Appendix E – Best Practices for BIM Modelling

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1.   INTRODUCTION

This appendix outlines the best practices for BIM modelling in EMSD context. While the standard of BIM files upon completion have been described in the latest the BIM-AM Standards and Guidelines (thereafter referred to as BIM-AM SG), Contractors may refer to this appendix for step-by-step instructions and suggestions on how to author BIM objects, set up BIM models, author BIM models, handover BIM models, and upgrade BIM models.

2.   BIM OBJECTS

BIM objects from the BIM Object Library of the CIC BIM Portal should be used as far as practicable. If authoring new BIM objects is necessary, existing objects from the CIC BIM Portal should be used as the basis if applicable, and LOD-G can be simplified or enhanced to meet the project requirement, while LOD-I should be preserved. Altered object shall be renamed after the Originator (author or latest modifier of the object as identified by DEVB Agent Responsible Code (ARC) or EMSD-assigned code). It is encouraged to submit newly developed objects to the CIC Object Library. Refer to BIM-AM SG for details.

The following principles should also be observed.

2.1   Nested Objects

A BIM Object may be comprised of several BIM objects, with each component modelled under the appropriate category as far as practicable. The individual objects can be shared or not shared by the host objects. Object nesting may be required when families need to perform the following tasks:

- Object array or stacking

- Displaying text or hatching region

- Make On/Off editing function more efficient

- Scale families that do not typically scale

- Minimise file size by avoiding grouping or copying elements

However, it is important to note that attributes within nested objects cannot be exported into the AIMP system. For example, the LV switchboard shown below would have to be represented by at 7 different object elements and individually loaded to project so that the asset data of each asset can be exported.

Figure 2-1 Example of nested object which is NOT applicable for LV switchboard installation
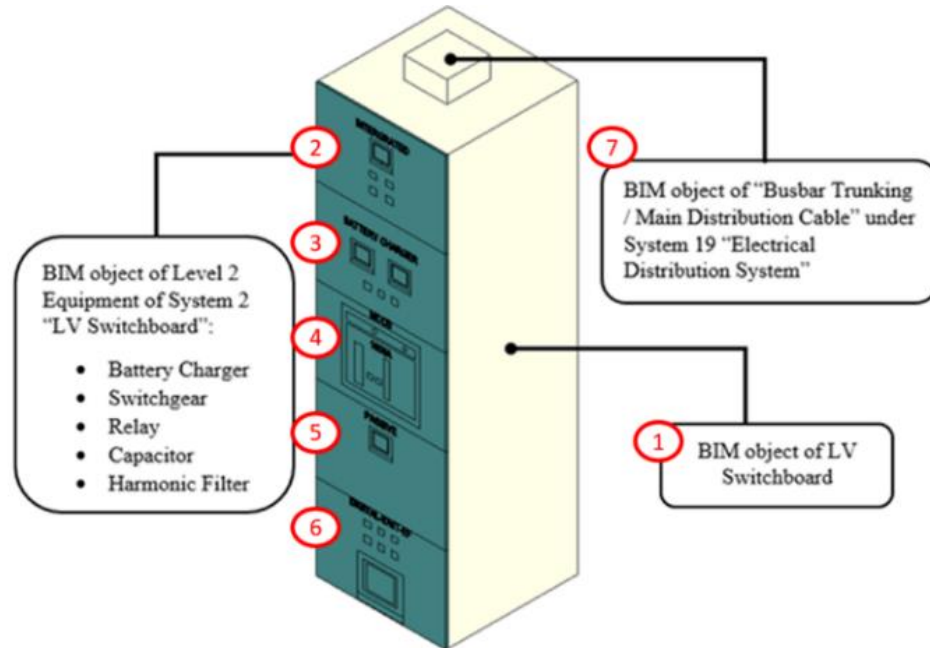
In accordance with BIM Harmonisation Guidelines for WDs, information owners should be consulted on whether nested BIM object (which contains multiple BIM objects) are allowed. If nested BIM object must be authored, all contained BIM object should be from the same category.

2.2   Detail Level of Objects

BIM Objects can be displayed at different detail levels to represent detailed elements for different stages. For example, a pump may be shown as a simple cylindrical shape in the design stage but separated parts may be added in the construction stage. The blow-up details can be displayed in more detail level as shown below.

Figure 2-2 shown as Medium in Detail Level
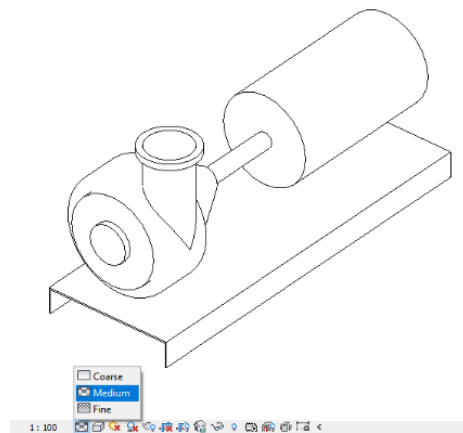
Figure 2-3 Object shown as Fine in Detail Level
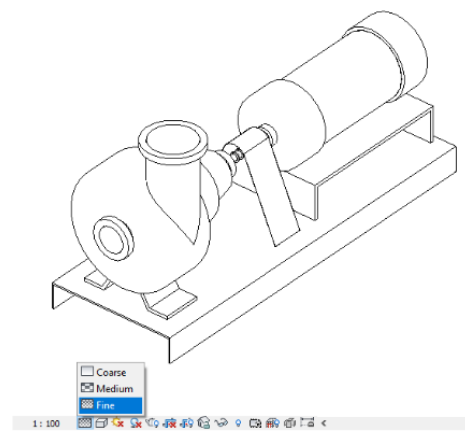
Figure 2-4 Pipework shown as Medium in Detail Level
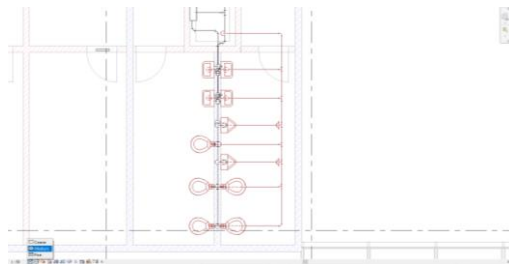
Figure 2-5 Pipework shown as Coarse in Detail Level
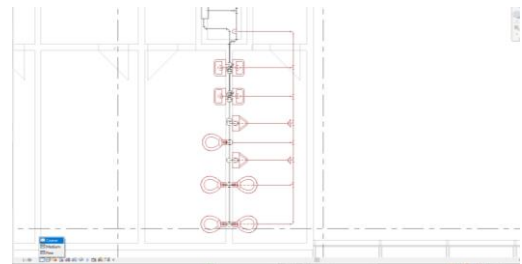
Figure 2-6 Smoke detector shown as Medium in Detail level
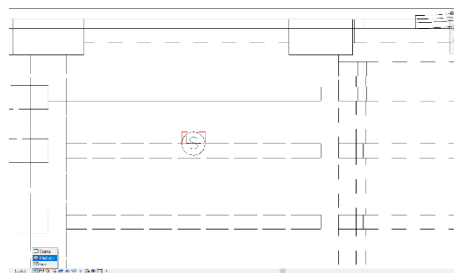
Figure 2-7 Smoke detector shown as Coarse in Detail level
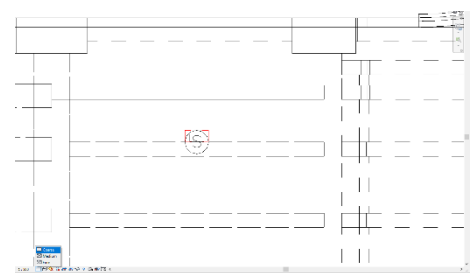
Figure 2-8 Sprinkler shown as Medium in Detail level
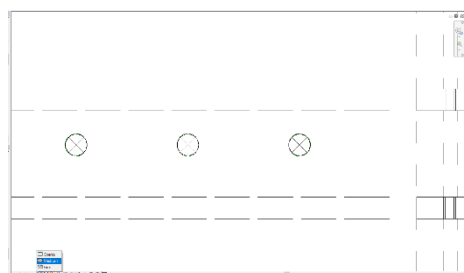
Figure 2-9 Sprinkler shown as Coarse in Detail level
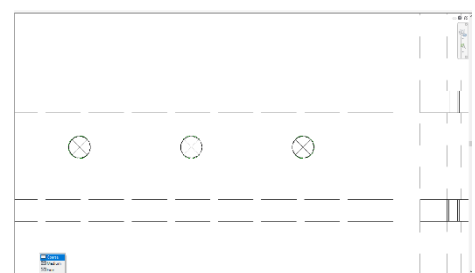
Figure 2-10 Family Element Visibility Settings in Fine Level
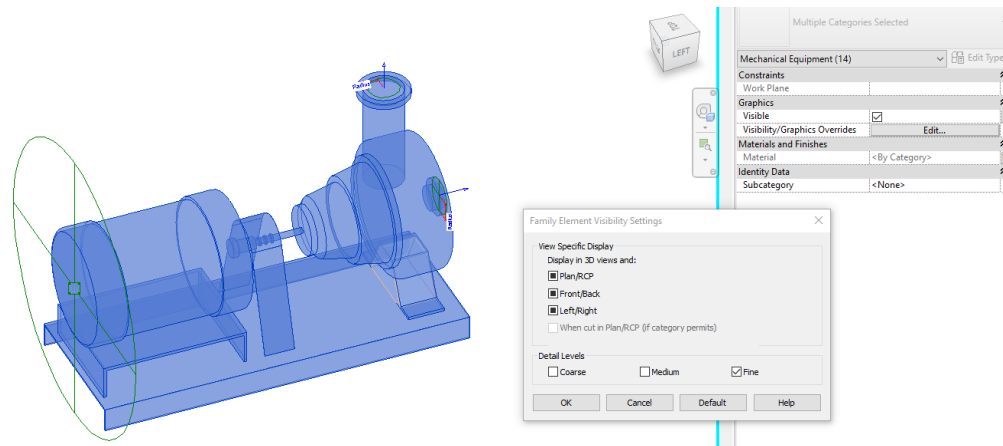
Figure 2-11 Family Element Visibility Settings in Medium Level
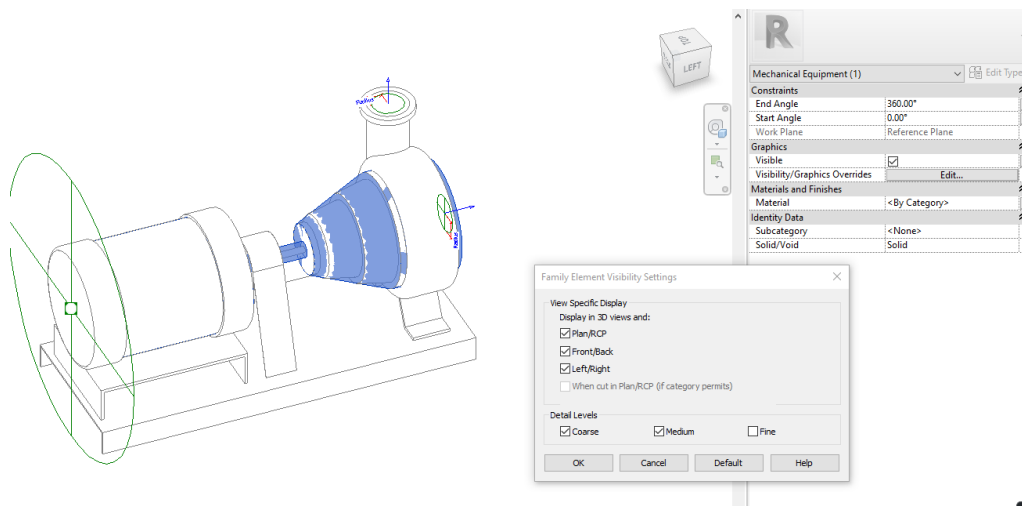
2.3   Modelling of Maintenance and Clearance Space

Clearance spaces for operation and maintenance purposes should be modelled in equipment BIM objects, as it would be taken into consideration during the design and construction phases. Two methods are suggested as follows:

Method 1

The visibility of clearance space of the BIM object can be turned on and off as parameter as shown below in figures.

Figure 2-12 Type Properties Settings
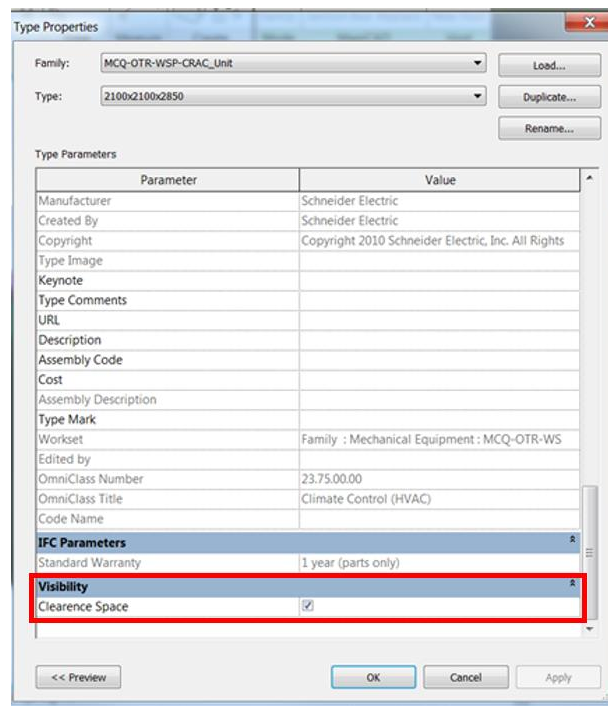
Figure 2-13 Clearance space with visibility "ON"
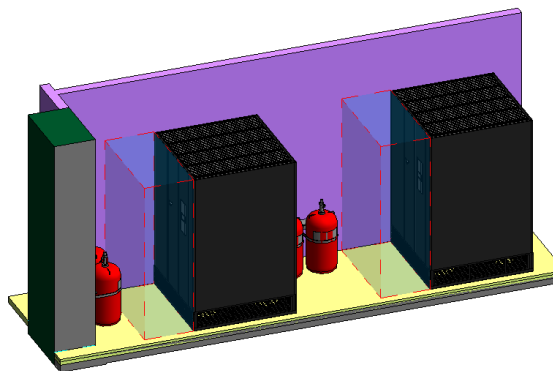
Figure 2-14 Clearance space with visibility "OFF"
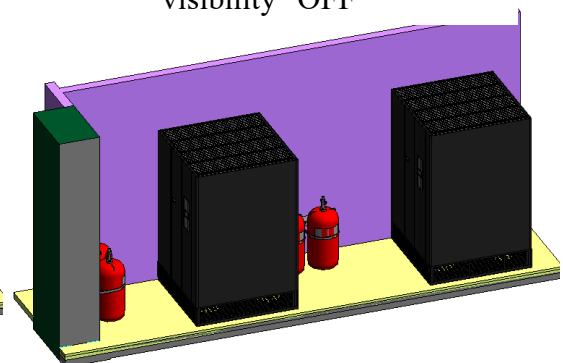
2.3.2   Method 2

Alternatively, subcategories can be used to control the visibility of clearance spaces. The clearance solids can be assigned a subcategory in the family editor and its visibility can be turned on/off in the project view visibility/graphics.

