BIM MEP e-Submission Briefing

New CP for BIM e- Submission

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Agenda

- **New Code of Practise for MEP BIM e-Submission**
- **SIAiDOL (Design Object Library)**
- **BIM Collaboration Fund**
- **Q & A**



Agenda – New CP for MEP e-Submission

- **Background**
- **General Requirement**
- **Technical Agencies Specific Requirement:**
  - **PUB- Water Supply (Network)**
  - **IDA- Telecommunication Facility Co-Ordination Committee**
  - **SCDF- Fire Safety and Shelter Department**
  - **CityGas Pte Ltd**
  - **NEA- Central Building Plant Department & PUB- Water Reclamation Network**



Background

Trained Regulatory Officers & installed BIM viewer (both Light weight)

25 JANUARY 2010 → **1 APRIL 2011**

Architectural BIM e-Submission
(BCA, URA, FSSD, CBPD, PUB, LTA, NParks, HDB, JTC)

Structural BIM e-Submission
(BCA)

MEP BIM e-Submission
(BCA,FSSD, CBPD, PUB, IDA, CITYGAS)



Background

New Timeline

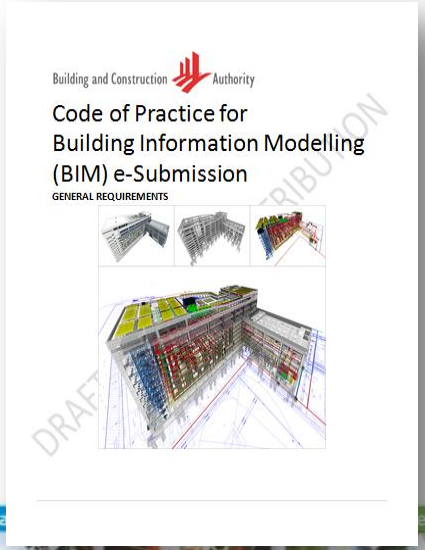
July 2013	Architecture Submissions for all new building projects > 20,000 m^2
July 2014	Engineering Submissions for all new building projects > 20,000 m^2
July 2015	Architecture & Engineering Submissions for all new building projects > 5,000 m^2
Dec 2015 - Oct 2016	New BIM Submission to Technical Agencies (By Pilot Firms)
Oct 2017	Voluntary New BIM Submission to Technical Agencies (By Industry)

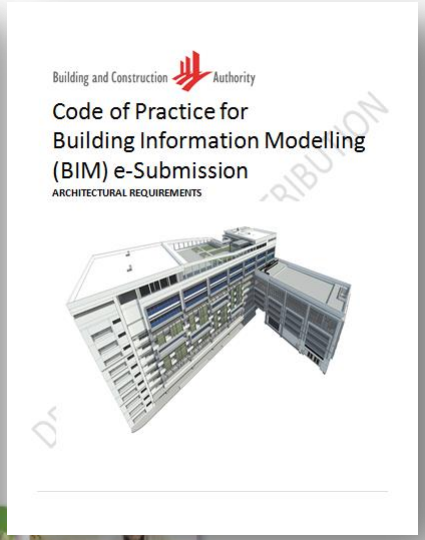


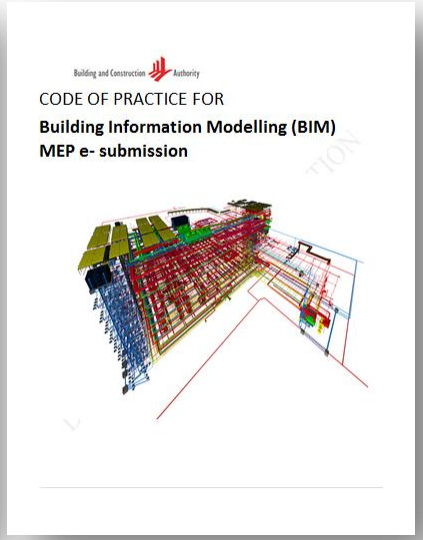
CP For BIM e-Submission

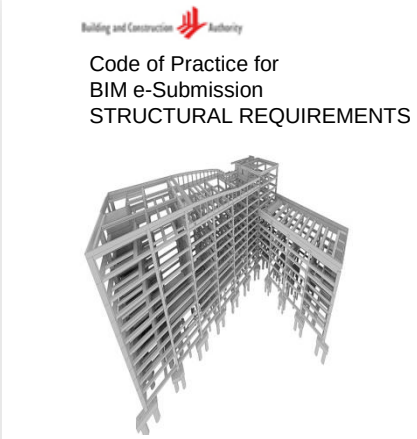
- **General Requirements**
- **Architectural Requirements**
- **MEP Requirements**
- **Structural Requirements**

