香港岩土及岩土環境工程專業協會
ASSOCIATION OF GEOTECHNICAL &
GEOENVIRONMENTAL SPECIALISTS (HONG KONG)

BIM – Challenges in BIM implementation in HK

Simon Ng
Associate Director & Regional Senior BIM Manager

Agenda

1. **Why BIM fails?**

    a) *True BIM? Fake BIM?*

    b) *Top 10 BIM Killers*

2. **Re-engineering**

    a) *Information Management*

    b) *BIM is game changer*

    c) *Think out of box*

3. **Conclusion**

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About Simon

§BEng (Hons) in Mechanical Engineering, HKU

§MSc in Environmental Engineering, HKUST

§20 years of experience in engineering design and management

§Young BIMer of the Year, BIM Excellence Awards, Construction Industry Council Hong Kong (2014)

§Chairman, Autodesk Industry Advisory Board, Hong Kong (AIAB) (2015 – 2017)

§Professional Member, Hong Kong Institution of Building Information Modelling (MHKIBIM)

§Speaker, Autodesk University, China (2013, 2016, 2017)

§Speaker, HKIBIM Annual Conference (2013, 2015)

§Speaker, AIAB Annual Conference(2014)

About WSP

§ As one of the world's leading professional services firms, WSP provides engineering design, planning, management and other professional consultancy service

§ With more than 37,700 talented people in 500 offices across 40 countries

§ More than 2,400 employees in China

§ Participate in a number of large-scale projects and iconic construction engineering design

§ In ENR "International Engineering Design", ranked for the first time in two consecutive years among 225 companies.

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After May 2017

Before May 2017

THE TOP 225
WSP Ranks Number 1

Super High Rise Project

International five-starts Hotel project

Financial Centre Project

Large Scale Project

WSP BIM – offers full range of BIM services across project whole life cycle

Singapore Culture Centre

Hans Shanghai Jing An Building

Hong Kong Kerry Centre

Jinhua Crown Hotel

Hengqin International Business Service Base & Supporting Project Phase 1
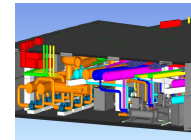
Xujiahui Centre

Guangzhou Southern Tower
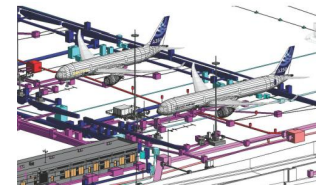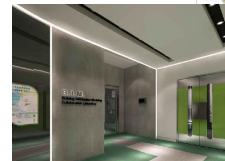
HK Airport Midfield Apron Dev. Works (P568)

BIM Coordination

BIM Design
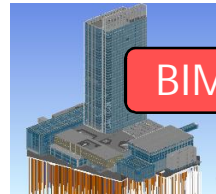
Shanghai Jing An Kerry Centre

Hung Shi Kiu Pbulic Retal Houseing

BIM Consultation

Tianjin City CBD, TJ117

(HOS) 2016, HKHA

HK CIC Training Centre

Huawei Suzhou R&D Centre

Shenzhen Ping An Financial Centre South Tower

Logan Property Guangming 玖龙台 Project

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2005　2006　2007　2008　2009　2010　2011　2012　2013　2014　2015　2016　2017

HK No. 1 Ede Road

HKJC Happy Valley

So Kwun Wat (The Bloomsway)
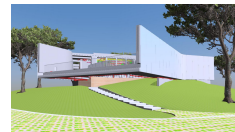
M + Pavilion West Kowloon Cultural

BIM Management
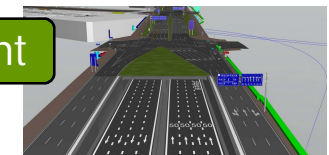
Shenzhen QIANHAI (V VI) GUIWAN QIANWAN

BIM Facility Management

HK Arch.SD Data Centre
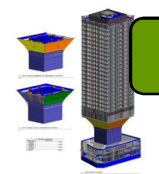
Asian House at 1 Hennessy Road

Hong Kong Madonnell Road

Tsuen Wan West Station TW5

Ho Man Tin (The Mantin Height)

HK EPD, Organic Waste Treatment Facilities, Phase 1

BIM Training

Rezoning for Wah Fu Est. & Reception Site Development at Pok Fu Lam South
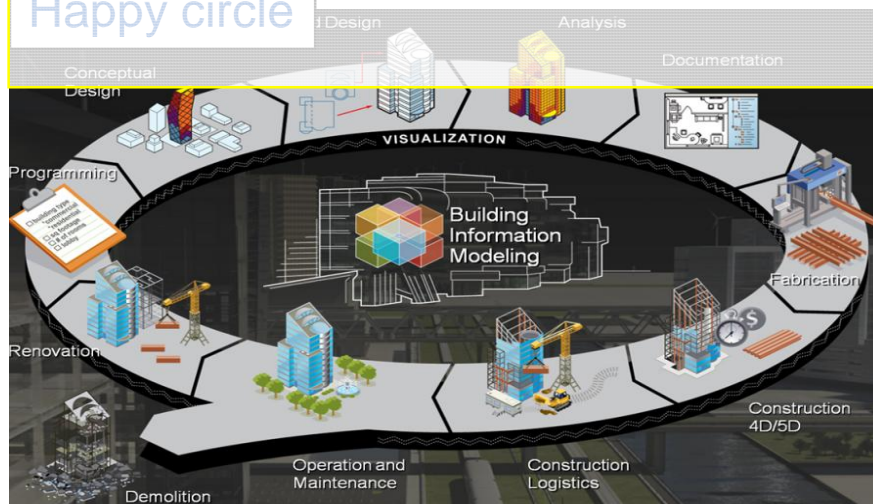
NTT Financial Data Centre

Home Ownership Scheme, HKHA
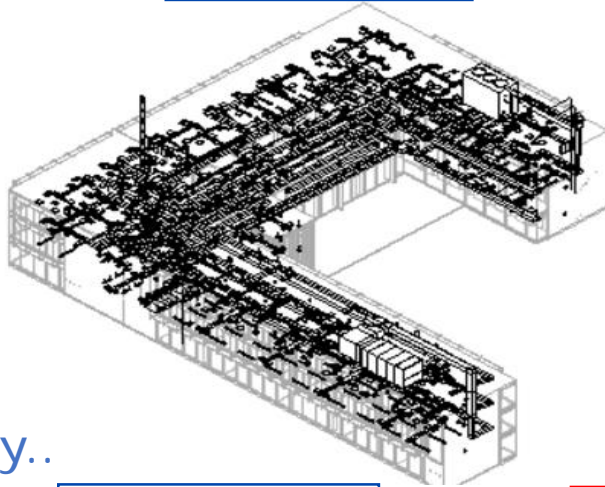
大连东港朗亭

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WHY BIM FAILS

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What people promote BIM **...**

Advanced Technology

Beautiful pictures / videos

Happy circle

Magic words

Is that true?

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TRUE BIM? FAKE BIM

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True BIM?   Fake BIM?

Should be..

