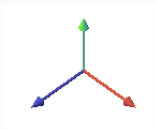
## 3.2.3. User Coordinate Systems

Every drawing has a fixed coordinate system called the World Coordinate System (WCS).
You can also define arbitrary coordinate systems located anywhere in three-dimensional space. These are called user coordinate systems (UCS) and can be located anywhere in the WCS and oriented in any direction. You can create as many UCS as you want, saving or redefining them to help you construct three-dimensional entities. By defining a UCS within the WCS, you can simplify the creation of most three-dimensional entities into combinations of two-dimensional entities.

When you create a new drawing the WCS is the current coordinate system by default, which is indicated by the letter W in the UCS icon. When you display a drawing in plan view, you see the coordinate system icon from the top, with the z-axis directed straight toward you. When you display a three-dimensional drawing in a view other than plan view, the coordinate system icon changes to reflect your new viewpoint.

**Note:** You cannot delete or modify the WCS.

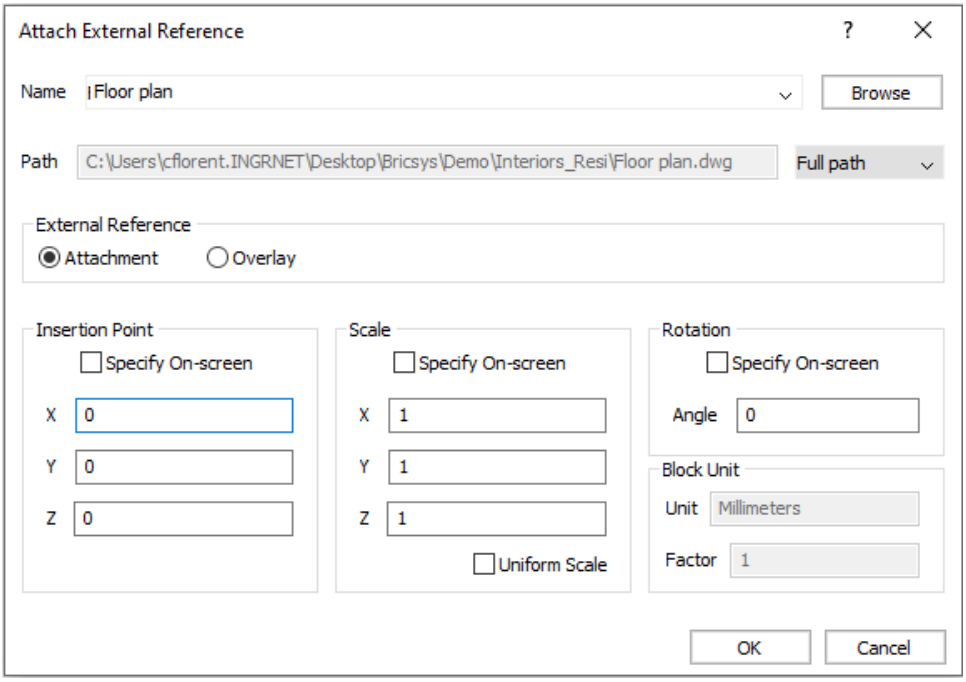
To help you keep your bearings in the current coordinate system, BricsCAD displays a coordinate system icon (UCS icon). The visible portions of the axes are the positive directions.

| 2D Wireframe visual style | | | |
|---|---|---|---|
|  |  |  |  |
| WCS Top View | UCS Top View | WCS Isometric View | UCS Isometric View |
| **Rendered Visual Styles** | | | |
|  |  |  |  |

## 3.3. Civil Site

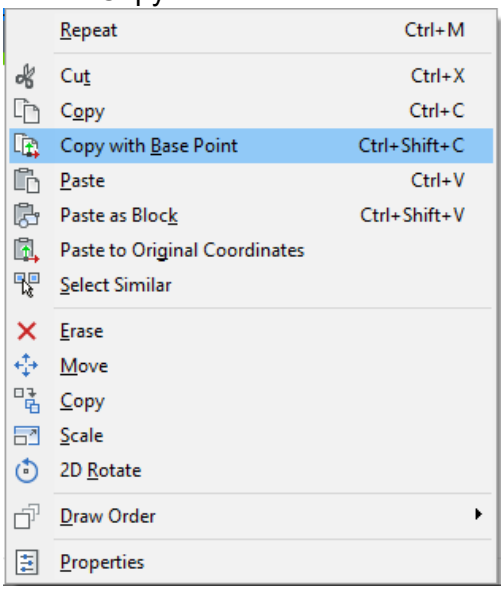
Site boundary shall be defined by the Architects or Surveyor. Architect's or Surveyor's models can be brought in by:

- X-referencing through the Attachments Panel

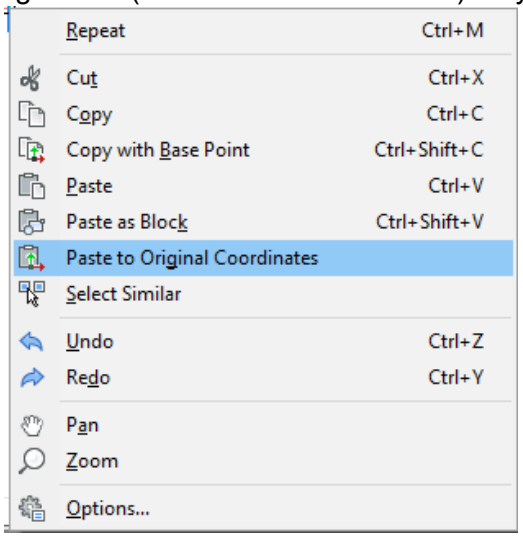



- Copying the model with a base point and pasting to original coordinates

Select the model from the Architect's or Surveyor's file, right click (Quad must be turned off) and select "Copy with Base Point"



Right click (Quad must be turned off) on your file and select “Paste to Original Coordinates”




### 3.3.1. Civil Entities

Gradings can also be identified as site boundaries. This corresponds to the Civil module in BricsCAD.

In BricsCAD, topographical surfaces are created using the TIN Surface (triangulated irregular network) tool.
Points contain x, y coordinates, and z values. All points are used to make a connection with the two nearest neighbours to create triangles. The surface triangulation is based on the Delaunay algorithm, which ensures that no point is inside the circumcircle of any triangle.
Breaklines represent linear infrastructure features like curbs, retaining walls, etc. These lines also define the edges of triangles. Break lines can be created from linear entities such as line, polyline, arc, circle.
Boundaries are the features to define bounded 3D surfaces. The surface boundaries can be created with closed polylines. Defining outer boundaries on a large 3D surface improves the performance of a TIN Surface plan.

A TIN Surface can be created through different ways:

- From a selection set of points and polylines
- From an imported Points file
- Using Clip polygon for a selected area
- By placing points
- From Faces
- From a Point Cloud
- From a Civil 3D surface

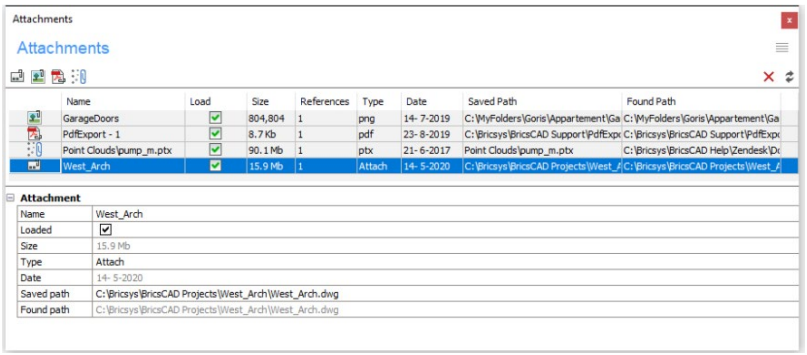
Creating a TIN Surface is a process that needs to be followed to map a particular area in detail. On BIM models, these topographic surfaces are used to represent the site. The topographical surface can be generated based on drawing entities, data imported from a comma-delimited file format (CSV) or text file format (TXT), and points placed at different elevations, created from Civil 3D surface.

When brought in, properties of the TIN Surface are displayed in the Properties Panel.

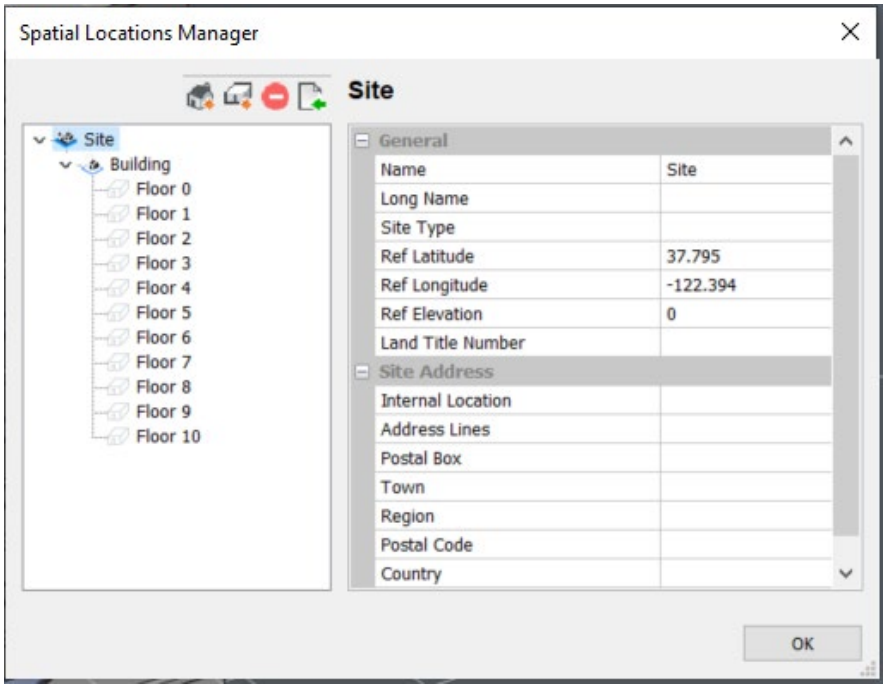
| | |
|---|---|
| **General** | |
| Handle | 93 |
| Color | Green |
| Layer | 0 |
| Linetype | ByLayer |
| Linetype scale | 1 |
| Plot style | ByColor |
| Lineweight | ByLayer |
| Transparency | ByLayer |
| Hyperlink | |
| History | Current |
| **3D Visualization** | |
| Material | ByLayer |
| **Data** | |
| Name | Site |
| Description | School playground |
| **TIN Visibility** | |
| Boundary line | Off |
| Points | Off |
| Triangles | On |
| Contours | Off |
| **TIN Contours** | |
| Major contours interval | 10 m |
| Minor contours interval | 1 m |
| Major contours color | Red |
| Minor contours color | Green |
| **TIN Statistics** | |
| Number of points | 4264 |
| Number of triangles | 8230 |
| Minimum elevation | 4.4 m |
| Maximum elevation | 18.9192 m |
| 2D area | 10363.7386 m² |
| 3D area | 11990.9728 m² |

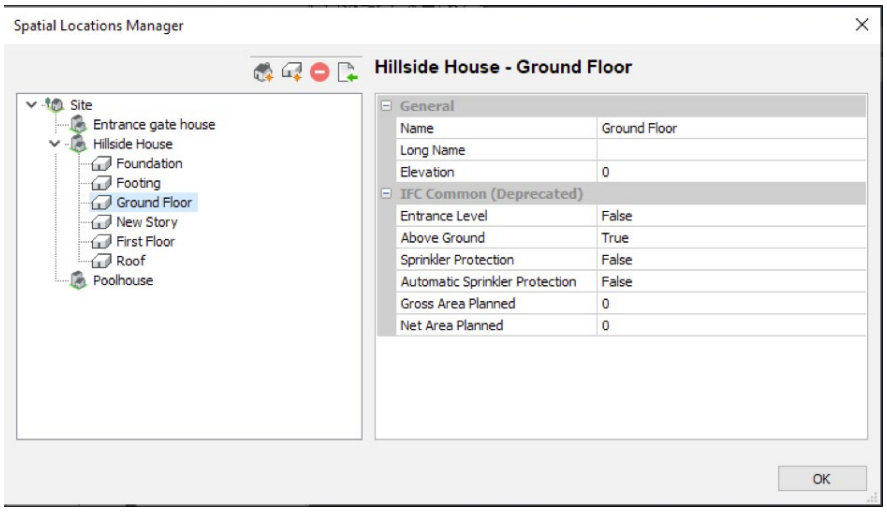
## 3.4. Create Grid and Level

Grid and Level shall be prepared by Architects in Building Projects. The grid and levels can be brought in by x-referencing through the Attachments Panel.



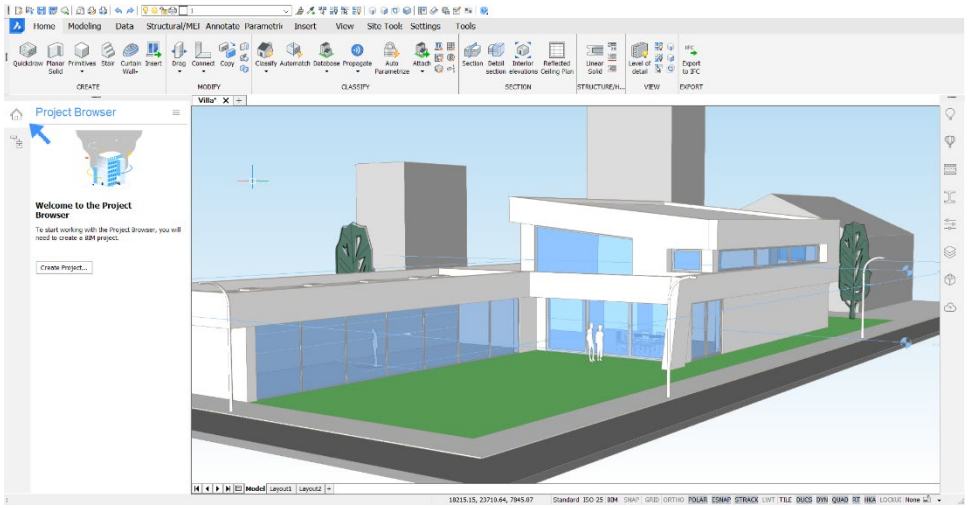

Levels and Spatial Locations are created upon using Bimify.



## 3.5. Managing the Project and Sheets

The BIM Project Browser allows you to navigate easily through an entire project; models, sections, drawings and schedules.

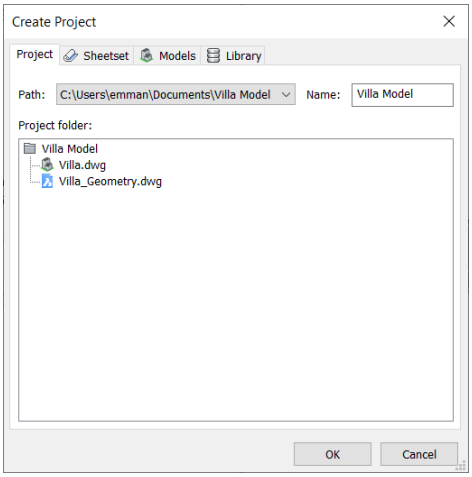



### 3.5.1. Create a BIM project

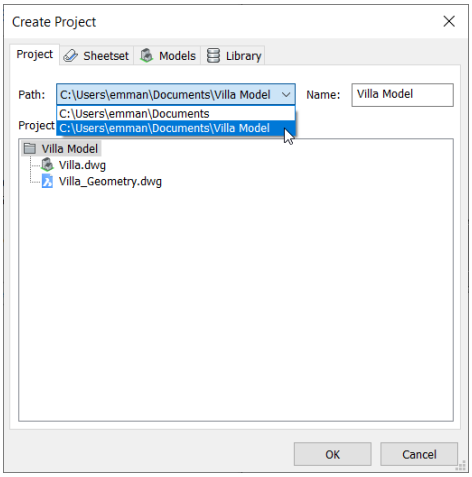
To create a BIM project, you must select one or more model drawings.

- Project

1. Click the **Create Project...** button in the **Project Browser.** A dialog box appears.



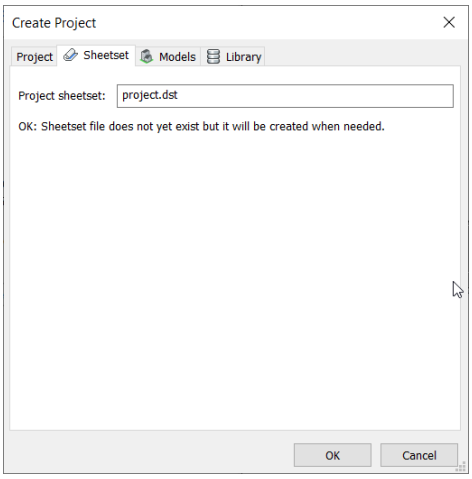
2. **(Optional)** Click the Path list button and select a parent folder.




3. **(Optional)** Type a name in the Name field (the default name is the name of the parental folder).

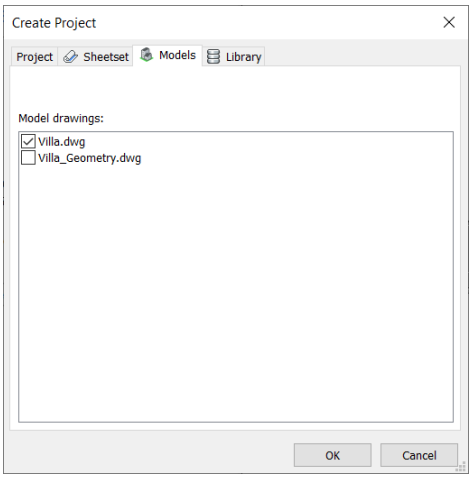
- **Sheetset**

1. Click the **Sheetset** tab. Enter a name for the Project sheetset (the default name is project.dst)




- **Models**

1. Click the **Models** tab. Here, the files in the selected parent folder (and subfolders) are displayed. Check all the models you want to incorporate in your drawing



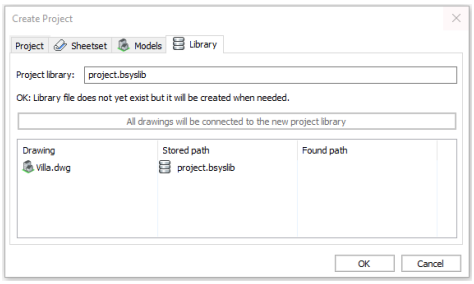
- **Library**

The Project Library can either be external or embedded. Sharing the project library means that you can use the same library over different drawings, this is called an external library. The shared library is stored in an external BIM Database File with the .bsyslib extension. An embedded library stores the Project Library in the drawing file.

## 3.5.2. To make an external library:

**Note:** by default, the library is set to 'Embedded'.

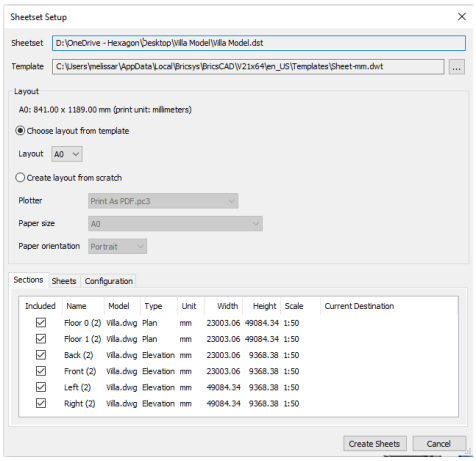
1. Go to the **Library** tab. Enter a name for the Project library (the default name is project.bsyslib).



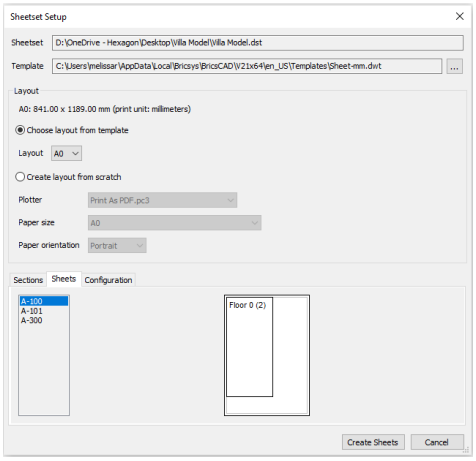

## 3.5.3. Sheetset Setup

**Sheetset:** Shows the path of the sheetset file.
**Template:** Shows the path of the current template. Click **Browse** ( ... ) to change the template.
**Layout:** Selects which layout (different paper sizes) the section results will be generated.

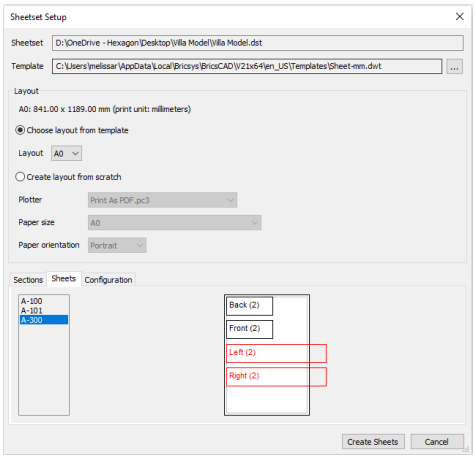
1. The **Sections** tab lists all sections. For each section with an empty Current Destination field, a viewport and sheet view are generated.



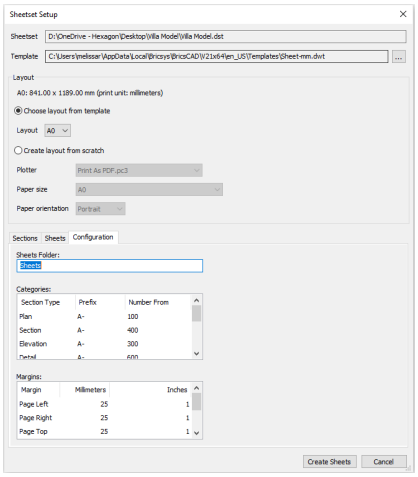

2. Click **Sheets** to preview each sheet (within the selected layout).



**Note:** When the viewport is larger than the layout, it displays in red.

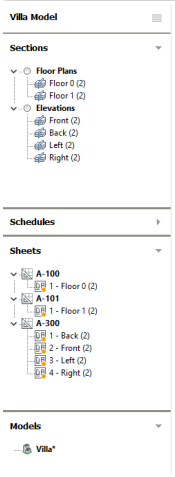



3. Click the **Configuration** tab. Slowly double-click (or click and hit Space/Enter) to change the properties. Under **Sheets Folder** you can change the name of the folder where the sheets will be stored.



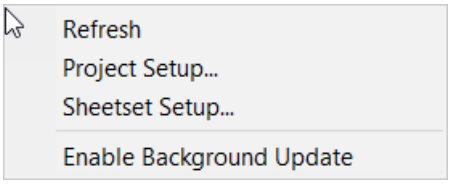

4. Click **Create Sheets**. An overview of the project displays and the sheets are generated.

**Note:** The drawings with an orange fill circle icon are out of date. Right-click on them and select **Update** to match changes in the models included in the project.




## 3.5.4. Editing a Project

1. Click on the **Menu** button (☰). A dialog box displays




**Refresh:** Refreshes the Project Browser to match changes in the model.

**Project Setup:** Opens the Project Setup dialog box.

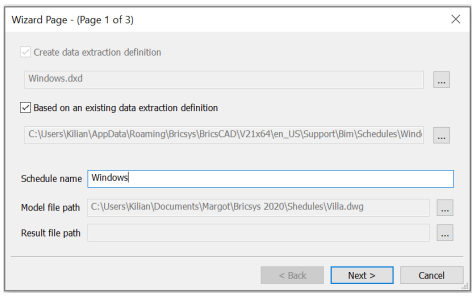
**Sheetset Setup:** Opens the Sheetset Setup dialog box.

**Enable Background Update:** Calculates section results automatically (without interrupting user

workflow). Sections are assigned a colour; Queued: blue, Outdated: red and in progress: green.

### 3.5.5. Creating Schedules

1. Click **Add Schedule (Wizard)**




Two options:

a. Create data extraction definition creates a new .dxd (data extraction definition) file:
   - Turn the option on
   - Click the **Browse** button

**Note:** the dxd files are stored in ..\bim\schedules serve as templates.
   - In the file dialogue box, select a folder
   - Enter a name in the **File name** field.
   - Click the **Select Folder** button.

b. **Based on an existing data extraction definition** uses an existing .dxd file as the template for the new one:
   - Turn the option on
   - Click the **Browse** button.

**Note:** the dxd files are stored in ..\bim\schedules serve as templates.
   - In the file dialogue box, select a .dxd file
   - Click the **Open** button.

**Note:** By default .dxd files are saved in the **...\Bim\Schedules** subfolder of the **Support** folder. You can use newly created custom .dxd file. You can create .dxd files yourself too in a text editor.

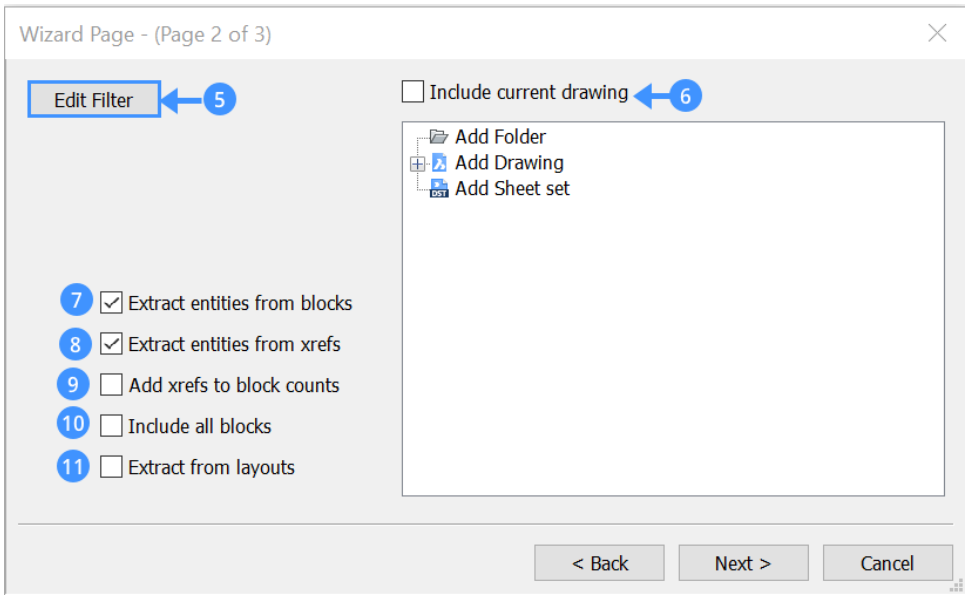
You can either choose a new name for your schedule or keep the default name.

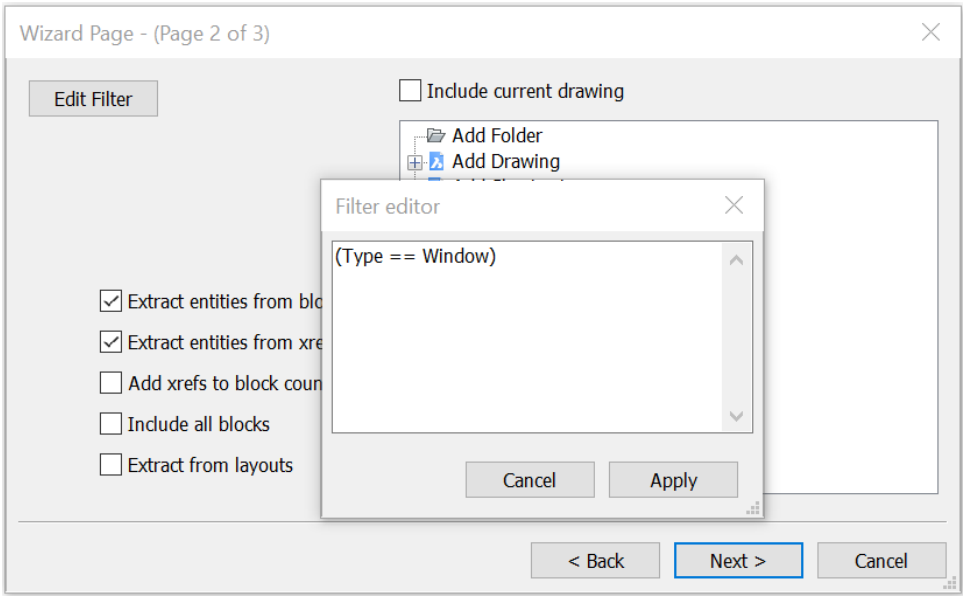
2. Model file path: The model path links to the model. This is filled in automatically if the wizard is started in the model file. If the wizard is started in another file from the project, link the model file:

   a. Click the **Browse** button (...).
   b. In the file dialog box, select the model file.
   c. Click the **Open** button.

3. Result file path
   a. In the file dialog box, select the sheet file.
   b. Click the **Open** button.

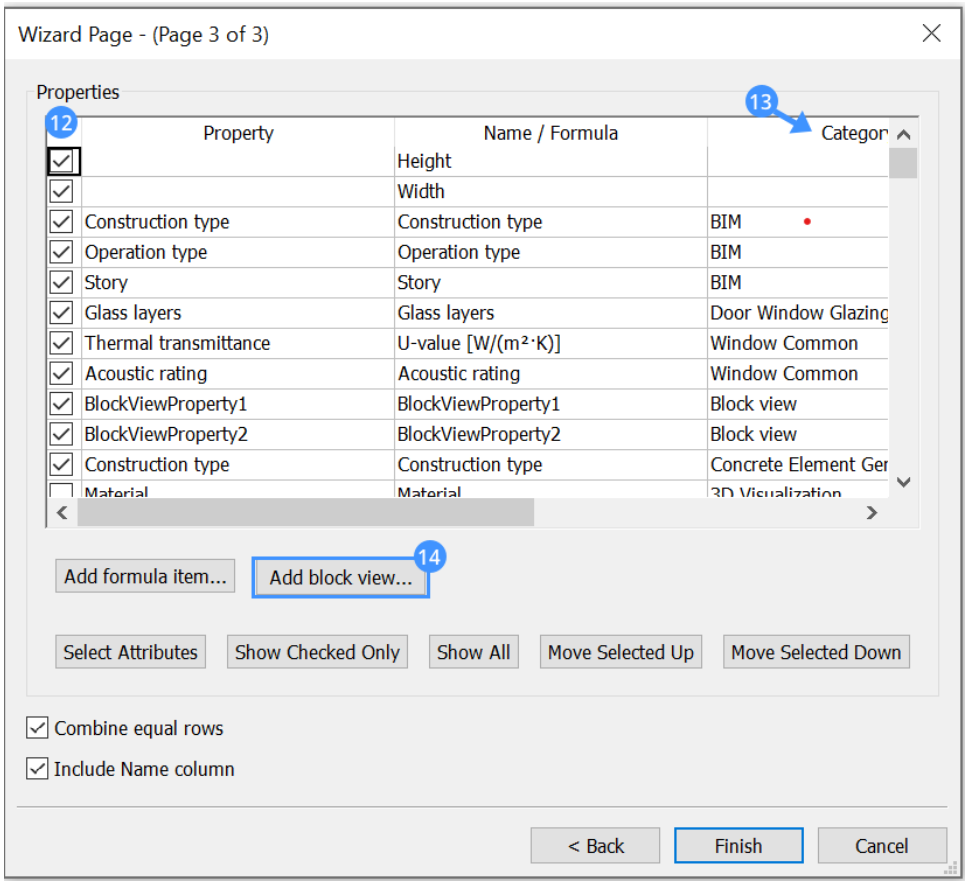
Click **Next** for the next page.


Wizard Page - (Page 2 of 3)
Edit Filter
5
Include current drawing
6
Add Folder
Add Drawing
Add Sheet set
7 Extract entities from blocks
8 Extract entities from xrefs
9 Add xrefs to block counts
10 Include all blocks
11 Extract from layouts
< Back
Next >
Cancel

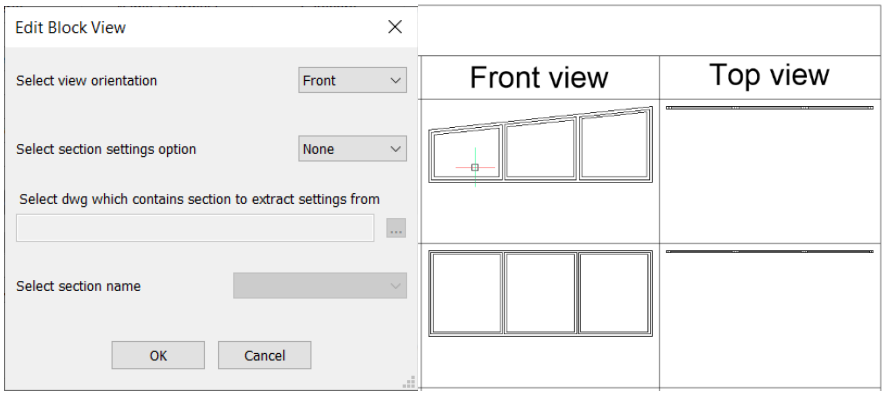

Wizard Page - (Page 2 of 3)
Edit Filter
Include current drawing
Add Folder
Add Drawing
Filter editor
(Type == Window)
Extract entities from blo
Extract entities from xre
Add xrefs to block coun
Include all blocks
Extract from layouts
Cancel
Apply
< Back
Next >
Cancel

**(5) Edit Filter:** The filter selects which BIM entity types are included in the Schedule. Use an existing data extraction definition to automatically define the filter. See the Editing Data Extraction Definition (.dxd) files to learn more about the filter syntax.
**(6) Include current drawing** - adds the current drawing for data extraction.
**(7) Extract entities from blocks**: Adds entities in blocks which will also be processed in the schedule.
**(8) Extract entities from xrefs:** Adds all entities in xrefs which will also be processed in the schedule
**(9) Add xrefs to block counts:** Counts selected xrefs as blocks.
**(10) Include all blocks:** Includes all blocks into the schedule.
**(11) Extract from layouts:** When toggled on, all entities layouts will also be processed in the schedule.

**Note:** The Wizard automatically selects all entities in the drawing




**(12)** Select the properties to be included in the schedule: click the checkbox to check/uncheck a property: selected (☑) or not selected (☐).
**(13)** Click on the Category column to change how the property is shown in the schedule.
**(14)** To include plan and elevation symbols, click on the **Add block view...** button.

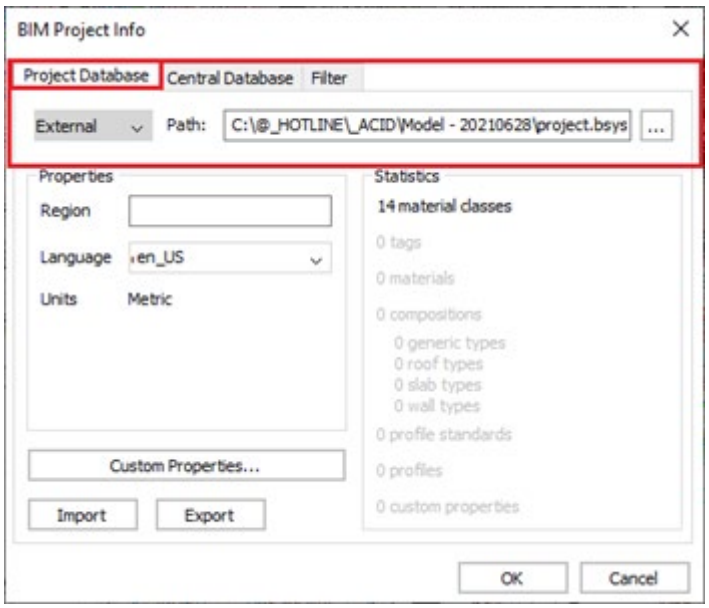



**(15)** To sort the list, click the title in the column heading. Click again to sort in reverse order.
**(16)** Click **Finish** to close the wizard (**or** click **Back** to switch back to page 2).

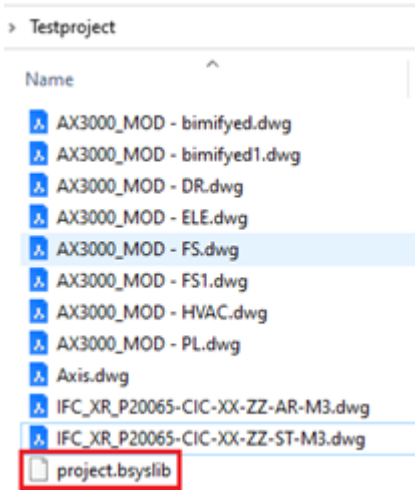
## 3.6. Introduction of AX-3000

AX3000 is an application on top of BricsCAD adding the functionality for MEP Engineers for drawing / modelling and calculating systems.Based on the logic of DWG, we recommend to work with separated drawings and external references, as it is standard in DWG.


We also recommend to use one folder (Hard Disc Drive or Network Drive) to organize the project. In this case it will make the work easier (to work with different drawings) if the BricsCAD BIM Project info is saved as an external file inside the folder (same as the drawing).




All files of the project (inside the folder) will use the same information's.




Architectural or Structural Mode as References in separate files in the same or in a subfolder.

# 4 Creating Model Objects

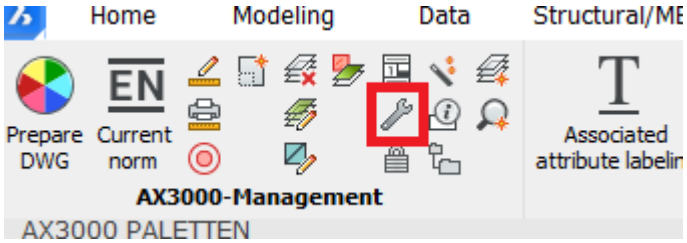
## 4.1. AX3000 SET-UP

AX3000 is able to work on different setups.  As a result, the ducts and pipes will use different layers. In this chapter you will find the description for CIC Projects.

The major Settings are predefined by the Installation Setup, but it can be changed by the user.

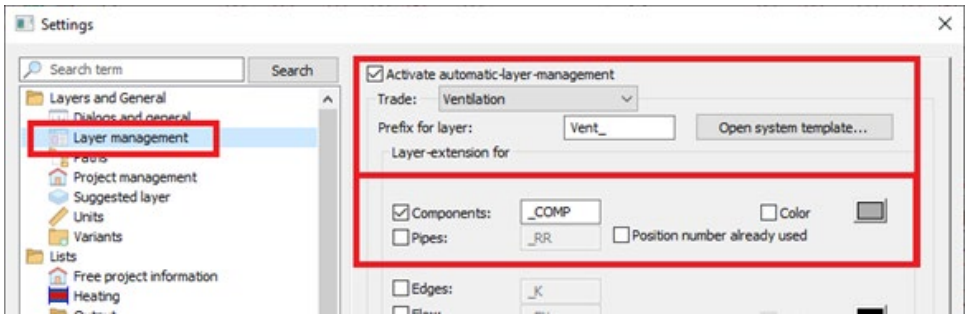
### 4.1.1. Settings

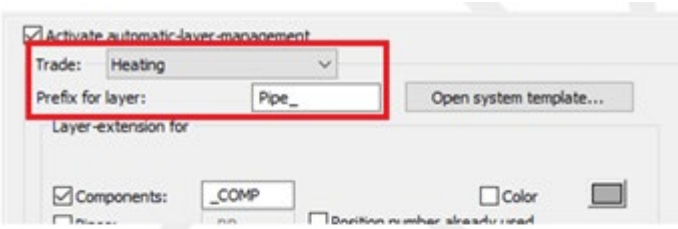
The function is located in “Settings” Dialog. You will find it in the Ribbon “AX3000-Common”

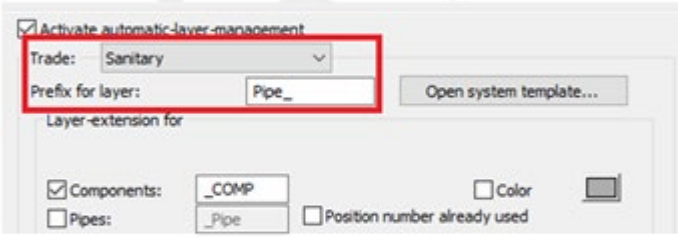


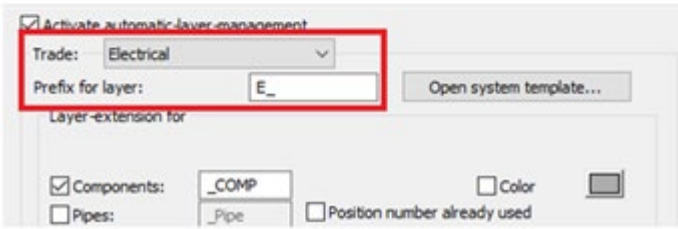
### 4.1.1.1. Layer Settings

AX3000 is using (based on the DWG Logic) Layers to store all graphical information's. This Dialog is used to define its Logic. Each Layer is using the Logic below, separated by an underscore _



The Prefix defines the Type of System. For a CIC-Project we use “Vent” for Ductworks.
All pipe systems use “Pipe” as a Prefix.

| Prefix | Description |
|---|---|
| **Vent** | Ventilation Ductworks |
| **Pipe** | Pipes (all kind of → Plumbing, Fire Service, Drainage,…) |
| **E** | Electric System |

It also can be a concept, to separate the different piping system types by the Prefix instead the example above.

| Prefix | Examples |
|---|---|
| **Vent** | Vent_SYSTEMNAME |
| **Heat** | Heat _SYSTEMNAME |
| **Plumbing** | Plumbing_SYSTEMNAME |
| **Sprinkler** | Sprinkler_SYSTEMNAME |
| **Drain** | Drain_SYSTEMNAME |
| **E** | E_SYSTEMNAME |

The Routing Code defines the type of medium.

| Routing Code (Examples) | Routing Name - Description |
|---|---|
| **EAD** | Exhaust Air Duct |
| **FAD** | Fresh Air Duct |
| **MAD** | Make Up Air Duct |
| **CHWR** | Chilled Water Supply Pipe |
| **CHWS** | Chilled Water Return Pipe |
| **FWP** | Fresh Water Pipe |
| **ELV TRUNKING** | Trunking for ELV (Extra Low Voltage) Systems |

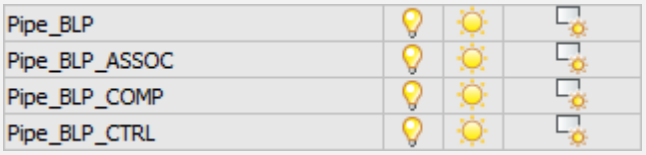
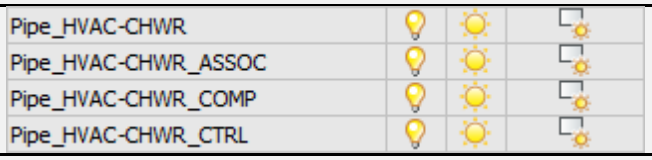
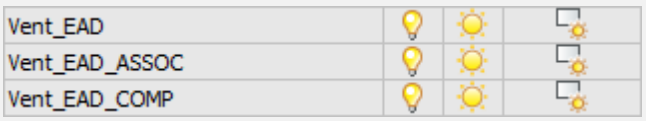
The suffix additional information’s. Here we use it mainly for separation of Components (to be able to use a different Colour than the Pipe- or Ductworks). In some cases for labels, if you label in Paper space.
Other possible separations (e.g. Separation of Pipes (_pipe) and rectangular Ducts in a Ventilation System) are not used for the project.

| Prefix | Description |
|---|---|
| **COMP** | Components or Equipment |
| **CTRL** | Centerline – used to draw the Easyline |
| **ASSOC** | Labels associated to an Element of the system |

Some Examples

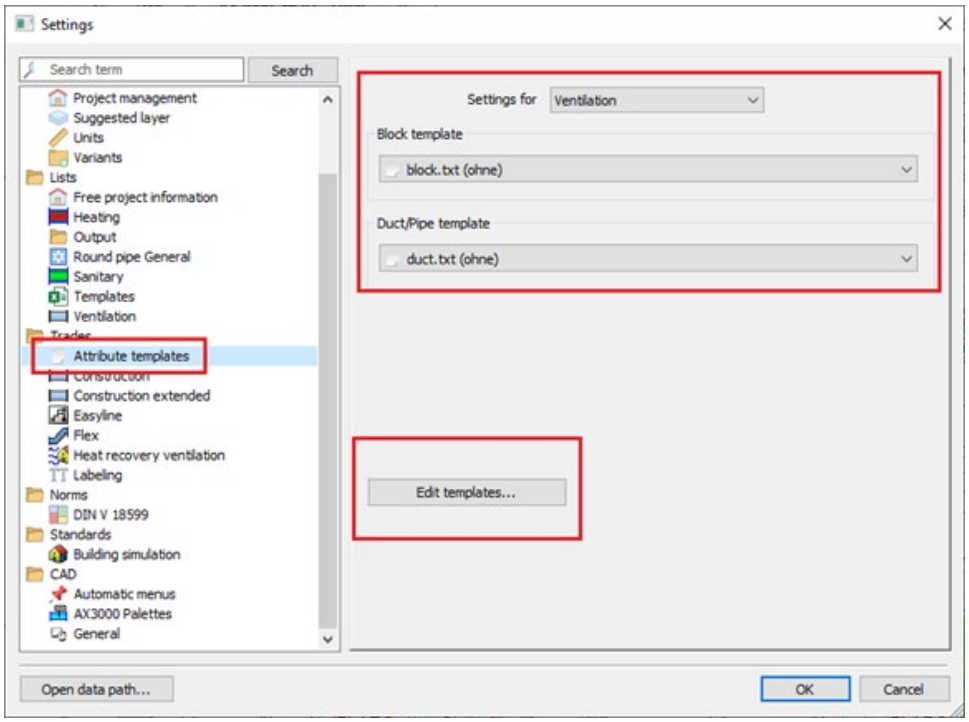
| Routing Code (Examples) | Routing Name - Description |
|---|---|
| **EAD** | Exhaust Air Duct |
| **FAD** | Fresh Air Duct |
| **MAD** | Make Up Air Duct |
| **CHWR** | Chilled Water Supply Pipe |

Some examples:

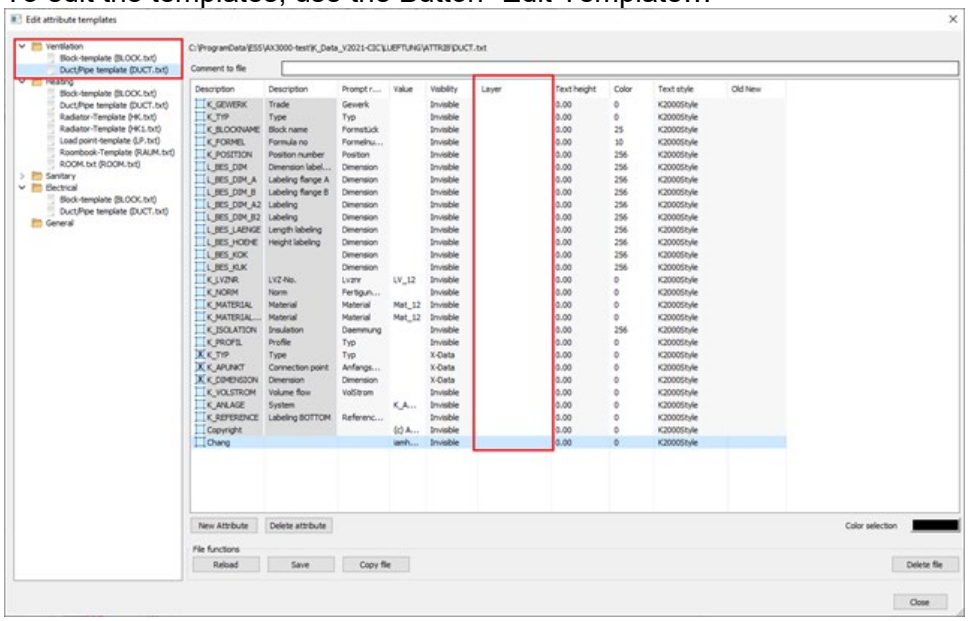
| Layerlist | Description |
|---|---|
|  | Pipe_BLP → Cooling Tower Balancing Pipe<br>_ASSOC → Labels<br>_COMP → Equipment<br>_CLTR → Centerline |
|  | Pipe_HVAC-CHWR → Chilled Water Return Pipe |
|  | VENT_EAD → Ventilation Exhaust Air Duct |

### 4.1.1.2. Attribute Settings

All information's are saved to the elements via attributes, therefore different templates for different Systemtypes are used. These Templates are also predefined by the Setup.