To Launch on Oct 2016





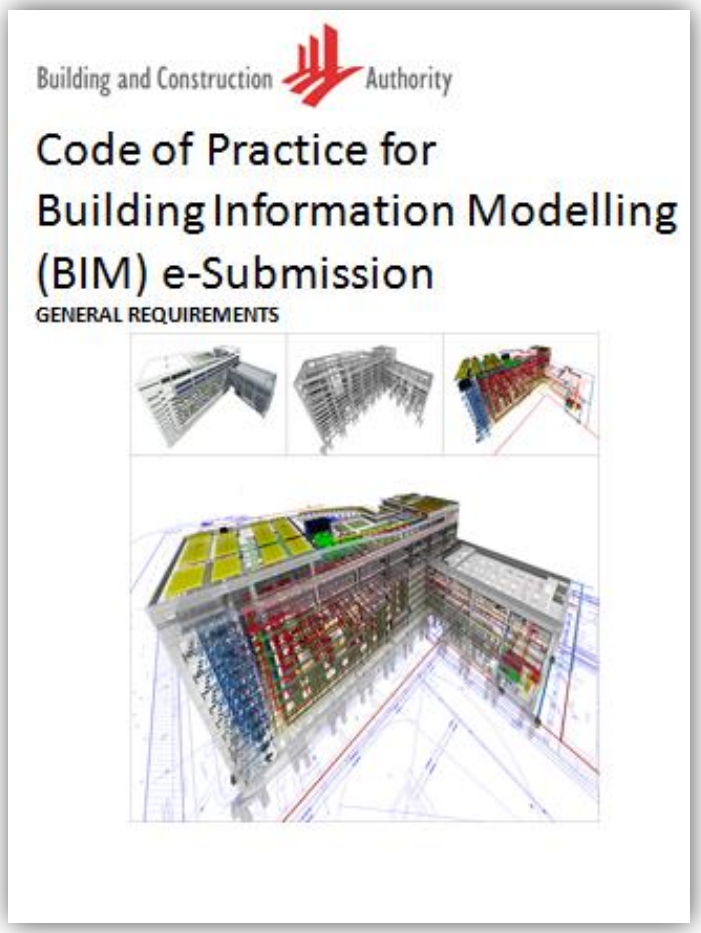






CP for General Requirement

(BCA, CBPD, PUB, FSSD, CityGas, IDA)



- Objective
- Scope
- Deliverable Format
- Site Model Set – Up
- File Naming Convention
- View Naming Convention
- Annotations & Dimensions
- Colour Standards
- Core Information Modelling



Deliverable Format Summary

Technical agencies	1st submission	Amendment submission	As-built submission
PUB- WTR	Light weight file	-	Light weight file
IDA-TFCC**	Native file	Native file	-
CityGas	Light weight file	Light weight file	Light weight file
SCDF **-FPS** **-ACMV** **-Detector**	Light weight file	Light weight file	-
NEA- CBPD & **PUB- WRN**	Light weight file	Light weight file	dwg – for 1st storey Light weight file native file**

***The respective regulatory agency reserves the right to request BIM native file for verification.**
**** Starting from Oct 2017.**



BIM e –Submission General Requirement

For light weight submission

Standard Naming of File

PROJECT ID					AUTHOR		ZONE			VERSION		USER-DEFINED
M	L	P	1	_	M	-	0	1	_	A	-	

Name of Field	Indicators	Description
Project Identification		User defined field for the project
Author	A-	Architect
	C-	Civil engineer
	E-	Electrical engineer
	L-	Land surveyor
	M-	Mechanical engineer
	N-	Equipment supplier
	S-	Structural engineer
	T-	Telecommunication/ Signal engineer
	V-	Other disciplines
	X-	Contractor
Zone (or Block)	NN	where, N: zone or block number e.g.: 01 for Block 1 A1 for Zone A1
	--	For all blocks
Version (Revision/ Submission)	A-	1st submission
	B-	2nd submission
	C-	3rd submission
User-defined (Optional)		User defined code for in-house applications (optional field)



BIM e –Submission General Requirement

For native submission

Standard Naming of File

Project ID (User-defined)		Author		Model Part		Submission Version		Software Version		Additional Information (User- defined)
	_		_		_		_		_	

Example:

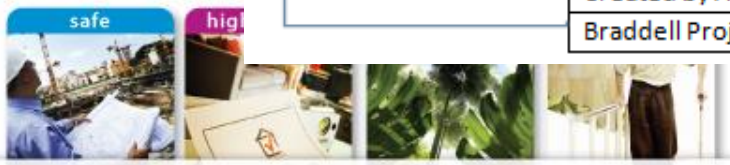
BR15_A_B1-_B_15.rvt
BR15_S_B1ST_A_15.rvt
BR15_M_B1AC_A_15.rvt

SINGLE FILE

BR15_A_B1_A_15_MAIN.rvt

FEDERATED FILE

Additional Information (indication of the MAIN project file)
Software version used
1st BP Submission to BCA
Block 1
Created by Architect
Braddell Project in the year 2015



BIM e –Submission General Requirement

For light weight & native submission

Standard Naming of Views

Agency						Type of View			View Name						
F	S	S	D	-	_	F	P	_	1ST	S	T	O	R	E	Y

Name of Field	Indicators	Description
Agency	CBPU	Central Building Plan Unit
	PUB	Public Utility Board
	FSSD	Fire Safety and Shelter Department
	CityGas	City Gas Pte Ltd
	IDA	Inforcomm Development Authority
Type of View	SP	Site Plan
	FP	Floor Plan
	FE	Elevation
	FX	Section
	DT	Details
	3D	3D View
	LG	Legend
	DG	Schematic Diagram
View Name	1ST STOREY; or NTH STOREY; or LOWER ROOF; or ROOF	where, N: Storey's number
	MEZZANINE N	where, N: Mezzanine's number
	BASEMENT N	where, N: Basement's number
	ELEVATION N or N ELEVATION	where, N: Directions (e.g.: East, West, North, South; or 1, 2, 3, 4)
	SECTION N	where, N: Section's number
	SUMMARY OF GFA; or SUMMARY OF INCENTIVE GFA; or SUMMARY OF X	Where, X: Schedule's Name