Design in BIM

BIM Coordination

Drawings produced by BIM
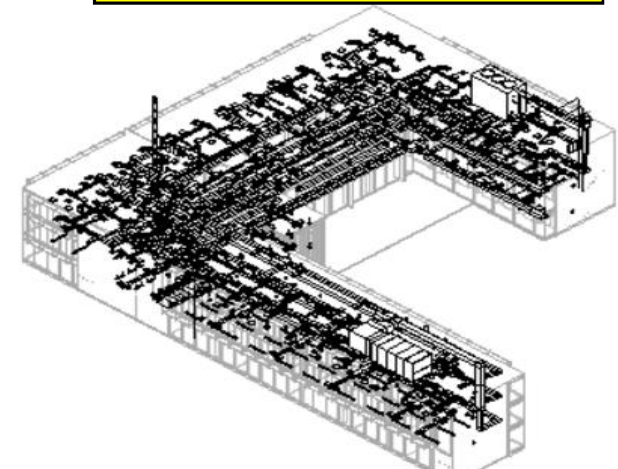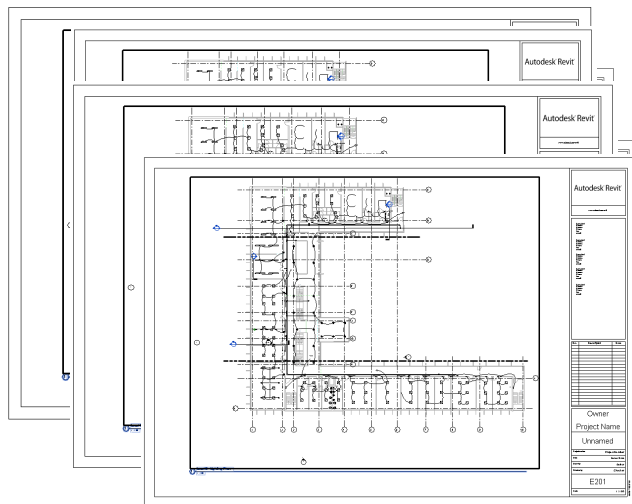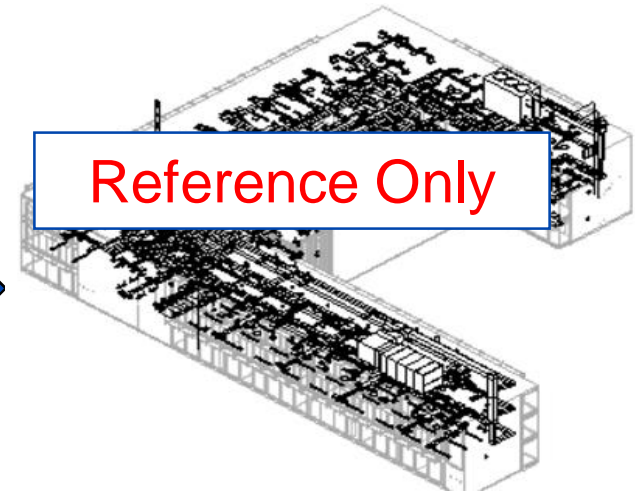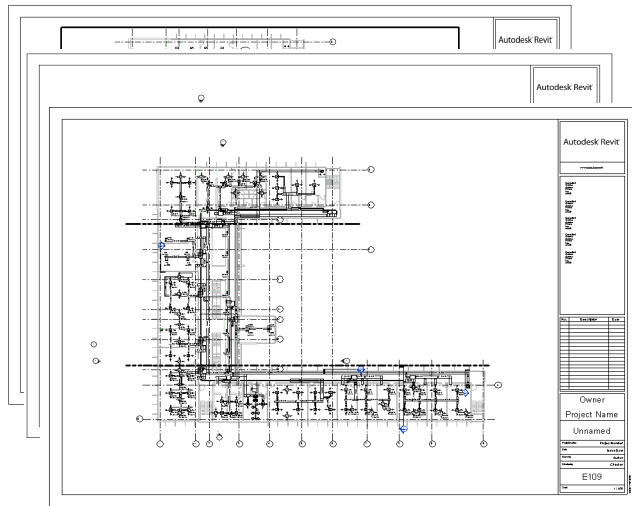
Reality..

9
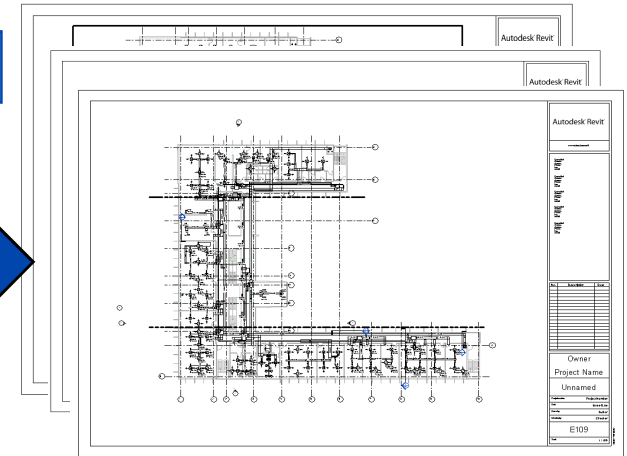
Design in CAD
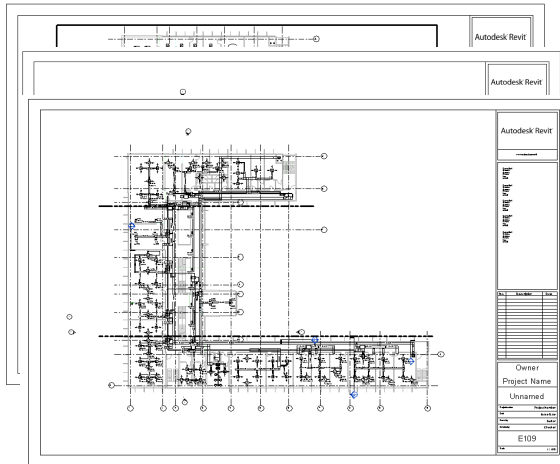
Outsource to someone
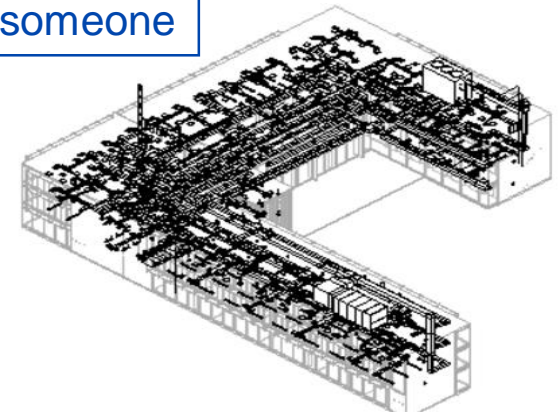
1. I don't have time, so issue CAD (deliverable) first
2. BIM will not affect my schedule
3. I can outsource, lower my cost

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Consequence of fake BIM

Reference Only

No trust on BIM data

As build BIM

Top 10 BIM Killers

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1. Increase workload and liability
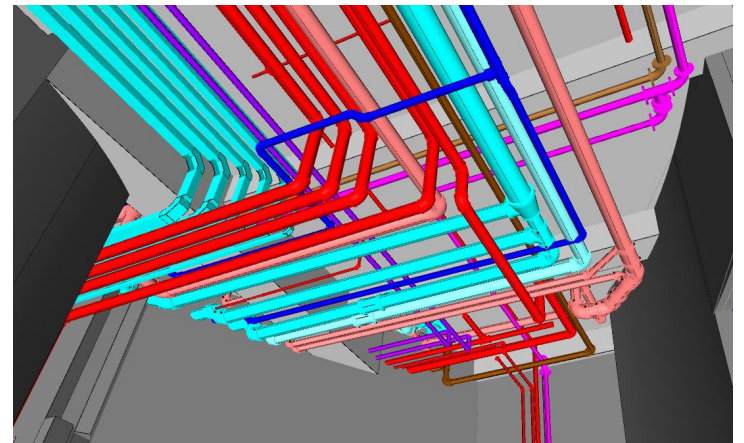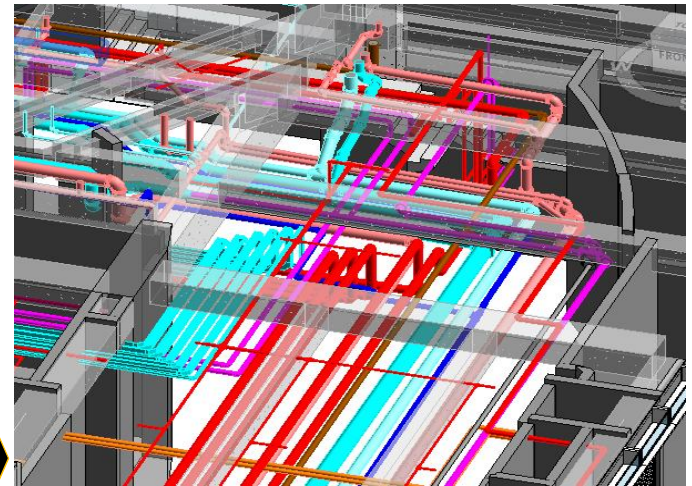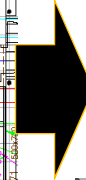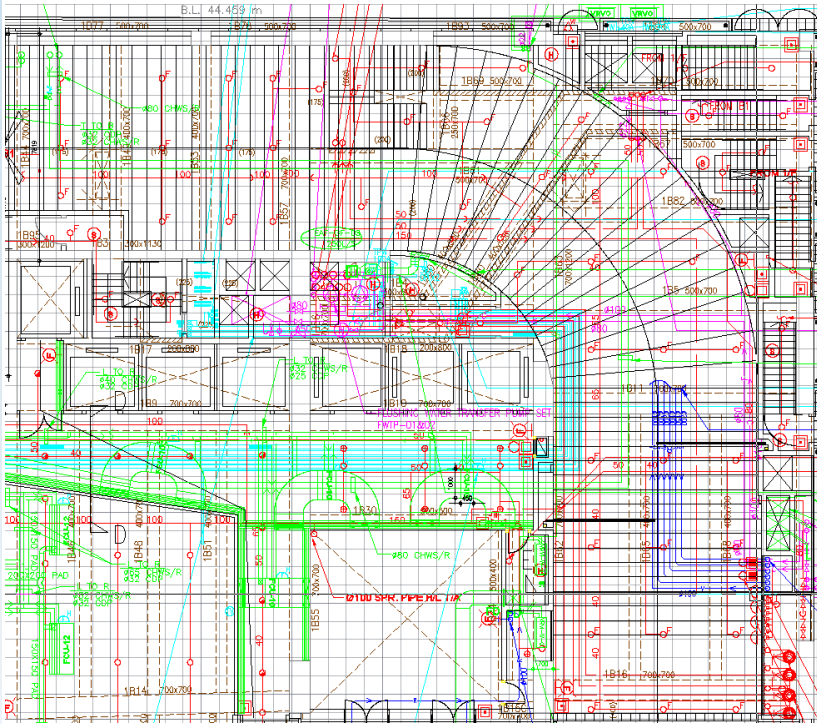
2. Cannot meet CAD standard