Figure 2-15 Setting clearance space in subcategories
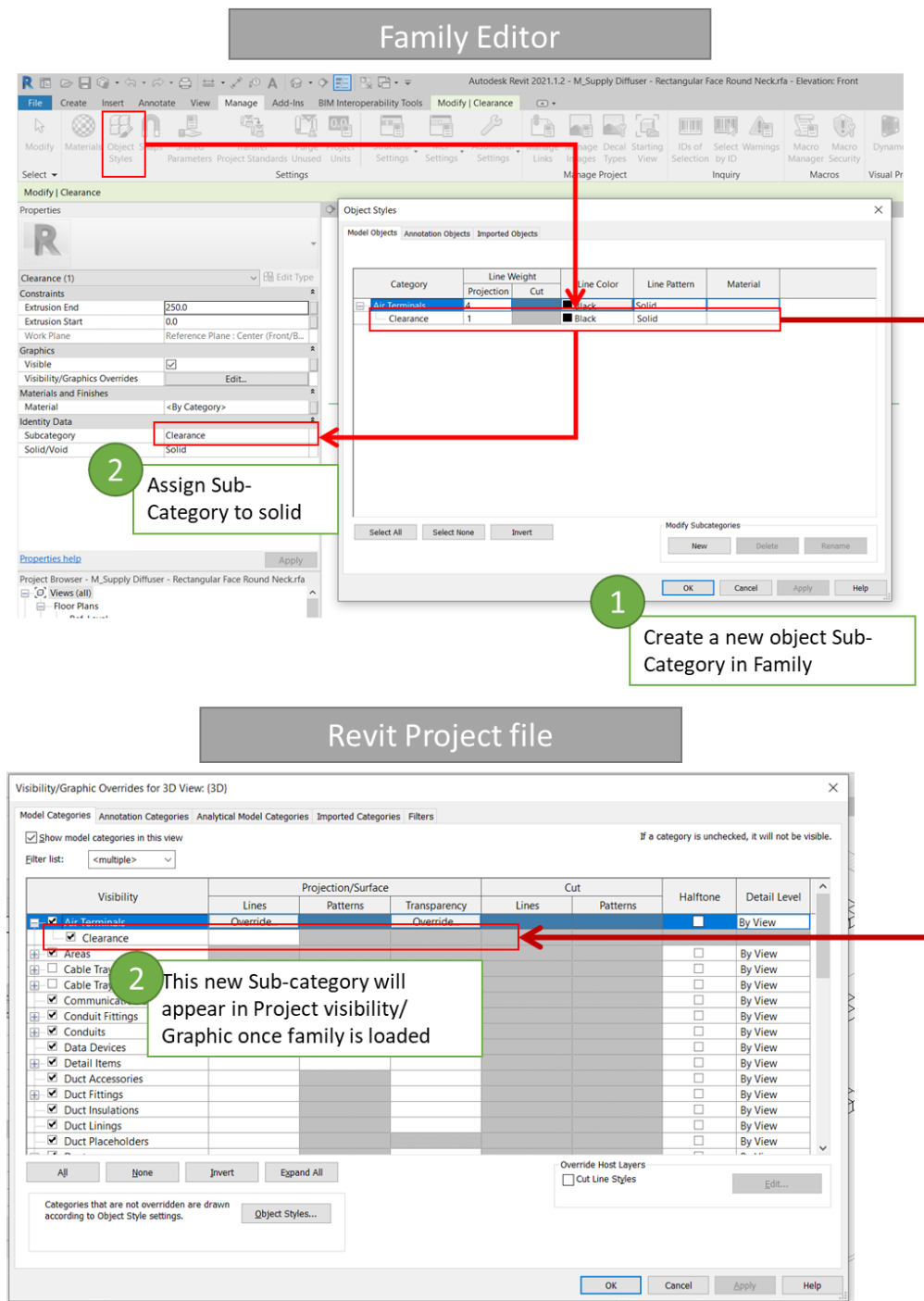
3.   ARCHITECTURAL BIM MODELS

3.1   Architecture Model Setup and Zone Creation

Room or Space should be created with labels in as-built architectural models for zone tagging assignments. Ceiling voids and raised floor voids should be included when defining the room or space in architectural model, if applicable, so that the parameter of "zone tag number" of each E&M object can be automatically filled by the AM system. Alternatively, manual input of "zone tag number" to BIM model is also acceptable.

Reflected ceiling plans showing the location of access panels for E&M services should also be included in architectural models.

To verify the area of each zone tag number of one storey, space would be added to rooms and particular areas. Space should be bounded by wall, ceiling, and floor. The basic elements of architectural model are described in the sections below.

3.1.1   Architectural Elements Modelling

The following objects within architectural model should be modelled for the operation of BIM -AM systems which include:

- Wall thickness and height, which is required for routing of main services, the location of mounting E&M equipment, wall penetrations, and fire stopping.

- Ceiling, which is required for the HVAC diffusers, electrical equipment locations, and routing of services with openings for lighting system.

Spatial analysis sequence should follow: Room Boundary → Space → Place Space → Room Calculation Point → Additional model text in space.

Space would be formed by wall, ceiling, and floor, but it would not form by ramp. The space can be either bounded, semi-bounded, or unbounded area.

Table 3-1 Basic Definition of Area

Area	Definition
Bounded Area	Bounded Area are bounded by room-bounding components such as wall, curtain wall, curtain systems, columns, roofs, floors, and room/room separation lines.
Semi-bounded Area	Semi-bounded Area are not fully bounded by room-bounding components.
Unbounded Area	Unbounded Area are some open areas without any room-bounding components.

3.1.2 Procedures of Creating Space for Architectural Models

Figure 3-1 Procedures of creating space
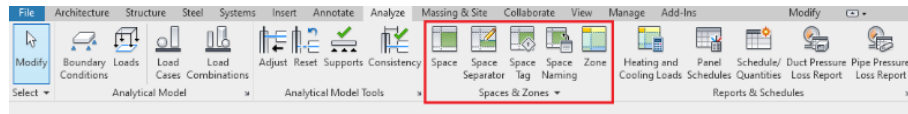
1. Open a view for BIM author to place a space.

2. Click the Analyze tab → Space and Zone Panel → Space

3. Specify the parameter for the space on the options bar.

4. Move the cursor into drawing area and click to place the space.

5. Continue placing spaces or click Modify.

6. To check room-bounding elements, click Modify and Place Space Tab → Space Panel → Highlight Boundaries. (All room boundaries would be highlighted in gold and display as warning. To further check with those do not display in current view, click Expand in the waring dialog. To remove and exit from the warning box, click Close.)

3.2 Room Modelling

3.2.1 Preparation before Creating Space

Multiple spaces may exist in the same physical room or under the same ceiling with different level heights.

For example, in Figure 3-3: -

Extra levels should be added between 4/F to ceiling (named 4/F Middle Level) and ceiling to 5/F (named 4/F Plenum).

Due to the various height of ceiling, the gap between ceiling to 5/F would be different.

Figure 3-2 Sample of Level Settings
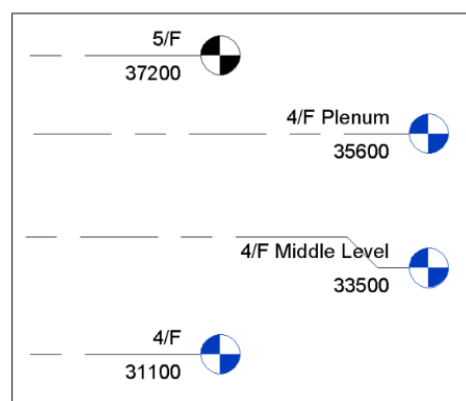
In the modelling process, 4/F Plenum should cover most of the gap, or more levels should be added.

1. Open a view in which BIM author want to set the level.

2. Click the Datum tab, and then click Level.

3.2.2   Creating Room Calculation Point

To get the correct room information calculated into the location data of asset, room calculation point for assets should be modified. To modify room calculation point of an asset, refer to following settings:

1.   Select the Family instance and Click "Edit Family".

2.   The Family Edit View shows up and check the Room Calculation Point checkbox to show calculation Point

3.   Select the Room Calculation Point in the view and move it to a relevant location for getting the room/space information of the asset. In general, the room calculation point should fall into the geometric centre. For some wall-mounted elements such as hose reel, fire alarm, sensors, the calculation point may need to be closed to inner side against the wall side.
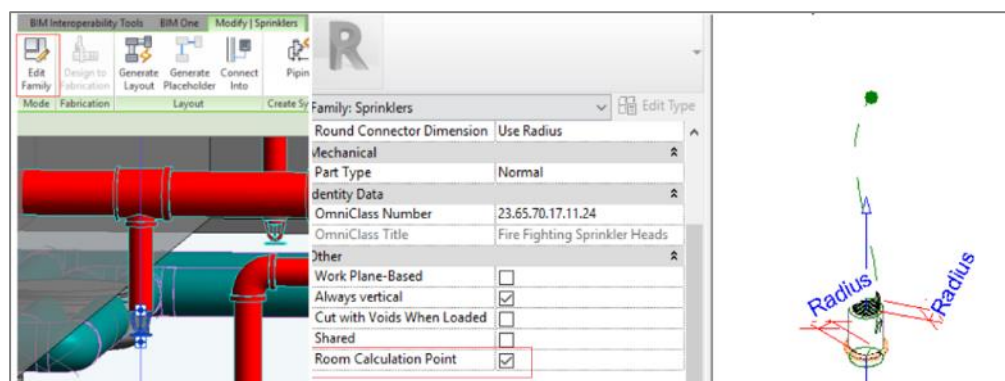
4.   After the setting is completed that can load back into the project.

Figure 3-3 Demo of families settings

3.2.3   Additional Model Text in Space

A Model Text should be added to the centre of each room/ space. The Model Texts should be added to the Architectural Model File and placed in an empty area inside the room which located away the walls or other physical objects inside the room. A new shared parameter "Room Point Name" should be added for the Model Texts with the Space Name. The purpose of model text in space which act as 3D annotation in view. And it is an optional modelling approach. Details please refer to the following guidelines for steps to add Model Text:

1.   For each space, create a Model Text with Text size = 50.0
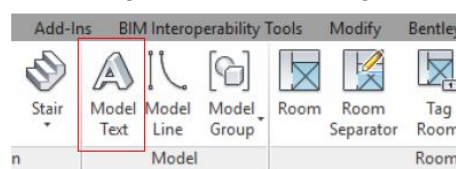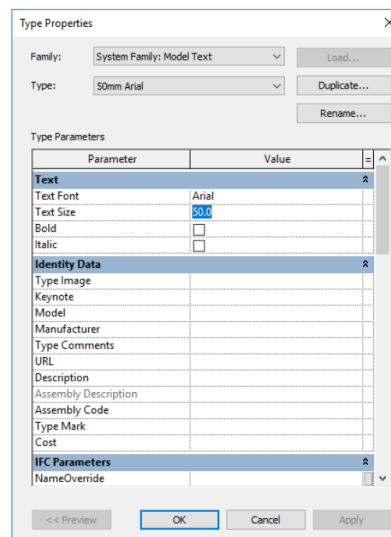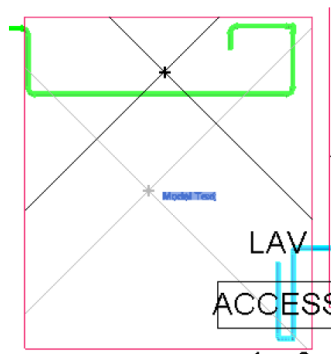
Figure 3-4 Text Settings
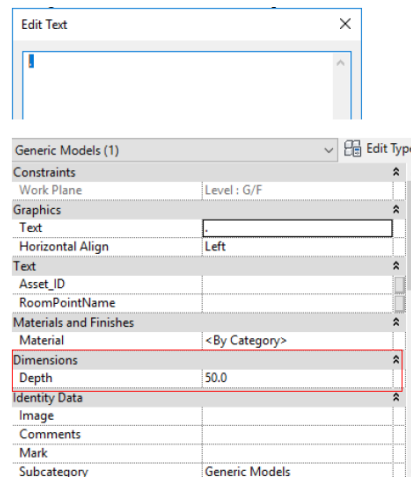
Figure 3-5 Type properties settings

2.   Place the Model Text at height level of roughly 1300mm in an empty area inside the room away from walls or other objects inside the room.

Figure 3-6 Text settings

3.   Change the text to a "." and set Depth Dimension = 50.

Figure 3-7 Text settings

4. E&M BIM MODELS SET UP

4.1 Level of Development

Referring to the CIC BIM Standards for Mechanical Electrical and Plumbing, separate LOD requirements exist for graphical representation (LOD-G) and LOD for LOD-Information (LOD-I).

4.1.1 LOD for Graphical Representation (LOD-G)

BIM objects shall be created at a suitable LOD-G based on project requirement, BIM software limitations, and common modelling practices. For BIM-AM operation, the recommended LOD-G is 300 and its definition is explicitly explained in the CIC BIM Standards.

The BIM object for asset management shall have the dimensional accuracy not more than ±150mm.

4.1.2 LOD for Information (LOD-I)

Common parameters as specified in the Appendix B of the BIM-AM SG shall be created under project parameter. Whilst, specific parameters should be created under each individual BIM object to ensures the asset data being clean and neat during the information exchange between BIM models and asset management system.

EMSD has developed a Model Checker Plugin to facilitate Contractor in identifying LOD-I non-compliance issues. The Contractor shall liaise with EMSD for the installation package of the plugin and the usage of this plugin is optional. Refer to Section 9 of this Appendix E for the user guide of the plugin.