BIM e –Submission General Requirement

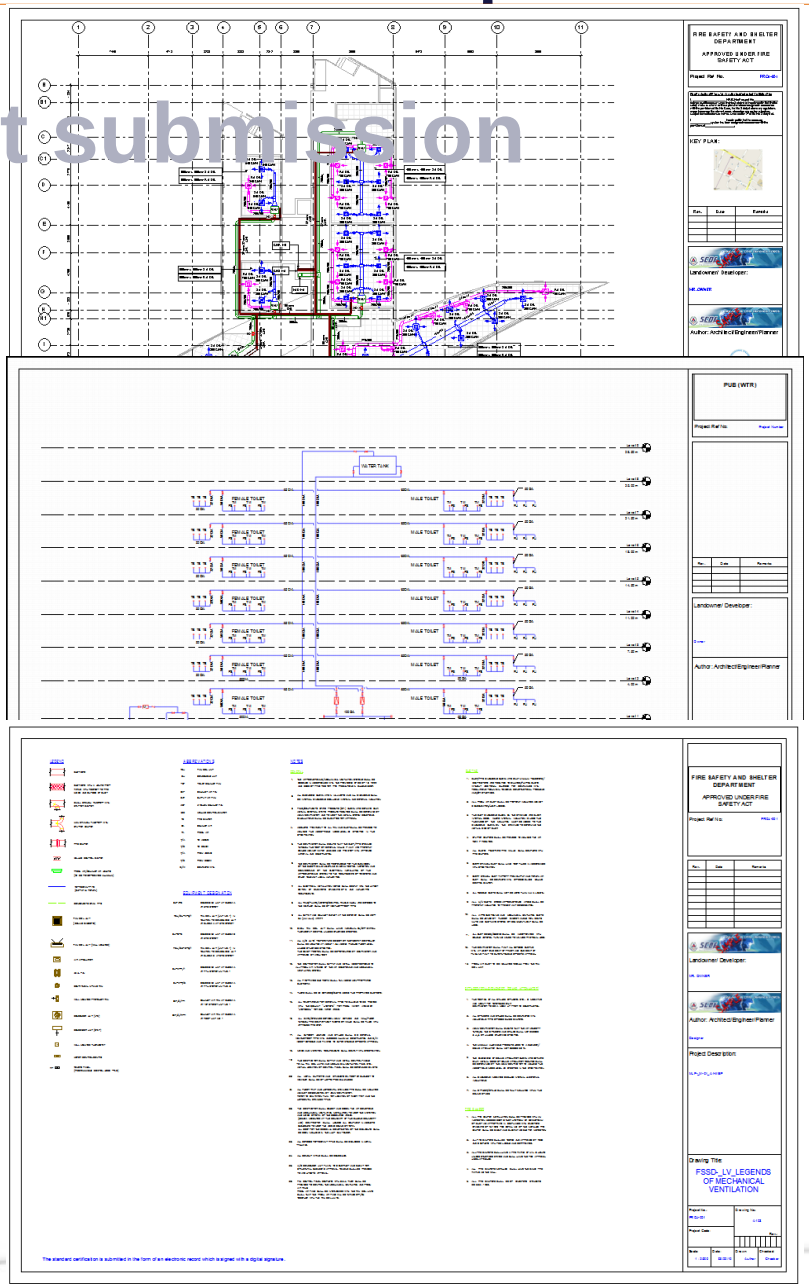
No change for light weight submission

2D Views

- Conventional drawings (plan, elevation or section, if any) with appropriate title block