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2. Cannot meet CAD standard

Class 570 - AIR-CONDITIONING, VENTILATION

Symbol Name	Graphical Presentation	Description
ADB201		SECTION OF SUPPLY AIR DUCT
ADB202		SECTION OF RETURN AIR DUCT
ADB203		SECTION OF PRIMARY AIR DUCT
ADB204		SECTION OF EXHAUST AIR DUCT

SAD

RAD

PAD

EAD

TAD
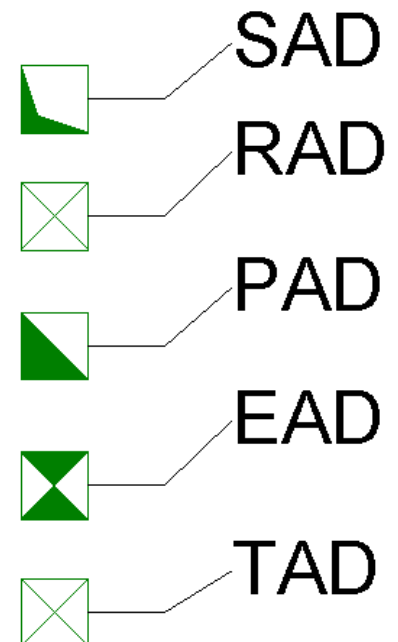
3. Cannot do Statutory submission

4. Too many clashes

5. Super fast track project, too many changes

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6. Culture of the industry

No Collaboration

Finger pointing

Too much competition

Quality is not priority

HIS FAULT

HER FAULT

THEIR FAULT

NOT ME

FAST, CHEAP OR GREAT?
Please choose 2:

LOW Quality

HIGH Cost

FAST

CHEAP   GREAT

LONG Duration

*UNATTAINABLE Nirvana
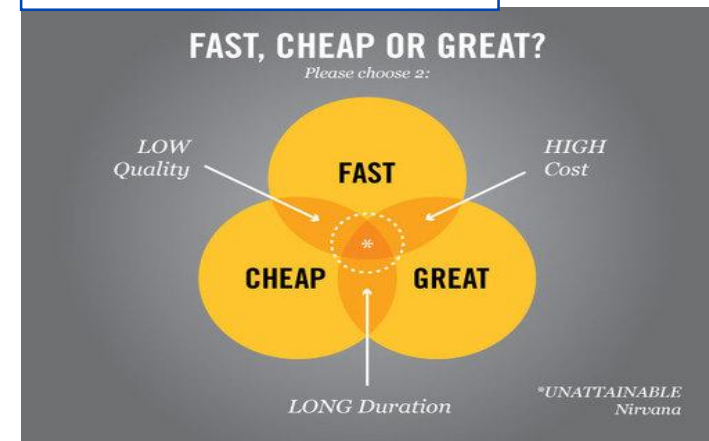
7. Can build without BIM anyway

No need BIM

Coordination on spot 地盤夾

8. Not part of their professional

9. Oversell / Over expectation

Zero clash
Fabrication from BIM?

Happy circle

Magic words

Beautiful pictures / videos

10. Other excuses

Other excuses…

- No Mandate – why so serious
- Other organisations haven't started yet, lets wait
- I am old, let young people do that
- No BIM standards
- Software too expensive
- Computer need upgrade first

What we can do?

1. Increase workload & liability

2. Cannot meet CAD standard

3. Cannot do Statutory submissions

4. Too many clashes

5. Super fast track / too many changes

6. Industry culture

7. Can built without BIM anyway

8. Not part of their professional

9. Oversell

10. Other excuses

??

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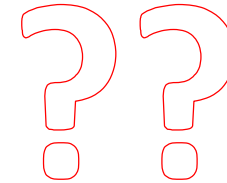
What does "I" in BIM mean?

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What does "I" in BIM mean?

M+ Pavlion, West Kowloon Cultural District

This is a picture

Designers Rendering

Is the information in BIM model ready for construction?

This is an Information Model
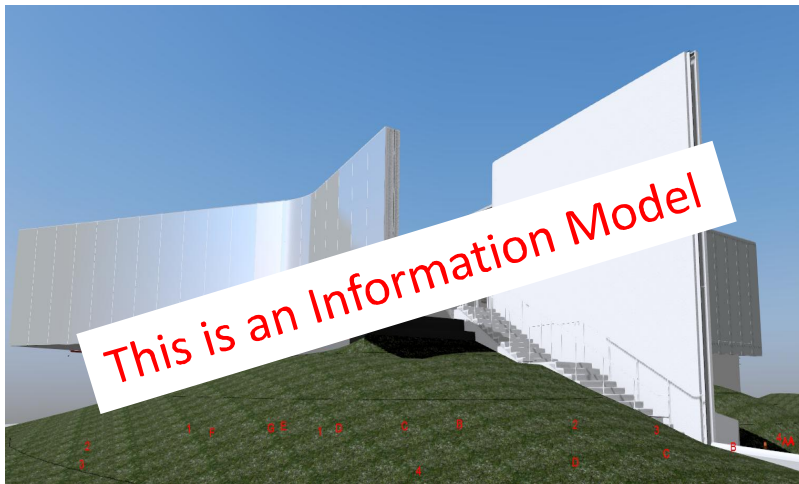
BIM Model

Nope, depends on what LOD it is...