4.1.3 Major E&M Objects Creation

BIM object creation principles outlined in this section are based on Revit but also applicable to other BIM software. This section briefly explains the basic modelling approach of some major E&M objects.

Level 1 Equipment/Systems refers to major E&M systems based on EMSD's asset data templates as specified in BIM-AM SG.

Level 2 Equipment should be modelled as BIM objects and loaded into project model. The advantage of using a project model is the ability to export the COBie schedule of Level 2 Equipment and the number of BIM objects can be counted correctly within the project. The level of equipment should be defined by Contractor and further confirmed by project engineer.

The subsequent sections contain object hierarchies, components and prevalent formats for major E&M objects.

4.1.4   Object Creation-LV Switchboard

Object Hierarchy and Components
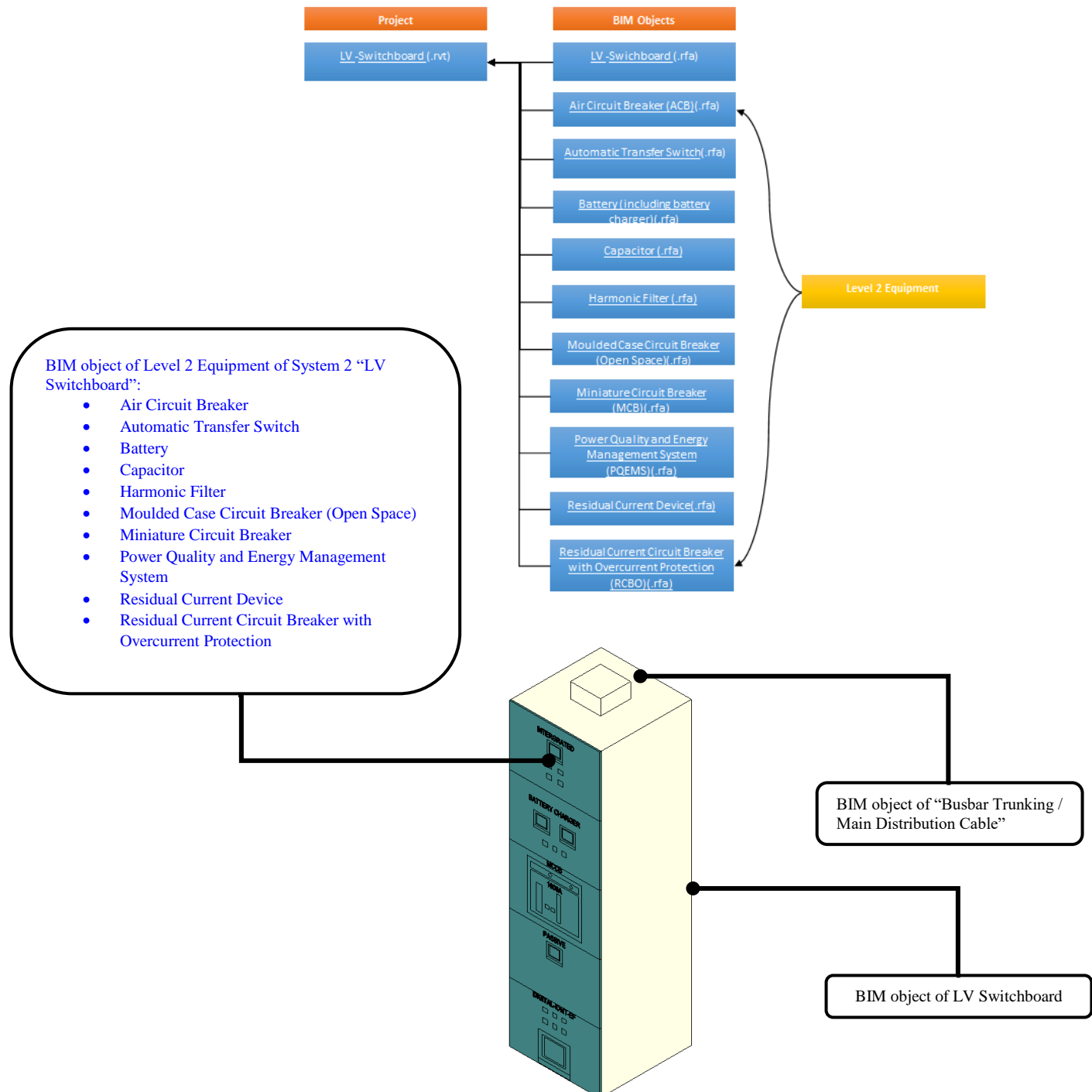
Figure 4-1 Object hierarchy for LV Switchboard

BIM object of Level 2 Equipment of System 2 "LV Switchboard":
- Air Circuit Breaker
- Automatic Transfer Switch
- Battery
- Capacitor
- Harmonic Filter
- Moulded Case Circuit Breaker (Open Space)
- Miniature Circuit Breaker
- Power Quality and Energy Management System
- Residual Current Device
- Residual Current Circuit Breaker with Overcurrent Protection

BIM object of "Busbar Trunking / Main Distribution Cable"

BIM object of LV Switchboard

Table 4-1 Typical components for LV Switchboards

Equipment Level	Components	Model Format
Level 1	LV Switchboard	.rfa
Level 2	Individual BIM Object: • Air Circuit Breaker • Automatic Transfer Switch • Battery • Capacitor • Harmonic Filter • Moulded Case Circuit Breaker (Open Space) • Miniature Circuit Breaker • Power Quality and Energy Management System • Residual Current Device • Residual Current Circuit Breaker with Overcurrent Protection	.rfa
	Main Distribution Cable (Incoming/ Outgoing)	.rfa

4.1.5   Object Creation-Air Handling Unit (AHU)

Object Hierarchy and Components

Figure 4-2 Object hierarchy for AHU
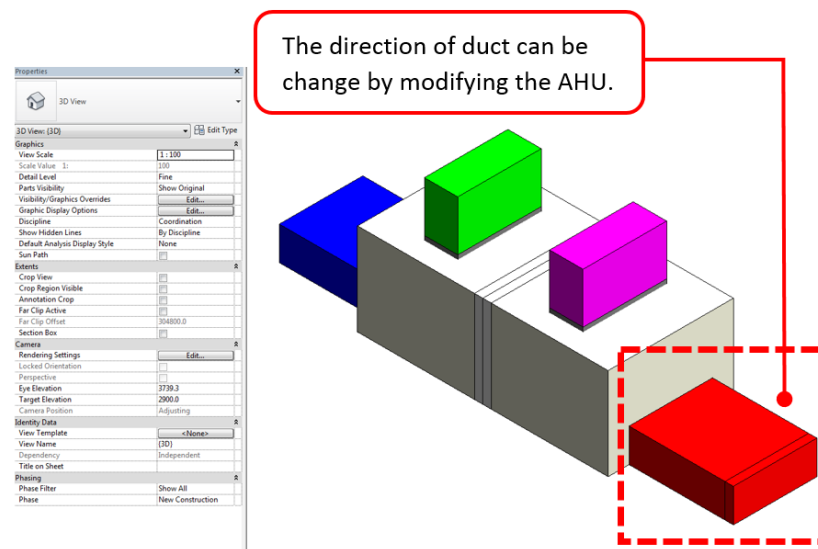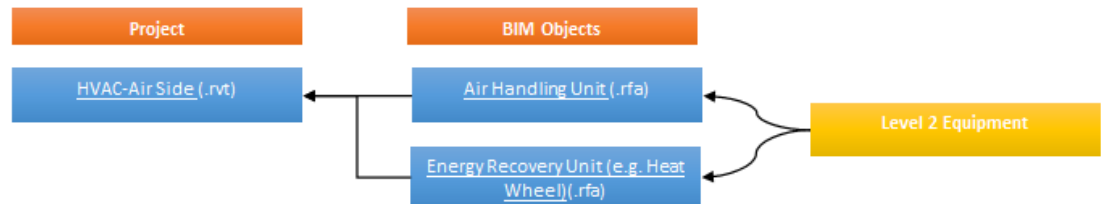
Table 4-2 Typical components in AHU

Equipment Level	Components	Model Format
Level 1	HVAC System-Airside System	.rvt
Level 2	AHU Body	.rfa
	Individual BIM Object: • Heat Exchange Wheel	.rfa

4.1.6   Object Creation-Emergency Generator

Object Hierarchy and Components

Figure 4-3 Object hierarchy for Emergency Generator
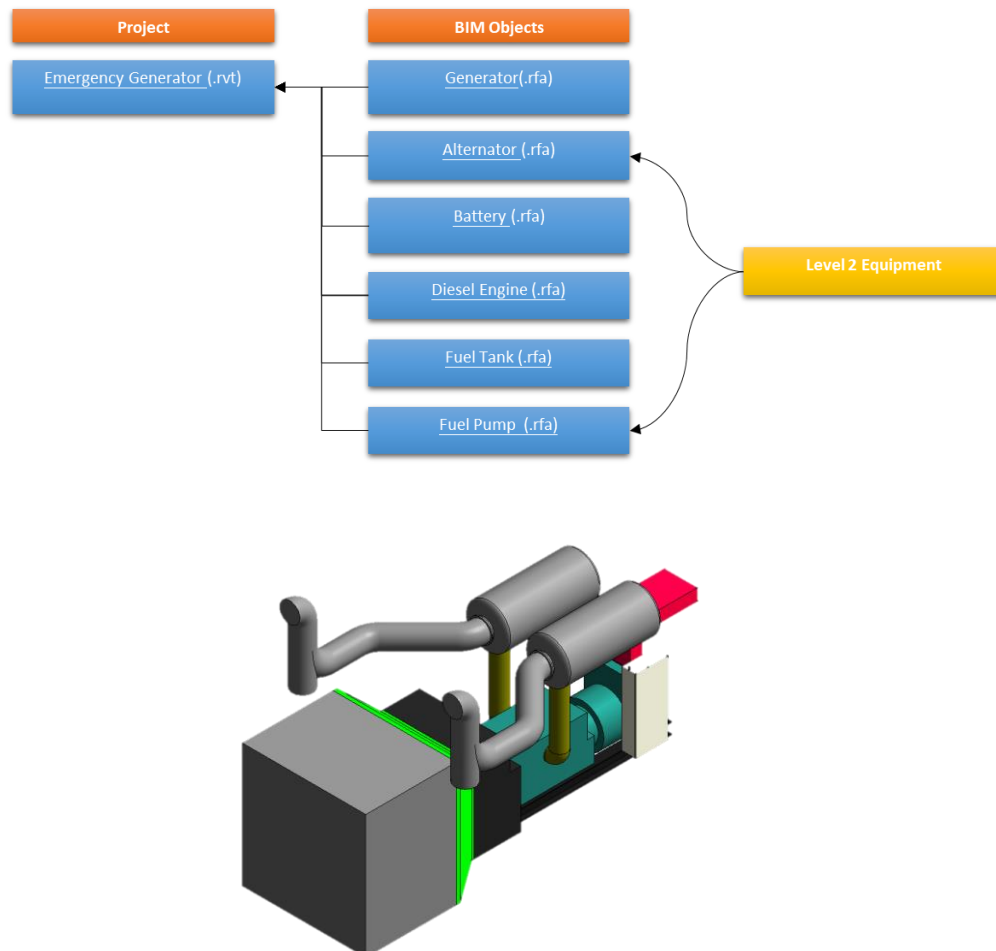
Table 4-3 Typical components in Emergency Generator

Equipment Level	Components	Model Format
Level 1	Emergency Generator	.rfa
Level 2	Individual BIM Object: • Alternator • Battery • Diesel engine • Fuel Tank • Fuel Pump	.rfa

4.1.7   Object Creation-Drop-arm Barrier

Object Hierarchy and Components

Figure 4-4 Object hierarchy for Drop-arm Barrier
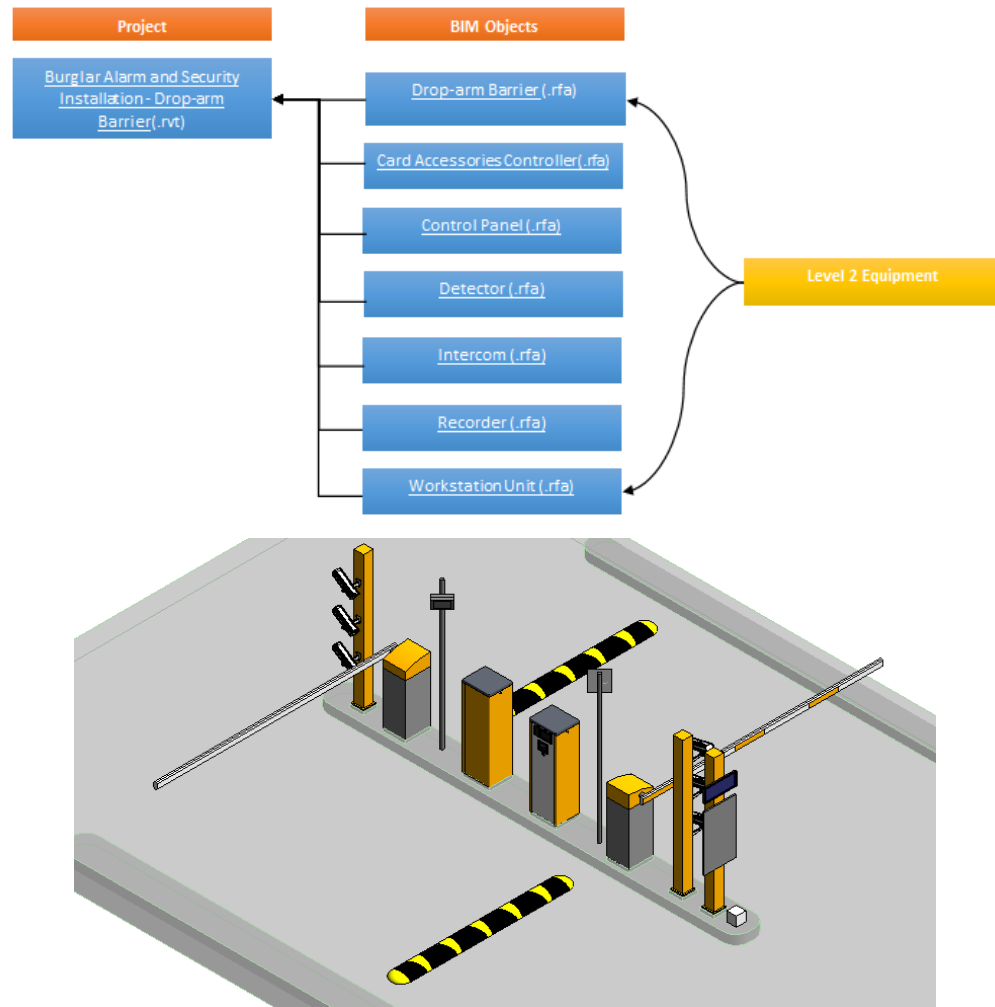
Table 4-4 Typical Components for Drop-arm Barrier

Equipment Level	Components	Model Format
Level 1	Burglar Alarm and Security Installation - Drop-arm Barrier	.rfa
Level 2	Individual BIM Object: • Barrier Gate • Card Accessories Controller • Control Panel • Detector • Intercom • Recorder • Workstation Unit	.rfa

4.1.8   Object Creation-Electronic Devices on Rack Cabinet

Object Hierarchy and Components for electronic systems and the example of close circuit TV system is shown as follows.