To edit the templates, use the Button "Edit Template…"



There are 2 different main Templates needed:

- DUCT.TXT → used for ducts and pipes
- BLOCK.TXT → used for equipment

The templates are used to define:

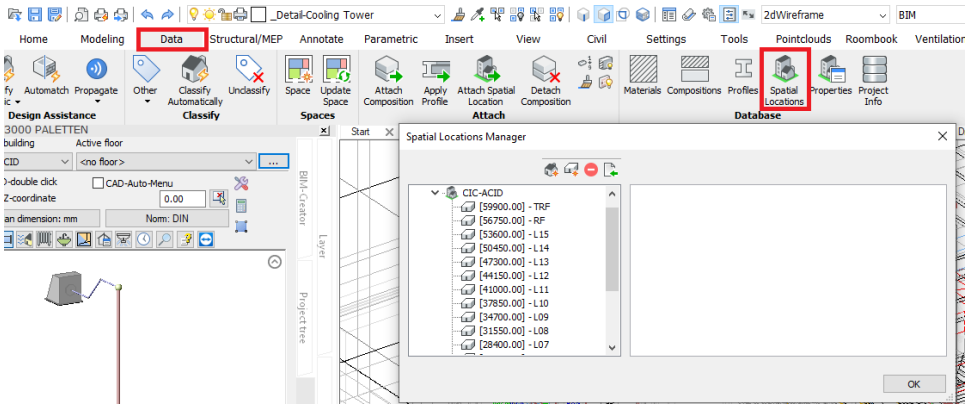
- the number of attributes saved to each element (major Attributes are needed, don't delete them)
- These are standard attributes with Tag, Prompt and value → value will be filled by the Software
- Visibility of the attributes → per default every attribute is invisible
  possible values are Invisible / visible / x-data (type of attribute, always invisible also invisible for the user)
- The Layer of each attribute 1. Variant is default

| | Example | Result | Description |
|---|---|---|---|
| **without value** | | Vent_EAD<br>Vent_SAD<br>Pipe_CHWR | EAD Elements + Attributes<br>SAD Elements + Attributes<br>CHWR Elements + Attributes |
| **Value** | TEXT | TEXT<br>Vent_EAD<br>Vent_SAD<br>Pipe_CHWR | Attributes<br>EAD Elements<br>SAD Elements<br>SAD Elements |
| **wildcard value** | *_TEXT | Vent_EAD<br>Vent_EAD_TEXT<br>Vent_SAD<br>Vent_SAD_TEXT<br>Pipe_CHWR<br>Pipe_CHWR_TEXT | EAD Elements<br>EAD Attributes<br>SAD Elements<br>SAD Attributes<br>CHWR Elements<br>CHWR Attributes |

- the text style, text colour or text height of each attribute
- If it is necessary new attributes can be added by user
  (e.g. attributes to add facility management information)

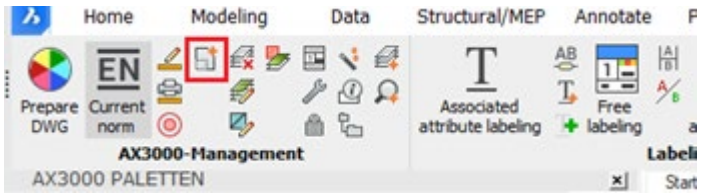
## 4.1.2. Floor Settings

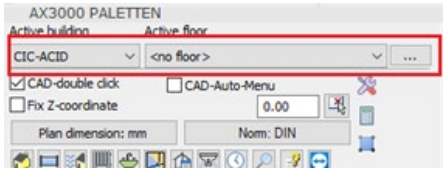
AX3000 is using its own Floor Manager.
It is made parallel to BricsCAD's ones but they can (had to be) set to the same values.



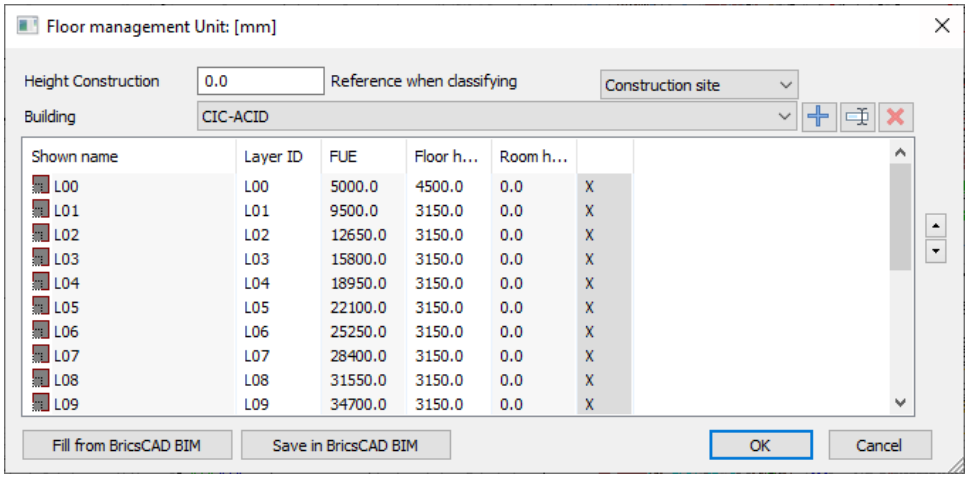

This is necessary for the automatic classification of each element (Building and Floor) to use BricsCAD's BIM functionality and later for the correct exchange via IFC.

Ribbon "AX3000-Common" or at the top of the wizard



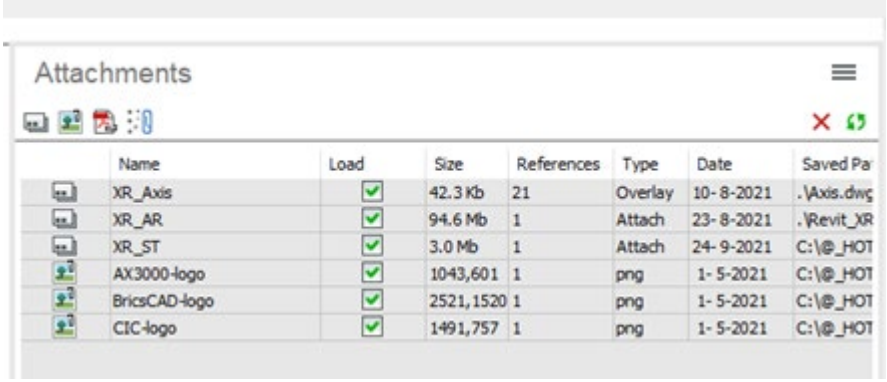




This is done, because it is possible to model MEP Systems on BricsCAD PRO without BIM functionality. In this case a classified IFC Export is not possible (Included in BricsCAD BIM license)

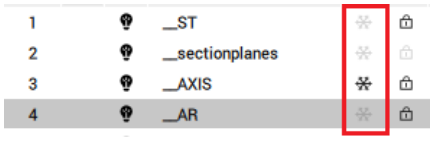


## 4.1.3. Architectural Reference

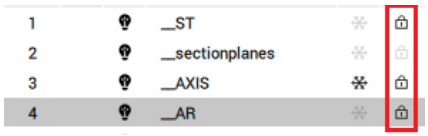
It is recommended to import the Architectural Model and or the Structural model as an External Reference.These References are imported into BricsCAD via its IFC interface into an empty drawing.




Use one layer per reference, which might be with an underscore at the beginning of the layer name. So they will be at the beginning of the layer list and it is possible to switch it on and off by using freeze function of the layer by one click.

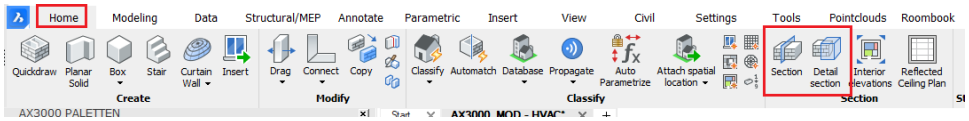



Don’t forget to lock the reference layers!

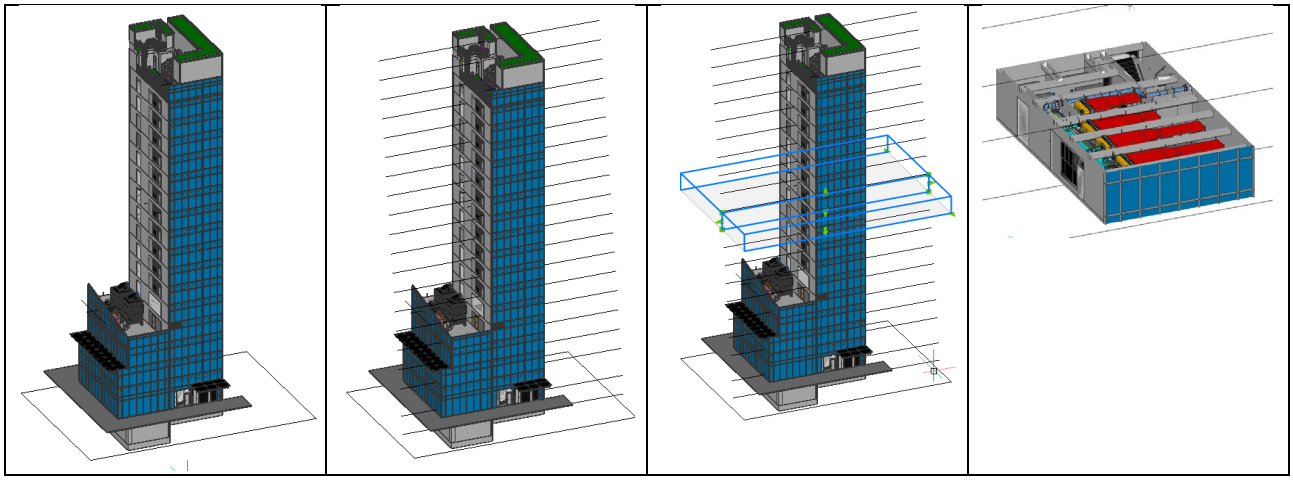


## 4.1.4. Section / Detail Section

To navigate between different floors in a 3d model, it can help to add “Sections” or “Detail Sections” to separate the floors. This can be used either in Modelspace as also in viewports in paperspace. Use a layer for this “floor clip planes” to hide them later in the viewports of the paperspace (layout)




**Tip:**
Name the Sections correctly and move them a bit, so they can be used as well in Planview...



## 4.2. Modelling Methods

Two different modelling methods are available:

- Construction Method → modeling “Part by Part”
- Easyline Method → “automatic modeling along a line”

The Construction Method will be used mainly for Ductwork in complex situation. The Easyline Method will be used for (nearly) all Piping Systems. In Compare with Ductwork in Ventilation, the diameters are much smaller and it will be easier to route a Pipe and their Fitting’s along a line.

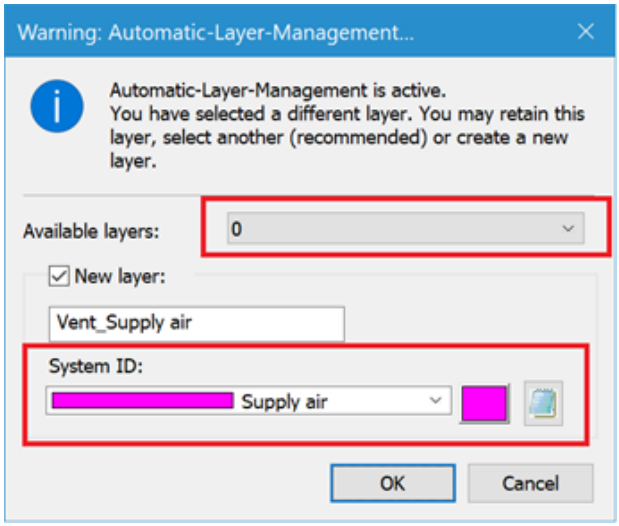
### 4.2.1. Construction Method

Constructing elements works by placing the individual items one after the other. You can either start in the empty space or connect to an existing pipe or duct system.

The concept is (excepting the start) not to draw ducts. Always select the position of the next elements (Fitting) inside the drawing. The distance will be filled with straight ducts or pipes automatically.

#### 4.2.1.1. Starting at the scratch

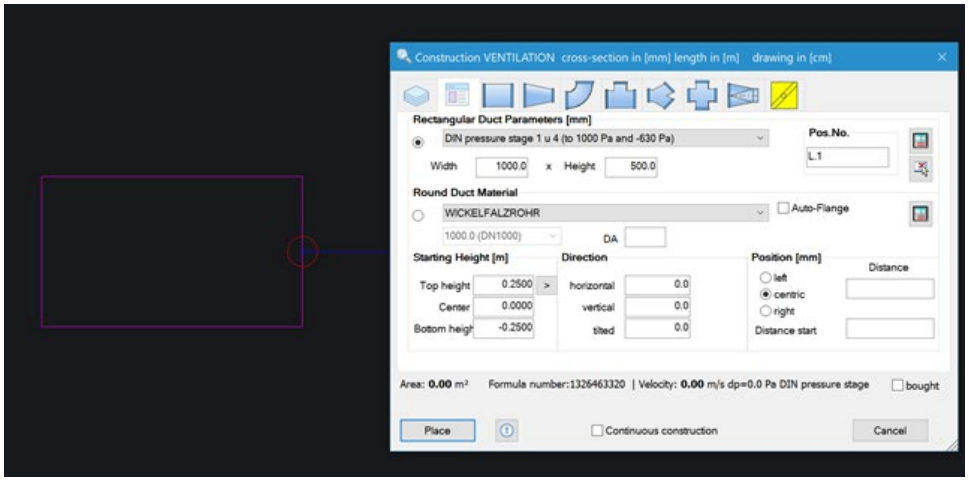
By clicking the first point you get the “Automatic-Layer-Management” dialog to select the appropriate layer. The defaults can be configured – for details see at Layer Settings




Select from the list of available layers

Create a new layer by defining the system type.

After clicking the second point, the “Construction dialog” opens. As a previewing the item will be shown in the drawing. Depending on the input values in this dialog, the preview updates and reflects your changes.

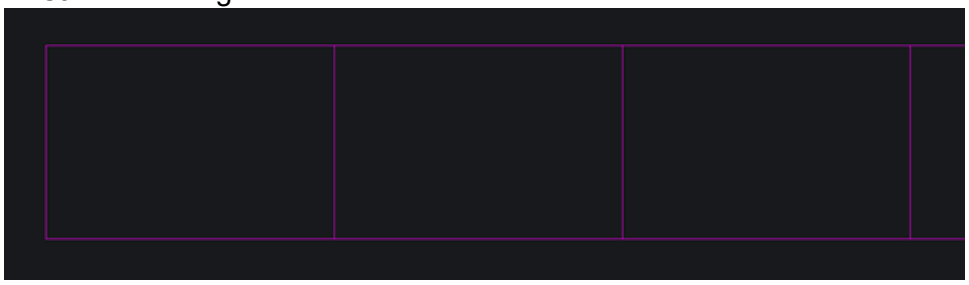



On the first page, select materials and shape - round or rectangular. This has to be inserted once, all following duct will use the same material information's. The Dimension can be changed with implementing fittings while changing to a sheet.

### 4.2.1.2. Routing from existing Elements

If you want to continue you construction from an existing element you can simply click on one open end of the duct or pipe. This also works for elbows, t-pieces etc. AX3000 then opens the "Construction Dialog" already prefilled with the settings from the picked element. So the material, size and type changes. If you pick a duct on the side, AX3000 changes the duct to become a t-piece by default:

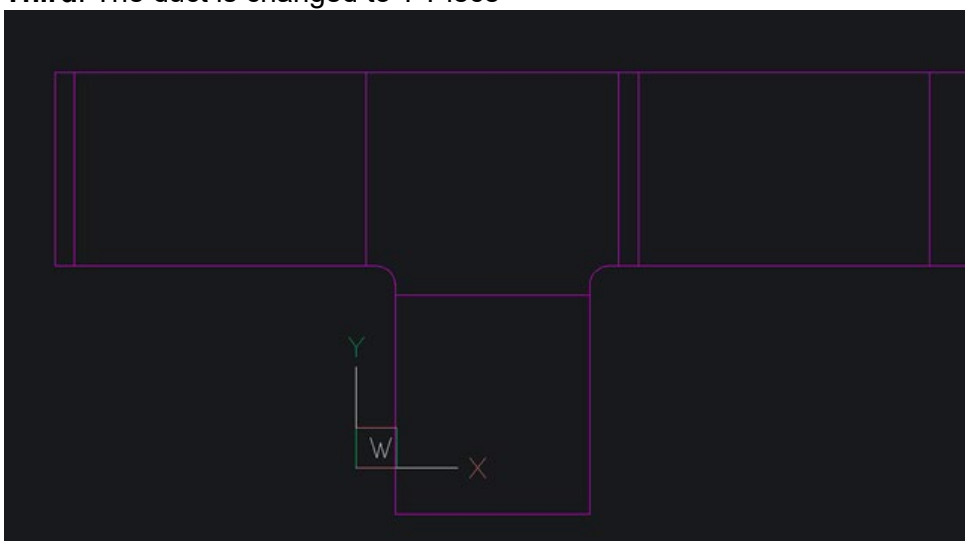
**Step1:**
**First**: the existing ducts



**Step 2:**
**Second**: Click on the side of the middle duct

**Step 3:**

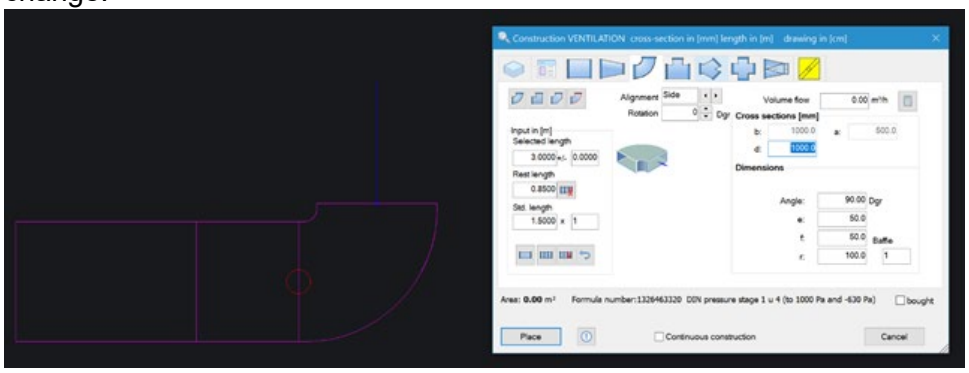
**Third**: The duct is changed to T-Piece



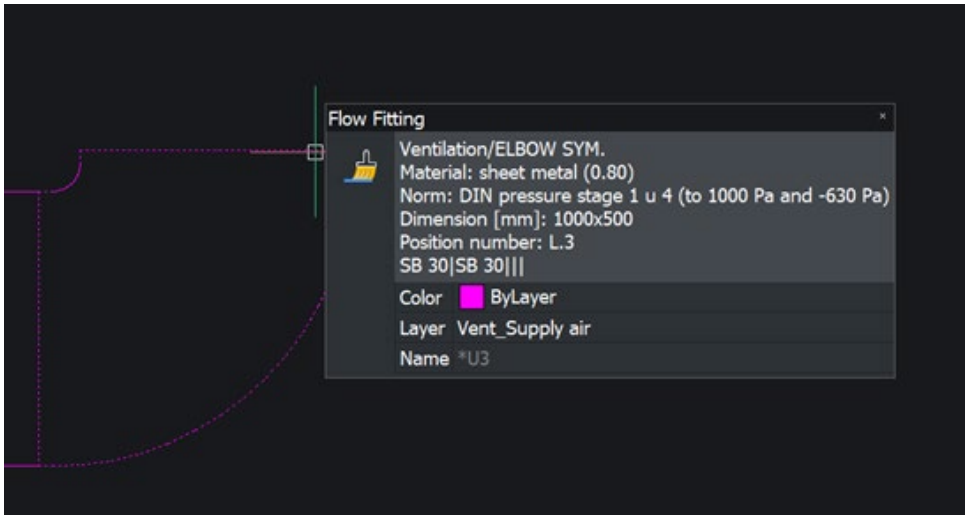
### 4.2.1.3. Creating Pipes, Ducts and Fittings

Depending on the material, the items are separated into “standard length” elements. For example: If you pick a length of 3 Meter AX3000 divides the ducts into 2 pieces each of 1.5 Meter length. This varies depending on the settings of the material.

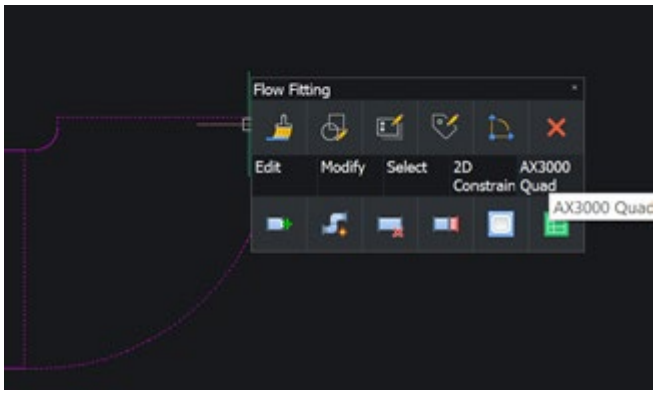
Activating the “Elbow” sheet in this dialog, creates an elbow at the end of the system. This also applies to other parts such as T-pieces. Each type has different settings and input values for you to change.




The default settings for the elbow part creates a 90° symmetric bow. After hitting the “Place” button this elements are created physically in the DWG database. So you can select, move or delete them as needed. If you move the mouse over the element you get the BricsCAD quad box with additional information from AX3000.



It is also possible to utilize some useful function via the BricsCAD QUAD. To use this, it is necessary to move the mouse of the big icon on the left and AX3000 functions show up.




With the “Construction Dialog” you can add all the pieces of the system one by one and one can create very complex systems.

## 4.2.2. Easyline Method

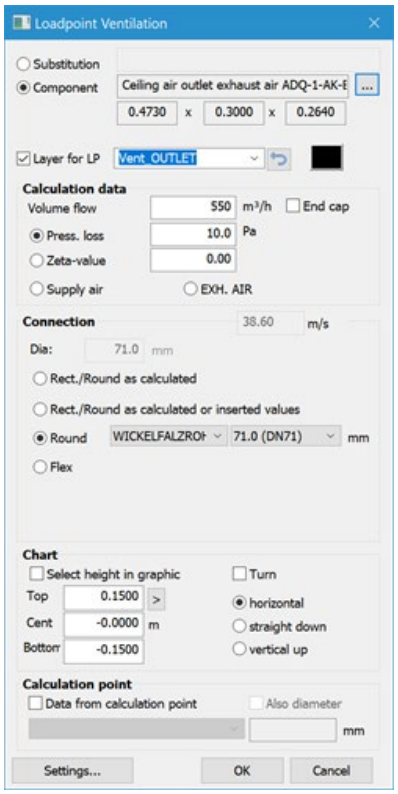
Easyline is designed to quickly sketch and calculate huge HVAC or piping systems.
It is based on a simple logic, you always need 3 Information's:

- Loadpoint
- Line
- Startpoint

These small set of objects allows you to design nearly any system. The “glue” of the system is a simple line to connect the Startpoint at the beginning with the Loadpoints at the end. Depending on the focused trade the parameters for the System, defined at the Startpoint and the values of the Loadpoint at the end may differ.

### 4.2.2.1. Example Ventilation

**Step 1**
The first step is normally to place the loadpoints. The loadpoint differs from trade to trade ranging from ventilation outlets to radiators. Some have only one connector (e.g. ventilation) and some may have four (Fan coils). One possibility is to place them manually in the empty space, defining all the needed values by hand. On the other side they can also be set automatically by AX3000 if – for example – a roombook is present to calculate the radiators or outlets. To give an overview we start we placing ventilation outlets and calculate a small system with AX3000.




Type of Loadpoint / Diffusor
for the graphical representation
*Choose correct layer for the system component which end with _COMP

Definition of the Loads:
Flowrate, pressure loss

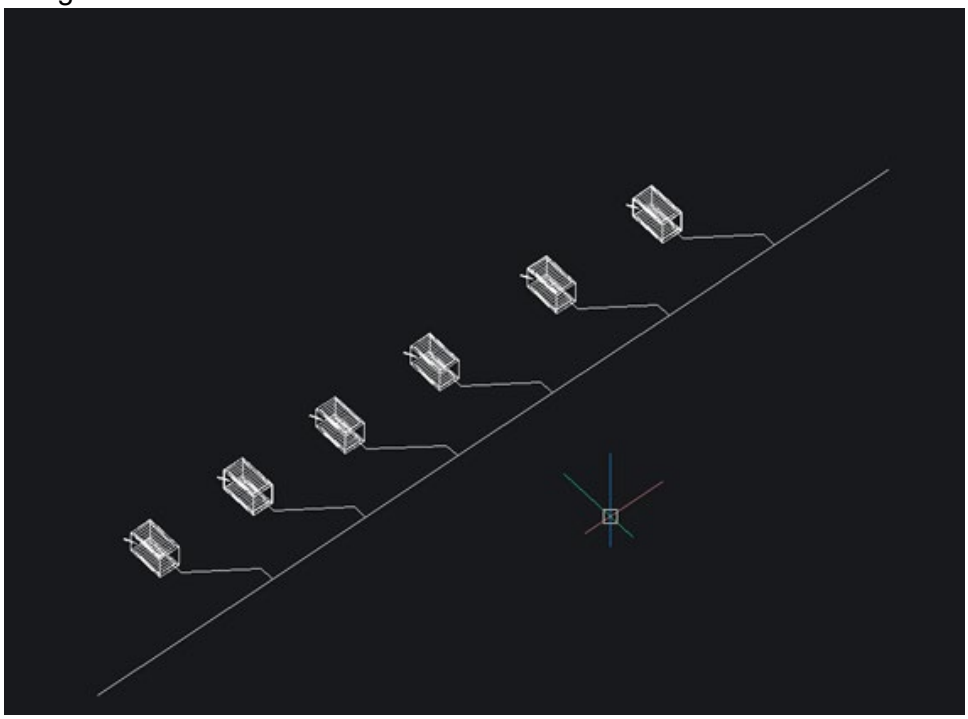
Material and connect parameters

Height information to place it at the correct elevation

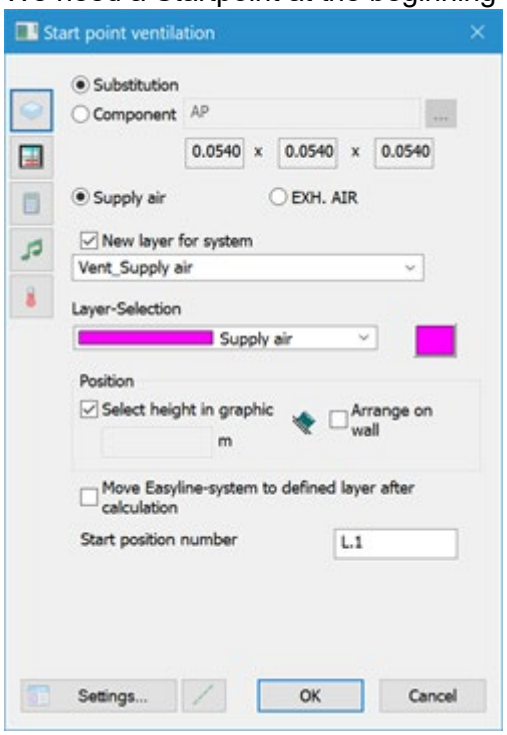
Place them six times in a row

**Step 2:**

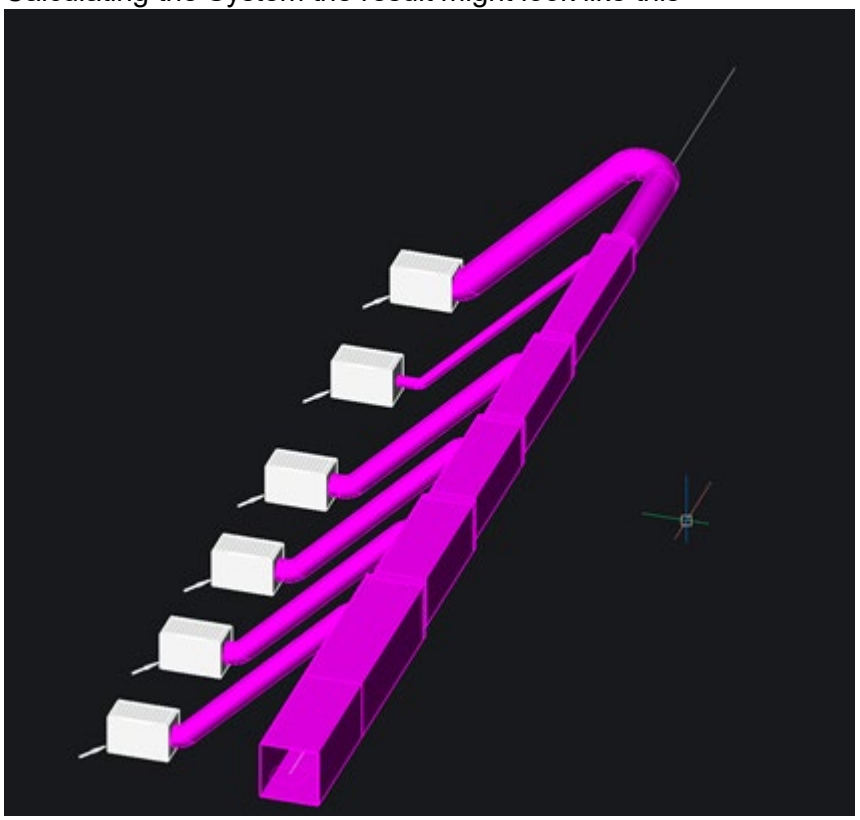
Select correct layer for the system centerline which end with _CTRL. Now these outlets need to be connected to a line, which we draw next to them. In the next step we connect this outlets to the line using a function to connect lateral.



**Step 3:**
We need a Startpoint at the beginning of the line. Choose correct layer for the system itself.




**Step 4:**
Calculating the System the result might look like this



# 5 BIM Objects

Due to the Logic of DWG ever Object – no matter for its type – is based on the standard DWG elements.

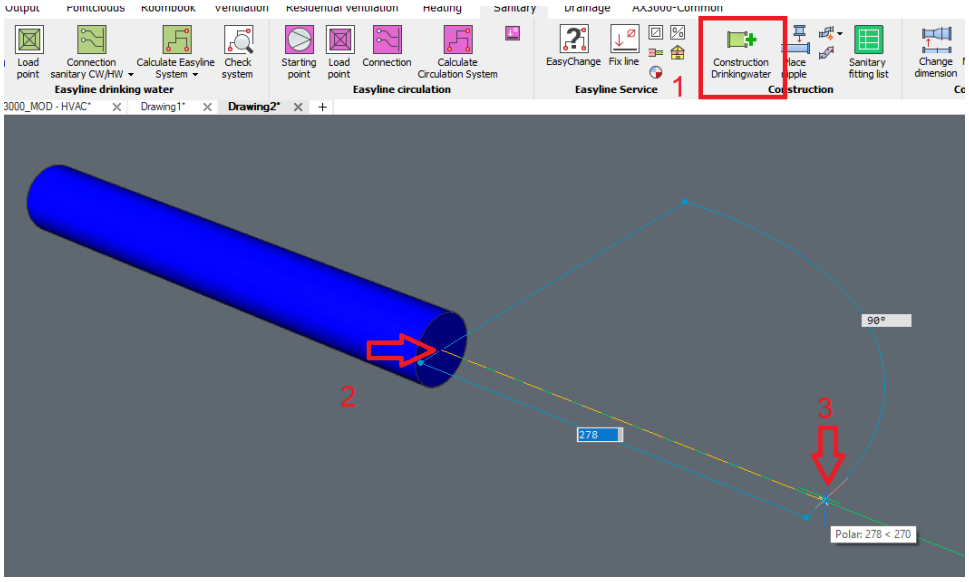
- **DWG Files**
  - Layers in side the DWG
  - Blocks inside the files
    - Geometric elements inside the block
    - Layers used by the geometric elements
    - Attributes inside the Blocks

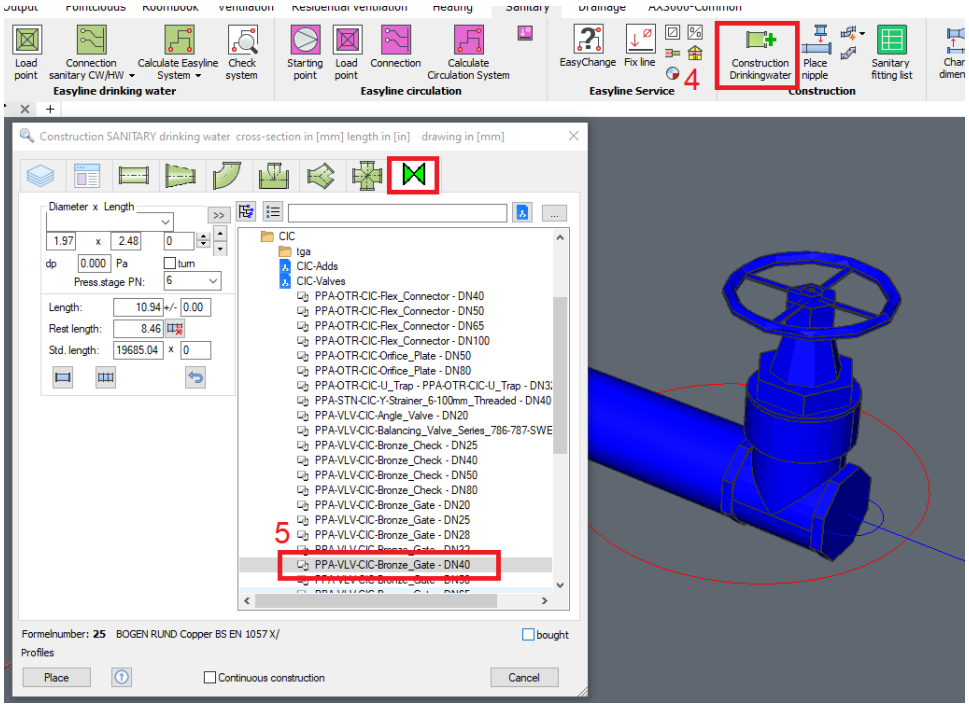
No matter for their usage as MEP Object, Duct, Pipe or Fitting.

# 5.1. Existing BIM Object for MEP

## 5.1.1. Use with Construction

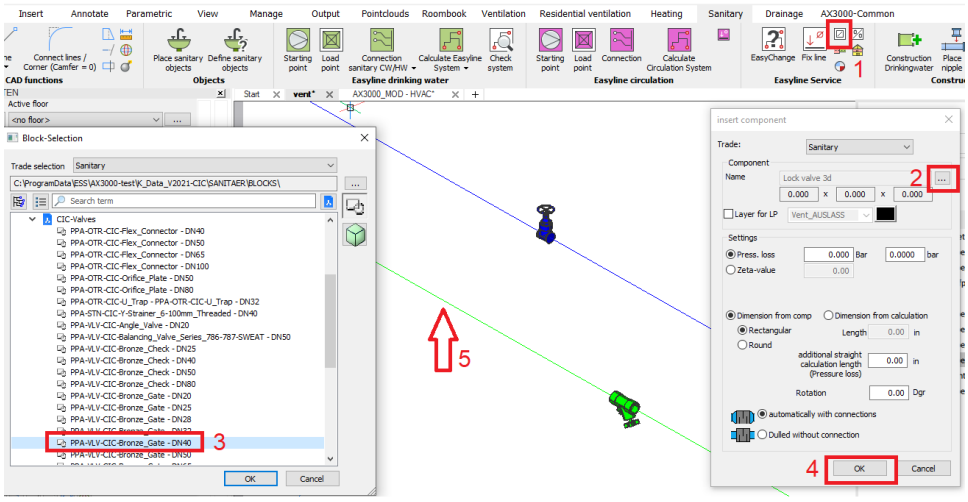
Equipment can be inserted into a system from one of the catalogue. There are existing catalogues delivered with the setup. Depending on the used Concept, it can be done with the Construction Dialog at the last sheet.

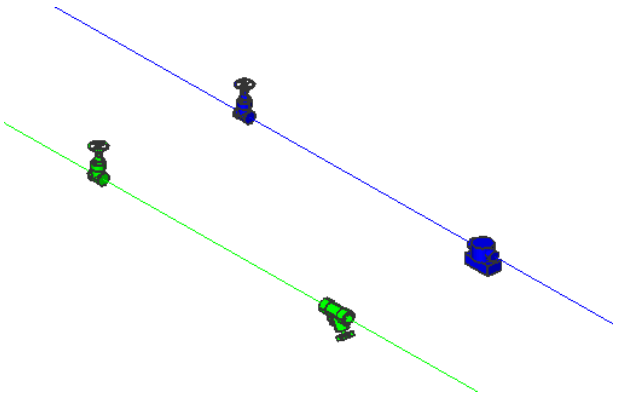


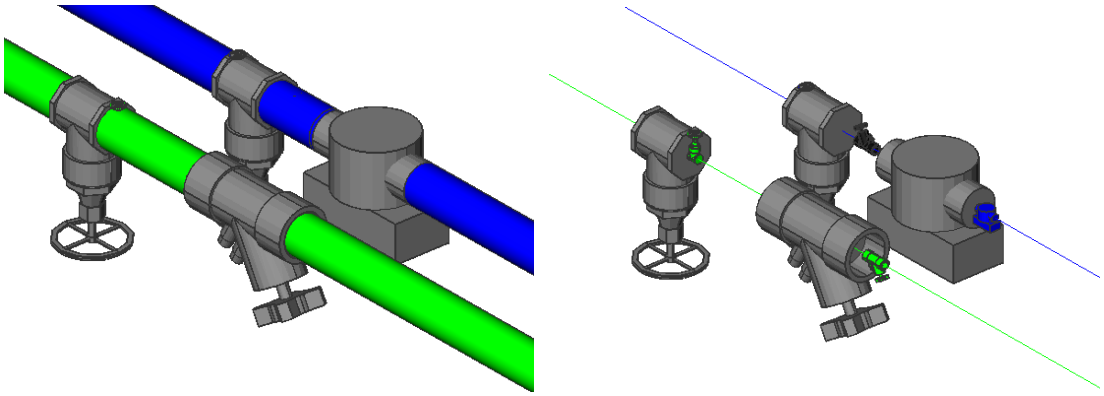
## 5.1.2. Use with Easyline

The Easyline is using a separate function to insert a placeholder (small version of the Element). The “real” version will be inserted while calculating the system.



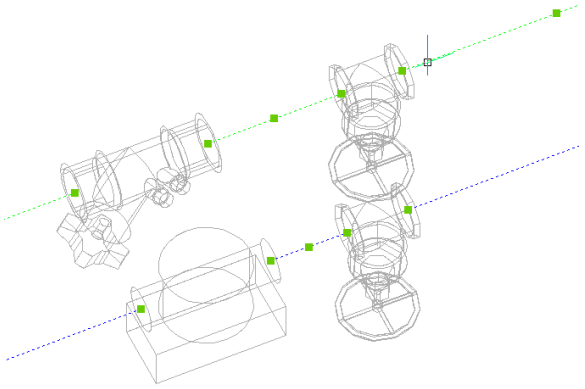
Result and Detailed View → Pipelayer switched off

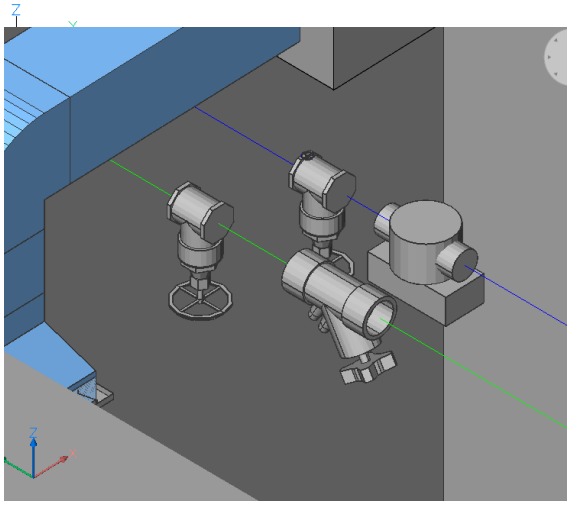


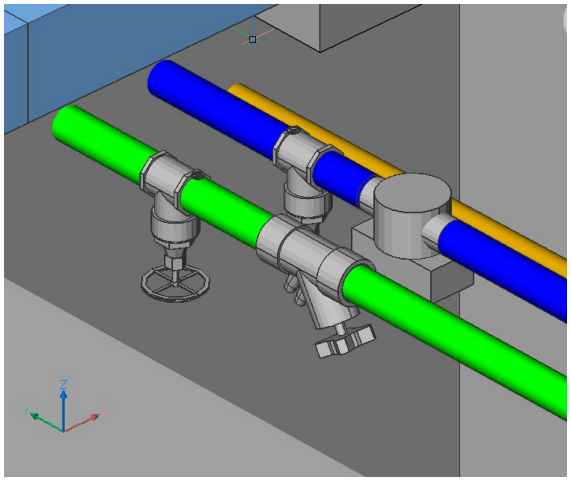
### 5.1.3. Mixture use

Because a mixture of both systems is possible, we recommend the constructive way for easyline too. Use the construction for the Equipment.

- it is easier to rotate or define the exact position
- it can be copied very easy if it is needed.
- The Line must end and start the ends of the element



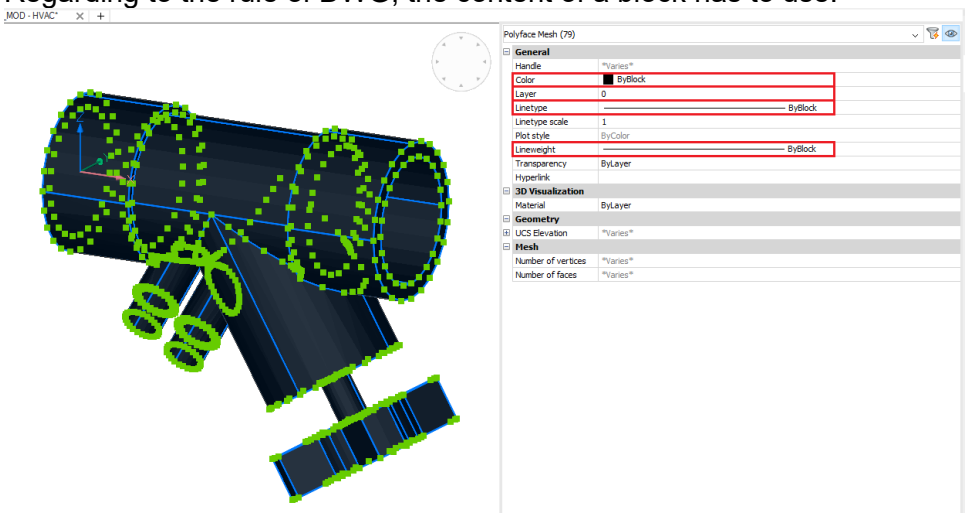




# 5.2. Create Objects for MEP 2D/3D

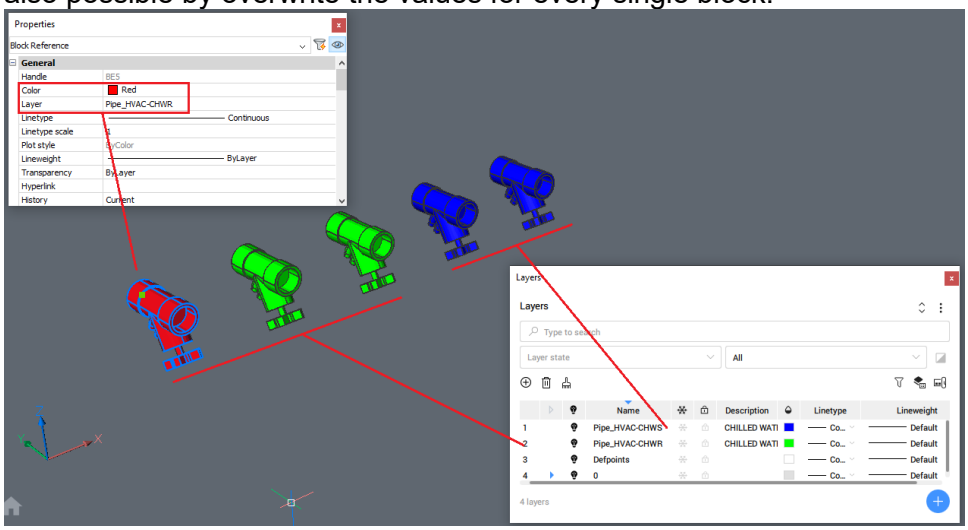
## 5.2.1. General Knowledge

Regarding to the rule of DWG, the content of a block has to use:




The screenshot shows the minimum, values for transparency and material can be defined optional.