- Schematic Diagram

- Legend



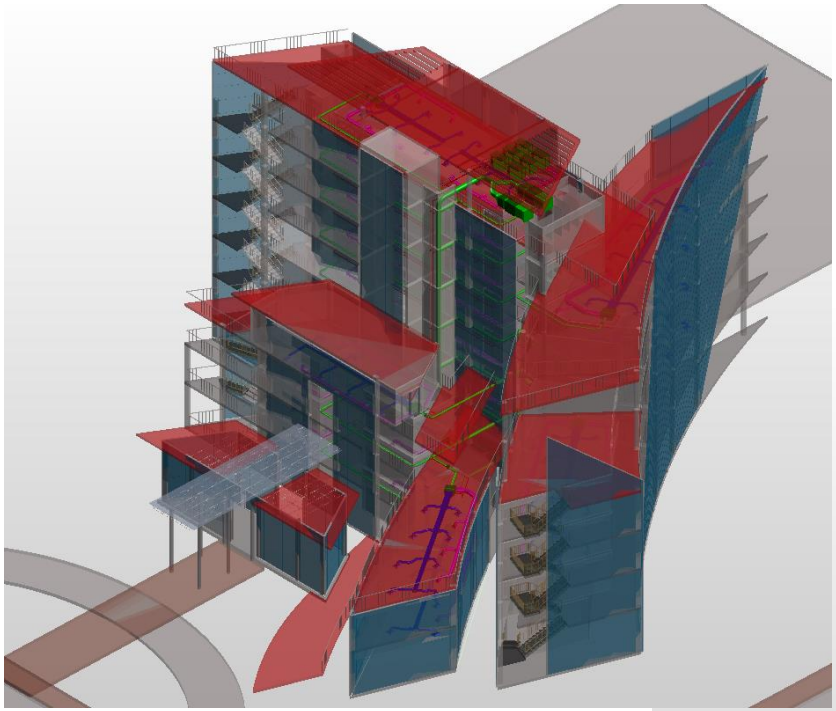


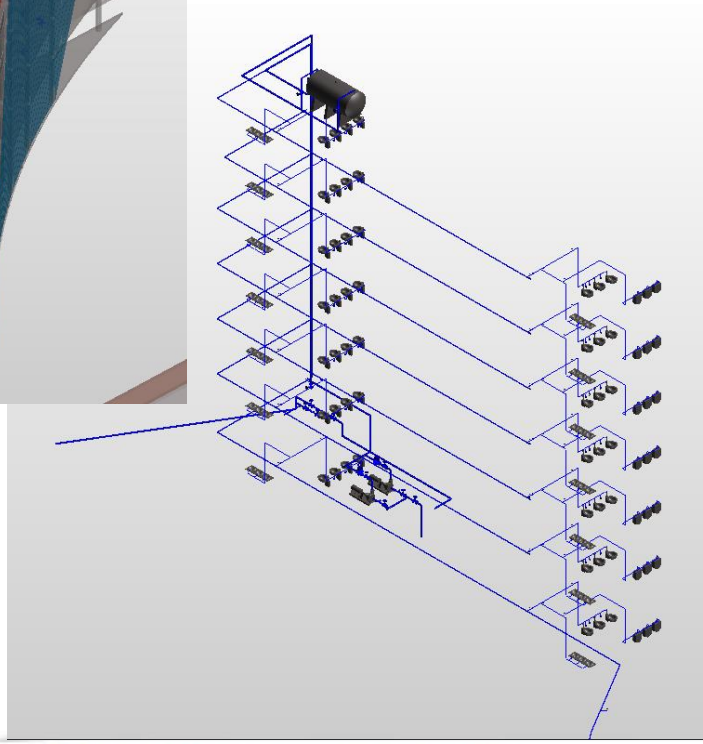
BIM e –Submission General Requirement

By-product of 2D drawings

3D model

- service by service

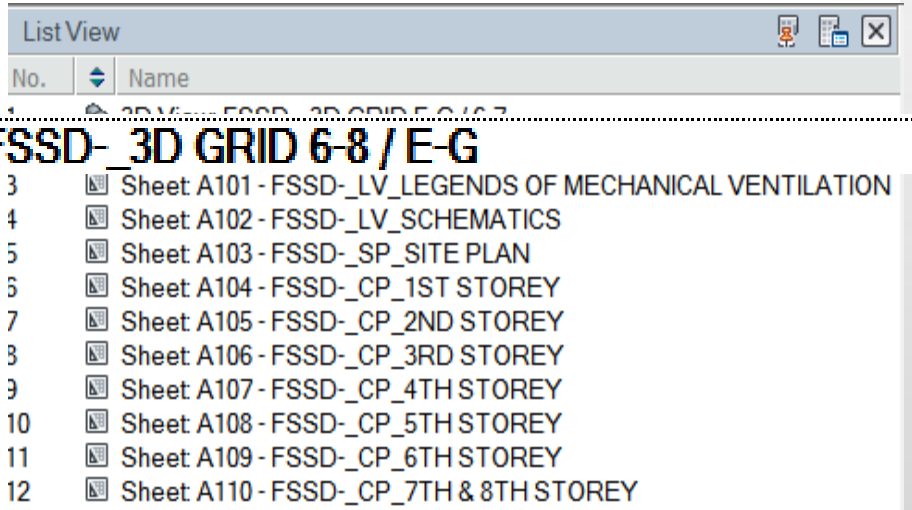


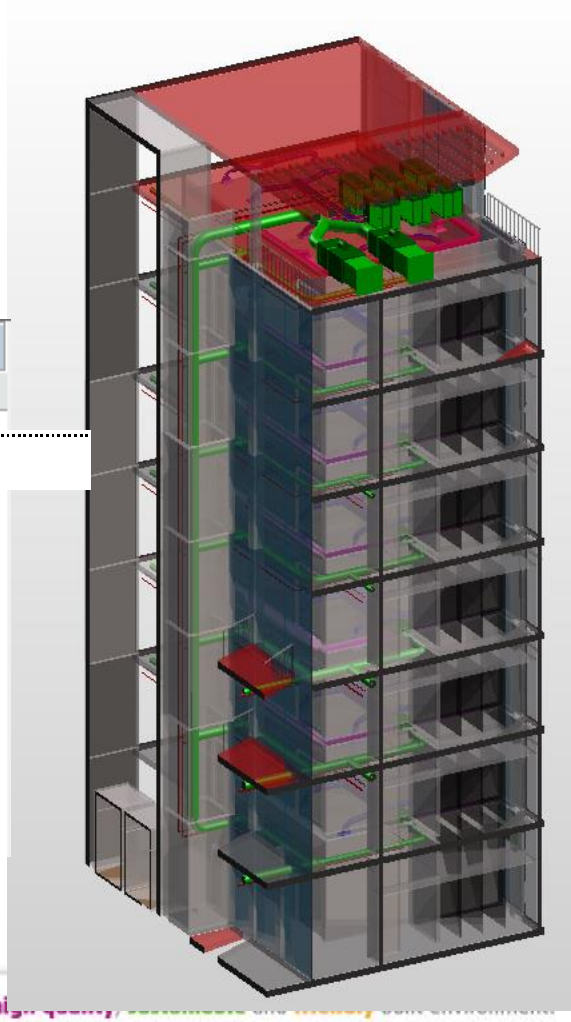


BIM e –Submission General Requirement

Part 3D Model (if any)

- services + archi model with grid number
  - by important area (e.g. MDF room)
  - by floor or
  - by shaft







What & How to submit?

No change in submission process

No change in 2D views but with additional useful information

Via CORENET

FSSD

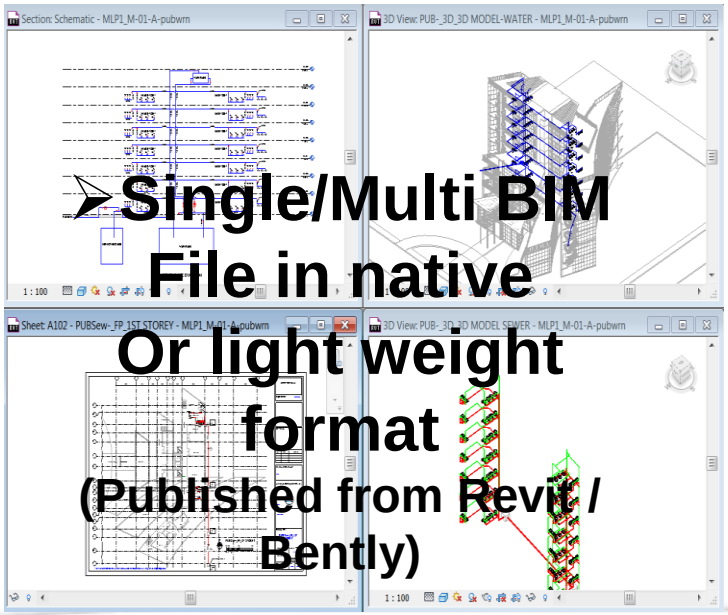
IDA

CBPU / PUB

CITYGAS

XFD Forms

Supporting Documents



- Single/Multi BIM File in native Or light weight format (Published from Revit / Bently)



Technical Agencies Specific Requirements

- ✓ **PUB- Water Supply (Network)**
- ✓ **IDA- Telecommunication Facility Co-Ordination Committee**
- ✓ **SCDF- Fire Safety and Shelter Department**
- ✓ **CityGas Pte Ltd**
- ✓ **NEA- Central Building Plant Department & PUB- Water Reclamation Network**
- ✓ **BCA – Civil Defence (CD) Mechanical and Electrical Plans in Transit Shelters**