Figure 4-5 Object hierarchy for Close Circuit TV System
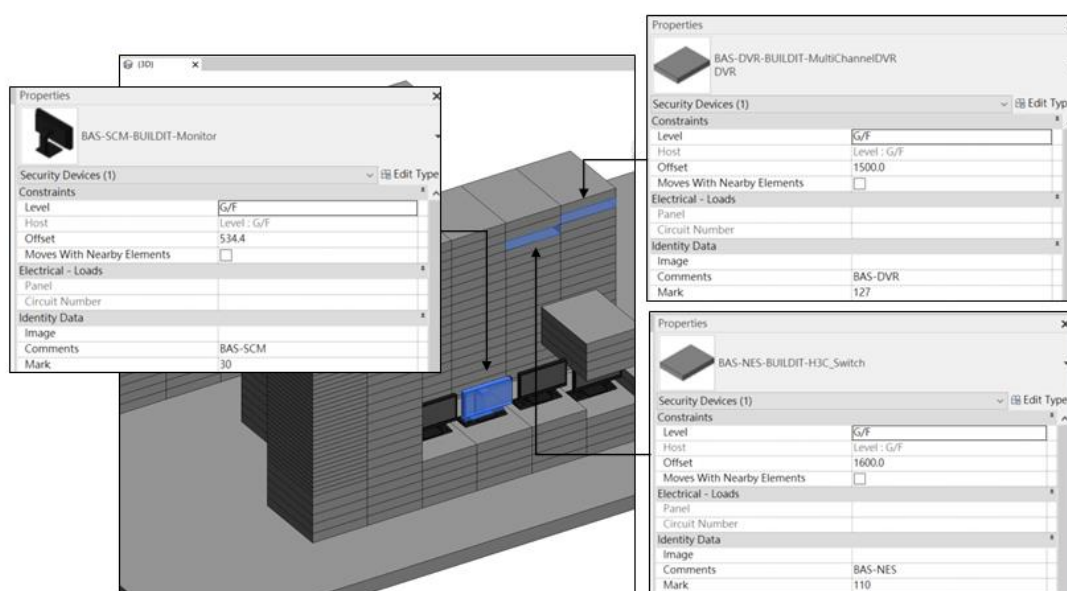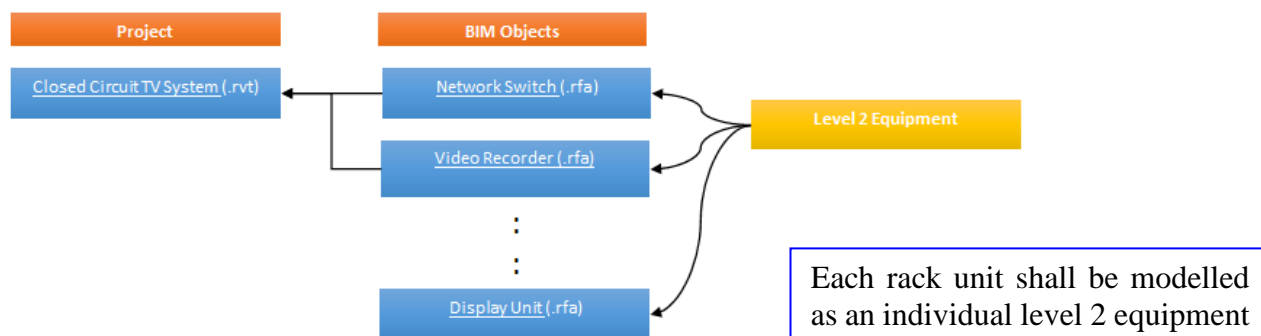
Table 4-5 Typical Components for Close Circuit TV System

Equipment Level	Components	Model Format
Level 1	Closed Circuit TV System	.rvt
Level 2	Individual BIM Objects in rack cabinet: • Display unit • Network switch • Video Recorder, e.g. DVR	.rfa

4.2   Multi-trade Integrated MEP (MiMEP)

MiMEP which is a key trend in current construction industry. There are several modelling methodologies for modular unit in which nested object is not preferable option for major E&M equipment under asset management. Figures shown some typical examples for MiMEP application.

Figure 4-6 Integrated Air-Handling Unit   Figure 4-7 Modular Pump Set with
                                                            Control Panel
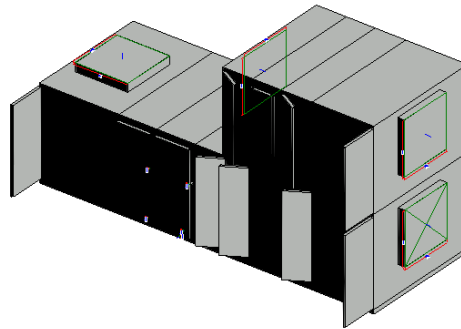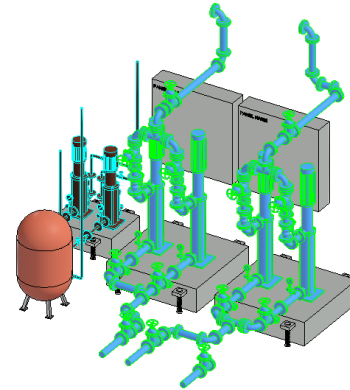
Figure 4-8 Multi-trade horizontal services module
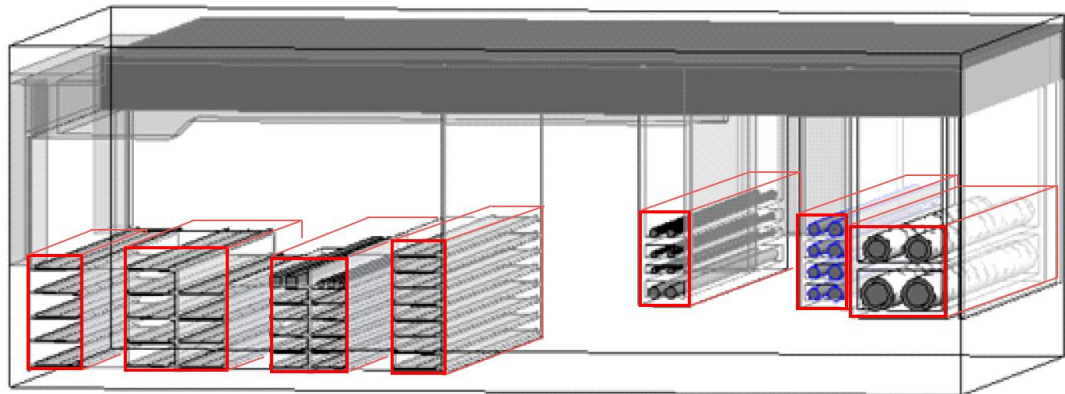
Based on the purpose of asset management, it is suggested that individual BIM objects shall be created for each project model as classified in Appendix G. Each separated asset shall input with relevant asset parameter as specified in Appendix B.

4.4   System Setup and Presentation Style for E&M System

4.4.1   Duct System

Each system should contain the following settings:

Figure 4-9 Duct System Settings
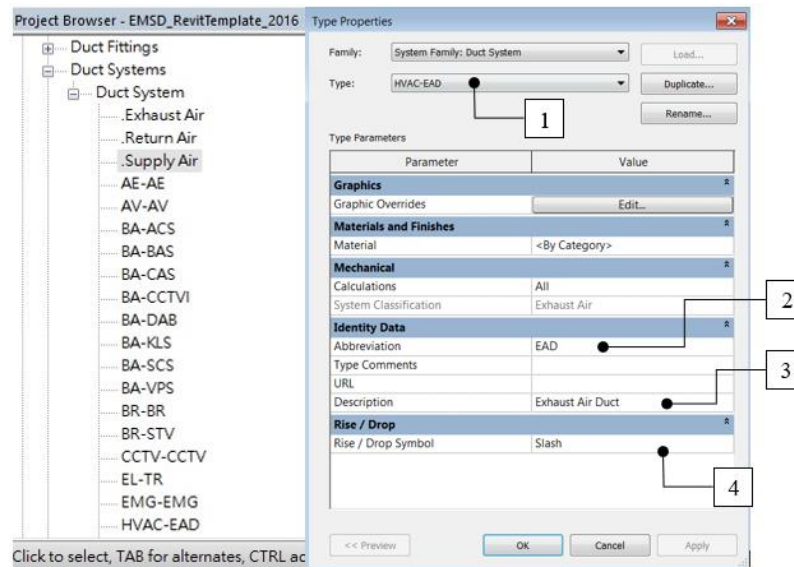
As there are no trunking objects in the software, it is recommended to use duct with specific duct system to represent trunking system. For trunking serving combined ELV system, the service type should be "ELV".

4.4.2   Pipe System

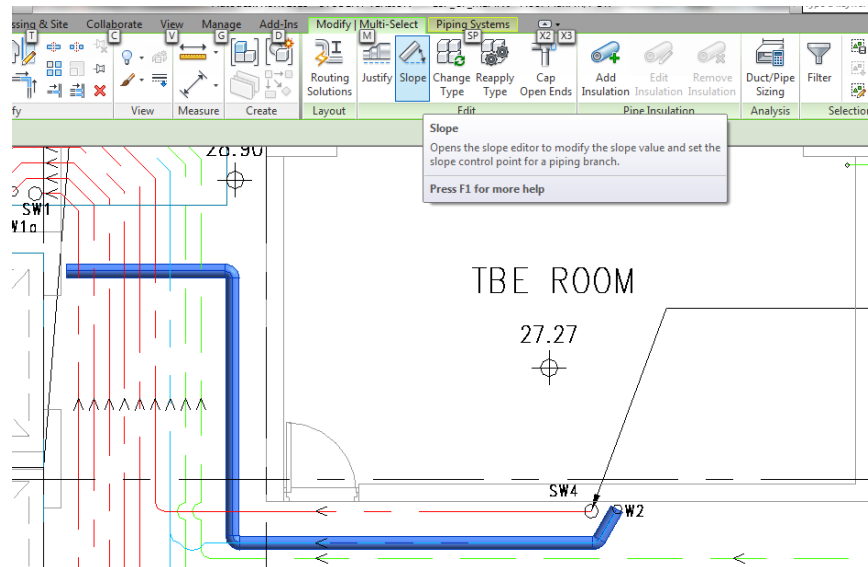Pipe systems should be created in the BIM project. Each system should contain the following settings:

Figure 4-10 Pipe System Settings
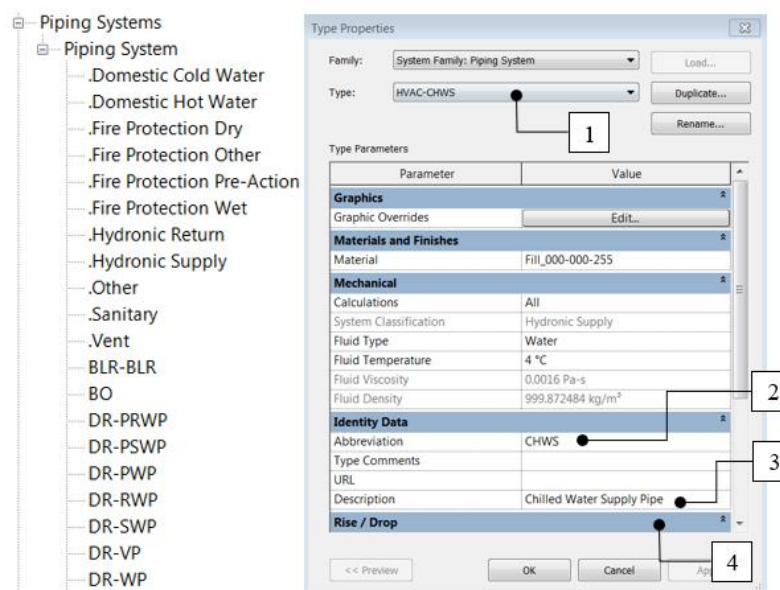
Sloped pipe can be created from the following steps:

1.   Select the pipe and click "slope"

Figure 4-11 Slope Pipe Settings

2.   Select the slope value and click "finish"

Figure 4-12 Settings of slope value
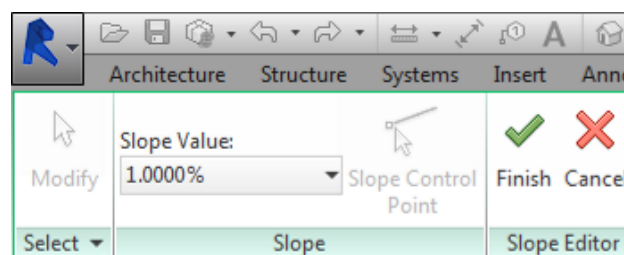
4.4.3   Cable Tray

To model a cable tray, the sub-system code should be inputted in the "Service Type" field under cable tray.

Figure 4-13 Settings of cable tray
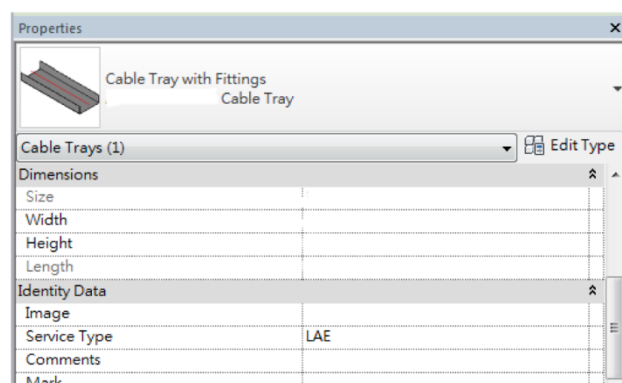
4.5   Adjusting CSD Model

Below are some tips on using Revit's "Spilt Element" function to resolve a clash by re-routing one system around another.