Opening ceremony

LOD – Level of Development

LoD	Definition	Stage
100	The model element may be graphically represented by the model with a **symbol** or other generic representation	Conceptual Design
200	The model element is graphically represented by the model as a **generic** system, object, or assembly with **approximate** quantities, size, shape, location and orientation	Schematic Design
300	The model element is graphically represented by the model as a **specific** system, object or assembly in terms of quantities, size, shape, location and orientation	Detail Design
400	The model element is graphically represented by the model as a **specific** system, object or assembly in terms of quantities, size, shape, location and orientation with **detailing, fabrication, assembly and installation information**.	Construction
500	The model element is **a field verified representation** in terms of size, shape, location, quantity and orientation.	As-built

Source: *HK Jockey Club BIM Standard*
Equivalent to: *CIC HK BIM Standard*
            AIA E202-2008 "Building Information Modeling Protocol Exhibit"

LOD – Level of Development

LOD = Level of Development
(not only "Level of Details", but Maturity of information)

Date	Maturity of information		
1 year ago	A seminar in HKUST will be held on Q4	LOD100	Overall
3 months before seminar	A seminar in HKUST on 1st week of Nov, capacity approx. 200	LOD200	Approxi mate
1 month before seminar, start registration	A seminar in HKUST confirmed on 4 Nov, 9am, Lecture theater F is booked, max capacity of 200.	LOD300	Design (Plan)
1 day before seminar, final preparation	Seminar in HKUST, Lecture theater F on 4 Nov, 9am, 187 people registered, 1 is disable person so need wheelchair seat. 10 helper is needed.	LOD400	Act (include temp work)
After seminar	Seminar was held in HKUST, Lecture theater F, 4 Nov, 9:05am started, 165 people shown up	LOD500	As-is

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LOD – Level of Development
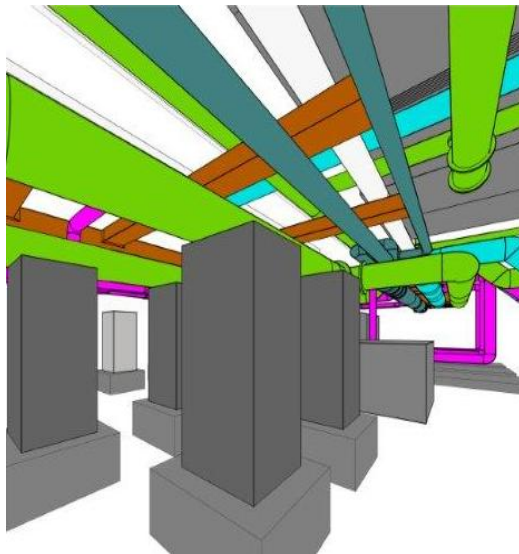
Schematic Design	Detail Design / Tendering	Construction / As-build
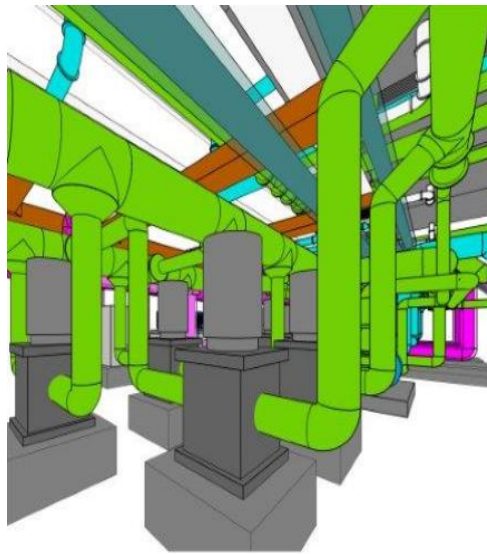
LOD 200   LOD 300   LOD 400 / 500

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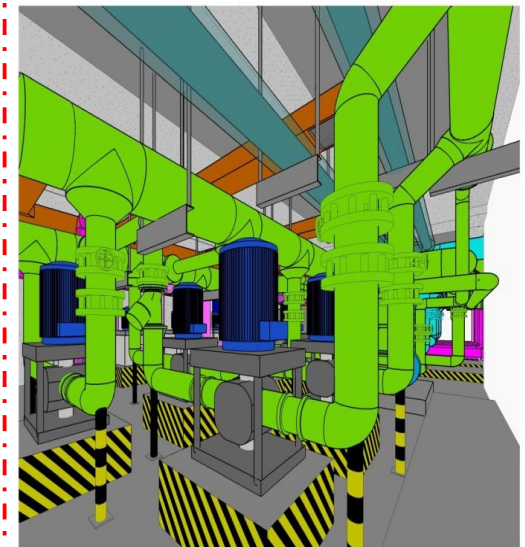
1. "BIM design model for reference only"?

BIM Is information rich model, but should have clear explanation on information based on maturity:

1. Design information for construction
2. Design intent
3. Indicative
4. Information not controlled

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1."BIM design model for reference only"?

1.1 Design Information for construction

Examples:
1. Gridline, levels (SFL, FFL)
2. Size and setting out of beams and columns

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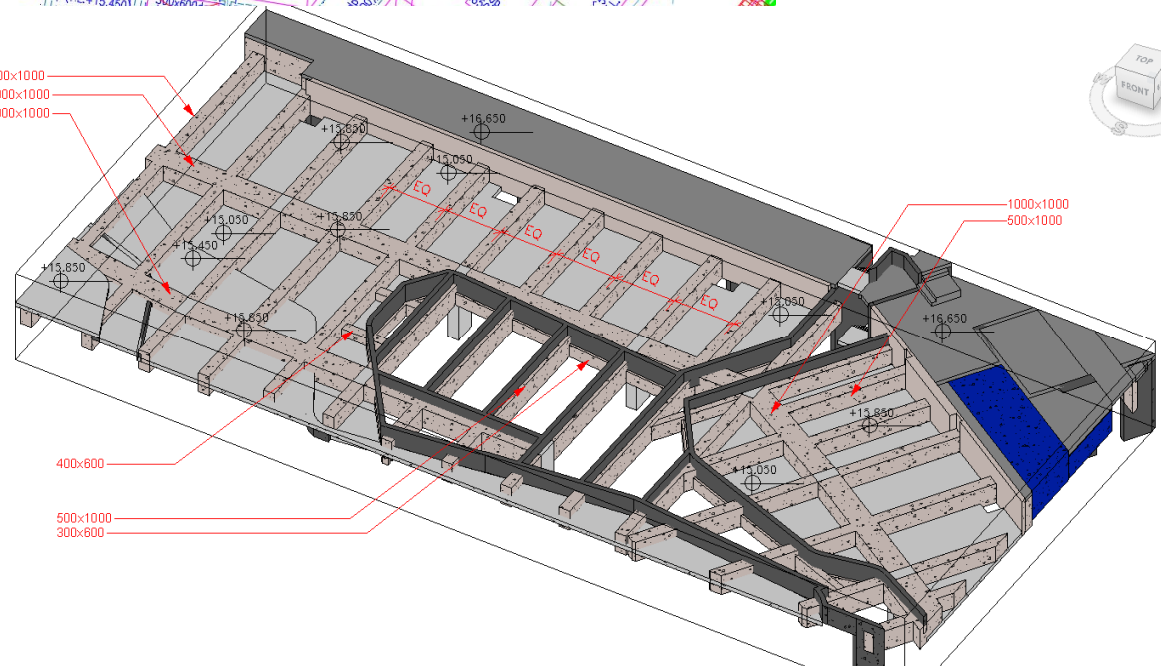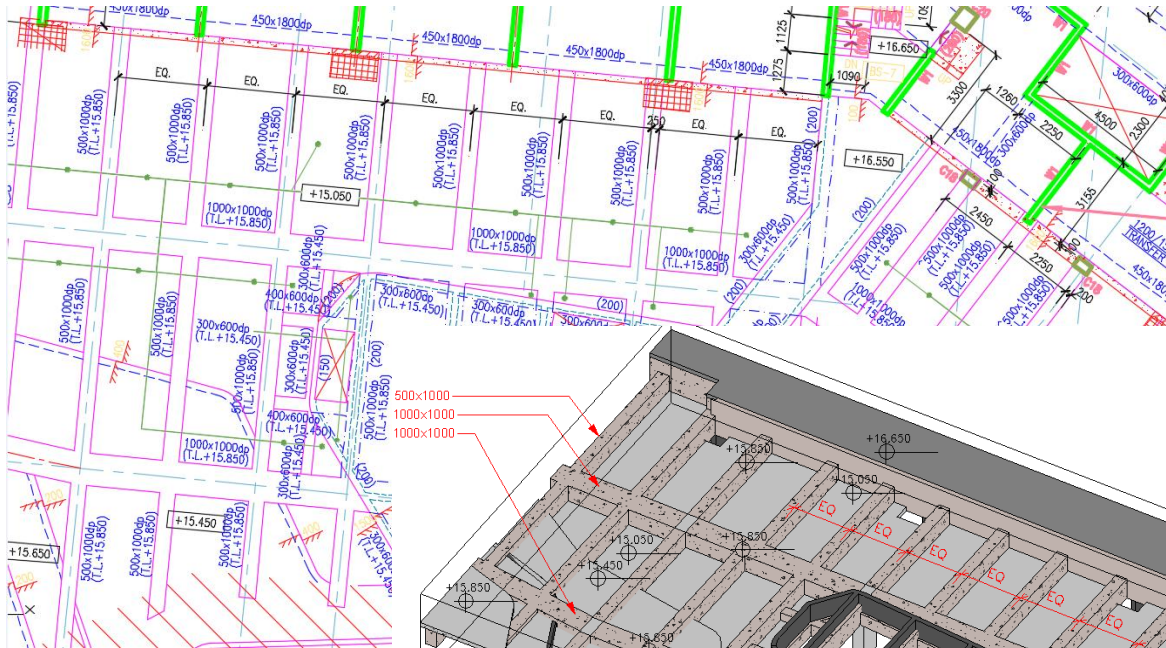
1."BIM design model for reference only"?