CBPD/PUB-WRN

Format:

- ✓ Light Weight Format (1st & Amendment submission)
- ✓ Native Format + Light Weight + dwg (1st Storey) (As-built submission**)**

Requirements:

- ✓ Pressured Pipes: Purple color
- ✓ Site Plan: include the connection to the main
- ✓ Drawing Scale for Site Plan:
  - ✓ use either 1:500 or 1:1000
  - ✓ (do not use odd scale)
- ✓ Key plan / Location plan:
  - ✓ to show surrounding site and location
- ✓ Include No. of Wash Basin, WC

<Plumbing Fixture Schedule (BLK 220A)>

A	B	C
Level	Type of Sanitary Fixture	Number of Sanitary Appliances Installed
2ND STOREY	Bath Room Basin	16
2ND STOREY	Bath Room WC	16
2ND STOREY	Kitchen Sink	9
3RD STOREY	Bath Room Basin	16
3RD STOREY	Bath Room WC	16
3RD STOREY	Kitchen Sink	9
4TH STOREY	Bath Room Basin	18
4TH STOREY	Bath Room WC	18
4TH STOREY	Kitchen Sink	10
5TH STOREY	Bath Room Basin	18
5TH STOREY	Bath Room WC	18
5TH STOREY	Kitchen Sink	10
6TH STOREY	Bath Room Basin	18
6TH STOREY	Bath Room WC	18
6TH STOREY	Kitchen Sink	10
7TH STOREY	Bath Room Basin	18
7TH STOREY	Bath Room WC	18
7TH STOREY	Kitchen Sink	10
8TH STOREY	Bath Room Basin	18
8TH STOREY	Bath Room WC	18
8TH STOREY	Kitchen Sink	10



FSSD – ACMV, Sprinklers & Detectors

Format:

- ✓ Light Weight Format (1st & Amendment submission)

Submission Documents:

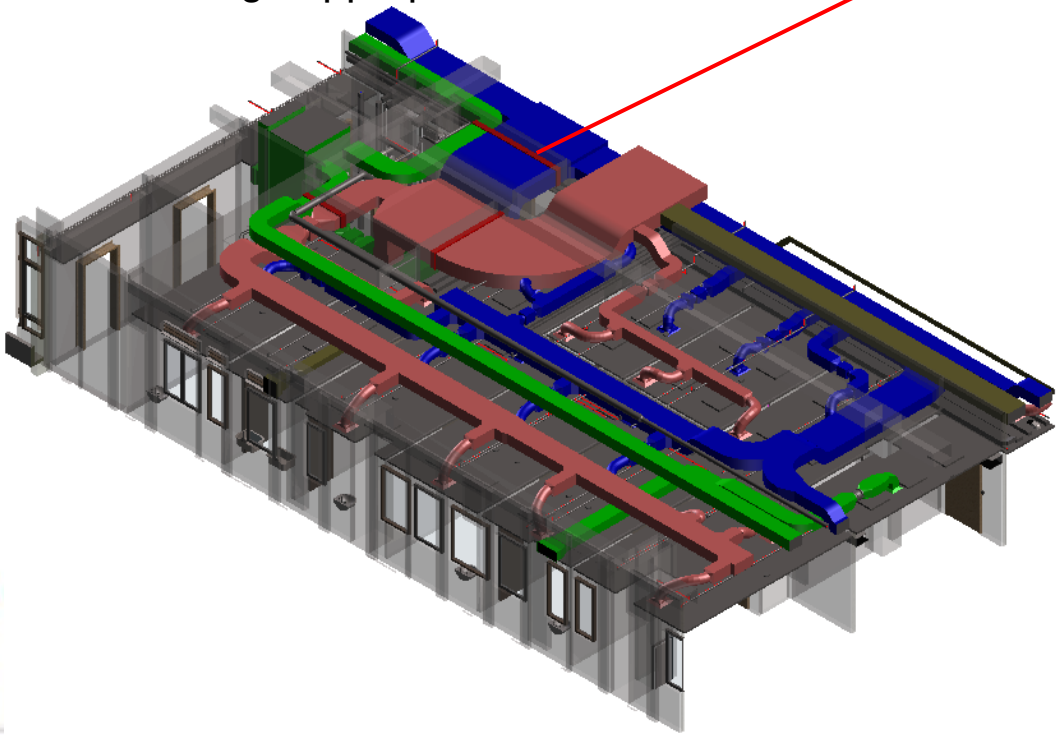
- ✓ Site & Location plan
- ✓ Notes & legend page
- ✓ Schematic diagram
- ✓ Typical detail
- ✓ Floor/Ceiling plan (generated from BIM model)
- ✓ BIM model



FSSD – ACMV

ACMV:

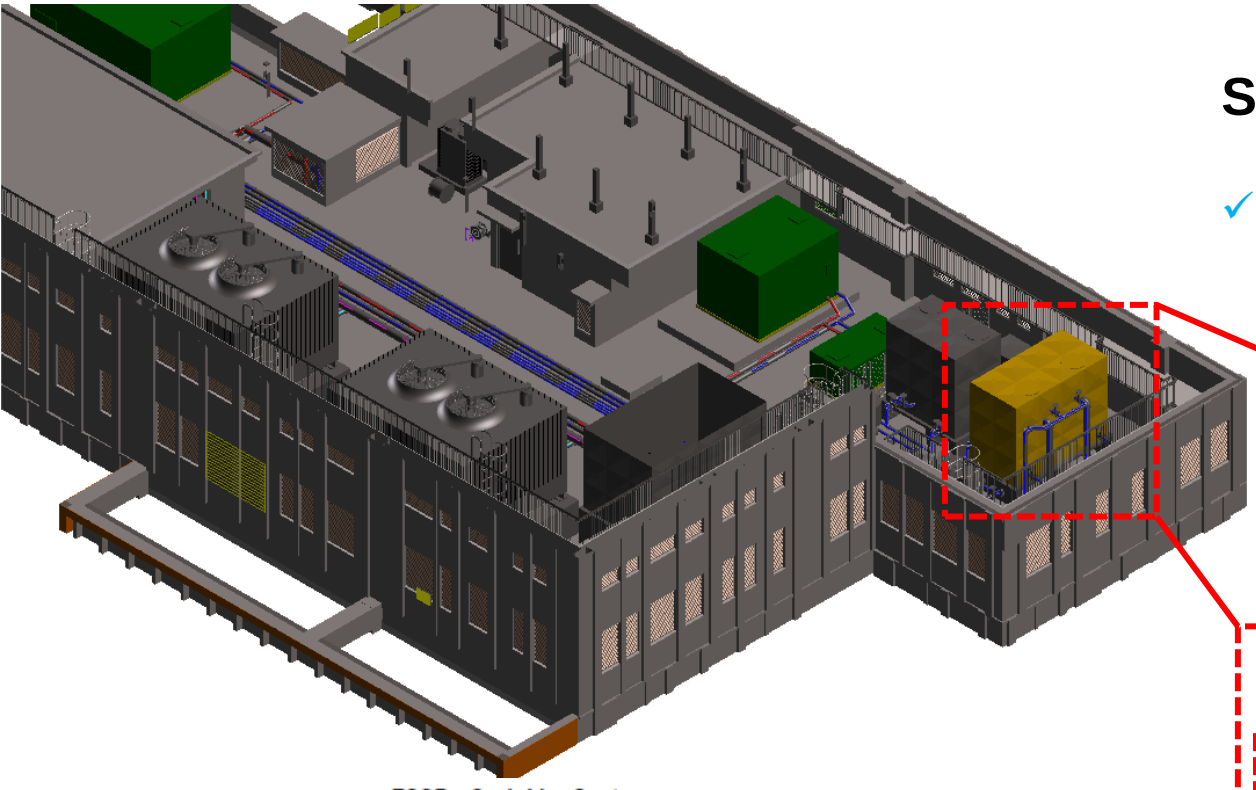
- ✓ Include hour rating for
  - ✓ Fire compartment and
  - ✓ Fire Dampers
- ✓ Assign appropriate materials for ducts



Object Properties

Name	Value
System Name	Mechanical Supply Air 65
System Type	Supply Air
Other	
ACMV_Return Air	No
ACMV_Supply Air	No
Hour Rating	2
Name	
SCDF_HourRating	2
Width 1	550.000 mm
Phasing	
Phase Created	New Construction
Text	
Level	Level 1
Room ID	Level 1 AHU Room

FSSD – Sprinklers



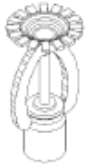
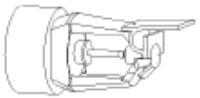
FSSD - Sprinkler System

Sprinklers:

- ✓ Include size & material for
  - ✓ Water Tank

Object Properties

Name	Value
Analysis Results	
SCDF_WaterTankSize	45.000 m³
Constraints	
Level	RC ROOF LOWEST LEVEL AND
Identity Data	
Mark	237
Mechanical	
System Classification	
System Name	
Other	
PS_Water Equipment	Yes
Phasing	
Phase Created	New Construction
Text	
SCDF_WaterTankMaterial	Steel

Sprinklers		
Pendent	Upright	Sidewall
		

Parameter Name	Sample Value
Temperature Rating	68 °C
Sprinkler Type	Concealed/Exposed
K factor	8
Hazard Group	Ordinary/High Hazard

FSSD – ACMV & Sprinklers checklist

3.2.1. ACMV System Checklist

1 Indicate the fire rating, capacity and dimensions of the ducts.

2 Indicate the location of compartment walls/floors, air shafts and location of fire dampers.

3 Indicate the location and volumetric rate of flow of air at each point of inlet and outlet of each system including those serving protected staircases, exit passageways, lobbies, areas of refuge, the Fire Command Centre, fire pump rooms, generator rooms, rooms used for the storage of flammable liquids or g or other areas of special risk.

4 Indicate the routing of ducts.

5 Indicate then location of intake and exhaust of MV system

6 Indicate the types of ventilation duct. E.g. Kitchen exhaust, fresh air duct, duct smoke control system.

7 Provide the necessary cross-sectional views as superimposed on the building part thereof to fully describe the details and configurations of the system.

3.2.2. Sprinkler System Checklist

1 Indicate the sprinkler tank capacity and material of construction

2 Indicate the location of sprinkler tank

3 Indicate the location of standby generator and compartmentation.*

4 Indicate the highest point / most remote point of the sprinkler head

5 Indicate the location of sprinkler control valve & pump

6 Show the height of highest sprinkler above the control valve & pump

7 Indicate the pipe size and orifice size

8 Indicate the discharge density and temperature of sprinkler head

9 Indicate the design hazard group

10 Indicate the coverage per sprinkler head and area of operations

11 Indicate the Routing of sprinkler pipes

12 Provide the necessary cross-sectional views as superimposed on the building or part thereof to fully describe the details and configurations of the system

