



The Complete Work Flow of BIM

Design, Documentation, Construction and Operation

David Fung
Building & Architectural Engineering Manager
T&ES

Building Information

Graphical

Plan 平面圖
Section 剖面圖
Elevation 立面圖
Area Diagrams 面積圖
Schematic Designs 方案圖
Building Plan 審批圖
Structural Plans 結構圖
E/M Drawings 機電圖
Schematics 機電示意圖
Details 大樣圖
Other Diagrams... 其他圖

Non-Graphical

Area Schedule 面積表
Finishing Schedules 裝潢表
Door/Window/Louvre 門窗表
Beam/Column Schedule 樑柱
Equipment Schedule... 機器

Program 進度
Cost Estimate 造價表
Quantity Take Off 材料表
Bills of Quantities 物料清單
Variation Assessments 變更

Modelling

- Plan
- Section
- Elevation
- Area Diagrams
- Schematic Designs
- General Building Plan
- Structural Plans
- E/M Drawings
- Schematics
- Other Diagrams

BIM

Information

- Area Schedule
- Finishing Schedules
- Floor/Window/Louvre Sch
- Beam/Column Schedule
- Equipment Schedule
- Logbook
- Cost Estimate
- Quantity Take Off
- Bills of Quantities
- Variations

Building Information Modeling

信息化建築模型



BIM Process - Information Flow

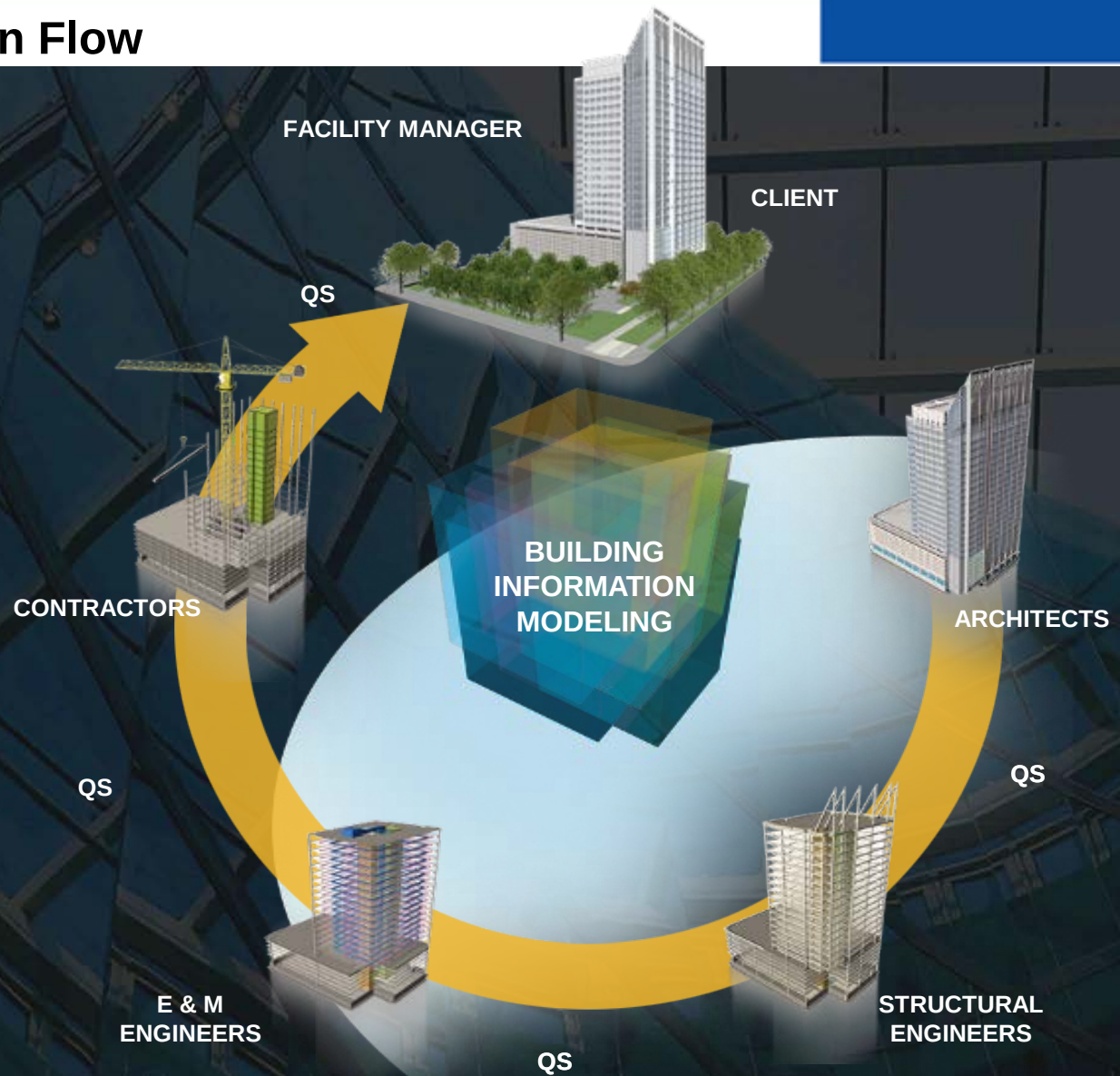
Graphical Data
(model)

+

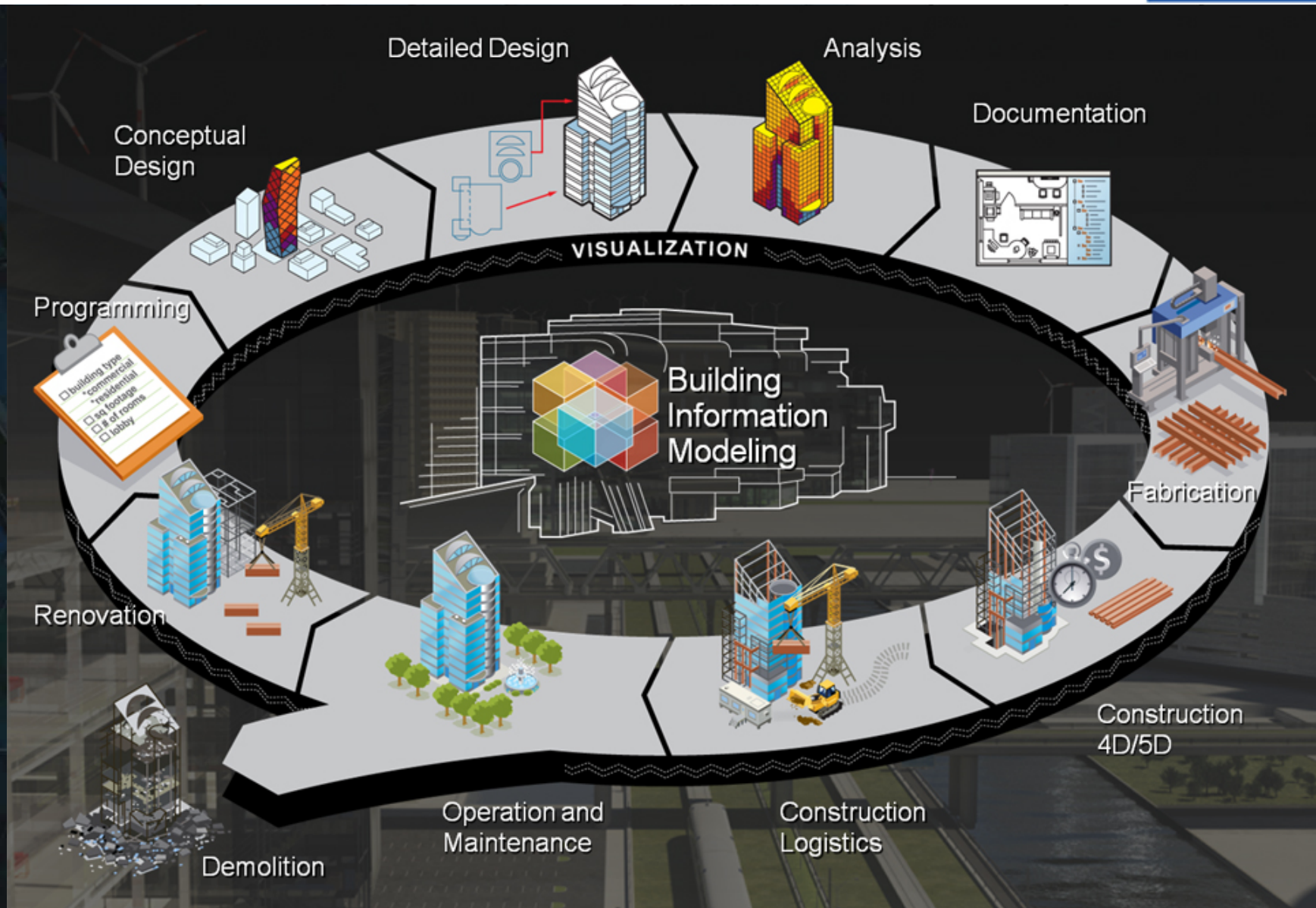
Non-Graphical
Data
(Information)

+

New workflow

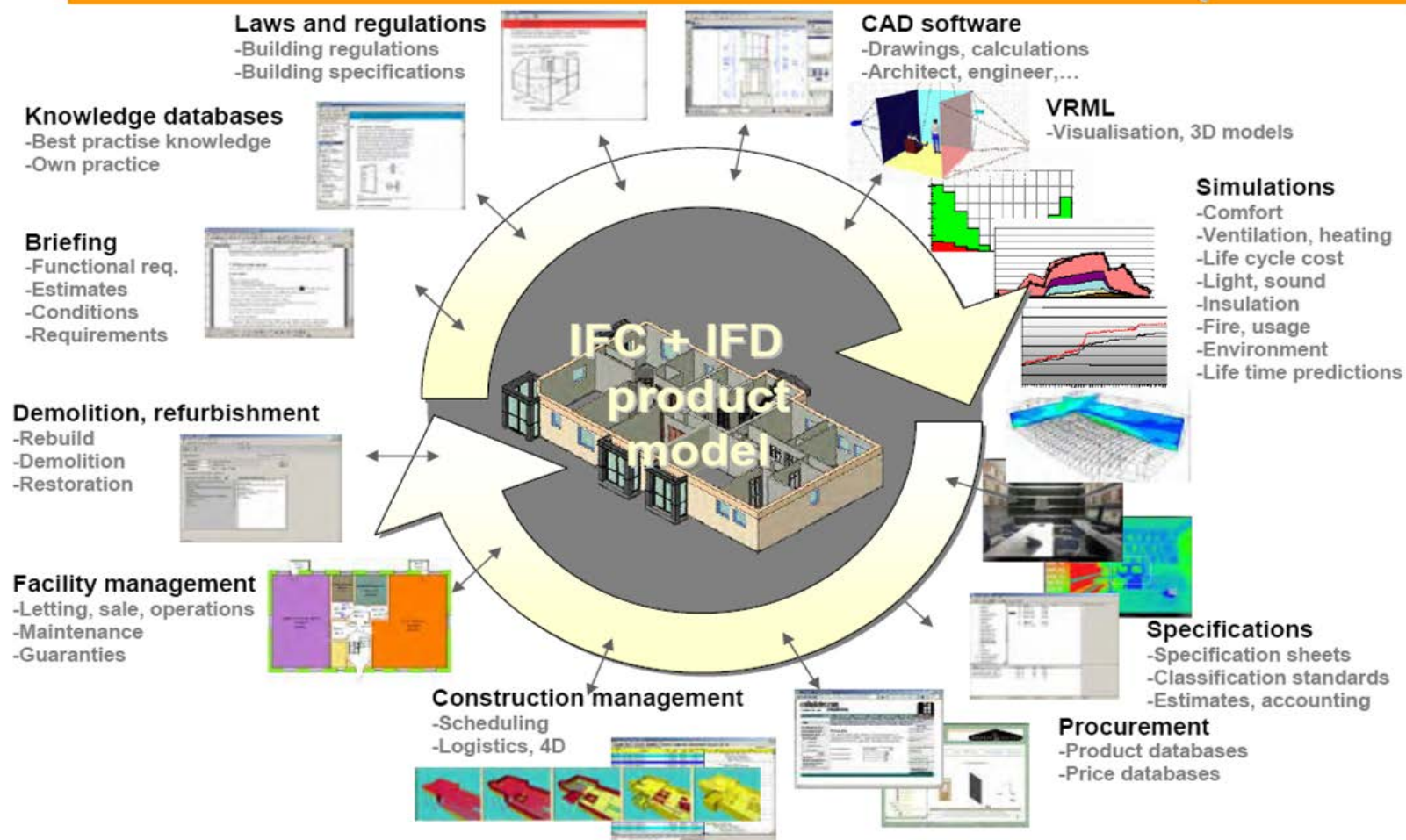


BIM Process - Information Flow



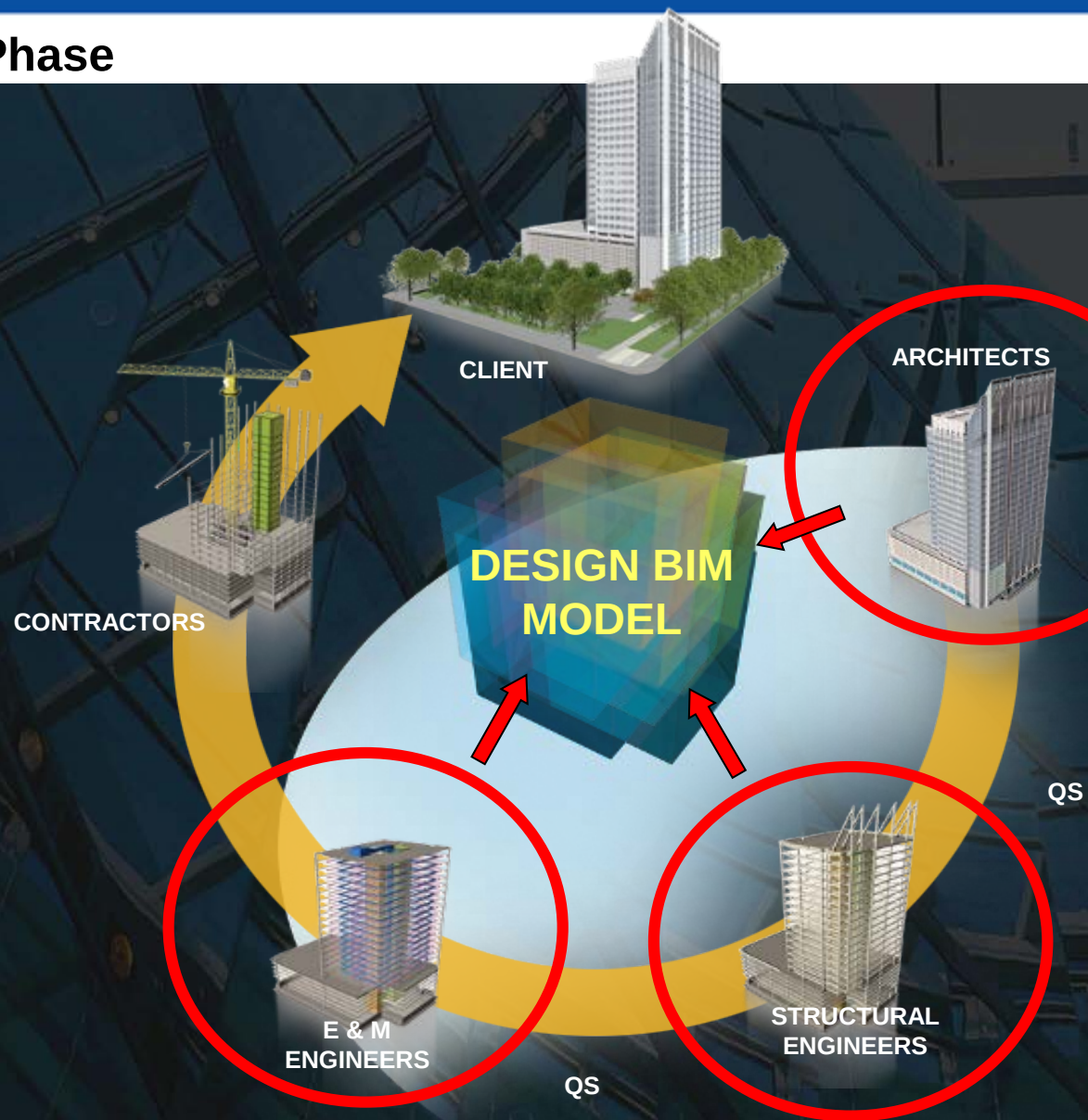


Tier 3 – Derived Lifecycle View



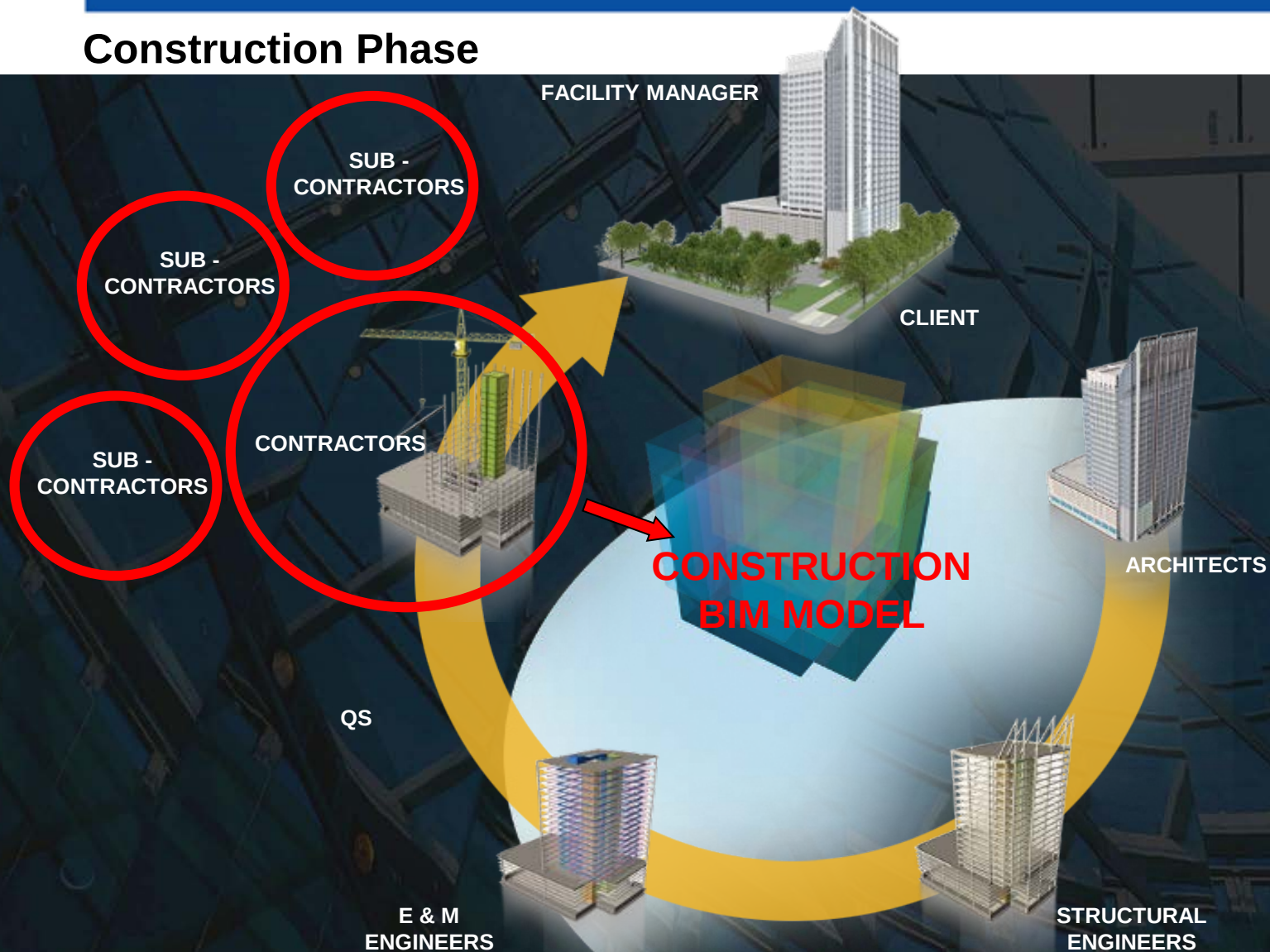


Design Phase

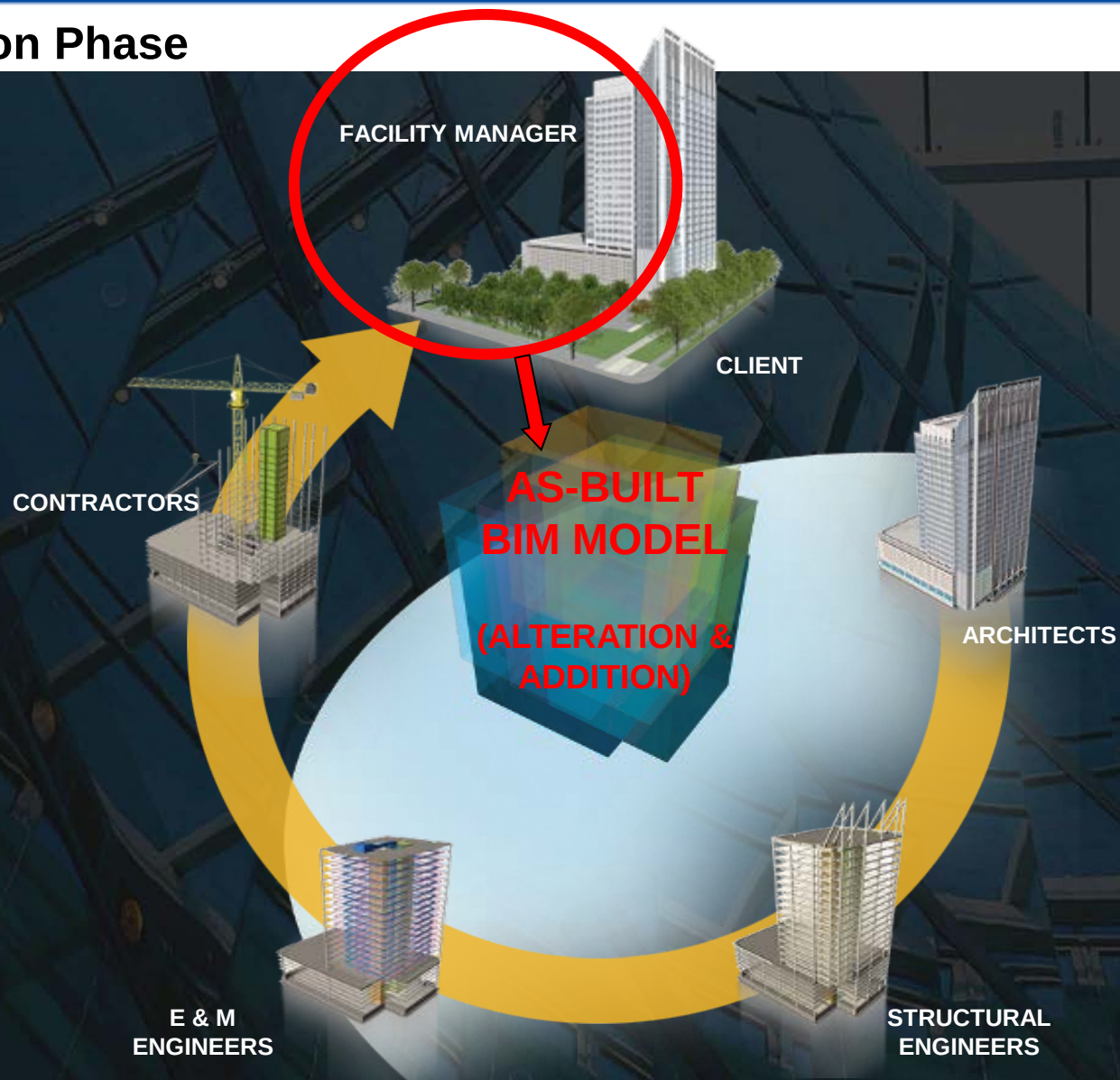




Construction Phase



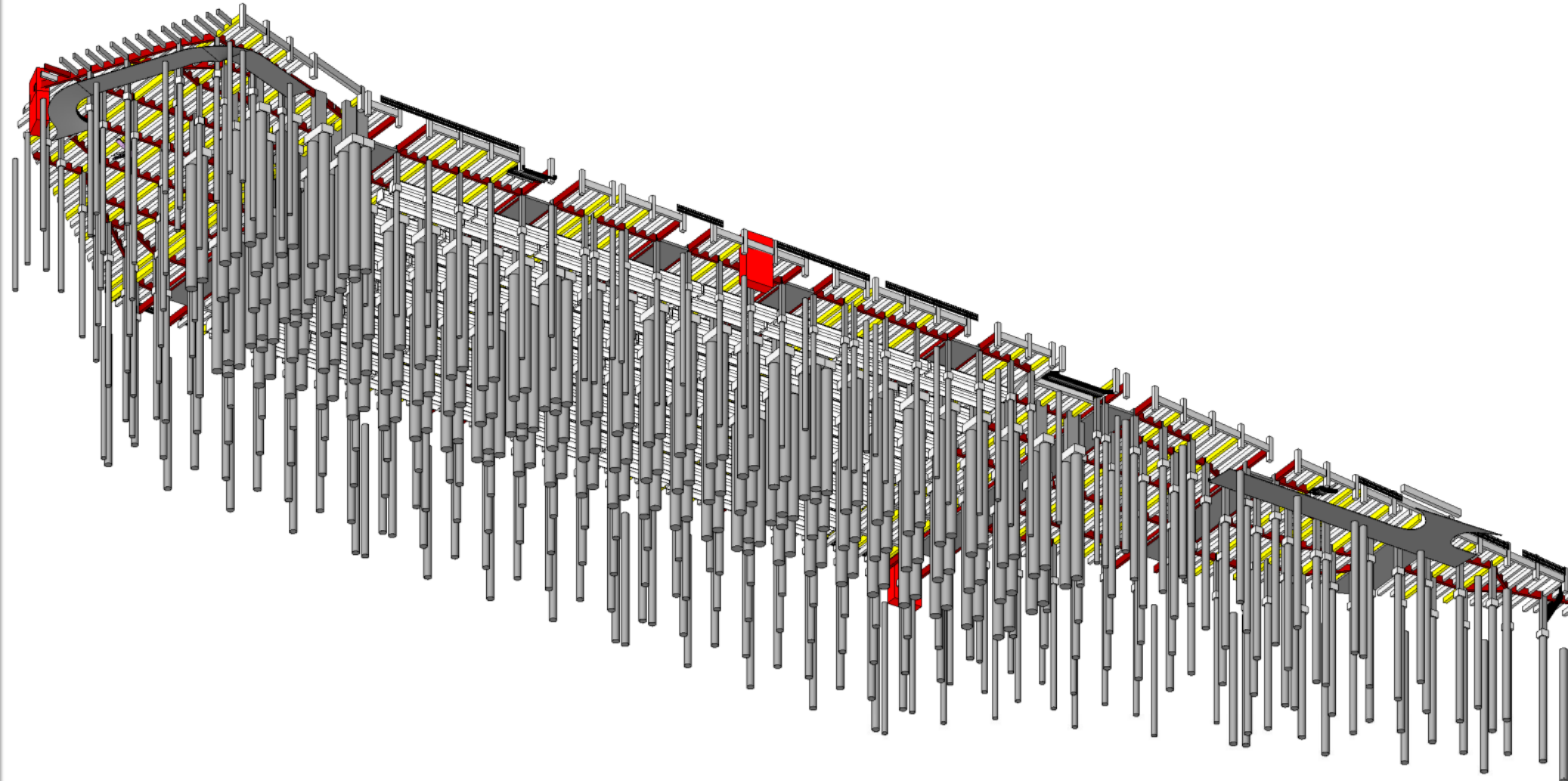
Operation Phase



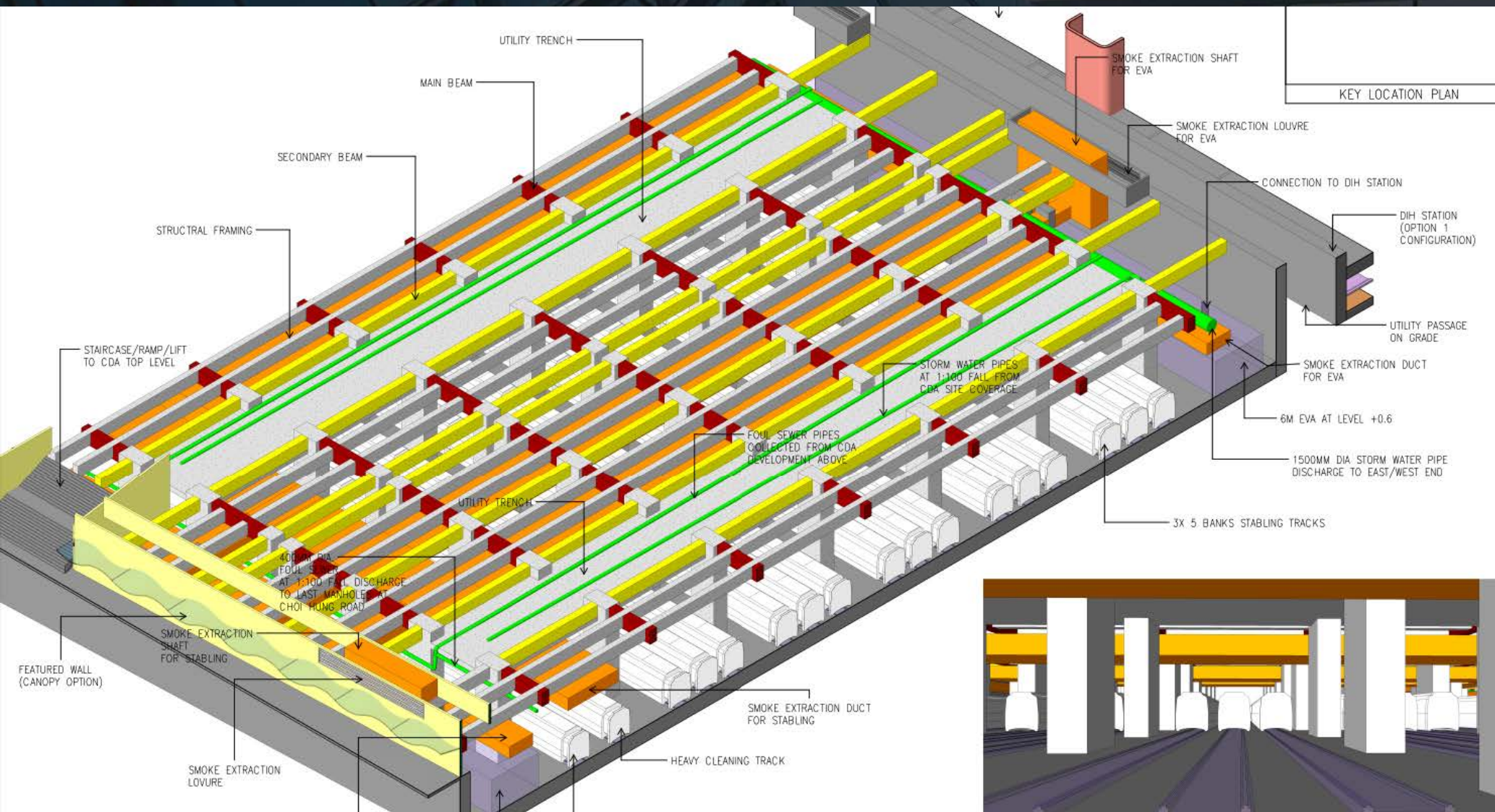
Use of BIM in Design Phase

1. Design visualization 型像化設計
2. Drawing Productions 製作圖件
3. Services Co-ordination and Clash detection with other disciplines 各專業協調
4. Quantity taking and preparation of Tender Document 投標文件
5. Automated Statutory Submission 自動化審批
6. Sustainability - analysis of different environmental aspects 科學性分析
7. Supply Chain Integration with the manufacturing and production 生產制造
8. Complex Geometry 複雜幾何形狀

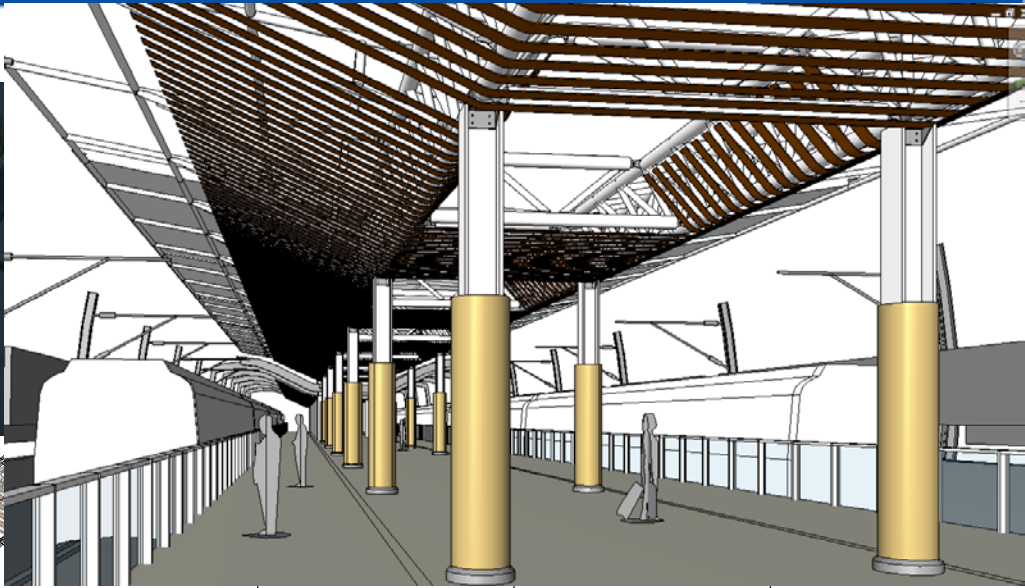
Preliminary Structural Design - DHS



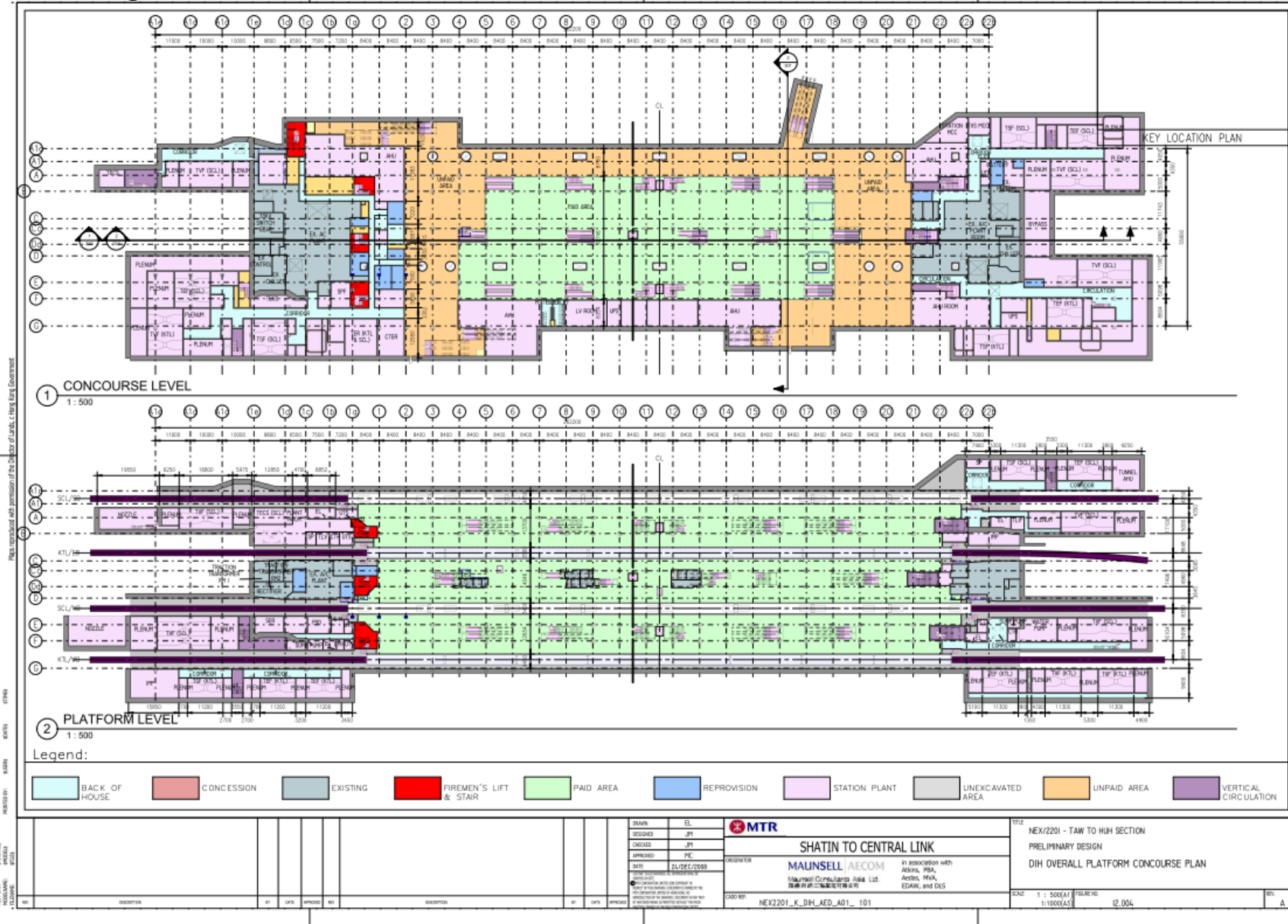
Preliminary Co-ordination Design Drawings - DHS



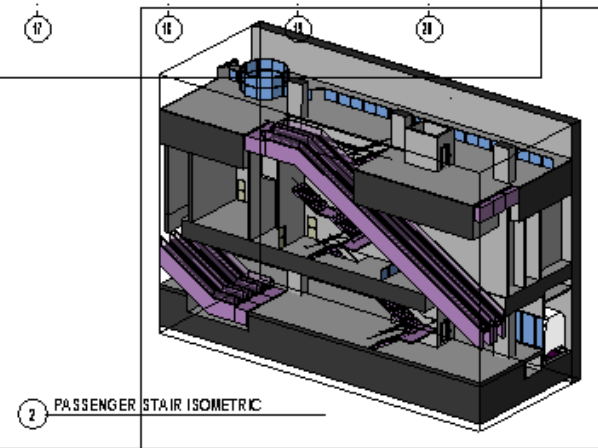
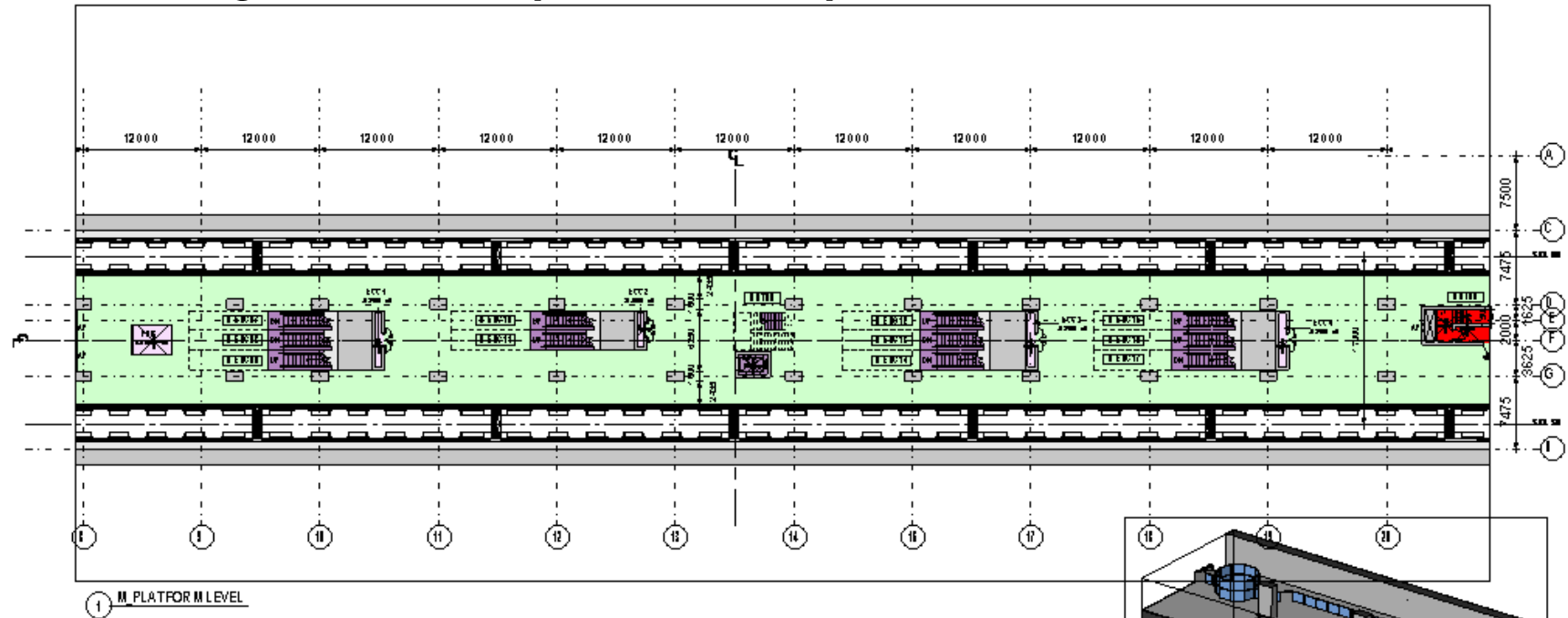
A low-angle, upward-looking shot of a sailing ship's mast and rigging. The dark wooden beams and ropes create a complex geometric pattern against a deep blue, slightly hazy sky. The perspective emphasizes the height and scale of the vessel.