1.2 Design inend

2499 mm
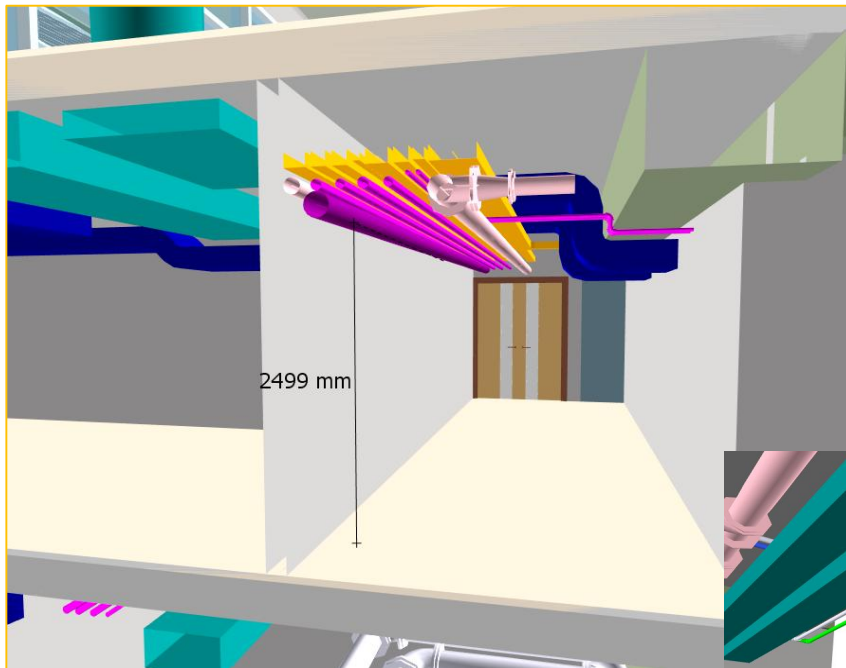
- Size, setting out and routing of ducts, pipes, cable containment

- Size and Setting out of Equipment, Fixture, Lift and Escalators.
- Panel and mullion size for Facade panel, glass and fins

wsp
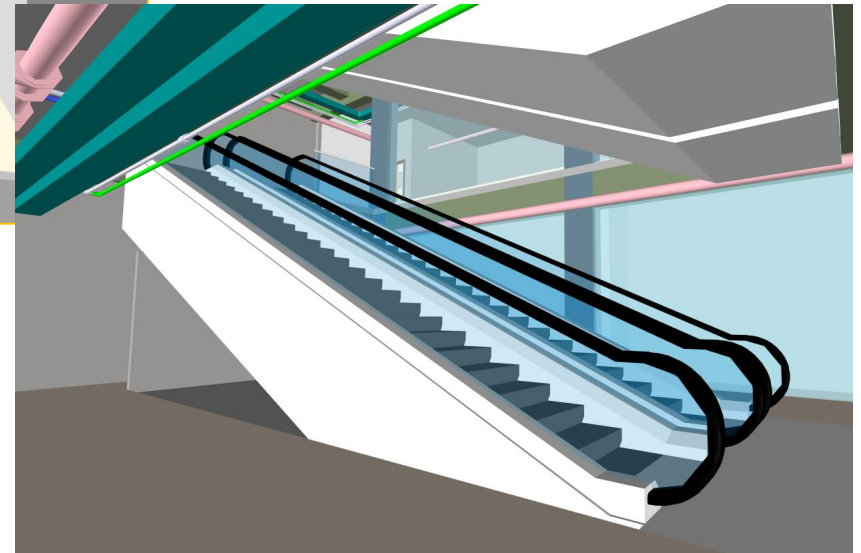
1."BIM design model for reference only"?

1.3 Indicative
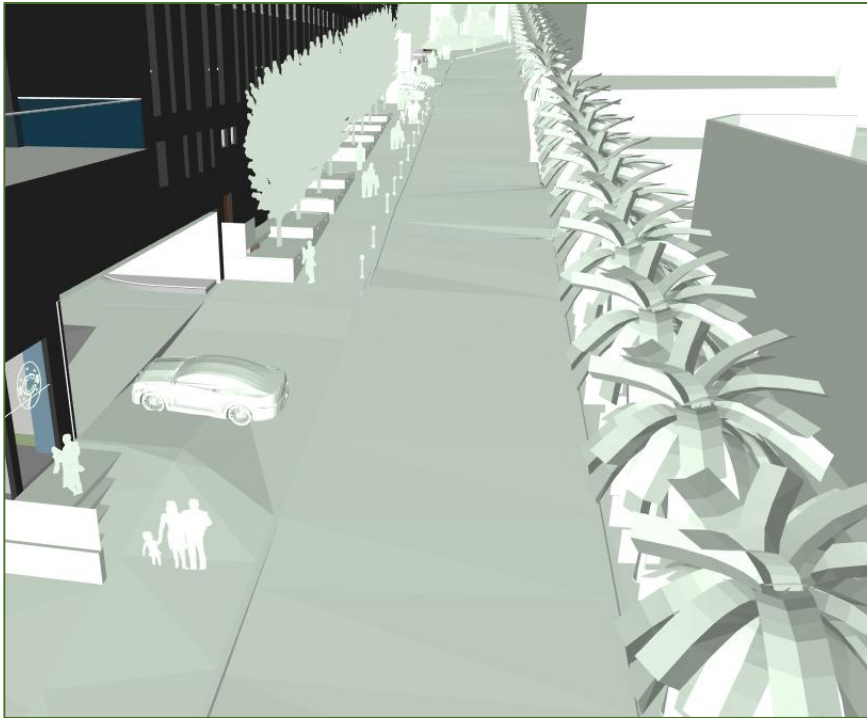
- Surrounding buildings, road and trees.
- Furniture and non-building equipment (if any)

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1."BIM design model for reference only"?