1.   Find clashes in plan or section.

Figure 4-14 Demo od adjusting CSD model
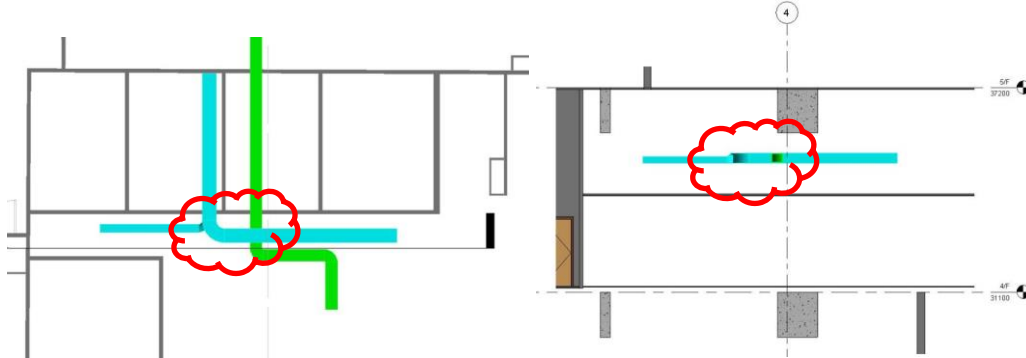
2.   Select "split element" function and click "delete inner segment".

Figure 4-15 Setting of adjusting mocdel
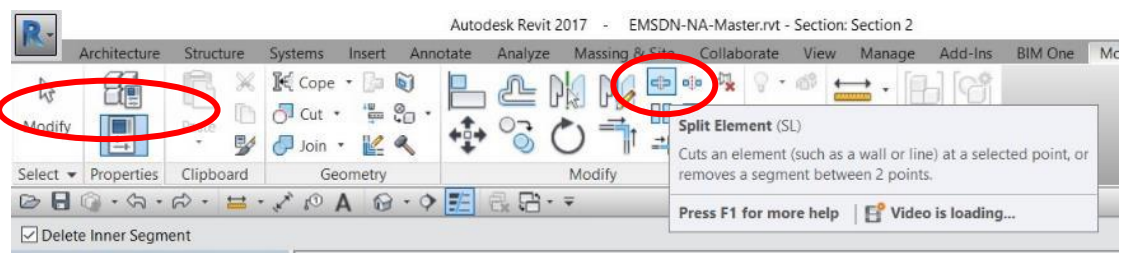
3.   Split the trunking and delete the fitting at the end point.

Figure 4-16 Demo of solving clash
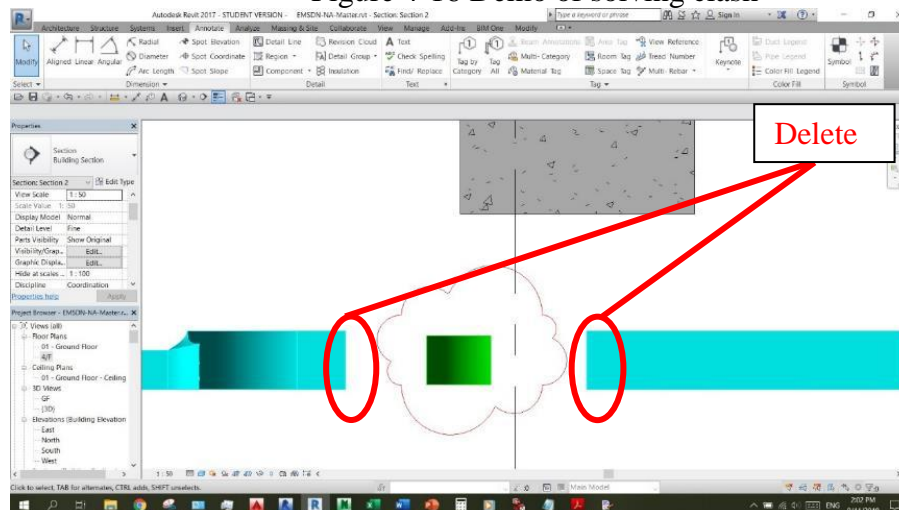
4.   Create the trunking to avoid clashes.

Figure 4-17 Demo of creating trunking
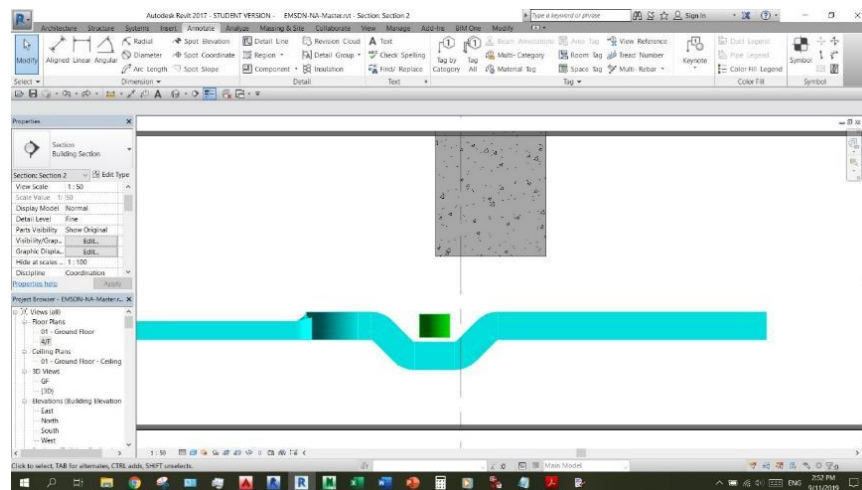
4.6   E&M System Families Centerline

All system routing centrelines in 3D views should be hidden. This is applicable to
Ducts, Duct fittings, Pipes, Pipe Fittings, Cable trays, Cable tray Fittings, Conduits
(if applicable) and Conduit Fittings (if applicable).

Figure 4-18 Visibility/Graphics Override for System Centre line
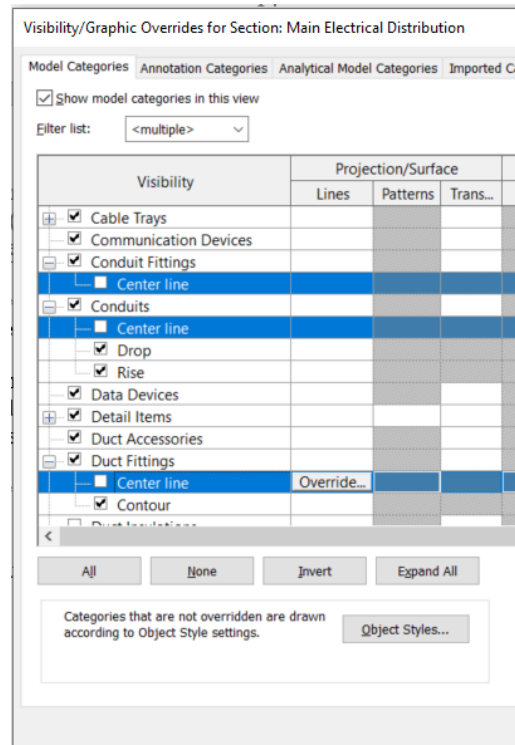
4.7   Panel Schedules for Distribution Boards

The requirement under this section is not a mandatory item unless this is stipulated in the project requirement and implementing as far as practicable in the project.

"Panel Schedule" should be created for all electrical distribution boards in BIM models, so that all the information of circuits and the asset code of switchgears can be inputted to the schedules for data exchange between BIM models and asset management system.

Figure 4-19 Sample of Panel Schedule

5.   BIM MODEL HANDOVER SETUP

5.1   3D Default with Consistent Colour for Forge Conversion

Before handover the as-built models, a series of setting is required to facilitate model conversion. This is to make sure the graphic as shown in the native model can be properly displayed in a 3D consistent colour mode.

- The visual style of the texture image must be realistic.

- The following items should be named in ASCII characters:

    - The filenames of the texture image;

    - The file path of the texture image (i.e. the image source paths under the Appearance tab of the custom material in the Revit Material Browser); and

    - The filename of the RVT file.

- All used custom texture images should be put along with the RVT file, i.e. all files of JPG, PNG, and RVT should be in the same level of the directory.

- All texture images and the RVT file should be compressed into a single ZIP package.

6. CONSTRUCTION BIM DETAILS

## 6.1 Separate Storage Set for Construction and Fabrication Details

All construction details (such as hangers) should be developed in separate storage sets (workset/ layer/ level) to allow switching off when converting the construction model for AM purpose.

Models should be detached from central file at the beginning of project. After disabling work-sharing, the model would no longer be synchronised with the central model.

Workflow to detach a central model are as follows:

1. Click File Tab and Open.

2. Select the RVT file.

3. In the open dialog, select Detach from Central.

4. Click open to the model file.

5. The default file name should be the original file name with" _detached". BIM author may change it after saving the model.

Figure 6-1 Model settings with detached model
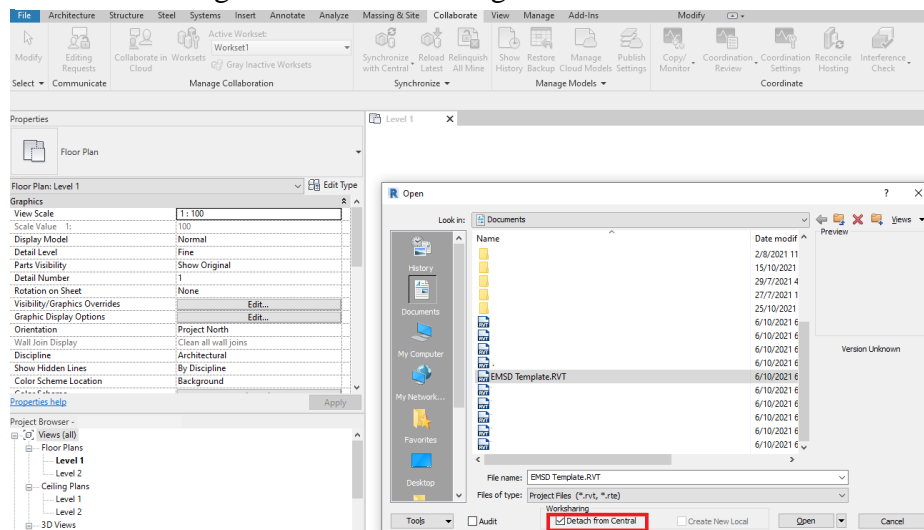
The latest model owner can select to preserve the work sets or discards the work sets from last model owner while opening the detached model.

Figure 6-2 Display of detaching model
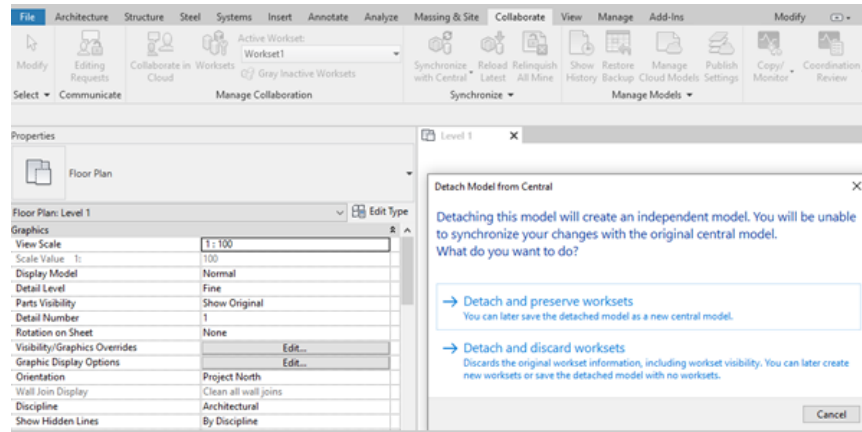
For AM purposes, owner can select to preserve Worksets. Objects/systems are already assigned in appropriate Worksets in construction stage. Model owners have rights to turn on/off for objects/systems visibility from construction model to AM purpose.

Figure 6-3 Workset Setup
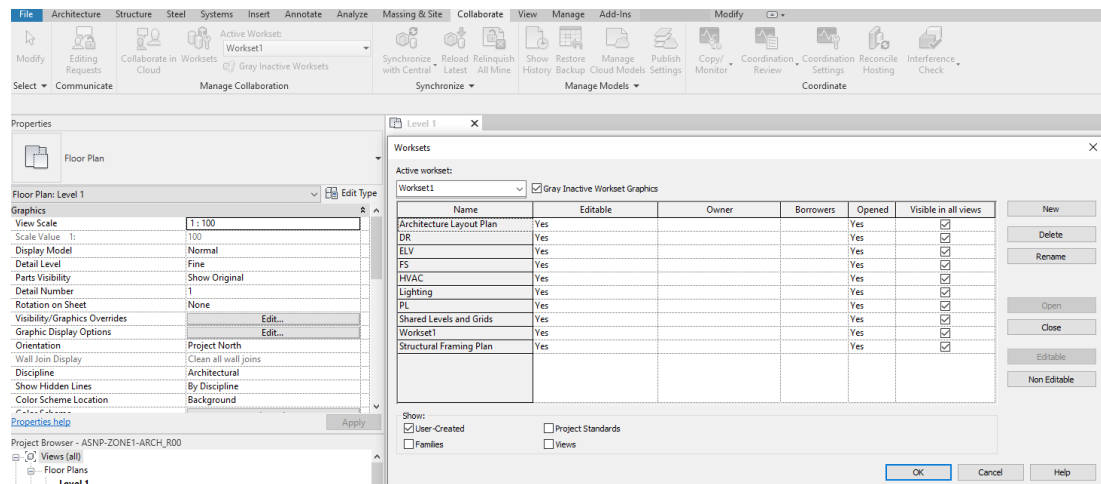
7.   PARAMETER DESIGN

Managing and updating information linked to each object element can be facilitated by reducing the number of loadable families and family types. This can be streamlined within the model in several ways.