Drawing Production (SCL-DIH Preliminary Design)



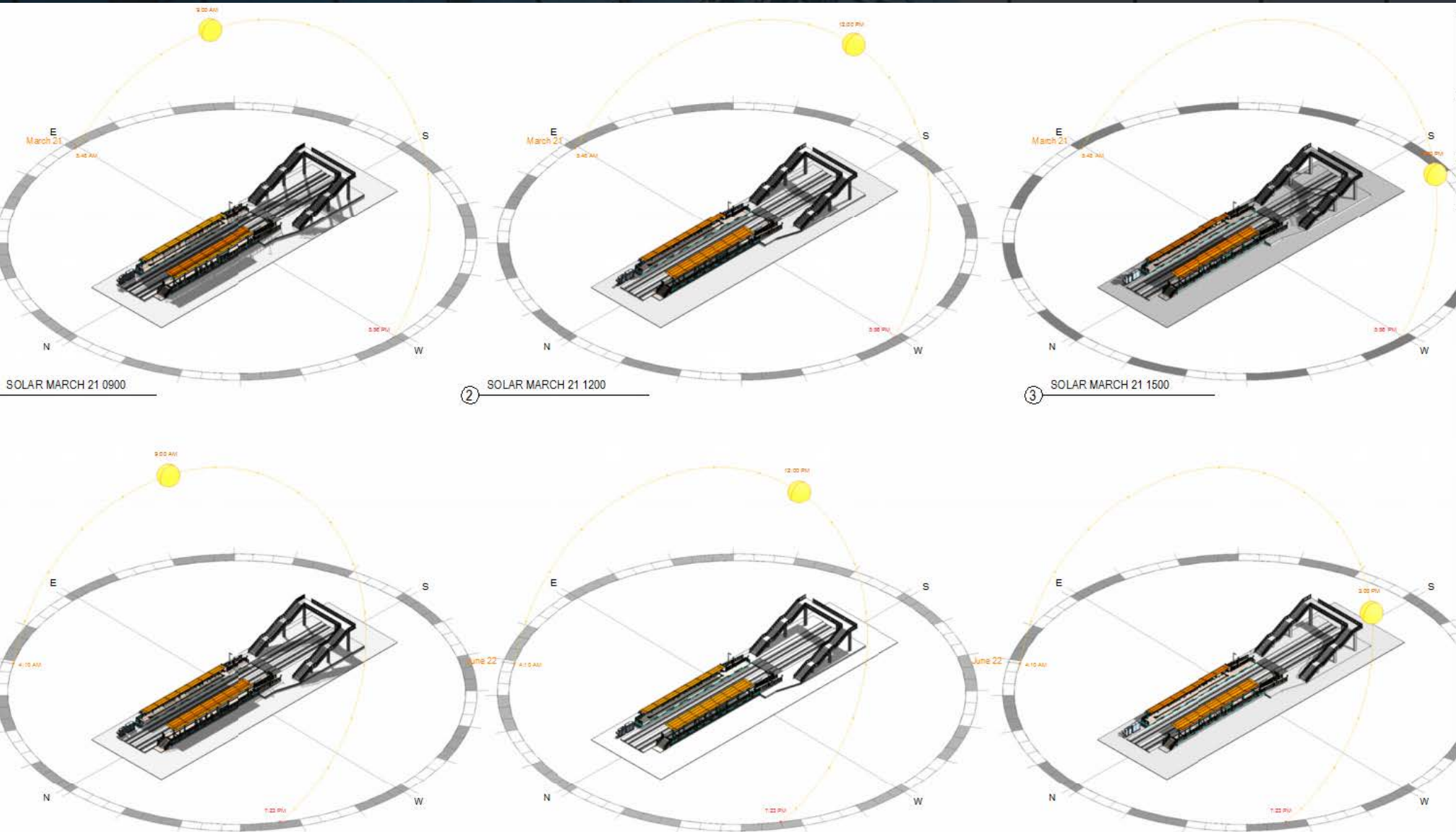
Drawing Production (Architectural)



■ FIREMAN'S LIFT STAIRS & ACCESS / FIRE SEPARATED CORRIDOR
 ■ PAID AREA
 ■ STATION PLANT
 ■ VERTICAL CIRCULATION

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Sustainability – Solar Study, Shadow Analysis



Quantity Taking

ADM STATION_DIA.32 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		32 mmø	SPP	2179.847

ADM STATION_DIA.40 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		40 mmø	SPP	921.447

ADM STATION_DIA.45 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		45 mmø	SPP	141.748

ADM STATION_DIA.50 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		50 mmø	SPP	208.230

ADM STATION_DIA.65 SPRINKLER PIPE SCHEDULE

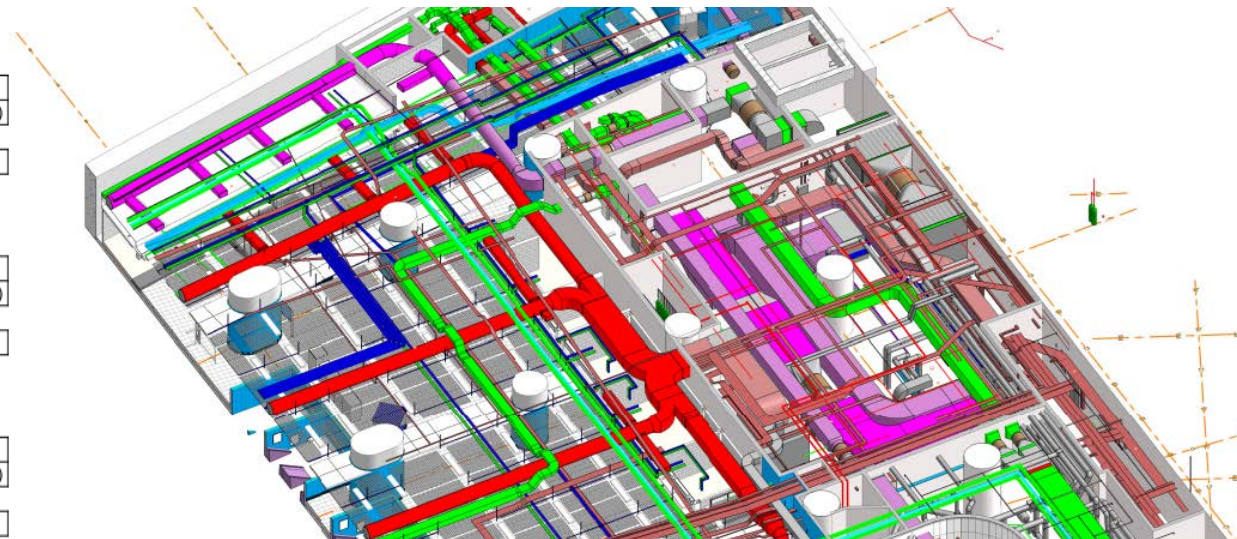
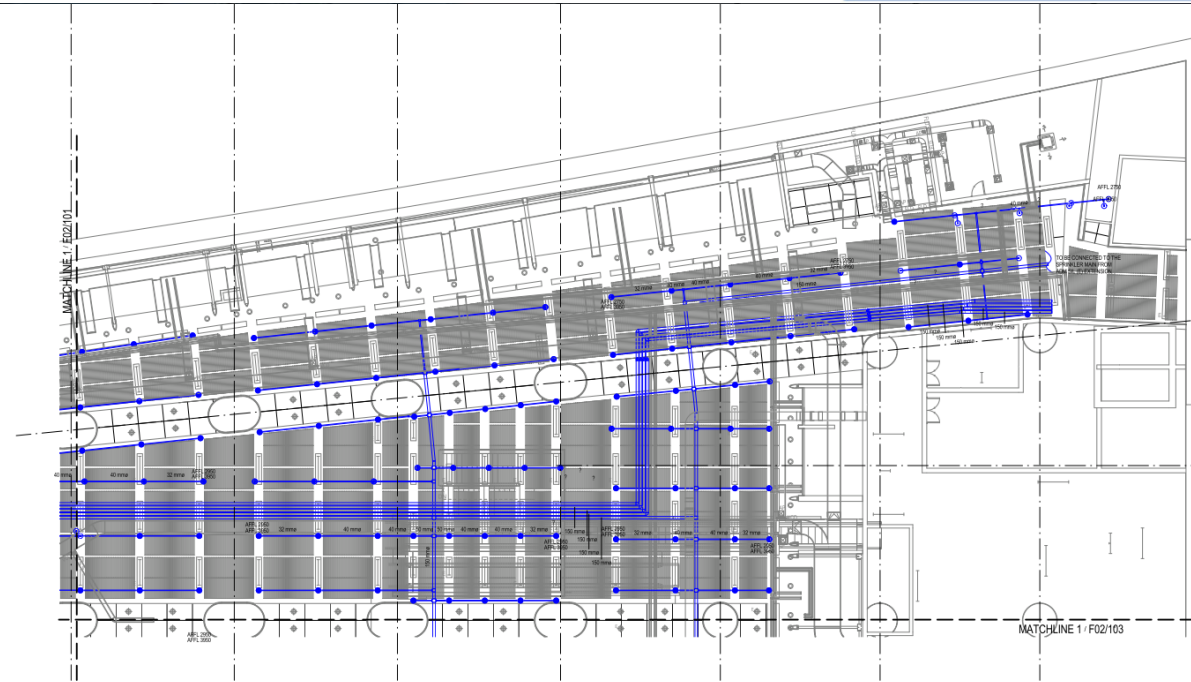
STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		65 mmø	SPP	127.179

ADM STATION_DIA.80 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		80 mmø	SPP	127.367

ADM STATION_DIA.100 SPRINKLER PIPE SCHEDULE

STATION	Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP		100 mmø	SPP	248.715



Integration with Specifications

The screenshot shows a Windows Internet Explorer browser window displaying the ARCOM website. The address bar shows the URL: http://www.arcomnet.com/masterspec/spec_espec_pro.php. The website header includes the ARCOM logo, contact information (800.424.5080), and navigation links (Home, Search, Contact Us, Online Demos, Order Now, Get Info). A date stamp indicates Monday, July 26th, 2010. A 'LiveSupport' button is also visible. The main content area features a sidebar with a navigation menu and a central promotional banner for 'e-SPECS® for Revit® and e-SPECS for AutoCAD®'. The banner details a limited-time offer for \$1295, which includes 1 seat of e-SPECS for Revit, 3 seats of e-SPECS for Revit Plug-In Console, and various training resources. A sidebar on the right provides additional details about the offer. The footer of the page includes a link to the website.

ARCOM :: MasterSpec Systems :: SpecWare :: e-SPECS® for Revit® and e-SPECS for AutoCAD® - Windows Internet Explorer

http://www.arcomnet.com/masterspec/spec_espec_pro.php

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★ Favorites ARCOM :: MasterSpec Systems :: SpecWare :: e-...

ARCOM The leader in specifications 800.424.5080

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Monday July 26th, 2010

MasterSpec Systems For Your Practice About ARCOM Quick Links For Users Only

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Username

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Login

Forgot your password? Not registered yet?

Library Comparison | Specification Types | Components | Compatibility | All Downloads

At a Glance

Specification Libraries

MasterSpec Resources for Building and Construction Specifications

▼ SpecWare

Masterworks™ 6.3

Masterworks™ 5.2

Linx™

e-SPECS® Linx™

▶ e-SPECS® for Revit® and e-SPECS for AutoCAD®

e-SPECS® Designer

FAQs

Downloads

Get Info

Order Now

e-SPECS® for Revit® and e-SPECS for AutoCAD®

For a limited time we offer you e-SPECS for Revit for \$1295. This offer includes:

- 1 seat (one year) of e-SPECS for Revit (value \$1295)
- FREE - 3 seats of e-SPECS for Revit Plug-In Console -- allows you to view and markup specifications directly into Revit without requiring additional seats of e-SPECS for Revit (value \$405)
- FREE - Self-paced training videos (\$600 value)
- FREE - Login to Live Webcast Scheduled Training Classes (\$600 value)

WAIVED - MasterSpec-Revit database fees (\$180 - \$750 value)

This offer expires July 31, 2010.

Don't miss your chance to save \$1785 - \$2355!

Perpetual licenses are also available.

Call with questions or to request a free live webinar.

Integrate MasterSpec specifications with your BIM/CAD drawings and building materials.

e-SPECS for Revit or e-SPECS for AutoCAD interfaces with:

- Autodesk® Revit®
- Autodesk® AutoCAD®

e-SPECS® for Revit® - Limited Time Offer

For a limited time we offer you e-SPECS for Revit for \$1295. This offer includes:

1 seat (one year) of e-SPECS for Revit (value \$1295)

FREE - 3 seats of e-SPECS for Revit Plug-In Console -- allows you to view and markup specifications directly into Revit without requiring additional seats of e-SPECS for Revit (value \$405)

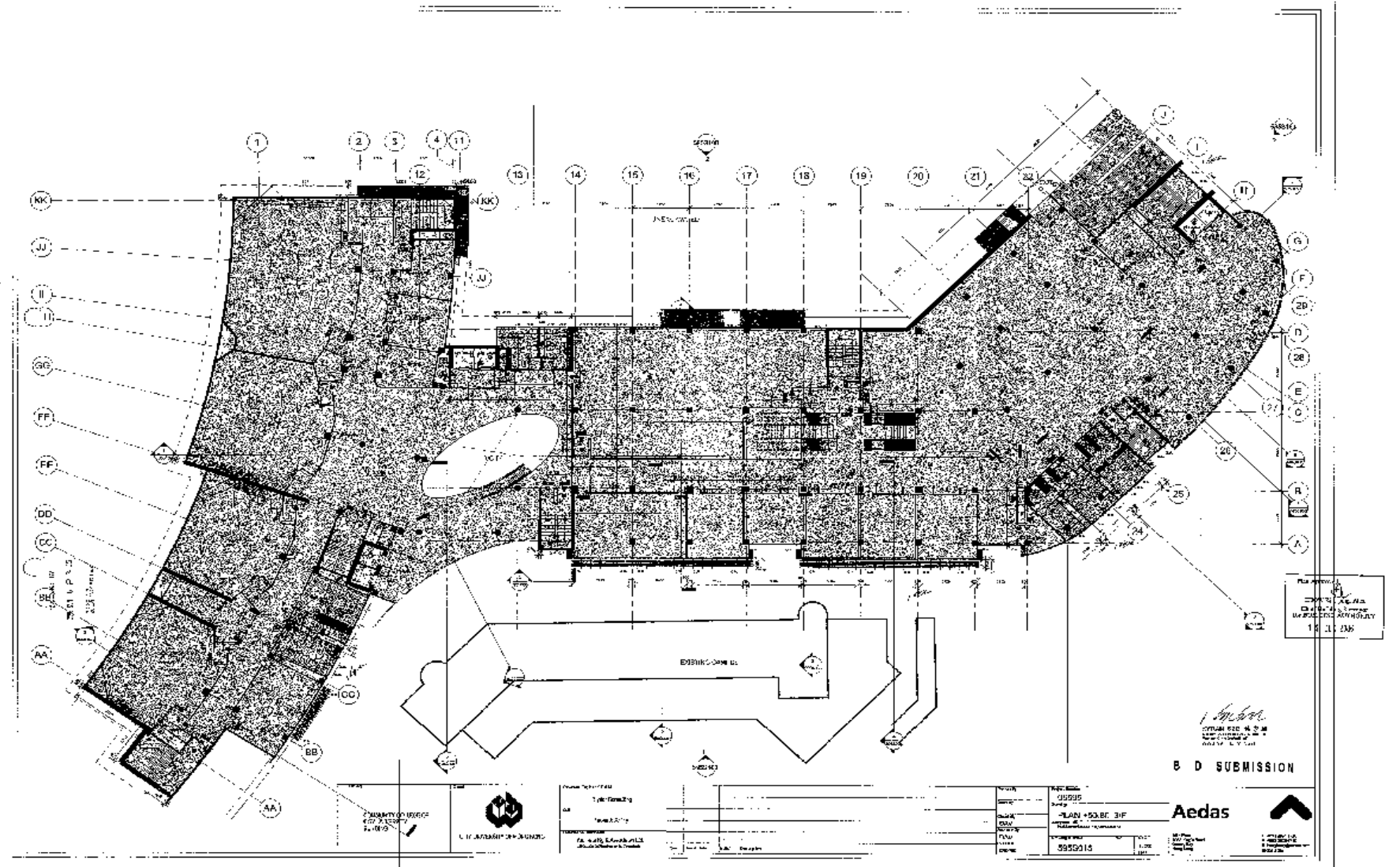
FREE - Self-paced training videos (\$600 value)

FREE - Login to Live Webcast Scheduled Training Classes (\$600 value)

WAIVED - MasterSpec-Revit

Link: www.arcomnet.com

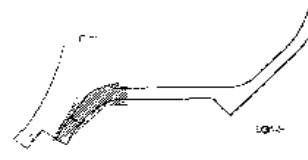
Statutory Submission



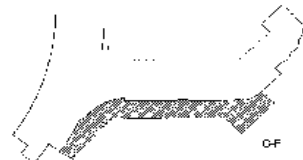
Statutory Submission



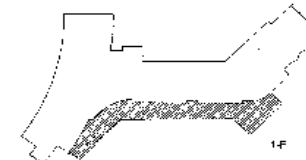
① EVA of Level 34.00_LG2/F
1:1000



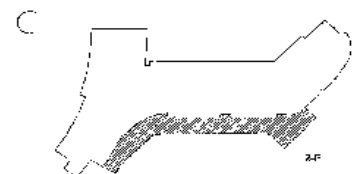
② EVA of Level 37.80_LG1/F
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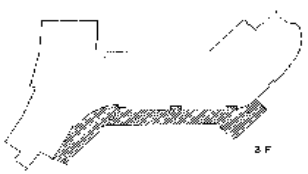
③ EVA of Level 41.80_G/F
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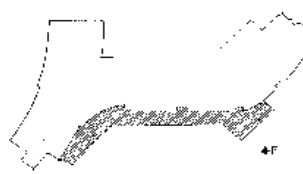
④ EVA of Level 45.80_1/F
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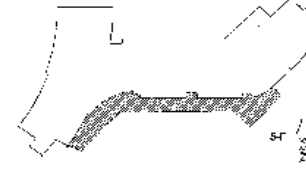
⑤ EVA of Level 49.80_2/F
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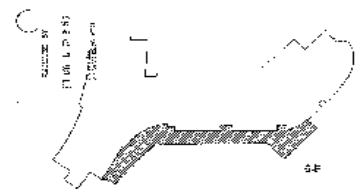
⑥ EVA of Level 53.80_3/F
1:1000



⑦ EVA of Level 58.20_4/F
1:1000



⑧ EVA of Level 62.00_5/F
1:1000



⑨ EVA of Level 65.80_6/F
1:1000

*Hatched area represents the total length of the building facade served by the EVA.

CALCULATION ON TOTAL LENGTH OF BUILDING FACADE TO BE SERVED BY EVA AND PERCENTAGE OF SUCH LENGTH OVER THE TOTAL LENGTH OF ALL THE PERIMETER WALLS OF THE BUILDING

FLOOR	LEVEL	EVA AREA (SQM)	PERIMETER WALL LENGTH (M)	PERCENTAGE (%)
LG2	34.00	10.00	100.00	10.00
LG1	37.80	10.00	100.00	10.00
G	41.80	10.00	100.00	10.00
1	45.80	10.00	100.00	10.00
2	49.80	10.00	100.00	10.00
3	53.80	10.00	100.00	10.00
4	58.20	10.00	100.00	10.00
5	62.00	10.00	100.00	10.00
6	65.80	10.00	100.00	10.00

FLOOR	LEVEL	EVA AREA (SQM)	PERIMETER WALL LENGTH (M)	PERCENTAGE (%)
LG2	34.00	10.00	100.00	10.00
LG1	37.80	10.00	100.00	10.00
G	41.80	10.00	100.00	10.00
1	45.80	10.00	100.00	10.00
2	49.80	10.00	100.00	10.00
3	53.80	10.00	100.00	10.00
4	58.20	10.00	100.00	10.00
5	62.00	10.00	100.00	10.00
6	65.80	10.00	100.00	10.00

FLOOR	LEVEL	EVA AREA (SQM)	PERIMETER WALL LENGTH (M)	PERCENTAGE (%)
LG2	34.00	10.00	100.00	10.00
LG1	37.80	10.00	100.00	10.00
G	41.80	10.00	100.00	10.00
1	45.80	10.00	100.00	10.00
2	49.80	10.00	100.00	10.00
3	53.80	10.00	100.00	10.00
4	58.20	10.00	100.00	10.00
5	62.00	10.00	100.00	10.00
6	65.80	10.00	100.00	10.00

Noted:
1. CITY ENGINEER'S OFFICE
2. CITY ENGINEER'S OFFICE
3. CITY ENGINEER'S OFFICE
4. CITY ENGINEER'S OFFICE
5. CITY ENGINEER'S OFFICE
6. CITY ENGINEER'S OFFICE
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9. CITY ENGINEER'S OFFICE
10. CITY ENGINEER'S OFFICE

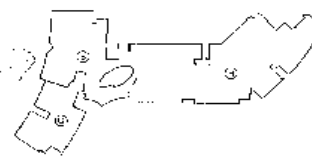
DATE OF SUBMISSION: 10/10/2023 DATE OF REVIEW: 10/10/2023 DATE OF APPROVAL: 10/10/2023	NAME OF CLIENT: MTR NAME OF DESIGNER: Aedas NAME OF REVIEWER: Aedas NAME OF APPROVER: Aedas	NAME OF CLIENT: MTR NAME OF DESIGNER: Aedas NAME OF REVIEWER: Aedas NAME OF APPROVER: Aedas	NAME OF CLIENT: MTR NAME OF DESIGNER: Aedas NAME OF REVIEWER: Aedas NAME OF APPROVER: Aedas
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Statutory Submission

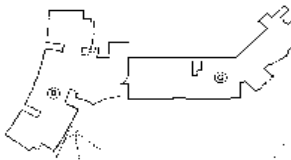
LG/1F (+37.80) COMPARTMENT CALCULATION



3/F (+53.80) COMPARTMENT CALCULATION



G/F (+41.80) COMPARTMENT CALCULATION



4/F (+58.20) COMPARTMENT CALCULATION



1/F (+45.80) COMPARTMENT CALCULATION



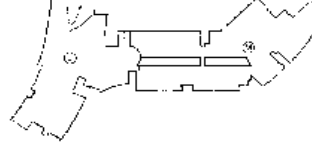
5/F (+52.00) COMPARTMENT CALCULATION



6/F (+59.50) COMPARTMENT CALCULATION



6/F (+59.80) COMPARTMENT CALCULATION



LOC.	TYPE OF ROOM	AREA (M ²)	FLOOR	NO. OF STUDENTS	NO. OF STUDENTS
LG/1F (+37.80)	Office	275.442	1	9	31
3/F (+53.80)	Shop	54.208	3	19	19
G/F (+41.80)	Office	412.442	9	41	41
3/F (+53.80)	Restaurant	115.442	1	153	153
3/F (+53.80)	Kitchen	481.136	4.5	107	107
5/F (+52.00)	Office	212.442	9	294	294
6/F (+59.50)	Office	2031.235	9	226	226
6/F (+59.50)	Restaurant	178.557	1	177	177
6/F (+59.50)	Kitchen	186.561	4.5	42	42
6/F (+59.50)	Exhibition hall	704.334	2	353	353
Total number of students					6000

Total Capacity of COCUB				
Location	Use	Area	Factor	Total Capacity
LG/1F	Office	275.442	9	31
3/F	Shop	54.208	3	19
G/F	Office	412.442	9	41
3/F	Restaurant	115.442	1	153
3/F	Kitchen	481.136	4.5	107
5/F	Office	212.442	9	294
6/F	Office	2031.235	9	226
6/F	Restaurant	178.557	1	177
6/F	Kitchen	186.561	4.5	42
6/F	Exhibition hall	704.334	2	353
Total number of students				6000

SCHEDULE 1: SUMMARY OF THE NUMBER OF STUDENTS IN EACH FLOOR AND THE NUMBER OF STUDENTS IN EACH ROOM									
LOCATION	FLOOR	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS
LG/1F (+37.80)	1	9	31	31	31	31	31	31	31
3/F (+53.80)	3	19	19	19	19	19	19	19	19
G/F (+41.80)	9	41	41	41	41	41	41	41	41
3/F (+53.80)	1	153	153	153	153	153	153	153	153
3/F (+53.80)	4.5	107	107	107	107	107	107	107	107
5/F (+52.00)	9	294	294	294	294	294	294	294	294
6/F (+59.50)	9	226	226	226	226	226	226	226	226
6/F (+59.50)	1	177	177	177	177	177	177	177	177
6/F (+59.50)	4.5	42	42	42	42	42	42	42	42
6/F (+59.50)	2	353	353	353	353	353	353	353	353

SCHEDULE 2: SUMMARY OF THE NUMBER OF STUDENTS IN EACH FLOOR AND THE NUMBER OF STUDENTS IN EACH ROOM									
COMPARTMENT	AREA	TOTAL	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS	NO. OF STUDENTS
A	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
B	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
C	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
D	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
E	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
F	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
G	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
H	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
I	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
J	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
K	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
L	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000
M	1000.000	1000.000	1000	1000	1000	1000	1000	1000	1000

1: Approved
2: Construction
3: Construction
4: Construction
5: Construction
6: Construction
7: Construction
8: Construction
9: Construction
10: Construction

STATUTORY SUBMISSION



CITY UNIVERSITY OF HONG KONG
STATUTORY SUBMISSION
1: Approved
2: Construction
3: Construction
4: Construction
5: Construction
6: Construction
7: Construction
8: Construction
9: Construction
10: Construction

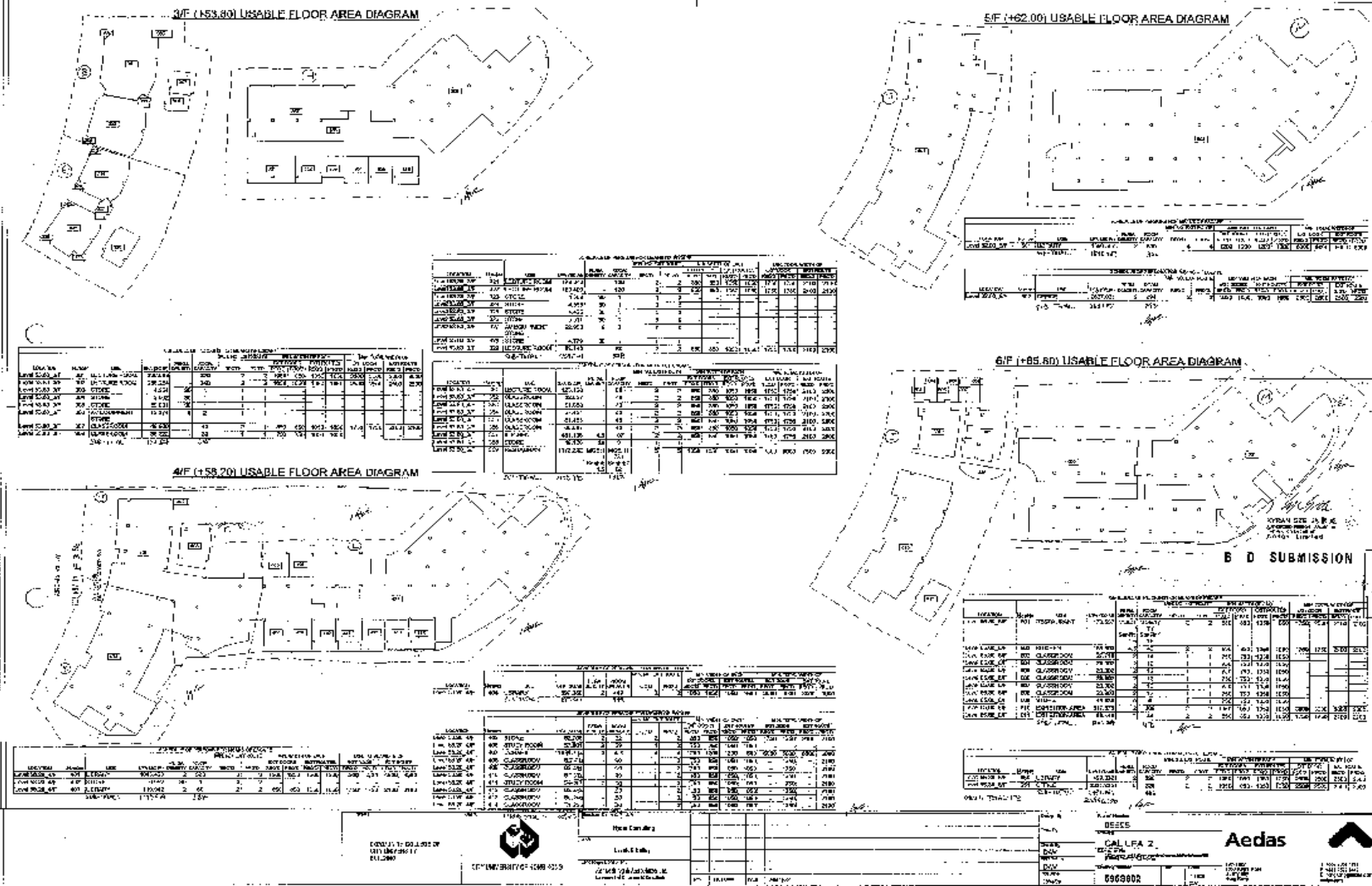
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1: Approved
2: Construction
3: Construction
4: Construction
5: Construction
6: Construction
7: Construction
8: Construction
9: Construction
10: Construction

STATUTORY SUBMISSION

Aedas
STATUTORY SUBMISSION
1: Approved
2: Construction
3: Construction
4: Construction
5: Construction
6: Construction
7: Construction
8: Construction
9: Construction
10: Construction



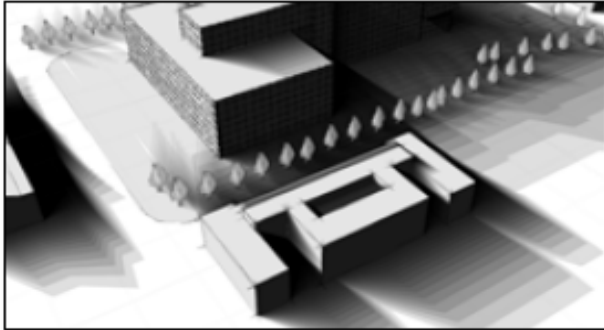
Statutory Submission



Sustainability – Thermal Performance

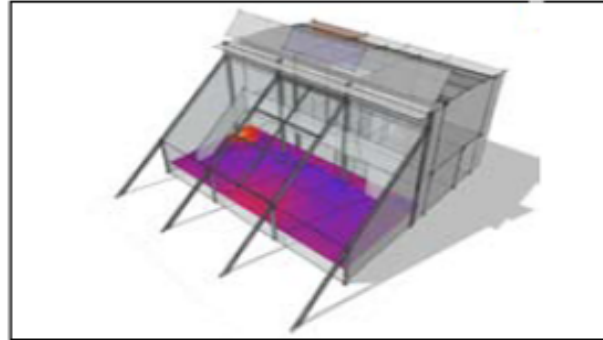
Shadows and Reflections

Display the sun's position and path relative to the model at any date, time, and location using this simulation tool. View how sunlight enters through windows and moves around within a space.