If the settings done in this way, the Equipment will earn the values of the insertion layer. This is also possible by overwrite the values for every single block.




It is not necessary to add any specific attribute to an element, they will be added automatically while placing the element by the Template. The user is allowed to add some, if they are needed for / in this specific case.

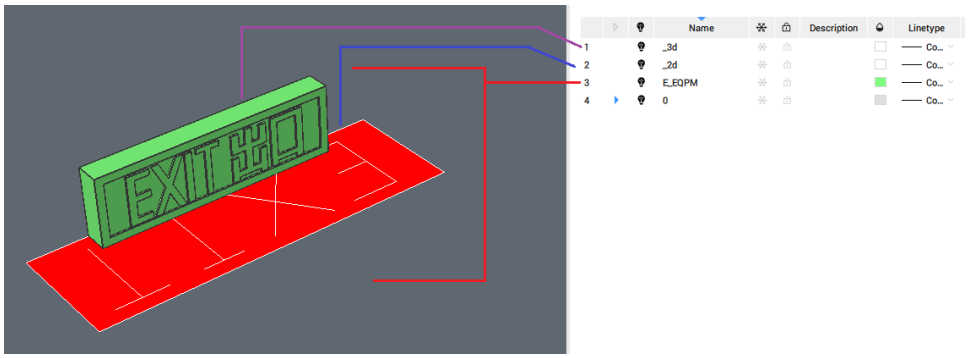
Blocks are saved in the “Blocks” subfolder of the K_data Directory.

## 5.2.2. MEP Equipment with 2D/3D Content

In this Case you need a “switchable” content.
The user wants to see might be

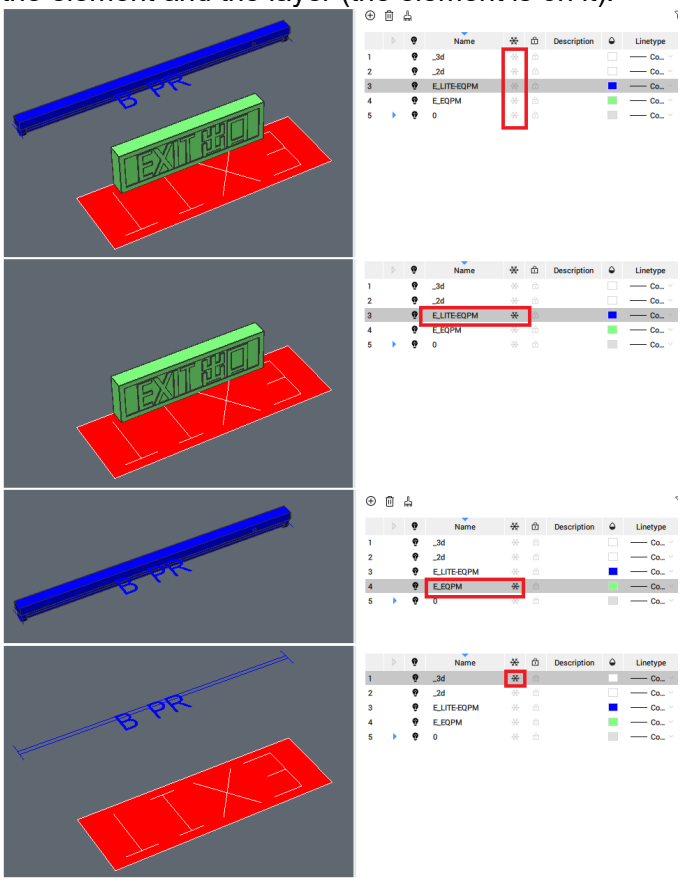
2D information in a Viewport in Paperspace → Planview
3D Content in another viewport as a Detail.

Here we also use the layer logic of DWG. Different Content in a Block have to use different Layers.
We recommend to use always identic Layers in different blocks.
This makes it easier to handle the visibility in viewports.



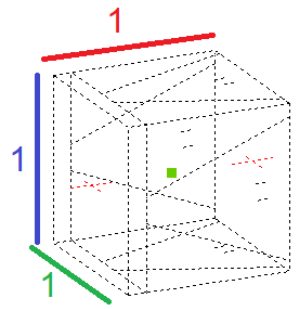

By freezing the main layer “E_EQPM” the entire block (all layer related elements) will be invisible


By freezing or switching the detail layers on/off, the partial content will be invisible. No matter for the element and the layer (the element is on it).



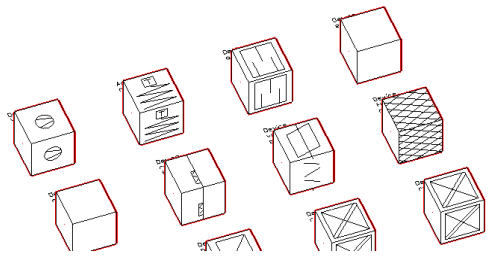
## 5.2.3. Parametric (Variable Blocks)

The content of a parametric block, fits in a cube of 1mm each side. The basepoint / Insertion point of the block has to be In the center of this cube.




| History | Current |
|---|---|
| **3D Visualization** | |
| Material | ByLayer |
| **Geometry** | |
| Position | 15.1000, 9.4000, 0.0000 |
| X | 15.1000 |
| Y | 9.4000 |
| Z | 0.0000 |
| Scale X | 1 |
| Scale Y | 1 |
| Scale Z | 1 |
| UCS Elevation | -0.5000, 0.5000 |
| Slope | 0 |
| **Misc** | |
| Annotative | No |
| Name | Constant volume flow controller Exhaust |
| Path | |
| Rotation | 0 |
| Block unit | Undefined |
| Unit factor | 1 |
| Explodable | Yes |

It is allowed to save Blocks in a single DWG or in different files. This helps to organize the structure.



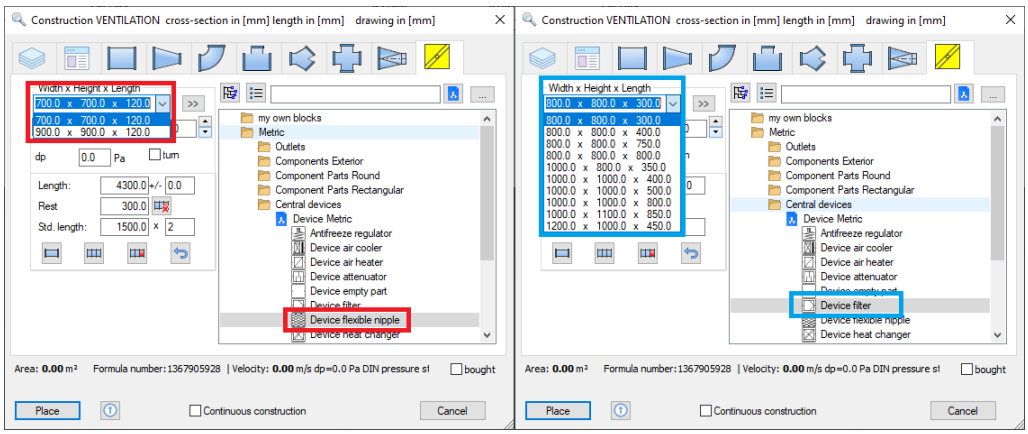
| | |
|---|---|
| Lineweight | |
| Transparency | ByLayer |
| Elevation | 0 mm |
| **View** | |
| Camera | -0.6349, 7.1996, -1.7474 |
| Target | -0.3916, 7.8347, -2.4805 |
| Perspective | Off |
| Lens length | 50 mm |
| Field of view | 39 |
| Height | 12.8134 mm |
| Width | 23.1732 mm |
| Clipping | Off |
| Front plane | 1 mm |
| Back plane | 0 mm |
| Visual style | Hidden |
| **Misc** | |
| Annotation scale | 1:1 |
| Default lighting | Off |

A size table is saved in the same folder as the Drawing. Inside the table, the pre-set dimensions are saved in ASCII Format. They can be changed while placing the block inside a System.

The usage of Tables is hierarchy, if you select a block:

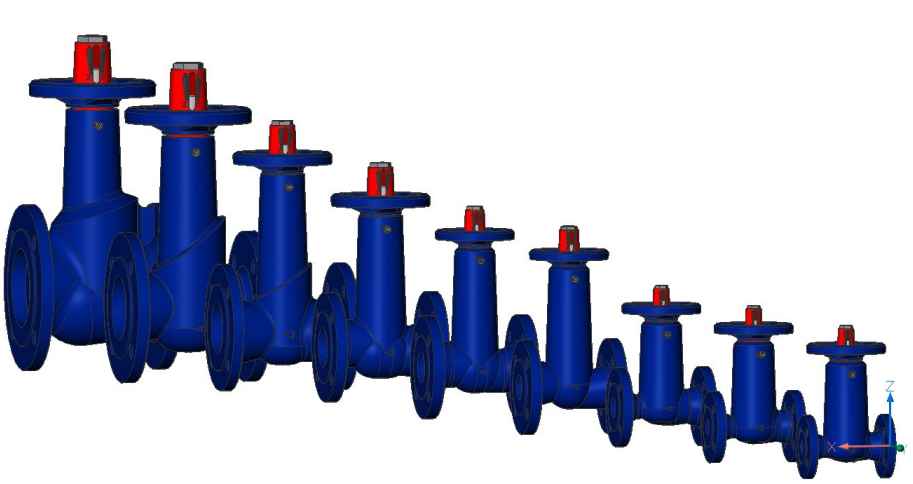
Primary always “Block Table” will be used → with the name of the block
Secondly (if no block table is found) a DWG Table will be used

1 Device flexible nipple.tab
Device Metric.dwg
2 Device Metric.tab
1 Device venetian blind flap.tab

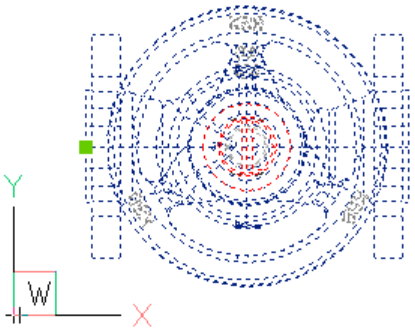


### 5.2.4. Blocks with fixed shape / dimension

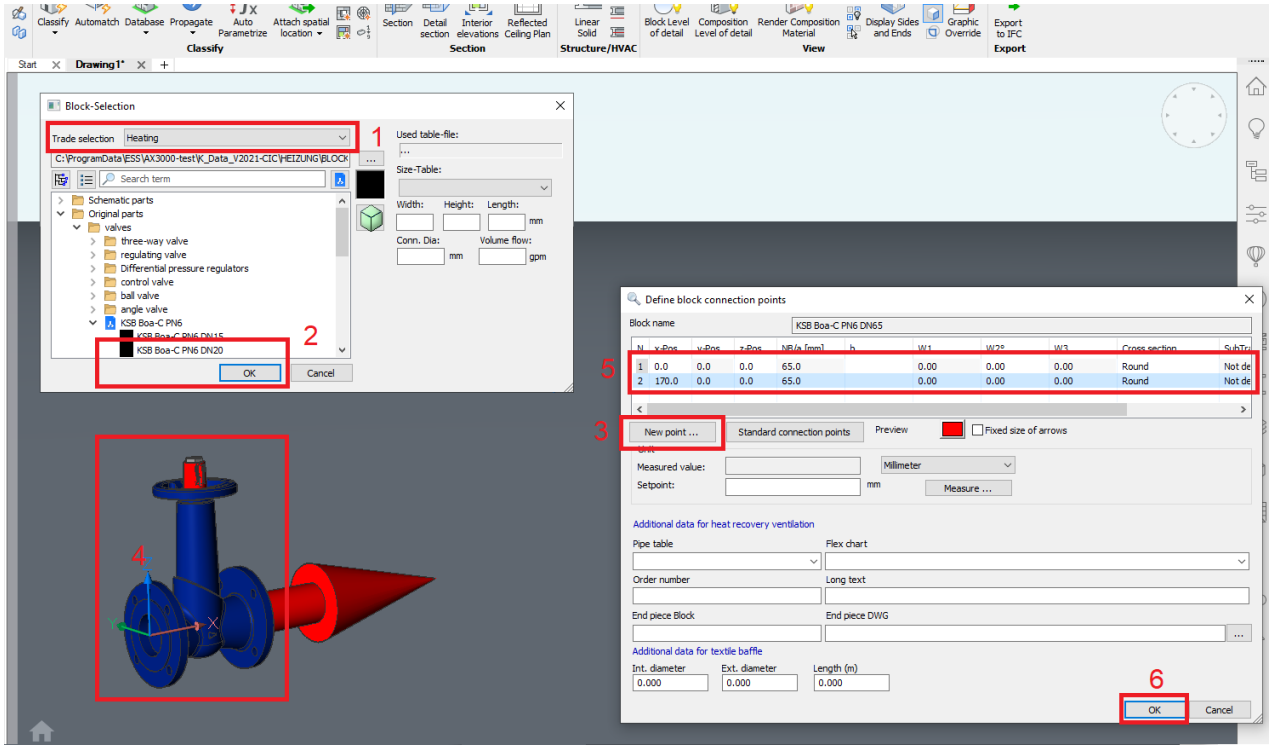
Might be from a Manufacturer, you can get geometry. This has to be saved as a block inside a Drawing. Blocks of the same type (same product, different dimensions).



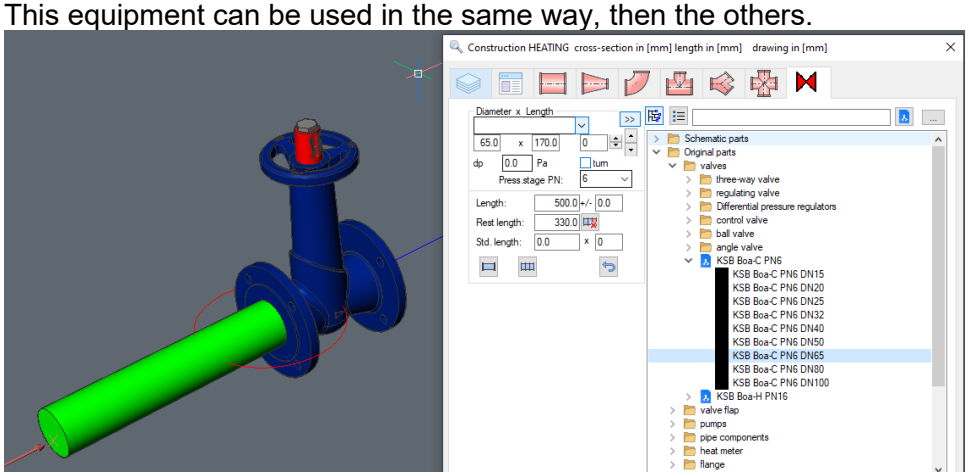
For these elements it is necessary, that they are oriented along x-axis, basepoint at the “input” connection. Save the drawing in the Blocks Folder of the discipline in k_data directory.



To define the Connection points, use the hidden command “_block_define”. This function is adding a table into the blocks folder, containing unit of the Block, and the number of connections, with their diameters and the orientations. Use this function (define connections for a new block) always in an empty drawing – because of a better preview.

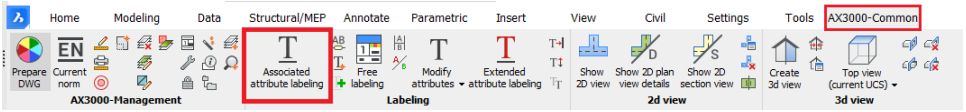



This equipment can be used in the same way, then the others.



## 5.3. Associative Labels

All labels are Blocks and can be used with the function “Associated attribute labelling” in Ribbon “AX3000 – Common"



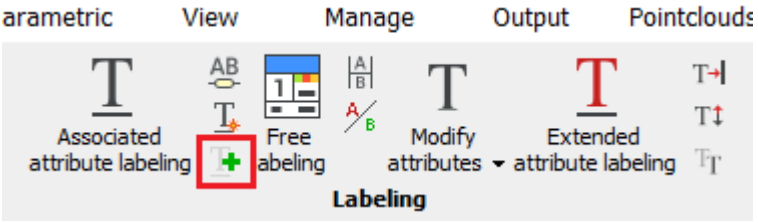

Label Blocks contains Attributes, merged with the value of an identic Attribute from the Element you are labelling. This works for any attribute no matter if it is a AX300 one or a “user” Attribute. By changing the value of the labelled attribute, the value at the labelling block will be updated automatically.

Special attribute are “dynamic” attributes, they are used to label the elevation or the used layer (used as System e.g. SAD, EAD, CHWR,)

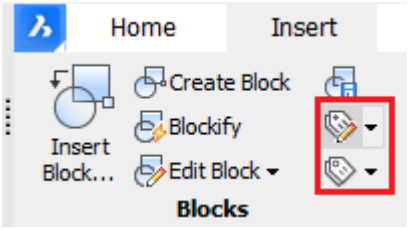
Dynamic blocks are allowed, but can't be edited by BricsCAD. The could use identic layer for all labels (unique) or the label can be made on a Prefix Layer of the system layer. (e.g. V_EAD – V_EAD_ASSOC)

### 5.3.1. Defining attributes

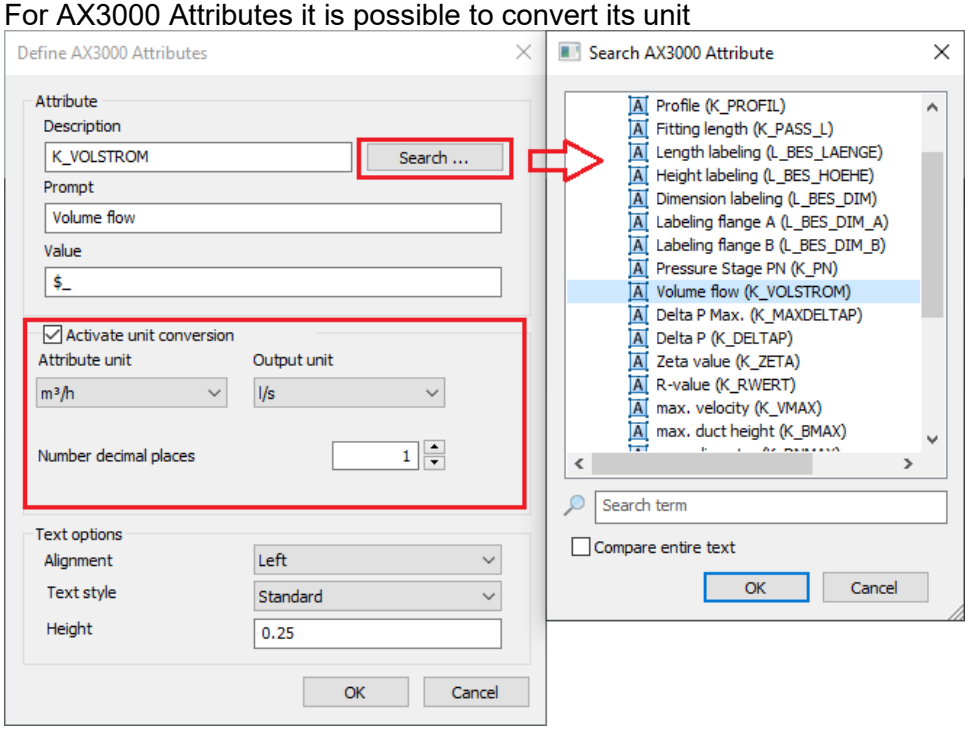
New attributes can be made with this function.




A Search function will help find AX3000 Standard attribute, but also the use of “DWG attribute function for attributes is possible.



For AX3000 Attributes it is possible to convert its unit




Examples unit conversion: (from - to)

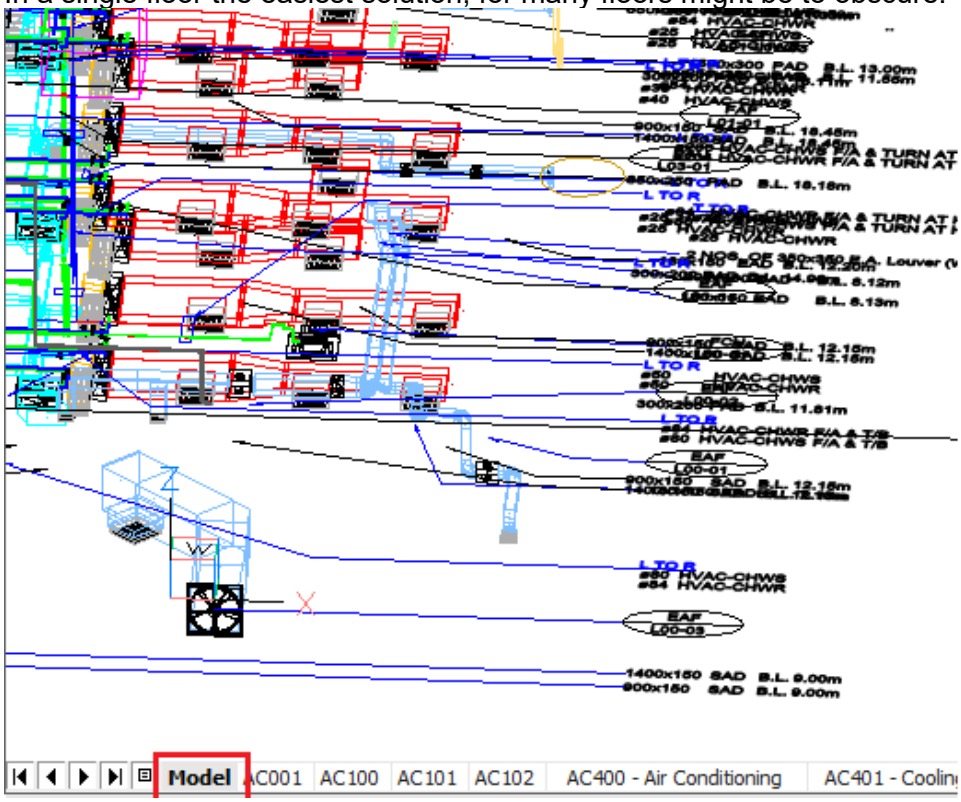
- m to mm
- m³/h to l/s

The conversion of the accuracy (e.g. from 23,456 to 23,5) is also possible.

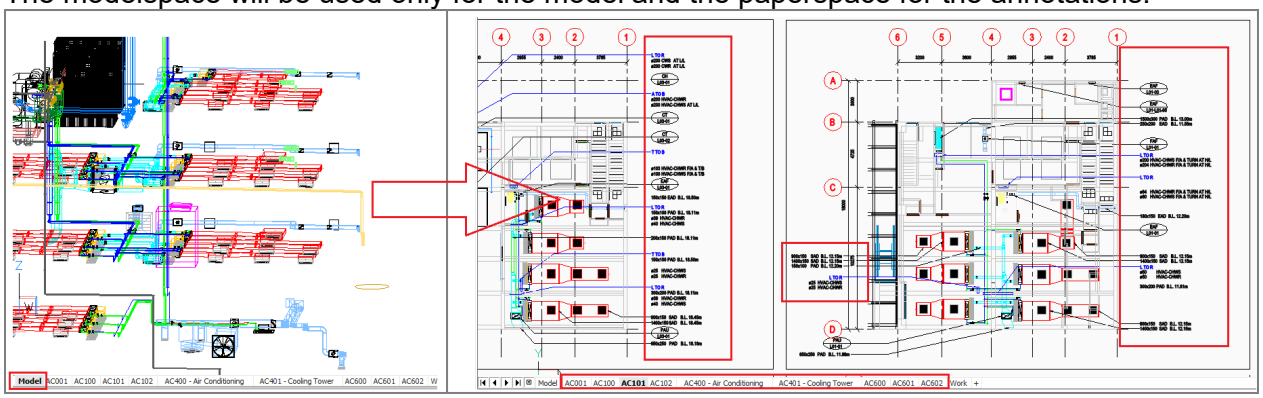
## 5.3.2. Labelling concepts

These labels can be used in paperspace and in modelspace.45

Modelspace labelling makes sense for smaller projects, but the model contains both information's.
In a single floor the easiest solution, for many floors might be to obscure.

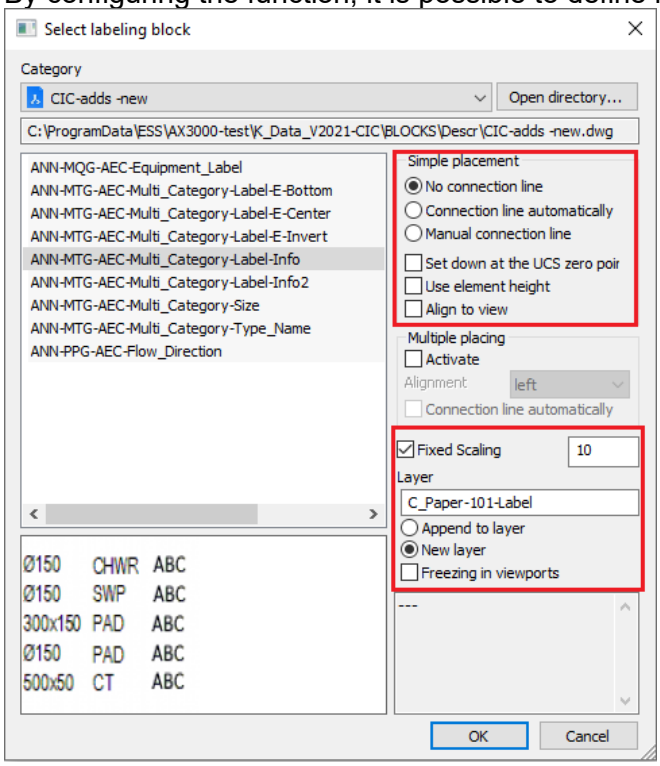



For larger projects, label in paperspace.
The modelspace will be used only for the model and the paperspace for the annotations.

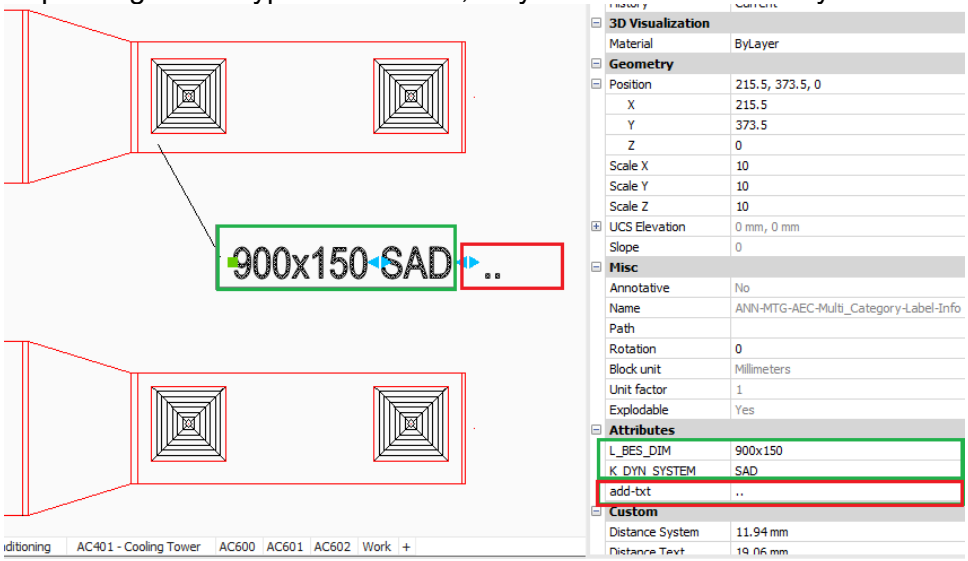


## 5.3.3. Using associated labels

By configuring the function, it is possible to define layer of the label, the size,….

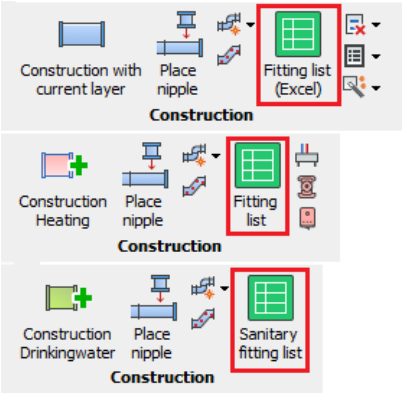



Depending on the type of attributes, they are filled automatically or the user can add information's

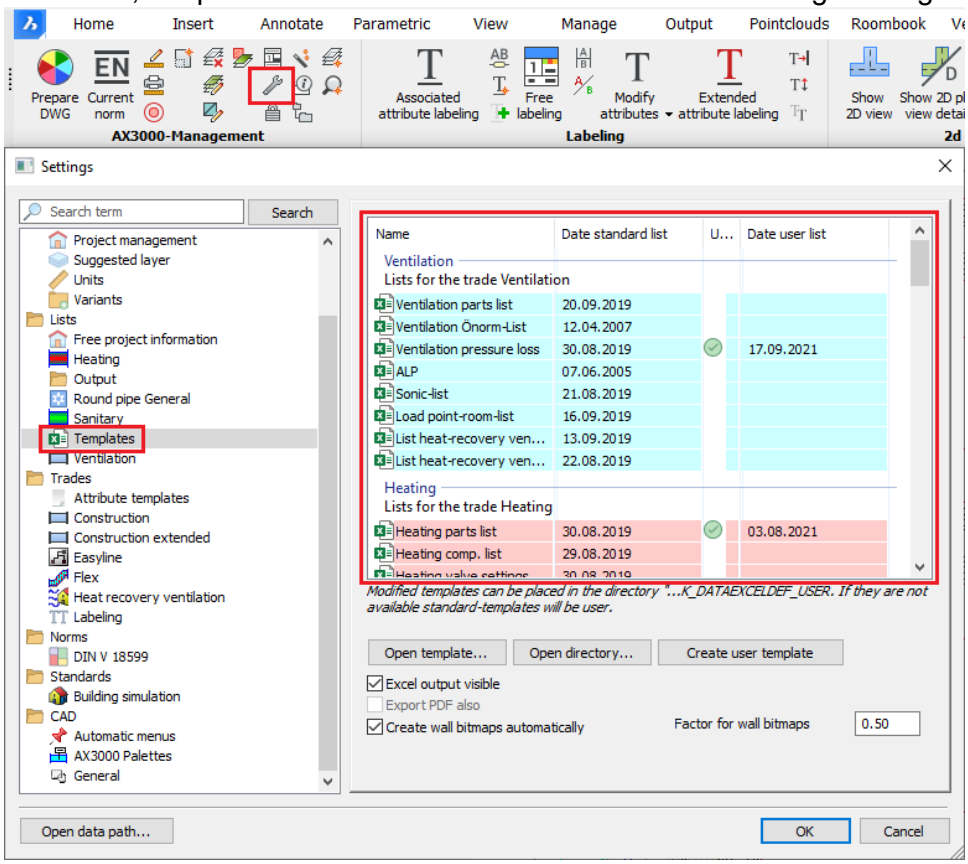


# 6 Preparing Schedules

Schedules (or Lists) are prepared and installed with AX3000. They can be found in every discipline and exported to Microsoft EXCEL

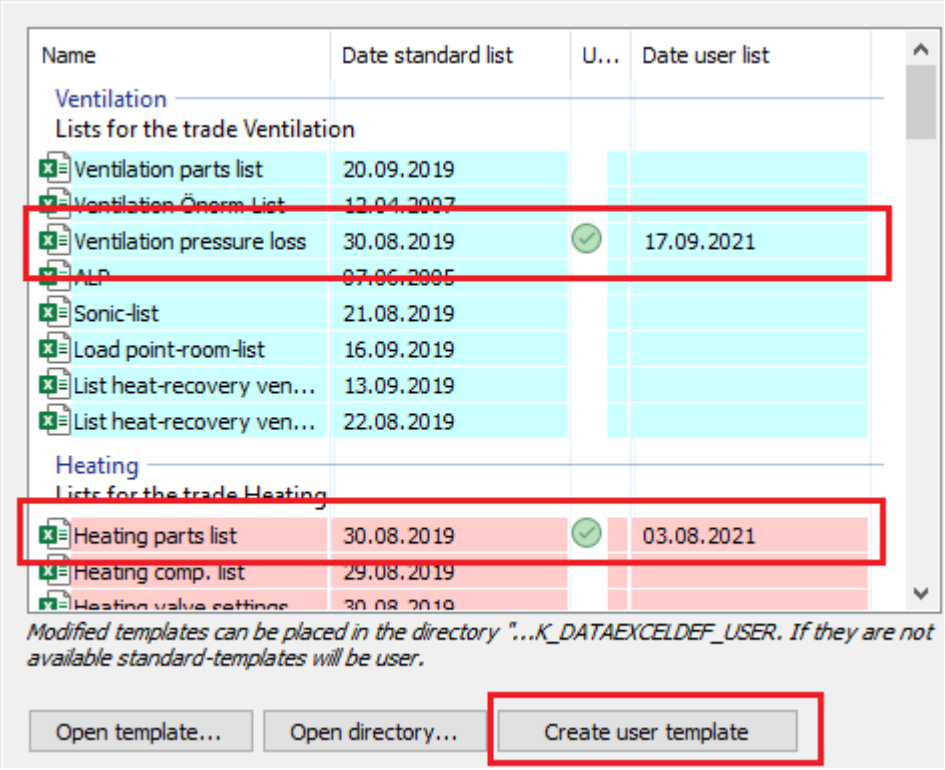



Therefore, templates are used and can be edited in The Settings Dialog

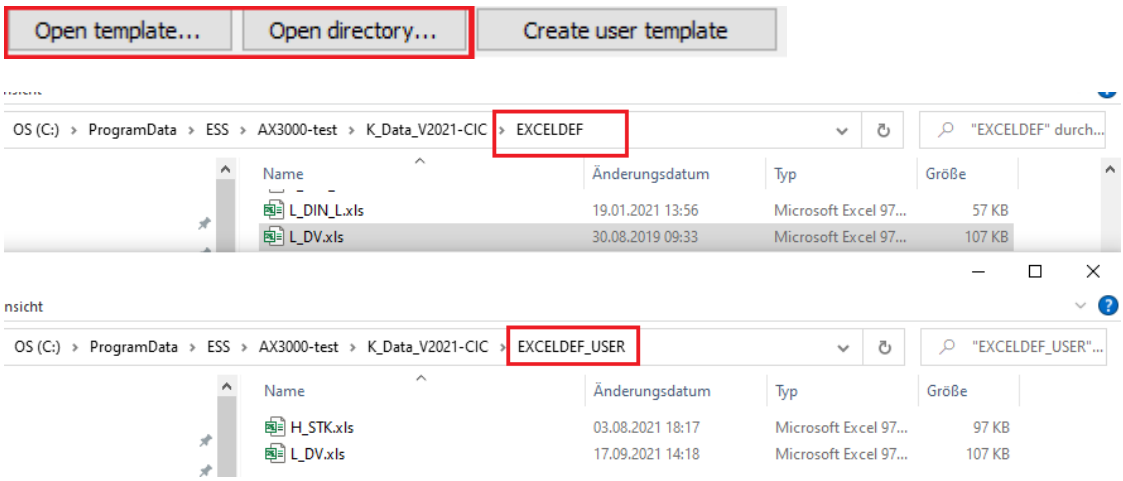


## 6.1. Creating User Template

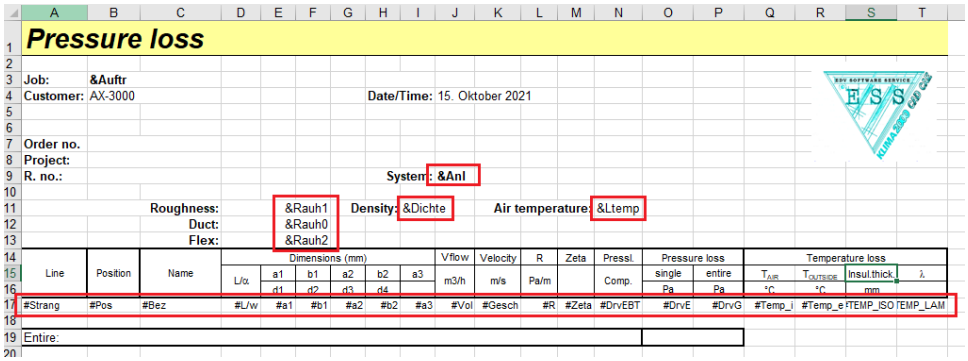
User Templates can be generated by pressing the button. This function is doubling the Standard File into a “user” directory. Now it is secure I can’t be overwritten by a new installation of AX3000. It will be found automatically, so it can be done also manually.
User lists are visualized by the green symbol and the last modification Date.




An existing user template can be edited directly, or the folders xam be opened in a Windows Explorer to open it manually.



The template can contain Text, graphic, and any other Functionality available in Microsoft Excel.
The values will be filled instead of the “placeholders”.
Some of them are unique, others will be copied to the lines below to fill the list.

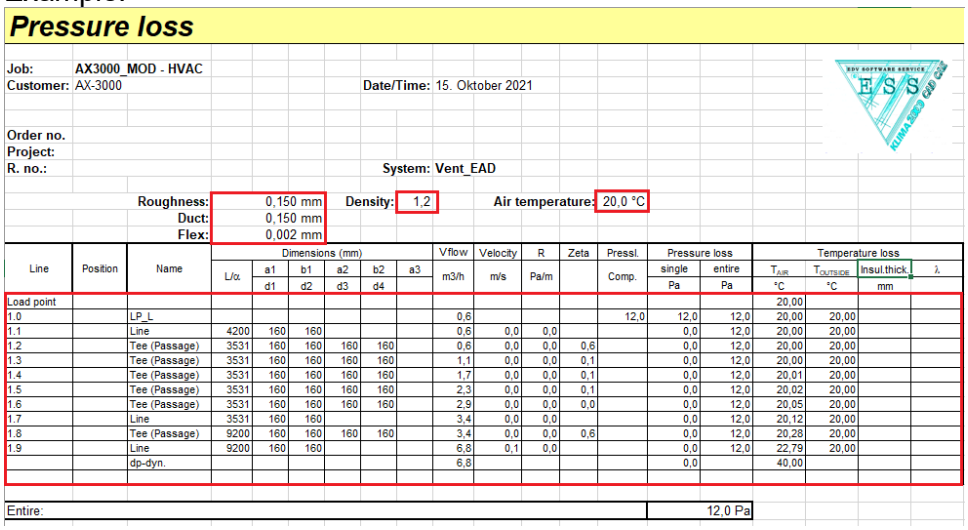


**Pressure loss**

Job: &Auftr
Customer: AX-3000
Date/Time: 15. Oktober 2021
Order no.
Project:
R. no.:
System: &Anl
Roughness: &Rauh1
Duct: &Rauh0
Flex: &Rauh2
Density: &Dichte
Air temperature: &Ltemp

| Line | Position | Name | Dimensions (mm) L/α | a1 d1 | b1 d2 | a2 d3 | b2 d4 | a3 | Vflow m3/h | Velocity m/s | R Pa/m | Zeta | Pressl. Comp. | Pressure loss single Pa | Pressure loss entire Pa | Temperature loss $T_{AIR}$ °C | $T_{OUTSIDE}$ °C | Insul.thick. mm | λ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #Strang | #Pos | #Bez | #L/w | #a1 | #b1 | #a2 | #b2 | #a3 | #Vol | #Gesch | #R | #Zeta | #DrvEBT | #DrvE | #DrvG | #Temp_i | #Temp_e | #TEMP_ISO | #TEMP_LAM |
| Entire: | | | | | | | | | | | | | | | | | | | |

Example:



**Pressure loss**

Job: AX3000_MOD - HVAC
Customer: AX-3000
Date/Time: 15. Oktober 2021
Order no.
Project:
R. no.:
System: Vent_EAD
Roughness: 0,150 mm
Duct: 0,150 mm
Flex: 0,002 mm
Density: 1,2
Air temperature: 20,0 °C

| Line | Position | Name | Dimensions (mm) L/α | a1 d1 | b1 d2 | a2 d3 | b2 d4 | a3 | Vflow m3/h | Velocity m/s | R Pa/m | Zeta | Pressl. Comp. | Pressure loss single Pa | Pressure loss entire Pa | Temperature loss $T_{AIR}$ °C | $T_{OUTSIDE}$ °C | Insul.thick. mm | λ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Load point | | | | | | | | | | | | | | | | 20,00 | | | |
| 1.0 | | LP_L | | | | | | | 0,6 | | | | 12,0 | 12,0 | 12,0 | 20,00 | 20,00 | | |
| 1.1 | | Line | 4200 | 160 | 160 | | | | 0,6 | 0,0 | 0,0 | | | 0,0 | 12,0 | 20,00 | 20,00 | | |
| 1.2 | | Tee (Passage) | 3531 | 160 | 160 | 160 | 160 | | 0,6 | 0,0 | 0,0 | 0,6 | | 0,0 | 12,0 | 20,00 | 20,00 | | |
| 1.3 | | Tee (Passage) | 3531 | 160 | 160 | 160 | 160 | | 1,1 | 0,0 | 0,0 | 0,1 | | 0,0 | 12,0 | 20,00 | 20,00 | | |
| 1.4 | | Tee (Passage) | 3531 | 160 | 160 | 160 | 160 | | 1,7 | 0,0 | 0,0 | 0,1 | | 0,0 | 12,0 | 20,01 | 20,00 | | |
| 1.5 | | Tee (Passage) | 3531 | 160 | 160 | 160 | 160 | | 2,3 | 0,0 | 0,0 | 0,1 | | 0,0 | 12,0 | 20,02 | 20,00 | | |
| 1.6 | | Tee (Passage) | 3531 | 160 | 160 | 160 | 160 | | 2,9 | 0,0 | 0,0 | 0,0 | | 0,0 | 12,0 | 20,05 | 20,00 | | |
| 1.7 | | Line | 3531 | 160 | 160 | | | | 3,4 | 0,0 | 0,0 | | | 0,0 | 12,0 | 20,12 | 20,00 | | |
| 1.8 | | Tee (Passage) | 9200 | 160 | 160 | 160 | 160 | | 3,4 | 0,0 | 0,0 | 0,6 | | 0,0 | 12,0 | 20,28 | 20,00 | | |
| 1.9 | | Line | 9200 | 160 | 160 | | | | 6,8 | 0,1 | 0,0 | | | 0,0 | 12,0 | 22,79 | 20,00 | | |
| | | dp-dyn. | | | | | | | 6,8 | | | | | 0,0 | | 40,00 | | | |
| Entire: | | | | | | | | | | | | | | | 12,0 Pa | | | | |

# 7 Standardising View Setting

## 7.1. Templates

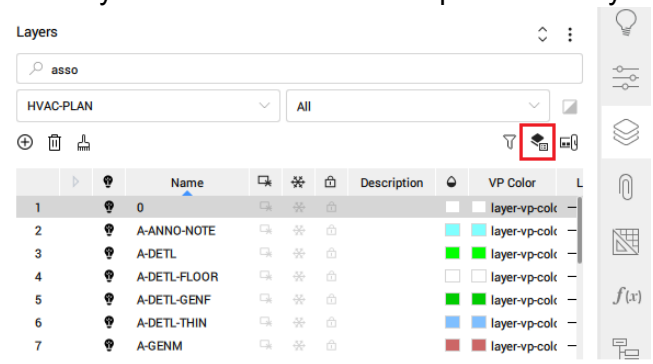
Due to the Logic of DWG the layouting of the plan views has to made in paperspace thru Viewports.

Inside a viewport layer can be frozen separately in every viewport. Elements visible in modelspace can be made visible in paperspace and viewport.

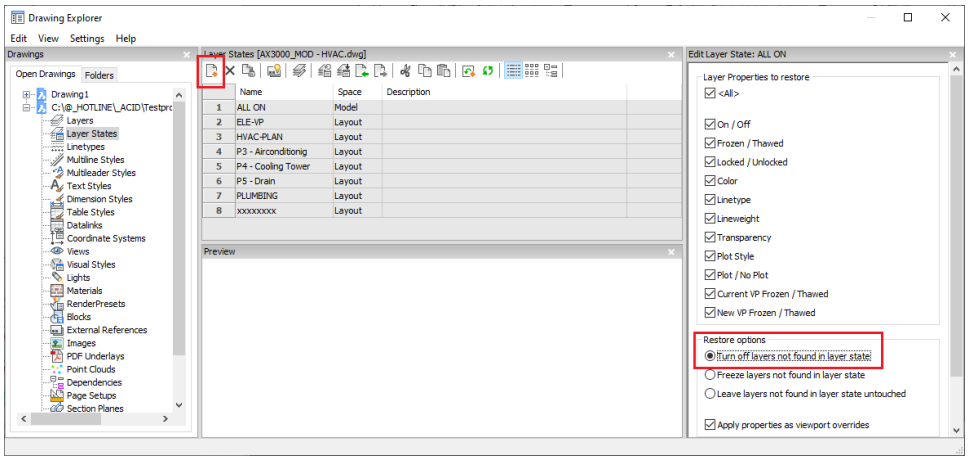
If something is switched of or invisible in modelspace it is also invisible in paperspace.

### 7.1.1. Create Template from Current view

Create a view template from the view that is defined with good and appropriate presentation settings as a Layerstate. Unction can be opened via Layer panel.

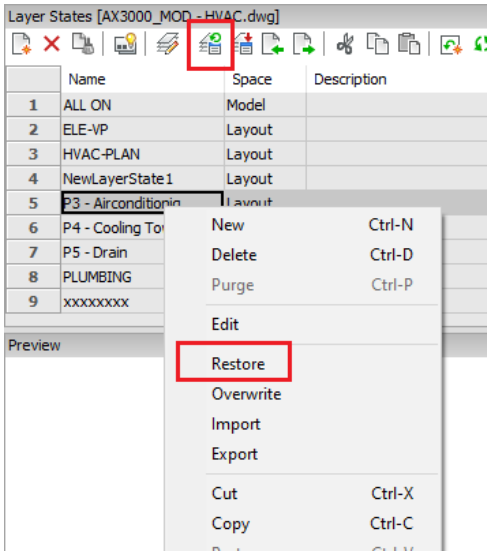



The layerstate's are saved in the drawing and can be used in any Viewport (or also the model) to restore all layer settings.