1.4 Information not controlled

- Pipe material, nominal diameter

- Wall materials, color and texture
- Ironmongery

2. Level of Development (LOD)

<u>LOD 300</u>
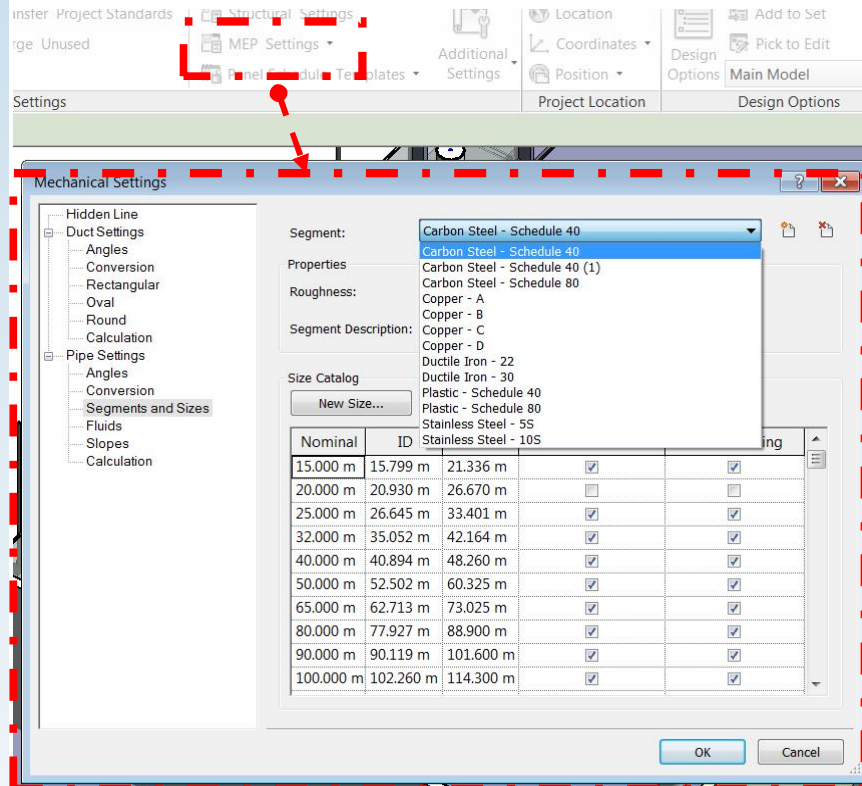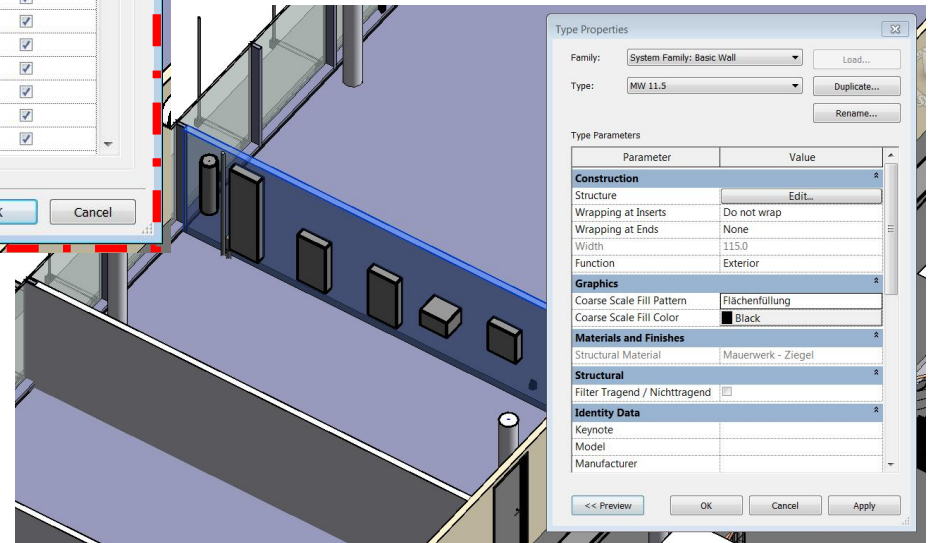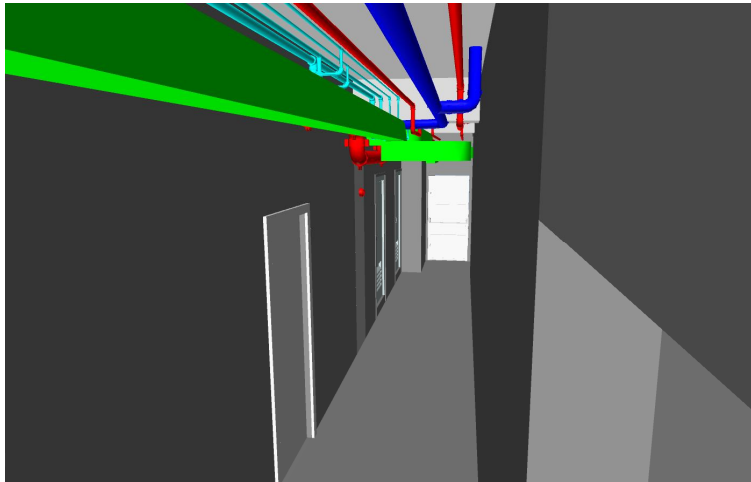Setting out and routing of ducts, pipes, are the design intend from engineer.

It is contractor's responsibility to coordinate based on i)site condition, ii) material approval iii) contractor's design to propose routing for approval

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<u>LOD 400/500</u>
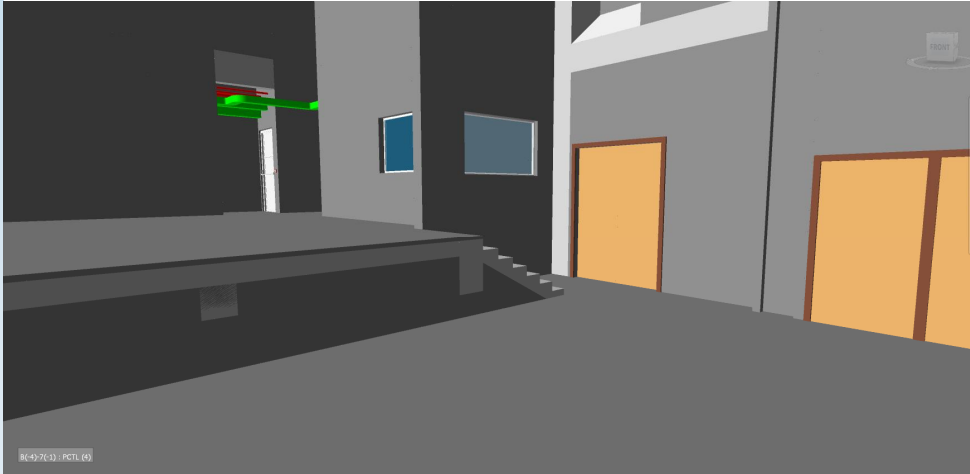Setting out are the arrangement-to-be.

More detail such as adding trap in drainage pipe, lighting arrangement, exit sign.

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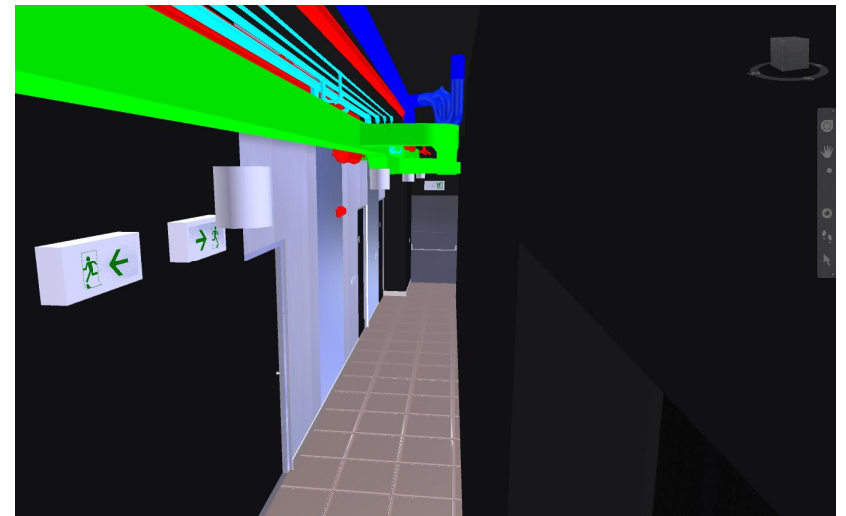
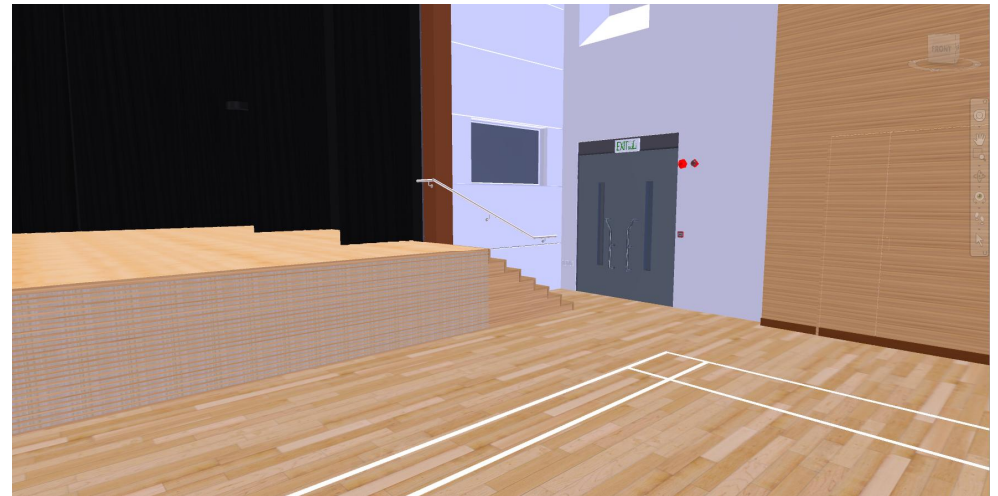# 2. Level of Development (LOD)