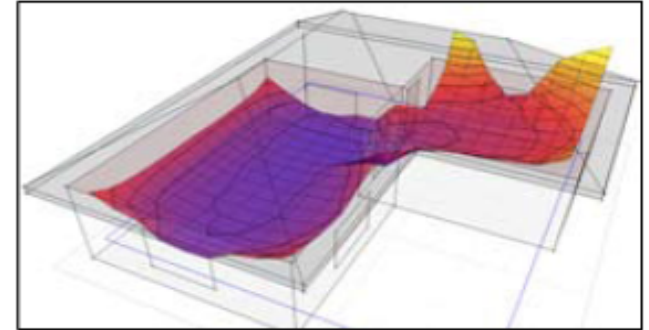
Daylighting

Calculate daylight factors and illuminance levels at any point in the model or over the analysis grid. This tool helps determine potential savings due to daylight-linked lighting design.



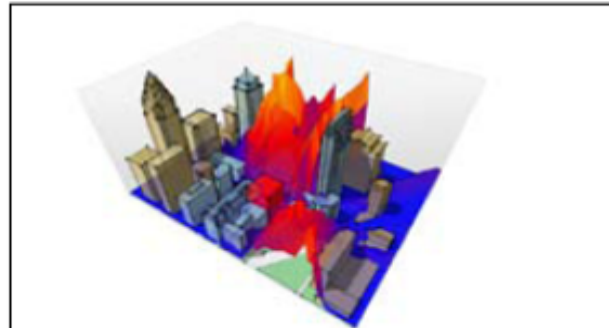
Thermal Performance

Calculate heating and sensible cooling loads for models with any number of zones or types of geometry. Analyze effects of occupancy, internal gains, infiltration, and equipment items.



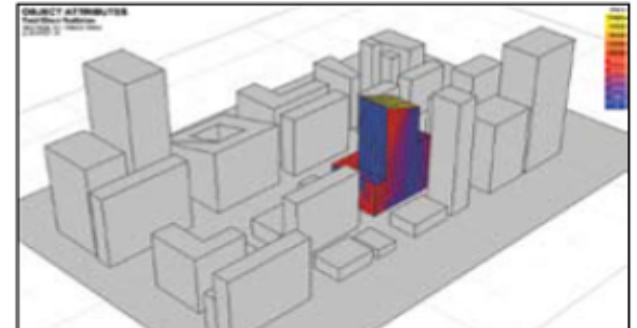
Visual Impact

Analyze site projection angles, assess obstructions, calculate vertical sky components for any point or surface, and visualize the no-sky line in any space.



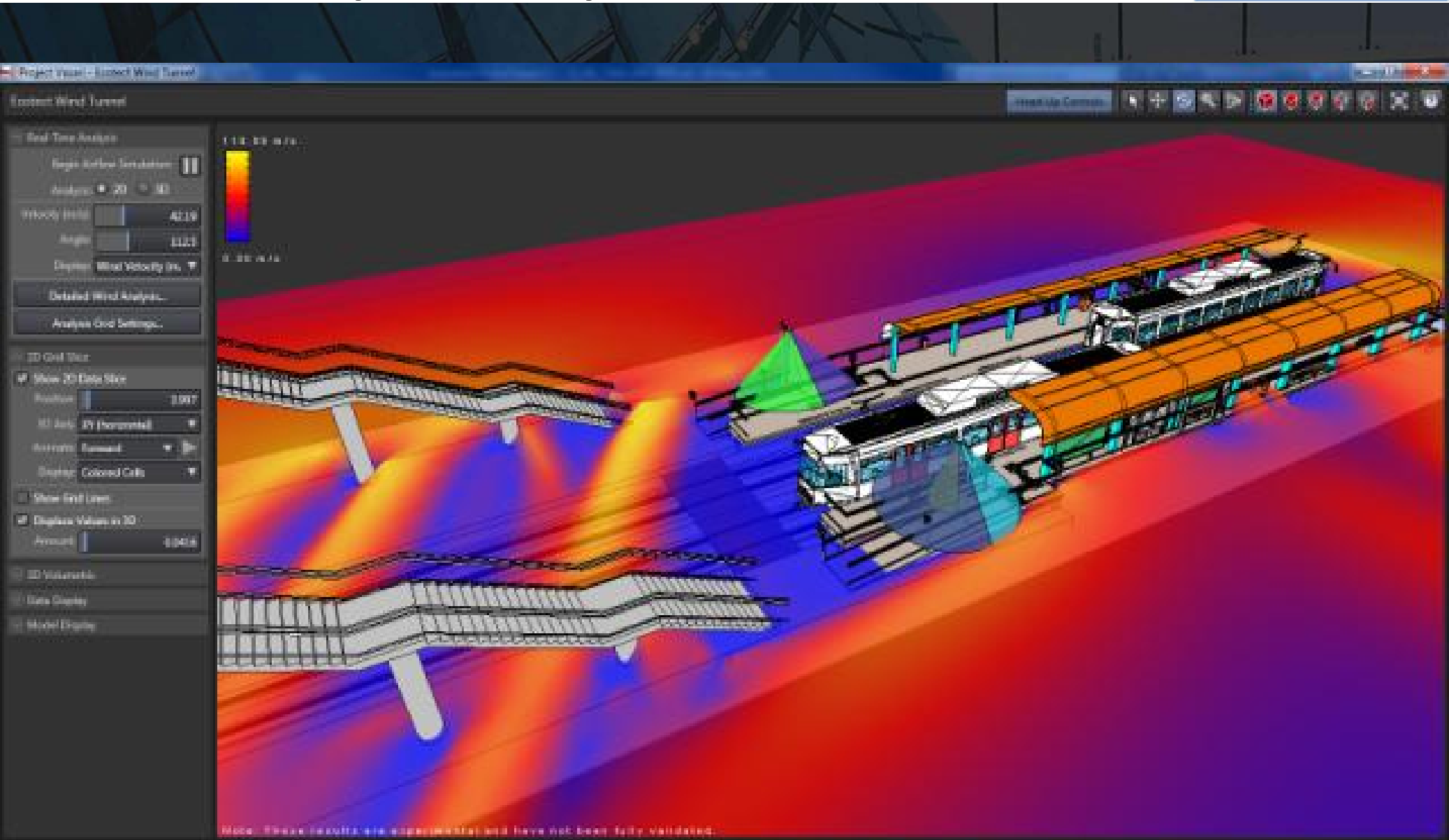
Solar Radiation

Visualize incident solar radiation on windows and surfaces, showing differential incident solar radiation calculated over any period.

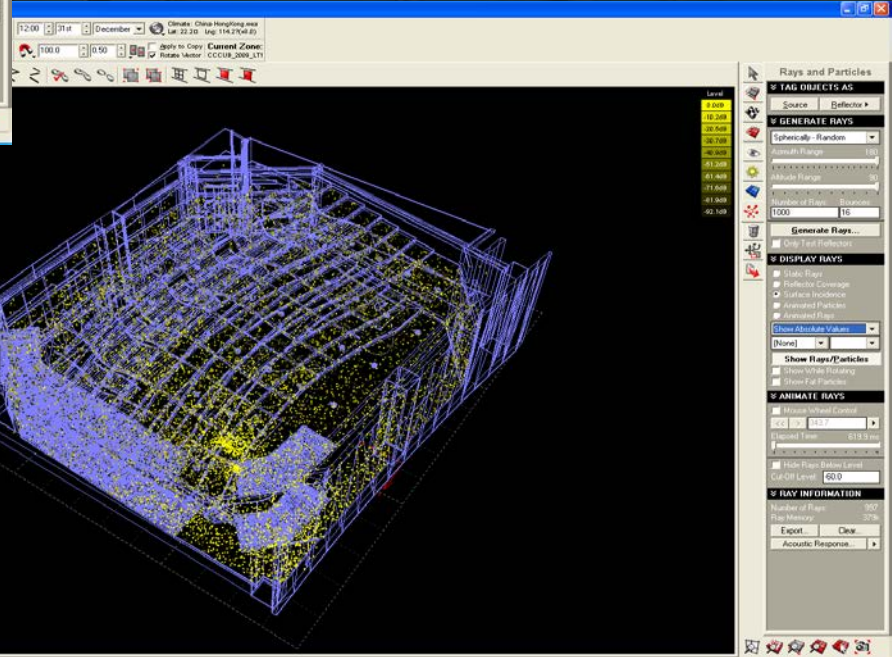
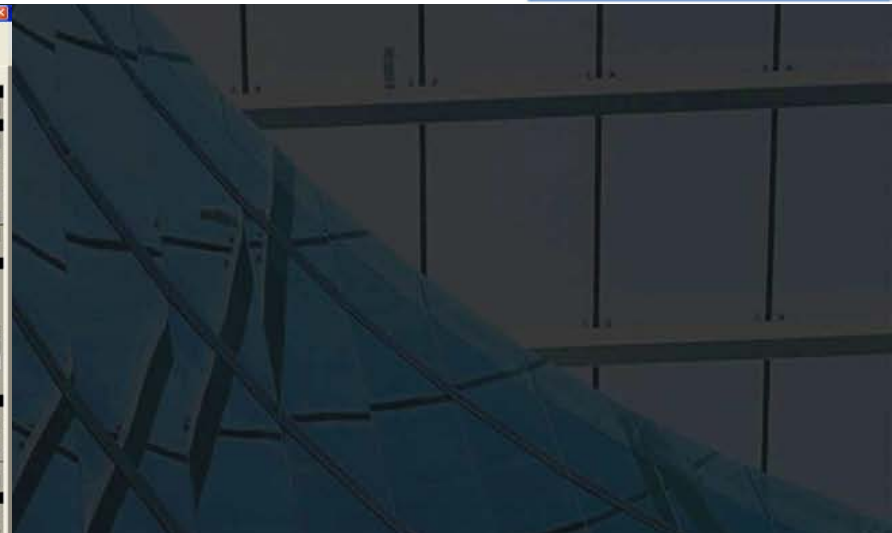
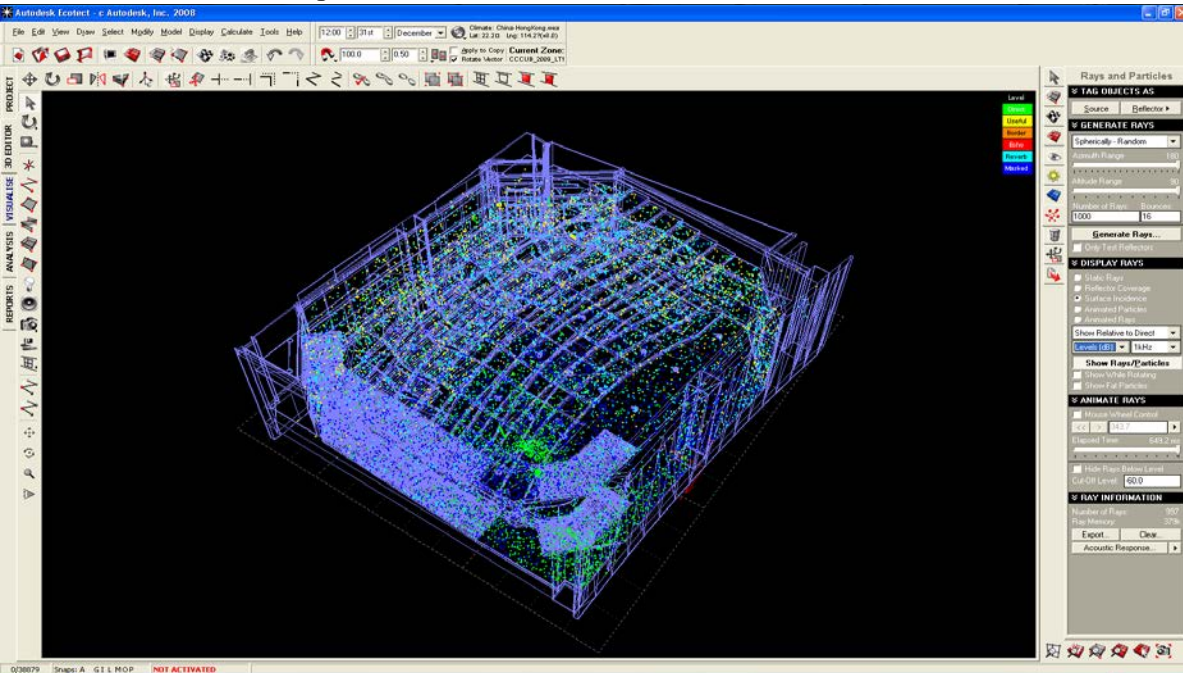


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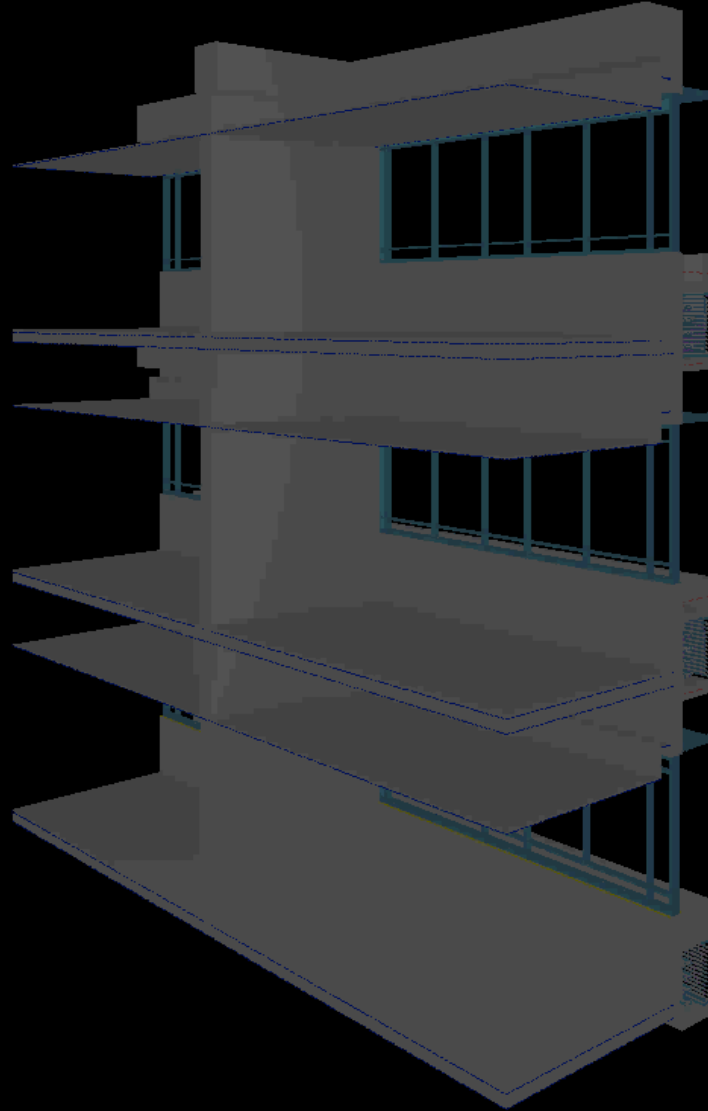
Sustainability – Wind Analysis



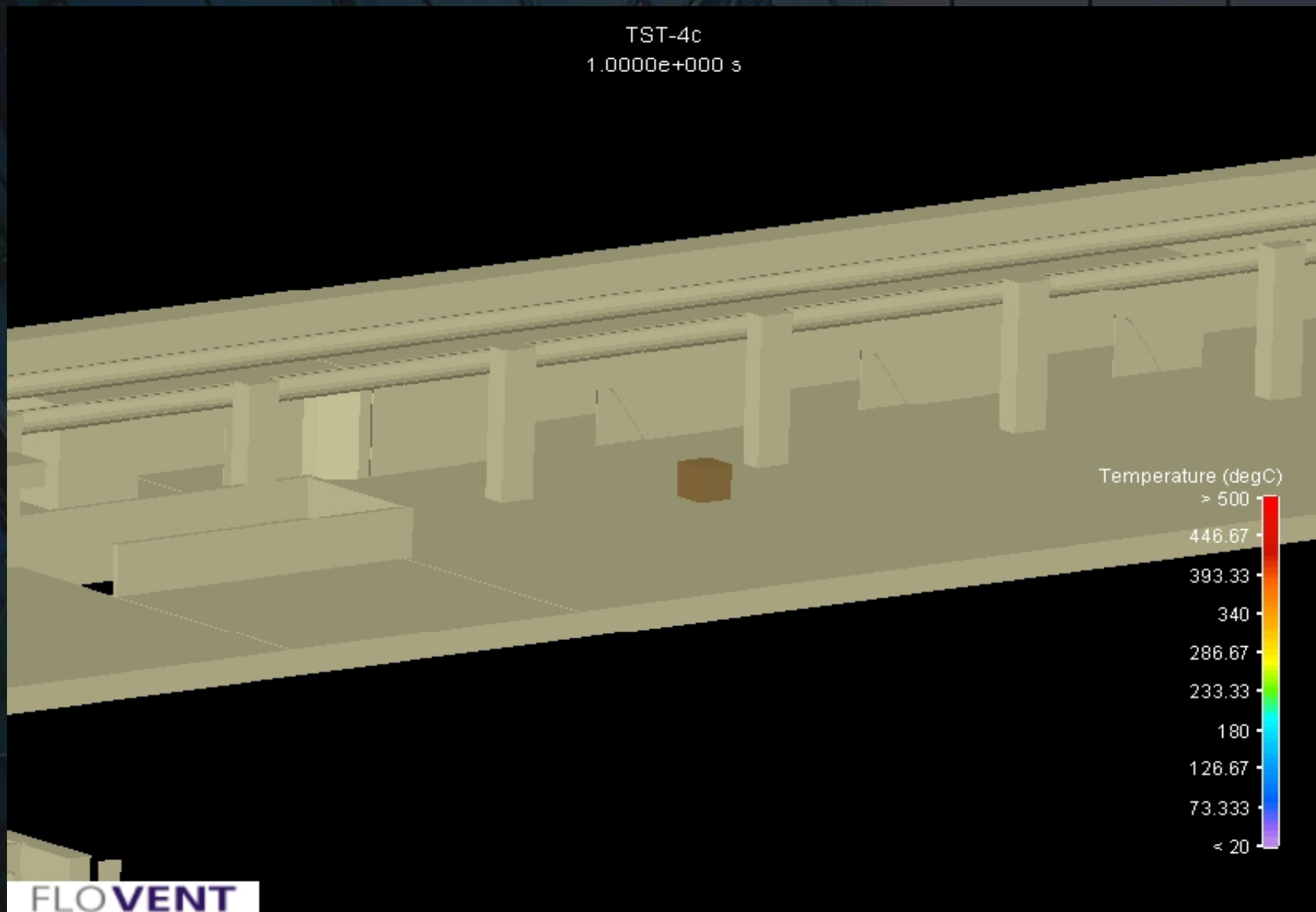
Analysis – Acoustic Performance



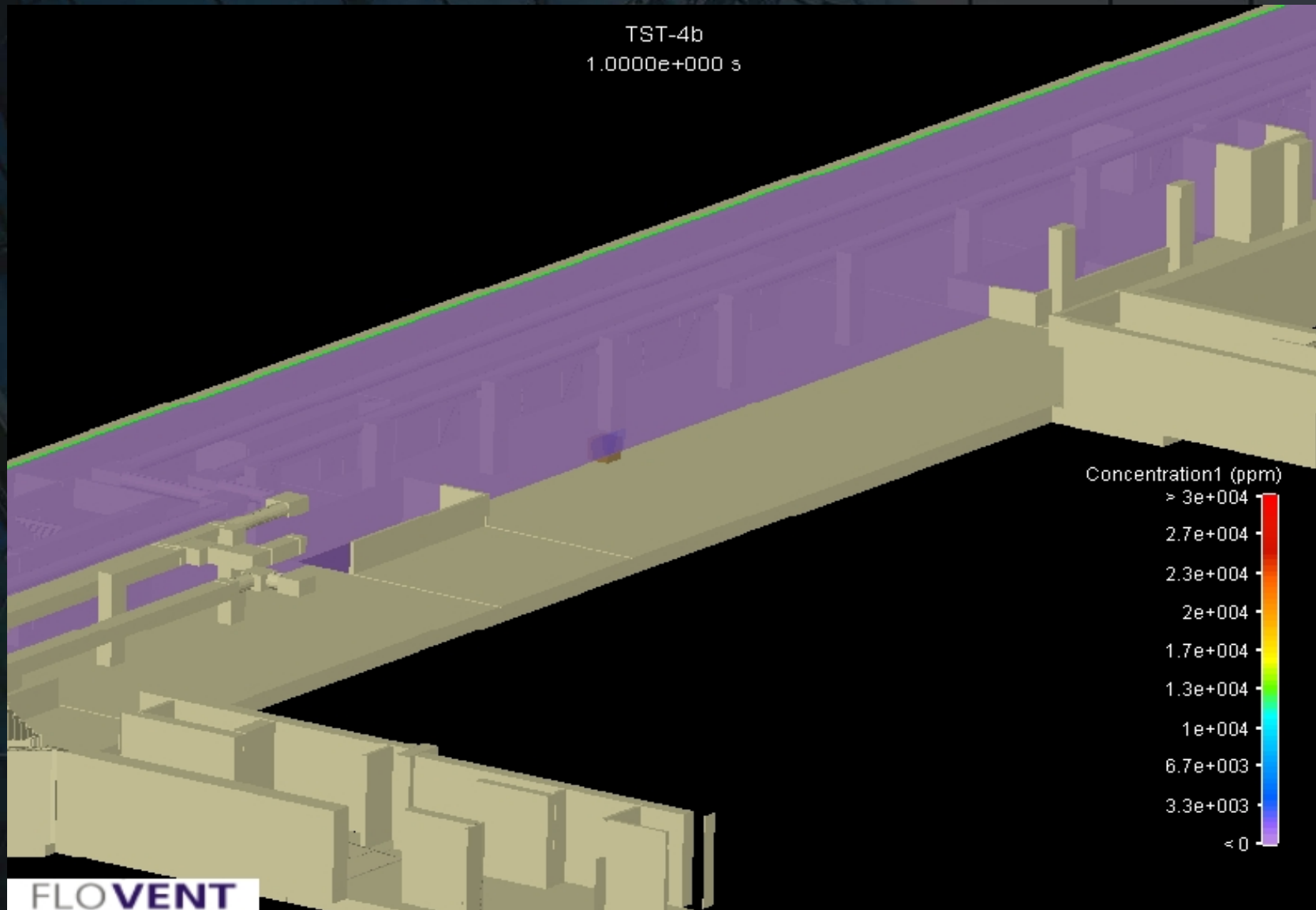
Sustainability - Sun shading Analysis



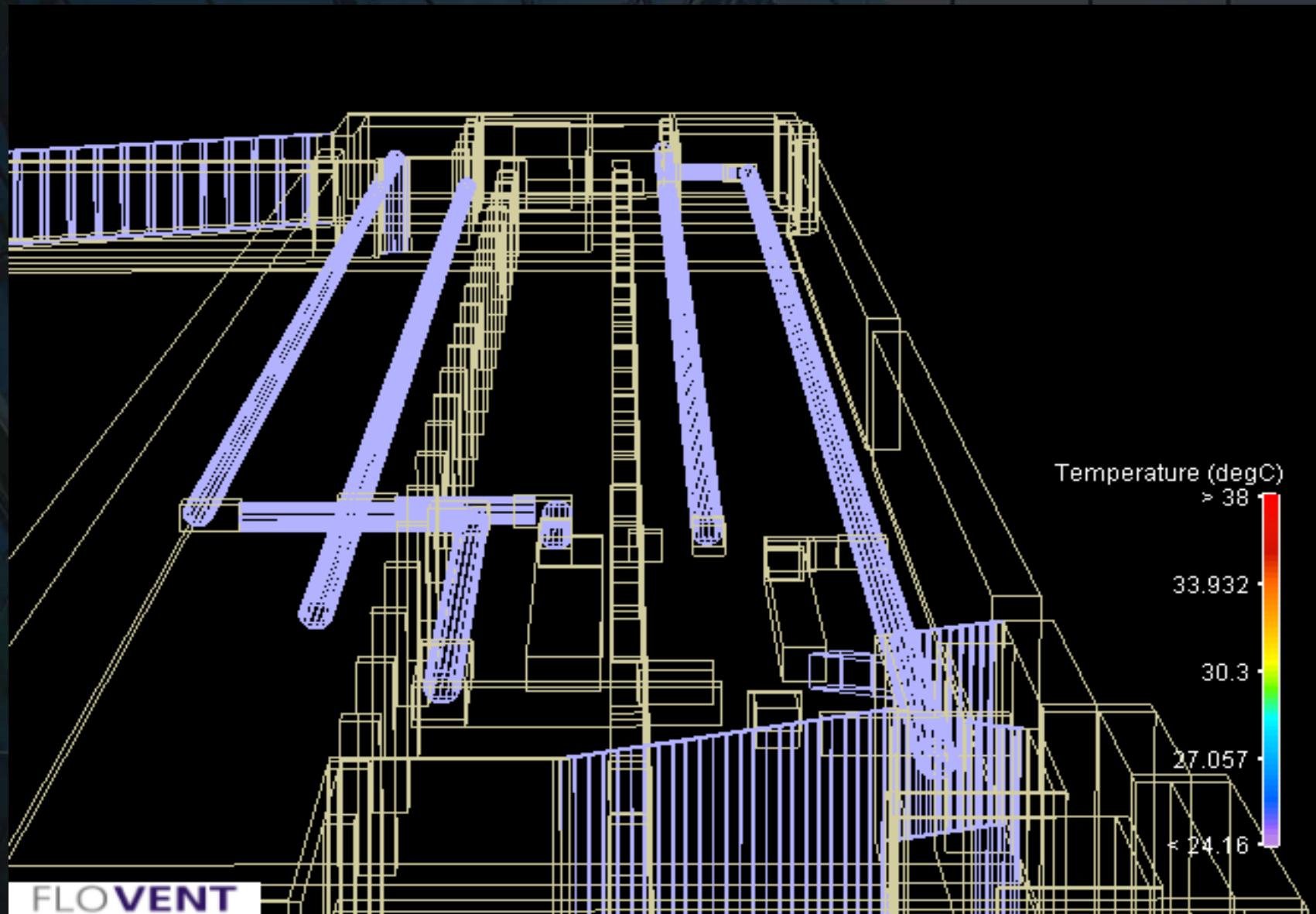
Analysis - Smoke



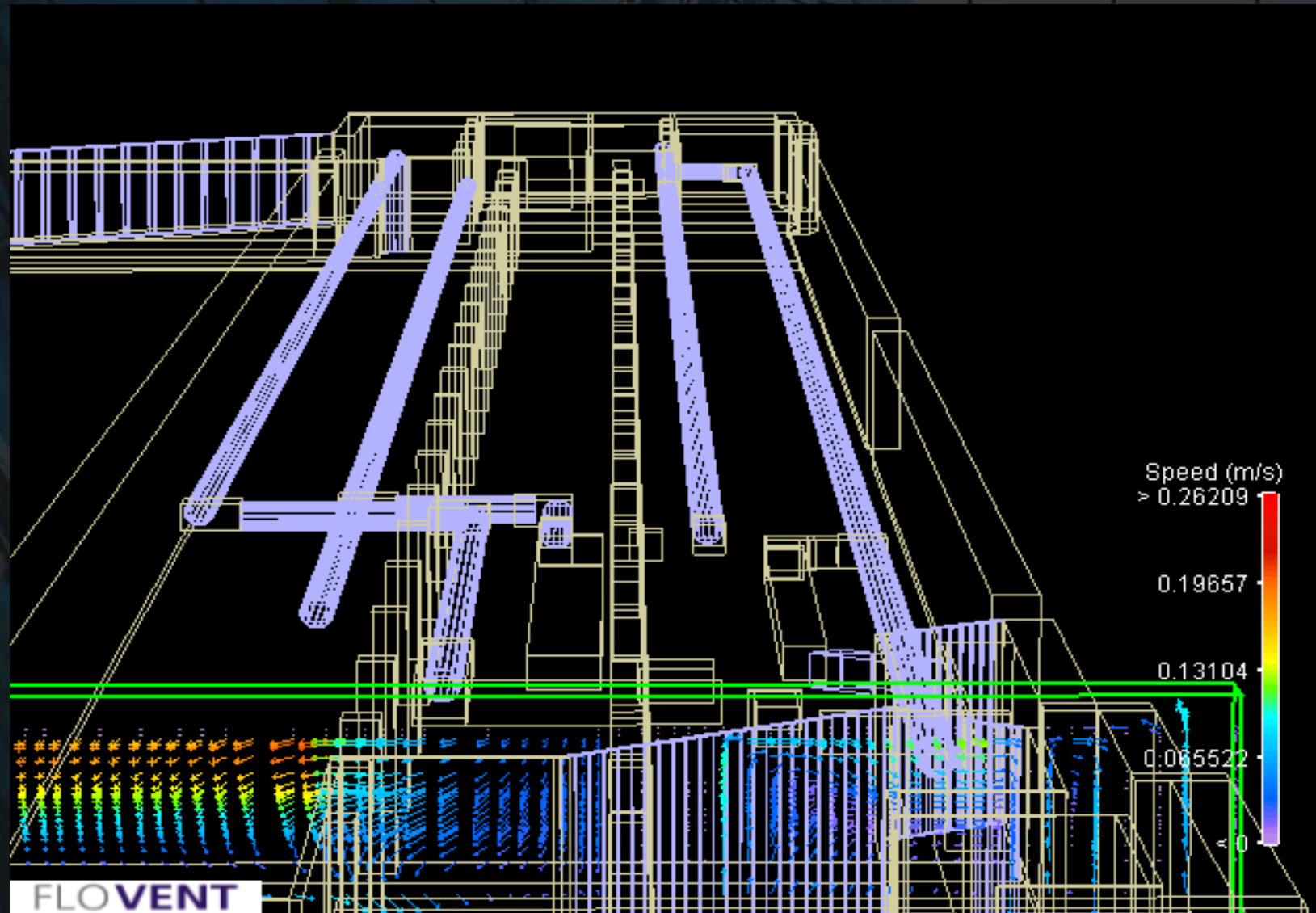
Analysis - Smoke



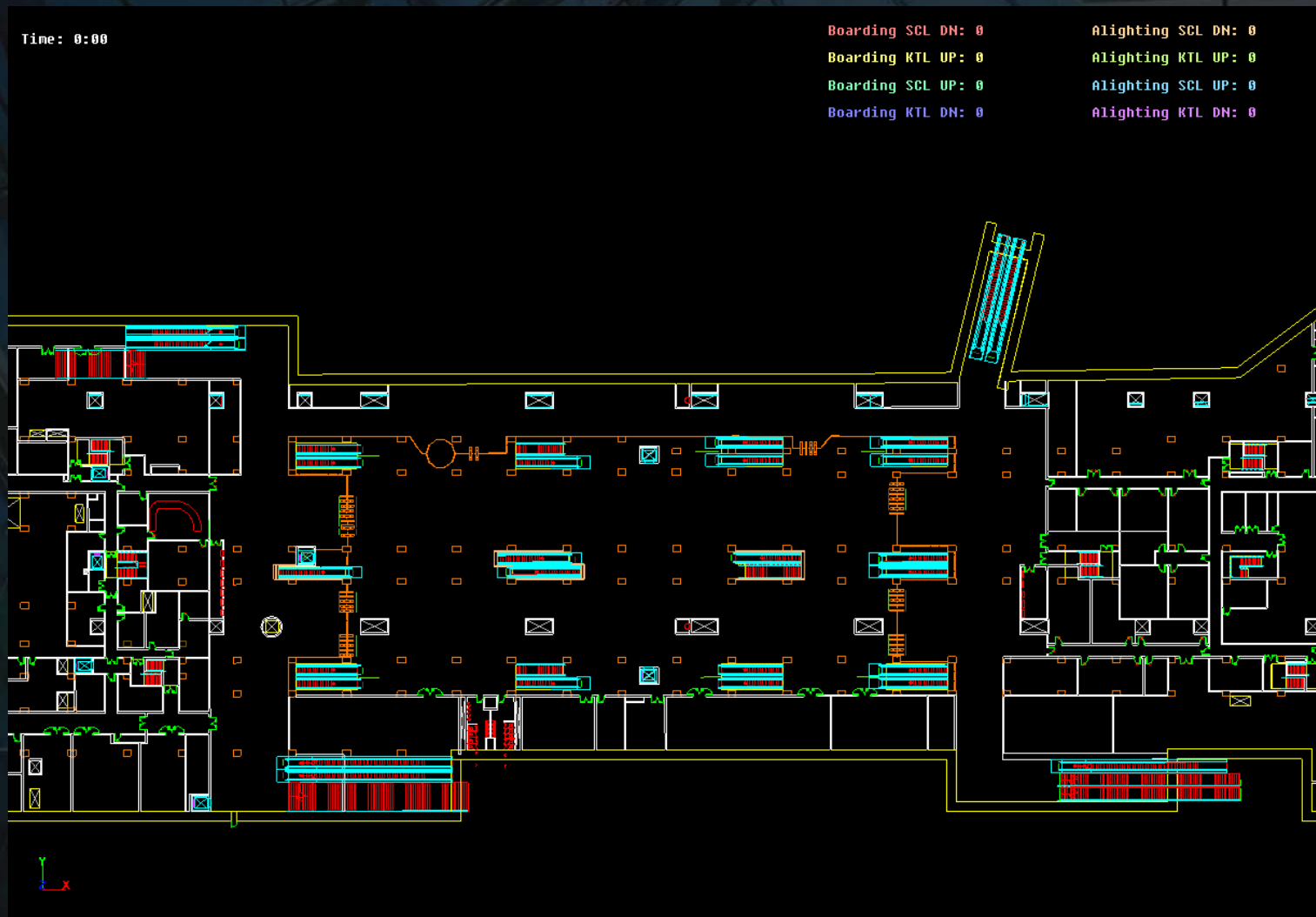
Analysis



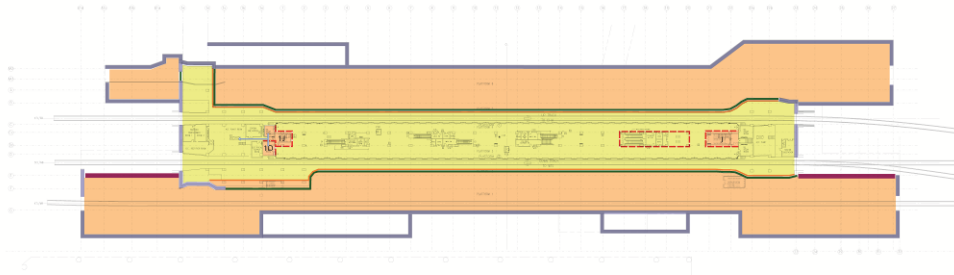
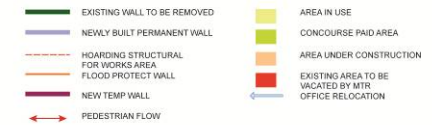
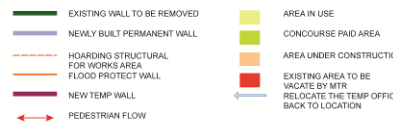
Analysis



Analysis – DIH Passenger Flow

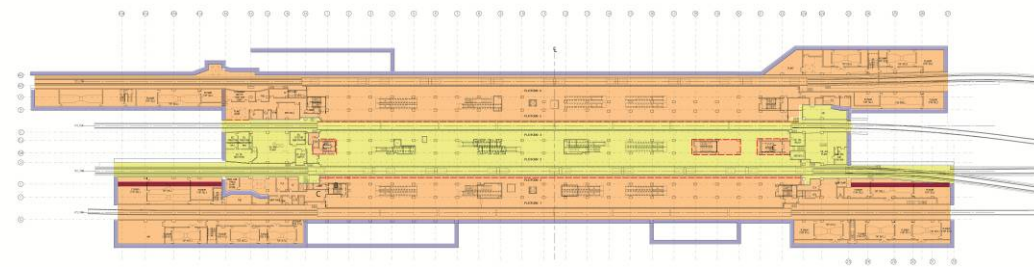


Preliminary Design Phasing Plan - DIH



PLATFORM LEVEL PHASE 3
MODIFICATION OF OFFICES / SCR

- A. ROOF & CONCOURSE SLAB COMPLETED
- MODIFICATION OF EXIT C AND NEW EXIT A & D COMPLETED
- B. COMPLETE TEMP OFFICE AND RELOCATION INCLUDING TEMP TOILET
- C. DEMOLITION OF EXISTING OFFICE, CONSTRUCTION OF NEW FIREMAN ACCESS CORRIDOR / COMPLETE NEW SCR, SCR RECEPTION & TER
- D. DECOMMISSION OF EXISTING SCR, SCR RECEPTION & EXISTING TELE RELAY ROOM
- E. RELOCATE SOME CTER EQUIP TO NEW CTER → HOARDING → BUILT NEW BEAM → DEMOLISH OLD COLUMN
- F. DEMOLITION OF EXISTING WALL TO COMPLETE FIREMAN ACCESS
- G. OPEN EXIT D
- H. CLOSE EXISTING PASSAGE
- J. CONSTRUCTION OF FIREMAN STAIR & LIFT (1W2 & 1E2, 3W4 & 3E4)