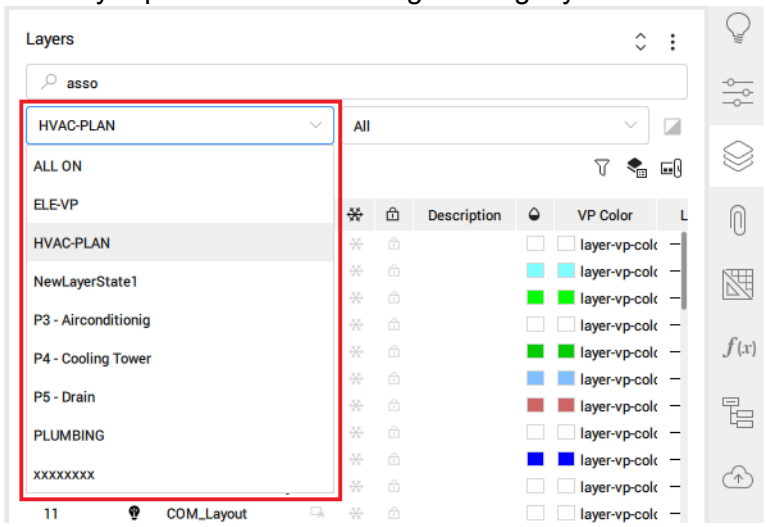



The Button at the top, is saving the status of all layers and the user can rename it directly in the list.

To restore a status, activate Line in the Drawing-Explorer and use either the button at the top or the function in the context menu.

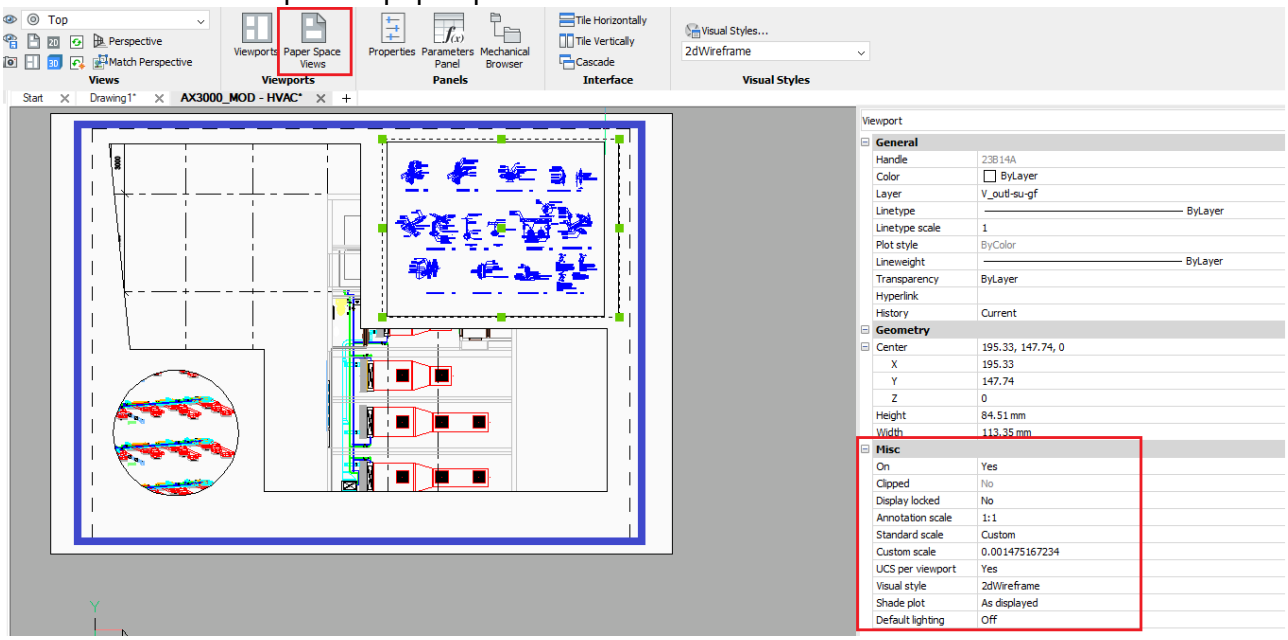



The Layer panel is also showing existing layer states to use it for the activated viewport.



## 7.2. Plan Views / Section Views / 3D Views

BricsCAD or DWG is not differing between views or view types.
All of them are a viewport on paperspace.



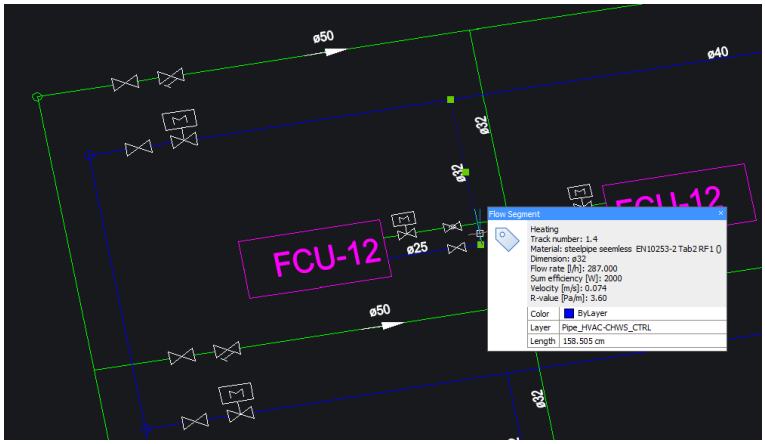

The user can define the

- shape of the viewport (rectangular round or any other shape)
- content of the viewport by layers or per entity
- view direction inside the viewport
- Scale of the viewport
- Visual style for the representation
-

All the viewports are the “top” view of the models in specific view coverage. However, the presentation of single and double line, and 2D and 3D interchange are controlled by the layers, such as XXXXX_CTRL, _2D, _3D etc.

## 7.3. Schematic Drawing

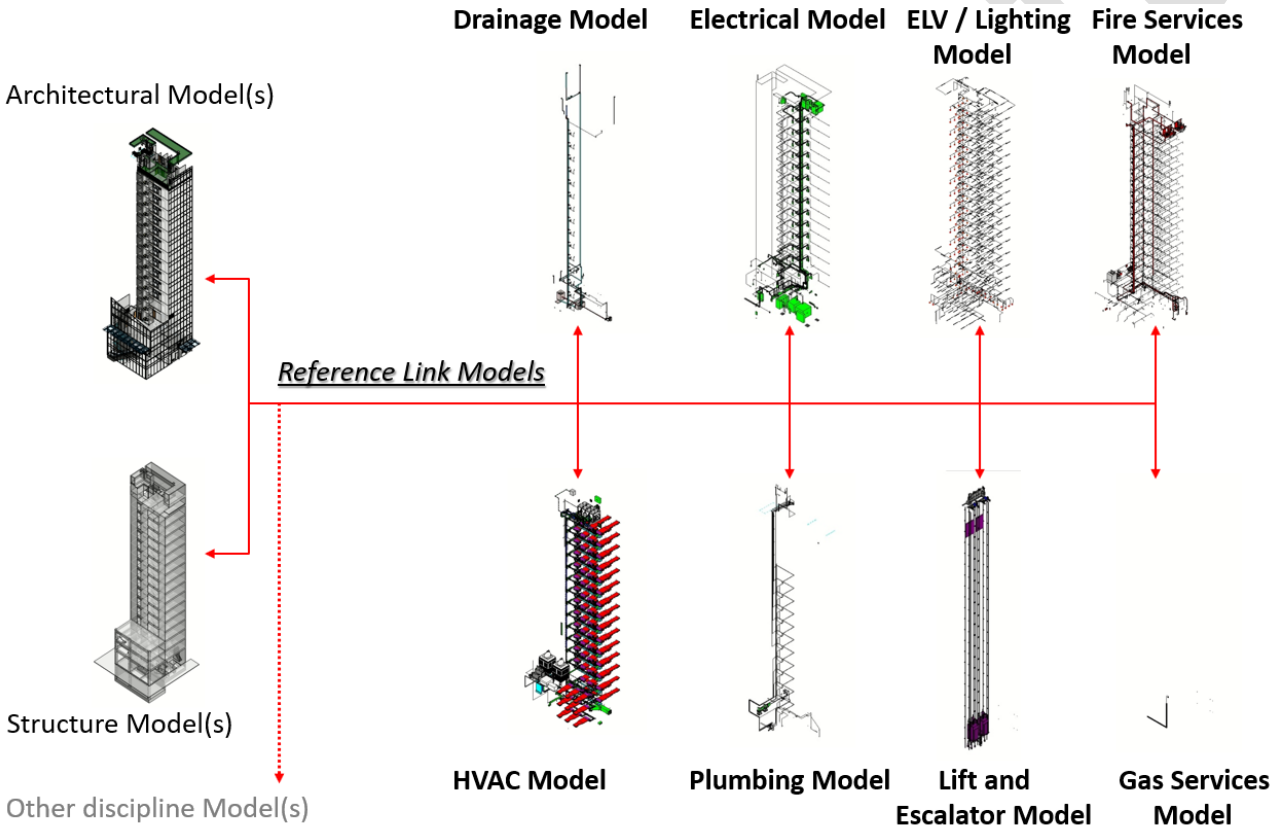
There is no automatic schematic function in AX3000 yet. However, it would be recommended to prepare the schematic using “Easyline” method. Extra information of MEP services and equipment could be assigned such as size. The information could also by tagged out by “label”. Be reminded that the model drawn for schematic drawing do NOT have any relationship to the building design model.



# 8 Model Segregation

## 8.1. Discipline Model

The Engineers shall prepare the model by disciplines as the sample below. The overall hierarchy of the project models shall be introduced clearly in the BIM Execution Plan (BEP). If the file size has exceeded the limit listed in the BEP, the discipline models shall then be further segregated by zone or services zone.




Reference models could also be linked through Industry Foundation Classes (IFC) format.

Details refer to

- CIC BIM Standards – General Section 5.8.2 Collaboration
- CIC BIM Standards – General Section 7 openBIM.

# 9 Collaboration with Other Disciplines

## 9.1. BIM X-ref

Entities from various disciplines can be brought in through BIM x-ref using the Attachments Panel in BricsCAD, not limited to 2D dwg, 3D dwg, IFC format etc.

## 9.2. BIM Collaboration Format (BCF) and the BCF Panel

### 9.2.1. About BCF

The BIM Collaboration Format (BCF) is an open file format used to exchange textual comments, images, and more on top of an IFC model. This allows better communication between different parties in the BIM process.

BCF makes it possible to link information such as a comment, a screenshot, a list of involved objects, and a camera viewpoint to an issue. An issue can be anything ranging from a small change in the design to clashes between different disciplines in the model. These issues can then either be saved as .bcf files or they can be managed on the cloud, using any sort of BCF cloud management system.

The advantage of BCF is that it allows communication over different software packages (e.g. a BCF issue created in Solibri can be opened in BricsCAD BIM), and that it enables easy navigation through a model based on issues.

### 9.2.2. BCF Files

Issues can be saved in standalone files. This is generally a more cumbersome workflow than working with a cloud system but it can be useful in case you are working offline. A .bcf file can then be imported in any BCF manager (e.g. BricsCAD BIM) to read the issues and see where in the model it applies.
Note that a .bcf file cannot be created in BricsCAD BIM. For this, you will need access to another service e.g. Solibri Model Checker or BIMcollab ZOOM. This software allows you to create a .bcf file based on one or more .ifc files. You can then create issues containing:

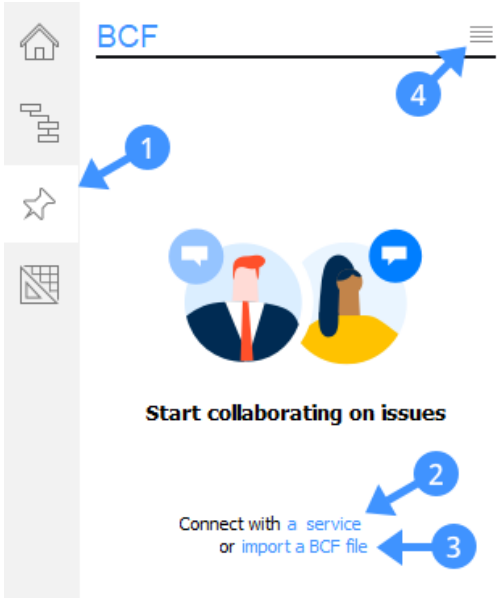
- Comments
- Screenshots or other images
- A list of involved objects, based on GUID (Global Unique IDs) to distinguish them unambiguously
- A camera position

### 9.2.3. Using the Cloud

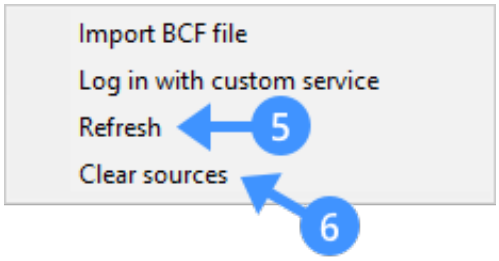
It is generally easier to use cloud services to manage BCF issues. Currently, BricsCAD BIM supports connection to three such services: **BIMcollab, BimSync** and **BIMtrack**. If you wish to connect to these services from within BricsCAD BIM you will need an account of these services first. These allow you to create issues and manage them in real-time from anywhere.
Note that it is not possible to **create** issues within BricsCAD BIM. The BCF Panel allows you to connect to these services from within BricsCAD BIM, log into your account and add comments, screenshots or change statuses of existing issues.

### 9.2.4. The BCF Panel

The BCF Panel can be opened by clicking the board pin icon on the left of your screen (1). If the icon is not there, right-click an empty space in the ribbon and under Panels, enable the **BIM BCF panel**. Using the panel you can either *Connect with a service* (2) or *import a BCF file* (3), as stated above. The hamburger menu at the top (4) gives you the same options, as well as refreshing the panel and clearing the sources.

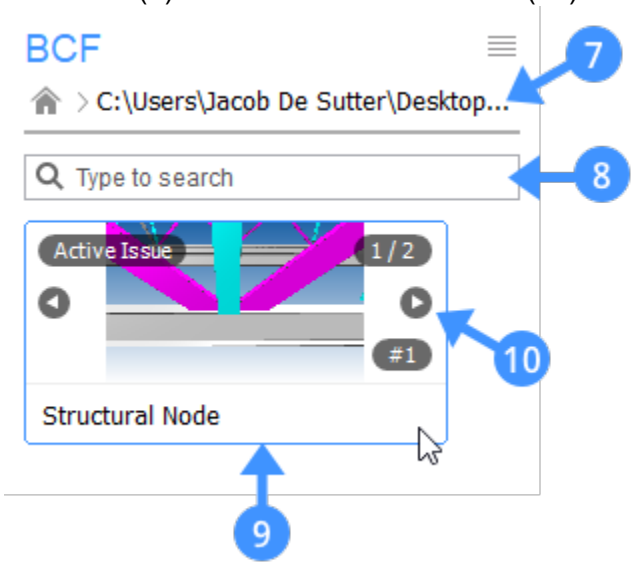



*Refreshing the panel* (5) will make sure you see the latest updates in case you are working on the cloud. *Clearing the sources* (6) will disconnect you with the cloud service in case you are online, or close the .bcf file in case you are working on an imported .bcf file.

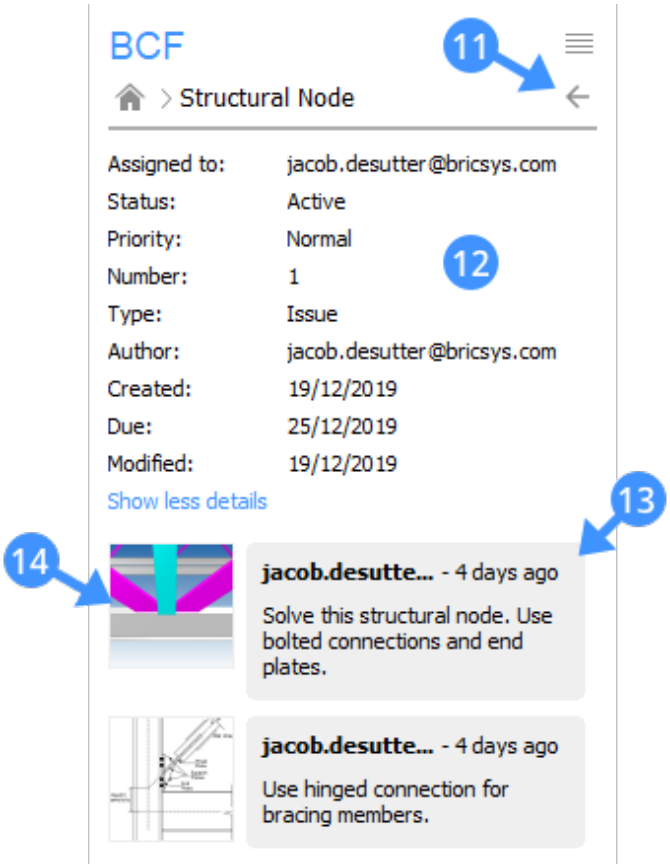


### 9.2.4.1. Working with the BCF Panel

When importing a .bcf file you will see the path of the currently opened file (7), a search bar that can be used to filter on issues (8) and a list of issues. In the case of this imported .bcf file, there is only one issue (9) with two associated views (10).



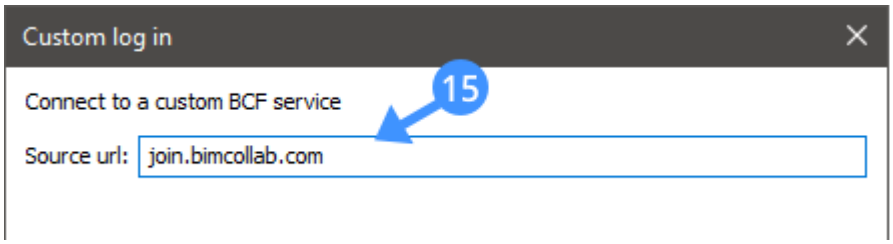

Click on the issue to open it. When opening an issue you will see a button to return to the issue overview (11), some more detailed information about the issue such as status, creation date and so on (12) and different comments on this issue (13). If this comment has an associated camera position, then clicking the thumbnail image (14) will take the camera in the current drawing to this position. This is useful if you want to know where exactly the issue is and you don't want to manually search through the model.



When using a cloud service you are presented with some more options, such as setting statuses and adding comments and screenshots.
To connect to a cloud service, click the *Connect with a service button* (2). You are prompted to enter a *Source URL* (15). The correct Source URL's for the respective services can be found in the table below.

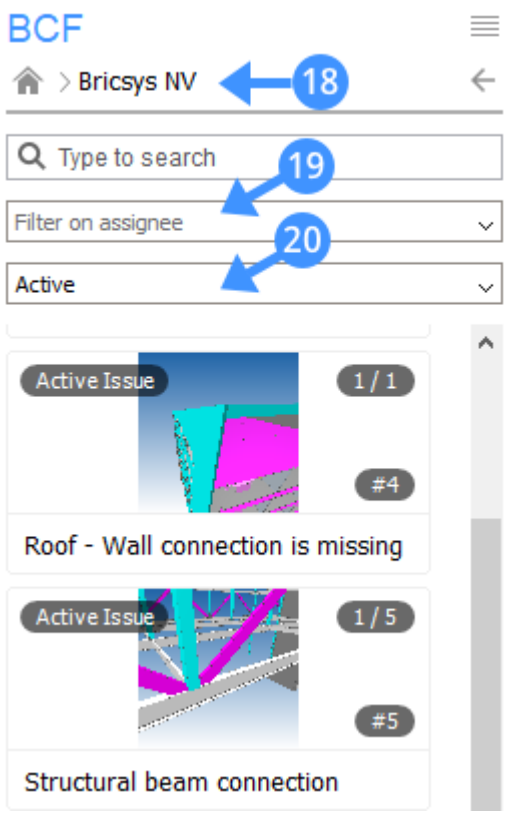
| Cloud service | Source URL |
|---|---|
| BIMcollab | <*space name*>.bimcollab.com * |
| BimSync | bcf.bimsync.com |
| BIMtrack | bcfrestapi.bimtrackapp.co |

* Note that the Source URL for BIMcollab includes the name of the space you bought. If using a free account, use *join.bimcollab.com.*

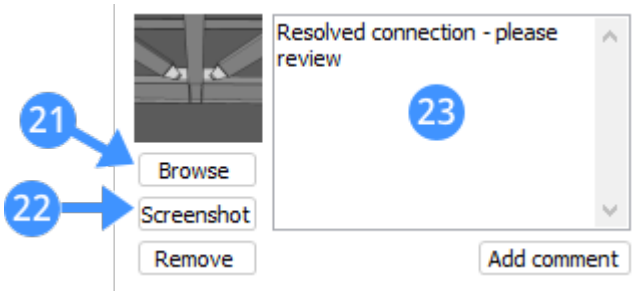



The following examples will be shown on an internal cloud space. It is possible to create a free account on e.g. BIMcollab. Clicking the *Log In* button should take you to a login page of the chosen service.
After logging in, the source URL should be shown (16), along with a list of projects that you are involved in (17). In this example, only one project is shown with 14 issues. Left-clicking the project will open it and show a list of the issues, similar to what we saw when importing the .bcf file.


At the top of the panel, the current project is displayed (18). Note that now it is also possible to filter the issues on assignee (19) and status (20). This makes it easy to quickly find the issues that are relevant to you.




Left-clicking an issue will open it and you will see similar options as before: detailed information about the issue (12) and comments on this issue (13). However, note that at the bottom it is also possible to add bitmap images (21) or a screenshot from model space (22). You can add some textual comments as well (23).



# 10 Preparing Drawing Production

## 10.1.Referencing Other Disciplines

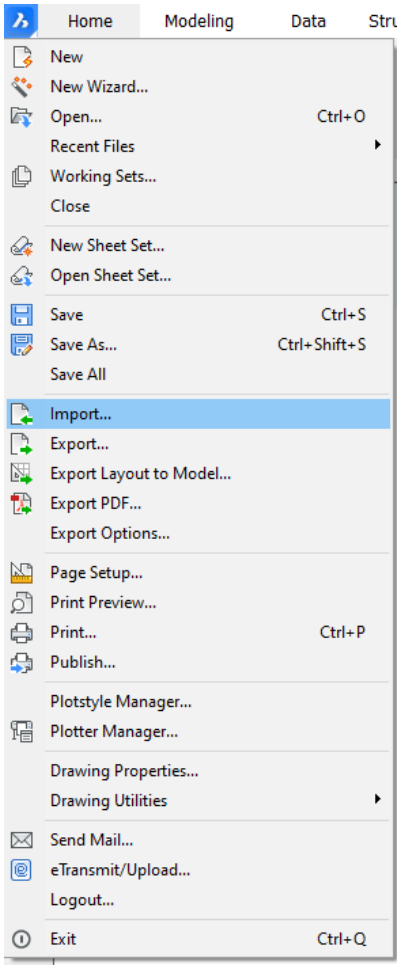
### 10.1.1. BricsCAD Models Approach

The Architectural, Structural and other MEP disciplines model within the BIM model should be referenced. This can be done by x-referencing through the Attachments Panel.

For each discipline, various portions of the model can be xref-ed into a master model of each discipline. Bringing in master models from each discipline can be done also by x-referencing through the Attachments Panel. This is best done with the use of DWG models.

If other file formats are used, it would be best to obtain an IFC file and import this IFC file into BricsCAD.

This can be done by going into File > Import

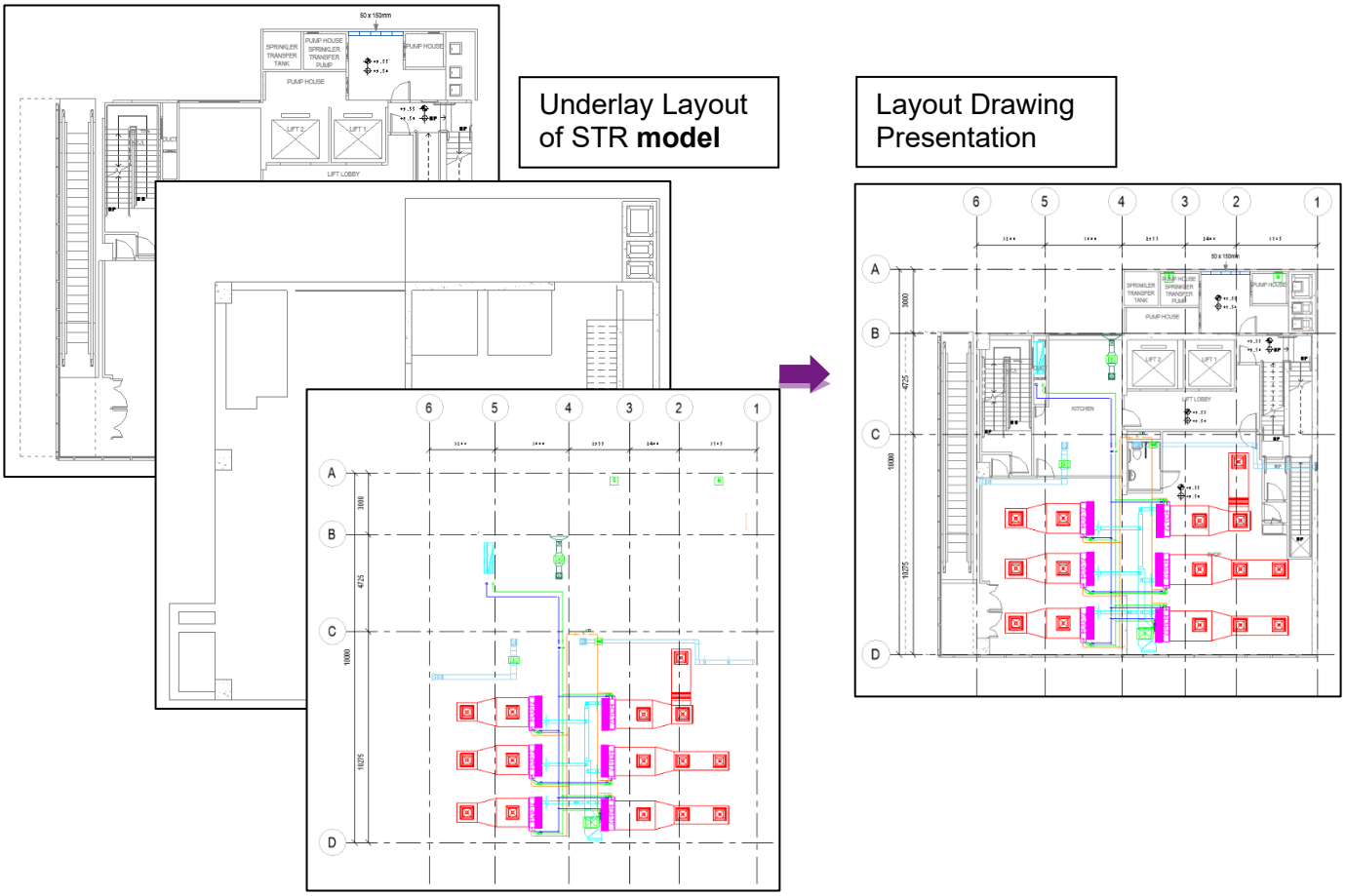


## Layout Plan / Section Plan

Underlay Layout of ARC **model**

Underlay Layout of STR **model**

Layout Drawing Presentation

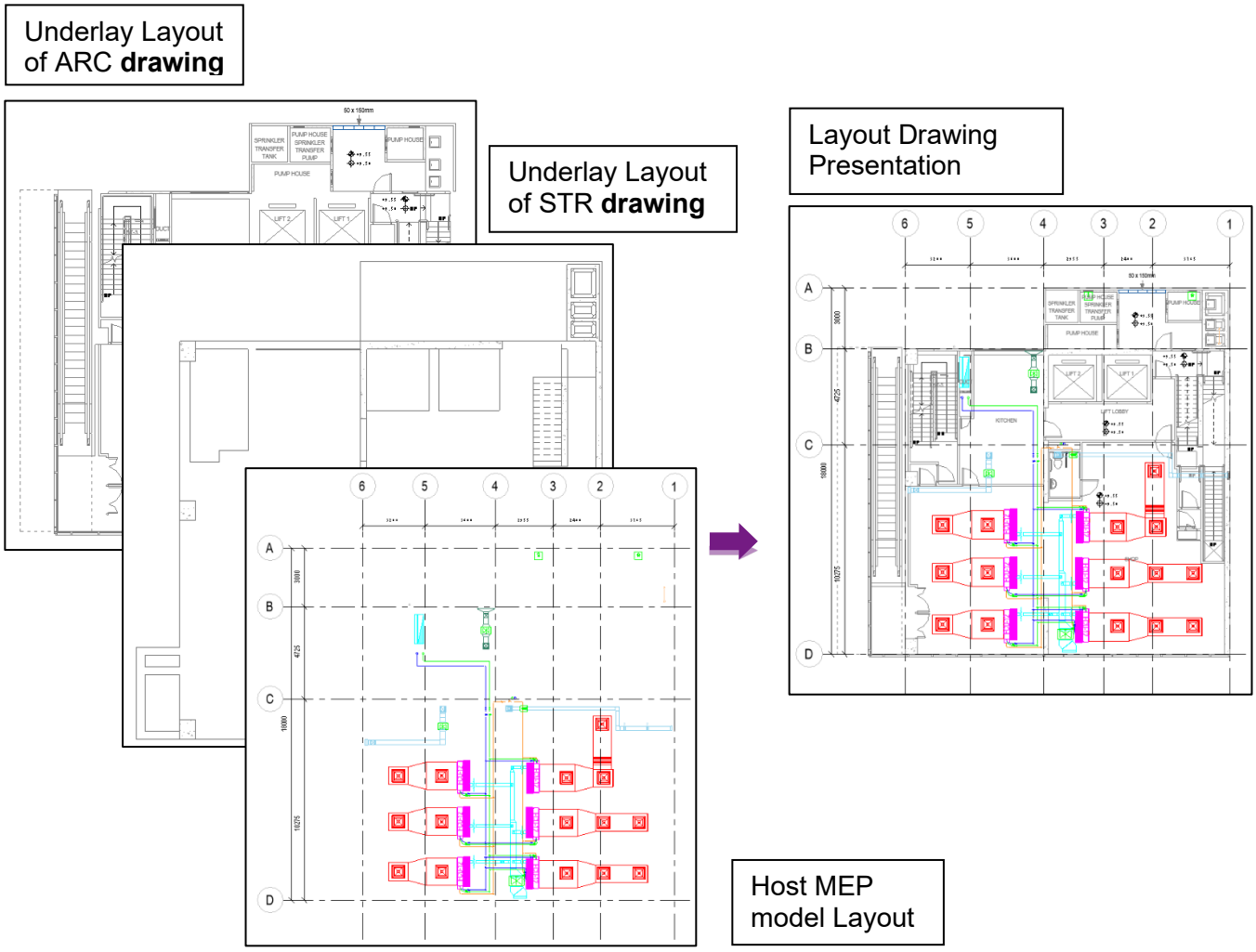



Host MEP

## 10.1.2. openBIM Approach

Due to the limitation of interoperability between different BIM design authoring software, openBIM approach could bridge between different models. However, IFC model could not retrieve the drawing setup prepared in the design authoring tools, it is the last resort and only way to underlay the reference “drawings” which are the approved statutory drawings from Architects or Structural Engineers through linked dwg, pdf or dwf formats.

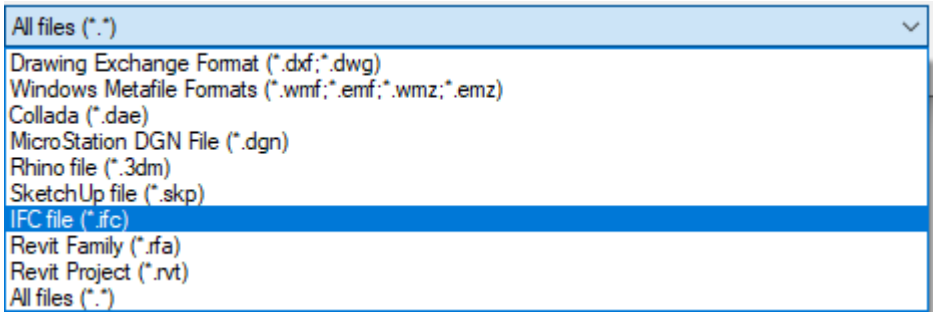
**Layout Plan**




However, this does not imply that the coordination and collaboration work revert back to “2D CAD coordination”. The 3D BIM IFC models should be used as geometry coordination and BIM information review. The recommended underlay of drawings above is only the workaround method for drawing production purpose only. There maybe enhanced methods upon the development of IFC exporter and reader upgrade.

BricsCAD follows the international standards for openBIM by using Industry Foundation Classes (IFC). Importing an IFC file into BricsCAD will include the model's data, according to IFC standards.

Choose IFC from the list of file formats




Once the IFC file is brought into BricsCAD, the entities function as BricsCAD elements and can be freely used – e.g. push/pull of solids.

# 10.2.Sheet Presentation

## 10.2.1. Generated Drawings

When a BIM Section is generated, a block containing the drawing generation result is added to the model space of the target drawing, as well as a paper space viewport looking onto this block. The block and the viewport initially are placed so they do not overlap with existing geometry contained in the drawing. You can move this block or viewport to a new location, which will be preserved on subsequent updates.

In the default template drawing which is used to create the generated drawings a **Viewlabel** and **NumberBubble** blocks exist. You can place them associated to the selected sheet view. The **Title** block in this drawing contains attributes that will be filled in automatically when the associated Sheet Set properties are defined.
A sheet list table can be placed on any sheet of the sheet set.

### 10.2.1.1. Title Block

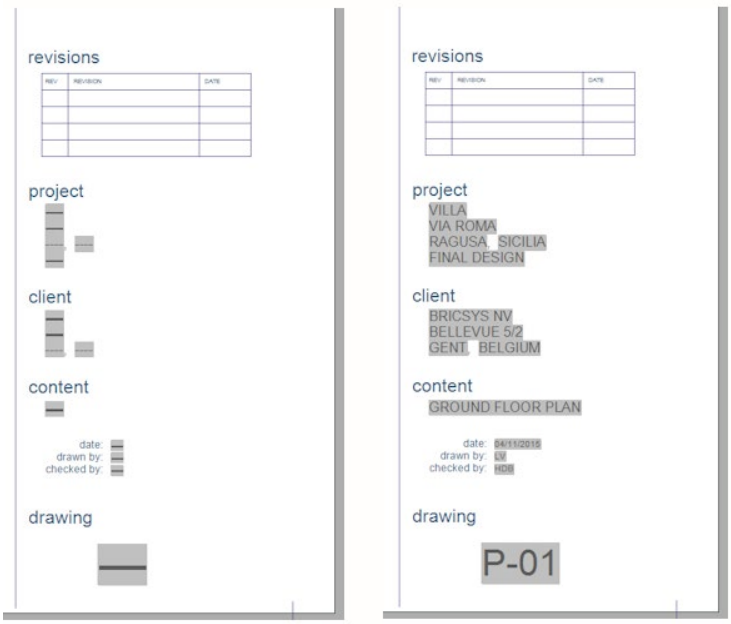
1. Open the Drawing Explorer - Blocks dialog.

2. Double click the **Title** block.
   The Drawing Explorer dialog closes and the block is attached to the cursor.
   In a metric units project the size of the **Title** block fits the A1 paper size (594 x 841 mm)
   In an imperial units project the size of the **Title** block fits the Arch D paper size (24 x 36 inches)

3. Click at the lower left corner of the paper sheet in the layout.

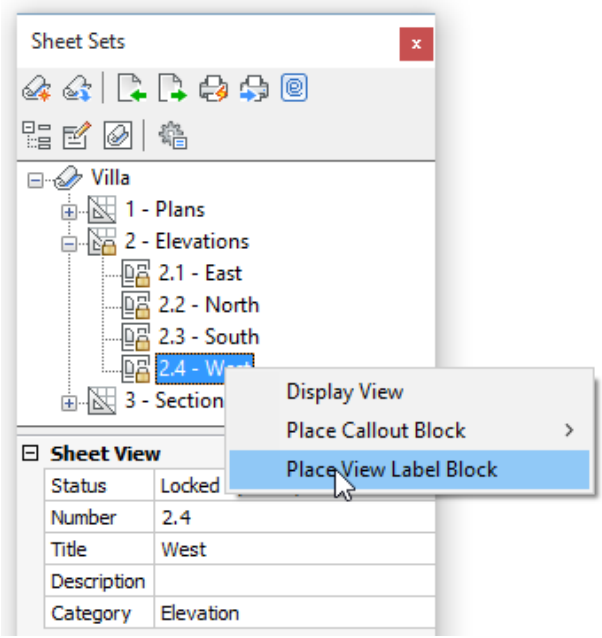
4. Define the Project and custom properties in the Sheet Sets panel.

5. Select the **Title** block, then click the **Update Fields** tool button (  ) in the **Redraw/Regen** toolbar.



### 10.2.1.2. View Labels for Sheet View

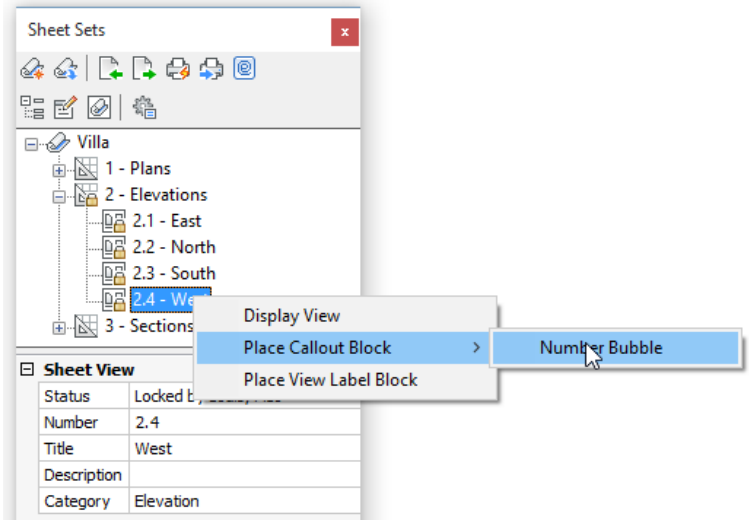
1. Select the sheet view In the Sheet Sets panel.
2. Right-click the sheet view you want the view label block to insert for.



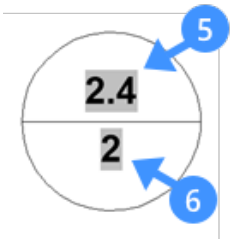

3. Choose **Place View Label Block** in the context menu.
   You are prompted: VIEWLABEL
   Units: Millimeters Conversion: 1
   Insertion point for block:
4. Specify the insertion point.
   You are prompted: Scale factor for block <1.0>:
5. Specify the scale factor or right-click to accept the current scale.
   You are prompted: Rotation angle for block <0>:
6. Specify the rotation angle or right-click to accept the current angle.
   The **View Label** block is inserted.
   The Sheet Number (1), Sheet View Number (2), Sheet View Title (3) and Viewport Scale (4) of the selected sheet view are filled in automatically.

### 10.2.1.3. Number Bubble Block for Sheet View

1. Select the sheet view In the Sheet Sets panel.
2. Right-click the sheet view you want the number bubble block to insert for.




3. Choose **Place Callout Block > Number Bubble** in the context menu.
   You are prompted: ._CALLOUT
   Units: Millimeters Conversion: 1
   Insertion point for block:
4. Scale factor for block <1.0>:
5. Rotation angle for block <0>:
6. Specify the insertion point.
   You are prompted: Scale factor for block <1.0>:
7. Specify the scale factor or right-click to accept the current scale.
   You are prompted: Rotation angle for block <0>:
8. Specify the rotation angle or right-click to accept the current angle.
   The **Number Bubble** block is inserted.
   The Sheet Number (5) and Sheet View Number (6) of the selected sheet view are filled in automatically.



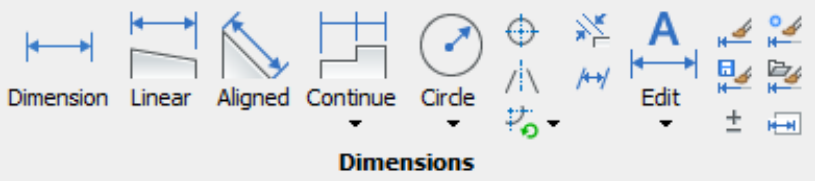
### 10.2.1.4. Sheet List Table

A **Sheet List** table can be inserted on any sheet of the sheetset. The table content is not yet associative and therefore will not be updated automatically when sheets are added, removed or renamed.

1. Right-click the sheetset name in the **Sheet Sets** panel and choose **Insert Sheet List Table** in the context menu.
   You are prompted: Select insertion point.
2. Specify a point in the drawing.

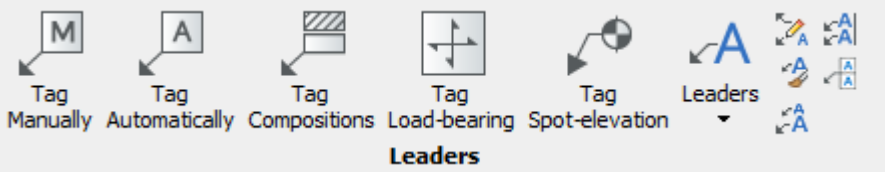
### 10.2.1.1. Add Dimensions

Create the appropriate dimension under Annotate tab in the Ribbon.




### 10.2.1.2. Add Annotations

Create the appropriate dimension under Annotate tab in the Ribbon.




### 10.2.1.3. Add Annotation Symbols

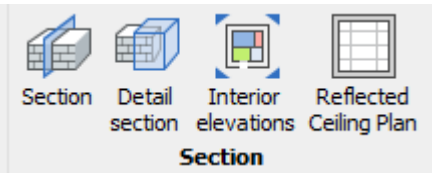
You can insert blocks that correspond to annotation symbols per the standard in your industry.

### 10.2.1.4. Add Labels and Tags

You can add tags manually or automatically.
Please refer to BIM Tags sections above.

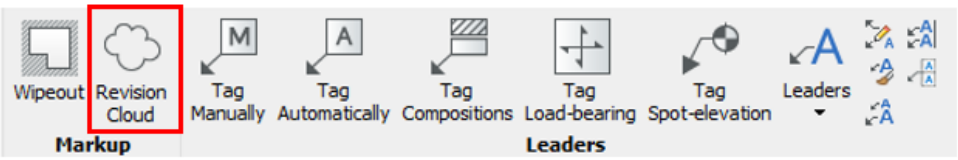
### 10.2.1.5. Details

You can include detail section by using the Detail section tool by going to the Home tab under the Section panel.



### 10.2.1.6. Revision Cloud

Revision Cloud is used to indicate design areas that have changed in a project. Use revision cloud annotations to mark drawing sections that have been revised. In Annotate tab, go to the Markup Panel and find Revision Cloud tool.




## 10.2.2. Annotation Scales

All model files are modelled at the 1:1 scale.

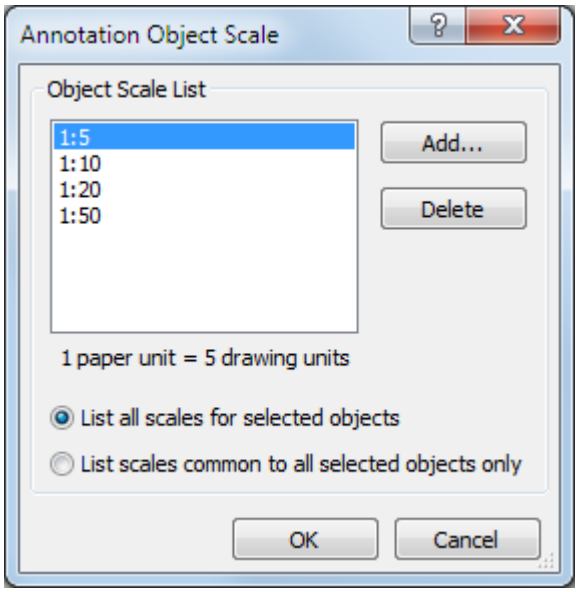
Annotation scales are used to calculate the scaling factor for annotative entities. It defines the height of annotative text entities or the overall scaling of annotative blocks. In general the annotation scale allows to create annotative entities in model space at the correct paper space size automatically.

Use the following procedure to:

- Check which annotation scales currently apply.
- Add annotation scales.
- Remove annotations scales.

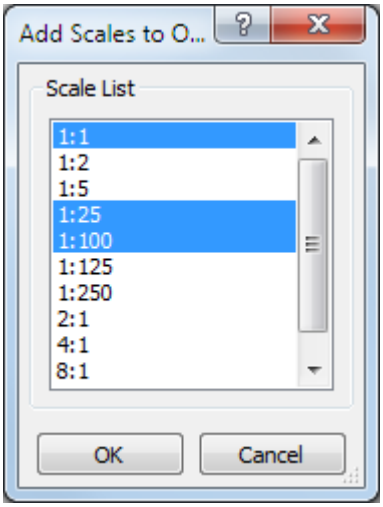
1. Select the annotative entity or entities.
2. In the Properties Bar, select the **Annotative Scale** field.
3. Click the **Browse** button (...) of the **Annotative Scale** field.

The **Annotation Object Scale** dialog displays.




4. (option) If multiple entities were selected, choose whether to list all scales for the selection or the common scales only.
5. (option) Do one of the following:
   - Select one or more scales in the list, then click the **Delete** button.
     The selected scale(s) are removed from the list.
   - Click the **Add...** button, then select one or more scales in the list and click the **OK** button.

The selected scale(s) are added are added to the list.

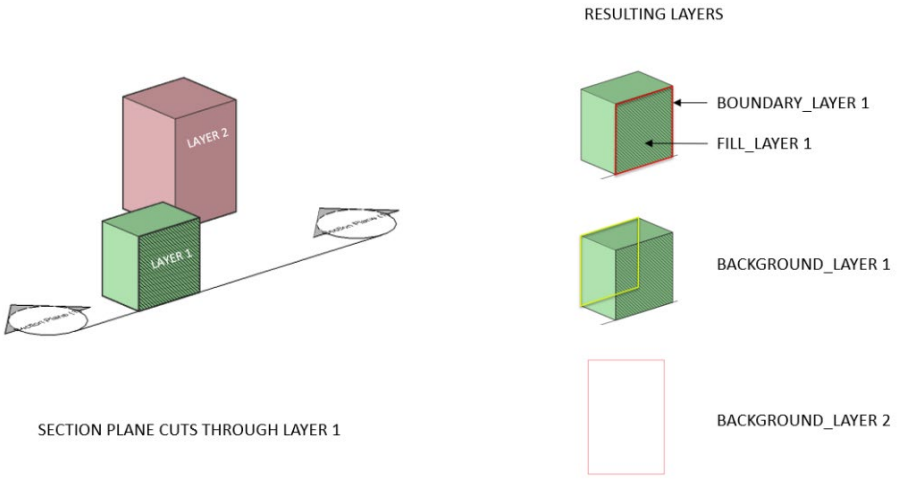



6. Click the OK button to close the **Annotation Object Scale** dialog.
   The changes are applied to the selection set.

Note: Only scales that exist in the Scale List of the drawing are available. Use the SCALELISTEDIT command to edit the Scale List.