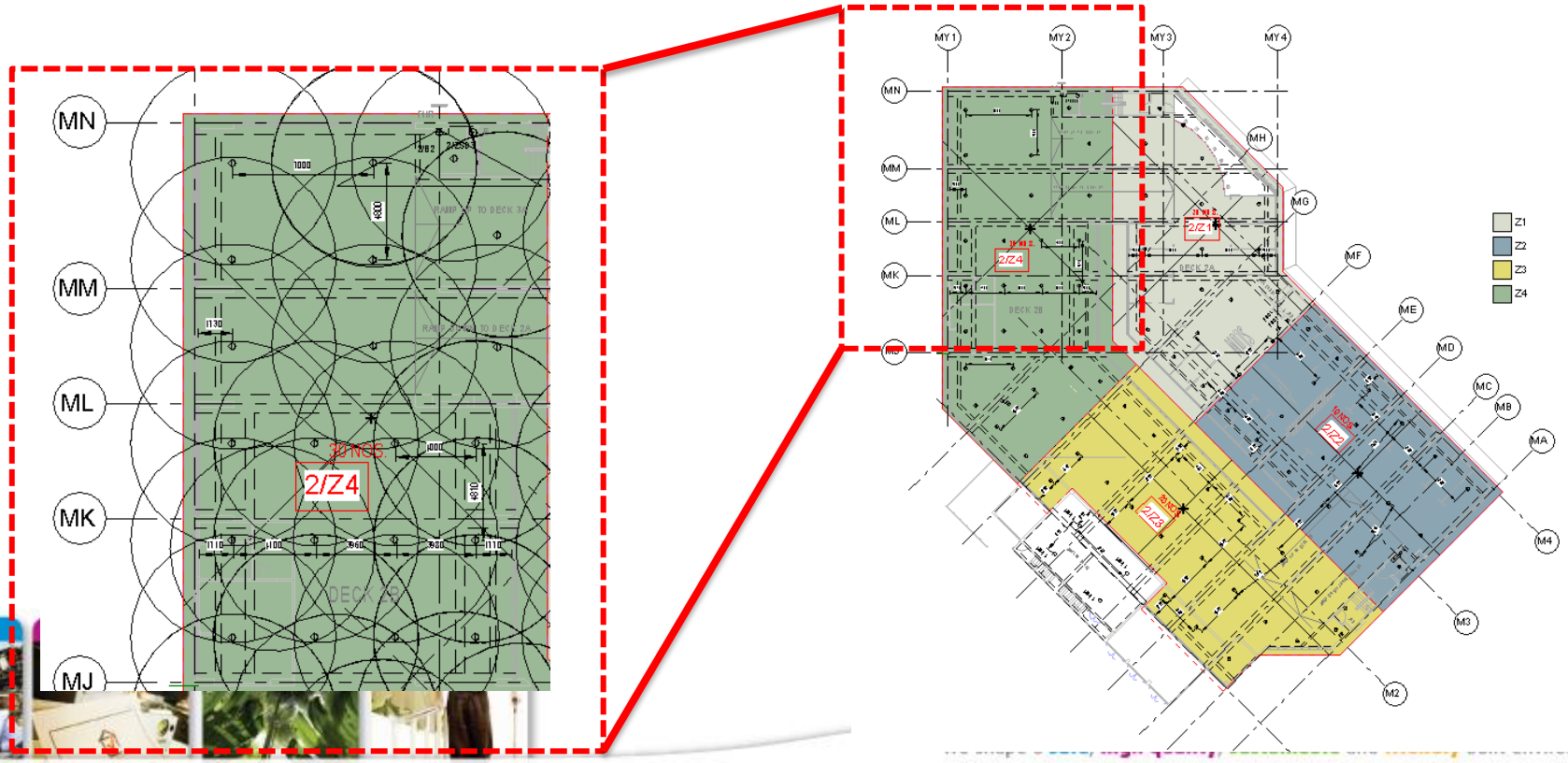
*Architectural consultant to provide info.



FSSD – Detectors checklist

1) Type of detectors
2) Schematic diagrams
3) Zoning
4) Coverage and numbers of detectors within the zone
5) Location of alarm panels







IDA-TFCC

Format:

- ✓ Light Weight Format (1st & Amendment submission) – Current submission
- ✓ Native Format - Voluntary submission

Submission Documents:

IDA-TFCC Submission Documents

2D View	BIM Model
• Site and location plan • Notes and legend page • Schematic drawing	• Main Distribution Frame (MDF Room) • Telecommunication Equipment Room (TER) • Telecommunication Risers • Floor plans generated from BIM model

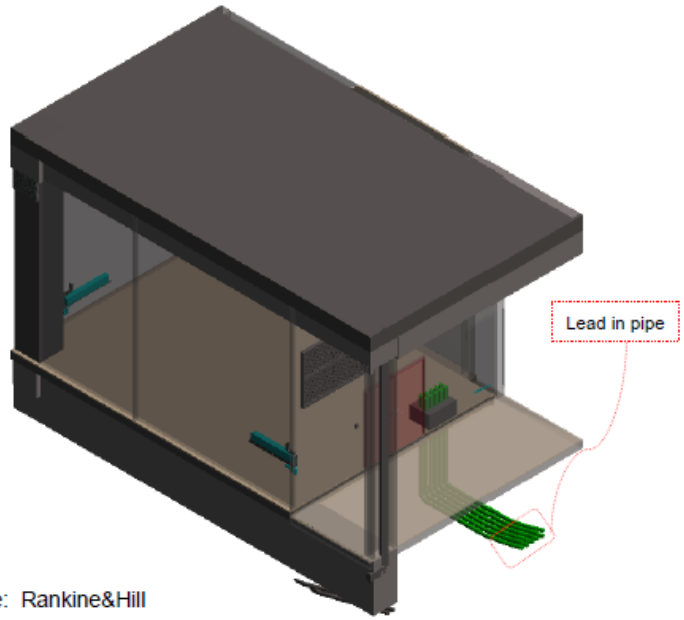


IDA-TFCC

- ✓ Prepare **Part 3D Model** for
  - Main Distribution Frame room or
  - Telecommunication Equipment room
  - Telecommunication Risers

- ✓ including
  - door
  - louvers for ventilation
  - ducts levels indication if air-conditioned
  - cable trays, distribution boxes, frames, equipment, etc.