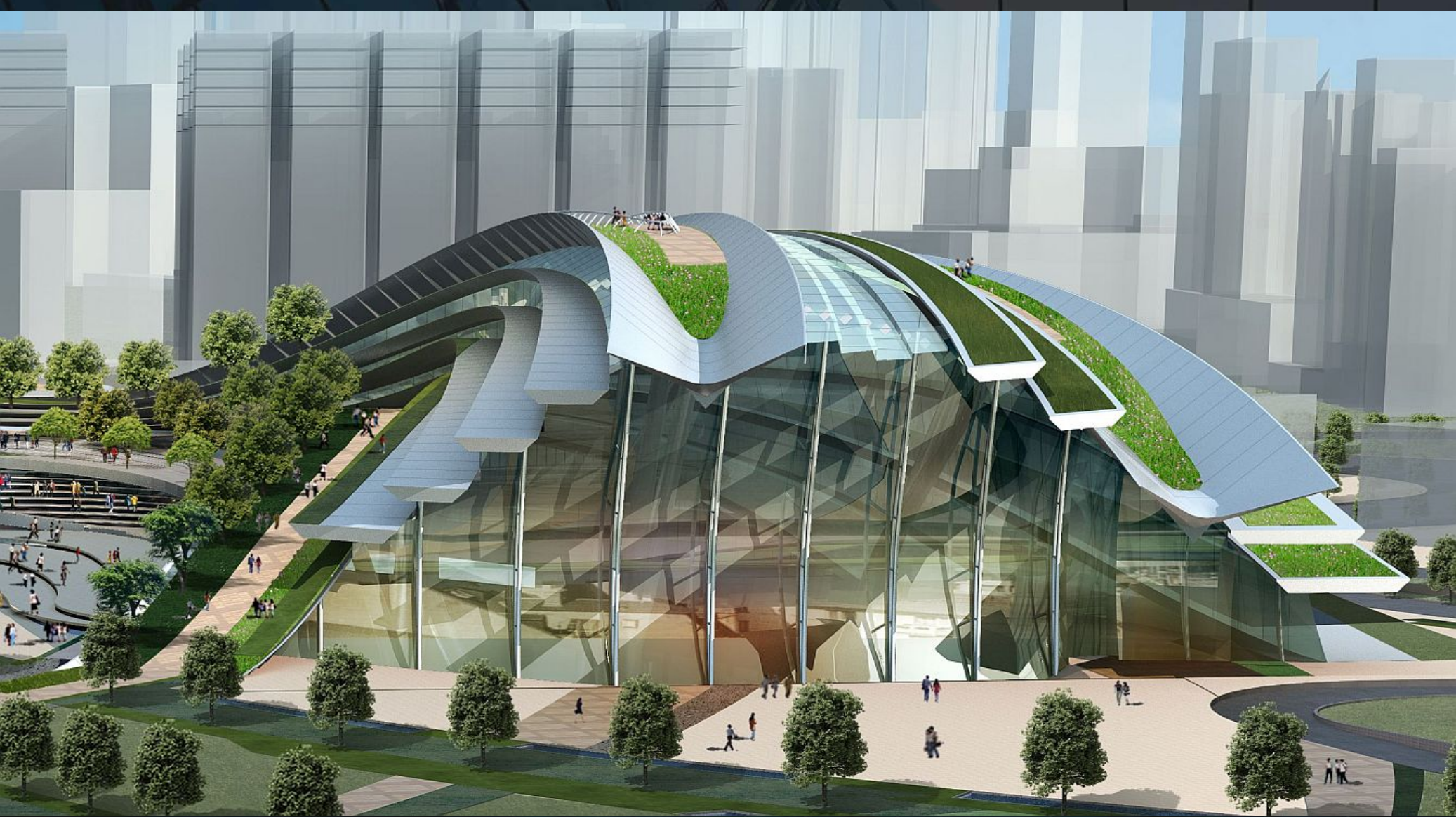
PLATFORM LEVEL PHASE 4
CONSTRUCTION OF FIREMAN ACCESS & OFFICE

- A. OPEN EXIT D
- B. CONSTRUCTION OF NEW COLUMNS
- C. CONSTRUCTION OF FIREMAN STAIR & LIFT (1W2 & 1E2, 3W4 & 3E4)
- D. ACCESSES PROVIDED FOR EXISTING PLANTROOM AREA
- E. CONSTRUCTION OF E&M SERVICES ON ROOF LEVEL

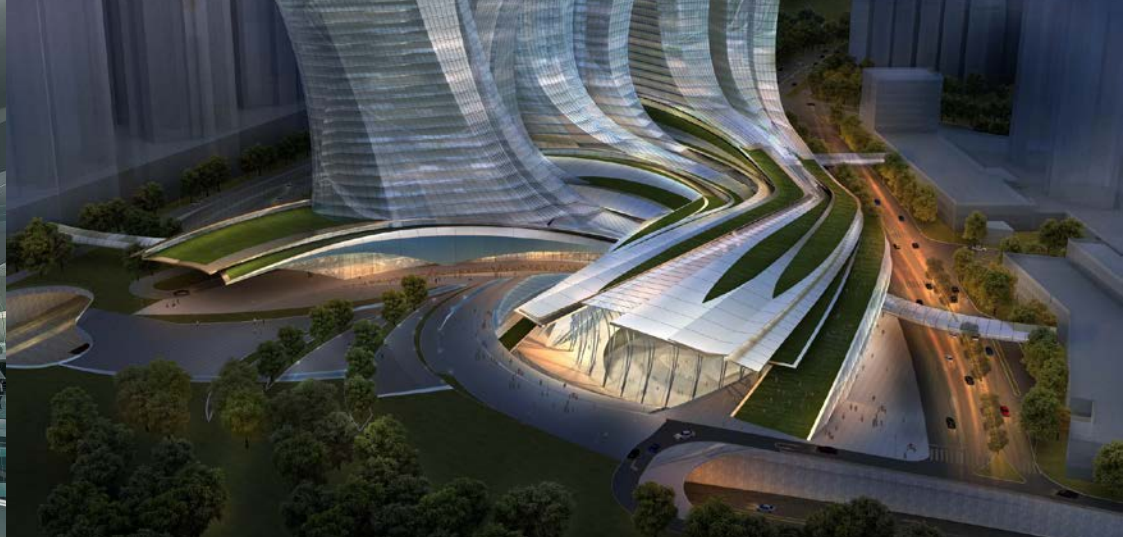
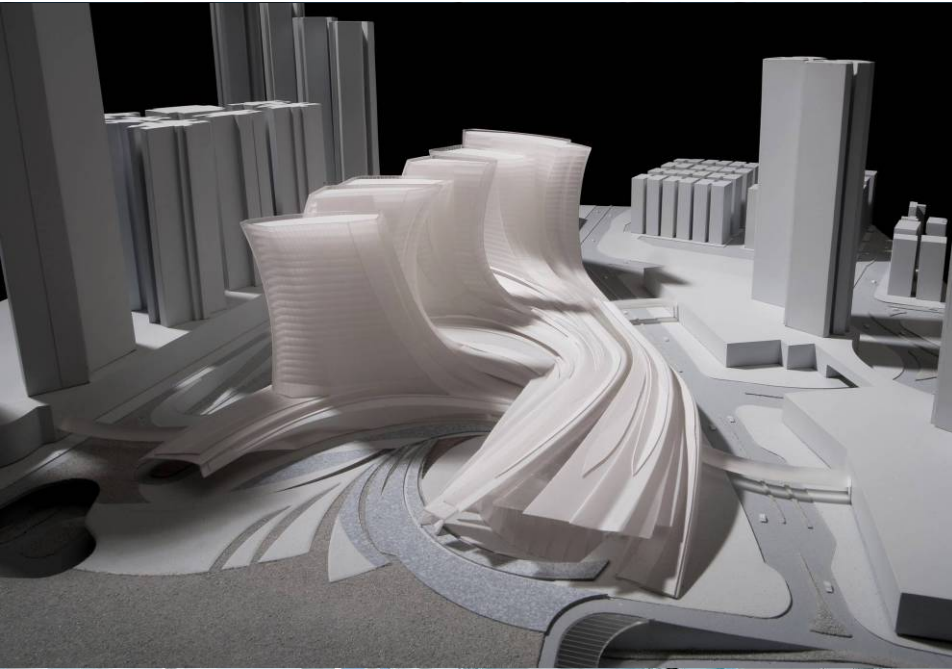
Complex Geometry



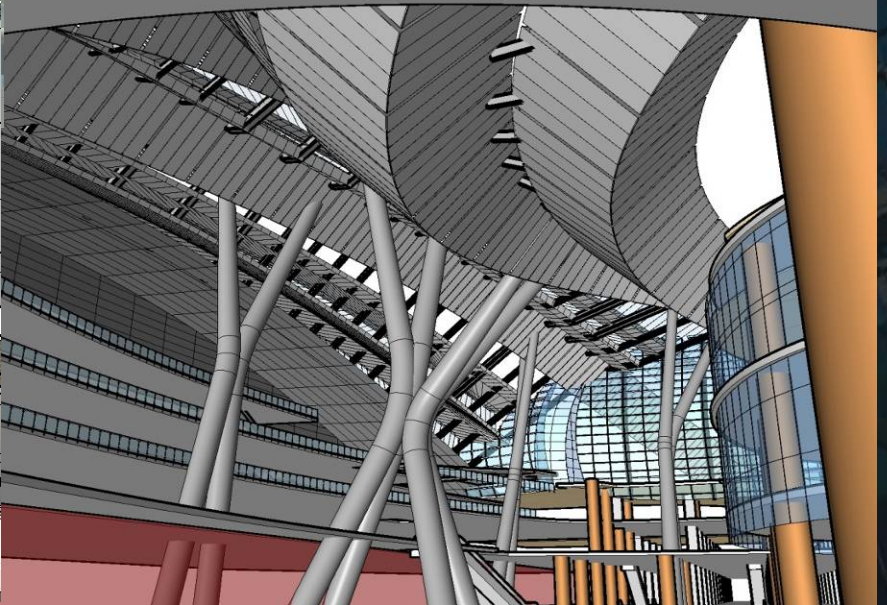
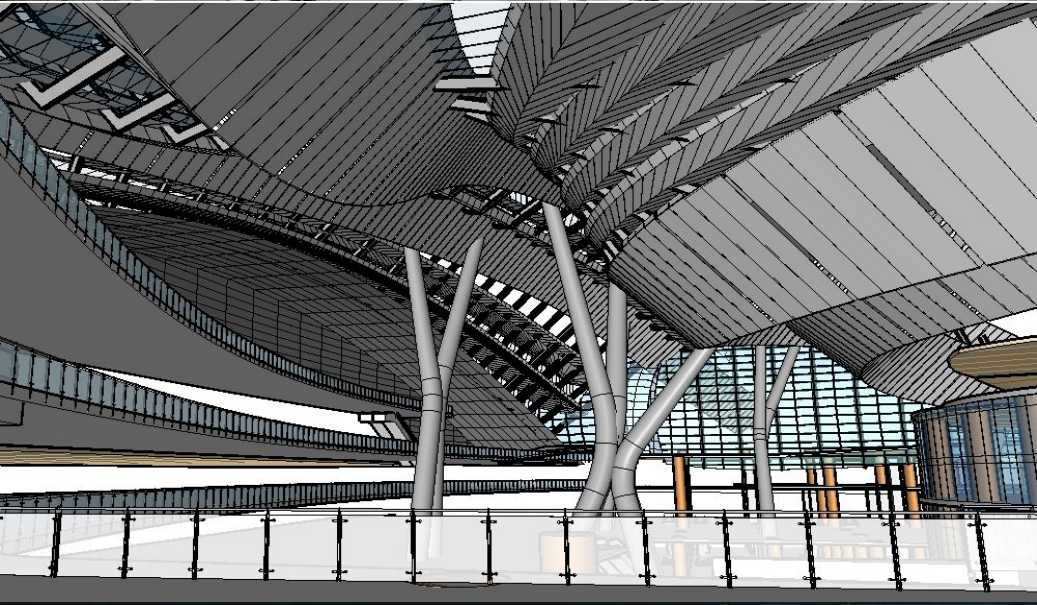
Complex Geometry



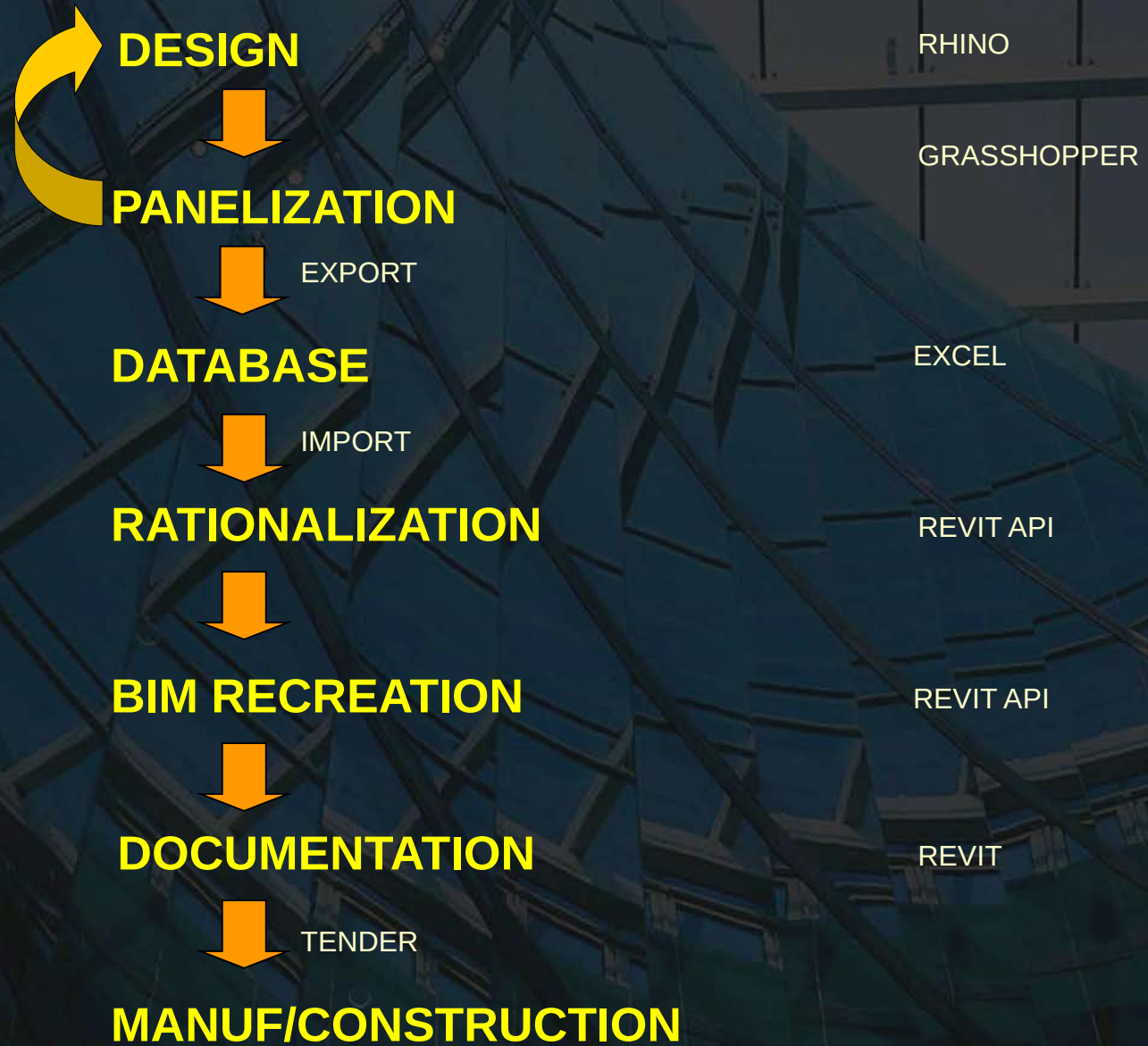
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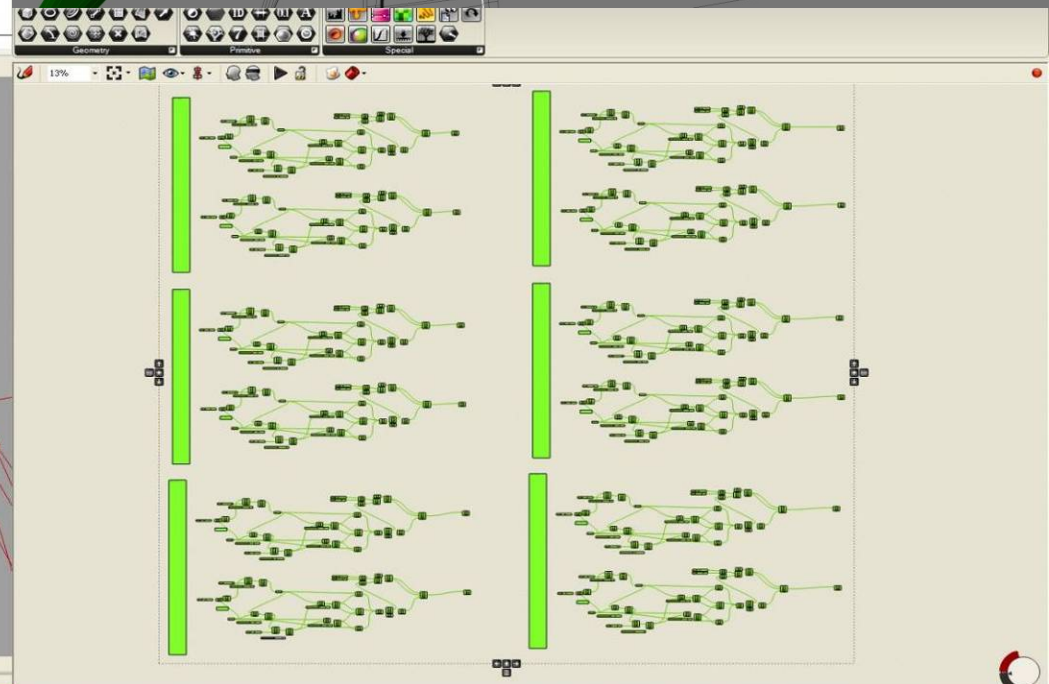
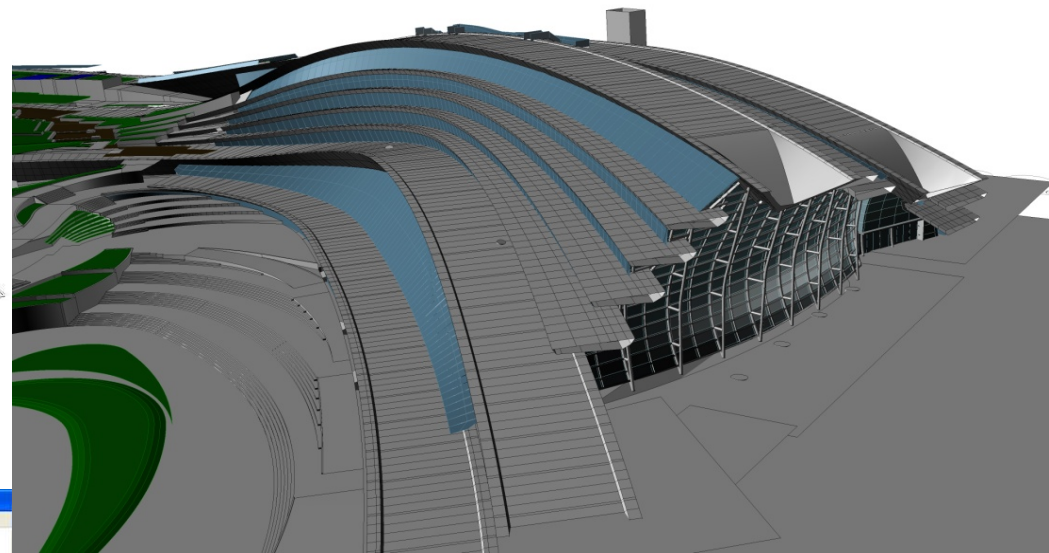
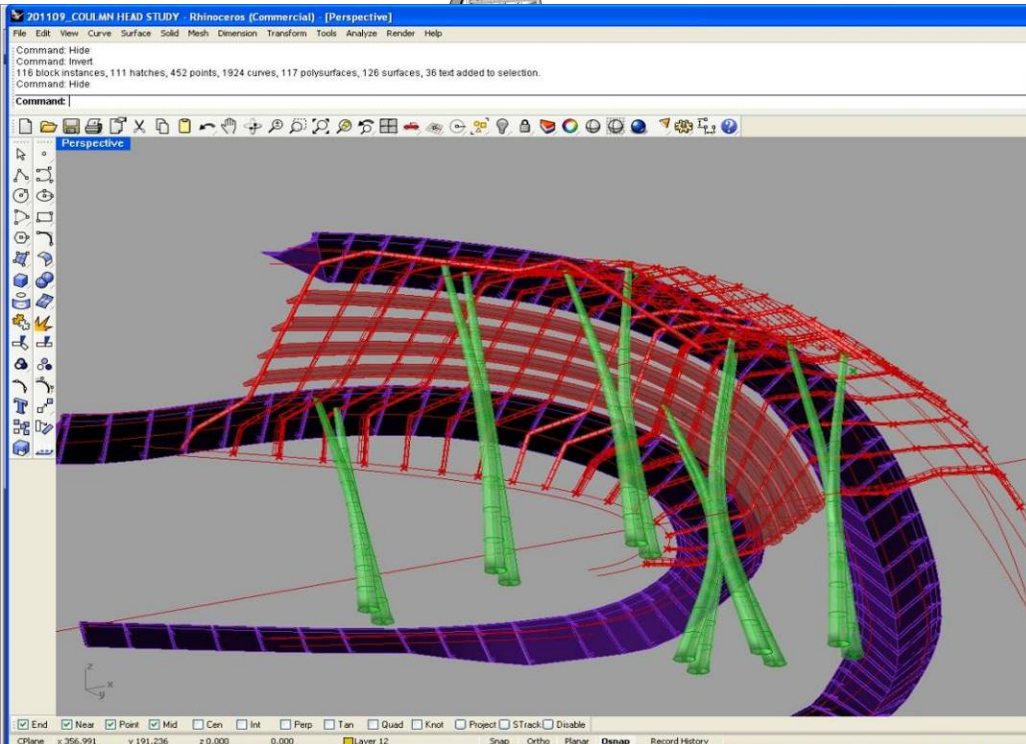
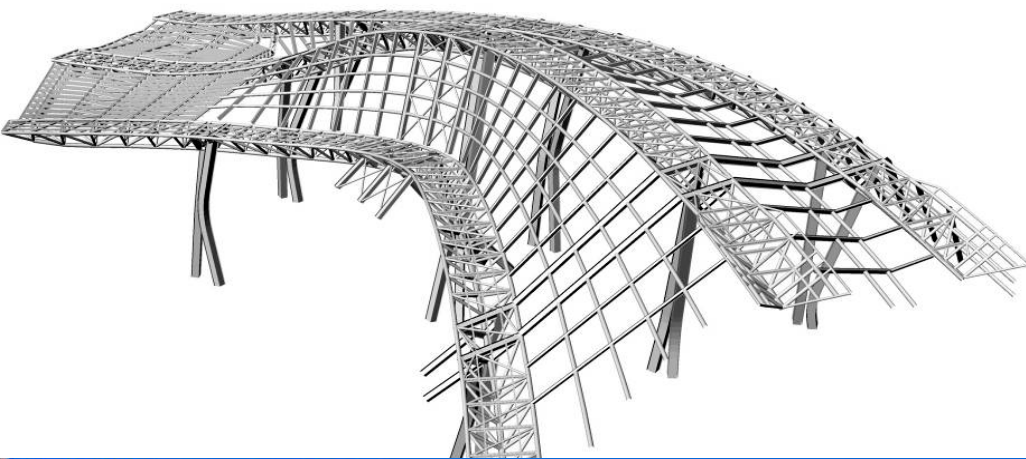


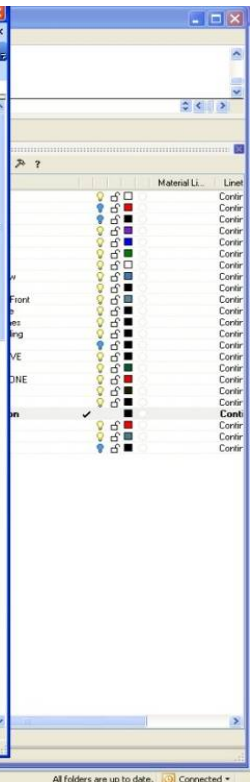
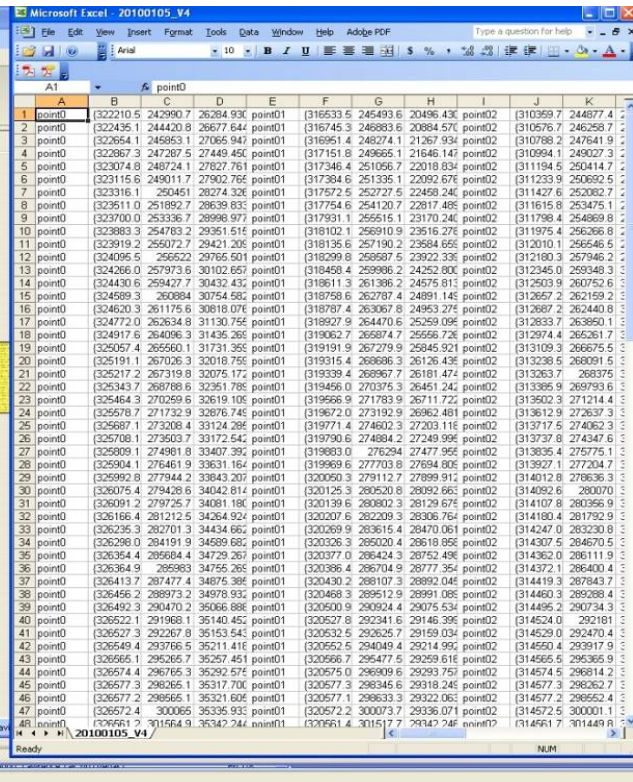
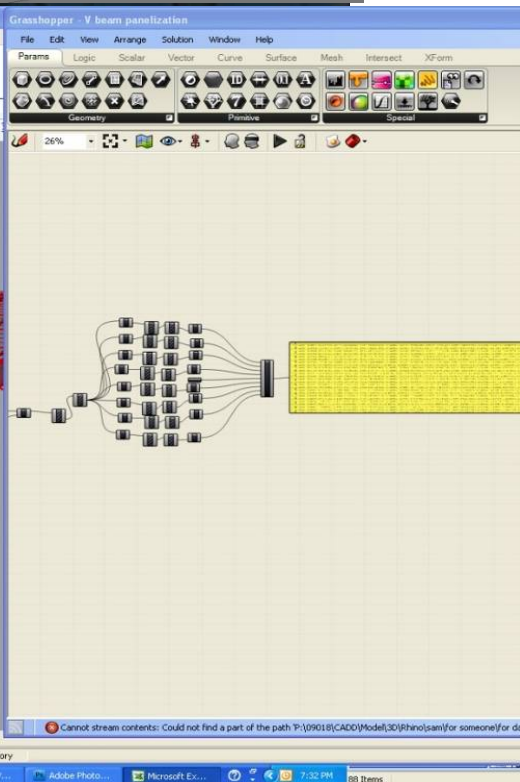
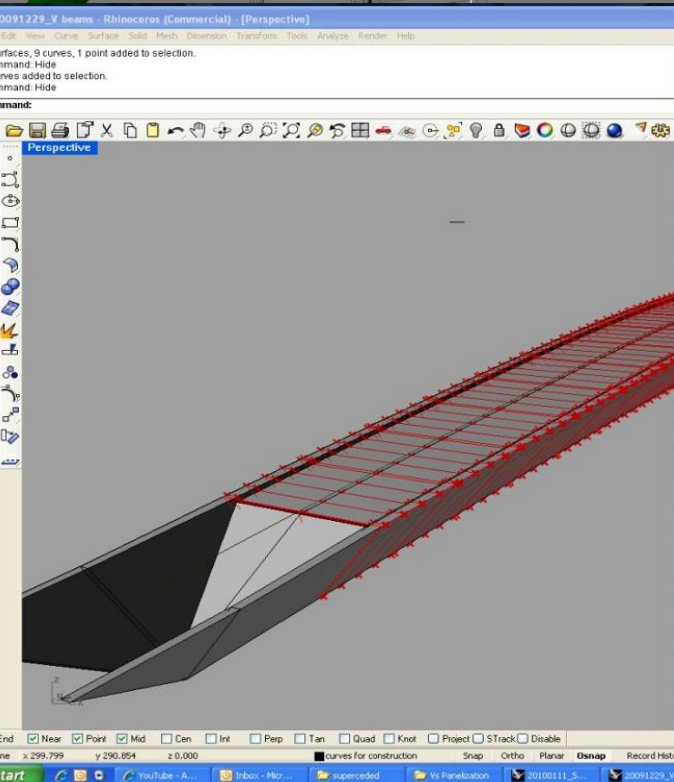
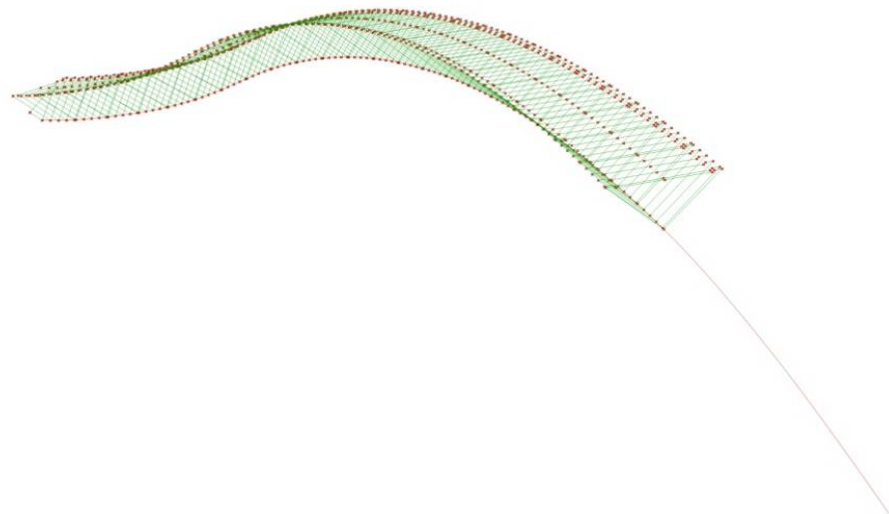
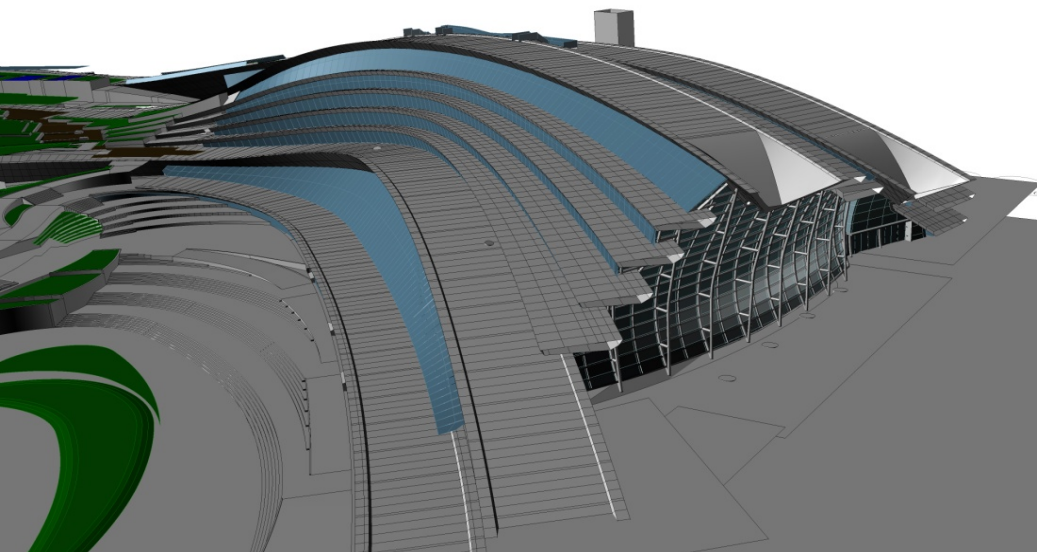
Complex Geometry