## 10.2.3. Templates for Generated Drawings

BricsCAD BIM has a series of templates to customize your generated drawings. These templates are stored in your **Support folder** in the following path:
C:\Users\<*user_name*>\AppData\Roaming\Bricsys\BricsCAD\V20x64\en_US\Support\Bim\Sections
The Appdata-folder is a hidden folder by default, you may have to unhide folders first. This path can also be accessed by the SupportFolder command.
This is closely related to the Layers created:



When generating a section, three groups of layers will be created, as seen in the Layers Panel: *Background, Boundary*, and *Fill*.

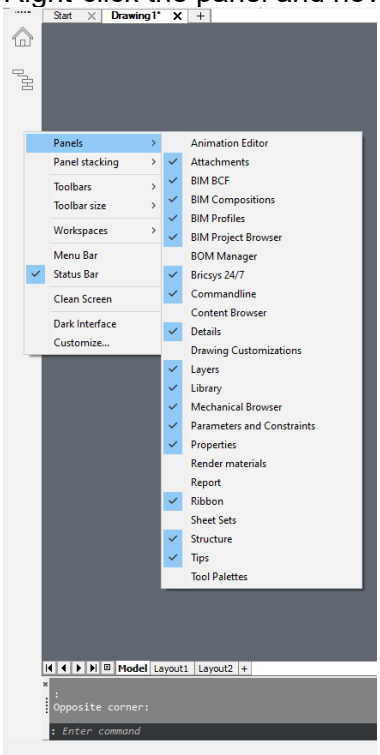
| | Current | Name | D.. | On/Off | Freeze | Locked | Color |
|---|---|---|---|---|---|---|---|
| 1 | | 0 | | | | | White |
| 2 | | Background_Layer1 | | | | | Green |
| 3 | | Background_Layer2 | | | | | Red |
| 4 | | BIM_SECTIONS_PREVIOUS | | | | | Magenta |
| 5 | | BIM_VIEWPORTS | | | | | White |
| 6 | | Boundary_Layer1 | | | | | Green |
| 7 | | Defpoints | | | | | White |
| 8 | | Fill_Layer1 | | | | | Green |
| 9 | | Title Block Frame | | | | | 175 |
| 10 | | Title Block Labels | | | | | 157 |
| 11 | | Title Block Text | | | | | 251 |

## 10.2.4. Drawing Customization

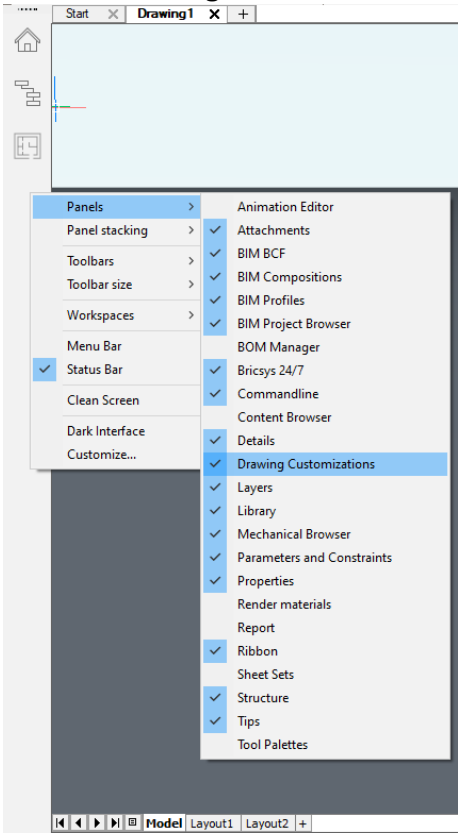
**Drawing Customization** allows you to create bespoke templates for drawing types based on a set filter parameter rule against an entity type's value or property within the 3D BIM model. This is especially helpful for customizing graphics of model entities independent of their assigned layers or layer states, therefore transferable and usable on other projects with similar entity properties.
The Drawing Customizations tool is operated by 3 principles – **Entity Customizations**, **Filter Rules** & **Styles** – and is only accessible from the panel.

### 10.2.4.1. Drawing Customizations Panel

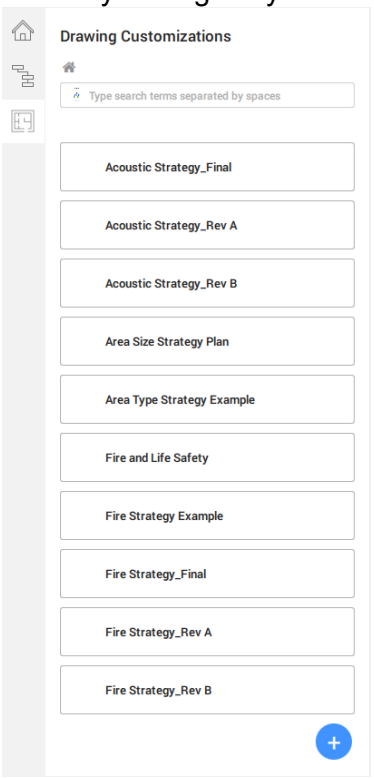
1. Right-click the panel and hover to Panels.



2. Select **Drawing Customization** to dock the tool icon in the panel.



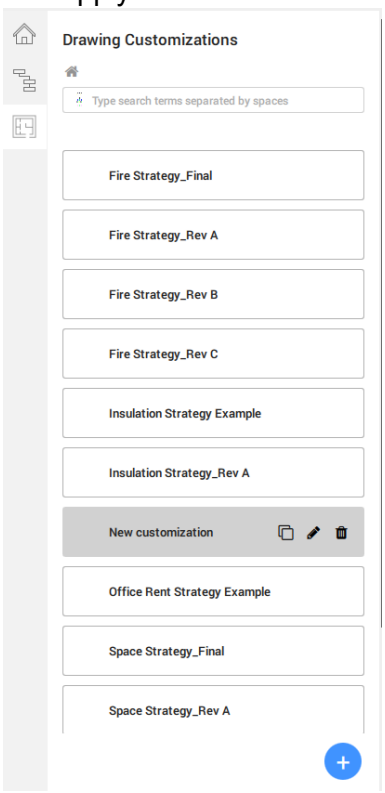

3. Open the panel, it allows you to create view templates to control and customize the visibility settings of your drawings on layouts.



4. Click  to create a new template. By default, the template is named **New Customization** with the text highlighted.

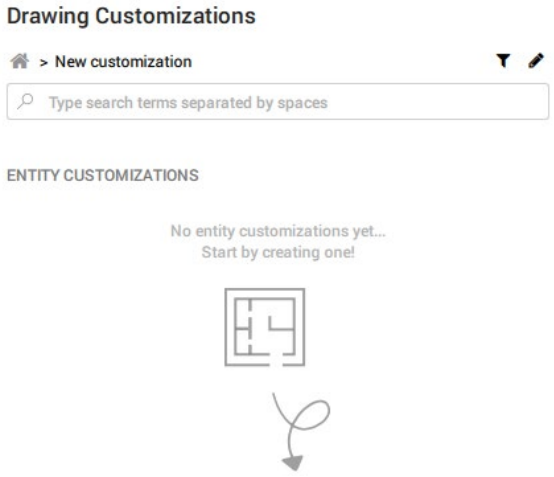

**Note:** All the controls of Drawing Customizations are represented as graphic icons within the User Interface panel, such as  to create a new control item. They are repeated throughout the tool in different settings, for example Entity Customizations, Ply Customizations..., but their functions and purposes remain consistent.

5. Rename the template whilst the text is being highlighted. Once done, press Enter to save and apply the name.




**Note:** You can duplicate, rename or delete your customization templates.

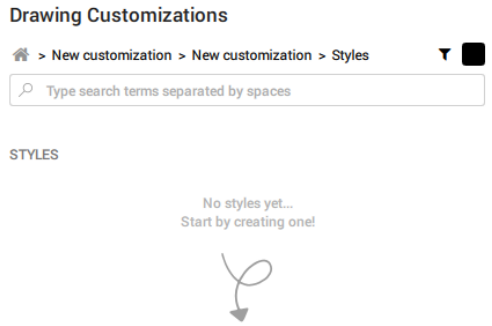
6. Click the newly created **Drawing Customization** template tab to begin defining its customization settings.
   The first step into the template brings you to the **Entity Customizations**, where you will create the necessary entity customizations template and will be first described later in this article.



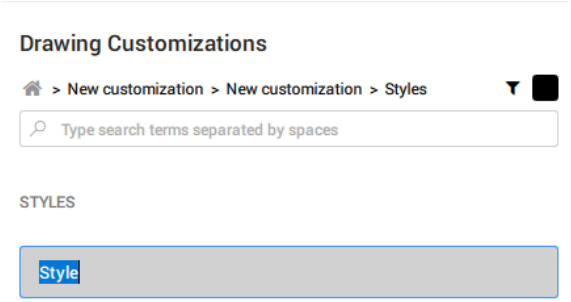

   You will also notice a funnel icon and a pencil icon on the top right part of the panel. They are the **Filter Rules** and **Styles** tabs respectively.
   The 3 principles – **Entity Customizations**, **Filter Rules** & **Styles** – which make up the **Drawing Customization** tool as described earlier in the article, are now accessible on this main page.

### 10.2.4.2. Drawing Customizations Style

1. Click the pencil icon to access the **styles** tab.
   This is where your desired style options, such as line weight, line colors..., are stored and will appear as drop-down options in the Entity Customizations and Center Customizations settings as shown in the previous section above.



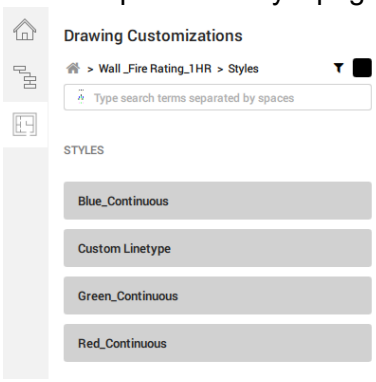

2. To create a new **style**, click  at the bottom right of the panel and a new **Style** template tab will appear.



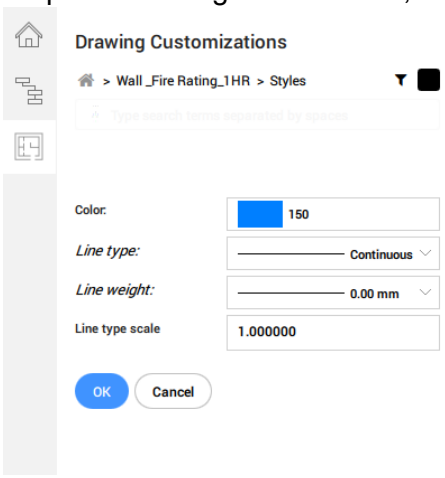

3. By default, the tab is named **Style**. Rename it whilst the text is being highlighted as shown. After you are done, hit Enter to save and apply.

4. Create a list of desired styles that you wish to use in this **Drawing Customization** template. Each tab contains its individual styles settings, such as the style's colour, line type, line weight and line type scale.

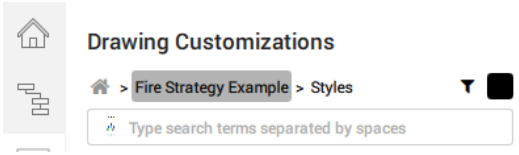
   An example of the style pages a list of templates:




5. To edit any of the styles template available, click on its relevant tab to access its settings.
   Note: Similar to the Drawing Customization template tabs, hover over the styles template tabs to reveal the function icons to duplicate, rename or delete.
   Style settings include the options to define colour, line type, line weight in their respective drop-down dialogs. Once done, click OK to save and apply the changes.



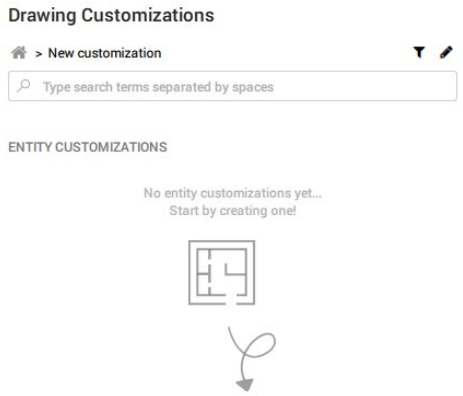

6. To leave the **styles** page, click **Back** at the bottom left side of the panel to return to your previous page. From there, you can navigate to modify the **Entity Customizations** or **Rules** templates.
   Or Click on your desired branch in the tree structure map above the search bar to navigate to your desired page.




   **Note:** The tree structure map is helpful to keep yourself orientated within the Drawing Customization tool. Similarly, the search bar allows you to narrow to a specific template if you have a long list of values to navigate through.

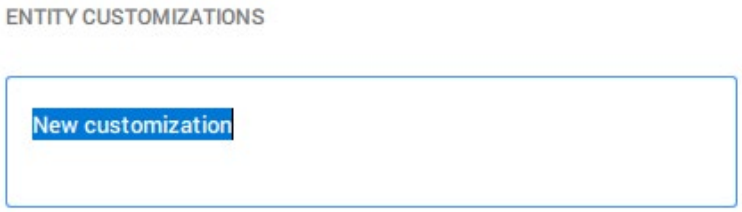
### 10.2.4.3. Entity Customizations

Entity Customizations refer to the visibility settings of how you would like to have your elements in your model drawing to look like.

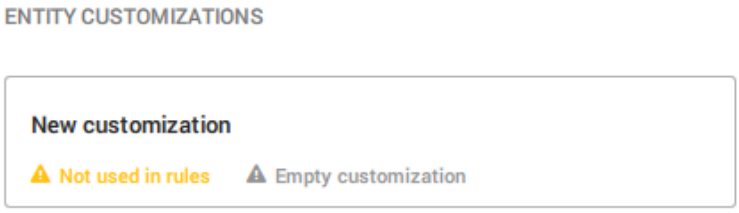



1. Click  to create a new **entity customization** template.

2. By default, the template is named **New Customization** with the text highlighted.

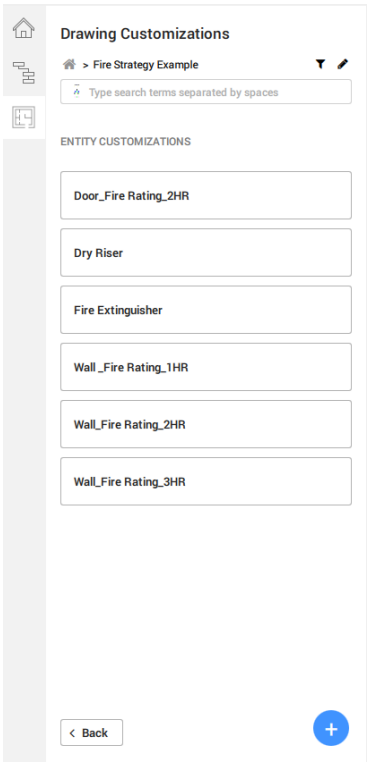



3. Rename it whilst the text is being highlighted as shown. After you are done, hit Enter to save and apply.

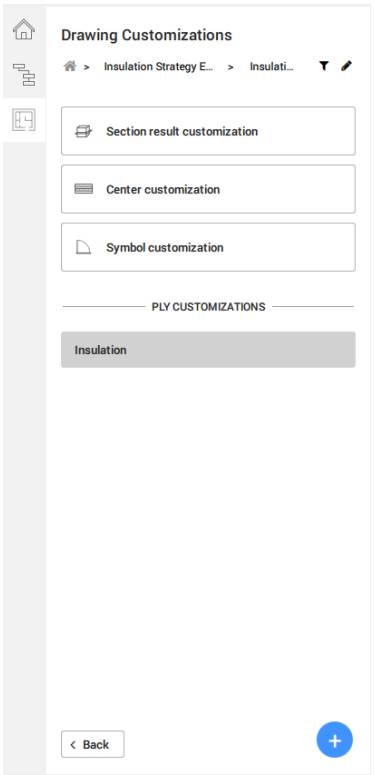



As the **entity customization** was newly created and not fully set up, you will find the relevant notices at the bottom of the **entity customization** tab. This is a helpful mechanism to remind you if any customization settings have not been defined yet, saving you the need to check the settings manually.

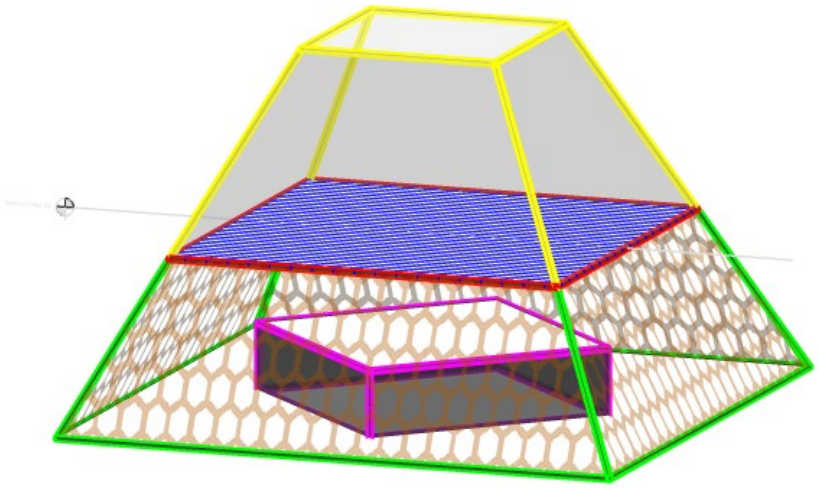
4. Create a list of templates for the entities you wish to customize.
A list of **Entity Customizations** templates could look like this:




5. After creating your desired **entity customization** templates, click onto the individual tabs to modify their respective settings.
   You can choose how the element should look like as a section result, or how a centerline type representation should appear, or how an external symbol representation should replace the original entity.



6. The **section result customization** displays a series of controls with drop-down values from the Styles tab for more specific control of the section result graphics. You can override the entities' hatches via the **Appearance Override** with pre-set or custom **Physical Materials a**vailable in your project.

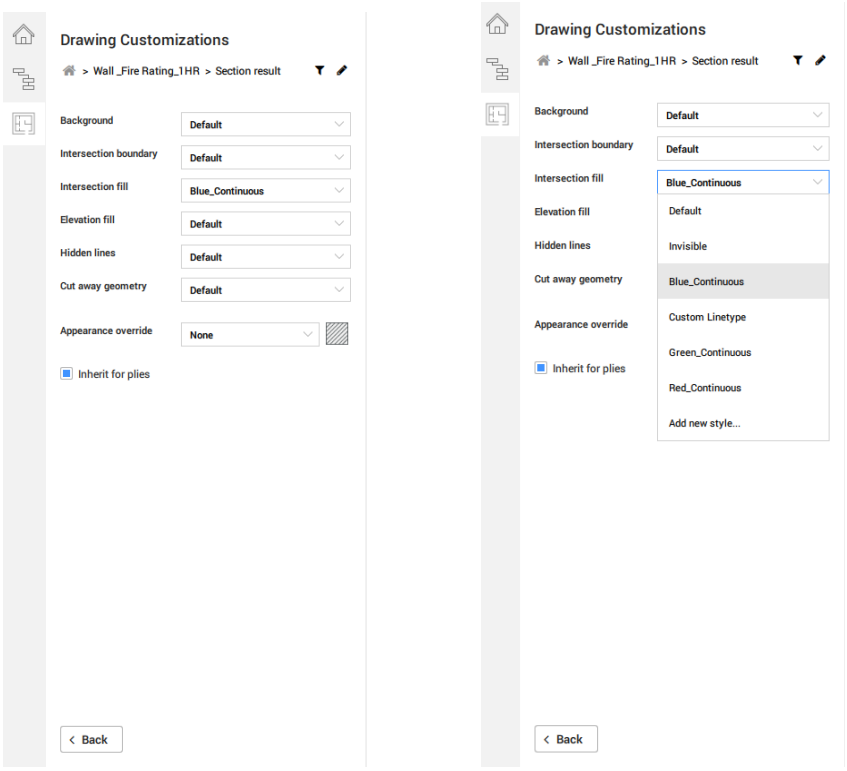


The diagram above illustrates how you could control the visibility and customization settings of an entity with the **Drawing Customization** tool. Notice that the **section plane** is aligned with the Blue square with Red outline.

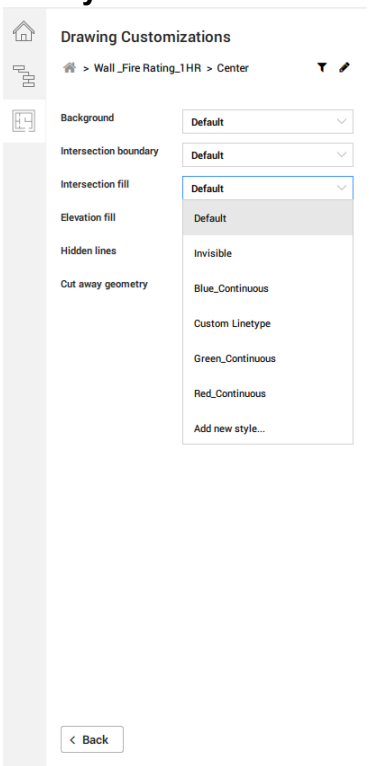
- Green outline represents **Background**, which is essentially the elevation outline of the cut object.
- Red outline represents **Intersection Boundary**, which traces over the cut area.
- Blue hatch represents **Intersection Fill**, as it shows the area of being cut by the section plane.
- Orange hexagons hatch represents **Elevation Fill**, which refers to the area bound by the elevation outline (see **Background**).
- Pink outline represents **Hidden Lines**, as it is below the blue hatch
- Yellow outline represents **Cut away geometry**, as it is above the section plane.

**Appearance Override** allows you to specify how an entity's hatch appearances (section and elevation) would appear, in place of the default hatch patterns already defined within the **Physical Materials** library. When you create any new **Physical Material** entry in the "In Project" category as part of the **Drawing Customization** template, your desired configurations are independent of the drawing project and stored in the template instead. You can later apply this template to other project models as you wish.

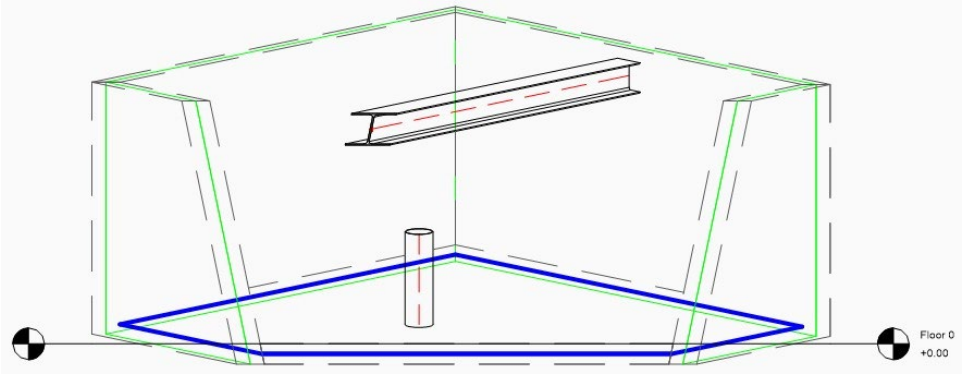
You can further ensure the customization applies to the plies within the entity composition, if appropriate, by checking the **Inherit for plies** box.




7. A similar setup can be found in the **Center Customization** settings, where your values in the **Styles** section of the customization template determines the drop-down selections.



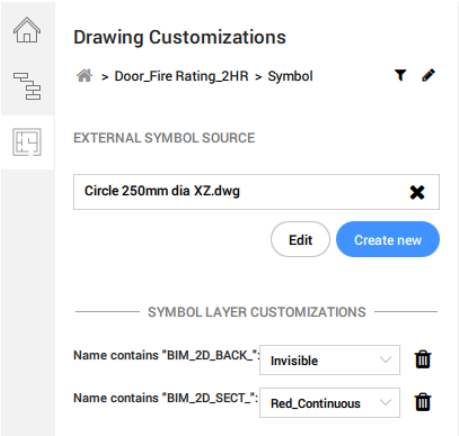

Center customization is particularly useful in scenarios where you would like to display the center elements of various planar and/or linear entities. For example, if you were to apply the center customization settings against a planar entity, i.e. a wall, you would be referring to the display behaviour of its center plane. However, if you were to apply the same settings against a linear entity, i.e. a beam, you would be adjusting how the beam's center line appears on the sheet.



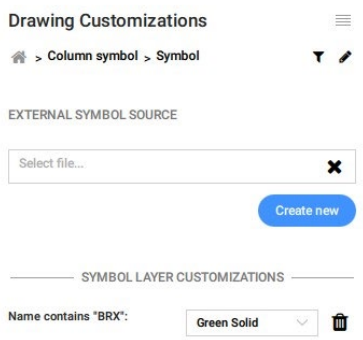

The diagram above illustrates an example of how the center elements differ between planar (wall center plane highlighted in green; slab center plane highlighted in blue) and linear entities (both column and beam center lines in dashed red lines)

There is no default setting to adjust the visibility of these center elements, and they are not normally displayed in section results.

8. For the **Symbol Customization** settings, you can find an input dialog to specify your desired external symbol drawing in .dwg format. If you would like to make any further changes to the 2D geometry itself, you can use the **Edit** button once the dialog is referring to your desired symbol drawing.
   Alternatively, you can begin creating one on a default symbol template by hitting the **Create New** button below the dialog.
   You can further apply your saved **Styles** to specific layers within your external symbol source, thereby allowing you to retain a general symbol drawing across several customization templates with different output results.



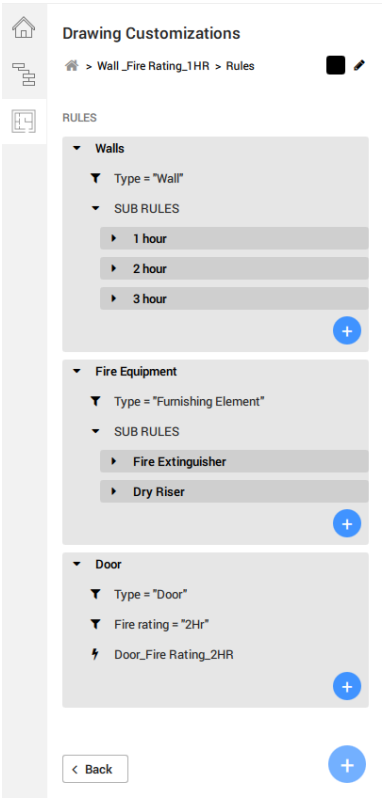

You could also choose not to specify any External Source Symbol, if you already have your desired 2D layers inside the model, usually as a 2D graphical representation that comes alongside the 3D geometry of a **Component.**
**In this instance, simply add a new symbol layer customization** value containing part of the desired layer name. If they are part of the default **BRX_2D** layers, adding "BRX" as a name value will suffice. **Drawing Customization** will now search within the component entity that the customization template is applied to. This method, however, will not allow any exchanging or sharing of 2D symbols across entities, i.e. replacing a **Column** with a symbol derived from a BRX layer stored within a (table) **Furnishing Element.**




## 10.2.4.4. Filter Rules

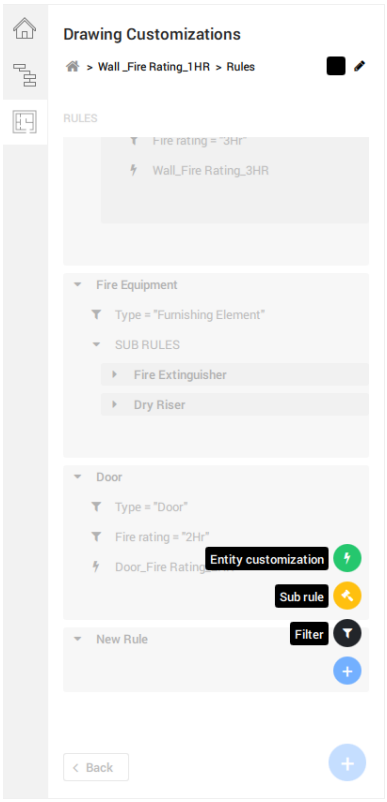
To be able to apply the right customization styles to specific entities, you have to set the appropriate filter rules to target those entities correctly in the **Filter Rules** tab located as a funnel icon on the top right-hand part of the panel next to the **Styles** icon.

**Note:** Nested Property Search function allows you to specify how nested objects within an assembly are filtered by and displayed.

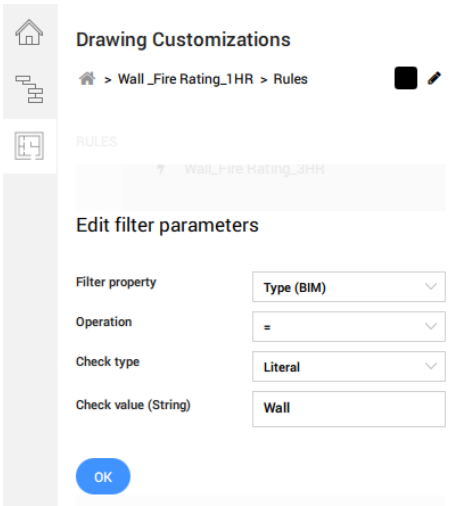



1. **Filter rules** can be further classed into **sub-rules**, which falls as a sub-set of the parent rule, ie. Fire Equipment as a **Filter Rule**, whereas Fire Extinguisher is classed as a sub-rule.

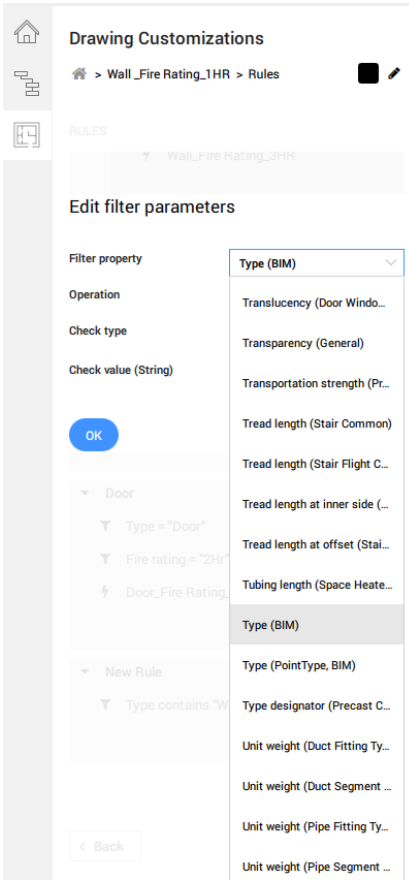
   also appears respectively and accordingly at each rule level. At the end of each rule, regardless of it being a subset or otherwise, it has to end with an **Entity Customization**.

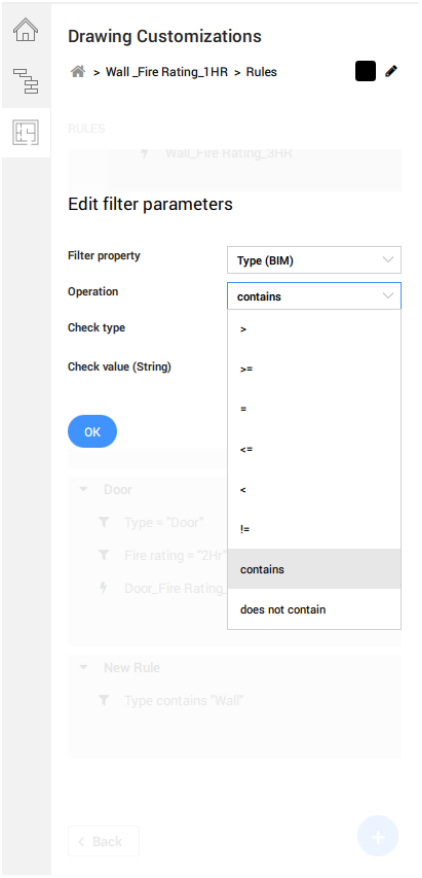



2. Adding and editing a filter parameter will lead you to a prompt, where the options of filter property are determined by the **BIMPROPERTIES** imported in the **namespace** settings.

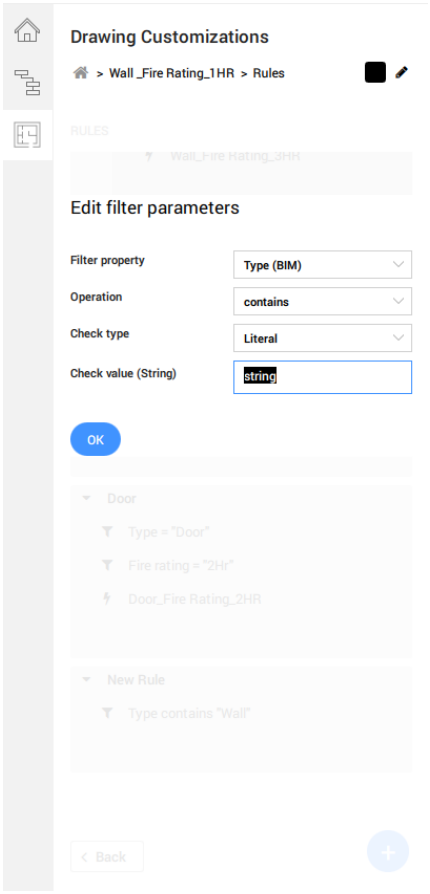


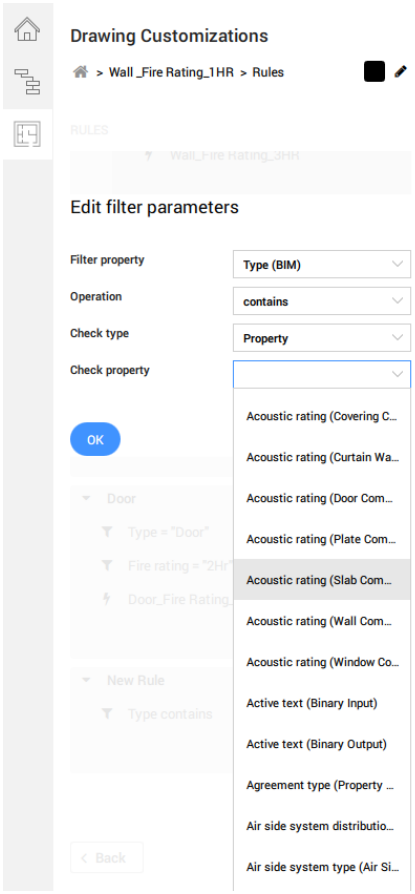
3. The **Filter Operation** values are also available as a drop-down.
   Note: You can also start typing a certain keyword to search a specific property that you want to filter on.



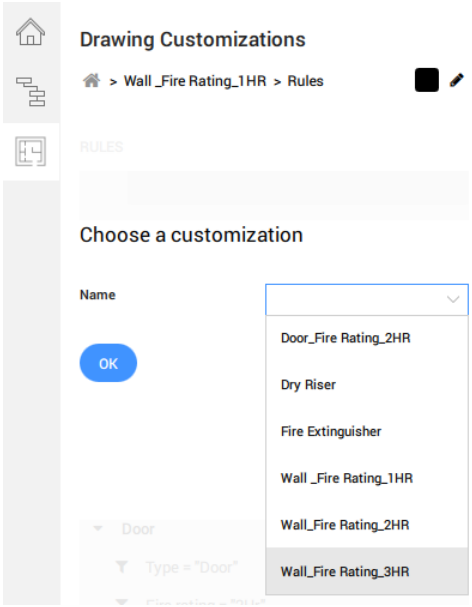



4. You can specify a string manually in your check value if your **Check Type** is a **Literal**. If you have selected a **Property** value for **Check Type**, your **Check Property** value will refer to the same values found in the **Filter Property** drop-down.



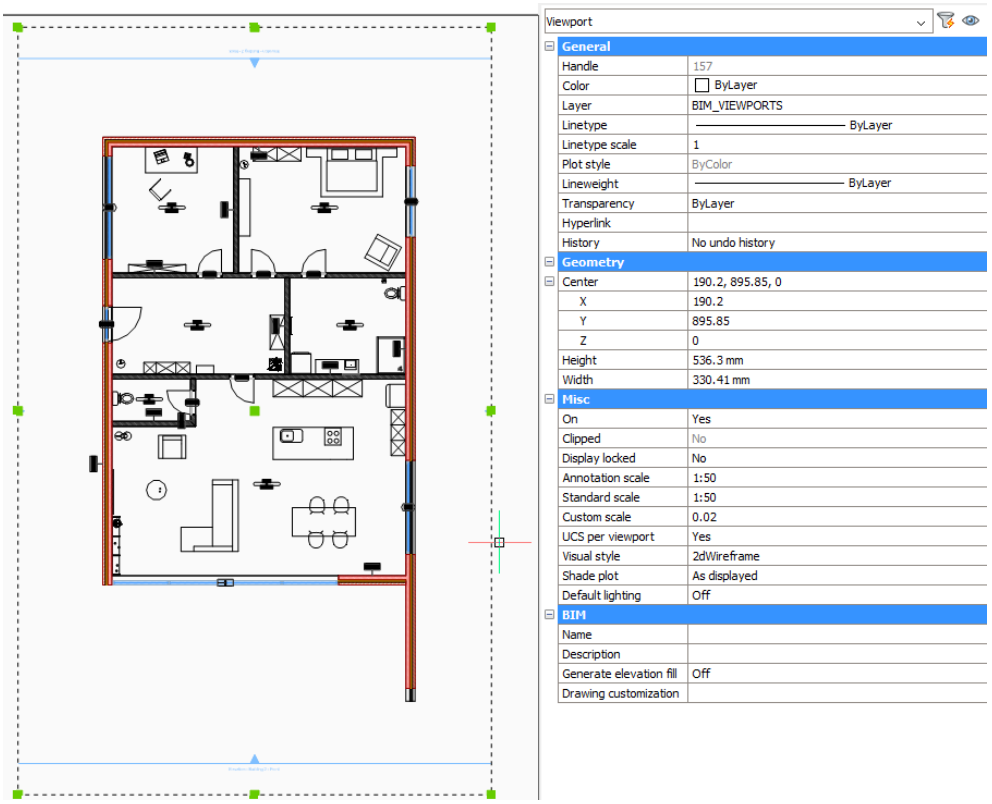

5. To end and legitimize a **filter rule**, the **entity customization** value must be added and filled in. The options available in the drop-down selection reflects the existing customizations tab available in the **Entity Customization** page.



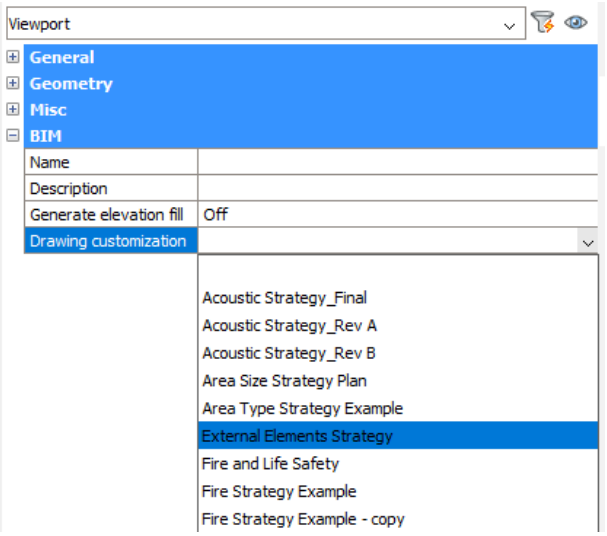
## 10.2.4.5. Applying Templates to Viewports on Sheets

With your **entity customizations**, **filter rules** and **styles** all set, your **Drawing Customization** template is now ready.

1. To apply the template, navigate to your sheet drawing with your desired viewport.
2. Open the Properties Panel and select the viewport to view its properties.

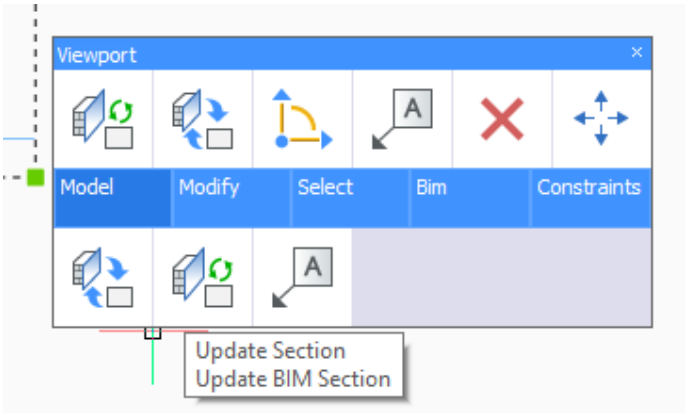



3. Navigate to the **Drawing Customization** property and click on the drop-down selection to the right.



4. Select your desired **Drawing Customization** template.

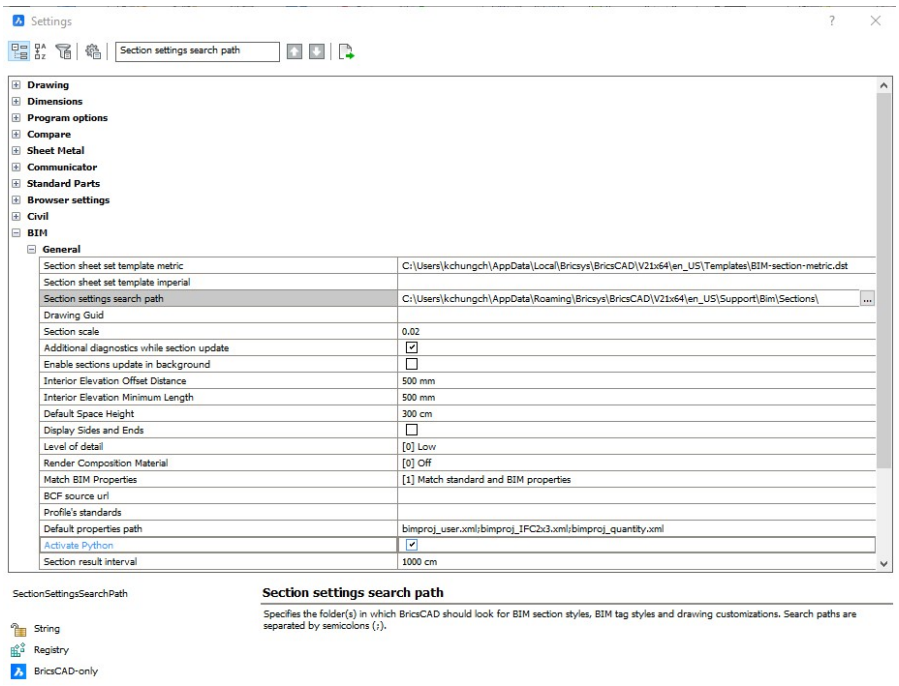
5. Once done, hover over your selected **viewport** to access the Quad. Click **UPDATE SECTION** in the **Quad** under **Model** tab.



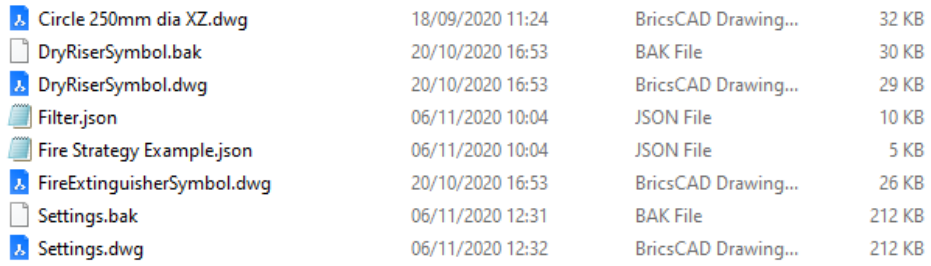

6. You should see a refreshed **viewport** with the graphical changes as per your **Drawing Customization** settings.

## 10.2.4.6. Accessing Customization Templates

By default settings, these templates are stored in the Customizations folder within your **Support folder** in the following path, under Bim folder and then Sections subfolder:
*C:\Users\<user_name>\AppData\Roaming\Bricsys\BricsCAD\V21x64\en_US\Support\Bim\Sections\Customizations*
The AppData folder is hidden by default, so you may have to unhide it first. This path can also be accessed by entering **SupportFolder** in the command line.
You can specify a different path if your Customization files are stored elsewhere in an accessible folder. Simply redefine the path in the **Section settings search path** in the **Settings dialog box** or typing **SRCHPATH** in the command-line:



New customizations created with the panel will be stored in a Customizations subfolder in the specified path. Each customization template is saved as an individual folder which contains in its basic form Settings.dwg, a Filter.json and a New customization.json files. The folder will also contain any external symbol sources which you have created new using the **Create New** buttons. Settings.dwg contains the values created in the **Style** tab in the form of layers and if you have created any custom properties that you wish to use as a **Filter** parameter, you have to ensure they are also reflected in the Settings.dwg.



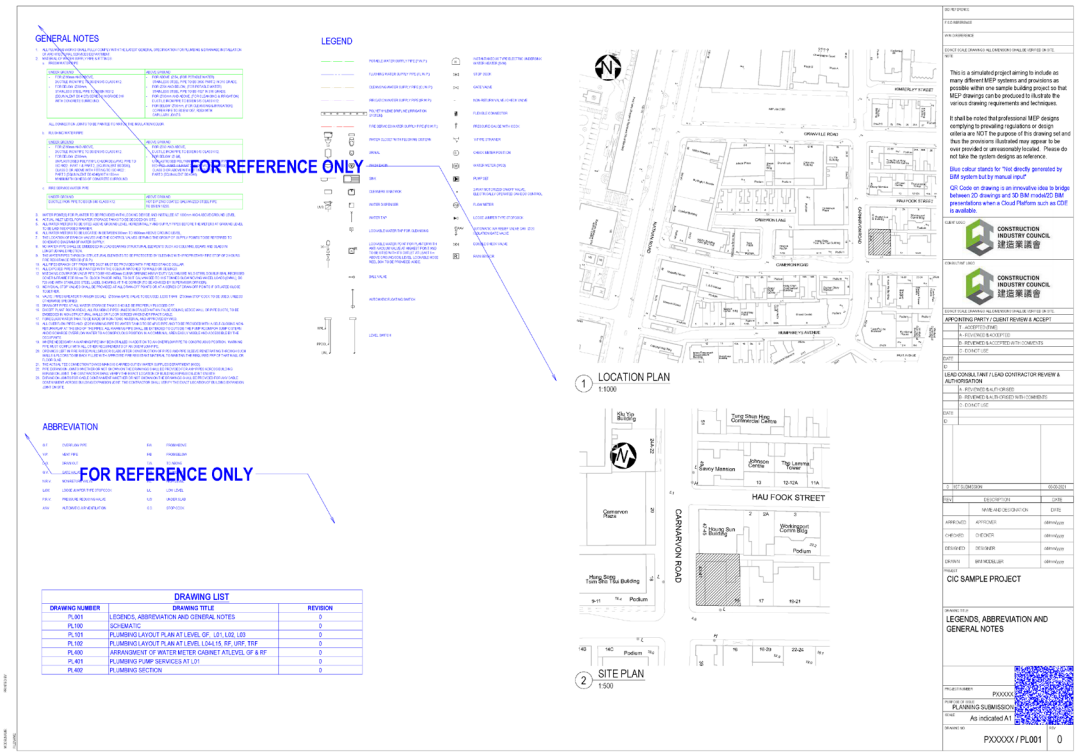

**Note:** As these Customization folders are stored locally in the machine you have created it with, you need to ensure the folders and their contents within are copied and pasted into the same location on other machines, should you wish to share it with other users on other machines.