Following information are not controlled:
- Type of Door
- Ironmongery
- Wall materials color and texture

LOD 300

Confirmed door type, ironmongery, wall materials

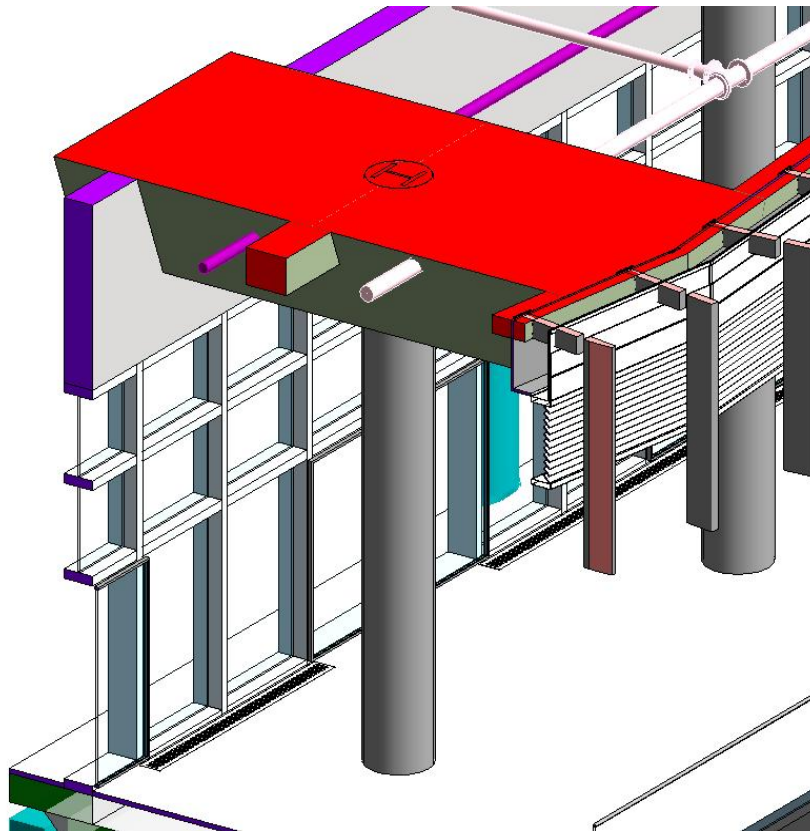Add more details: exit sign, breakglass, alarm

LOD 400 / 500

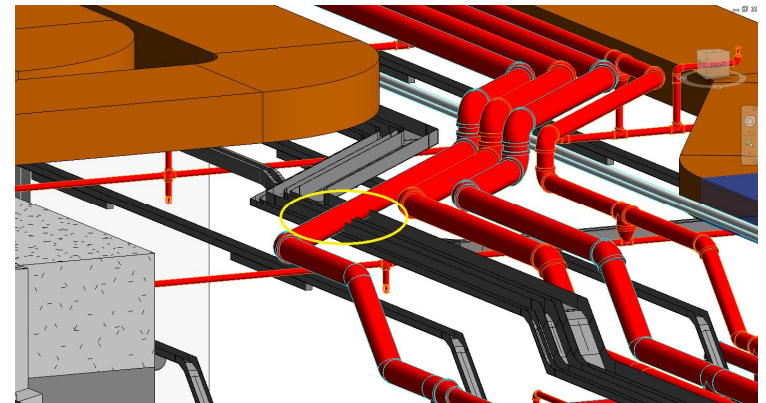# 3. Clash Free model?

Which one matter?

Openings
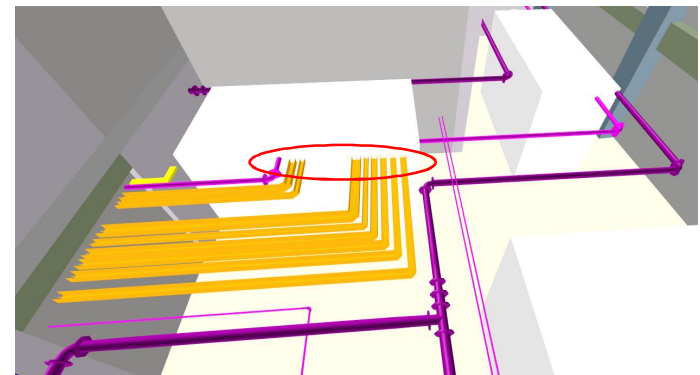
MEP self clashes

Connection to equipment

BIM is the game changer

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Opportunity ? Re- allocation of resources

Traditional Method

Design Drawing	Construction Drawing		Completion Drawing

Due to missing the chance

B I M

Design Model		Construction Model	Completion model

3D coordination force

Complete building data

BIM Drawings – as long as it is understandable，Why Strictly Follow the CAD Standard?