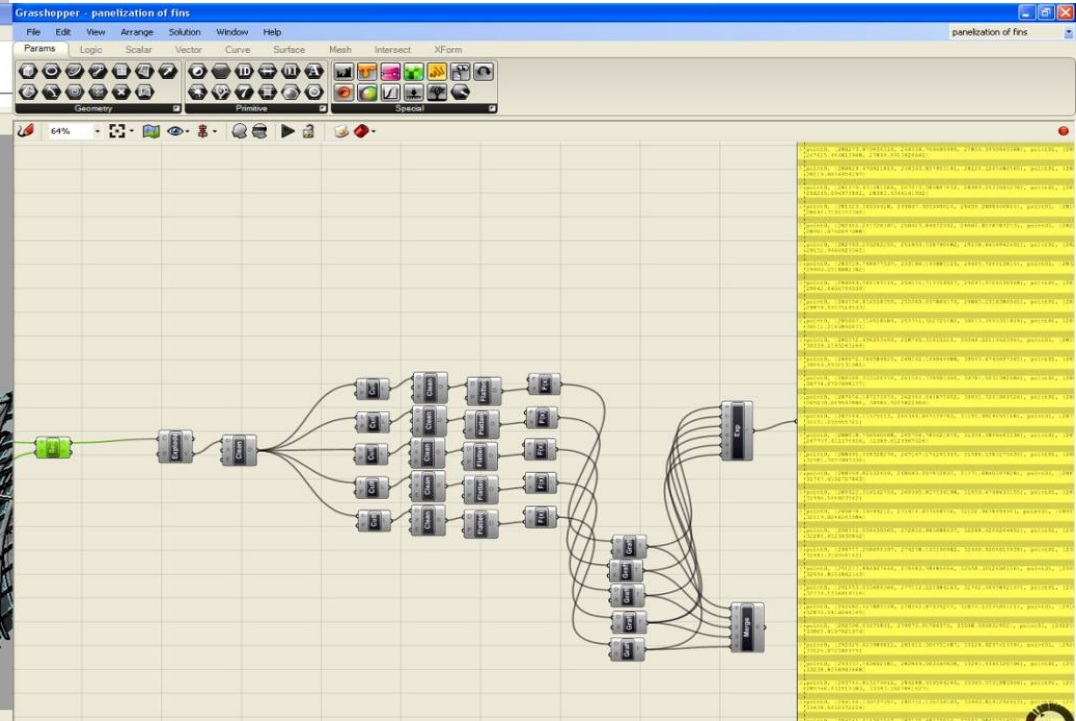
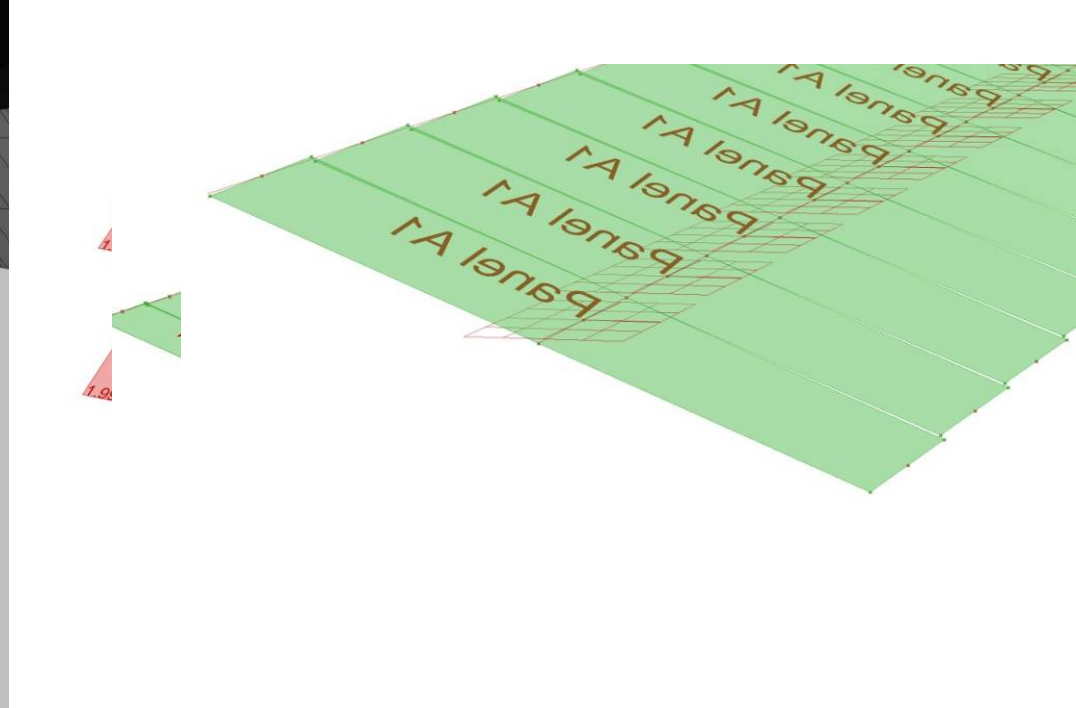
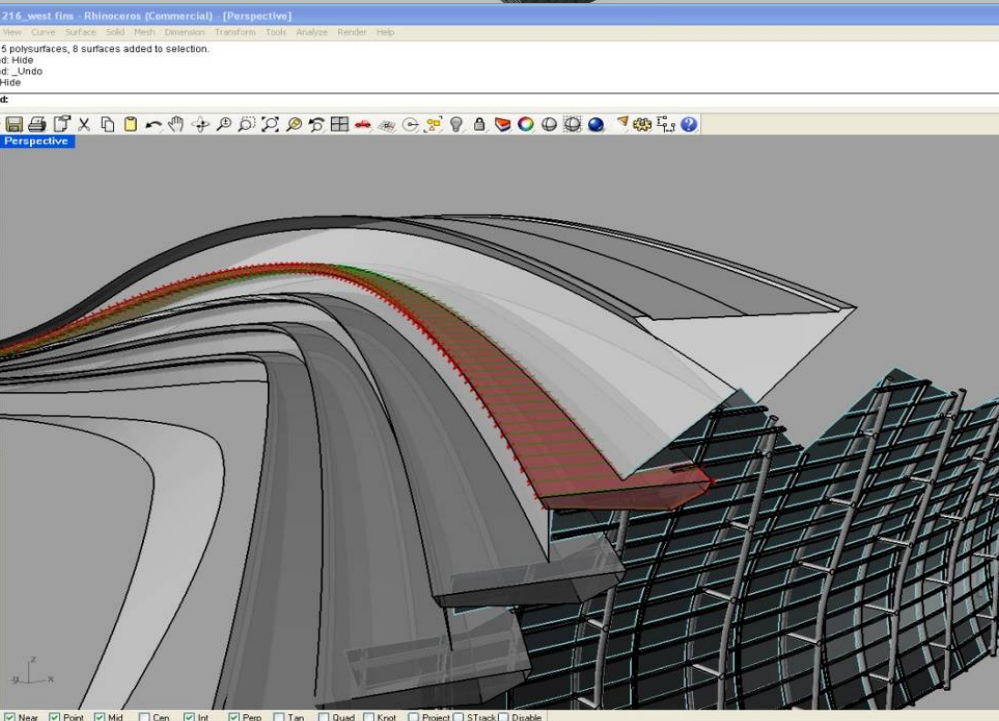
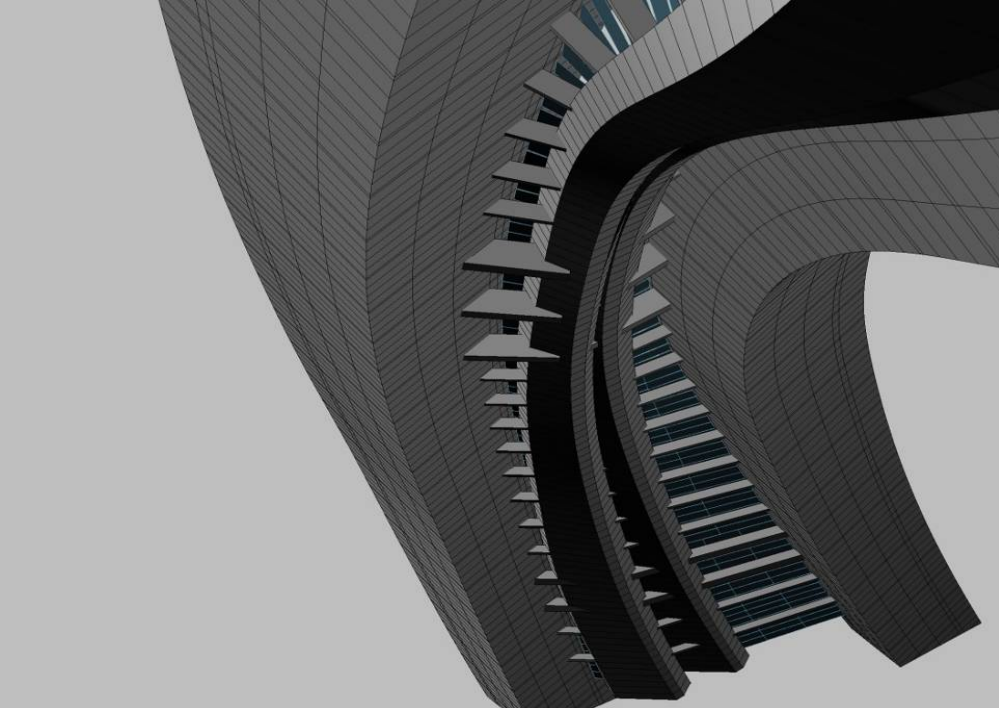


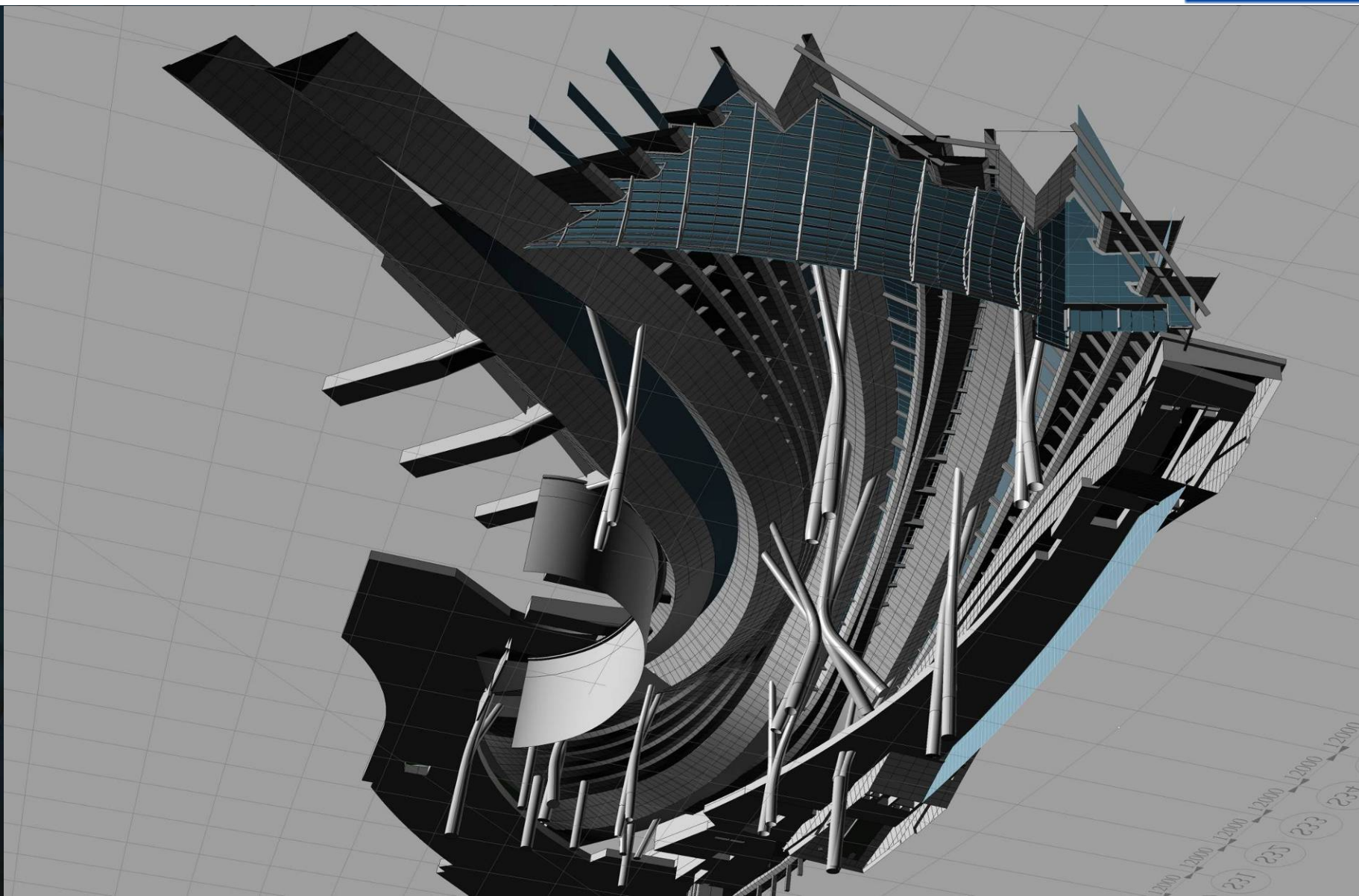
Complex Geometry Design/ Documentation Workflow







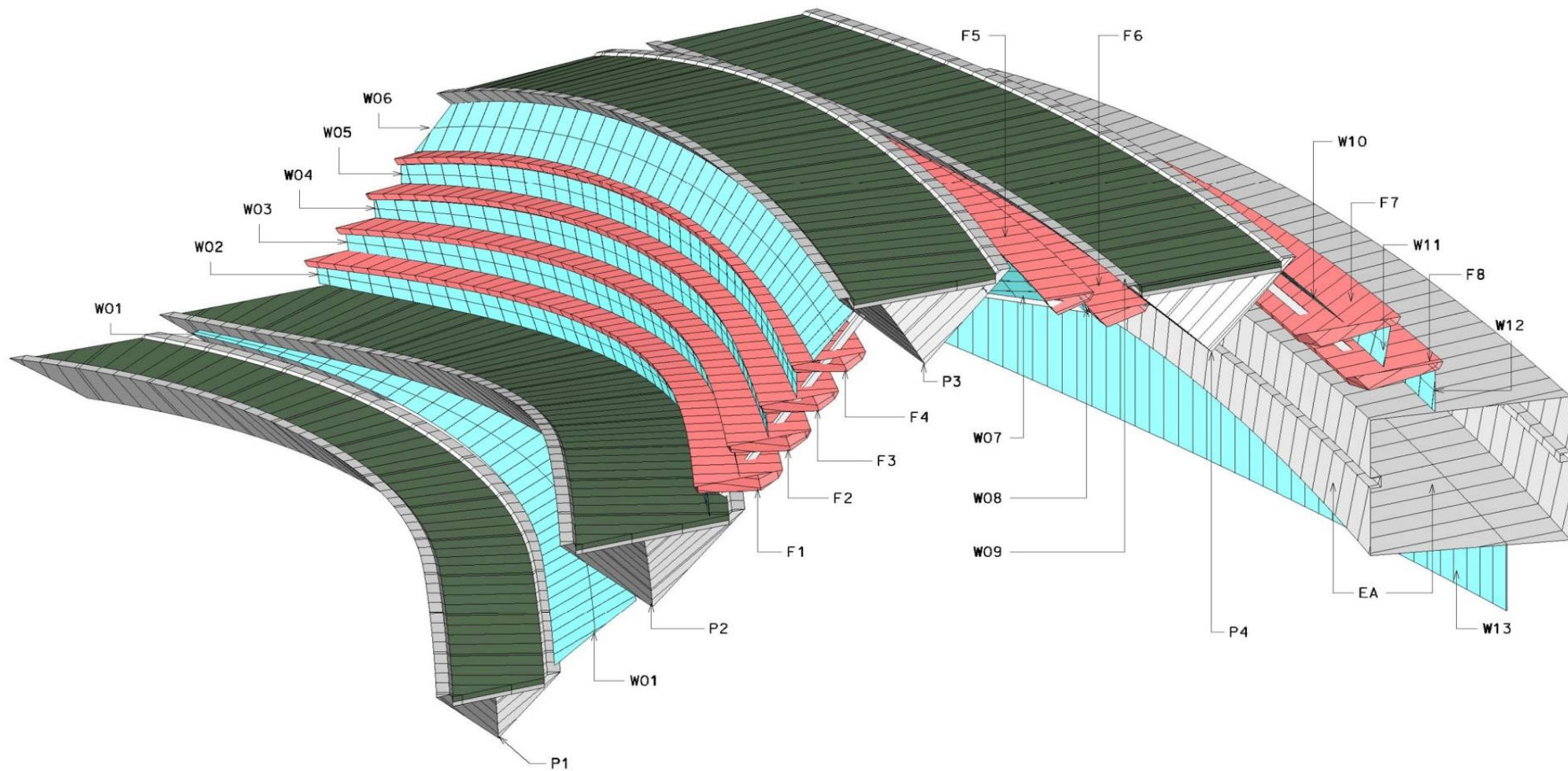


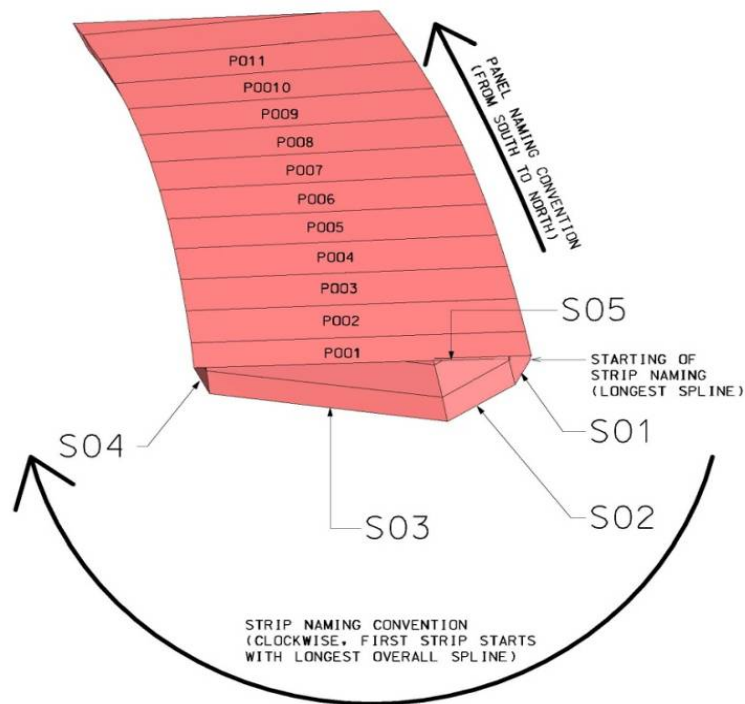


REF	DESCRIPTION	DRAWING NUMBER
P	PRIMARY V CLADDING	810A/T/WKT/AAT/A65/021/001
T	TERTIARY FIN CLADDING	810A/T/WKT/AAT/A65/021/002
EA	EASTERN ARCH CLADDING	810A/T/WKT/AAT/A65/022/002
SF	SOUTH FACADE CLADDING	810A/T/WKT/AAT/A65/022/002
SWT	SOUTH WEST TERTIARY FIN CLADDING	810A/T/WKT/AAT/A65/021/002
W	GLAZING	810A/T/WKT/AAT/A65/022/001
SWW	SOUTH WEST GLAZING	810A/T/WKT/AAT/A65/022/001
FB	FOOT BRIDGE ONE	810A/T/WKT/AAT/A65/301
D1	PLAZA SKYLIGHT	810A/T/WKT/AAT/A67/301
D2	PLAZA SKYLIGHT	810A/T/WKT/AAT/A67/302
L	LIFT	810A/T/WKT/AAT/A67/501
SECTIONS THROUGH SECONDARY STRUCTURE		810A/T/WKT/AAT/A65/015

01 3D SOUTH

										DRAWN ERICA LAM																				TITLE									
										DESIGNED MARK POLLARO																				CONTRACT 810A									
										CHECKED F. MCGLOTHLIN										EXPRESS RAIL LINK										WEST KOWLOON TERMINUS									
										APPROVED KELVIN KO										DESIGNATOR										ENTRANCE BUILDING, GATEWAY DRAWING SOUTH									
										DATE JUN. 2010										 																			
										BY JUN. 2010										AECOM • AEDAS										MEDIANOT • MAYA • BLURO • HPPOLD • EDRAW • MOTT									
										BY JUN. 2010										CALC. BY:										09018 XRL Station Roof.rvt									
										BY JUN. 2010										SCALE										NTS @ A1									
										BY JUN. 2010										DRAWING NO.										810A/T/WKT/AAT/A65/011									
										BY JUN. 2010																				REV. A									
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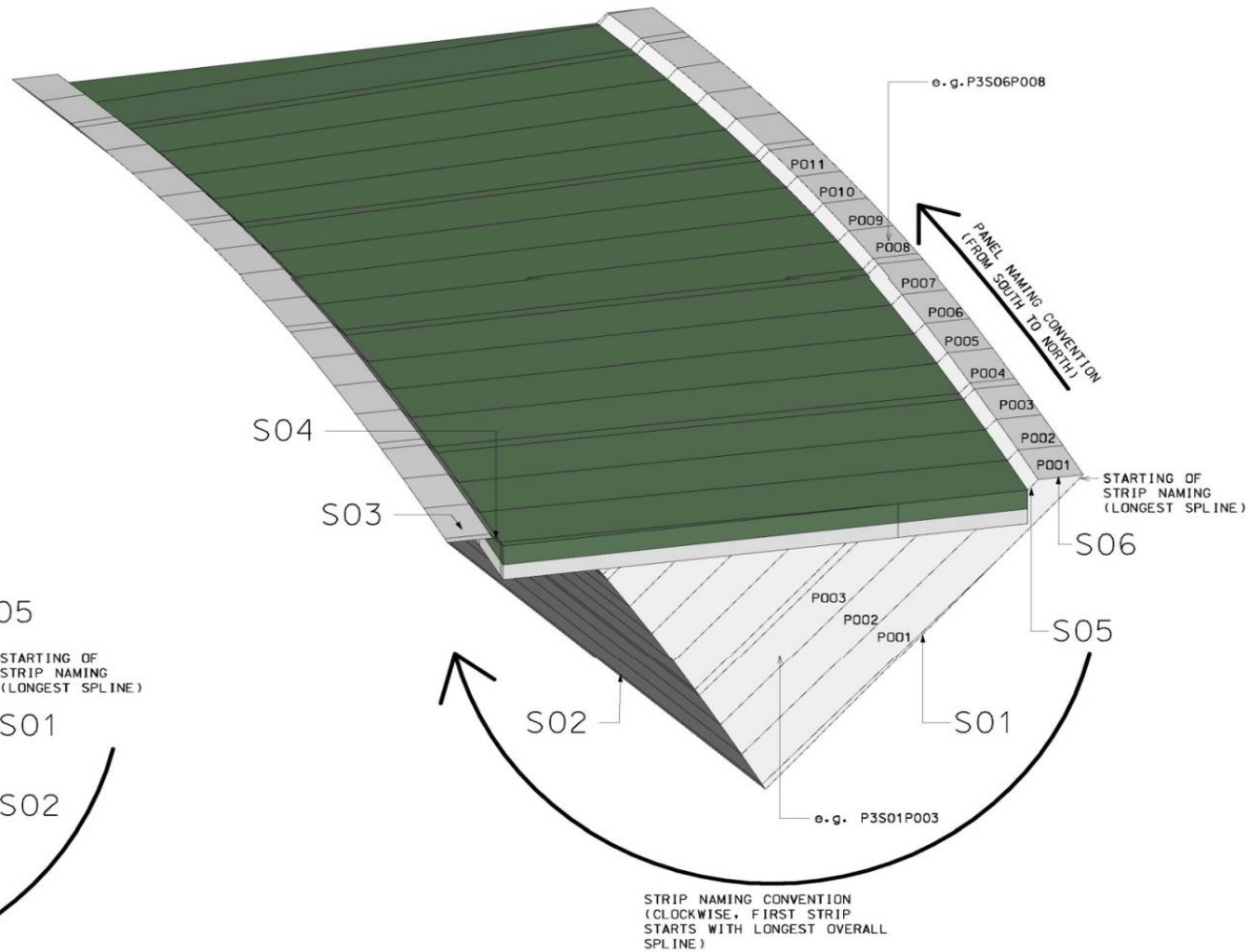




Nomenclature - Fin Cladding

e.g. F1

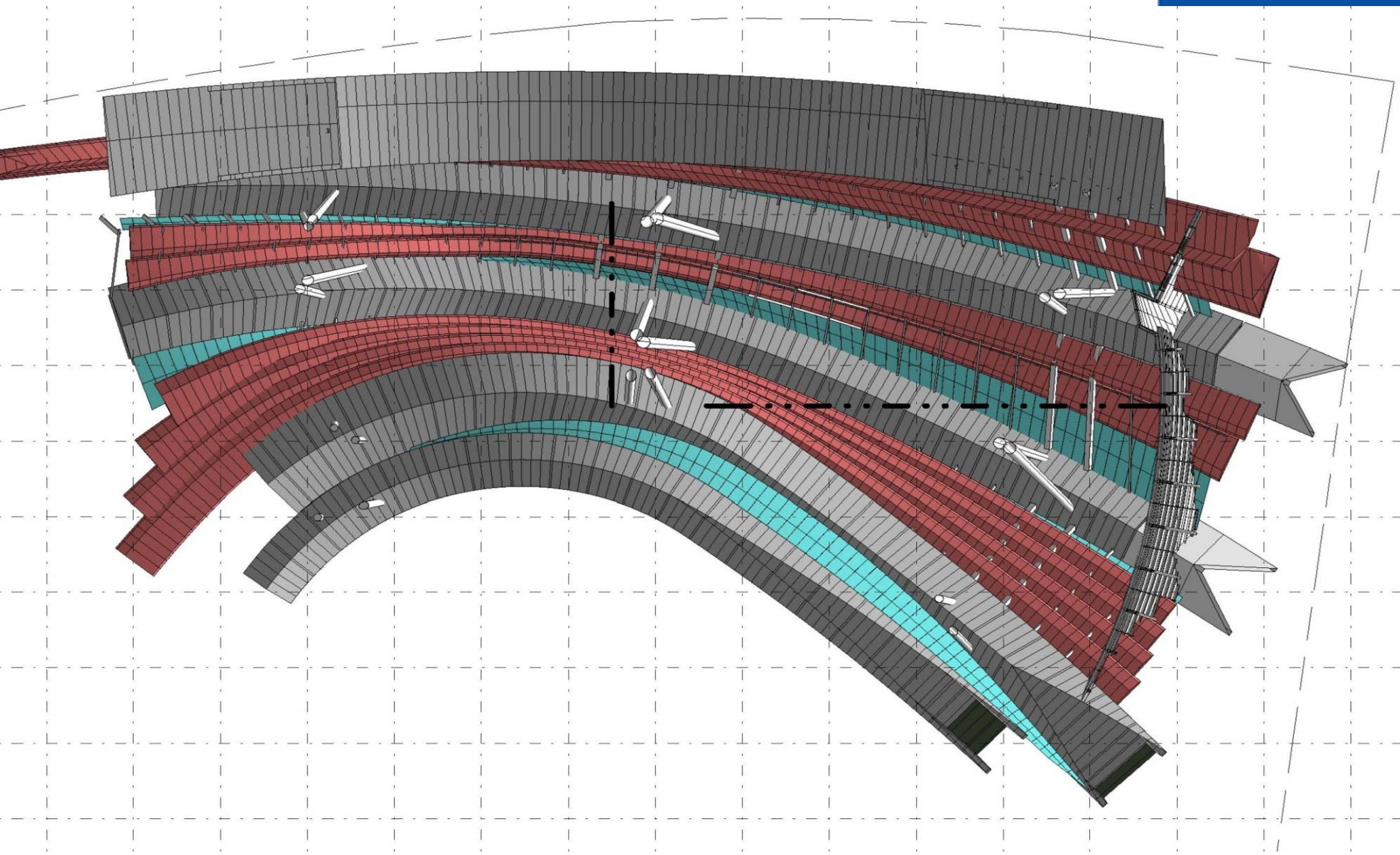
NAMING CONVENTION:
ELEMENT / STRIP(S) / PANEL(P)
E.G. F1 / SXX / PXXX
F1S03P078



Nomenclature - V Cladding

e.g. P3

NAMING CONVENTION:
ELEMENT / STRIP(S) / PANEL(P)
E.G. P3 / SXX / PXXX
P3S17P123



Microsoft Excel - 20100127_V3_S6.xls										EN English (United States)									
File Edit View Insert Format Tools Data Window Help										100%									
R30										Arial									
	A	B	C	D	E	F	G	H	I	J	K	L	M	N					
1		P01x## lengt	P01y## lengt	P01z## lengt	P02x## lengt	P02y## lengt	P02z## lengt	P03x## lengt	P03y## lengt	P03z## lengt	P04x## lengt	P04y## lengt	P04z## lengt	Panel Type##tot					
2	P3S06P001	149572.632	43124.1138	30997.4089	150034.096	44497.0923	31201.1007	151479.165	44220.6936	29756.4955	151017.994	42846.0425	29553.4116	P3S06P001					
3	P3S06P002	150034.096	44497.0923	31201.1007	150490.205	45872.5015	31400.2904	151935	45597.7674	29955.086	151479.165	44220.6936	29756.4955	P3S06P002					
4	P3S06P003	150490.205	45872.5015	31400.2904	150940.93	47250.3052	31594.9821	152385.473	46977.2334	30149.1841	151935	45597.7674	29955.086	P3S06P003					
5	P3S06P004	150940.93	47250.3052	31594.9821	151386.267	48630.4698	31785.1616	152830.57	48359.0618	30338.7828	152385.473	46977.2334	30149.1841	P3S06P004					
6	P3S06P005	151386.267	48630.4698	31785.1616	151474.689	48906.7825	31822.6539	152918.944	48635.7079	30376.1616	152830.57	48359.0618	30338.7828	P3S06P005					
7	P3S06P006	151474.689	48906.7825	31822.6539	151913.575	50289.7323	32007.3872	153357.585	50020.3276	30560.3477	152918.944	48635.7079	30376.1616	P3S06P006					
8	P3S06P007	151913.575	50289.7323	32007.3872	152347.08	51674.9657	32187.576	153790.836	51407.2369	30740.0246	153357.585	50020.3276	30560.3477	P3S06P007					
9	P3S06P008	152347.08	51674.9657	32187.576	152775.147	53062.4739	32363.2813	154218.667	52796.4316	30915.2314	153790.836	51407.2369	30740.0246	P3S06P008					
10	P3S06P009	152775.147	53062.4739	32363.2813	153197.744	54452.3272	32534.6167	154641.09	54188.0429	31086.0665	154218.667	52796.4316	30915.2314	P3S06P009					
11	P3S06P010	153197.744	54452.3272	32534.6167	153281.603	54730.5766	32568.3694	154724.924	54466.654	31119.7184	154641.09	54188.0429	31086.0665	P3S06P010					
12	P3S06P011	153281.603	54730.5766	32568.3694	153697.624	56123.188	32734.5715	155140.841	55861.1282	31285.4274	154724.924	54466.654	31119.7184	P3S06P011					
13	P3S06P012	153697.624	56123.188	32734.5715	154108.128	57517.7498	32896.4211	155551.199	57257.4509	31446.8027	155140.841	55861.1282	31285.4274	P3S06P012					
14	P3S06P013	154108.128	57517.7498	32896.4211	154513.02	58914.0007	33053.6684	155955.863	58655.1793	31603.5689	155551.199	57257.4509	31446.8027	P3S06P013					
15	P3S06P014	154513.02	58914.0007	33053.6684	154912.275	60311.9726	33206.0604	156354.833	60054.3601	31755.4605	155955.863	58655.1793	31603.5689	P3S06P014					
16	P3S06P015	154912.275	60311.9726	33206.0604	154991.455	60591.8003	33235.9403	156433.956	60334.4167	31785.2395	156354.833	60054.3601	31755.4605	P3S06P015					
17	P3S06P016	154991.455	60591.8003	33235.9403	155384.039	61992.164	33382.3144	156826.258	61735.9125	31931.1206	156433.956	60334.4167	31785.2395	P3S06P016					
18	P3S06P017	155384.039	61992.164	33382.3144	155771.104	63394.5402	33523.6095	157213.036	63139.4019	32071.9532	156826.258	61735.9125	31931.1206	P3S06P017					
19	P3S06P018	155771.104	63394.5402	33523.6095	156152.641	64799.0536	33659.8994	157594.329	64545.1147	32207.8035	157213.036	63139.4019	32071.9532	P3S06P018					
20	P3S06P019	156152.641	64799.0536	33659.8994	156528.665	66205.8406	33791.3989	157970.193	65953.318	32338.8909	157594.329	64545.1147	32207.8035	P3S06P019					
21	P3S06P020	156528.665	66205.8406	33791.3989	156603.207	66487.4657	33817.1437	158044.711	66235.2527	32364.5566	157970.193	65953.318	32338.8909	P3S06P020					
22	P3S06P021	156603.207	66487.4657	33817.1437	156972.591	67896.8372	33943.1573	158414.002	67646.2548	32490.1972	158044.711	66235.2527	32364.5566	P3S06P021					
23	P3S06P022	156972.591	67896.8372	33943.1573	157336.329	69307.9002	34064.607	158777.619	69058.83	32611.2857	158414.002	67646.2548	32490.1972	P3S06P022					
24	P3S06P023	157336.329	69307.9002	34064.607	157694.338	70720.5482	34181.3772	159135.5	70472.822	32727.6793	158777.619	69058.83	32611.2857	P3S06P023					
25	P3S06P024	157694.338	70720.5482	34181.3772	158046.558	72134.4265	34293.1711	159487.514	71887.6646	32839.0806	159135.5	70472.822	32727.6793	P3S06P024					
26	P3S06P025	158046.558	72134.4265	34293.1711	158116.297	72417.2914	34314.8748	159557.191	72170.6364	32860.703	159487.514	71887.6646	32839.0806	P3S06P025					
27	P3S06P026	158116.297	72417.2914	34314.8748	158461.474	73832.0687	34419.7934	159901.955	73585.5129	32965.2043	159557.191	72170.6364	32860.703	P3S06P026					
28	P3S06P027	158461.474	73832.0687	34419.7934	158800.798	75247.6674	34518.1928	160240.723	75000.5299	33063.172	159901.955	73585.5129	32965.2043	P3S06P027					
29	P3S06P028	158800.798	75247.6674	34518.1928	159134.34	76664.522	34609.6099	160573.676	76416.4942	33154.1589	160240.723	75000.5299	33063.172	P3S06P028					
30	P3S06P029	159134.34	76664.522	34609.6099	159462.105	78082.6818	34693.7628	160900.837	77833.534	33237.8995	160573.676	76416.4942	33154.1589	P3S06P029					
31	P3S06P030	159462.105	78082.6818	34693.7628	159526.964	78366.4655	34709.6976	160965.574	78117.0662	33253.7554	160900.837	77833.534	33237.8995	P3S06P030					
32	P3S06P031	159526.964	78366.4655	34709.6976	159847.917	79786.6698	34784.8936	161285.941	79536.0393	33328.5833	160965.574	78117.0662	33253.7554	P3S06P031					
33	P3S06P032	159847.917	79786.6698	34784.8936	160163.369	81209.1412	34852.7734	161600.864	80957.3769	33396.1369	161285.941	79536.0393	33328.5833	P3S06P032					
34	P3S06P033	160163.369	81209.1412	34852.7734	160473.329	82633.6703	34913.5237	161910.348	82380.8678	33456.5958	161600.864	80957.3769	33396.1369	P3S06P033					
35	P3S06P034	160473.329	82633.6703	34913.5237	160777.356	84058.5399	34967.1102	162213.944	83804.7494	33509.9212	161910.348	82380.8678	33456.5958	P3S06P034					
36	P3S06P035	160777.356	84058.5399	34967.1102	160837.419	84343.4967	34976.9482	162273.925	84089.5132	33519.7114	162213.944	83804.7494	33509.9212	P3S06P035					
37	P3S06P036	160837.419	84343.4967	34976.9482	161133.92	85768.179	35021.638	162570.037	85513.2534	33564.1916	162273.925	84089.5132	33519.7114	P3S06P036					
38	P3S06P037	161133.92	85768.179	35021.638	161424.472	87194.961	35058.7408	162860.157	86938.7178	33601.1181	162570.037	85513.2534	33564.1916	P3S06P037					
39	P3S06P038	161424.472	87194.961	35058.7408	161710.115	88626.5835	35088.1259	163145.242	88368.1089	33630.3397	162860.157	86938.7178	33601.1181	P3S06P038					
40	P3S06P039	161710.115	88626.5835	35088.1259	161991.372	90062.1491	35109.5513	163425.853	89800.6144	33651.6209	163145.242	88368.1089	33630.3397	P3S06P039					
41	P3S06P040	161991.372	90062.1491	35109.5513	162046.965	90348.8387	35112.8371	163481.328	90086.742	33654.8892	163425.853	89800.6144	33651.6209	P3S06P040					
42	P3S06P041	162046.965	90348.8387	35112.8371	162320.456	91777.2531	35124.1735	163754.377	91513.2313	33666.1912	163481.328	90086.742	33654.8892	P3S06P041					
43	P3S06P042	162320.456	91777.2531	35124.1735	162582.475	93187.6147	35126.9896	164016.659	92925.0915	33668.9867	163754.377	91513.2313	33666.1912	P3S06P042					

```

        {
            case 'x':
                p[index].x = System.Convert.ToDouble(para.AsValueString());
                break;
            case 'y':
                p[index].y = System.Convert.ToDouble(para.AsValueString());
                break;
            case 'z':
                p[index].z = System.Convert.ToDouble(para.AsValueString());
                break;
            default:
                MessageBox.Show("Wrong format of parameter name");
                break;
        }
    }
}

CladdingPanel cl = new CladdingPanel(p, PanelCounter); // new panel created from list of points.
double Area_m2 = cl.PanelArea / 1000000; // division by 1000000 to get area in m2 from mm2

//current family type parameter is updated with value of Area_m2 ;
document.BeginTransaction();
if( symbol.ParametersMap["Area"].Set(Area_m2) == false )
{
    MessageBox.Show("Wrong parameter type");
}
document.EndTransaction();

ArrayOfPanels.Add(cl); // new panel inserted into the array of panels

output += cl.UniqueNumber + "          " + Area_m2 + " " + cl.T_edge[0] + " " + cl.T_edge[1] + " " + cl.T_edge[2] + " " + cl.T_edge[3]

// creating panel objects in space
document.BeginTransaction();
FamilyInstance instance = document.Create.NewFamilyInstance(location, symbol, StructuralType.NonStructural);
document.EndTransaction();
}
//MessageBox.Show(output);