The Drawing Customizations tool can be used to create templates for different types of sheets presentation, as may be required, e.g. Combined Information, Schematic Drawing, Floor Plans and Layouts, Details and Installations.

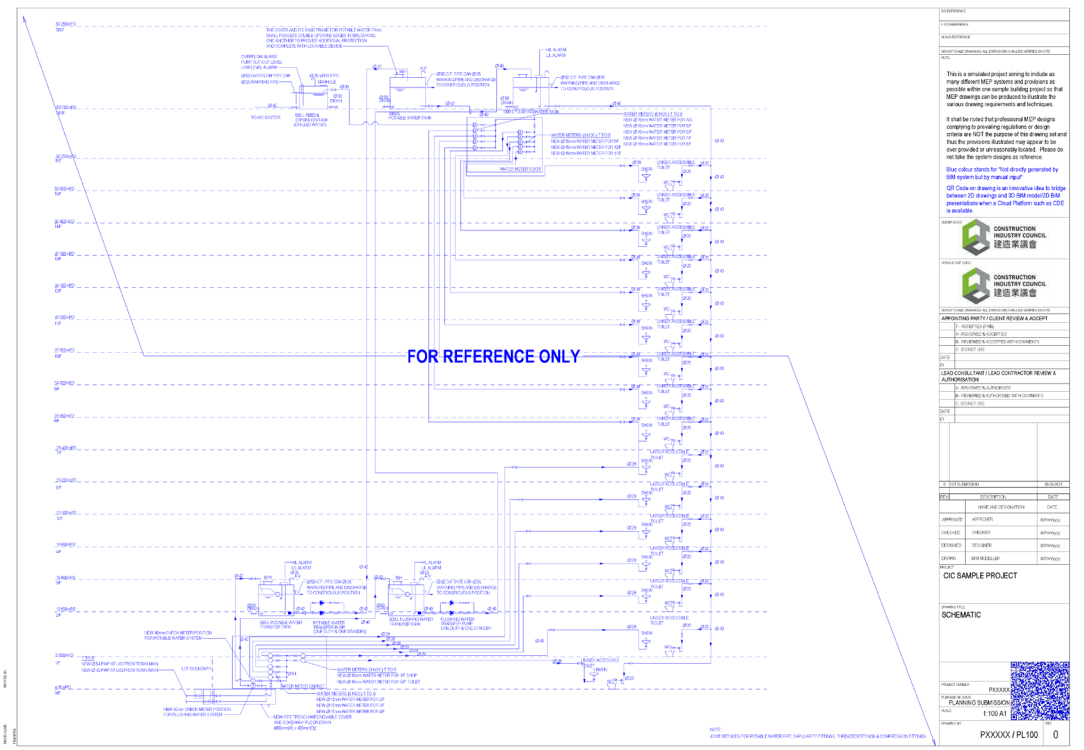
# 11 Statutory Submission Sample

## 11.1.Application for the Water Supplies Department

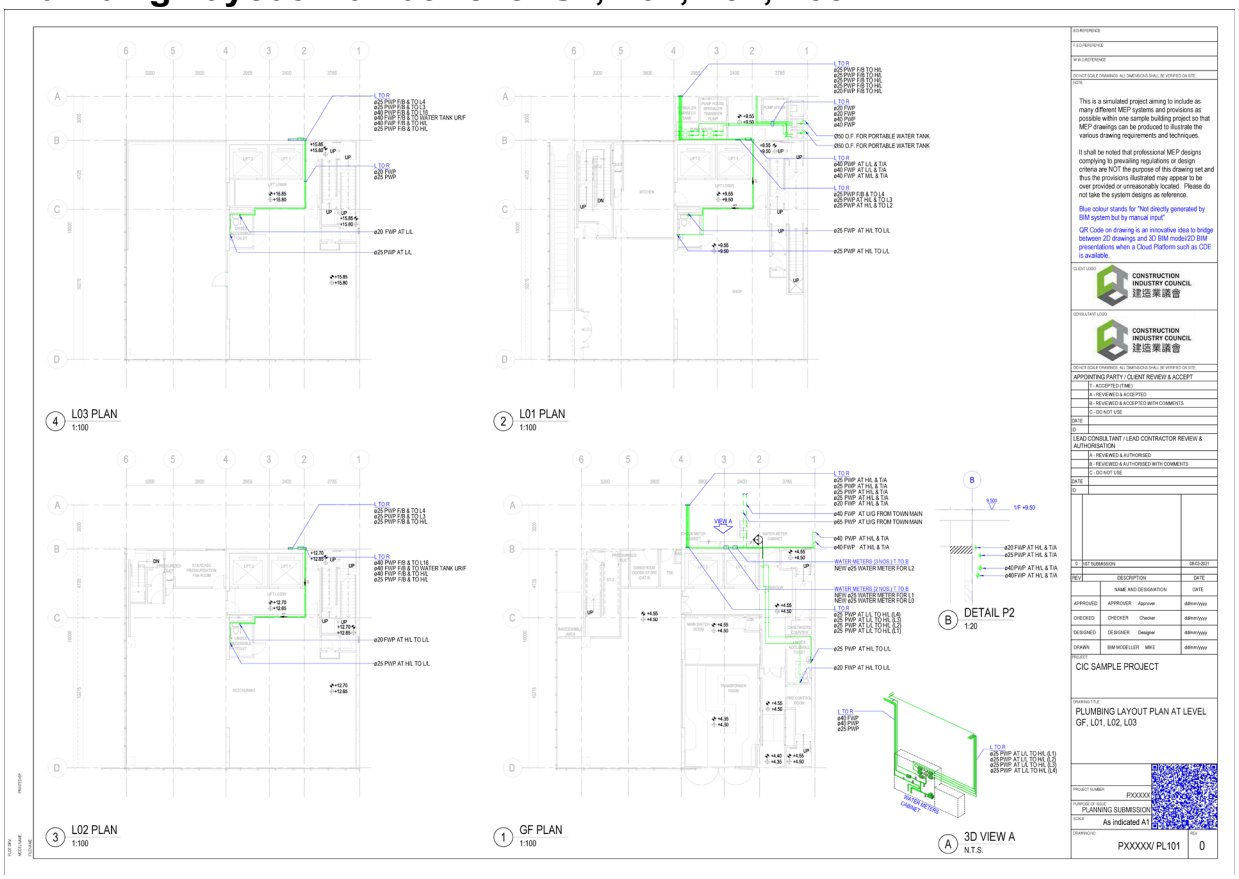
### General Notes, Legends, Abbreviation and Drawing List



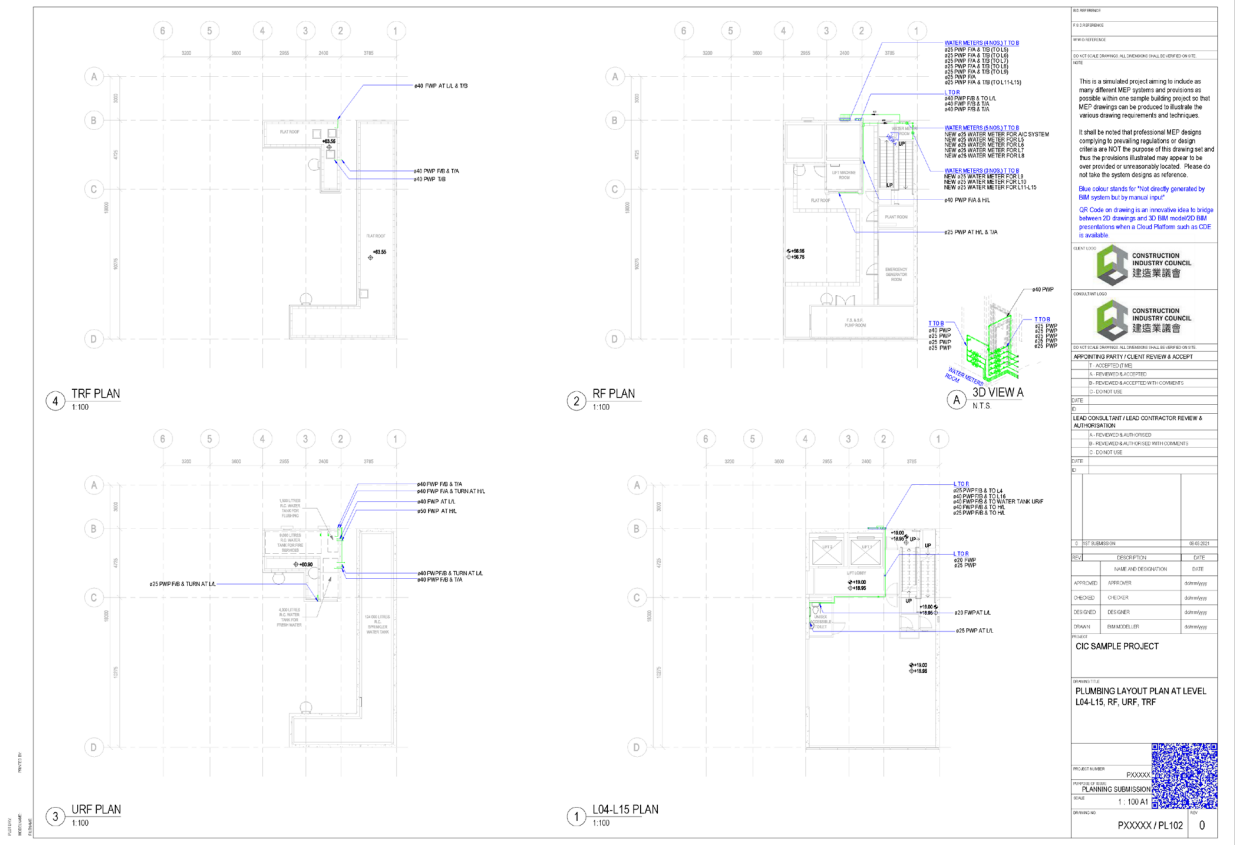

### Schematic Drawing



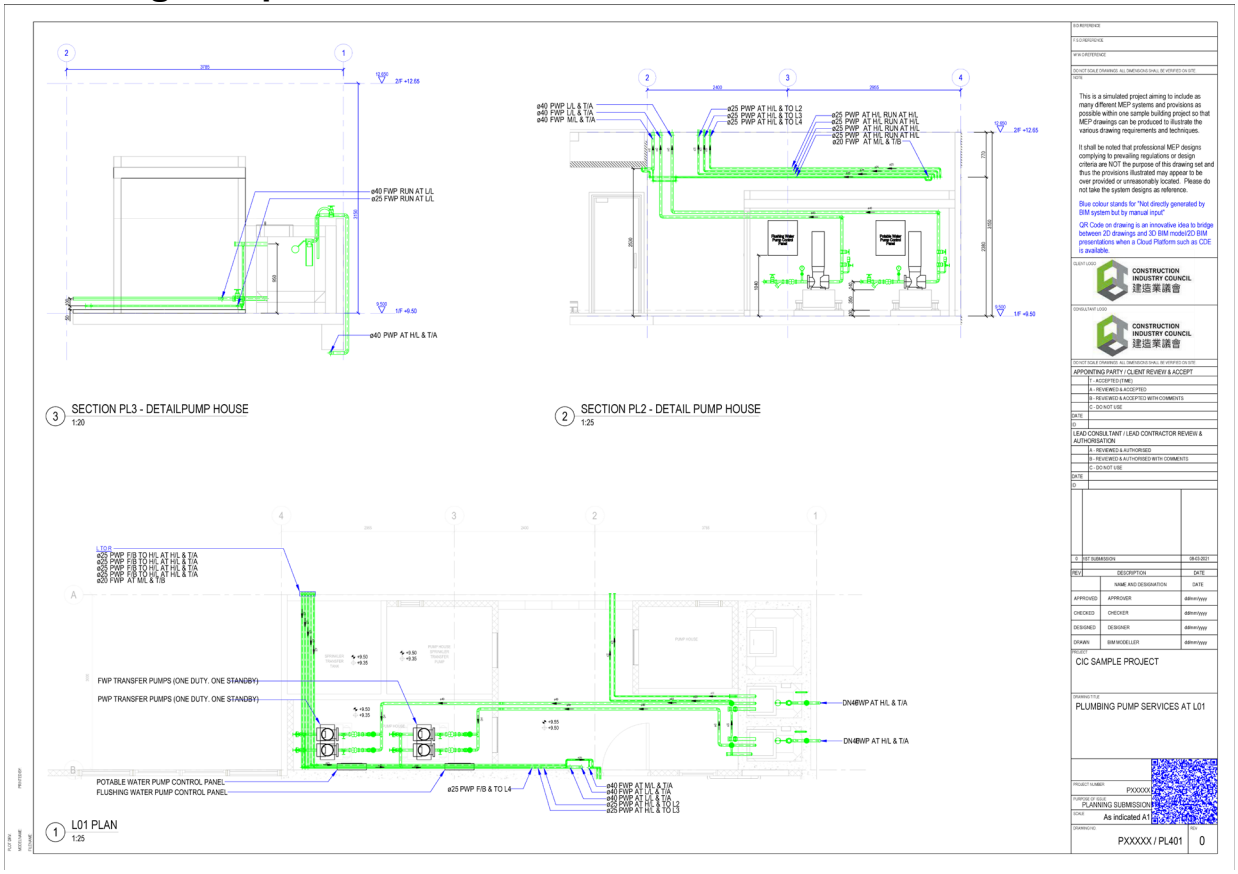
## Plumbing Layout Plan at Level GF, L01, L02, L03



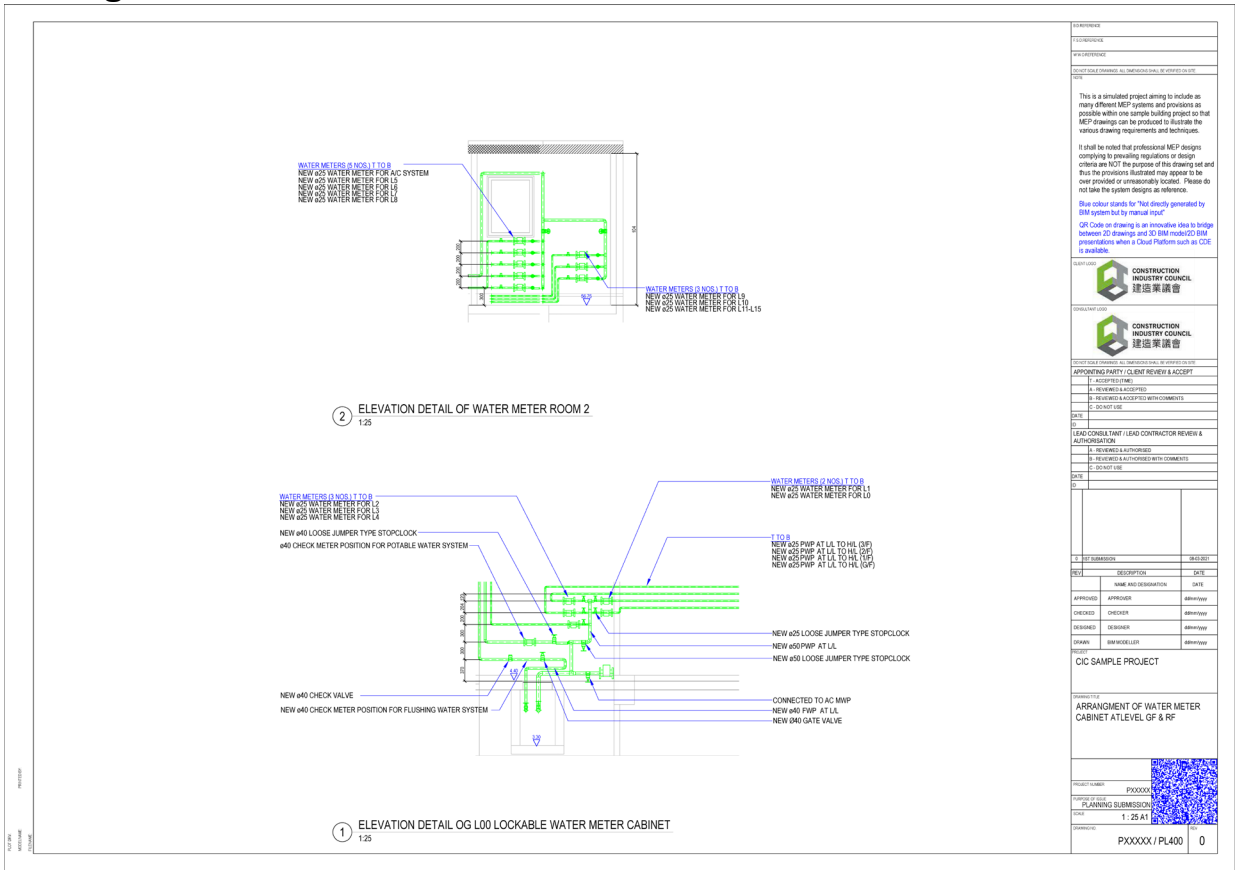

## Plumbing Layout Plan at Level L04-L15, RF, URF, TRF



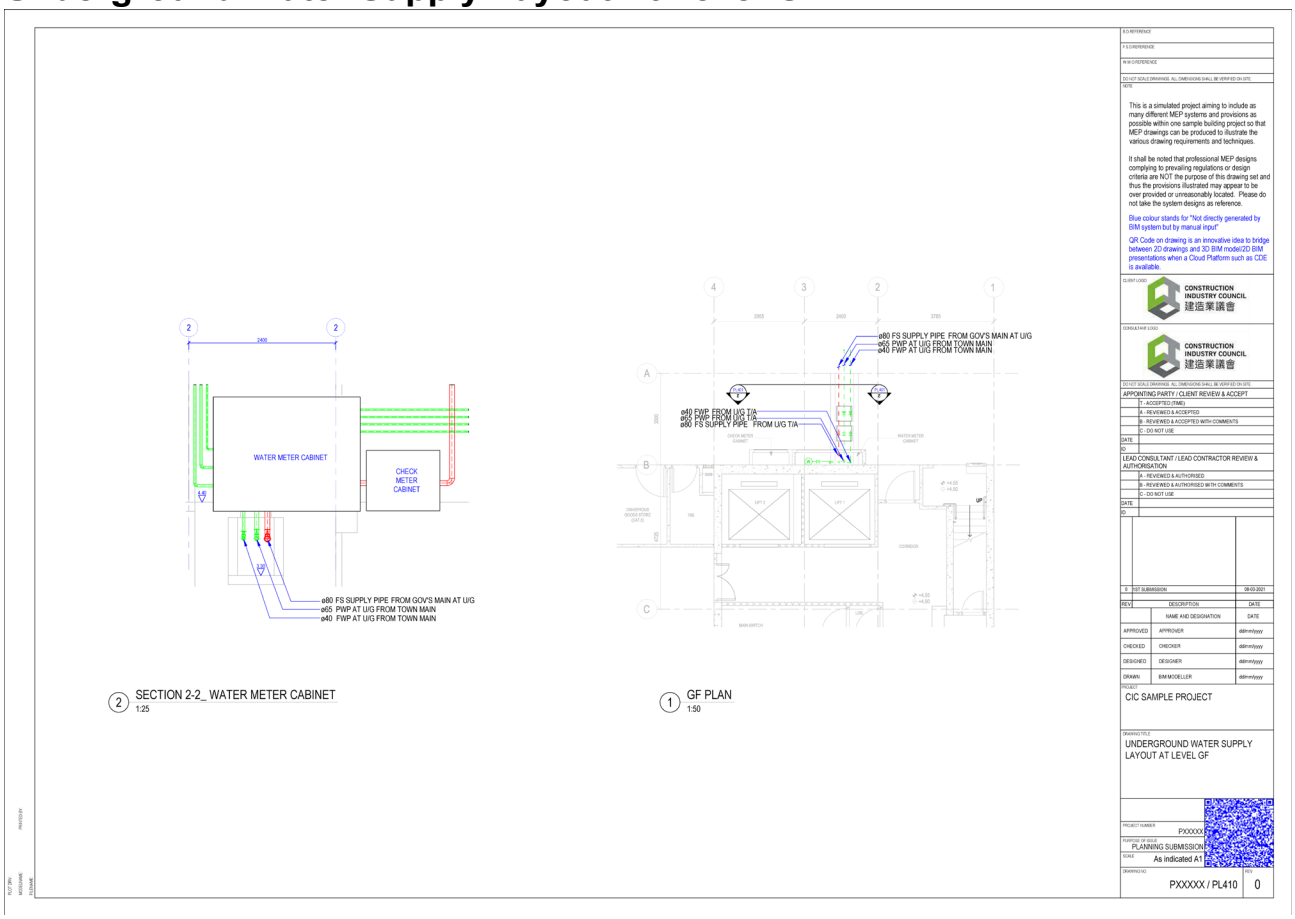
## Plumbing Pump Services at L01




## Arrangement Of Water Meter Cabinet at Level GF & RF

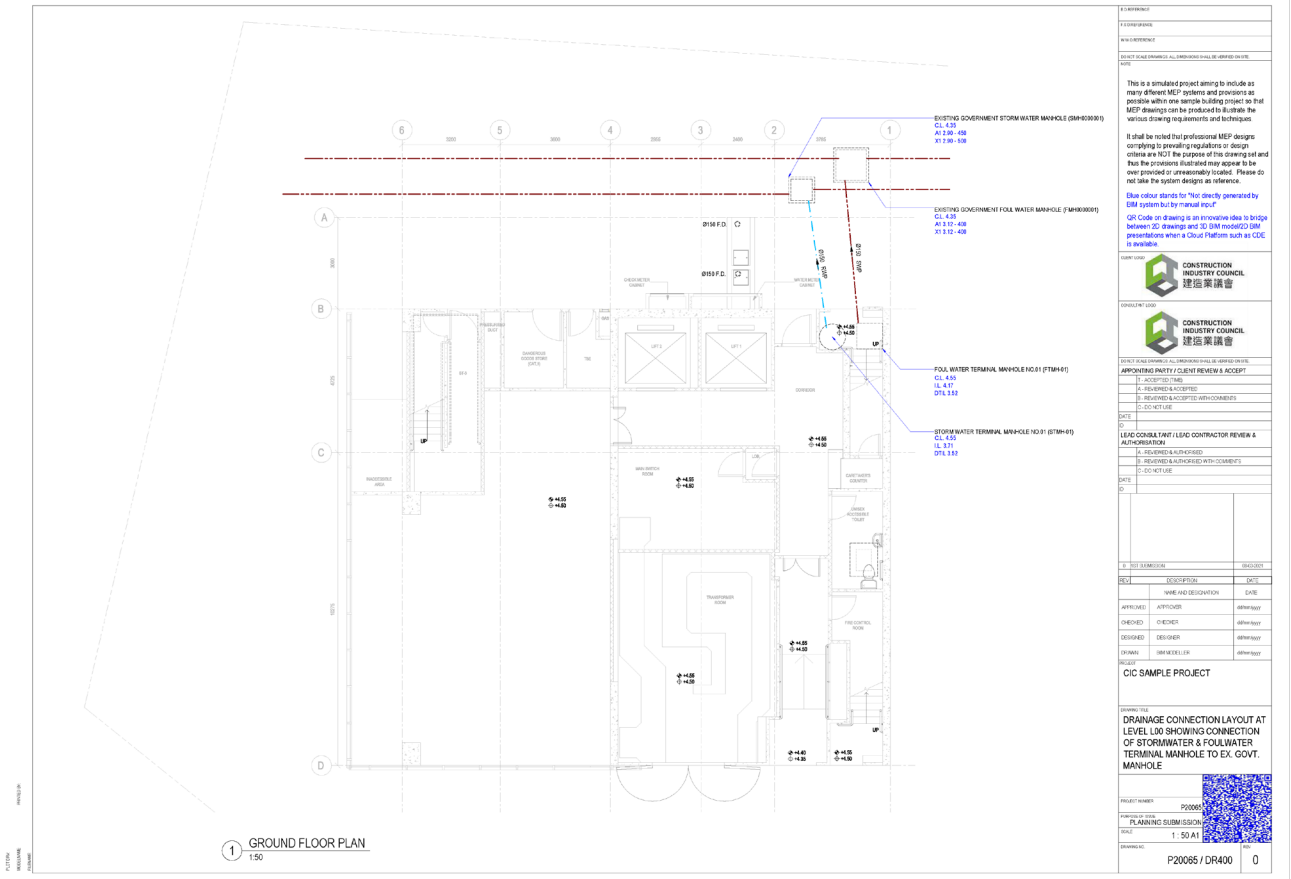


# Underground Water Supply Layout At Level GF



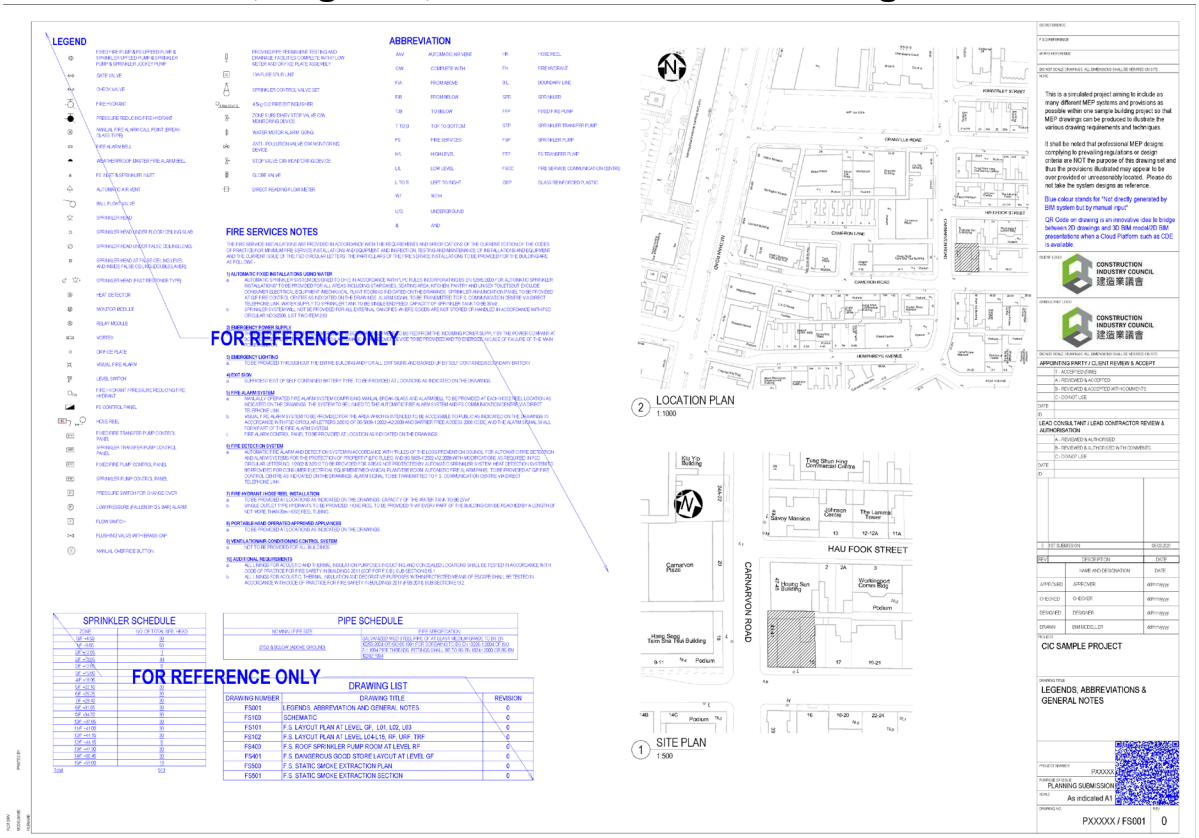
# 11.2.Drainage Connection

## Drainage Connection Layout At Level L00

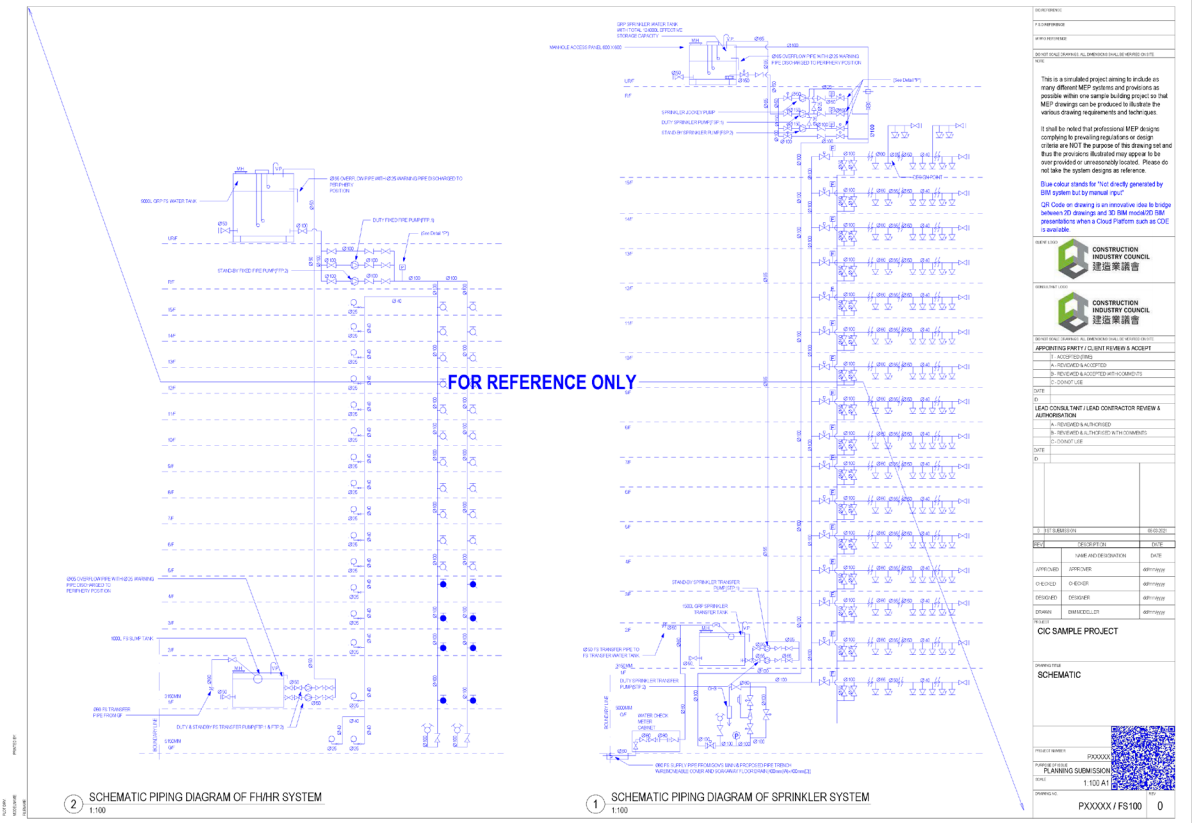


# 11.3.Application for Fire Services Department

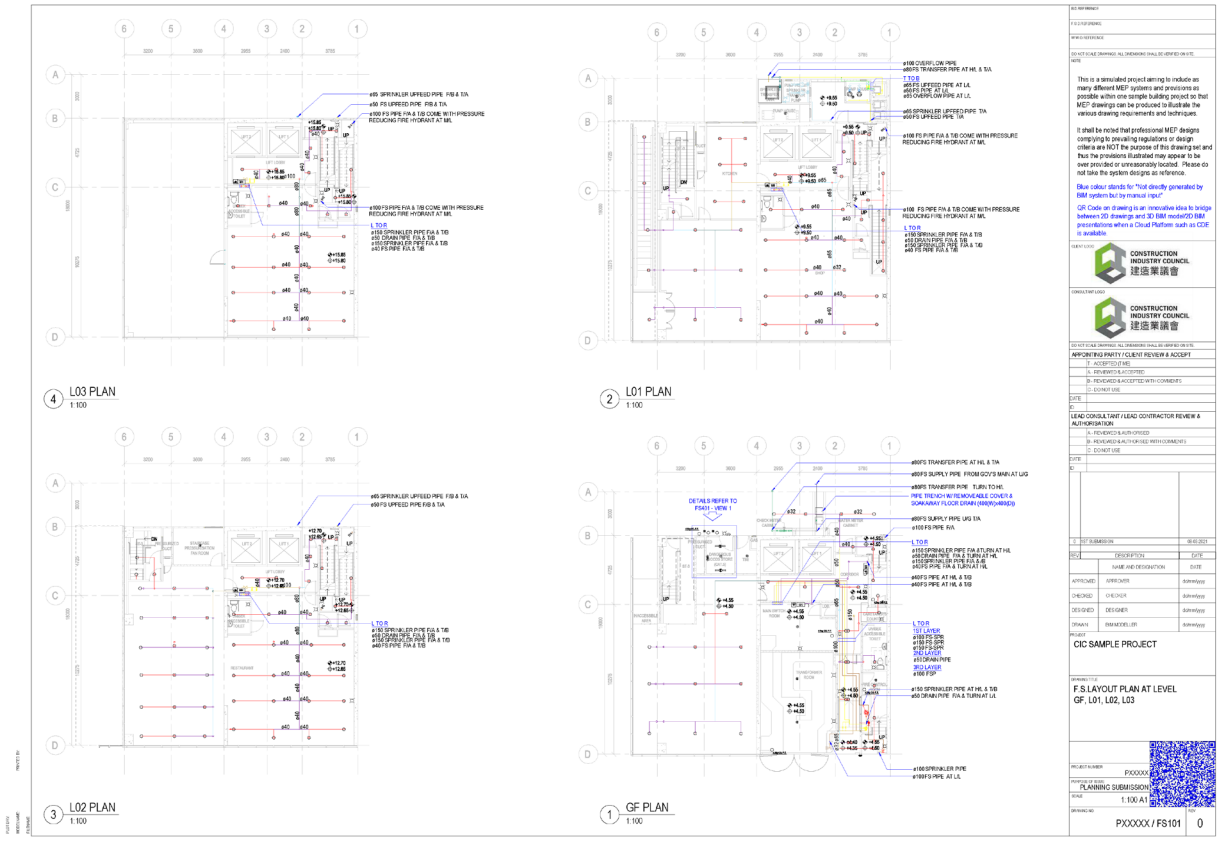
## General Notes, Legends, Abbreviation and Drawing List



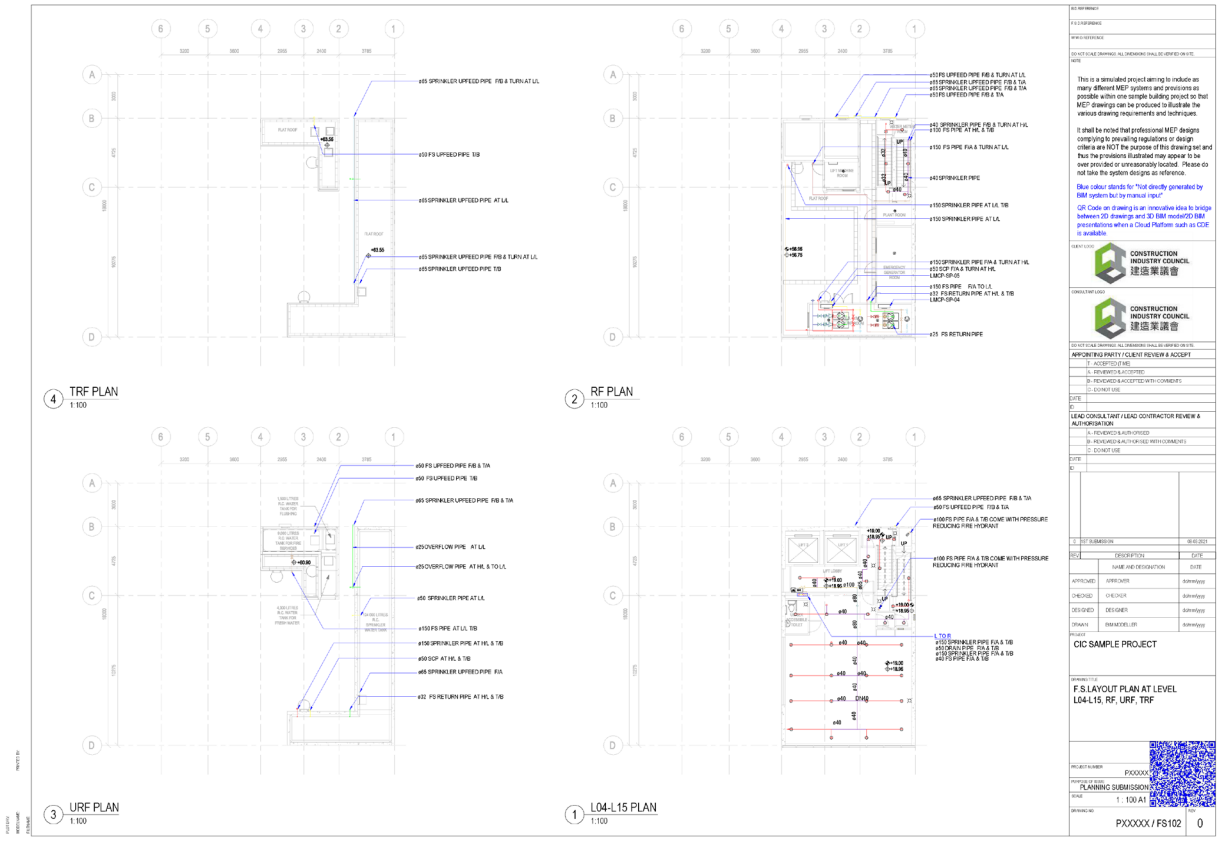

## F.S. Sprinkler Schematic



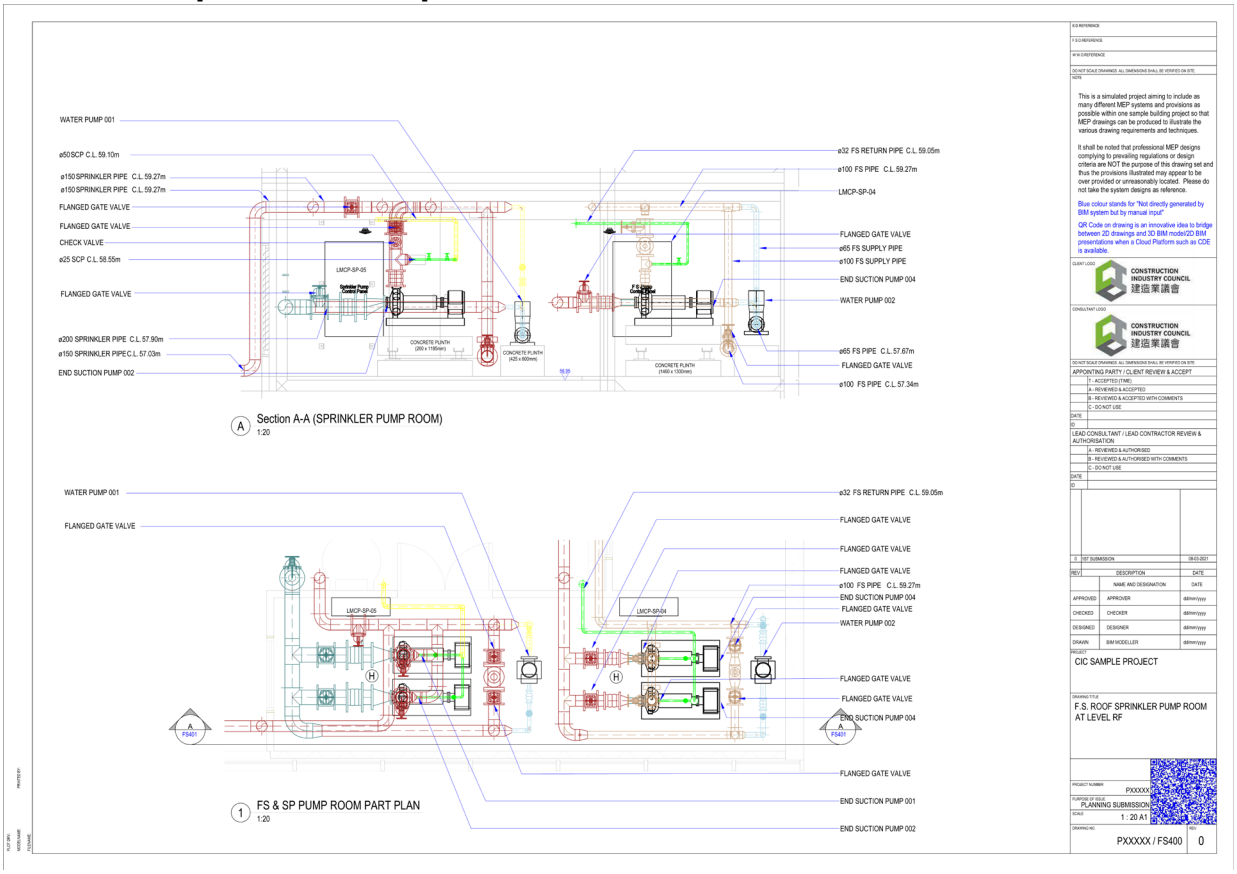
## F.S. Layout Plan at Level GF, L01, L02, L03



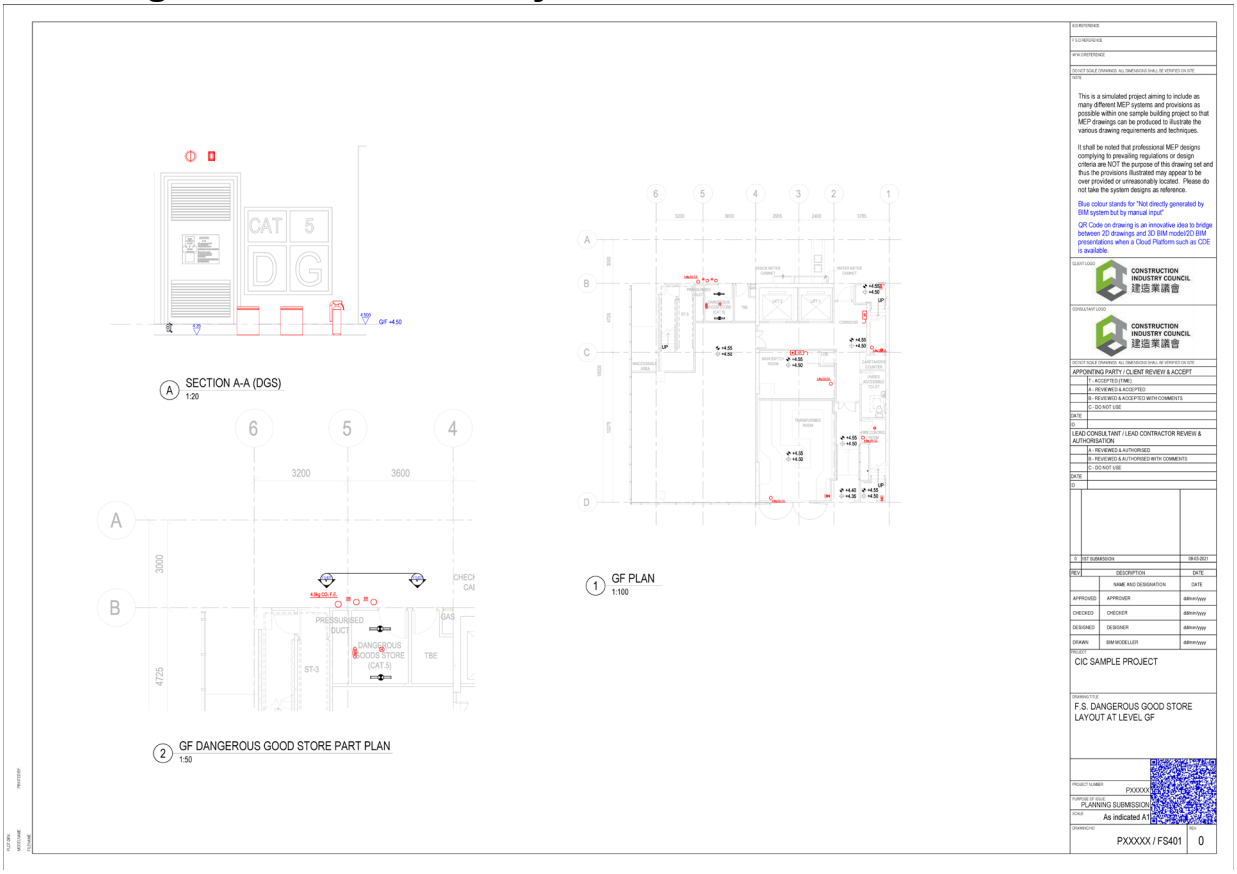

## F.S. Layout Plan at Level L04-L15, RF, URF, TRF



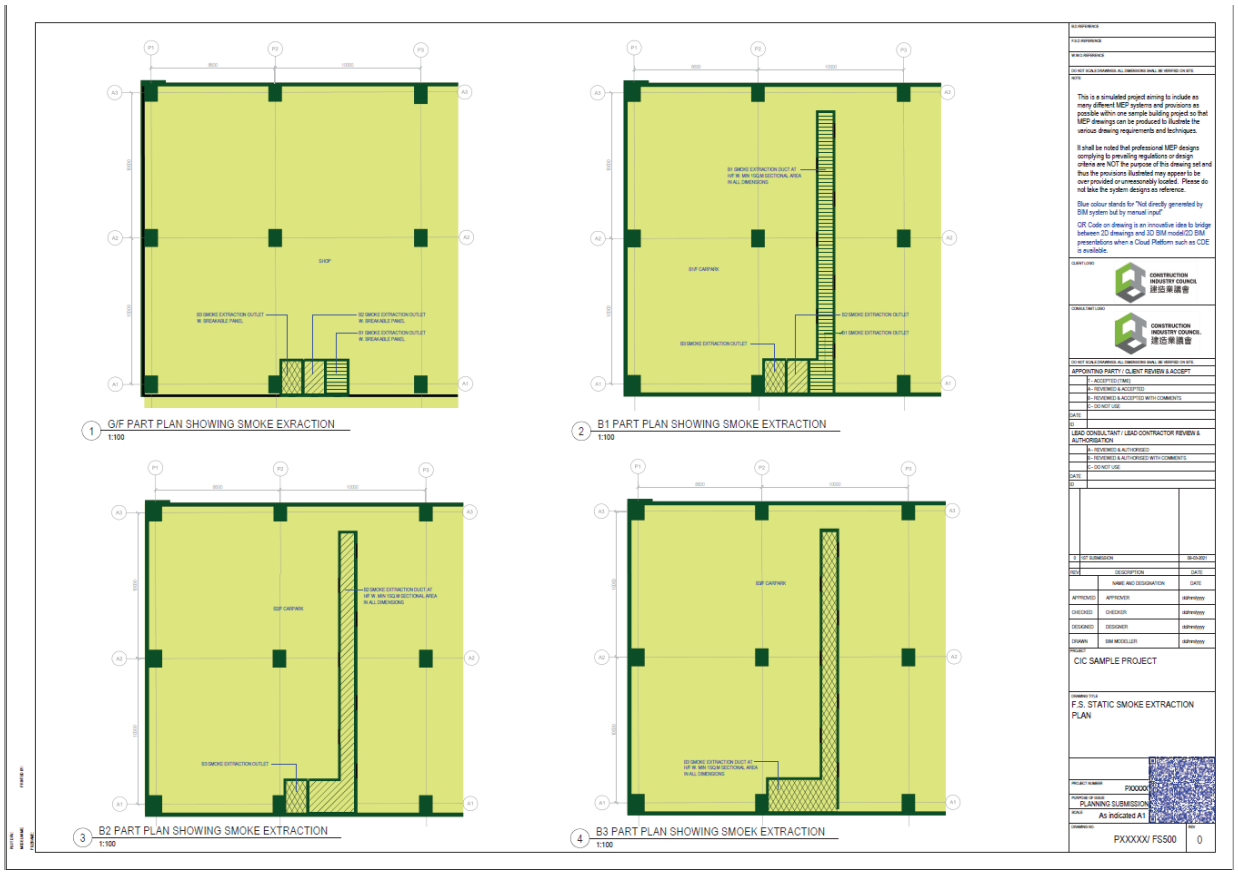
## F.S. Roof Sprinkler Pump Room at Level RF