Example: Part 3D MDF Room with lead in pipe



Source: Rankine&Hill



City Gas

Format:

- ✓ Light Weight Format

Schematic Diagram and Detailed Plan

3D Model View:

- ✓ showing overall gas installation(Level by Level)

Submission Requirement:

- ✓ save each plan in one file with 3D model (Level by Level)
- ✓ submit the deviated plans for amendment submission

As-built submission:

- ✓ Line diagram with final pressure test
- ✓ Show the actual pipe installation



City Gas

- ✓ **Pipe materials and size commonly used for gas installation**

Material (Standards)	Size (mm)	Types of Joints (Standards)
Polyethylene pipes	32, 63, 125, 180, 250, 315	Butt fusion Electrofusion joint
Ductile iron pipes	100, 150, 200, 300	Bolted gland joint
Galvanised iron pipes (seamless & heavy gauge type)	20, 25, 32, 40, 50, 80, 100	Threads joint (Below 100mm diameter) Flange joint (100mm diameter and above)
Steel pipes (Seamless type)	20, 25, 32, 40, 50, 80, 100, 150, 200, 300	Welded joint
Copper pipes (seamless & half hard type)	15, 22, 28	Compression joint Capillary joint



PUB - Water

Format:

- ✓ Light Weight Format

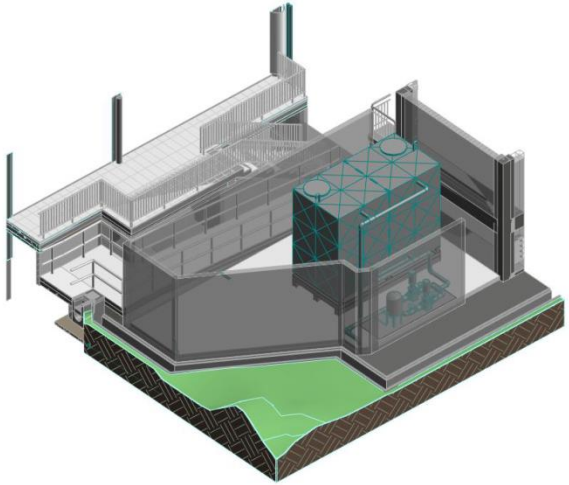
2D View:

- ✓ No floor plans during submission

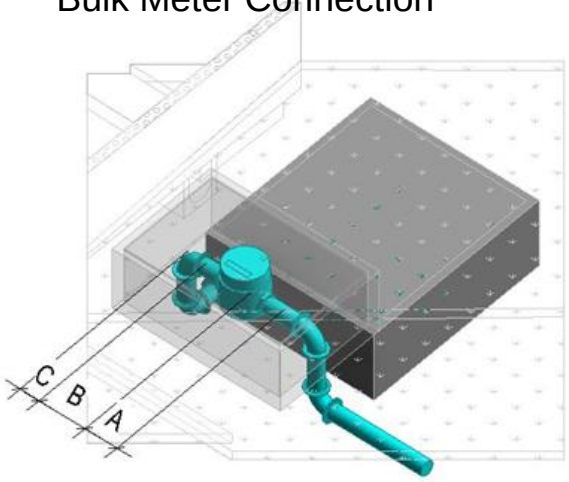
Part 3D Model:

- ✓ Water tank details
- ✓ PUB Water/Newater meter
- ✓ PUB Sub-meter

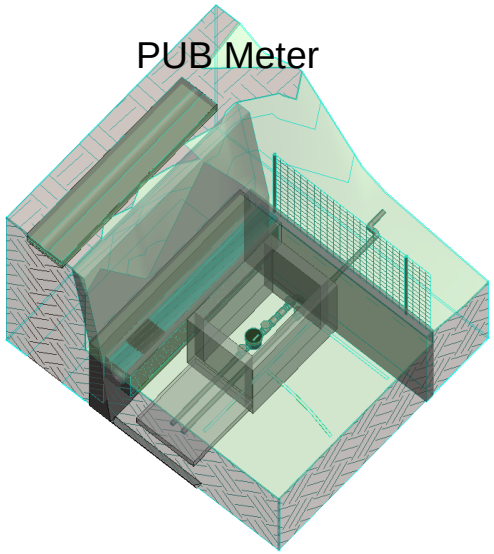
Water Tank Details



Bulk Meter Connection



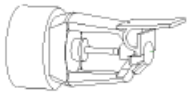
PUB Meter



Core Info

FSSD - Sprinkler System

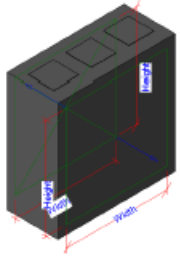
Sprinklers

Pendent	Upright	Sidewall
		

Parameter Name	Sample Value
Temperature Rating	68 °C
Sprinkler Type	Concealed/Exposed
K factor	8
Hazard Group	Ordinary/High Hazard

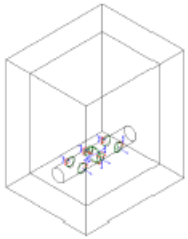
FSSD - ACMV

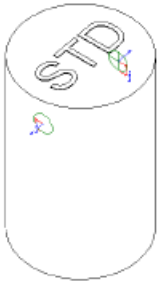
Fire Damper



Parameter Name	Sample Value
Hour Rating	2 hrs

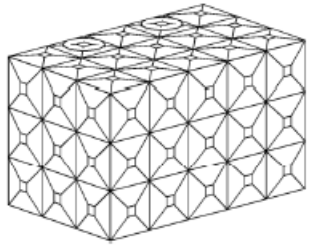
Inspection Chamber/ Silt Trap





Parameter Name	Sample Value
Top Level	110.300 mm
Invert Level	109.550 mm
Depth	0.750 mm

Sprinkler Tank



Parameter Name	Sample Value
Length	4m
Width	3m
Height	3m
Effective Volume	21.6m^3
Effective Height	1.8m
Tank Material	Pressed steel



Useful Link

CORENET BIM e-Submission:

http://www.corenet.gov.sg/general/building-information-modeling-(bim)-e-submission.aspx

CORENET BIM Guides:

http://www.corenet.gov.sg/general/bim-guides/singapore-bim-guide-version-20.aspx

http://www.corenet.gov.sg/general/bim-guides/bim-essential-guides.aspx

BCA BIM:

http://bimsg.org/



Contact Persons

Architectural BIM e- Submission

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Structural BIM e- Submission

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MEP BIM e- Submission

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Thank You!

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