```



```

public bool CanBeGroupedWith(CladdingPanel nextPanel, double tolerance)
{
    if
    (
        Math.Abs(nextPanel.G_edge[0] - G_edge[0]) <= tolerance
        &&
        Math.Abs(nextPanel.G_edge[1] - G_edge[1]) <= tolerance
        &&
        Math.Abs(nextPanel.G_edge[2] - G_edge[2]) <= tolerance
        &&
        Math.Abs(nextPanel.G_edge[3] - G_edge[3]) <= tolerance
        &&
        Math.Abs(nextPanel.G_diagonal_1 - G_diagonal_1) <= tolerance * Math.Sqrt(2)
    )
    { return true; }
    else
    { return false; }

}

}

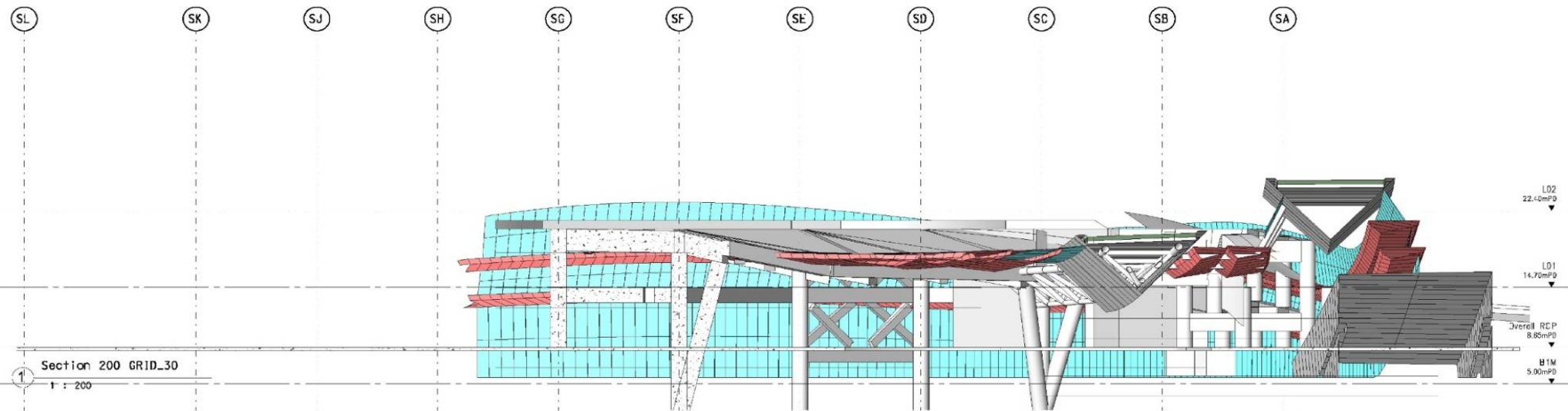
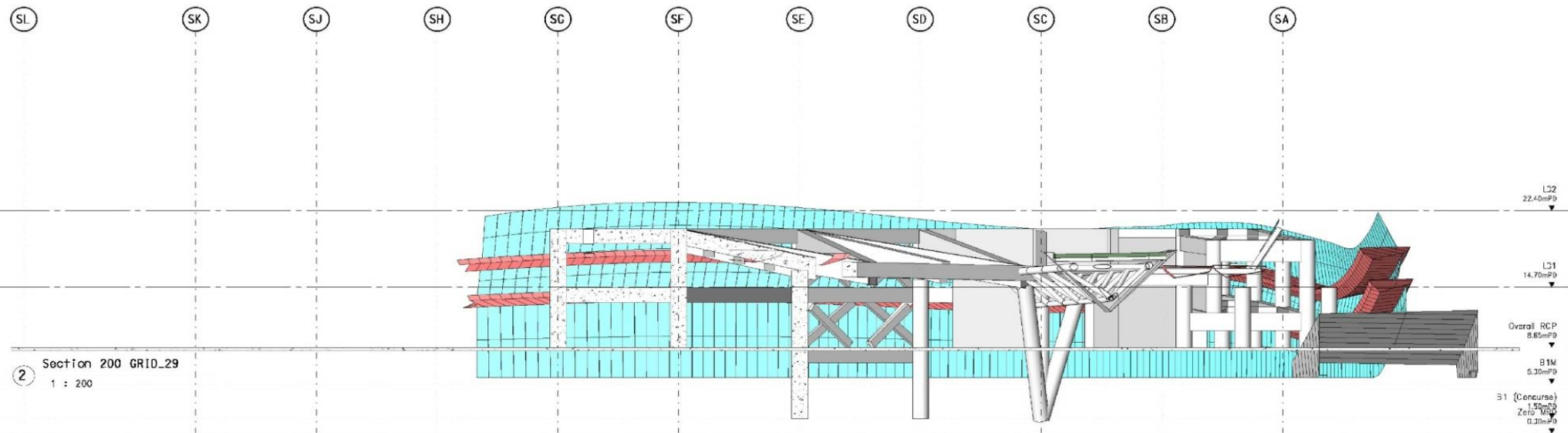
#endregion

public class Group
{
    public int GroupNumber;
    public double[] Edge; //array of lengths of groups's edges.
    public double Diagonal; //length of group's diagonal.
    public double Area; //area of a grouped panel;
}

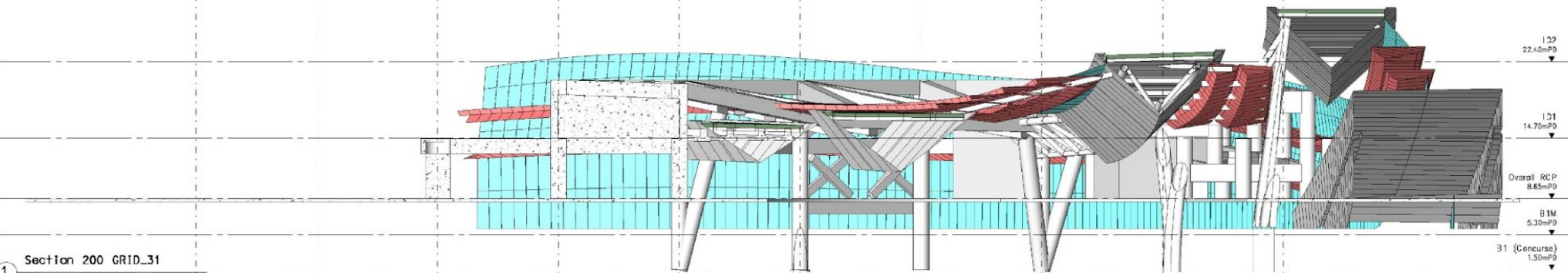
double toFeet(double value) //conversion of linear sizes for family instances
{
    return value * FACTOR_MMtoFT;
}

double toSqFeet(double value) //conversion of areal sizes for family instances
{

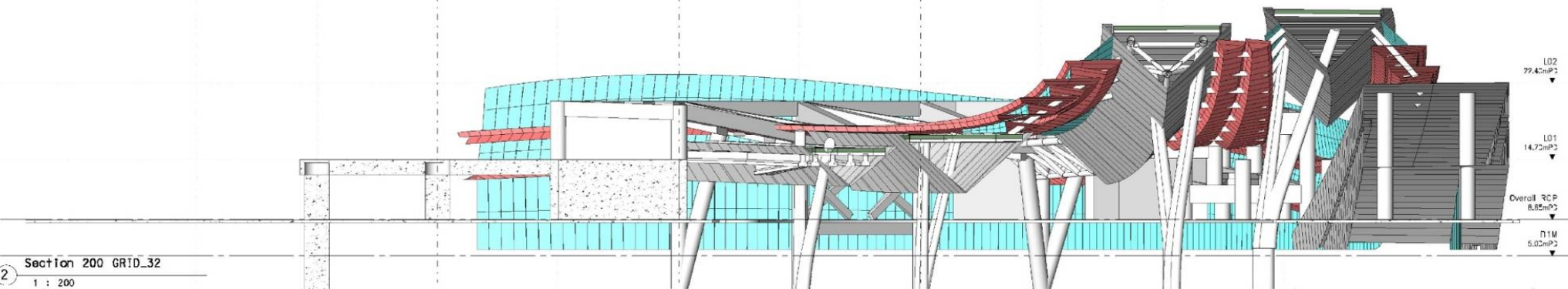
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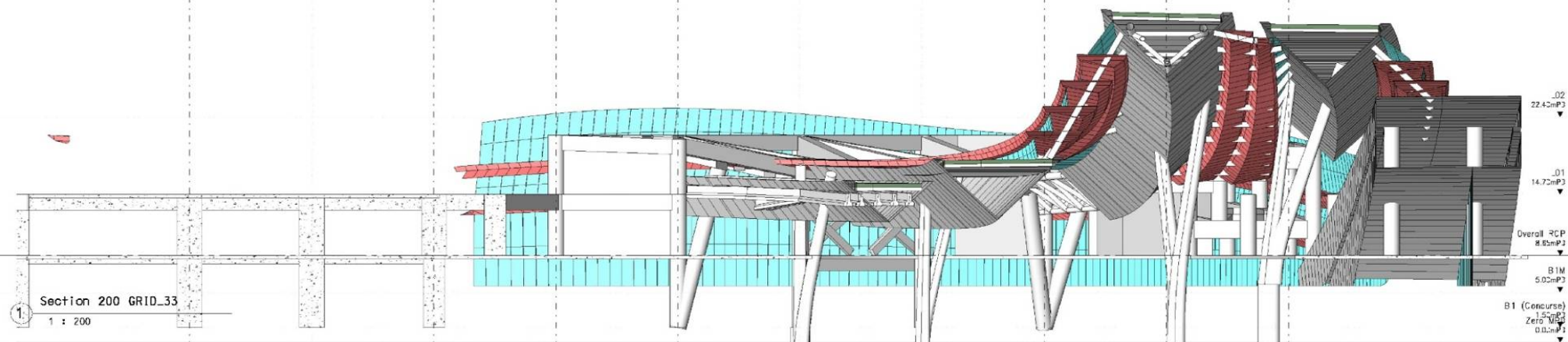
SK SJ SH SG SF SE SD SC SB SA



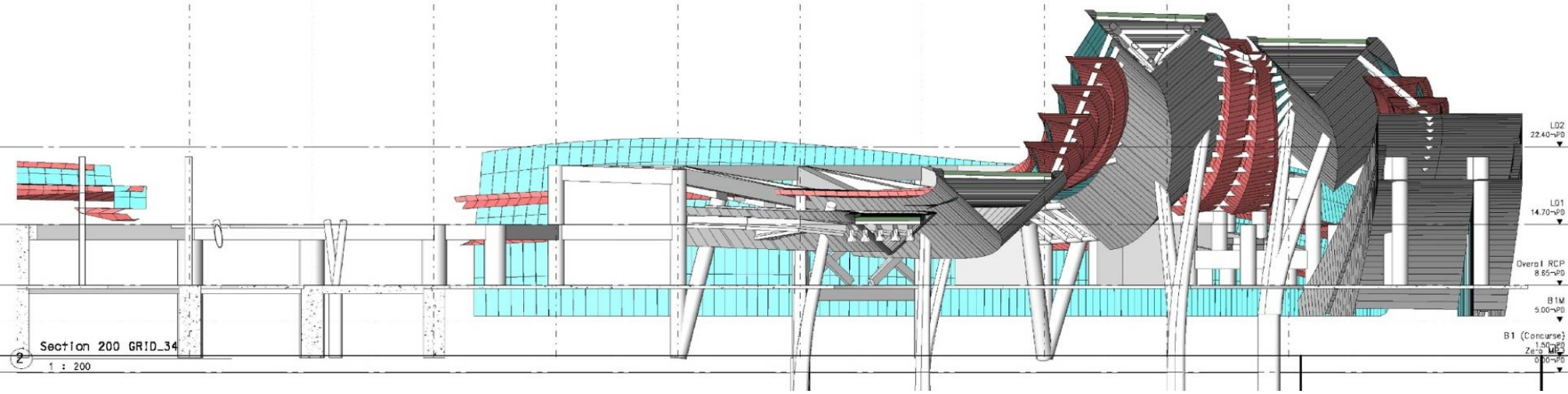
SK SJ SH SG SF SE SD SC SB SA

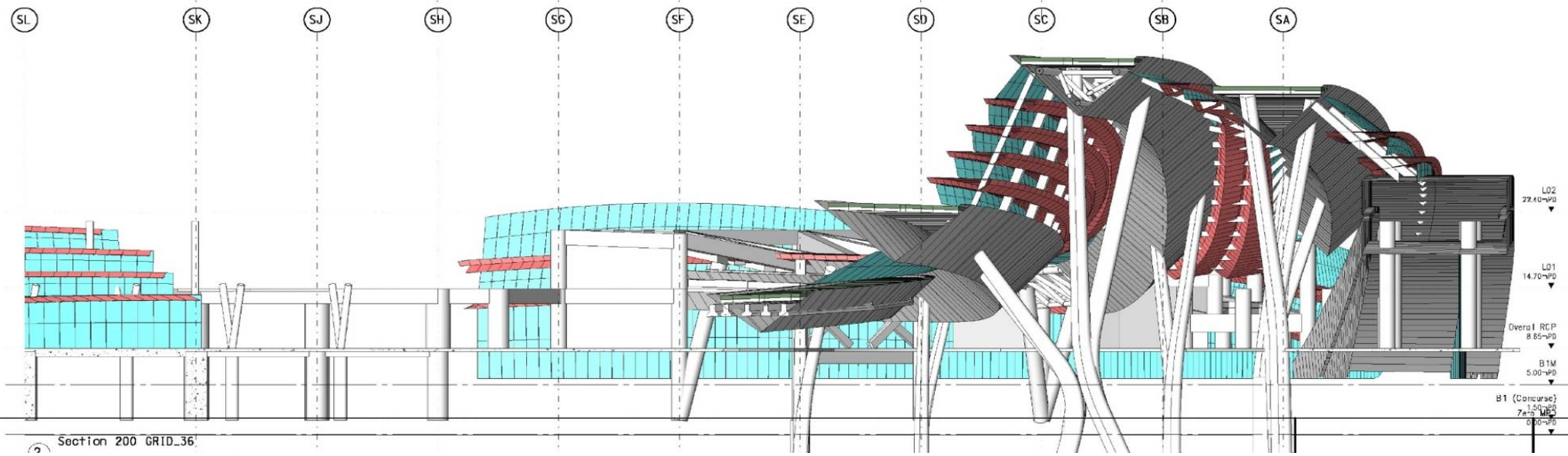
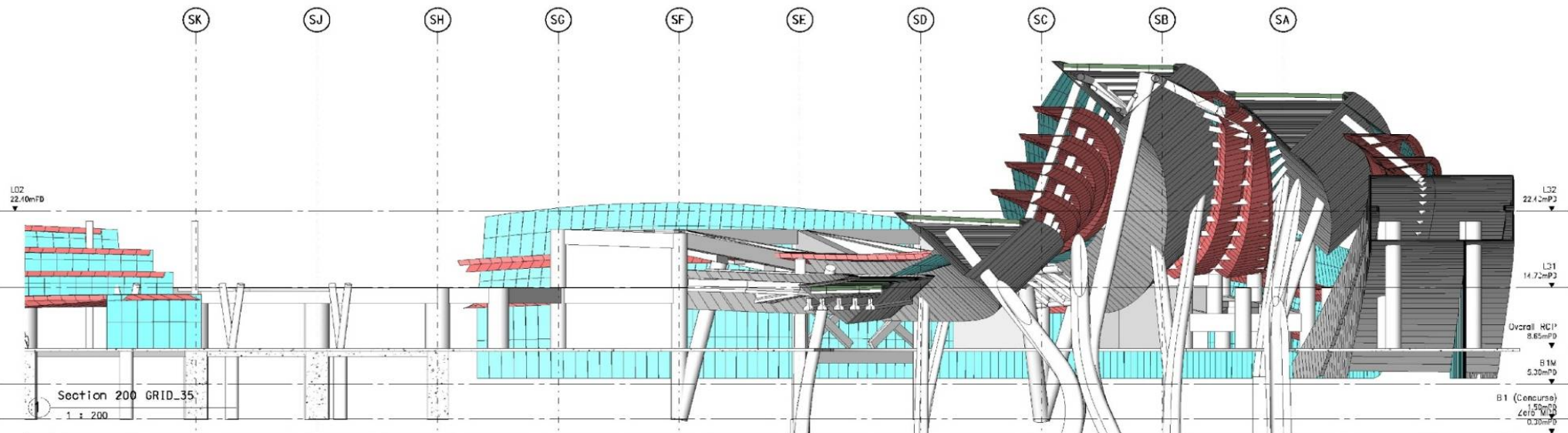


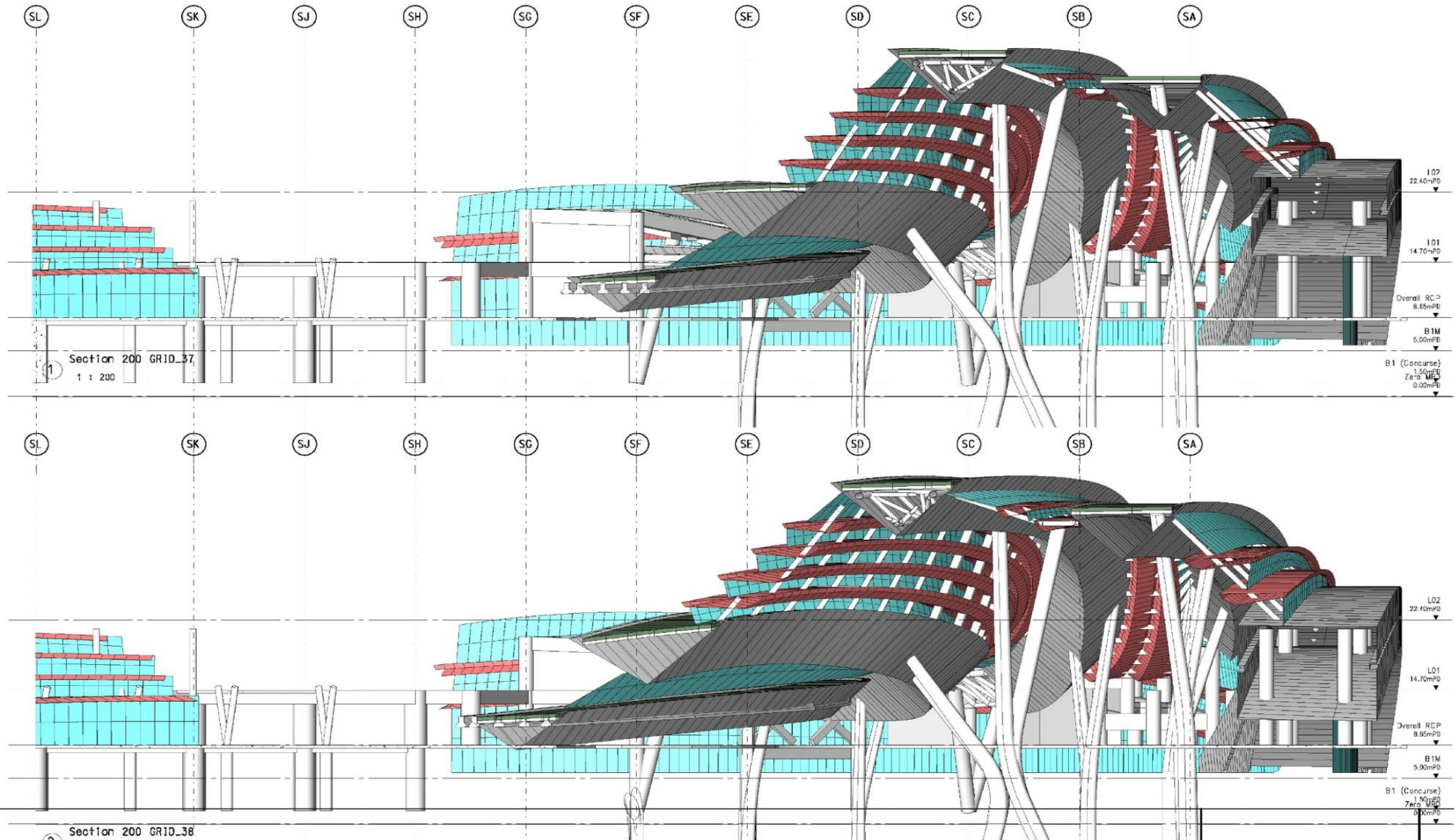
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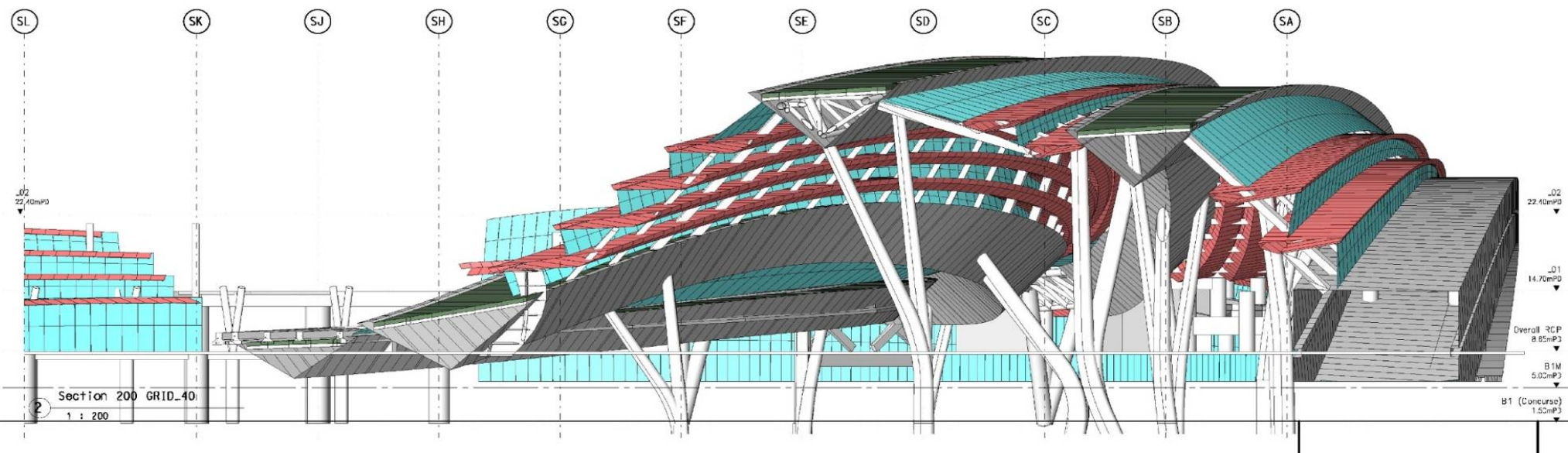
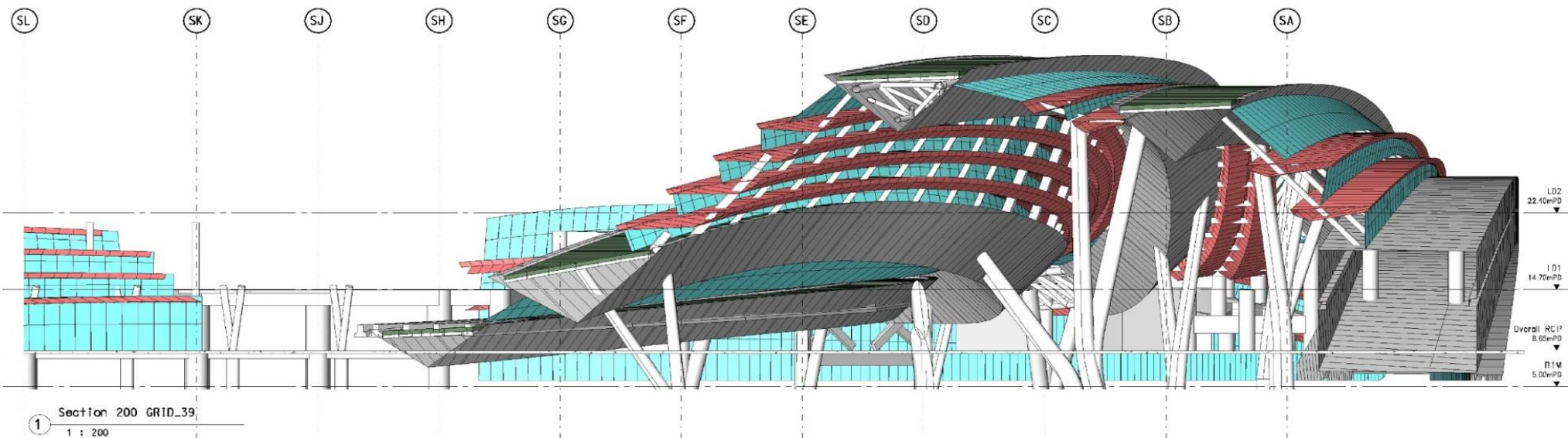


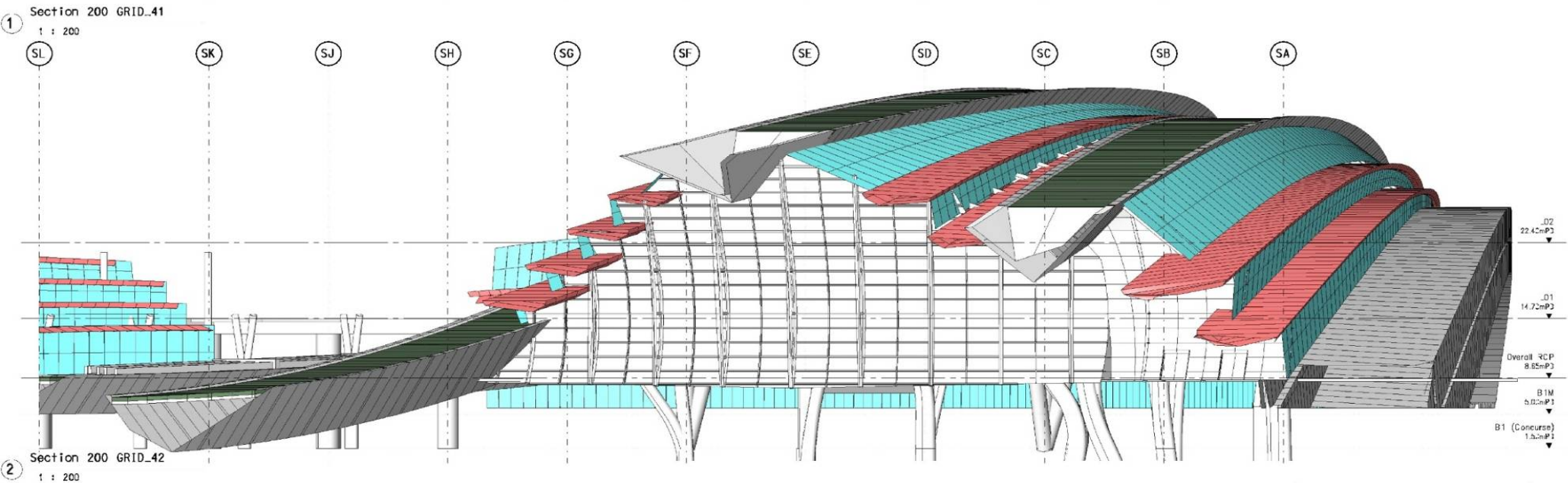
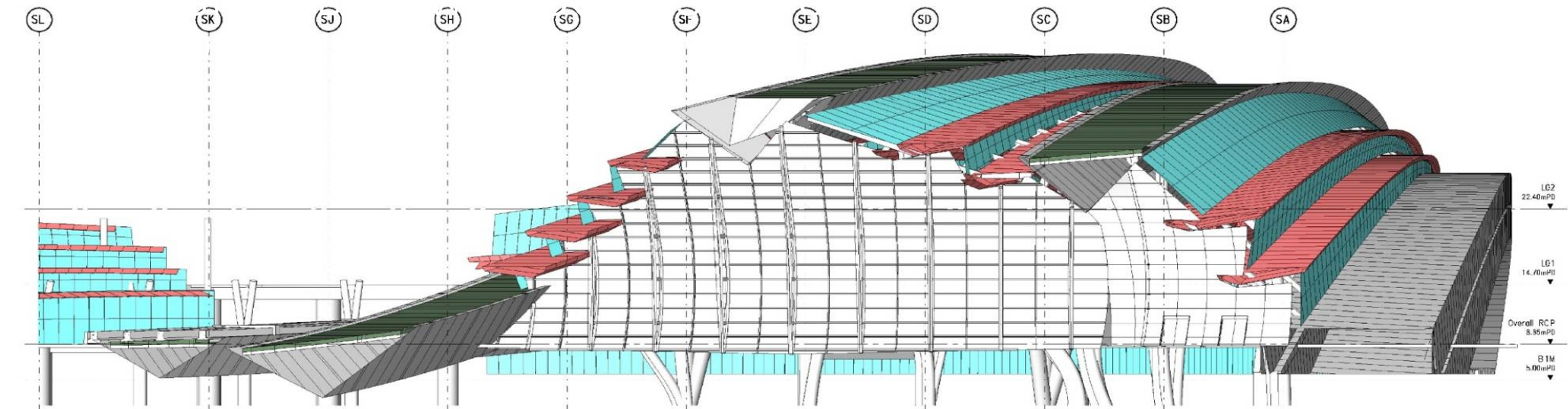
SK SJ SH SG SF SE SD SC SB SA















SCALE 1:20

DRAWN	ALT
DESIGNED	ALT
CHECKED	F MCGOLDRICK
APPROVED	K CHONG
DATE	30NOV2009

DO NOT SCALE DIMENSIONS: ALL DIMENSIONS SHALL BE VERIFIED ON SITE.

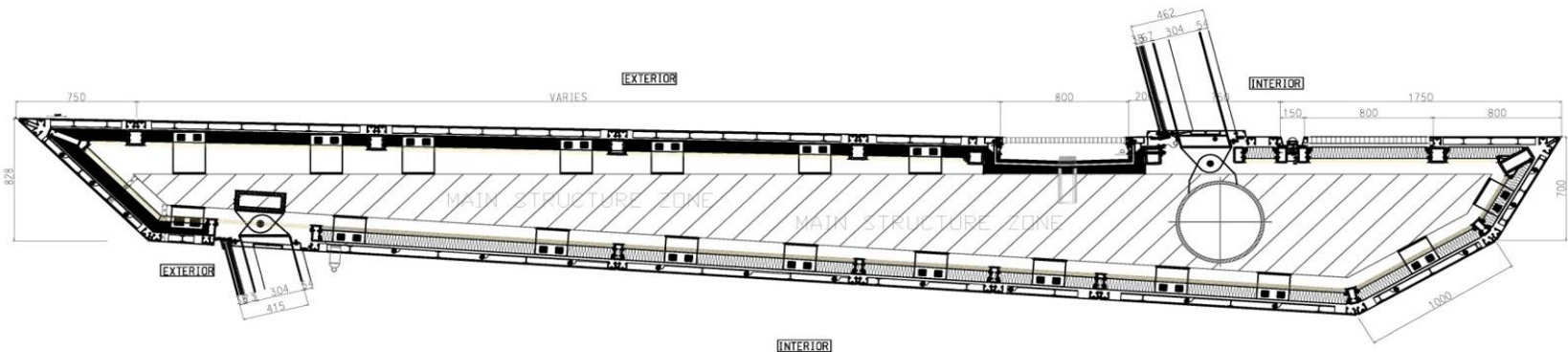
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CADD REF.	FILE
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DRAWING NO.	810A/P/WKT/AAT/A67/484
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REV.





01 CLERESTORY

ADVANCE CHECK PRINT

DRAWN	
DESIGNED	
CHECKED	
APPROVED	
DATE	

MTR

EXPRESS RAIL LINK

ORIGINATOR
MAUNSELL | AECOM | Aedas

MAUNSELL • AEDAS • MEINHARDT • MVA • BURO HAPPOLD • EDWARDS • MOTT

CADD REF.

TITLE
CONTRA
 WKT -
 ENTRANCE BL
 WALL TYPE /

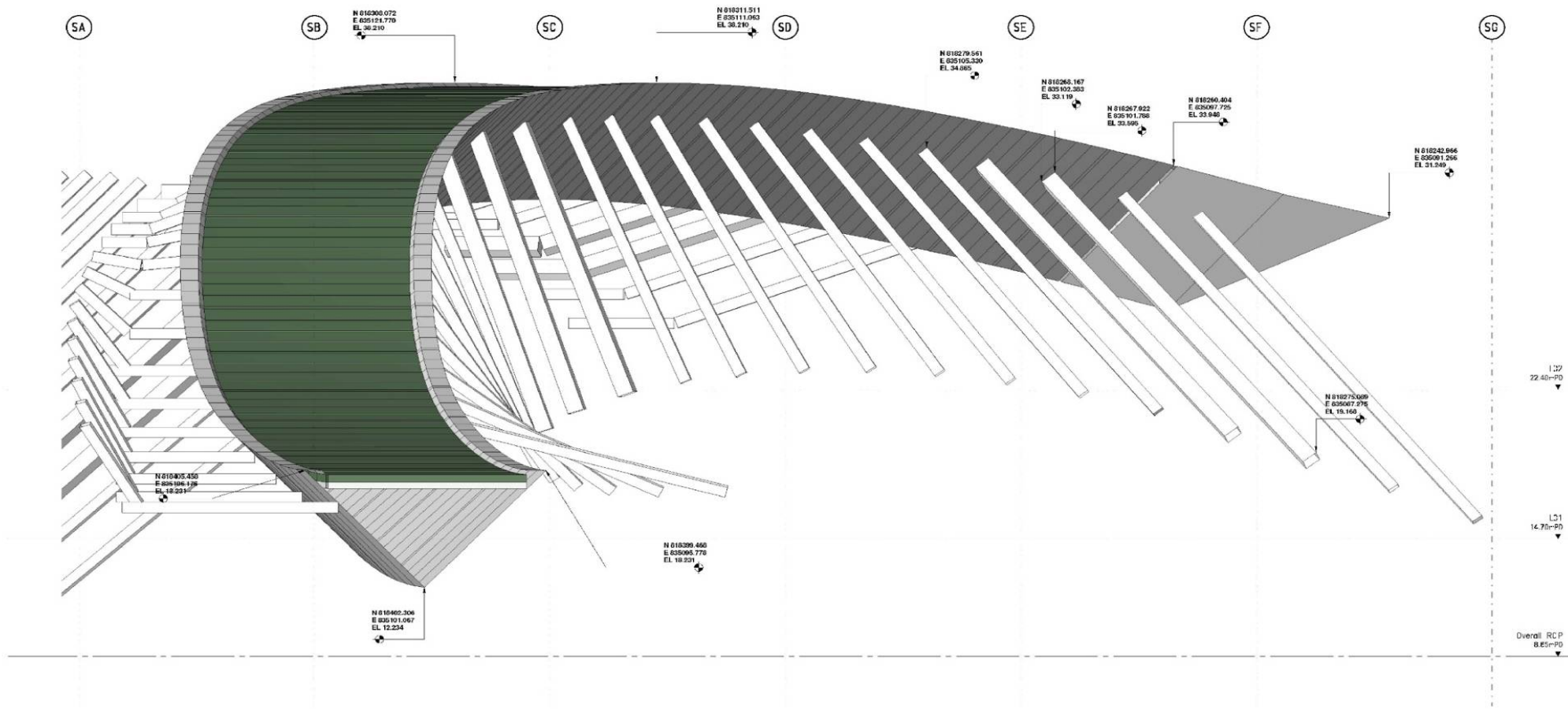
SCALE
 1:15 @ A1

- LANDSCAPE GRASS
- LANDSCAPE GRAVEL
- SKYLIGHT
- WATER FEATURE
- METAL CLADDING
- COMMERCIAL OFFICE



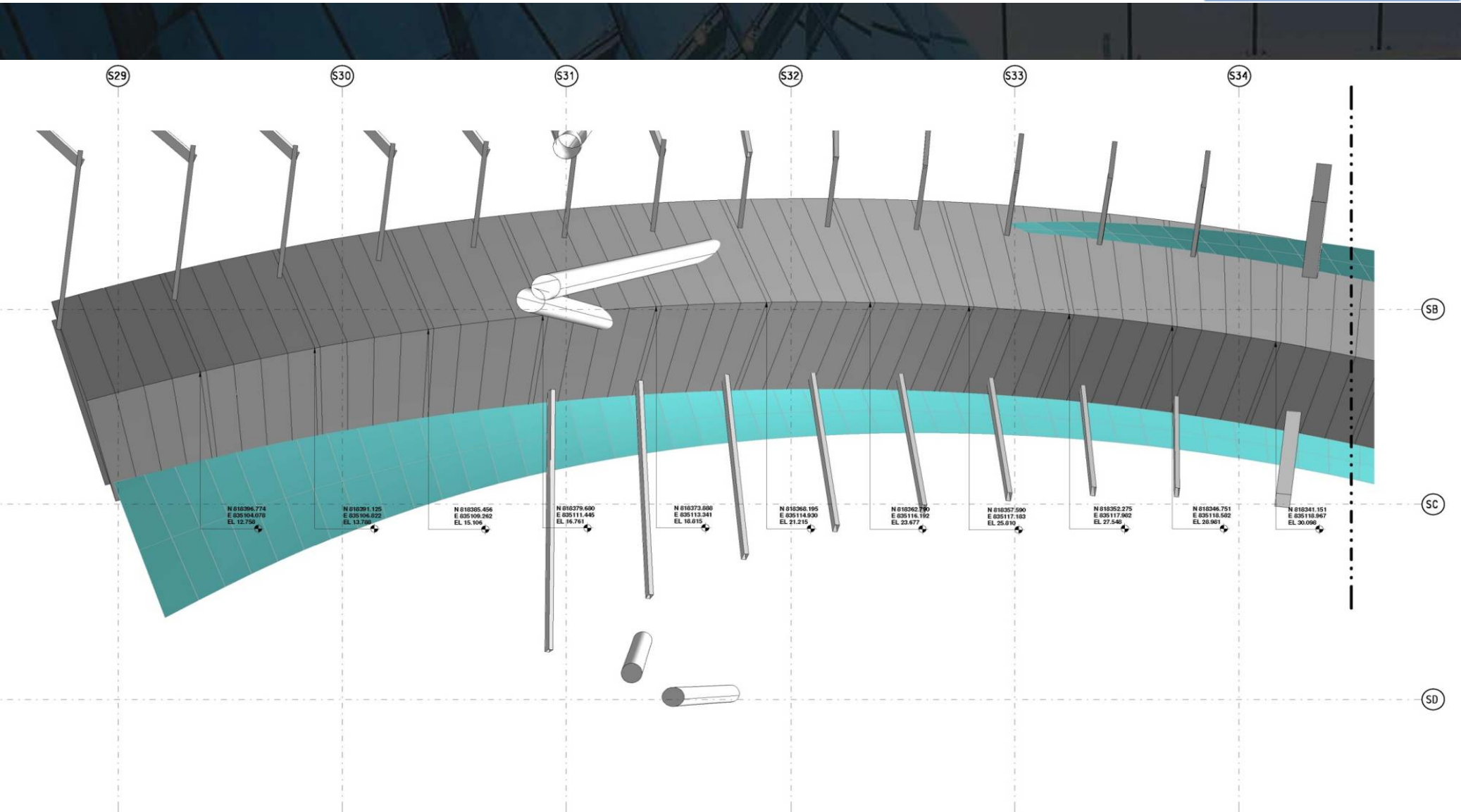
PLOT BY: \$UTKAS
 MODELNAME: \$MAUNSELL
 FILENAME: \$FILE

PRINTED BY: \$DESIGN
 \$DATE \$TIME \$PAGE



1 Component Elevation P3 North
1 : 100





Panel P3S03P082

Group AL 33
 Edge 1 1391 mm
 Edge 2 839 mm
 Edge 3 1398 mm
 Edge 4 839 mm
 Diagonal 1628 mm
 Area 1.197 m²

Panel P3S03P081

Group AL 33
 Edge 1 1358 mm
 Edge 2 839 mm
 Edge 3 1366 mm
 Edge 4 839 mm
 Diagonal 1600 mm
 Area 1.169 m²

Panel P3S03P080

Group AL 34
 Edge 1 267 mm
 Edge 2 824 mm
 Edge 3 269 mm
 Edge 4 824 mm
 Diagonal 867 mm
 Area 0.234 m²

Panel P3S03P079

Group AL 33
 Edge 1 1358 mm
 Edge 2 839 mm
 Edge 3 1366 mm
 Edge 4 839 mm
 Diagonal 1600 mm
 Area 1.169 m²

Panel P3S03P078

Group AL 33
 Edge 1 1358 mm
 Edge 2 839 mm
 Edge 3 1366 mm
 Edge 4 839 mm
 Diagonal 1600 mm
 Area 1.169 m²

Panel P3S03P077

Group AL 33
 Edge 1 1358 mm
 Edge 2 839 mm
 Edge 3 1366 mm
 Edge 4 839 mm
 Diagonal 1600 mm
 Area 1.169 m²

Panel P3S04P082

Group AL 43
 Edge 1 1378 mm
 Edge 2 276 mm
 Edge 3 1378 mm
 Edge 4 276 mm
 Diagonal 1405 mm
 Area 0.400 m²

Panel P3S04P081

Group AL 40
 Edge 1 1347 mm
 Edge 2 276 mm
 Edge 3 1354 mm
 Edge 4 276 mm
 Diagonal 1379 mm
 Area 0.392 m²

Panel P3S04P080

Group AL 41
 Edge 1 265 mm
 Edge 2 271 mm
 Edge 3 266 mm
 Edge 4 271 mm
 Diagonal 381 mm
 Area 0.078 m²

Panel P3S04P079

Group AL 40
 Edge 1 1347 mm
 Edge 2 276 mm
 Edge 3 1354 mm
 Edge 4 276 mm
 Diagonal 1379 mm
 Area 0.392 m²

Panel P3S04P078

Group AL 40
 Edge 1 1347 mm
 Edge 2 276 mm
 Edge 3 1354 mm
 Edge 4 276 mm
 Diagonal 1379 mm
 Area 0.392 m²

Panel P3S04P077

Group AL 40
 Edge 1 1347 mm
 Edge 2 276 mm
 Edge 3 1354 mm
 Edge 4 276 mm
 Diagonal 1379 mm
 Area 0.392 m²

Panel P3S02P082

Group AL 30
 Edge 1 1412 mm
 Edge 2 8443 mm
 Edge 3 1400 mm
 Edge 4 8443 mm
 Diagonal 8559 mm
 Area 11.992 m²

Panel P3S02P081

Group AL 29
 Edge 1 1400 mm
 Edge 2 8443 mm
 Edge 3 1367 mm
 Edge 4 8443 mm
 Diagonal 8551 mm
 Area 11.801 m²

Panel P3S02P080

Group AL 23
 Edge 1 272 mm
 Edge 2 8298 mm
 Edge 3 272 mm
 Edge 4 8298 mm
 Diagonal 8296 mm
 Area 2.361 m²

Panel P3S02P079

Group AL 29
 Edge 1 1400 mm
 Edge 2 8443 mm
 Edge 3 1367 mm
 Edge 4 8443 mm
 Diagonal 8551 mm
 Area 11.801 m²

Panel P3S02P078

Group AL 29
 Edge 1 1400 mm
 Edge 2 8443 mm
 Edge 3 1367 mm
 Edge 4 8443 mm
 Diagonal 8551 mm
 Area 11.801 m²

Panel P3S02P077

Group AL 29
 Edge 1 1400 mm
 Edge 2 8443 mm
 Edge 3 1367 mm
 Edge 4 8443 mm
 Diagonal 8551 mm
 Area 11.801 m²

P3

Schedule of panels																						
Panel	Point 1			Point 2			Point 3			Point 4			Center of weight			Edges					Area	Group
	P01 x	P01 y	P01 z	P02 x	P02 y	P02 z	P03 x	P03 y	P03 z	P04 x	P04 y	P04 z	C x	C y	C z	Edge 1	Edge 2	Edge 3	Edge 4	Diagonal		
P3S01P001	835106129	818405541	18228	835101817	818402394	12231	835106871	818404239	18290	835101802	818401012	12299	835103955	818403297	15262	1493	8446	1583	8446	8585	13.111 m²	AL 1
P3S01P002	835106871	818404239	18290	835101802	818401012	12299	835107598	818402931	18391	835102588	818399625	12410	835104710	818401952	15347	1493	8446	1583	8446	8585	13.111 m²	AL 1
P3S01P003	835107598	818402931	18391	835102588	818399625	12410	835108310	818401617	18528	835103312	818398241	12560	835105447	818400604	15472	1493	8446	1583	8446	8585	13.111 m²	AL 1
AL 1.3																					39.333 m²	
P3S01P004	835108310	818401617	18528	835103312	818398241	12560	835109007	818400300	18696	835104033	818396862	12745	835106166	818399255	15633	1493	8446	1559	8446	8583	13.010 m²	AL 2
AL 2.1																					13.010 m²	
P3S01P005	835109007	818400300	18696	835104033	818396862	12745	835109144	818400036	18736	835104175	818396658	12786	835106590	818398446	15741	294	8313	305	8313	8318	2.594 m²	AL 3
P3S01P010	835111765	818394722	19674	835106783	818391211	13770	835111860	818394454	19728	835106906	818390943	13826	835109336	818392833	16750	294	8313	305	8313	8318	2.594 m²	AL 3
P3S01P015	835114256	818399075	20934	835109228	818385543	15084	835114368	818388805	21001	835109337	818395271	15154	835111797	818387174	18043	294	8313	305	8313	8318	2.594 m²	AL 3
P3S01P020	835116476	818383392	22499	835111414	818379709	18734	835116575	818383121	22582	835111511	818379492	18822	835113994	818381444	19859	294	8313	305	8313	8318	2.594 m²	AL 3
P3S01P025	835118417	818377721	24432	835113315	818373975	18781	835118503	818377451	24534	835113398	818373751	18888	835115908	818375712	21659	294	8313	305	8313	8318	2.594 m²	AL 3
P3S01P030	835120084	818372092	26716	835114909	818368280	21178	835120157	818371825	26832	835114977	818368015	21297	835117532	818370053	24006	294	8313	305	8313	8318	2.594 m²	AL 3
AL 3.6																					16.564 m²	