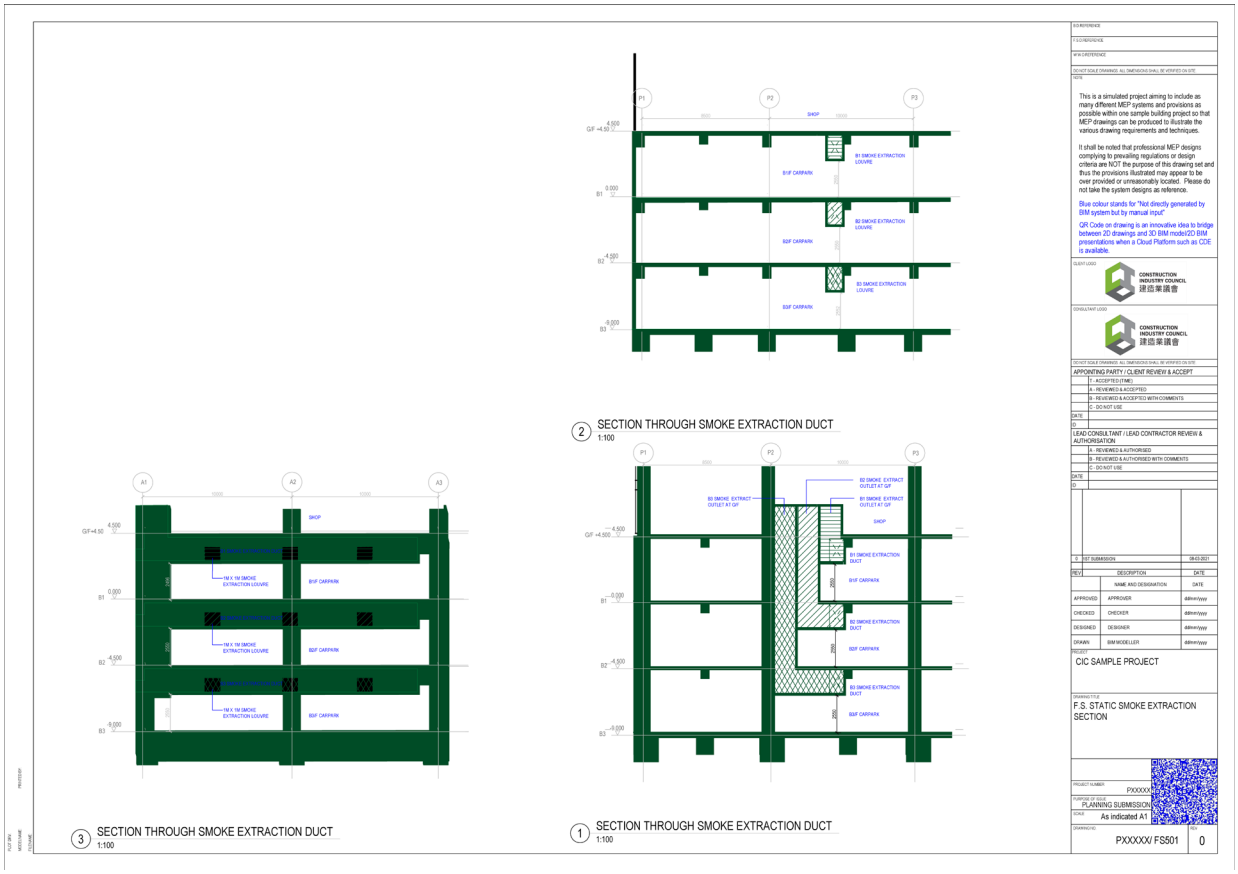

## F.S. Dangerous Good Store Layout at Level GF



## F.S. Static Smoke Extraction Plan

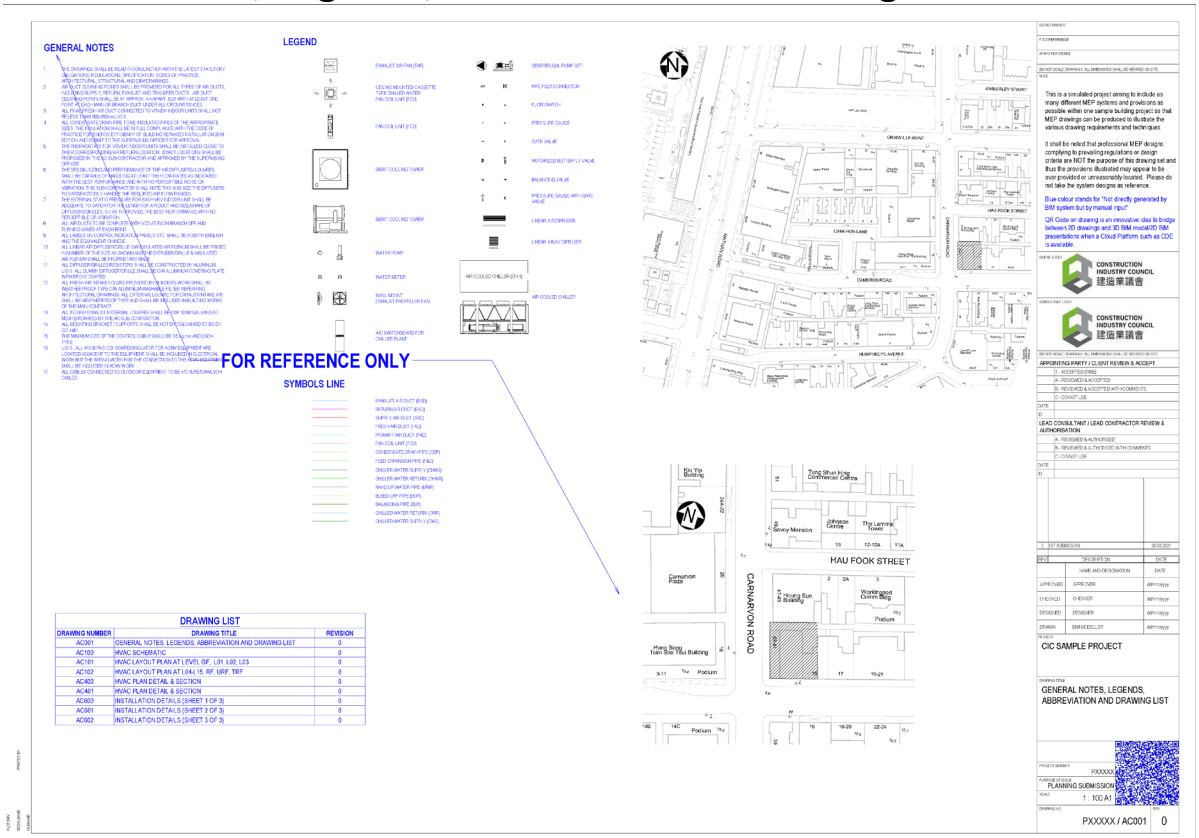



## F.S. Static Smoke Extraction Section

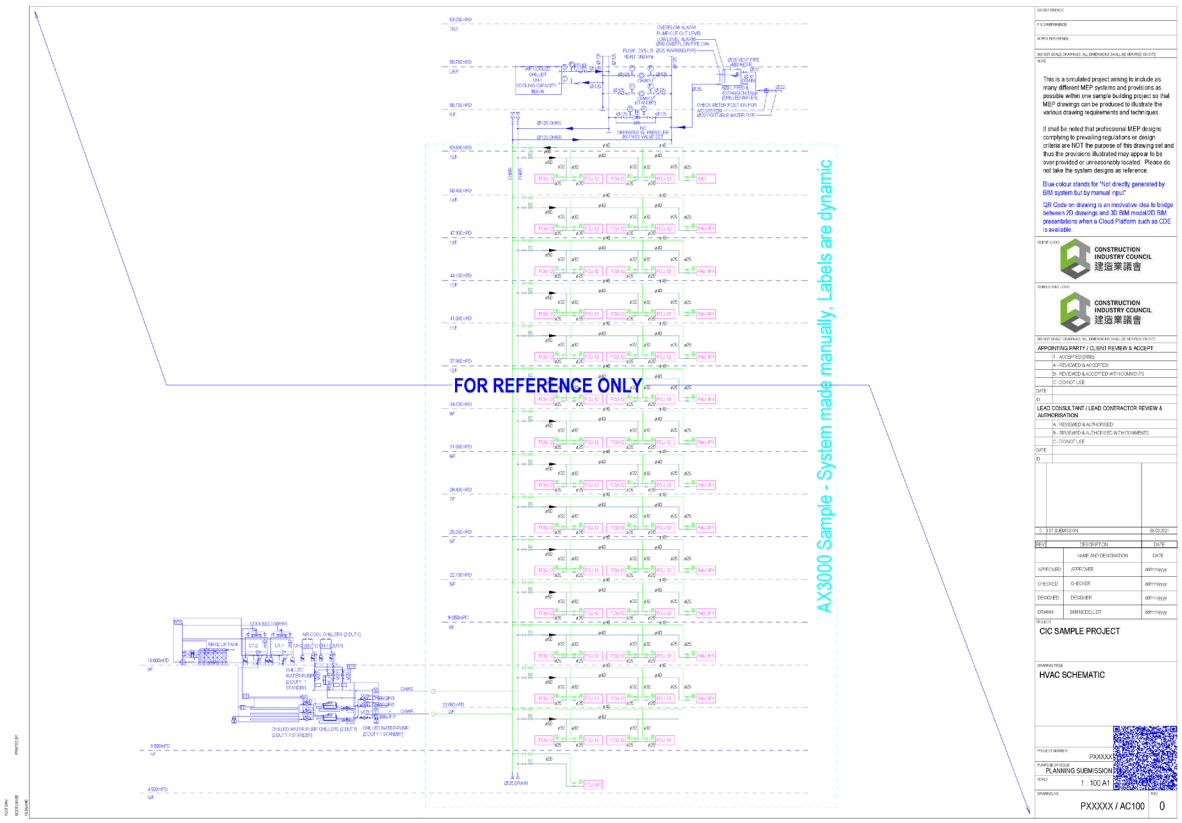


# 11.4.Application for Electrical and Mechanical Department

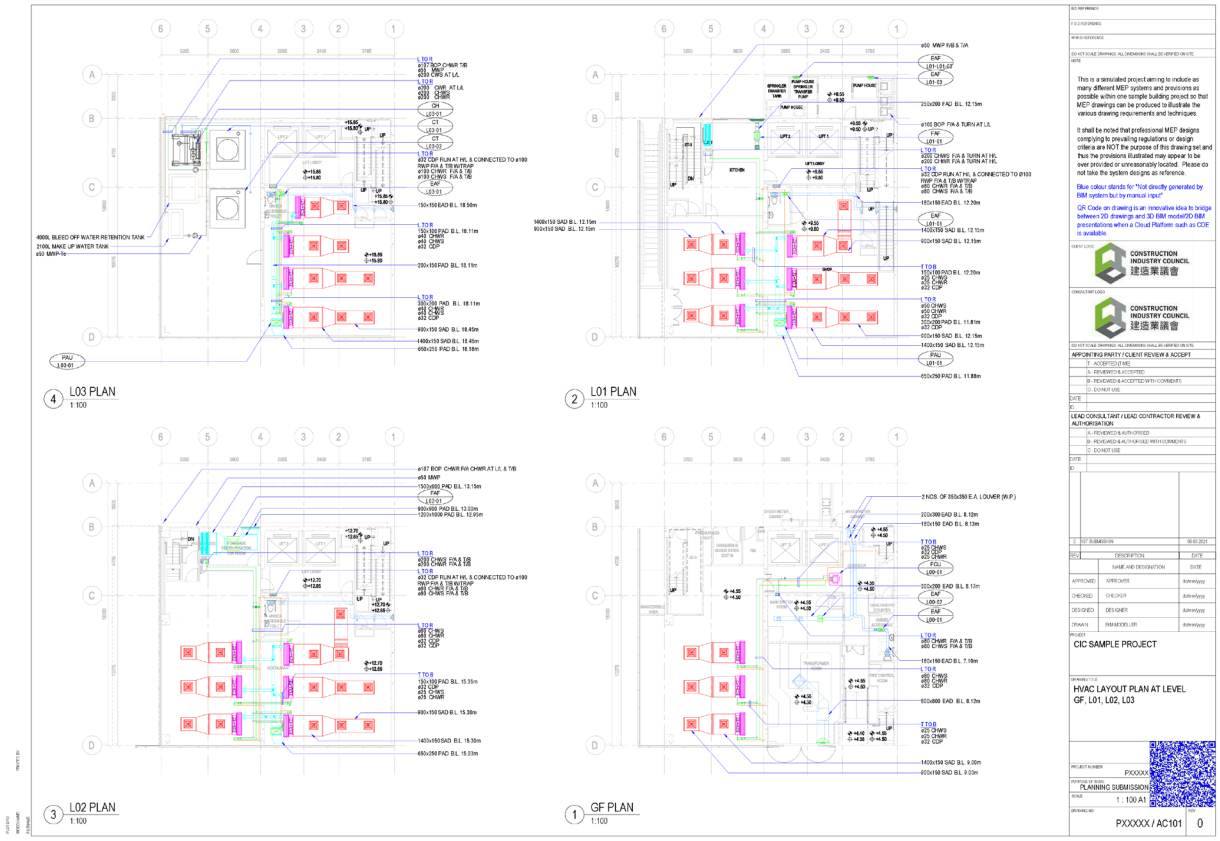
## General Notes, Legends, Abbreviation and Drawing List



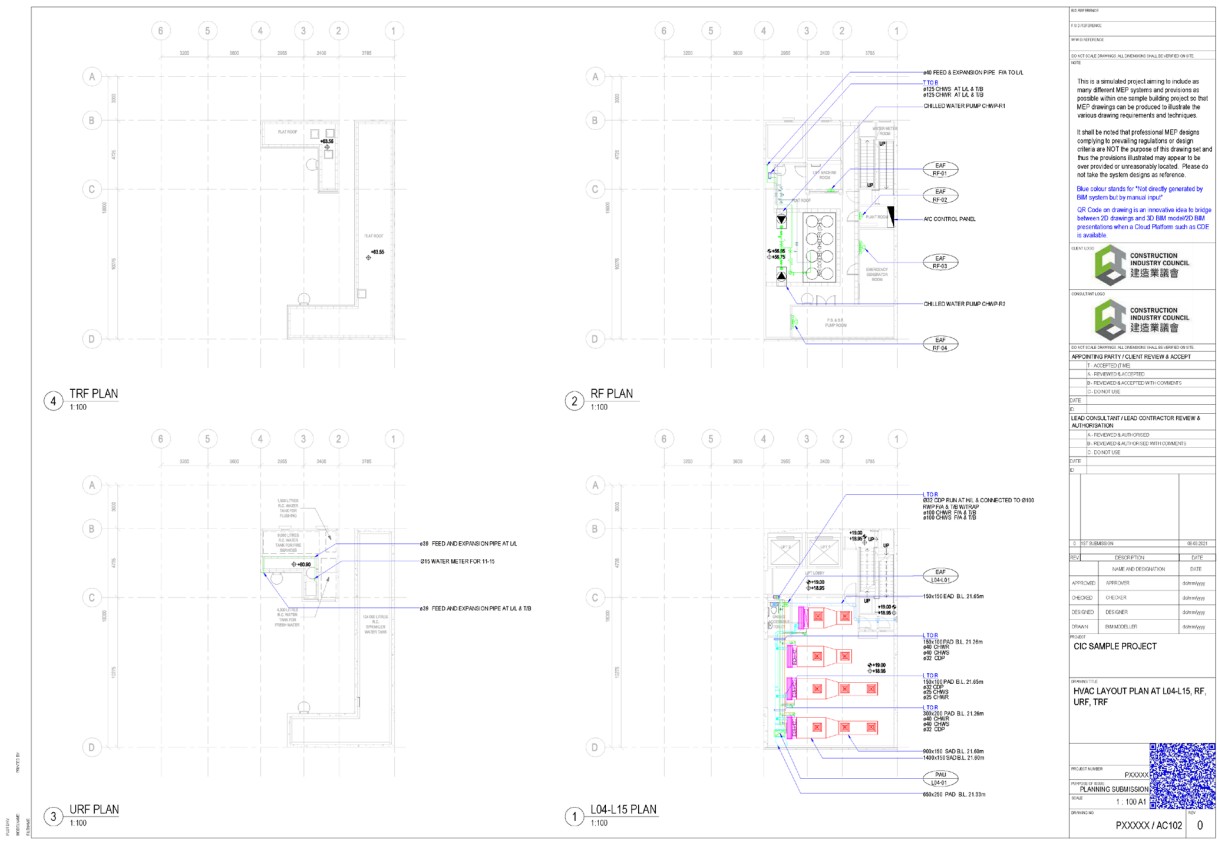

## MVAC Schematic



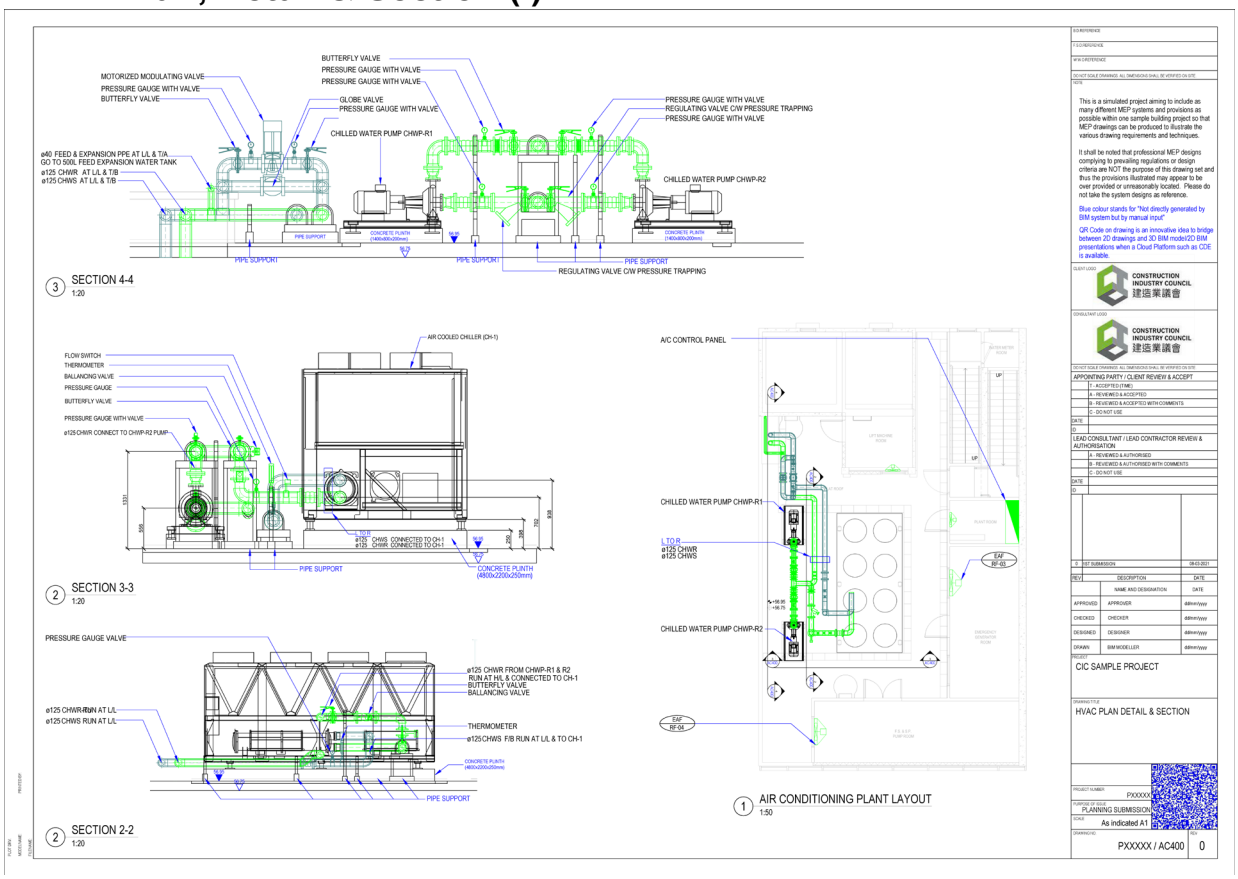
## MVAC Layout Plan at Level GF, L01, L02, L03



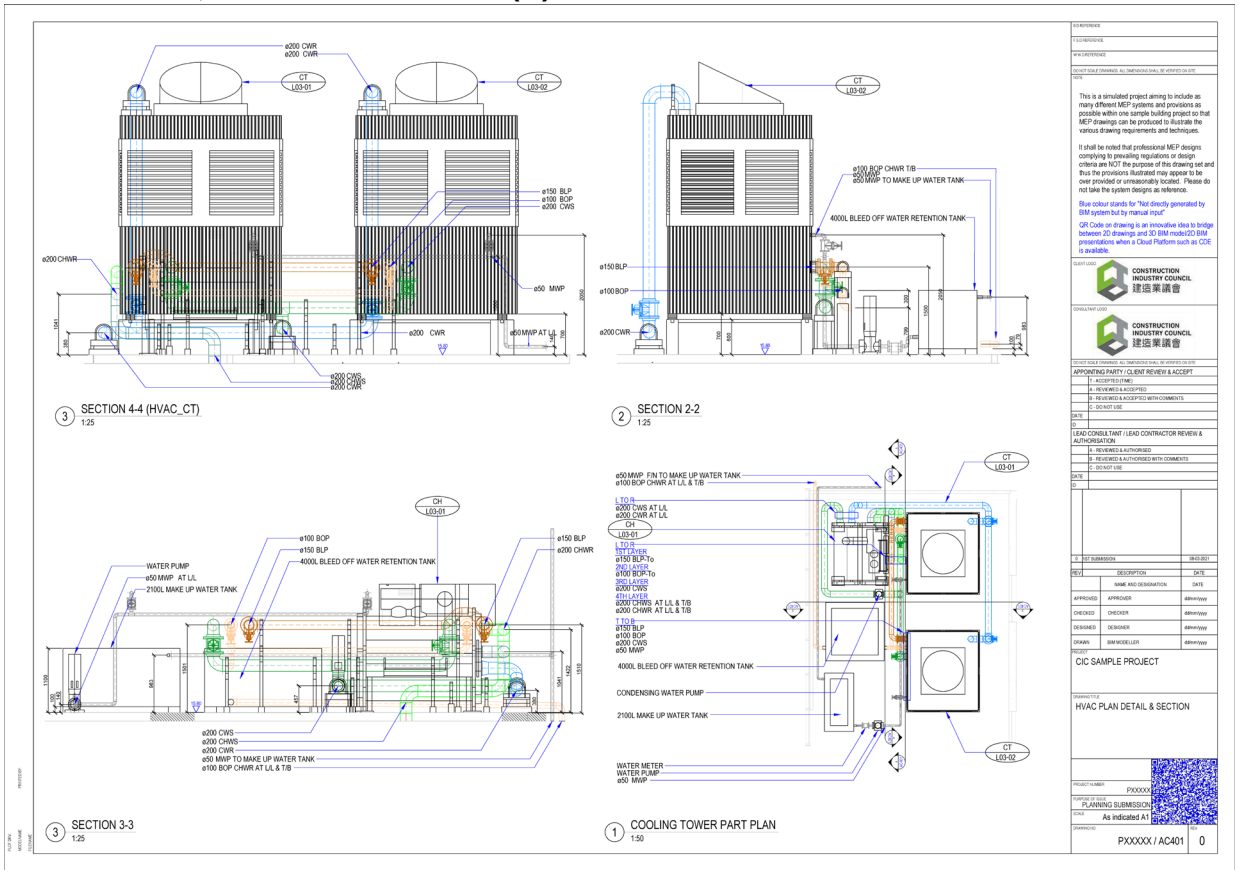

## MVAC Layout Plan at L04-L15, RF, URF, TRF



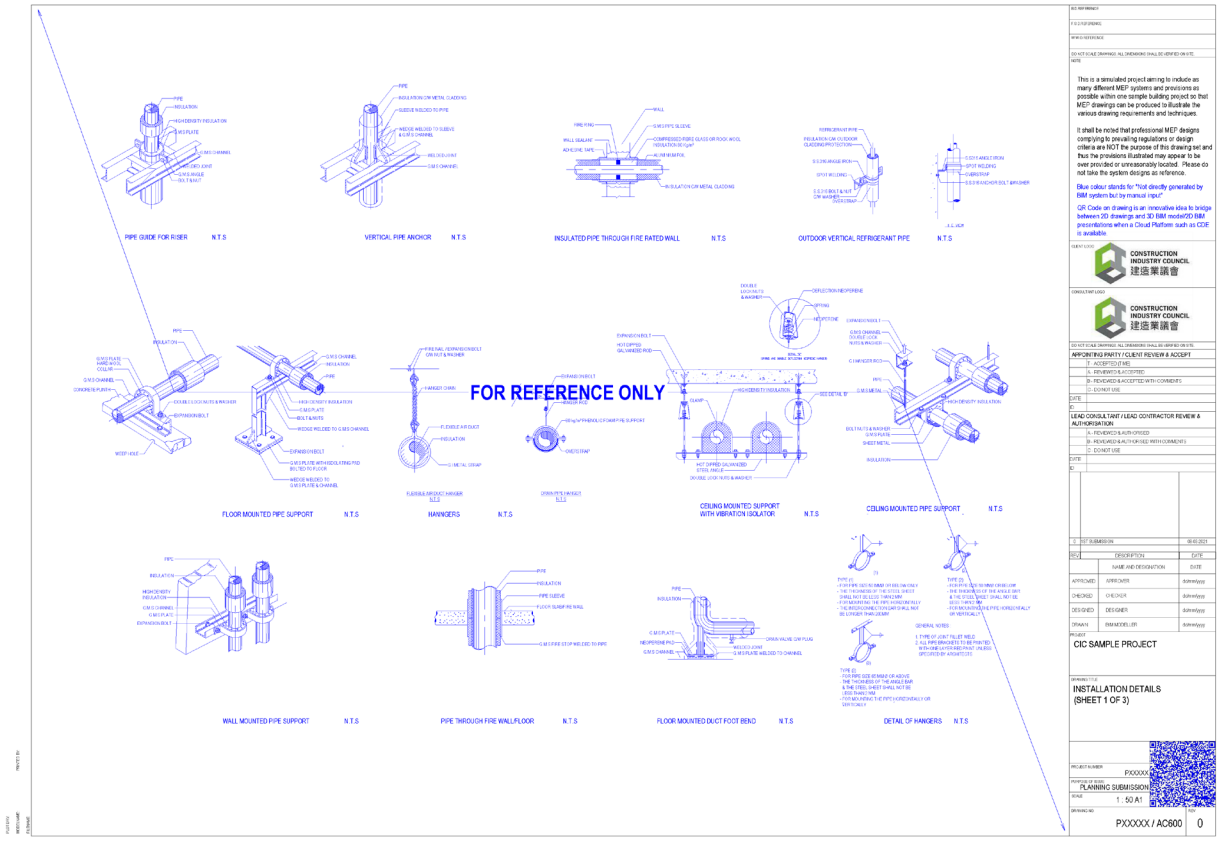
# MVAC Plan, Detail & Section (I)



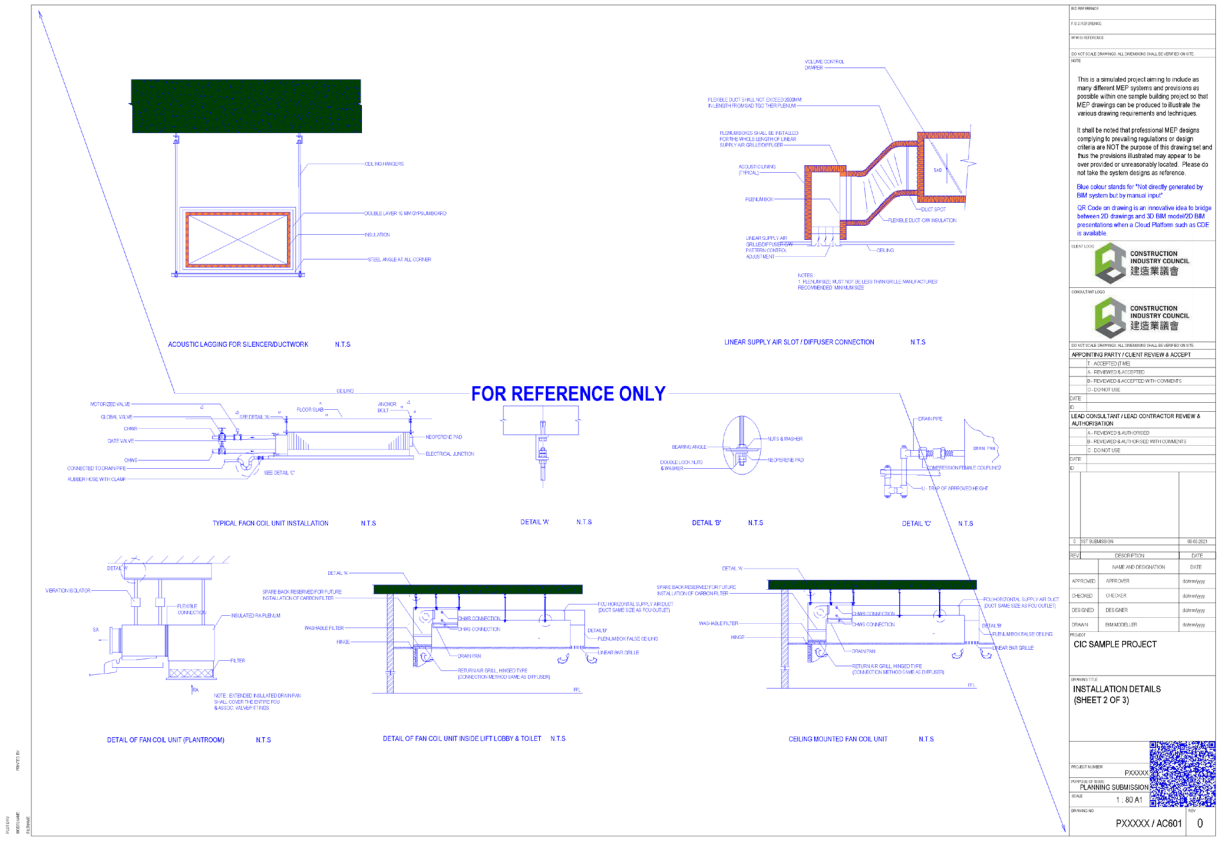

# MVAC Plan, Detail & Section (II)



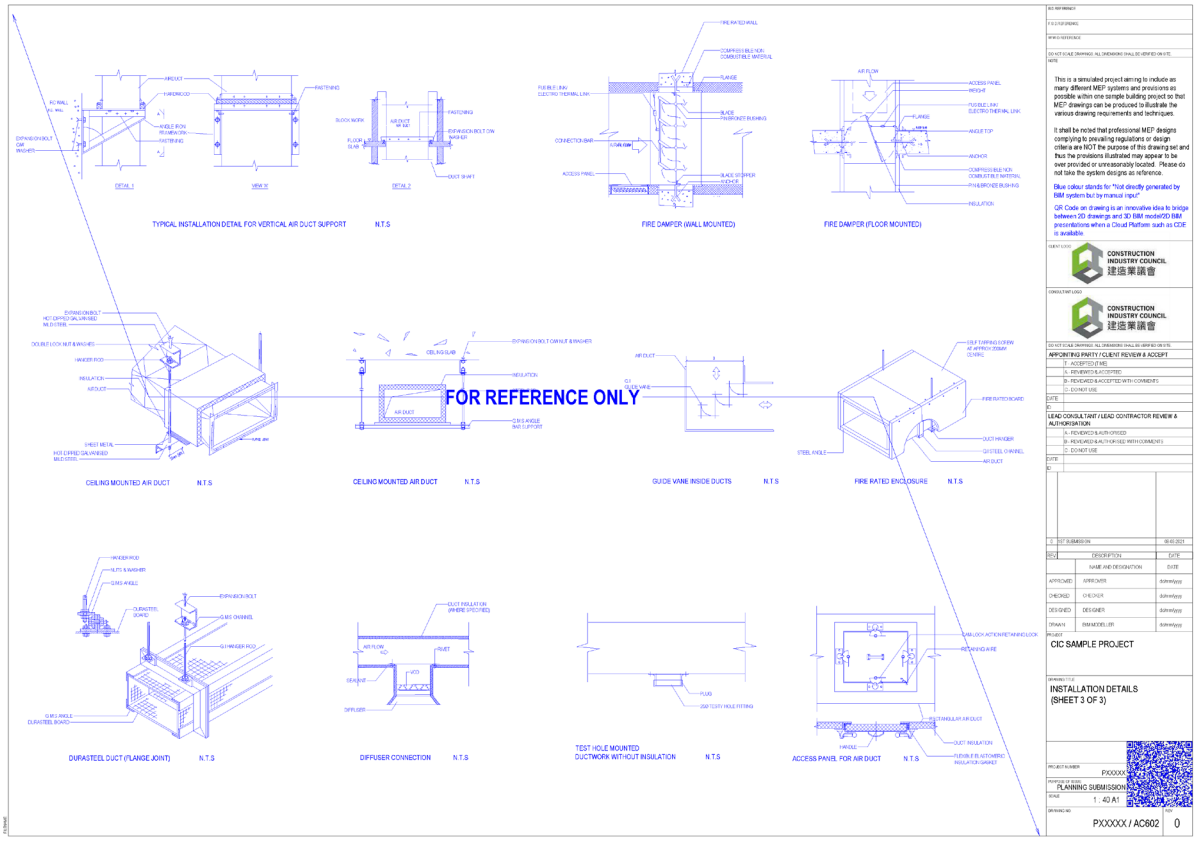
## Installation Details (I)



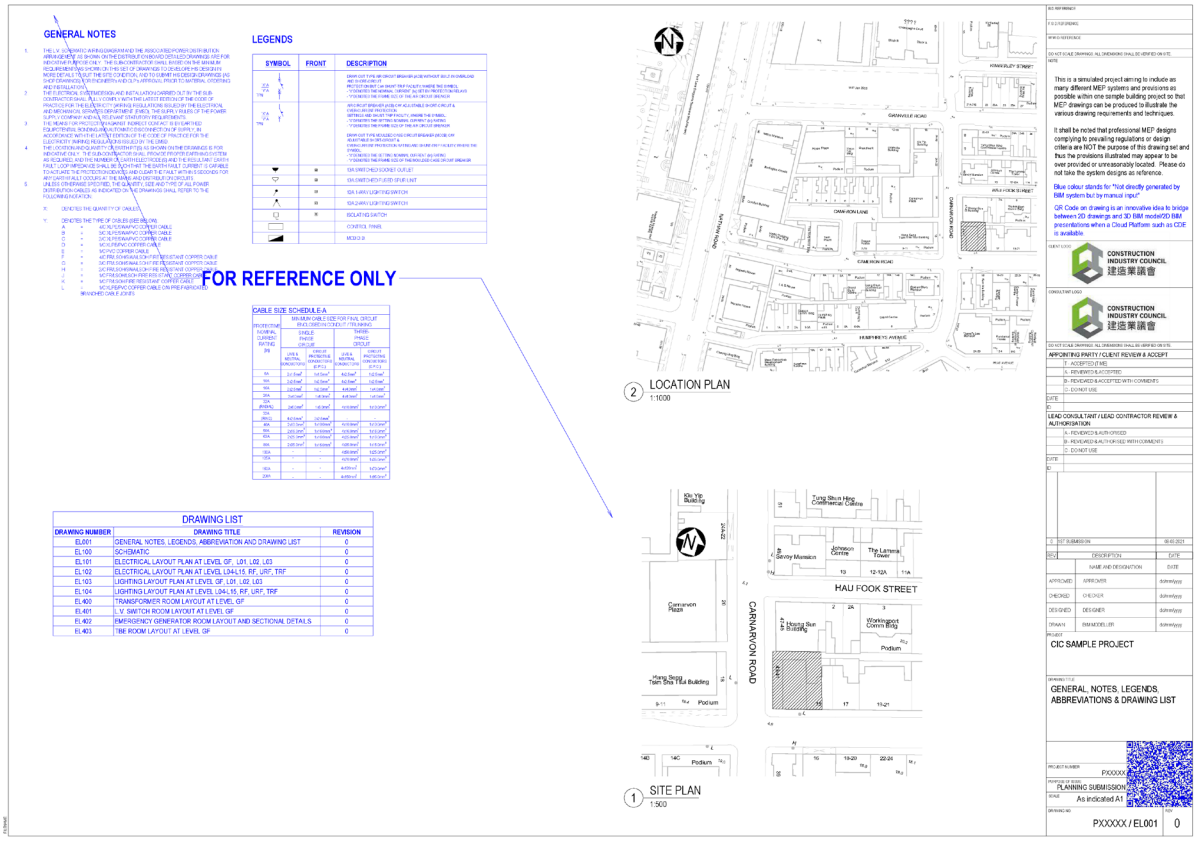

## Installation Details (II)



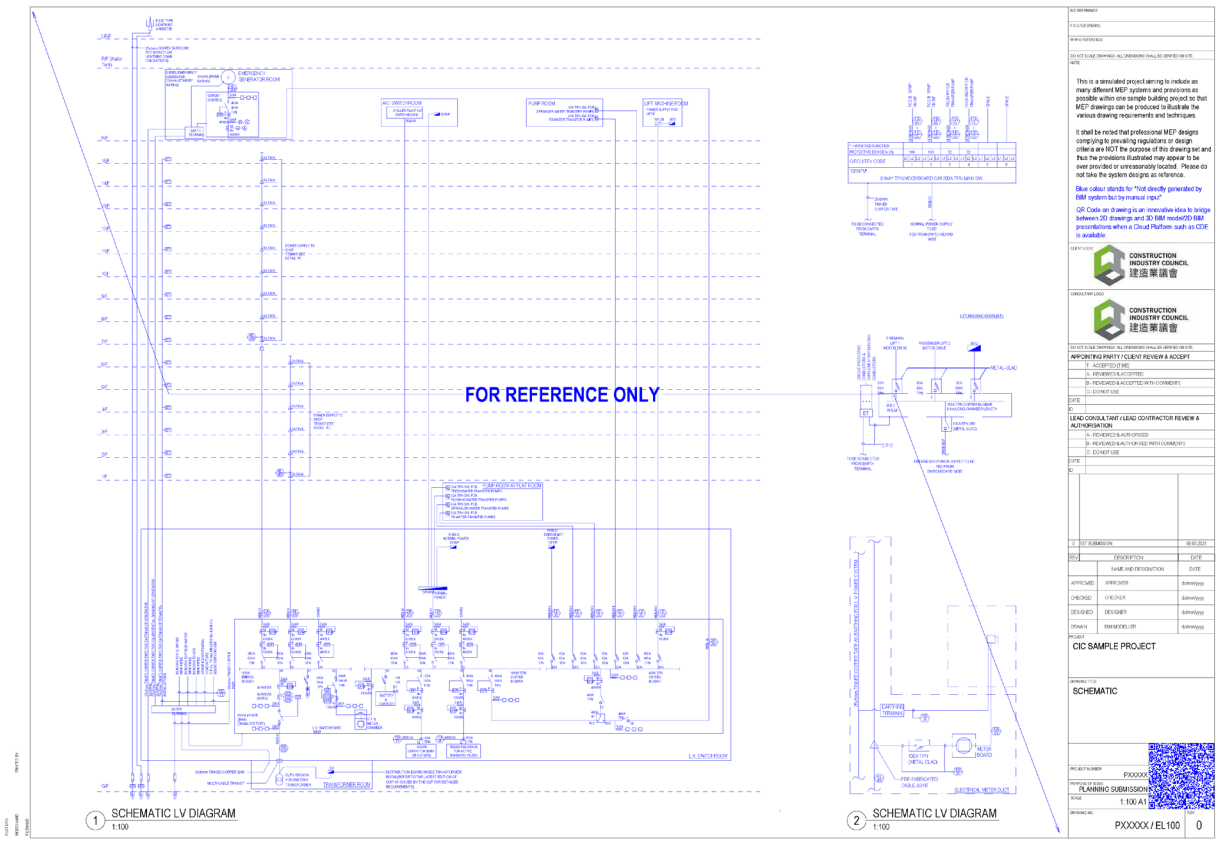
## Installation Details (III)