There can be many considerations in deciding whether an element should exist as a unique loadable family or a new type under an existing family. In general, the decision should be based on the ease of updating the information associated with the element and these are some of the aspects to be considered:

1.   Elements in the same System (eg. Lift and Escalator, LV switchboard, etc)

2.   Elements in the same Equipment Type and BIM category (eg. Specialty Equipment, Electrical Equipment, etc)

3.   Elements whose geometries are similar

4.   Elements whose parameters are similar

In the example shown below, the 2 light fixtures have similar geometry and similar object parameters, and are therefore modelled under the same family and their differences are noted by their type parameters.

Figure 7-1 Examples of type parameters
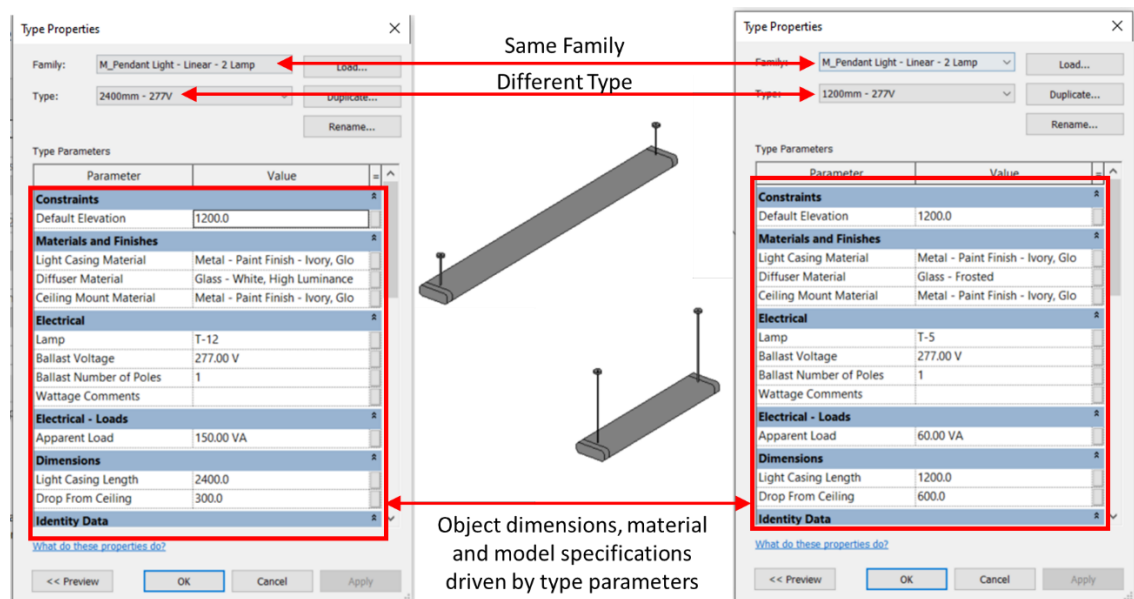
7.1   Type versus Instance Parameters

A Type parameter enables the modeller to modify the parameter for all the elements of the same family type while an Instance parameter enables the modeller to modify the parameter for every instance of an element. The modeller should consider how the parameters would vary in the project to decide on using Type or Instance parameters.   Refer to Appendix B – Asset Data Templates for the details and some highlights are shown below.

In general, elements of the same manufacturer model number are modelled as the same type and its catalogue specifications reflected as type parameters. Examples

where Type parameters are used are Model no., Capacity, Width, Height, Length, Manufacturer, etc.

Instance parameters are typically used to further differentiate elements of the same type. Examples where instance parameters are used are installation date, serial number, mounting height, equipment location etc.
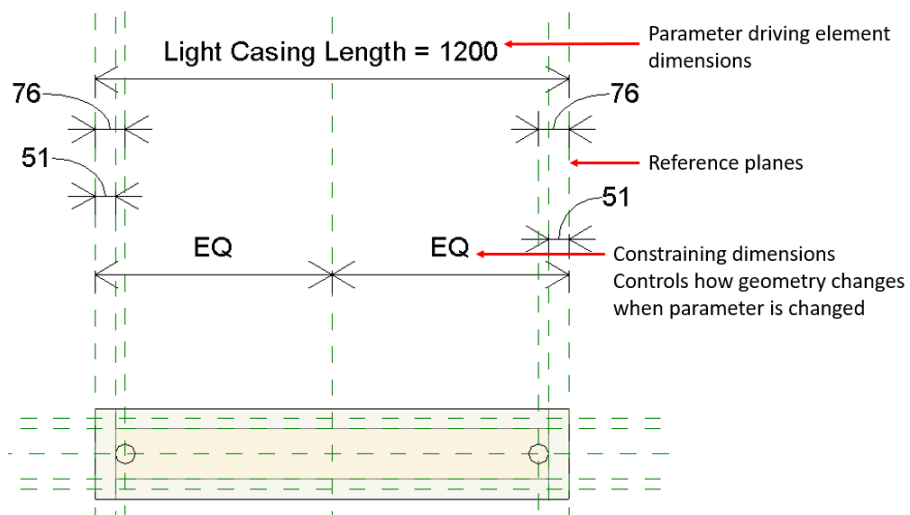
7.2   Parametric Family

As mentioned in the beginning of this chapter, elements of similar geometry, can be created using the same family. This is achieved by using parameters in the family file to control certain dimensions. In the example below, the different types of pendant lights are created using the same family.

Figure 7-2 Demonstration of parametric family
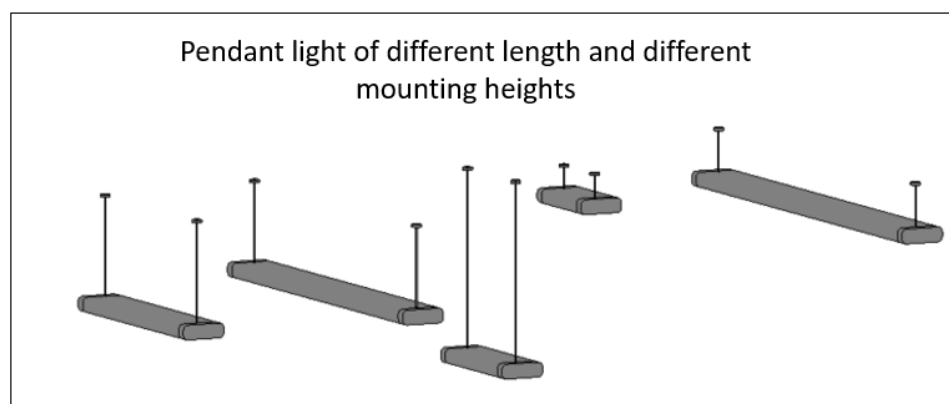
The main components of a parametric family are reference planes, parameter driving the change in dimensions and constraining dimensions that controls how the geometry changes when a parameter is changed. (View in family editor)

Figure 7-3 Creation of parametric family

Tutorials and information on creation of parametric families can be easily found on Autodesk and partner hosted websites and would not be detailed here. Below are some tips on maintaining and managing parametric families:

1.   Delete unused reference planes.

2.   Delete unused parameters.

3.   Consistent and intuitive naming of parameters to allow BIM author to find and modify the correct dimension easily.

4.   Having too many unnecessary parameters in a family makes it harder for modellers to find and modify the parameters they need. Some dimensions in a family do not have to be parametric if they are constant throughout the different types.

In the pendant light example, there is a fixed 51mm of framing and 76mm offset for the supports. If this is a constant dimension across all different types of pendant lights, these dimensions do not have to be parametric.

Figure 7-4 Dimensions do not have to be parametric
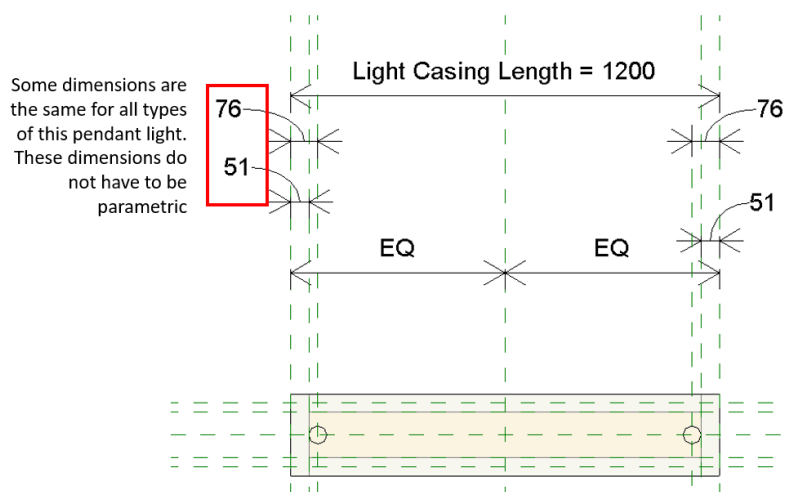
5.   As much as possible, parameters driving the element sizes should be dimensioned to refence planes and not to the extrusion solid. This is so that these dimensions can be easily found on the plan/elevation views.

6.   Although the plan and elevation views in the family editor would not be used in the project model, it is good practice to make sure that all dimensions are arranged in a presentable matter to facilitate updating, troubleshooting or checking of the family file.

7.   Use formulas to create relationships between parameters whenever possible to reduce manual inputs.

7.3   Type Catalogue

When a Revit family contains multiple types, type catalogues can be used to limit the types that are loaded into the project. In the example below, a Fan Coil Unit created by a manufacturer has several types of different sizes created using the type catalogue. This allows the modeller to select and load only the sizes used into the Revit project.

Figure 7-5 Type catalogues

Type	Model	Design Supply Air Flow	Width	Height	Plenum Length	Mounting Hole Spacing	Condensate Drain Pan Total Length	Condensate Drain Pan Width	Condensate Drain Pan Height	Condensate Drain Connection Offset Top	Condensate Pan Front Offset
(all)	(all)	(all)	(all)	(all)	(all)	(all)	(all)	(all)	(all)	(all)	(all)
Size 02	FTHC??S02	94.39 L/s	476.8	251.0	507.0	486.9	814.1	263.5	32.3	247.7	10.7
Size 03	FTHC??S03	141.58 L/s	476.8	251.0	676.9	657.1	984.0	263.5	32.3	247.7	10.7
Size 04	FTHC??S04	188.78 L/s	476.8	251.0	807.0	786.9	1114.0	263.5	32.3	247.7	10.7
Size 06	FTHC??S06	283.17 L/s	476.8	251.0	1007.1	987.0	1313.9	263.5	32.3	247.7	10.7
Size 08	FTHC??S08	377.56 L/s	476.8	251.0	1257.0	1237.0	1563.9	263.5	32.3	247.7	10.7
Size 10	FTHC??S10	471.95 L/s	476.8	251.0	1357.1	1337.1	1664.0	263.5	32.3	247.7	10.7
Size 12	FTHC??S12	566.34 L/s	476.8	251.0	1617.0	1596.9	1924.1	263.5	32.3	247.7	10.7

Select one or more types on the right for each family listed on the left

Although the files would be purged at the end of the project and all unused types would be removed, loading only the types needed would facilitate the model creation process, thus making it easier to find the correct type and reduce human errors in the selection of similar types.

8.   BIM MODEL UPGRADE

In normal practices, the need to update a BIM to reflect the as-built condition. The Contractor shall ensure the BIM-AM deliverables comply with approved software versions at the time of delivery. Contractor is required to upgrade the final BIM-AM deliverables to the version specified by EMSD's Project Engineer.

The sections below describe ways of conducting model upgrade procedures.

8.1   Upgrading through BIM 360

To upgrade an as-built model:

1.   Select Project Admin module, click Document Management

2.   Select Revit Model Upgrade.

Figure 8-1 Model Upgrade
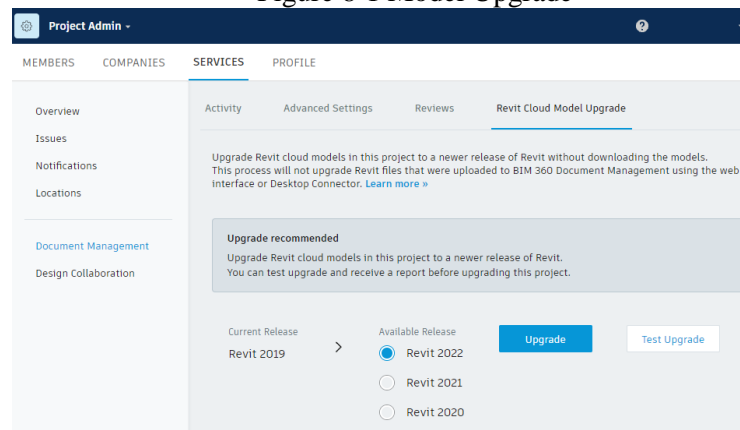
8.2   Upgrading through Newer Software Version

Instead of using BIM 360 internal upgrade settings, there is another way to upgrade in normal practice. When a Revit model is opened by a newer revit version. Revit can automatically recognise the product version was saved and would ask BIM author to start the upgrade process of project data for the attempting to open the project file.

Recommendations before upgrading the as-built model:

1.   Clear all warning in the model which might cause failure of upgrade

2.   The file may corrupt if upgrading directly from older version to latest version (e.g., 2013 to 2022)

3.   To avoid any potential data loss problem, BIM author can check with "Audit" option to track and fix any possible corrupt elements.

9.   BIM MODEL CHECKER USER GUIDE

The "BIM Model Checker", which is a Revit plugin developed by EMSD, written in Python and based on pyRevit (i.e. an add-on development package for Autodesk Revit).   The checker can check the following for those E&M objects with either data input of "system code plus equipment code", e.g. HVAC-FCU", in the "Comments" parameter, or the filled Asset Code parameter. Contractors can make request to the EMSD for installation package of BIM model checker.

- The presence of parameter sets for individual equipment type based on the Asset Data Templates as specified in the Appendix B of the BIM-AM Standards and Guidelines.
- Correctness of parameter setting.   For example, common attributes of EMSD.common.XXX should be set as project parameters, whilst the specific attributes for individual equipment, e.g. EMSD.HVAC.XXX, should be set as object parameters.

There are about 200 thousands of elements in a 30 MB file size BIM model, the checker can check the following for those E&M objects with either data input of "system code plus equipment code", e.g. HVAC-FCU", in the "Comments" parameter (see below), or the filled Asset Code parameter.