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BIM Drawings – as long as it is understandable，Why Strictly Follow the CAD Standard?
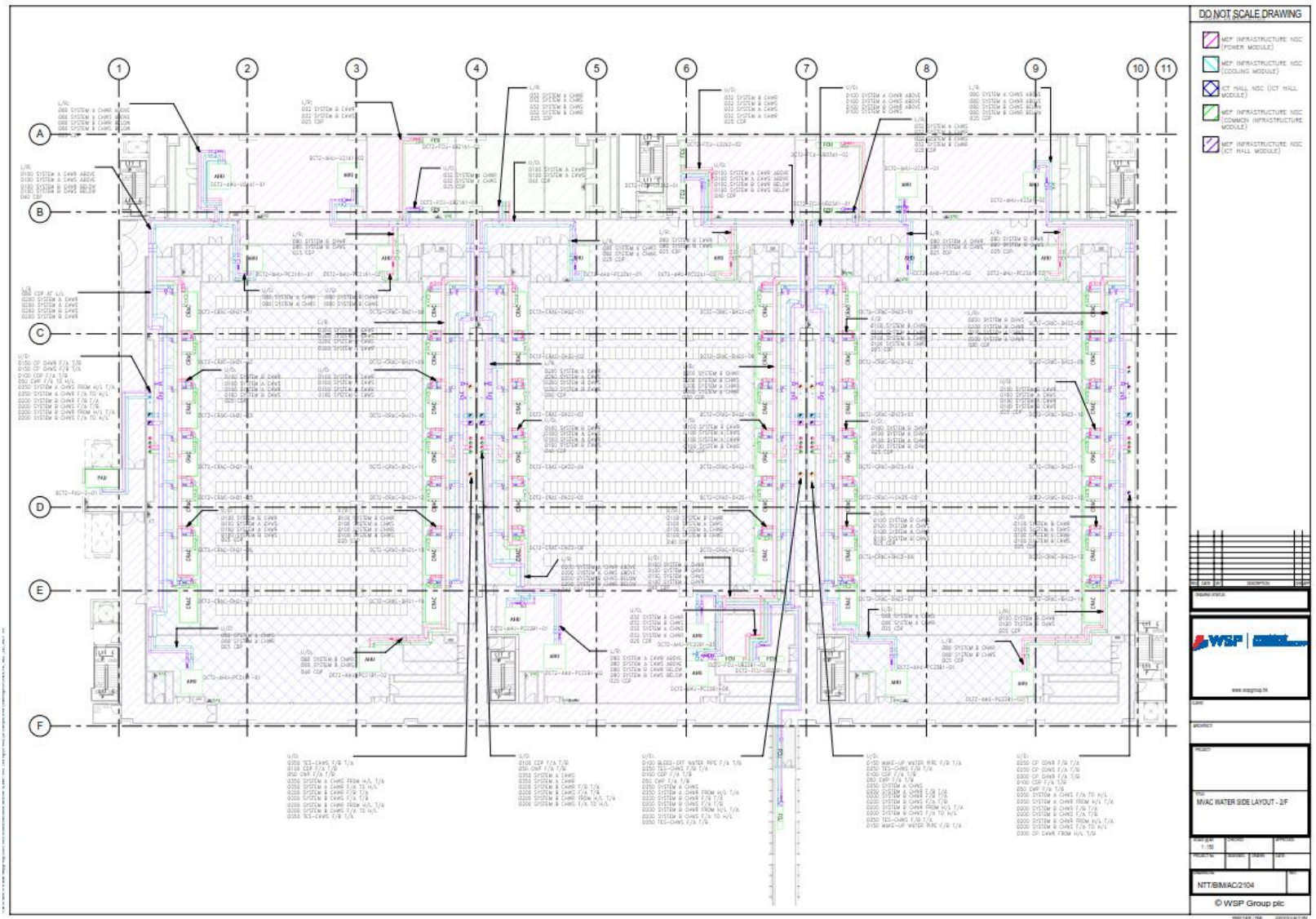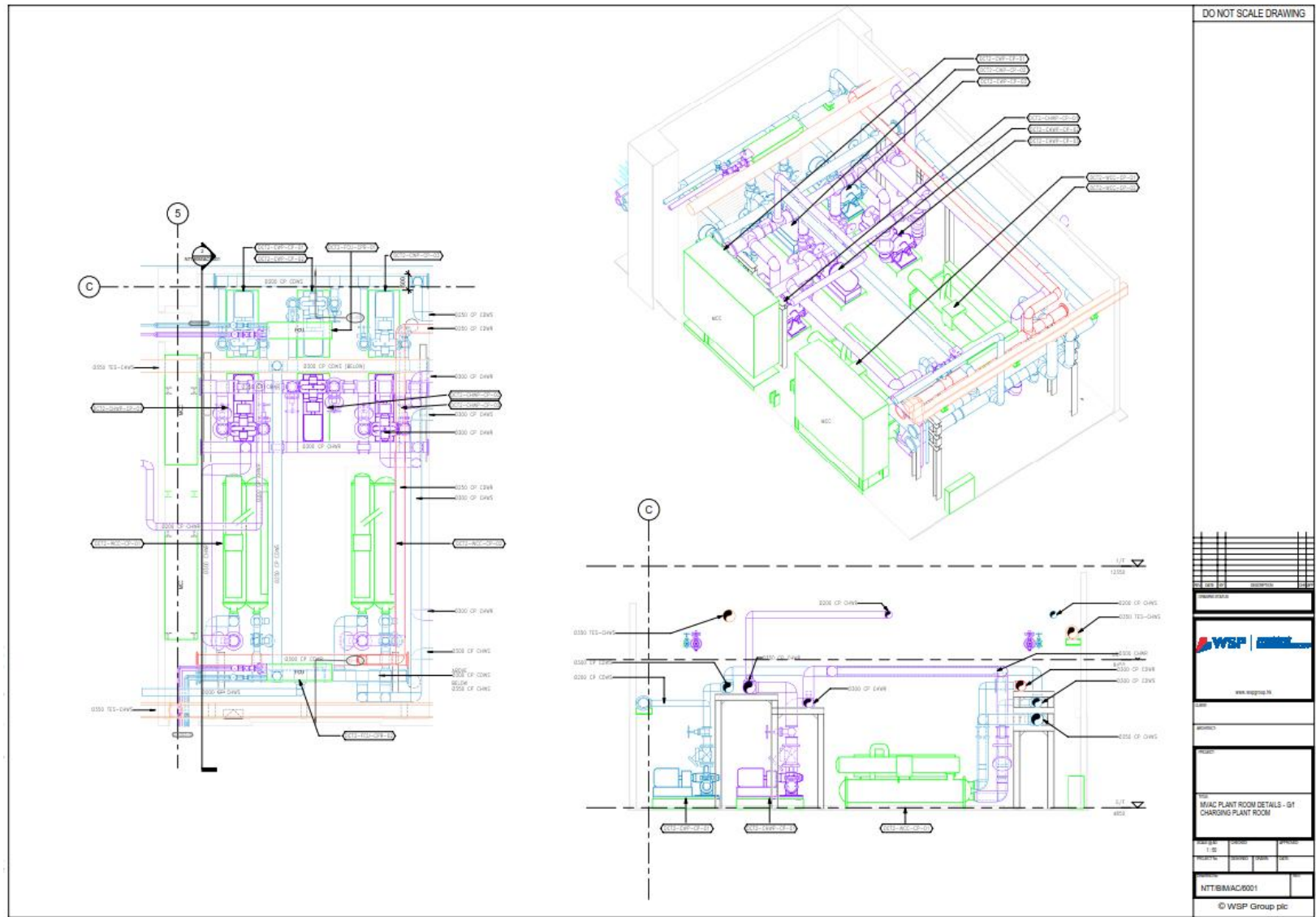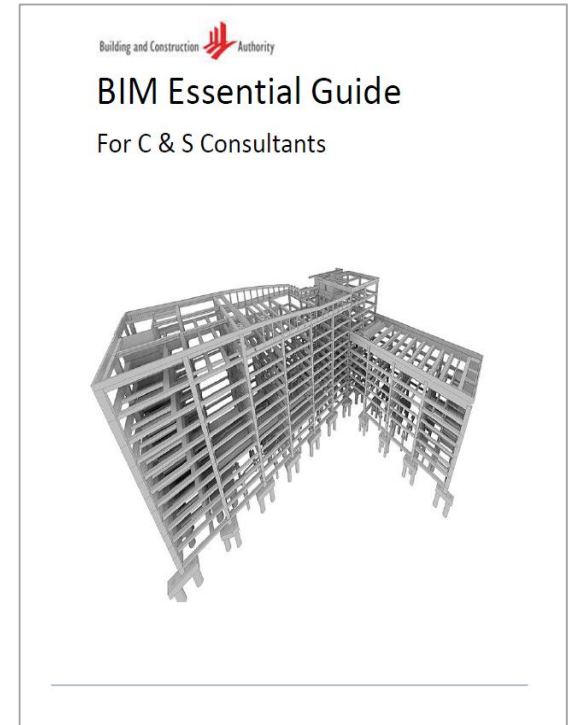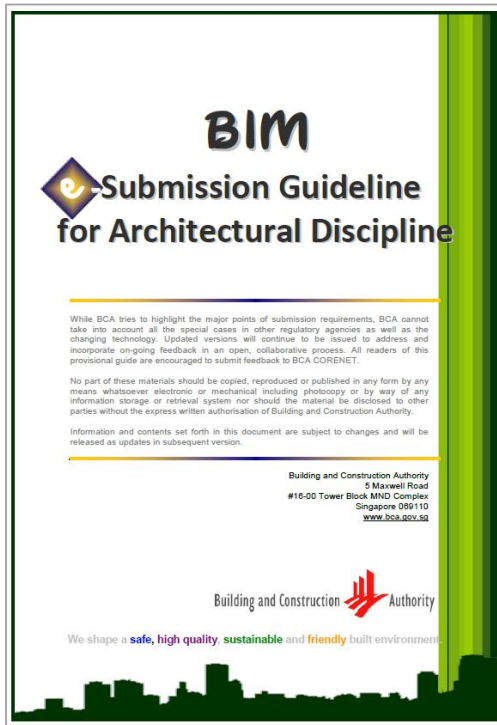
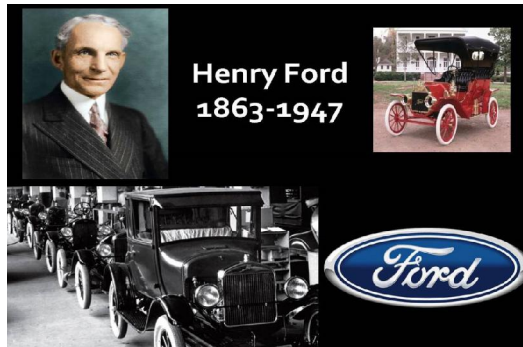# BIM for Statutory submission

THINK OUT OF BOX

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Think out of the box

Henry Ford

Fed Smith – Founder of FedEx

Steve Jobs

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Conclusion

BIM Challenges, What we can do?

1. Increase workload & liability

2. Cannot meet CAD standard

3. Cannot do Statutory submissions

4. Too many clashes

5. Super fast track / too many changes

6. Industry culture

7. Can built without BIM anyway

8. Not part of their professional

9. Oversell

10. Other excuses

BIM is about game changer

BIM is Information Management

BIM is "think out of box"

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Thank you!

Simon Ng

Associate Director and
Regional Senior BIM Manager

Email: simon.ng@wsp.com