P3S01P036	835109144	818400036	18736	835104175	818396658	12786	835109622	818398714	18942	835104883	818395227	13005	835107001	818397641	15987	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P018	835115454	818396100	21710	835110405	818382531	15899	835115973	818394746	22094	835110918	818391150	16305	835113167	818393632	19002	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P019	835115973	818394746	22094	835110918	818382531	15899	835116476	818383392	22499	835111414	818379769	16794	835113995	818382264	19408	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P021	835116575	818383121	22582	835111511	818379492	18822	835117059	818381769	23013	835111987	818378111	17278	835114293	818380623	19924	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P022	835117059	818381769	23013	835111987	818378111	17278	835117528	818380417	23465	835112447	818376730	17757	835114755	818379257	20378	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P023	835117528	818380417	23465	835112447	818376730	17757	835117980	818379088	23938	835112890	818375351	18258	835115211	818377891	20855	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P024	835117980	818379088	23938	835112890	818375351	18258	835118417	818377721	24432	835113315	818373875	18781	835115950	818376529	21353	1493	8446	1534	8446	8581	12.901 m²	AL 4
P3S01P026	835118503	818377451	24432	835113398	818373751	18888	835118921	818377610	25052	835113802	818372332	19436	835116156	818374898	21978	1493	8446	1534	8446	8581	12.901 m²	AL 4
AL 4.8																					103.208 m²	
P3S01P007	835109622	818398714	18942	835104883	818395227	13005	835110486	818397388	19170	835105522	818393885	13245	835107673	818386303	16090	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P008	835110486	818397388	19170	835105522	818393885	13245	835111132	818396057	19414	835109181	818392551	13500	835108325	818394970	16332	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P009	835111132	818396057	19414	835109181	818392551	13500	835111765	818394722	19674	835109783	818391211	13770	835109960	818393635	16590	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P011	835111860	818394454	19728	835109906	818390943	13826	835112504	818393115	20006	835109750	818390959	14116	835107022	818392028	16919	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P012	835112504	818393115	20006	835109750	818390959	14116	835113103	818391771	20300	835108092	818388252	14422	835110304	818390654	17211	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P013	835113103	818391771	20300	835108092	818388252	14422	835113668	818390425	20609	835108670	818386600	14745	835110890	818389337	17519	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P014	835113668	818390425	20609	835108670	818386600	14745	835114256	818389075	20934	835109228	818385543	15084	835111460	818387956	17843	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P016	835114368	818388905	21001	835109337	818385271	15154	835114919	818387453	21346	835109878	818383906	15516	835112126	818386359	18254	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P017	835114919	818387453	21346	835109878	818383906	15516	835115454	818386100	21710	835110405	818382531	15899	835112864	818384998	18818	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P027	835118921	818376106	25052	835113802	818372332	19436	835119324	818374766	25590	835114189	818370971	20002	835116559	818373544	22520	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P028	835119324	818374766	25590	835114189	818370971	20002	835119711	818373428	26145	835114559	818369618	20585	835116948	818372196	23081	1493	8445	1507	8445	8578	12.786 m²	AL 5
P3S01P029	835119711	818373428	26145	835114559	818369618	20585	835120084	818372092	26716	835114899	818368280	21178	835117316	818370053	23556	1493	8445	1507	8445	8578	12.786 m²	AL 5
AL 5.12																					163.433 m²	
P3S01P031	835120157	818371825	26832	835114977	818368015	21297	835120513	818370490	27416	835115304	818366697	21896	835117738	818369257	24360	1493	8445	1477	8445	8574	12.661 m²	AL 6
AL 6.1																					12.661 m²	

Panel P3S02P002

Group AL 14
Edge 1 1583 mm
Edge 2 8445 mm
Edge 3 1367 mm
Edge 4 8445 mm
Diagonal 8568 mm
Area 12.573 m²

N 818401012
E 835101802
EL 12299

N 818404239
E 835106871
EL 18290

Panel P3S01P002
Group AL 1
Edge 1 1493 mm
Edge 2 8446 mm
Edge 3 1583 mm
Edge 4 8446 mm
Diagonal 8585 mm
Area 13.111 m²

Panel P3S01P009
Group AL 5
Edge 1 1493 mm
Edge 2 8445 mm
Edge 3 1507 mm
Edge 4 8445 mm
Diagonal 8578 mm
Area 12.786 m²

Remark: An above table is a portion extracted for presentation purpose from the full schedule of panels included in the BIM model.

P3

N 818398670
E 835109844
EL 18950

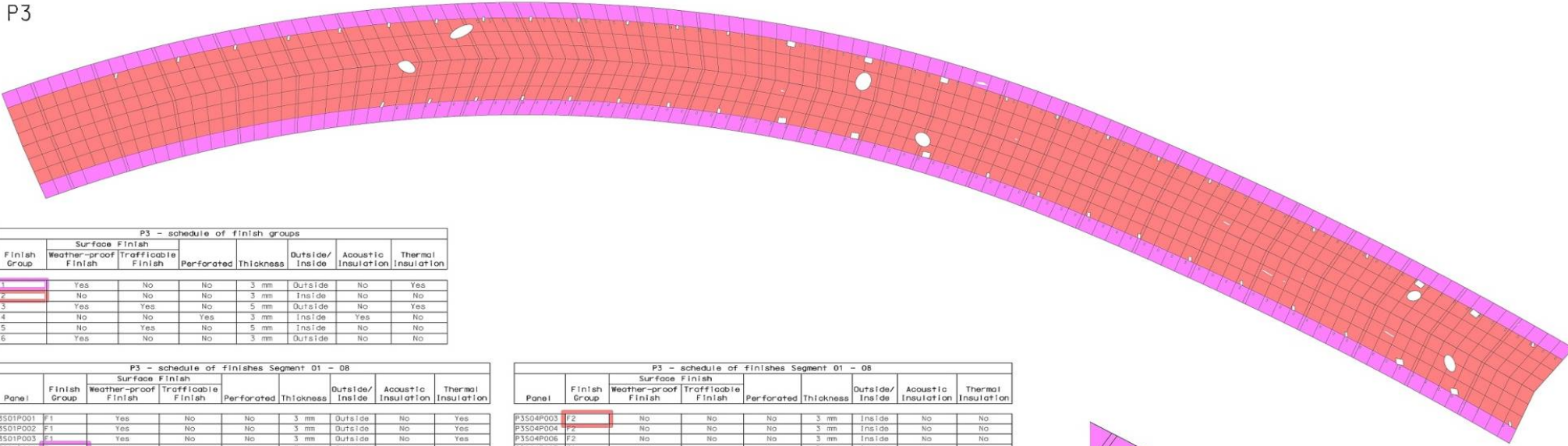
N 818405541
E 835106129
EL 18228

N 818402394
E 835101017
EL 12231

N 818398353
E 835096414
EL 18290

Group Name	Number of panels	Edge 1	Edge 2	Edge 3	Edge 4	Diagonal	Panel area	Group Area
AL 1	3	1493	8446	1583	9446	8595	13.111 m²	39.333 m²
AL 2	1	1493	8446	1559	9446	8583	13.010 m²	13.010 m²
AL 3	6	284	8313	336	8313	8318	2.594 m²	15.564 m²
AL 4	8	1493	8446	1534	9446	8581	12.901 m²	103.208 m²
AL 5	12	1493	8446	1507	9445	8578	12.788 m²	153.433 m²
AL 6	1	1493	8445	1477	9445	8574	12.661 m²	12.661 m²
AL 7	32	1493	8444	1452	9444	8572	12.554 m²	401.734 m²
AL 8	5	1493	8444	1424	9444	8569	12.436 m²	82.180 m²
AL 9	13	1493	8444	1398	9444	8567	12.325 m²	160.227 m²
AL 10	23	294	8303	272	8302	8307	2.453 m²	80.933 m²
AL 11	25	1493	8443	1369	9443	8564	12.199 m²	304.979 m²
AL 12	9	1493	8443	1338	9443	8562	12.109 m²	80.079 m²
AL 13	3	1493	8443	1338	9443	8560	12.069 m²	36.208 m²
AL 14	3	1563	8445	1387	9445	8568	12.573 m²	37.718 m²
AL 15	1	1559	8445	1368	9445	8560	12.479 m²	12.479 m²
AL 16	6	1533	8445	1369	9445	8556	12.372 m²	98.979 m²
AL 17	3	1513	8445	1374	9445	8547	12.311 m²	36.932 m²
AL 18	1	1497	8446	1385	9445	8536	12.290 m²	12.290 m²
AL 19	1	1477	8445	1387	9445	8534	12.209 m²	12.209 m²
AL 20	1	1452	8445	1387	9445	8531	12.102 m²	12.102 m²
AL 21	1	1424	8445	1387	9445	8529	11.984 m²	11.984 m²
AL 22	1	1398	8444	1385	9444	8527	11.871 m²	11.871 m²
AL 23	11	272	8298	272	8298	8298	2.361 m²	25.974 m²
AL 24	6	1369	8444	1385	9444	8524	11.742 m²	70.452 m²
AL 25	7	1354	8444	1384	9444	8524	11.674 m²	81.716 m²
AL 26	3	1338	8443	1381	9443	8524	11.595 m²	34.788 m²
AL 27	6	1362	8442	1389	9442	8539	11.648 m²	93.185 m²
AL 28	3	1380	8442	1367	9442	8548	11.714 m²	35.143 m²
AL 29	10	1400	8443	1367	9443	8551	11.801 m²	118.005 m²
AL 30	1	1412	8443	1400	9443	8559	11.992 m²	11.992 m²
AL 31	10	1427	8444	1431	9444	8564	12.167 m²	121.867 m²
AL 32	24	1440	8444	1453	9444	8568	12.334 m²	296.014 m²
AL 33	62	1358	839	1365	839	1603	1.169 m²	60.791 m²
AL 34	16	267	824	289	824	867	0.234 m²	3.748 m²
AL 35	13	1372	839	1379	839	1611	1.181 m²	15.348 m²
AL 36	1	1391	839	1398	839	1628	1.197 m²	1.197 m²
AL 37	31	1422	839	1426	839	1653	1.222 m²	37.880 m²
AL 38	3	1444	839	1447	839	1671	1.240 m²	3.720 m²
AL 39	34	284	825	285	825	873	0.248 m²	8.446 m²
AL 40	54	1347	276	1354	276	1379	0.392 m²	21.163 m²
AL 41	24	265	271	268	271	361	0.078 m²	1.883 m²
AL 42	11	1361	276	1366	276	1396	0.396 m²	4.353 m²
AL 43	1	1378	276	1373	276	1405	0.400 m²	0.400 m²
AL 44	32	1406	276	1408	276	1432	0.408 m²	13.052 m²
AL 45	2	1426	276	1425	276	1452	0.414 m²	0.827 m²
AL 46	26	281	271	281	271	390	0.083 m²	2.154 m²
AL 47	100	1456	276	1453	276	1481	0.422 m²	42.209 m²
AL 48	100	1474	839	1483	839	1700	1.269 m²	126.892 m²
Grand total: 750								2923.908 m²

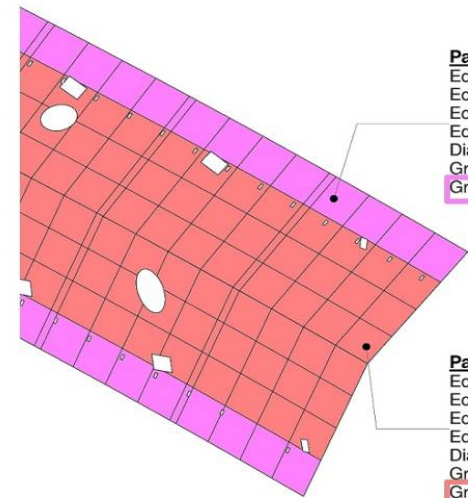
P3



P3 - schedule of finish groups							
Finish Group	Surface Finish		Perforated	Thickness	Outside/ Inside	Acoustic Insulation	Thermal Insulation
	Weather-proof Finish	Trafficable Finish					
F1	Yes	No	No	3 mm	Outside	No	Yes
F2	No	No	No	3 mm	Inside	No	No
F3	Yes	Yes	No	5 mm	Outside	No	Yes
F4	No	No	Yes	3 mm	Inside	Yes	No
F5	No	Yes	No	5 mm	Inside	No	No
F6	Yes	No	No	3 mm	Outside	No	No

P3 - schedule of finishes Segment 01 - 08								