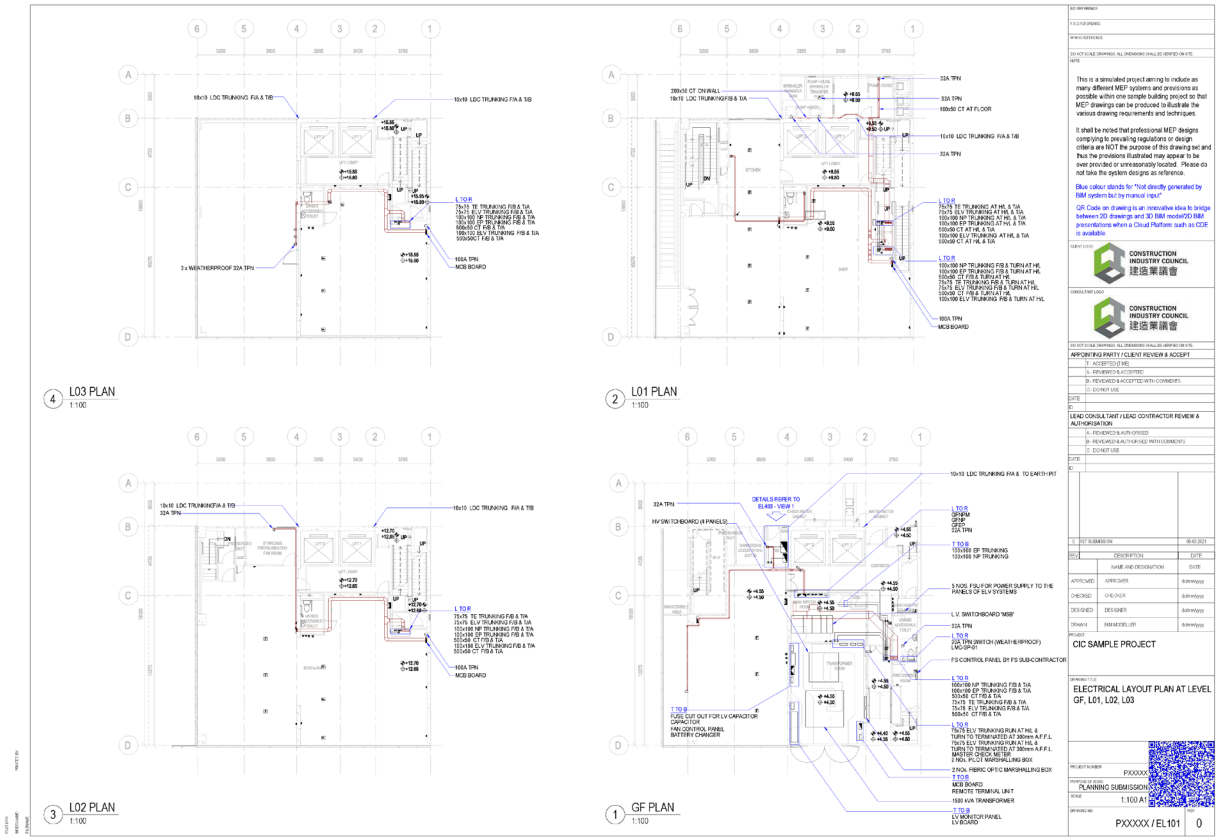

## General Notes, Legends, Abbreviation, and Drawing List



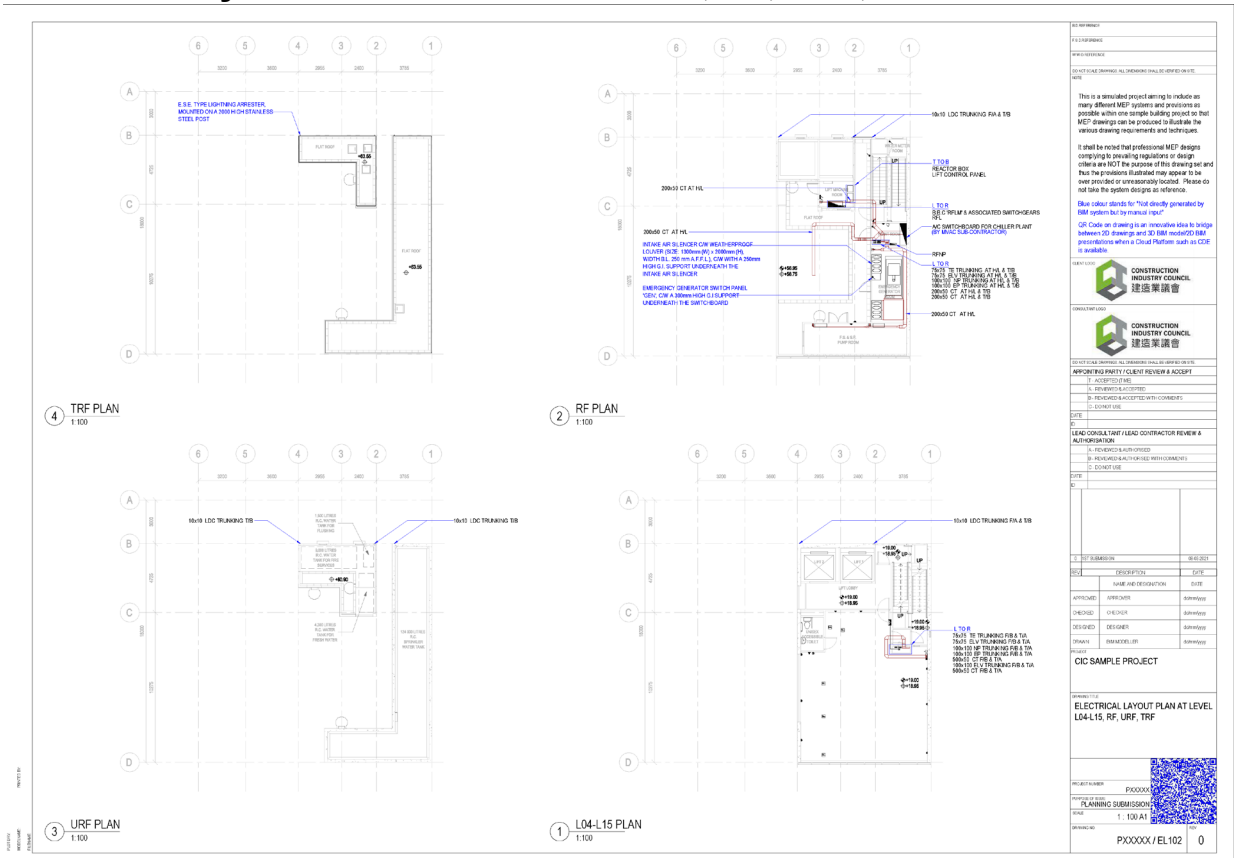
## LV Schematic




## Electrical Layout Plan at Level GF, L01, L02, L03



## Electrical Layout Plan at Level L04 - L15, RF, URF, TRF

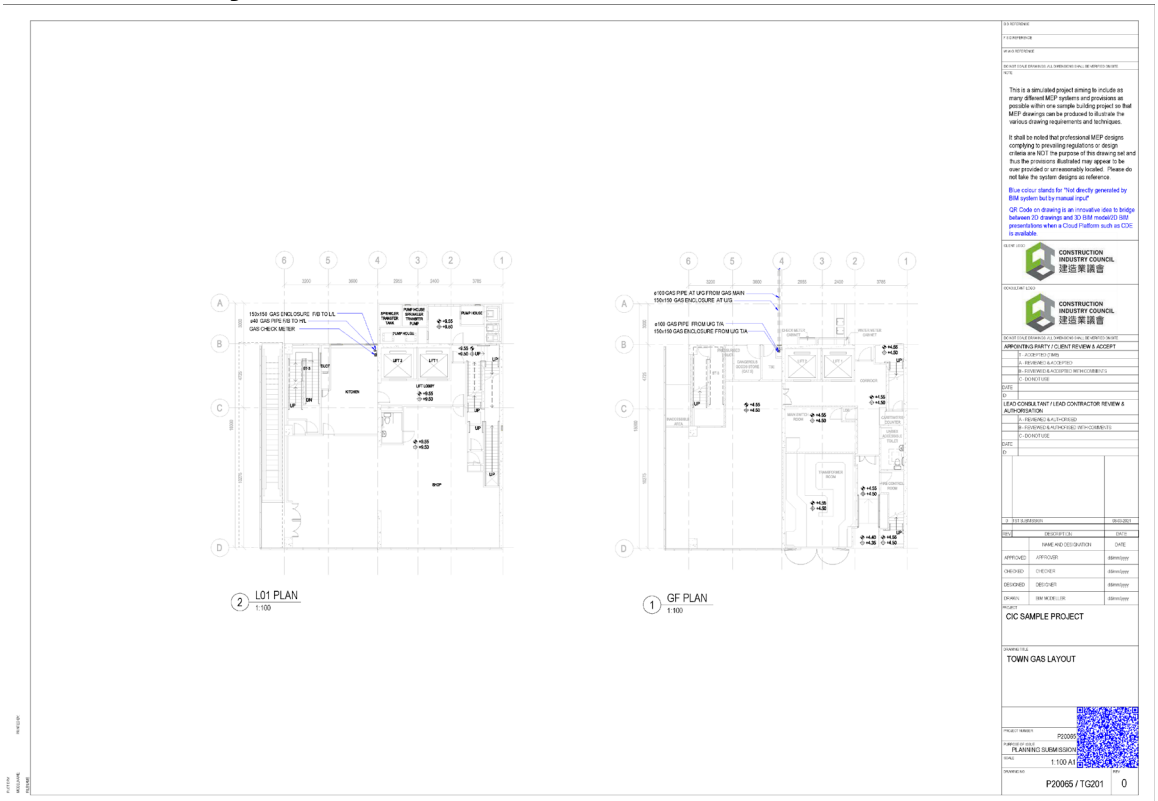



## Lighting Layout Plan at Level GF, L01, L02, L03

# Lighting Layout Plan at Level L04 - L15, RF, URF, TRF

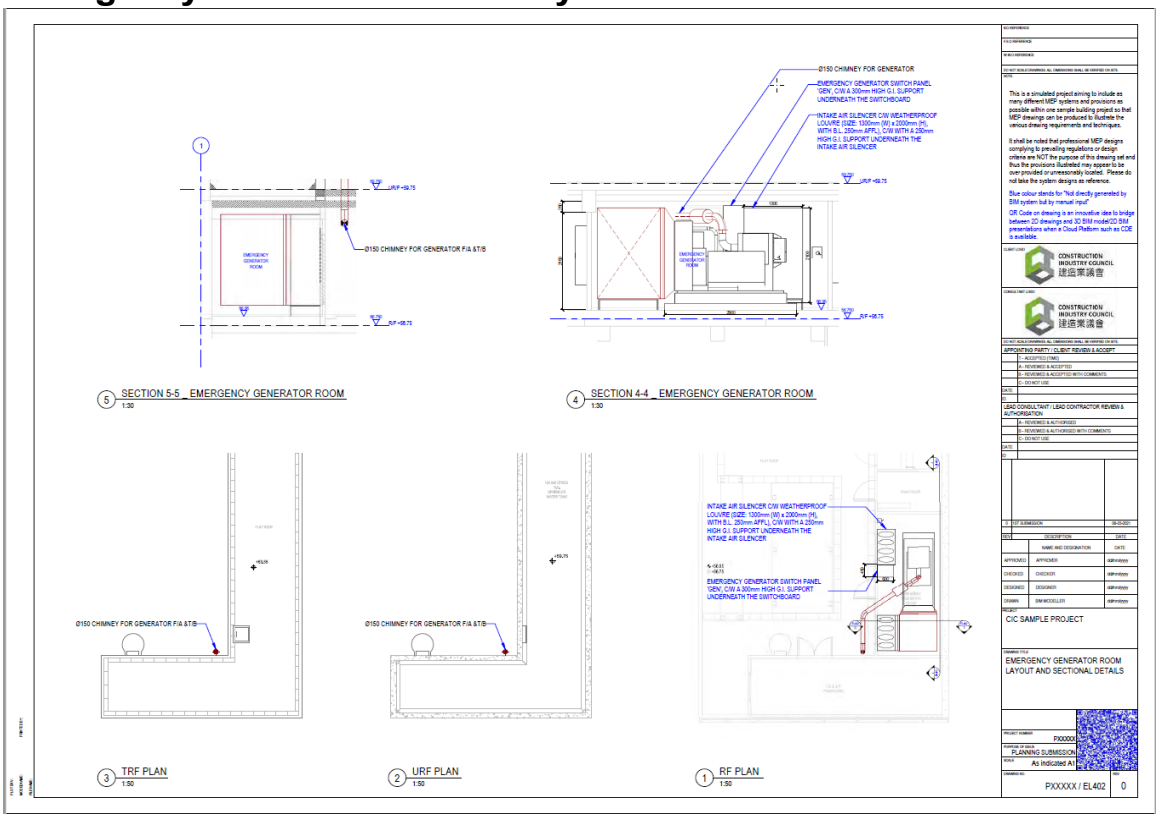
# 11.5.Application for Gas Installation

## Town Gas Layout



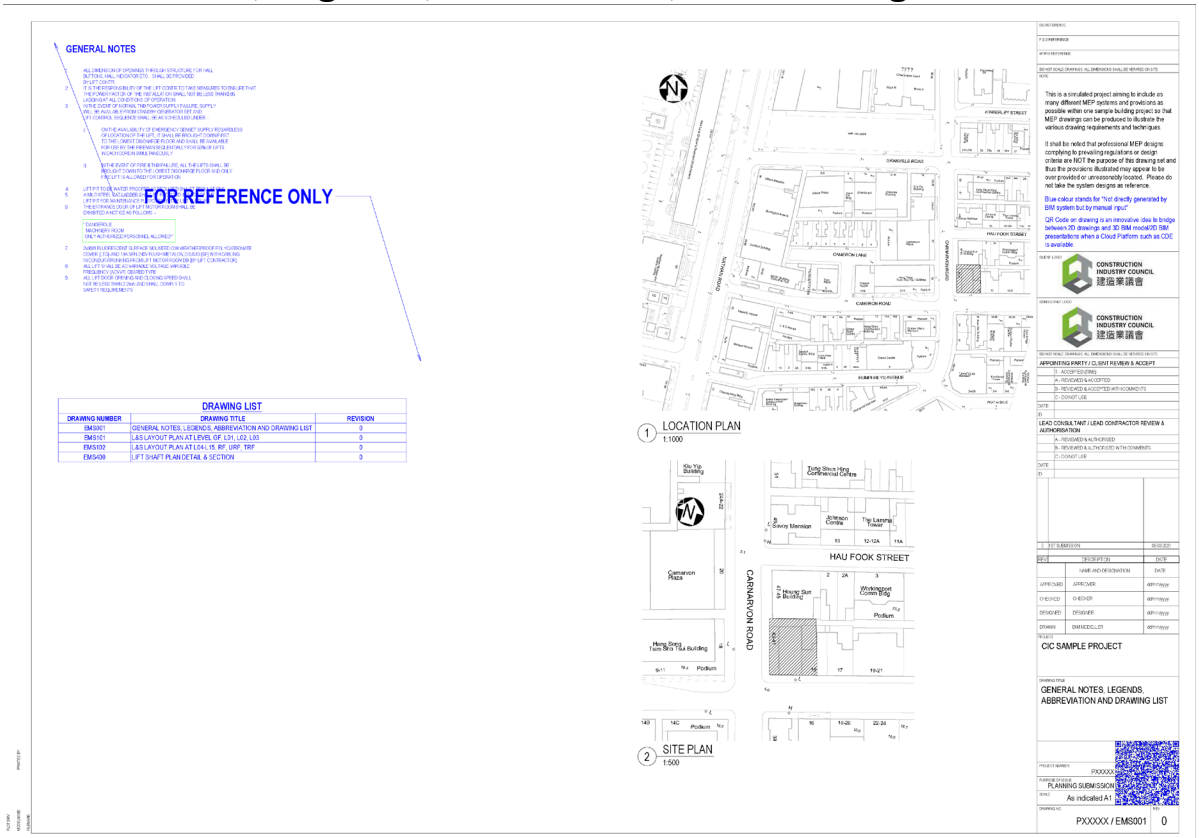

# 11.6.License for Generator

## Emergency Generator Room Layout and Sectional Details



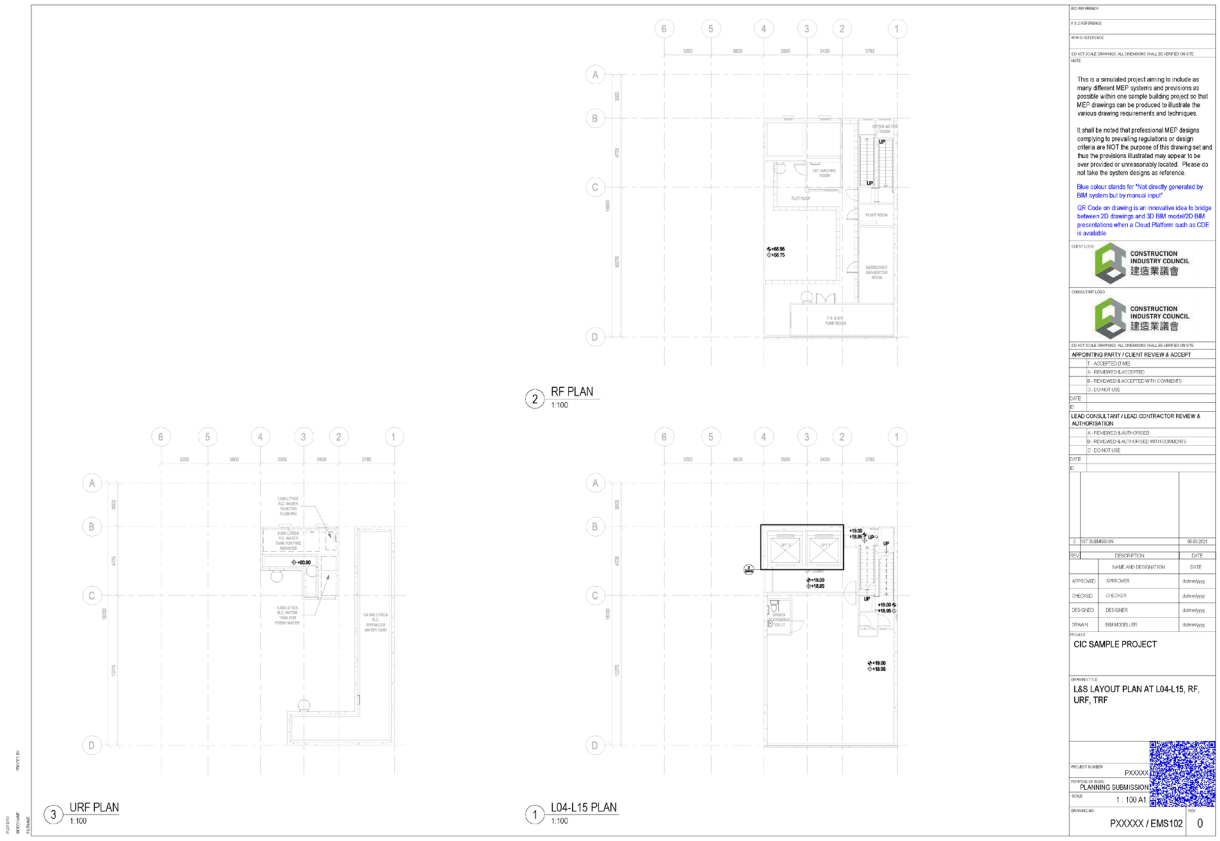
# 11.7.Lift & Escalator Inspection

## General Notes, Legends, Abbreviation, and Drawing List

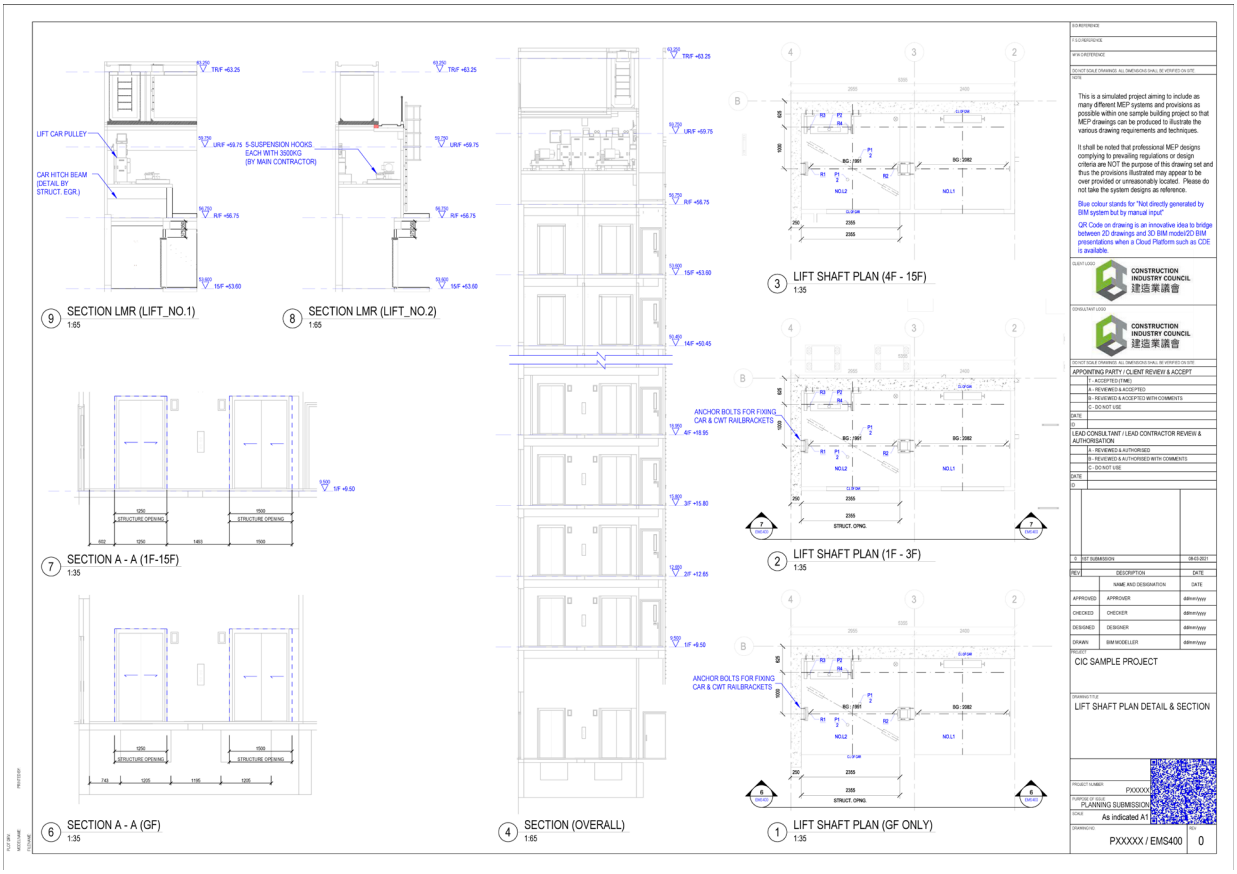



## L&S Layout Plan at Level GF, L01, L02, L03

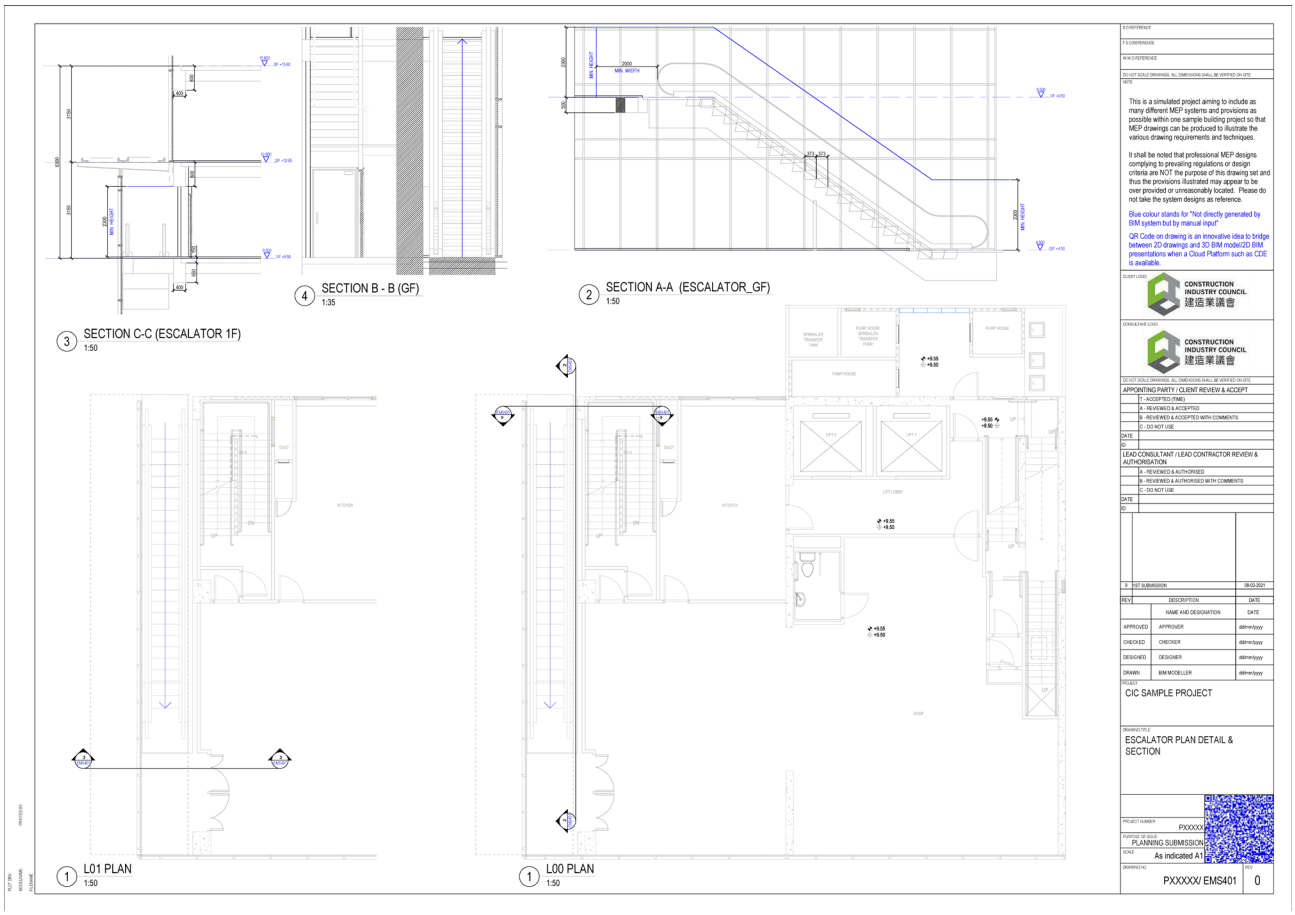
## L&S Layout Plan at Level L04 - L15, RF, URF, TRF




## Lift Shaft Plan Detail & Section

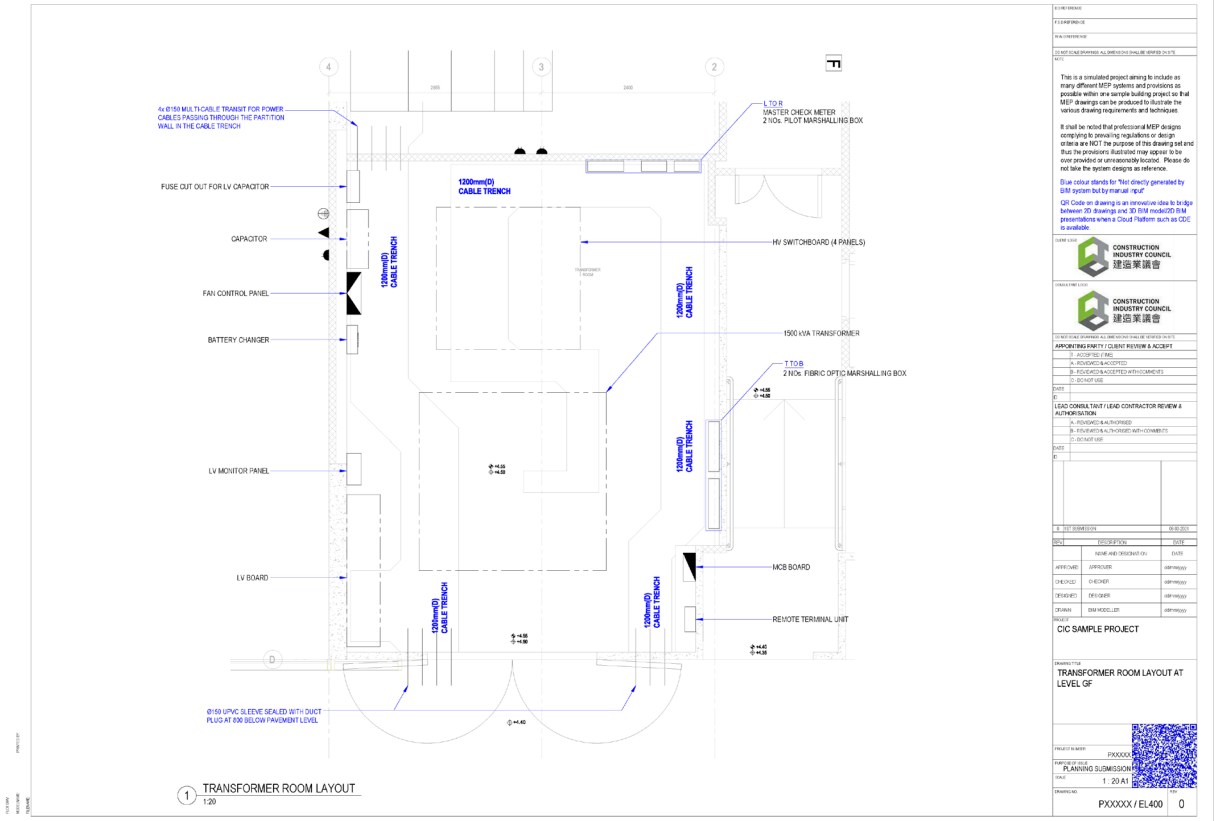


# Escalator Plan Detail & Section

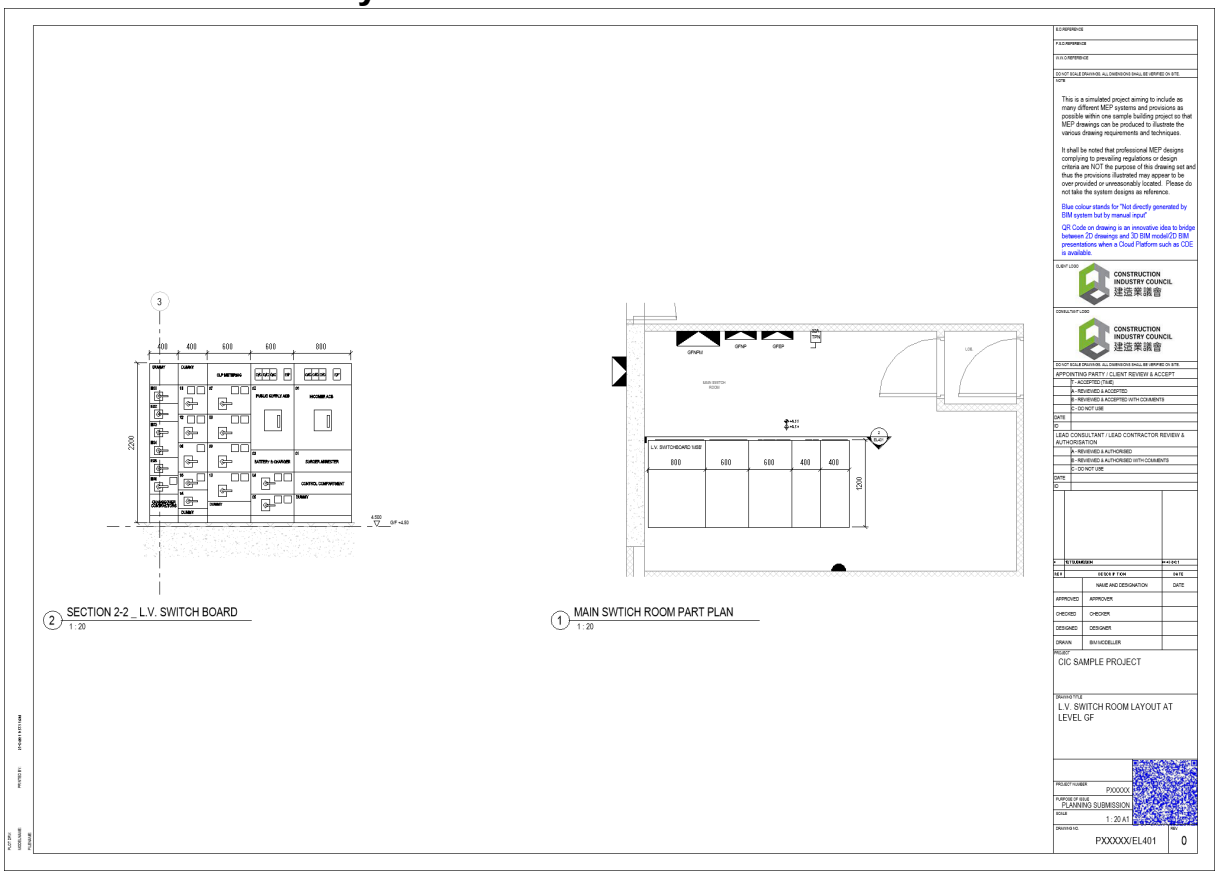


# 11.8.Transformer Room / LV Switch Room Inspection

## Transformer Room Layout at Level GF

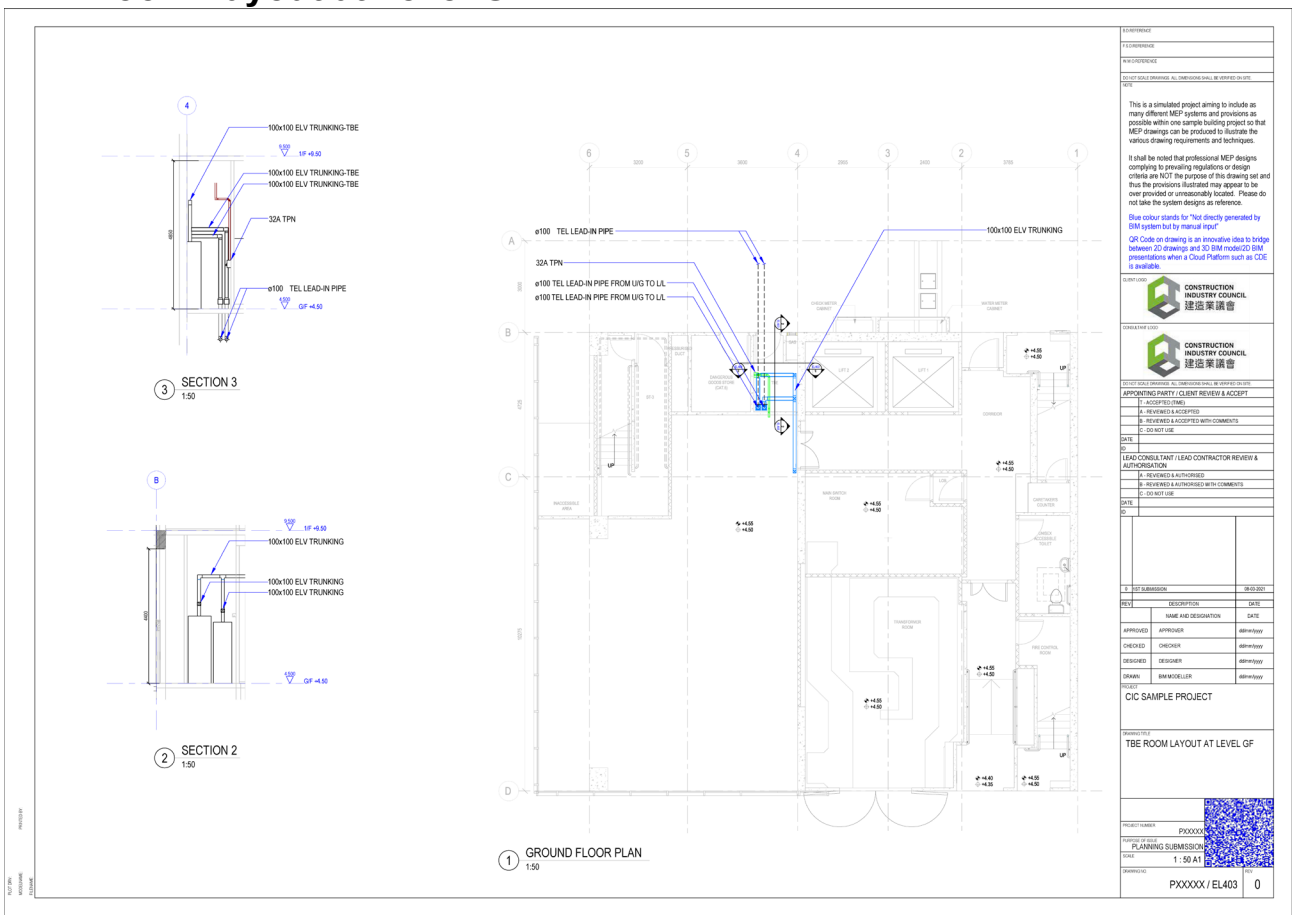



## L.V Switch Room Layout at Level GF



# 11.9.Telecommunication

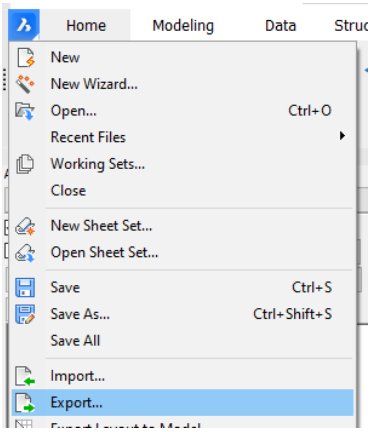
## TBE Room Layout at Level GF

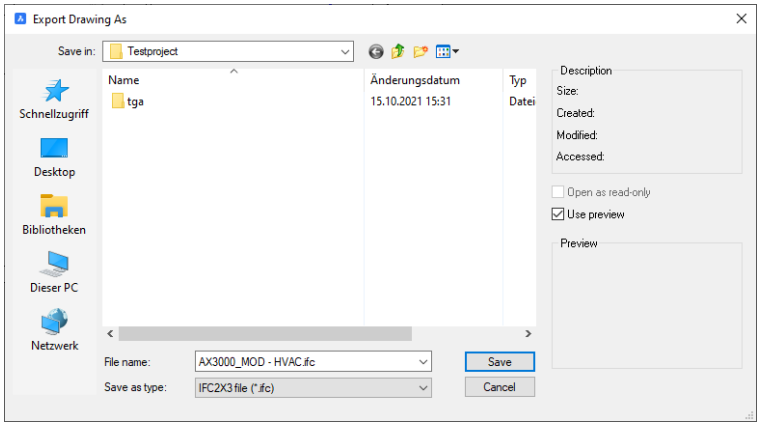


# 12 Exporting Models as Deliverables

## 12.1. Exporting 3D models as Industry Foundation Classes (IFC)

Users can export the DWG Model model to IFC format. The IFC file format is a platform-neutral format used to allow interoperability between industry BIM programs. The IFC Interface is a part of BricsCAD BIM. A BIM License is needed to export.



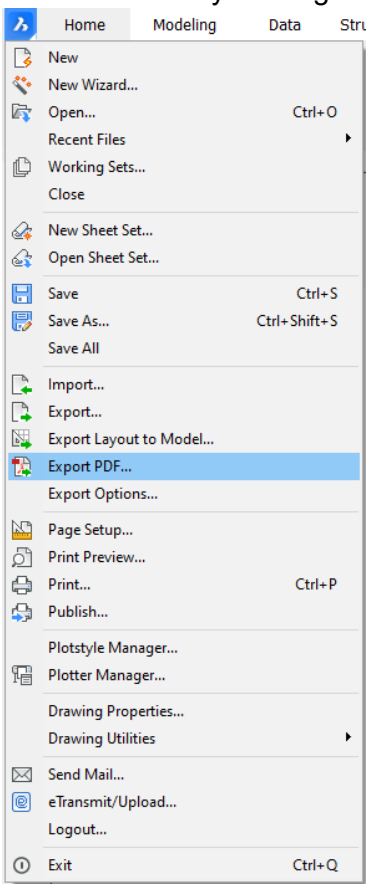




You can decide between IFC 2x3, IFC 4 and IFC 4x1.

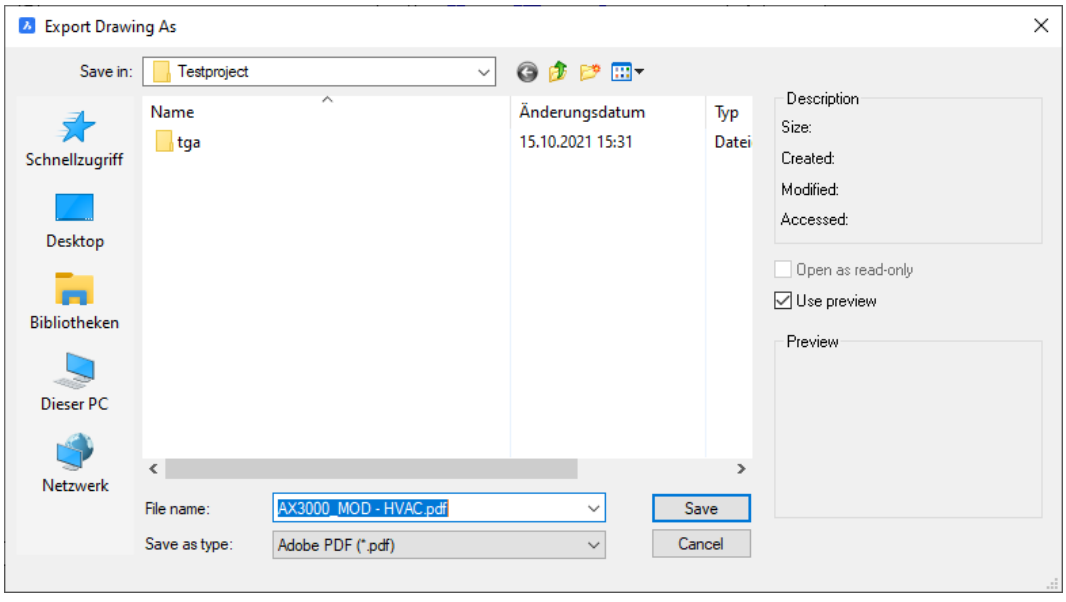
## 12.2. Exporting 2D models as PDF

Publishing to 2D pdf files creates an easy-to-use file. The layer structure remains and can be used as well in the exported file.

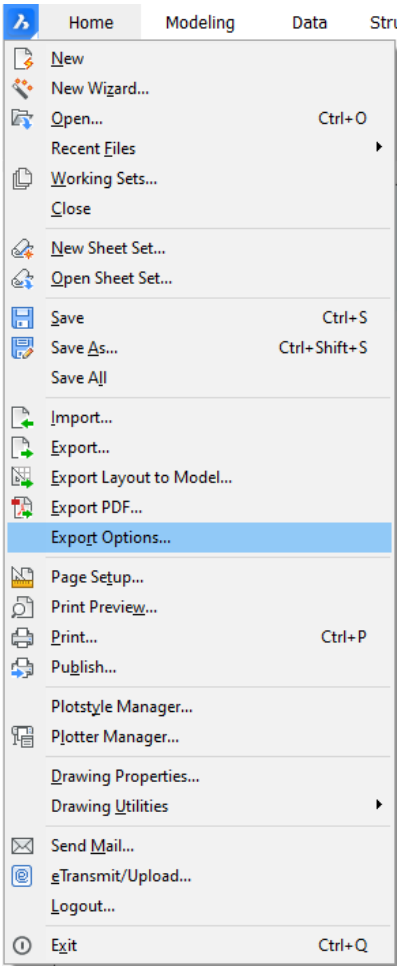
This can done by clicking into File > Export PDF

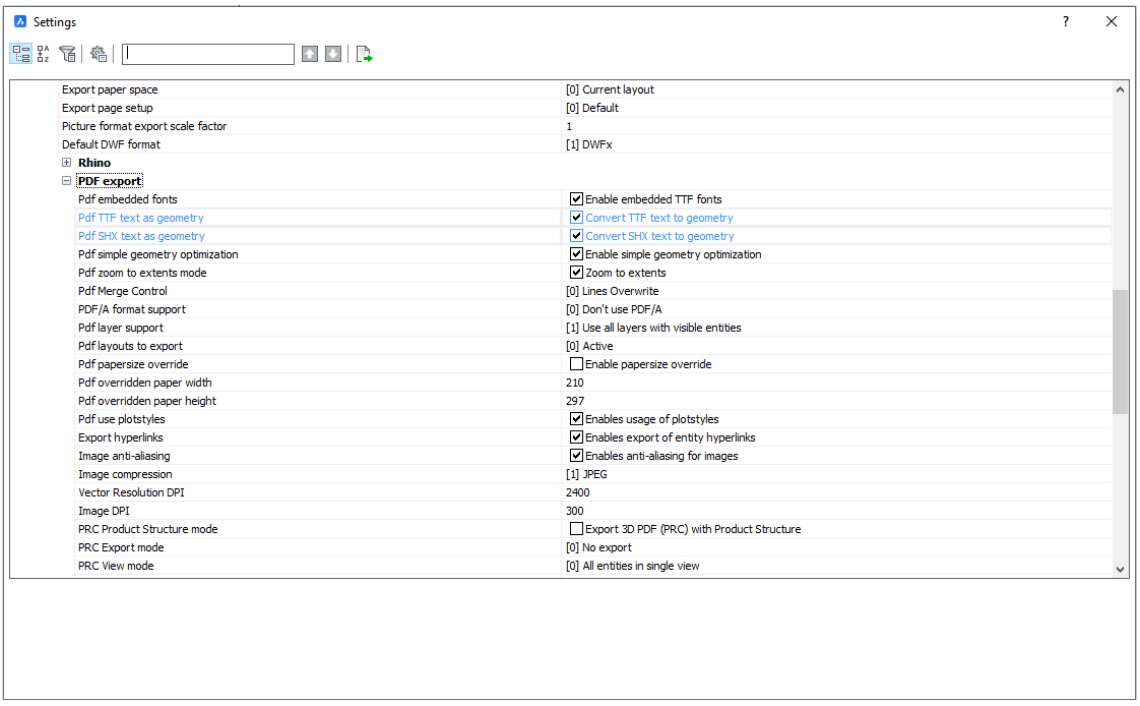


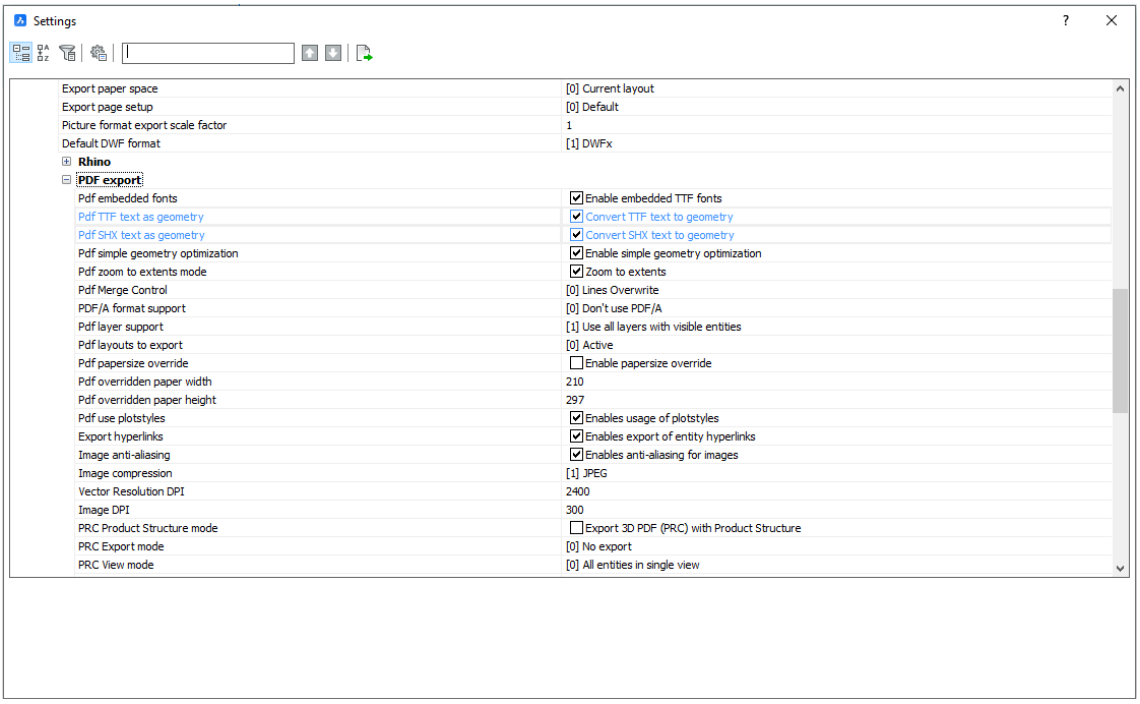

1. Select a folder to save the PDF file.
2. Type a name in the File name field to replace the default <DRAWING_NAME>.pdf name.
3. Click the **Save** button to create the PDF.



If you wish to adjust settings for PDF Export, this can be done through the Settings by clicking into File > Export Options.




Settings
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Export page setup
[0] Default
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Default DWF format
[1] DWFx
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Enable simple geometry optimization
Pdf zoom to extents mode
Zoom to extents
Pdf Merge Control
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PDF/A format support
[0] Don't use PDF/A
Pdf layer support
[1] Use all layers with visible entities
Pdf layouts to export
[0] Active
Pdf papersize override
Enable papersize override
Pdf overridden paper width
210
Pdf overridden paper height
297
Pdf use plotstyles
Enables usage of plotstyles
Export hyperlinks
Enables export of entity hyperlinks
Image anti-aliasing
Enables anti-aliasing for images
Image compression
[1] JPEG
Vector Resolution DPI
2400
Image DPI
300
PRC Product Structure mode
Export 3D PDF (PRC) with Product Structure
PRC Export mode
[0] No export
PRC View mode
[0] All entities in single view

# 13 Reference


1. **Bricsys**
   - BricsCAD BIM Training (updated for V21)

2. **EDV-Software-Service GmbH & Co KG**
   - Step by Step TUTORIAL AX3000 ACAD/BricsCAD (2020)

*Feedback Form*

## CIC User Guide for using BIM in Generation of MEP Digital Drawings for Statutory Submissions – BricsCAD

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| **Useful** | ❑ | ❑ | ❑ | ❑ | ❑ |
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**Construction Industry Council**

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