Figure 9-1 Parameter inside BIM Object
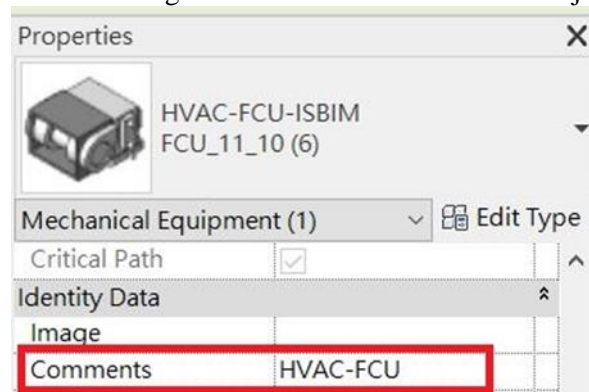
(a)   The presence of parameter sets for individual equipment type based on the Asset Data Templates as specified in the Appendix B of the BIM-AM Standards and Guidelines.
(b)   Correctness of parameter setting.   For example, common attributes of EMSD.common.XXX should be set as project parameters, whilst the specific attributes for individual equipment, e.g. EMSD.HVAC.XXX, should be set as object parameters.

Correctness of parameter type, i.e. (i) type vs instance and (ii) text, area, volume, currency etc.

Pre-install the Revit EMSD extension is required. Installation steps are shown in the following Sections.

9.1   BIM Model Checker Set up

Follow the below steps to setup BIM Model Checker.

1.   Download the plugin on AIMP.
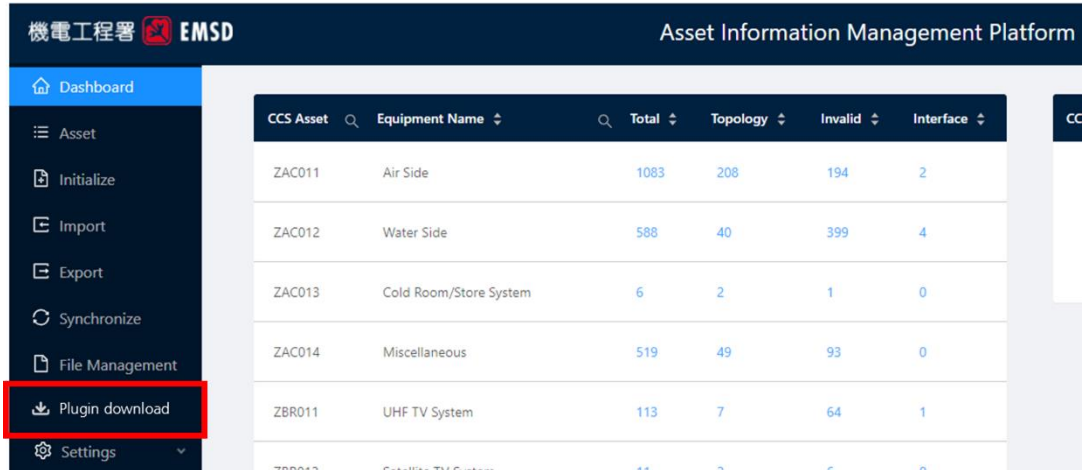
2.   Execute and run the installer of BIM Model checker.exe
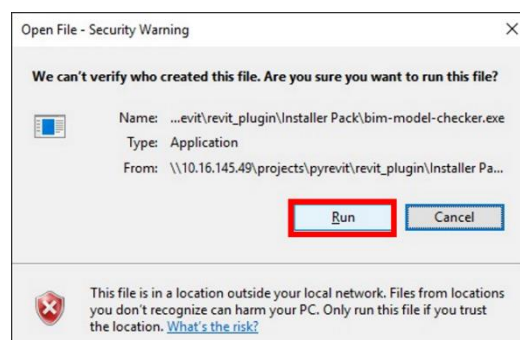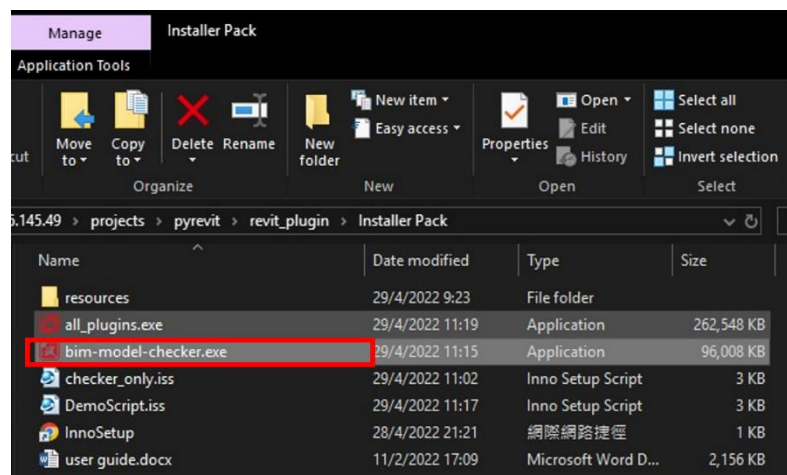
3.   Select Set up Installation mode
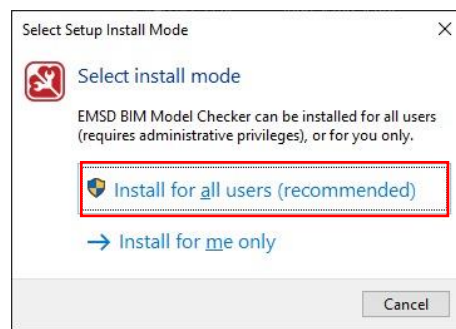
4.   Input user information
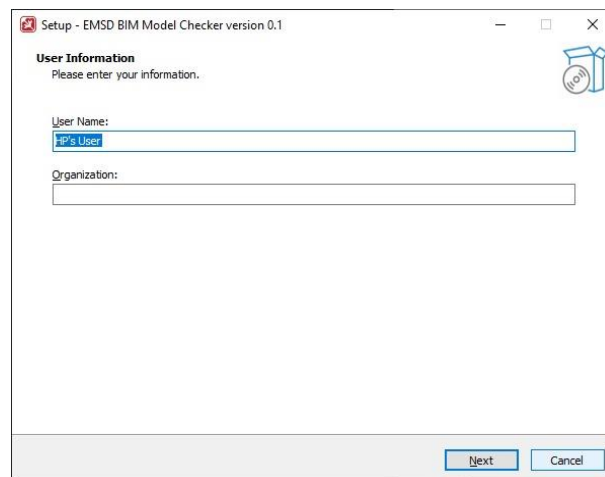
5.   Select location of the installation and C drive is recommended.
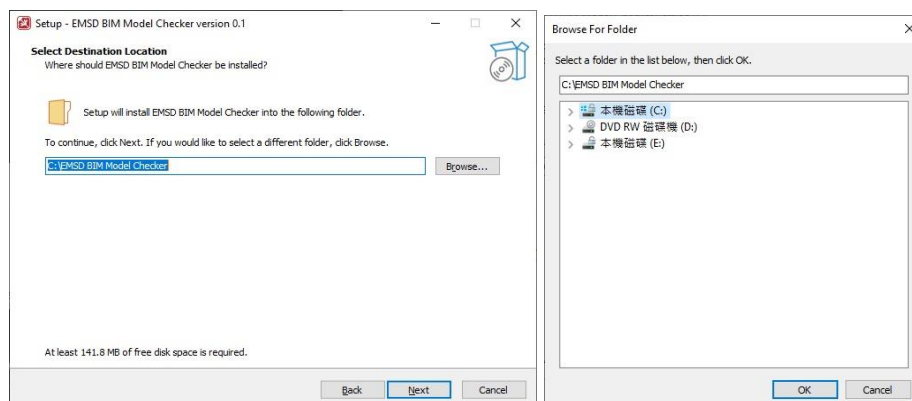
6.   Select install to complete the installation.
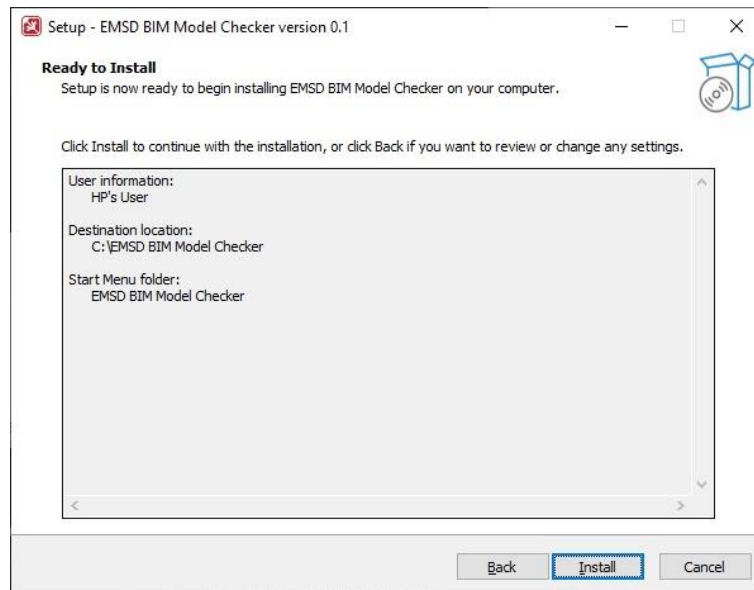
7.   Open Revit then click "Settings"
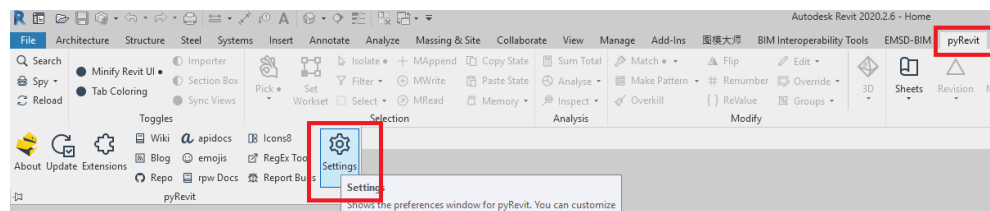
8. Press "Add folder" to add "C:\revit_plugin", then press "Save Settings and Reload"
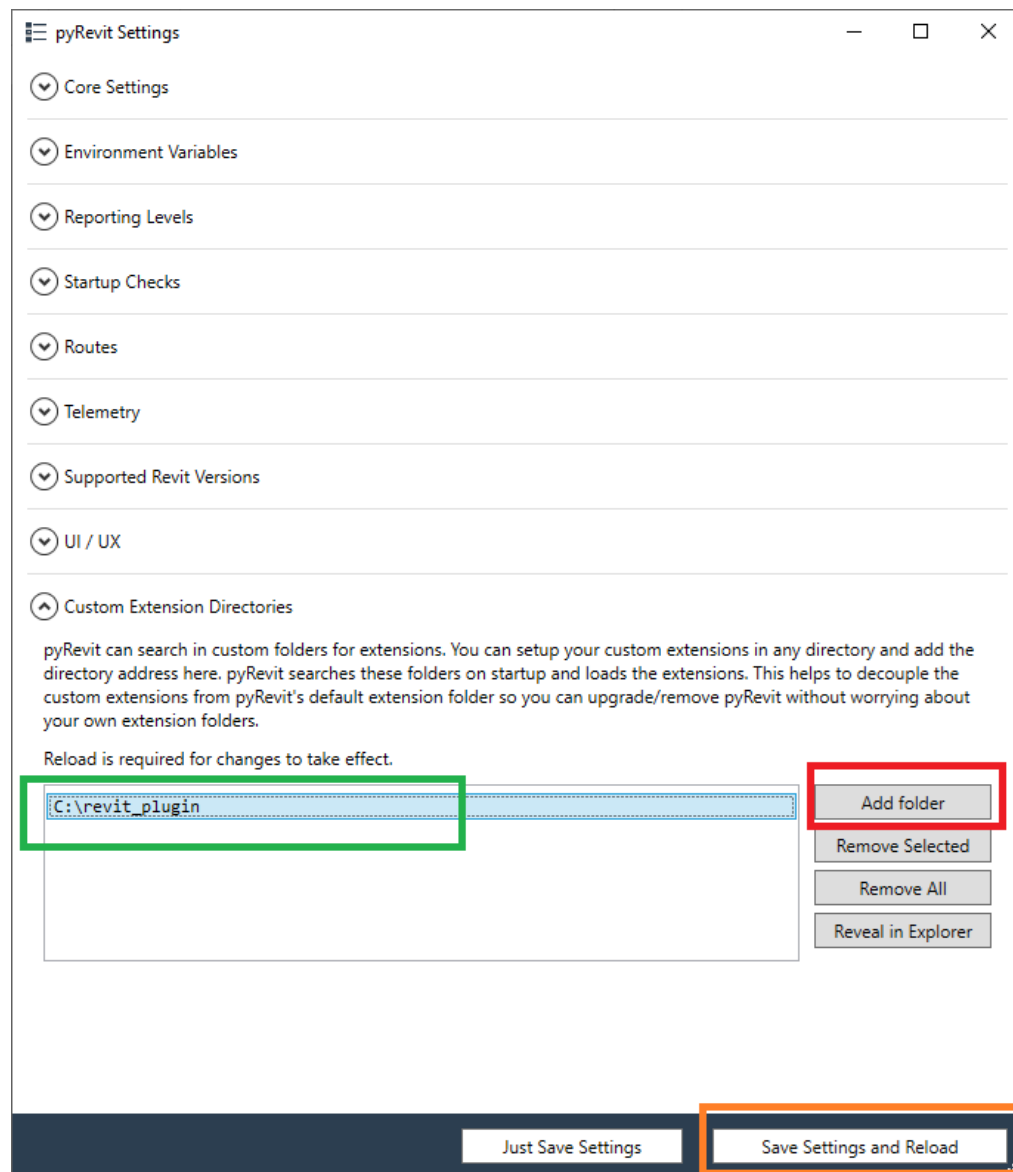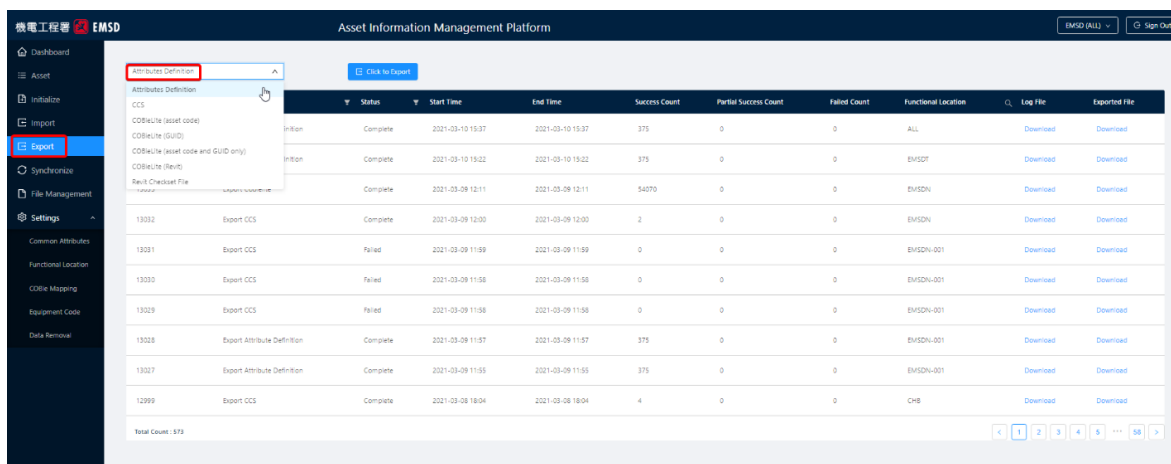
9. Close Revit and reopen it, then you can see "EMSD-BIM"
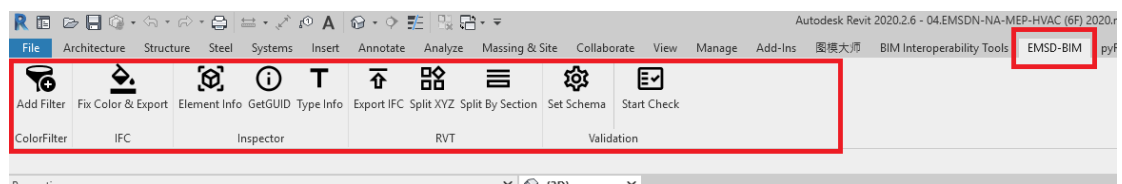
9.2 Exporting Definition file from AIMP

The procedures of acquiring the new definition files through Asset Information Management Platform (AIMP) is illustrated under this Section 9.2. There are some predefined attribute definition after installation, so the import only required when attribute definition are updated.

1. Log in to AIMP. Click "Export". Choose "Attributes Definition".

2. Click "Click to Export" to export the Attributes Definition file. The status will change to "Complete" if export success.

3.   Click "Download" under "Exported File" column.

4.   Unzip the downloaded file.
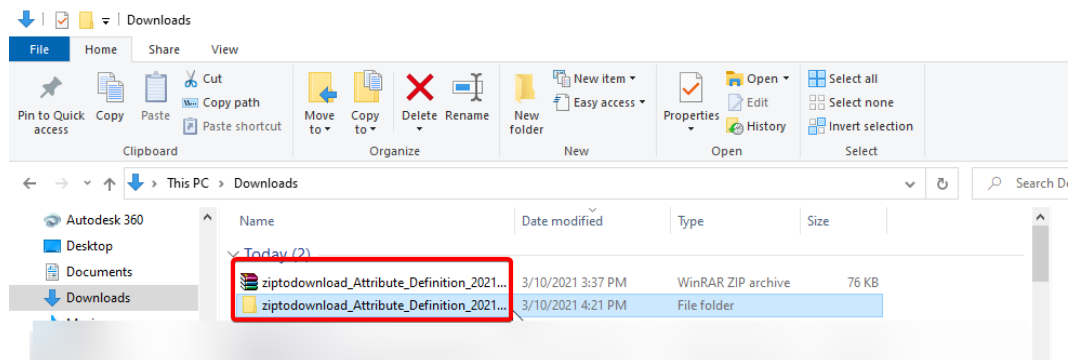
5.   Open the unzipped file, the Attributes Definition file in xml format is inside.
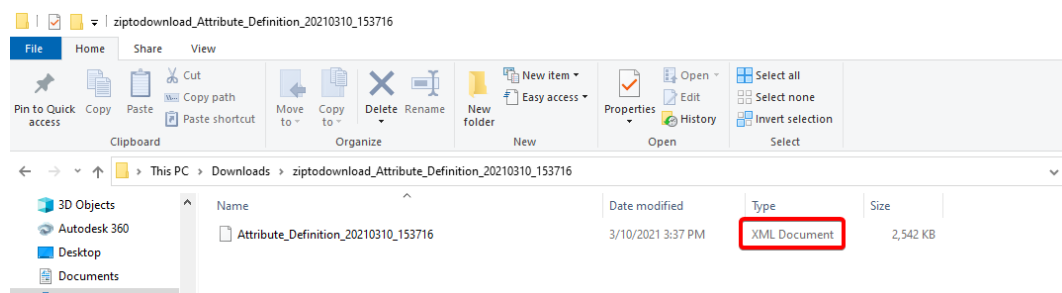
9.3   Setting Up Definition Files to Plugin for Compliance Checking

The checker relies on attribute definition to do the checking, the definition files can be imported as shown below.

(a)   Import Schema

e.g. Attribute_Definition_20211210_112906.xml
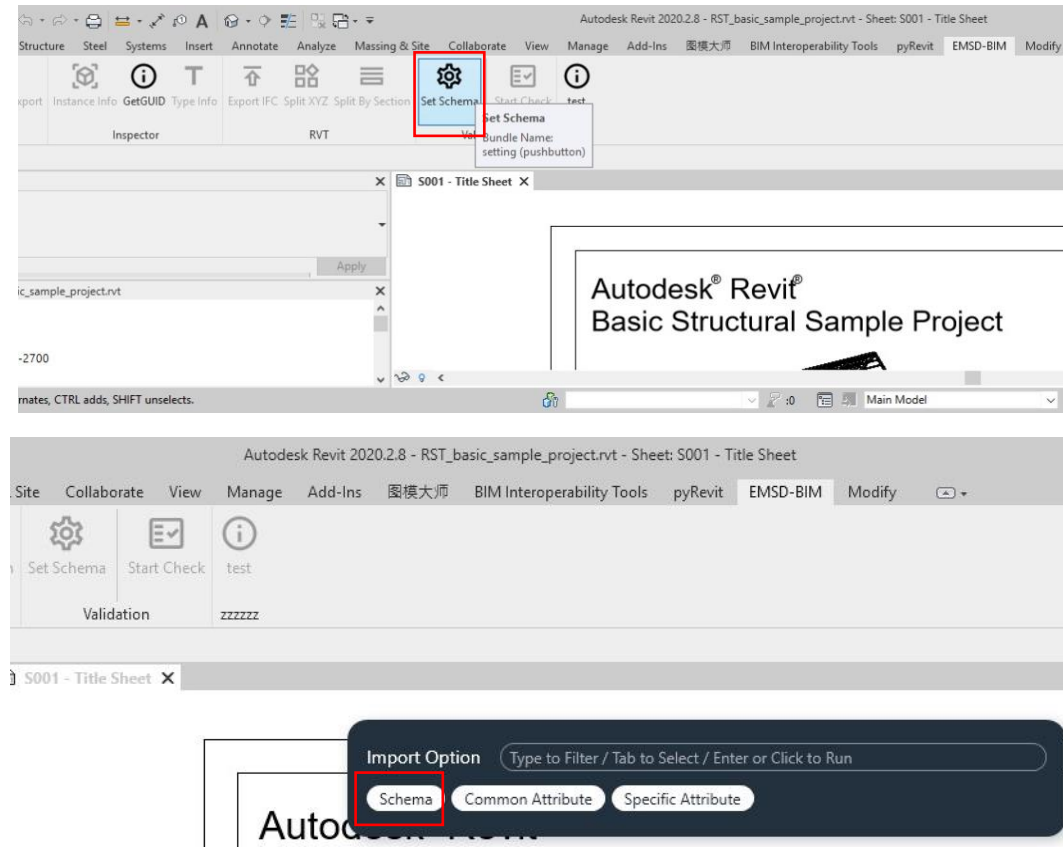
(b)   Import Common Attribute

e.g. CommonAttribute.csv
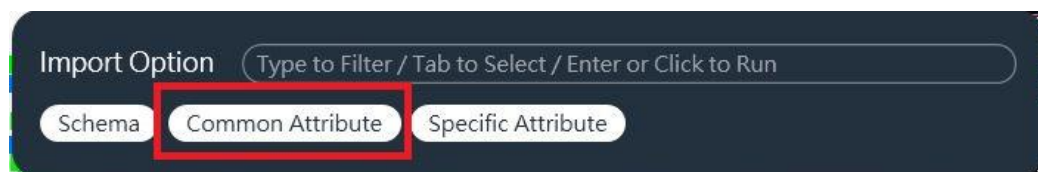
(c)   Import Specific Attribute

e.g. Summary.csv
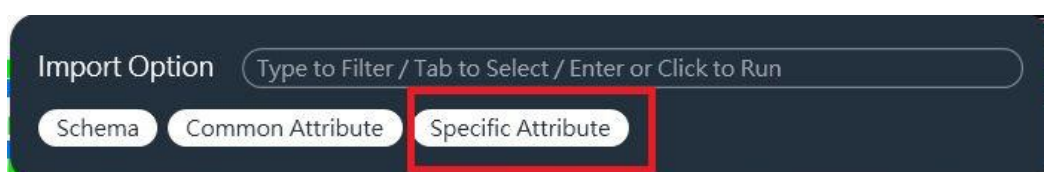
9.4   Compliance Checking by Plugin

9.4.1   Check Project Parameters

Check Project Parameters according to the Common Attribute imported at Section 9.3. All the Project Parameters should be set for those major assets.

9.4.2   Check Asset Code

- Make sure the Asset Code is in the right format, 7 trunks separated by "-".
- Asset Code example: KC-HKCH-TA-B02-BLR-PMP-0004.
- The code should be unique within this BIM model.
- The System Code and Equipment Code should be correct, in this example is "BLR-PMP".

9.4.3   Check Specific Attribute of an Asset

- Check Specific Attribute according to the Specific Attribute imported at Section 9.3.
- All the Specific Attributes should be set for those major assets, according to system type.
- All the Specific Attributes should belong to correct parameter group.

9.4.4   Run the checker

Click "Start Check" will pop up to let the user to choose where the system type is in the "Comments" attribute, or by the Asset Code attribute:
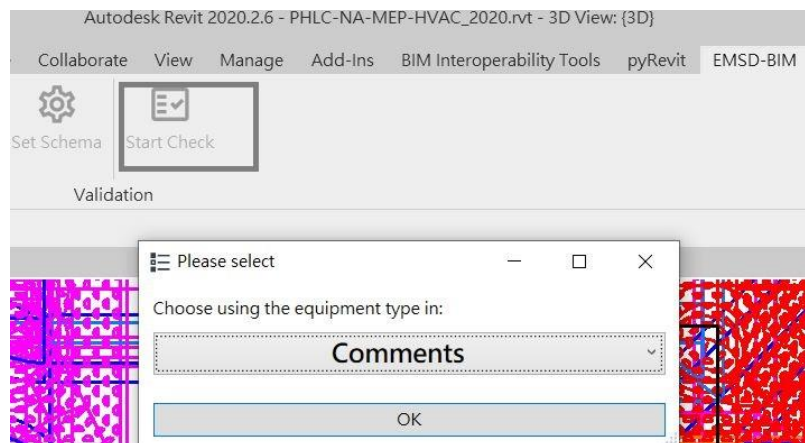
Then it starts to run.
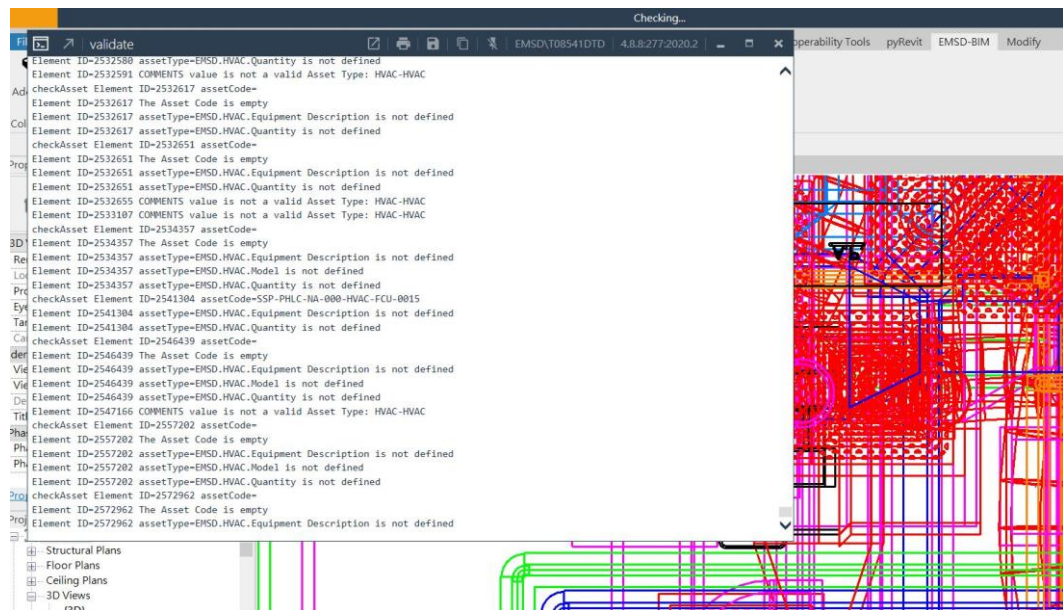
There will be a report generated in CSV format that is prompt to save.
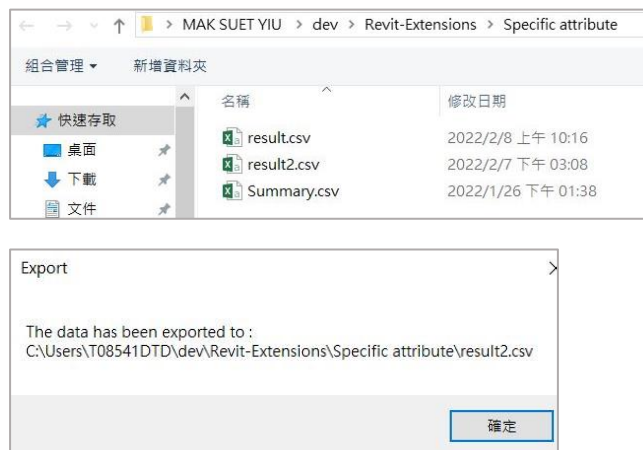
It will open automatically after saving.

9.5   Report

The issue report showing the non-compliance items in CSV format that can be opened as Excel.