Panel	Finish Group	Surface Finish		Perforated	Thickness	Outside/ Inside	Acoustic Insulation	Thermal Insulation
		Weather-proof Finish	Trafficable Finish					
P3501P001	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P002	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P003	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P004	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P005	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P006	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P007	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P008	F1	Yes	No	No	3 mm	Outside	No	Yes
P3501P009	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P001	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P002	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P003	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P004	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P005	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P006	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P007	F1	Yes	No	No	3 mm	Outside	No	Yes
P3508P008	F1	Yes	No	No	3 mm	Outside	No	Yes
F 11 17								
P3502P001	F2	No	No	No	3 mm	Inside	No	No
P3502P002	F2	No	No	No	3 mm	Inside	No	No
P3502P003	F2	No	No	No	3 mm	Inside	No	No
P3502P004	F2	No	No	No	3 mm	Inside	No	No
P3502P005	F2	No	No	No	3 mm	Inside	No	No
P3502P006	F2	No	No	No	3 mm	Inside	No	No
P3502P007	F2	No	No	No	3 mm	Inside	No	No
P3502P008	F2	No	No	No	3 mm	Inside	No	No
P3502P009	F2	No	No	No	3 mm	Inside	No	No
P3503P001	F2	No	No	No	3 mm	Inside	No	No
P3503P002	F2	No	No	No	3 mm	Inside	No	No
P3503P003	F2	No	No	No	3 mm	Inside	No	No
P3503P004	F2	No	No	No	3 mm	Inside	No	No
P3503P006	F2	No	No	No	3 mm	Inside	No	No
P3503P007	F2	No	No	No	3 mm	Inside	No	No
P3503P008	F2	No	No	No	3 mm	Inside	No	No
P3503P009	F2	No	No	No	3 mm	Inside	No	No
P3504P001	F2	No	No	No	3 mm	Inside	No	No
P3504P002	F2	No	No	No	3 mm	Inside	No	No

P3 - schedule of finishes Segment 01 - 08								
Panel	Finish Group	Surface Finish		Perforated	Thickness	Outside/ Inside	Acoustic Insulation	Thermal Insulation
		Weather-proof Finish	Trafficable Finish					
P3504P003	F2	No	No	No	3 mm	Inside	No	No
P3504P004	F2	No	No	No	3 mm	Inside	No	No
P3504P006	F2	No	No	No	3 mm	Inside	No	No
P3504P007	F2	No	No	No	3 mm	Inside	No	No
P3504P008	F2	No	No	No	3 mm	Inside	No	No
P3504P009	F2	No	No	No	3 mm	Inside	No	No
F 21 25								
P3505P005	F2	No	No	No	3 mm	Inside	No	No
P3504P005	F2	No	No	No	3 mm	Inside	No	No
P3505P001	F2	No	No	No	3 mm	Inside	No	No
P3505P002	F2	No	No	No	3 mm	Inside	No	No
P3505P003	F2	No	No	No	3 mm	Inside	No	No
P3505P004	F2	No	No	No	3 mm	Inside	No	No
P3505P005	F2	No	No	No	3 mm	Inside	No	No
P3505P006	F2	No	No	No	3 mm	Inside	No	No
P3505P007	F2	No	No	No	3 mm	Inside	No	No
P3505P008	F2	No	No	No	3 mm	Inside	No	No
P3505P009	F2	No	No	No	3 mm	Inside	No	No
P3506P001	F2	No	No	No	3 mm	Inside	No	No
P3506P002	F2	No	No	No	3 mm	Inside	No	No
P3506P003	F2	No	No	No	3 mm	Inside	No	No
P3506P004	F2	No	No	No	3 mm	Inside	No	No
P3506P005	F2	No	No	No	3 mm	Inside	No	No
P3506P006	F2	No	No	No	3 mm	Inside	No	No
P3506P007	F2	No	No	No	3 mm	Inside	No	No
P3506P008	F2	No	No	No	3 mm	Inside	No	No
P3506P009	F2	No	No	No	3 mm	Inside	No	No
P3507P001	F2	No	No	No	3 mm	Inside	No	No
P3507P002	F2	No	No	No	3 mm	Inside	No	No
P3507P003	F2	No	No	No	3 mm	Inside	No	No
P3507P004	F2	No	No	No	3 mm	Inside	No	No
P3507P005	F2	No	No	No	3 mm	Inside	No	No
P3507P006	F2	No	No	No	3 mm	Inside	No	No
P3507P007	F2	No	No	No	3 mm	Inside	No	No
P3507P008	F2	No	No	No	3 mm	Inside	No	No
P3507P009	F2	No	No	No	3 mm	Inside	No	No
F 61 29								



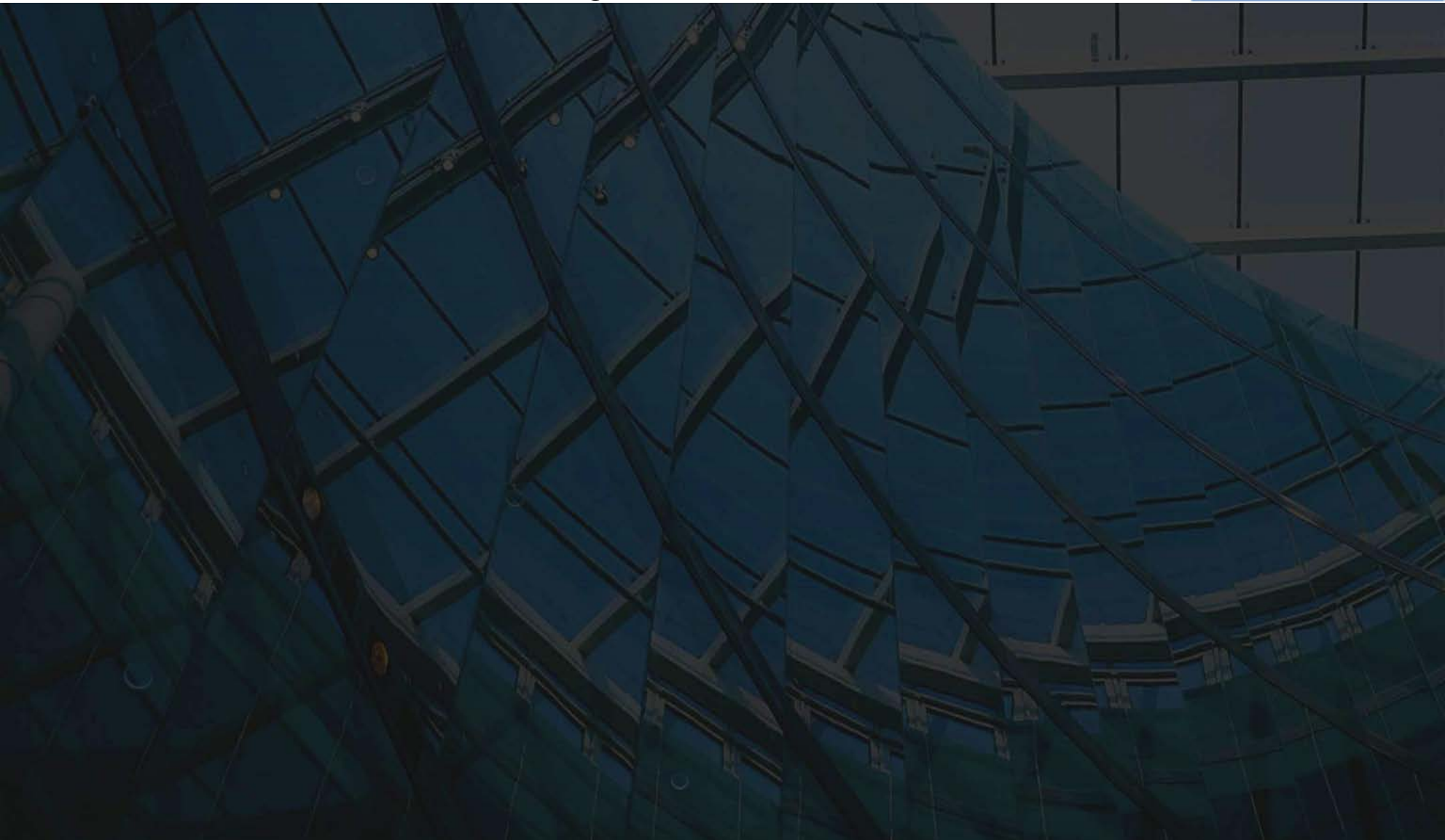
Panel P3S01P004
 Edge 1 1488 mm
 Edge 2 2279 mm
 Edge 3 1476 mm
 Edge 4 2279 mm
 Diagonal 2720 mm
 Group(Size) A 1
 Group(Finish)... F 1

Panel P3S04P001
 Edge 1 1460 mm
 Edge 2 2042 mm
 Edge 3 1445 mm
 Edge 4 2042 mm
 Diagonal 2508 mm
 Group(Size) A 13
 Group(Finish)... F 2

Remark: An above is a portion extracted for presentation purpose the full schedule of panels included in the BIM model.



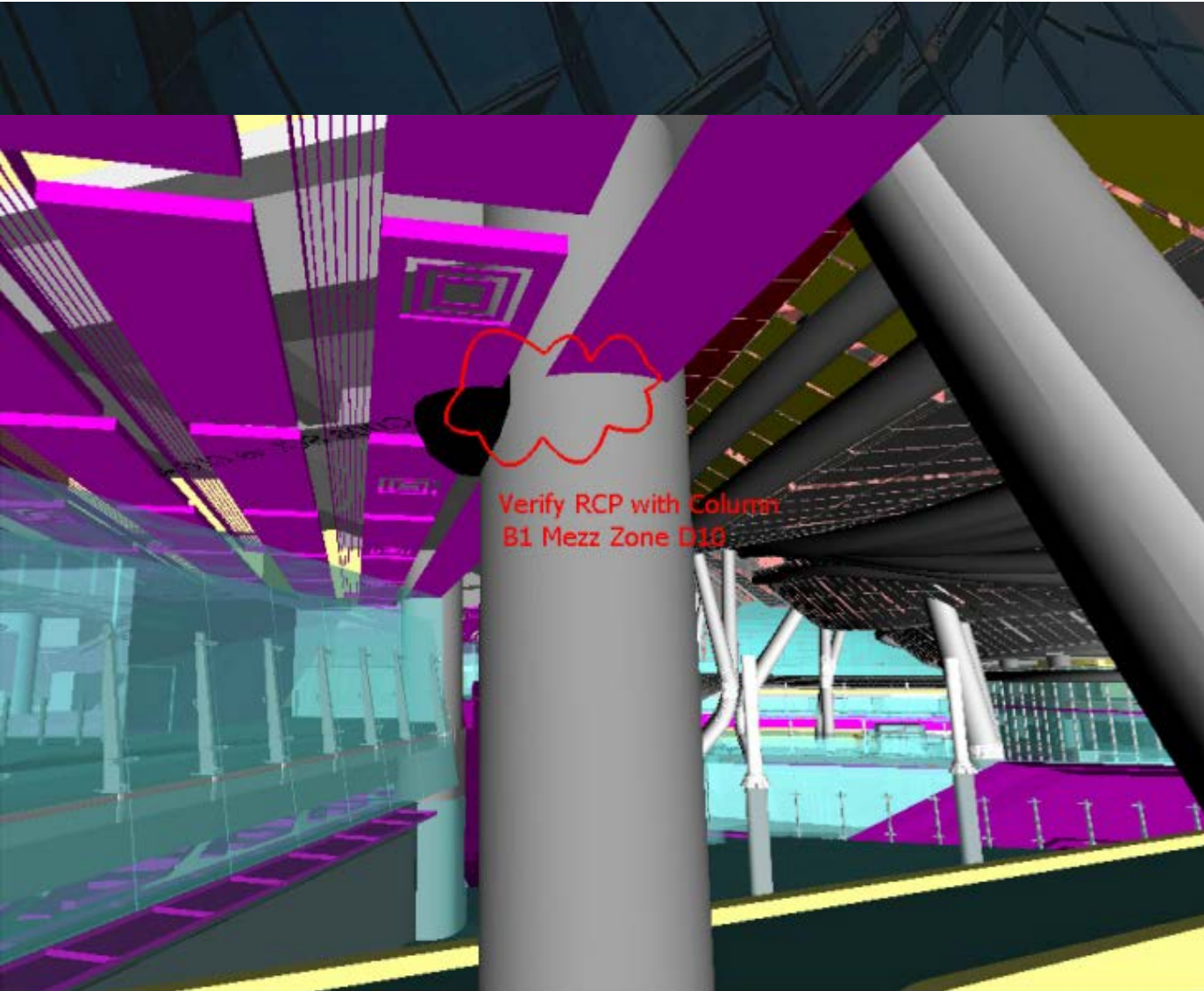
Production of E&M drawings



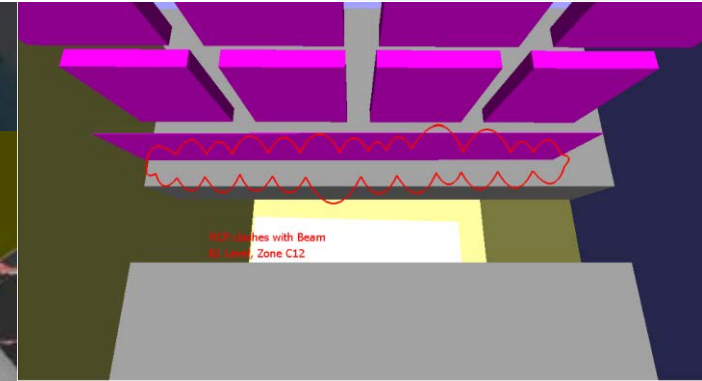
Use of BIM in Construction Phase

1. Clash Analysis
2. 4D Simulation & Construction Sequence
3. Service Co-ordinations => CSD drawings
4. SEM Drawings
5. Virtual Prototyping
6. Procurement, Delivery & Installation Process

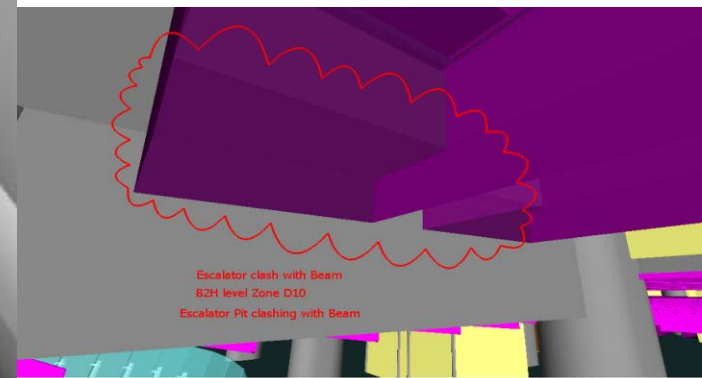
Clash Analysis (WKT)



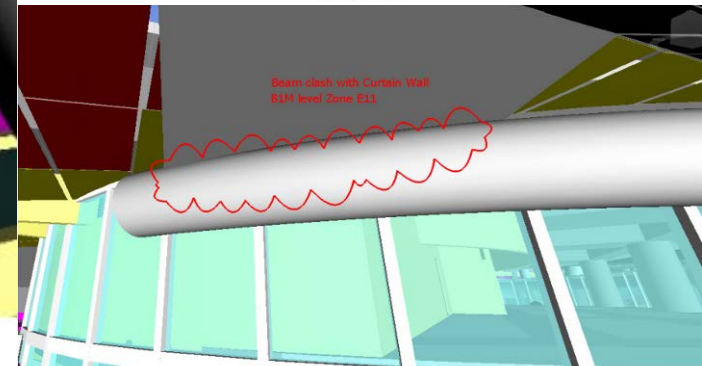
Ceiling VS Column



Ceiling VS Beam

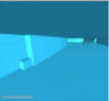
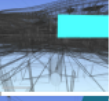
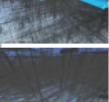
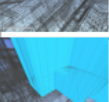
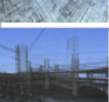
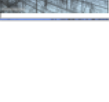


Escalator VS Beam

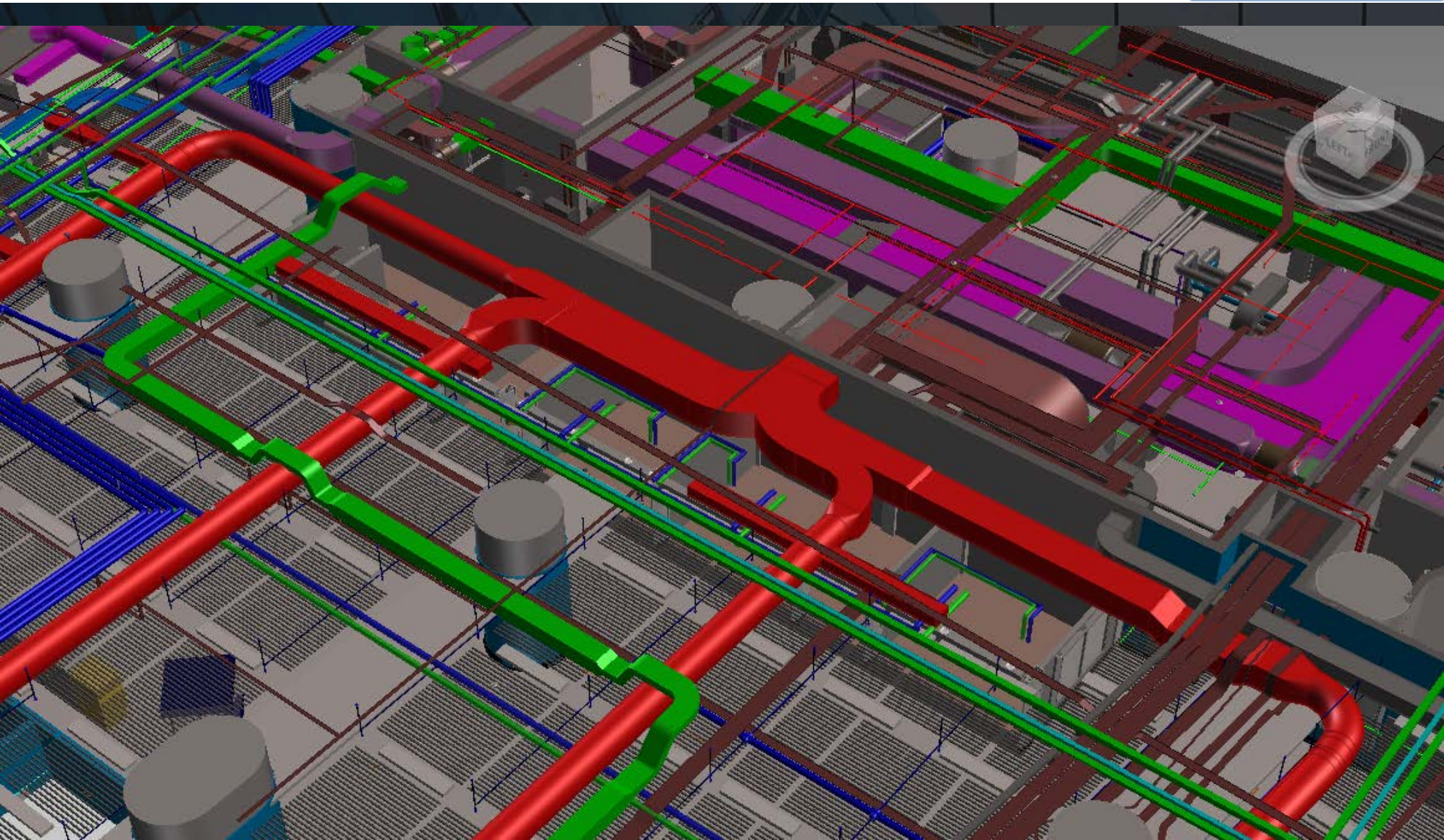


Curtain Wall VS Beam

A001 CLR vs SBS	Tolerance	Clashes	New	Active	Reviewed	Approved	Resolved	Type	Status
	0.01m	219	2	175		19	23	0	Hard Old

						Item 1			Item 2		
Image	Clash Name	Status	Distance	Grid Location	Clash Point	Layer	Item Name	Item Type	Layer	Item Name	Item Type
	Clash324	Reviewed	-0.54	S1-13-SW-1.2 : (GROUND FLOOR)+8.550	x:835039.17, y:818327.43, z:9.45	<No level>	SBS-RC-MTR-RCT-1000x900	Solid	(GROUND FLOOR)+8.550	CLR-HRM-MTR-Headroom 3000	Solid
	Clash460	Reviewed	-0.4	S25-TB : B1(CONCOURSE)+1.400	x:835123.32, y:818454.62, z:2.70	<No level>	SBS-RC-MTR-RCT-1000x2500	Solid	B1(CONCOURSE)+1.400	CLR-HRM-MTR-Headroom 2000mm	Solid
	Clash462	Reviewed	-0.38	S25-TB : B1(CONCOURSE)+1.400	x:835122.26, y:818455.91, z:2.70	<No level>	SBS-RC-MTR-RCT-1000x2500	Solid	B1(CONCOURSE)+1.400	CLR-HRM-MTR-Headroom 2000mm	Solid
	Clash473	Reviewed	-0.28	S27-TA : B1(CONCOURSE)+1.400	x:835141.34, y:818432.64, z:3.10	<No level>	SBS-RC-MTR-RCT-1200x2100	Solid	B1(CONCOURSE)+1.400	CLR-HRM-MTR-Headroom 2000mm	Solid
	Clash513	Reviewed	-0.07	S26-SB : (GROUND FLOOR)+8.550	x:835099.40, y:818437.34, z:10.50	<No level>	SBS-RC-MTR-RCT-800x1200	Solid	(GROUND FLOOR)+8.550	CLR-HRM-MTR-Headroom 3000mm	Solid
	Clash528	Reviewed	-0.15	SB-TC : B1(CONCOURSE)+1.400	x:835075.68, y:818510.03, z:4.40	B1(CONCOURSE)+1.400	CLR-HRM-MTR-Headroom 3000mm	Solid	<No level>	SBS-RC-MTR-RCT-700x1000	Solid
	Clash538	Reviewed	-1	S14-SG : B1(MEZZ)+4.900	x:835008.34, y:818564.69, z:8.06	(GROUND FLOOR)+8.550	CLR-HRM-MTR-Headroom 2400	Solid	<No level>	SBS_RC_MTR_RCT_2000x1250	Solid
	Clash542	Reviewed	-0.42	S14-SG : B1(MEZZ)+4.900	x:835010.09, y:818563.25, z:8.30	(GROUND FLOOR)+8.550	CLR-HRM-MTR-Headroom 2400	Solid	<No level>	SBS_RC_MTR_RCT_2000x1050	Solid
	Clash543	Reviewed	-0.42	S14-SG : B1(MEZZ)+4.900	x:835009.96, y:818564.04, z:8.07	(GROUND FLOOR)+8.550	CLR-HRM-MTR-Headroom 2400	Solid	<No level>	SBS_RC_MTR_RCT_2000x1050	Solid
	Clash544	Reviewed	-0.26	S1-18-S34 : B1(MEZZ)+4.900	x:835060.98, y:818330.37, z:7.44	B1(MEZZ)+4.900	CLR-HRM-MTR-Headroom 2000	Solid	<No level>	SBS-RC-MTR-RCT-2000x960	Solid

Co-ordination & Collaboration



Co-ordination & Collaboration

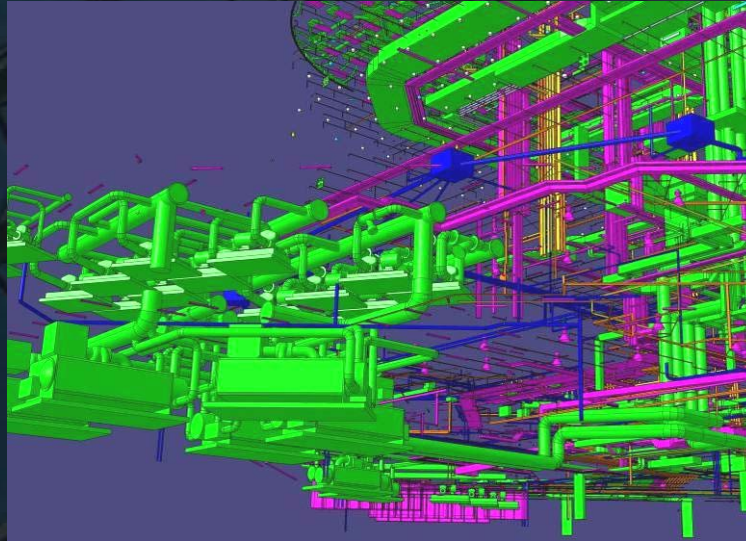
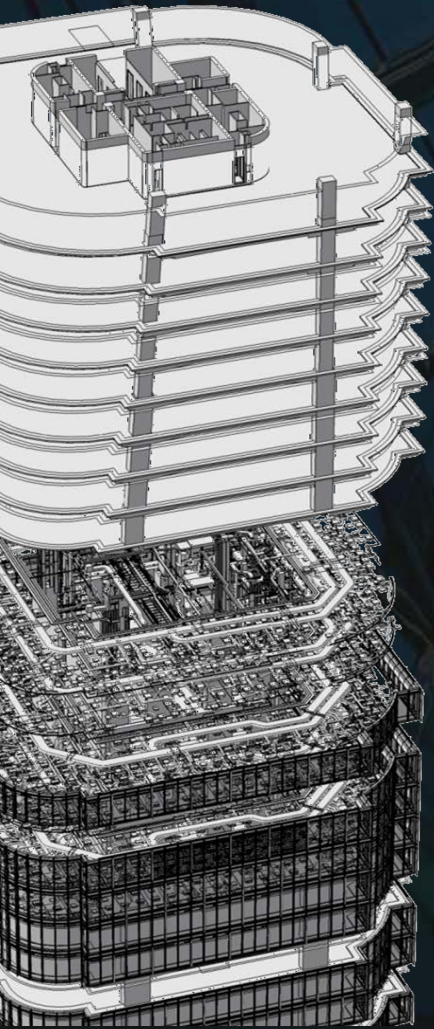


4D Simulation & Construction Sequence (WKT)

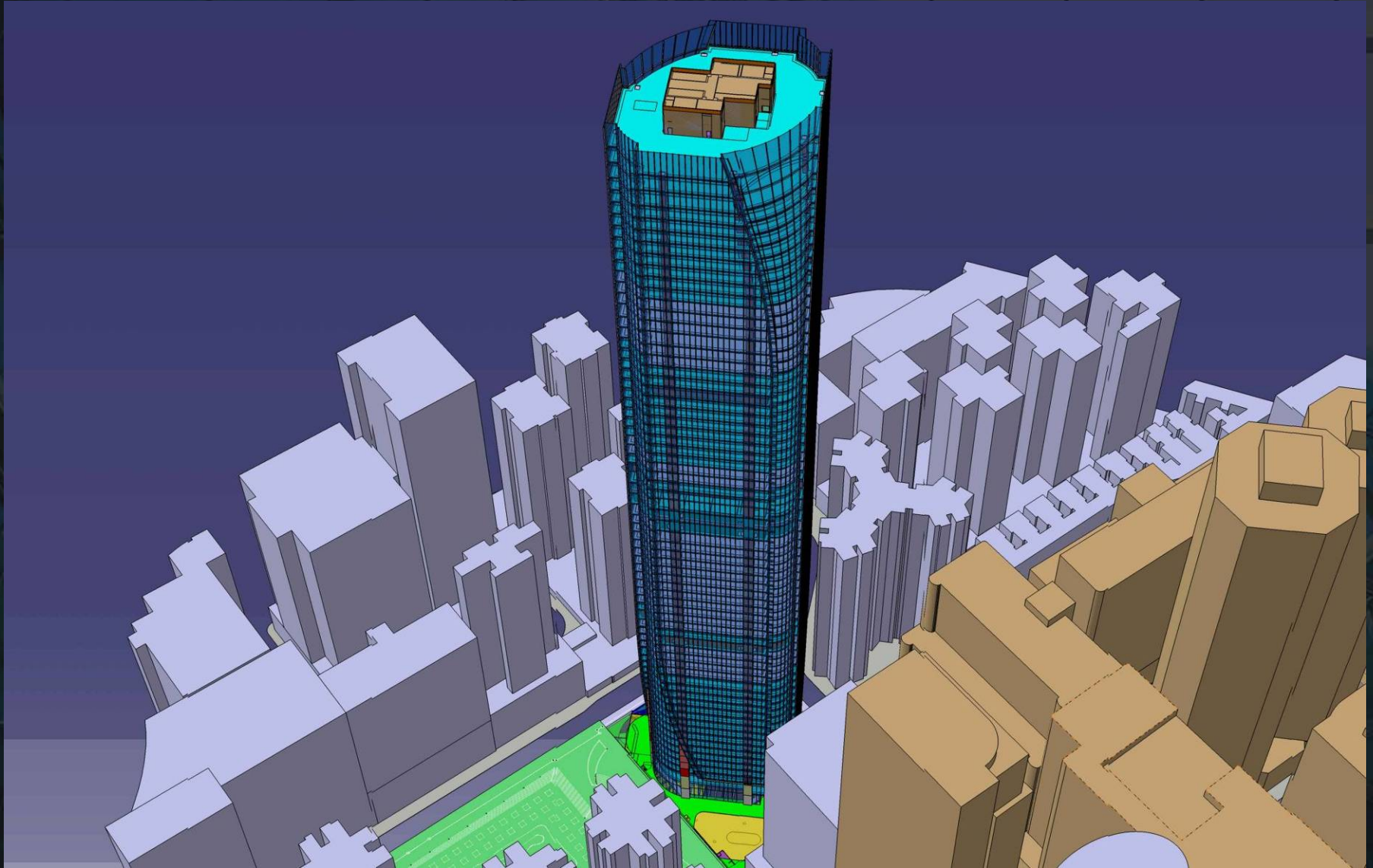


BIM in Construction Phase

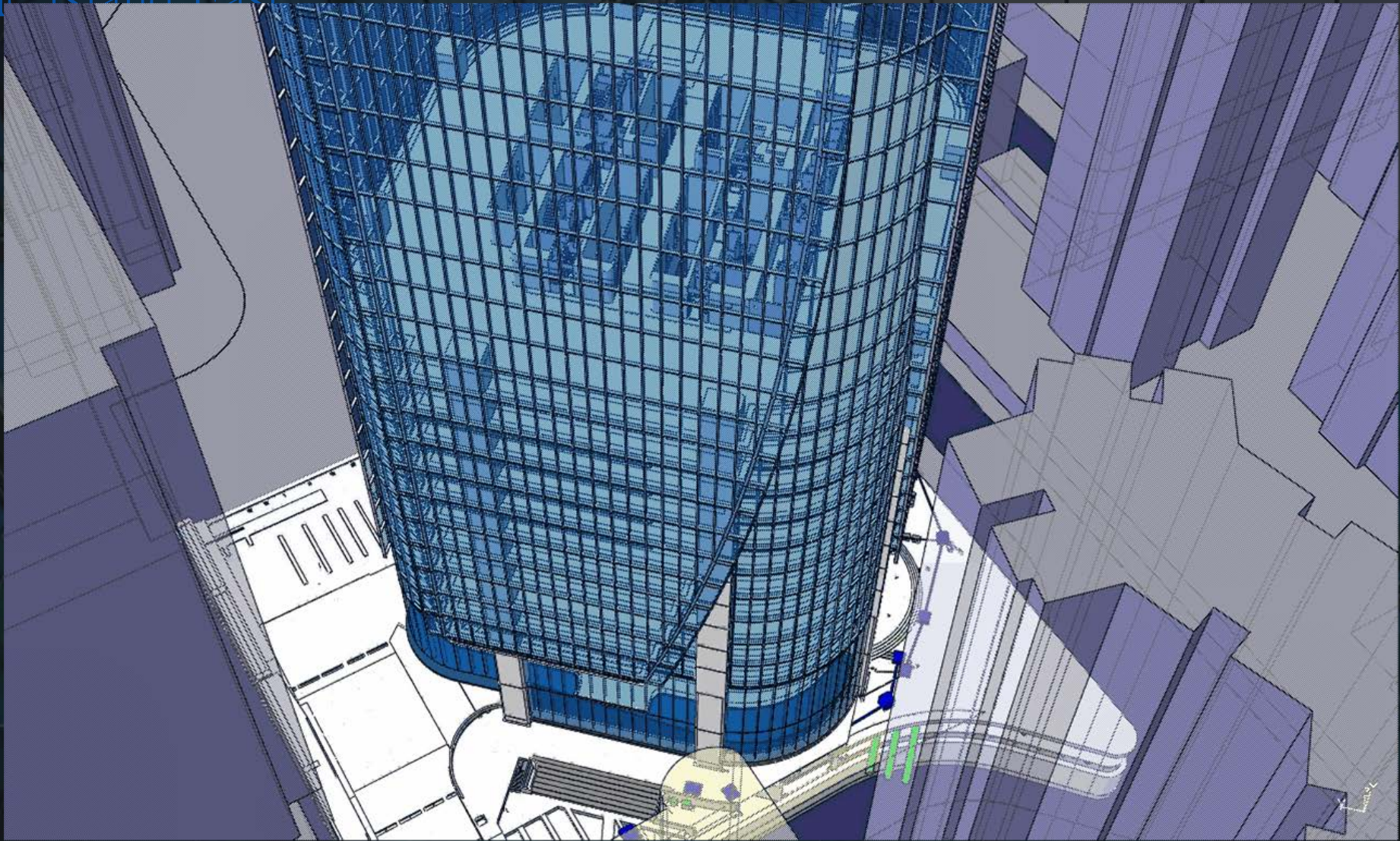
- One Island East



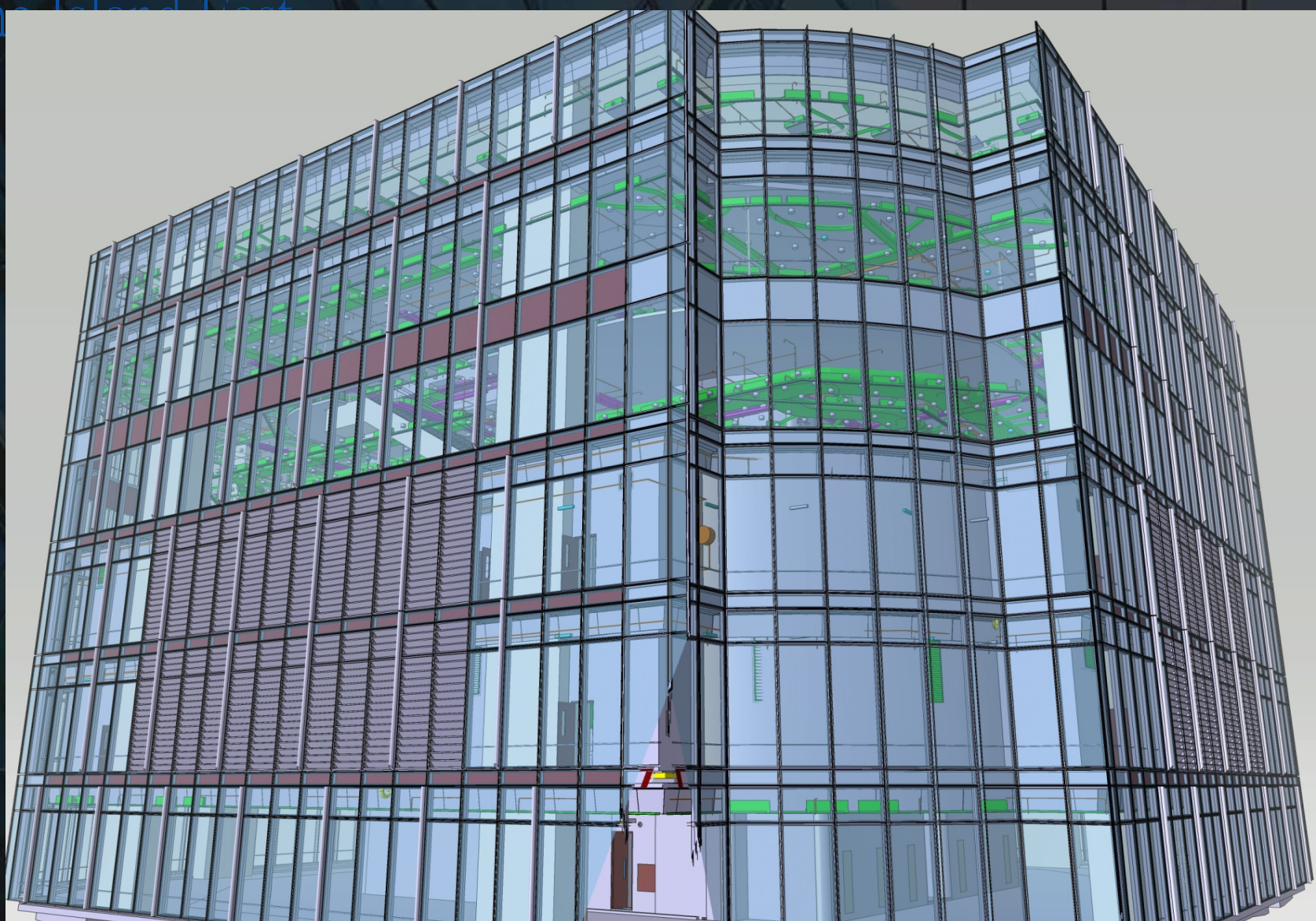
Design BIM Model



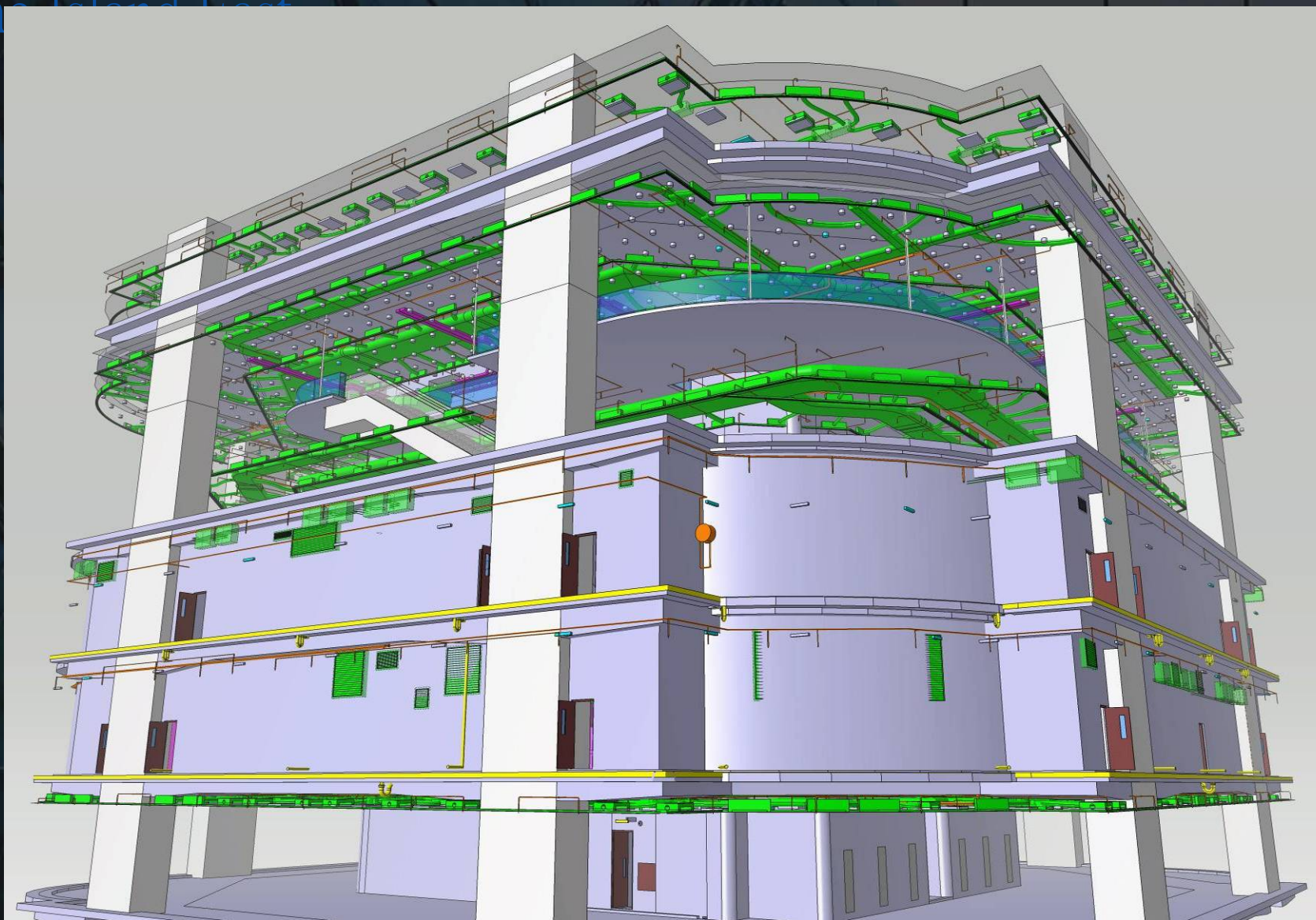
One Island East



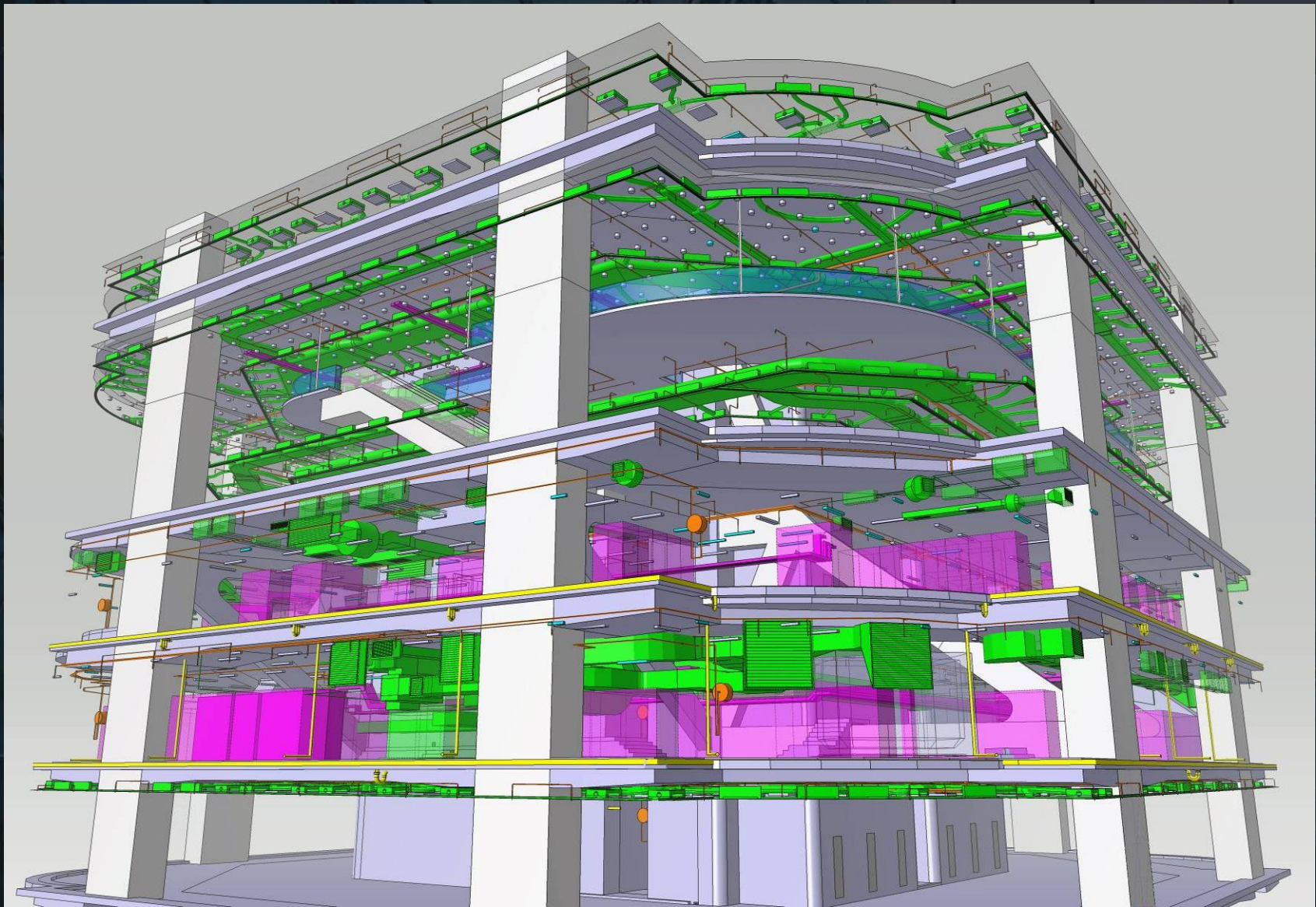
BIM Architectural Configuration



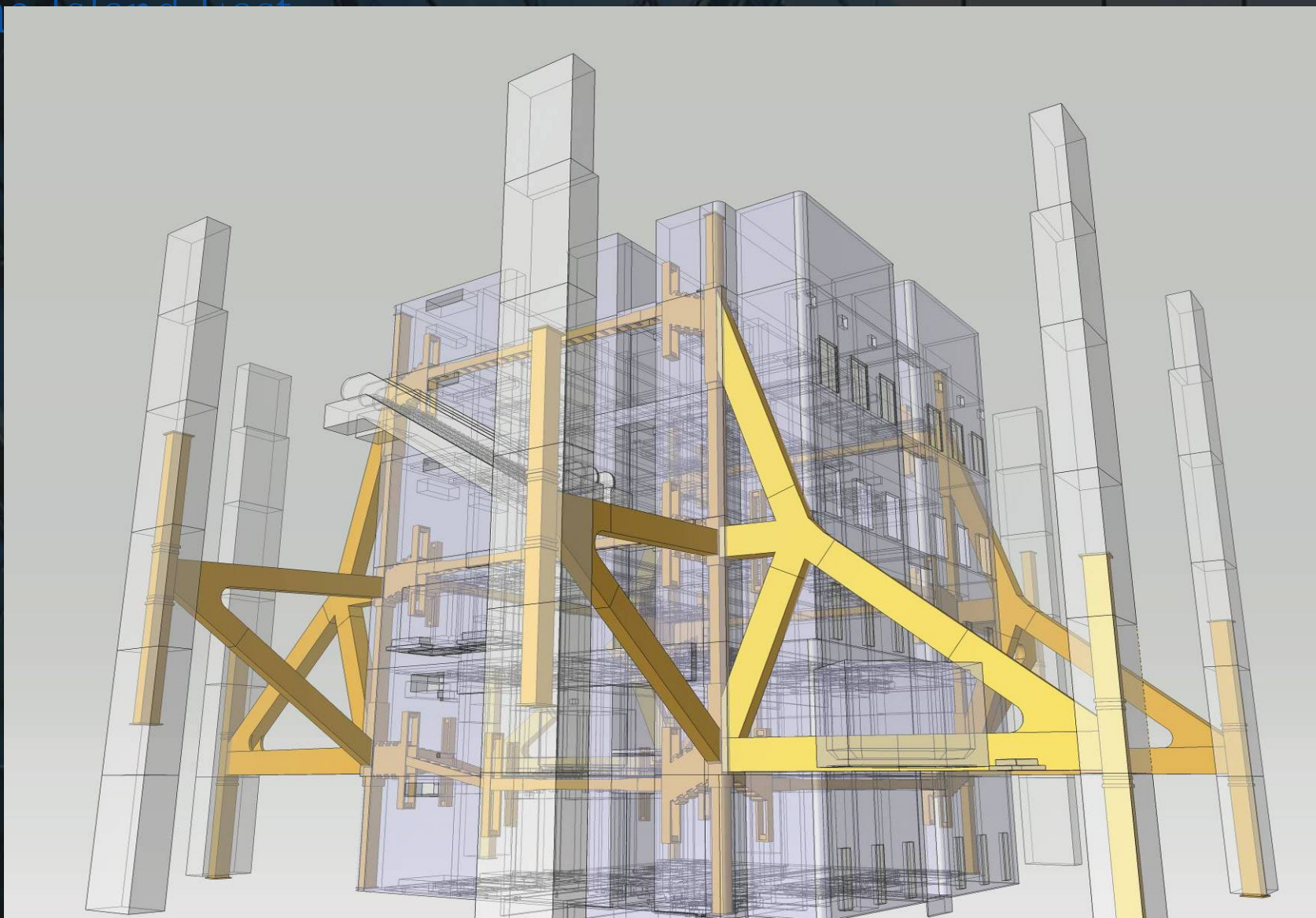
BIM MEP Configuration



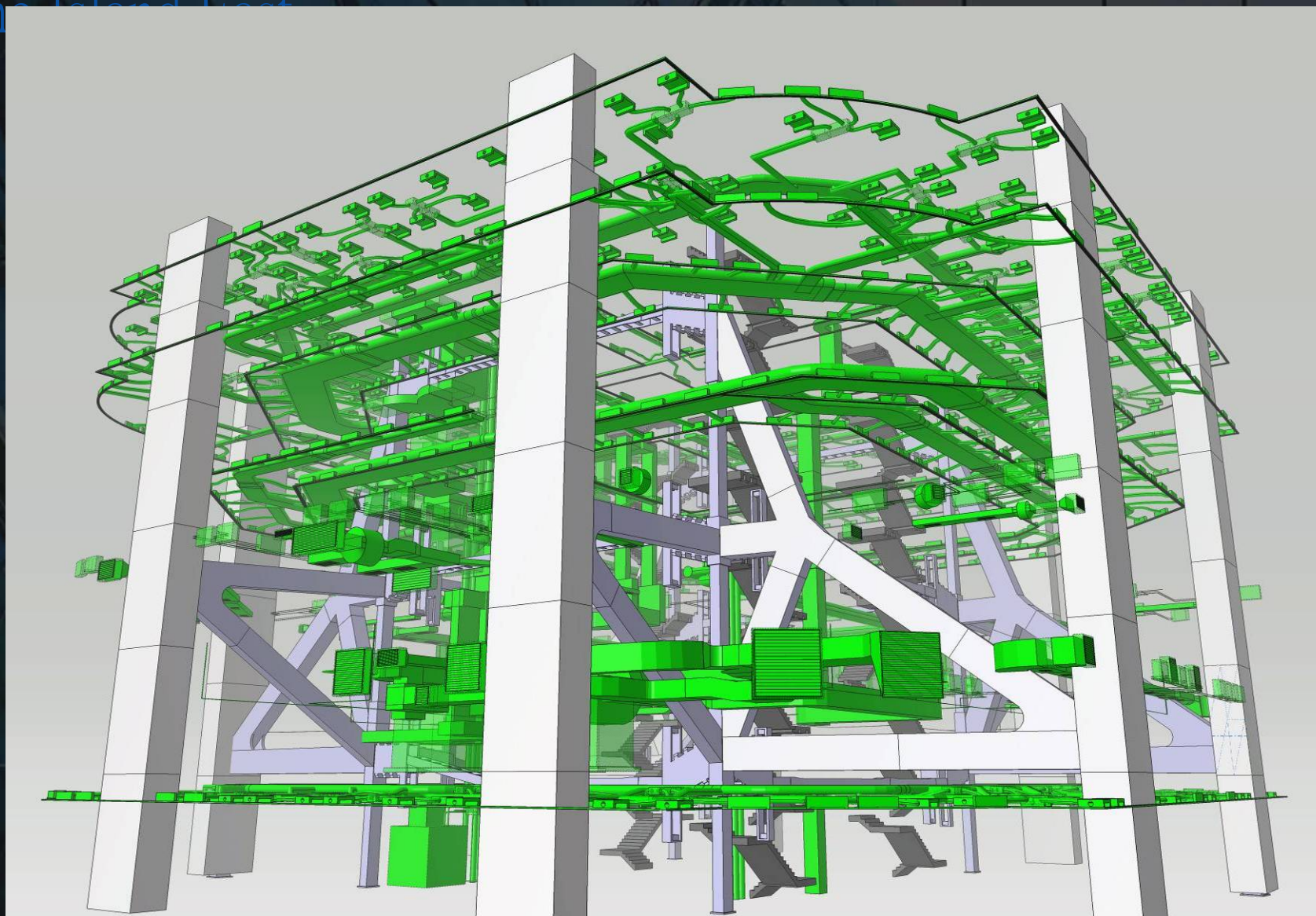
BIM MEP Configuration



BIM MEP Configuration

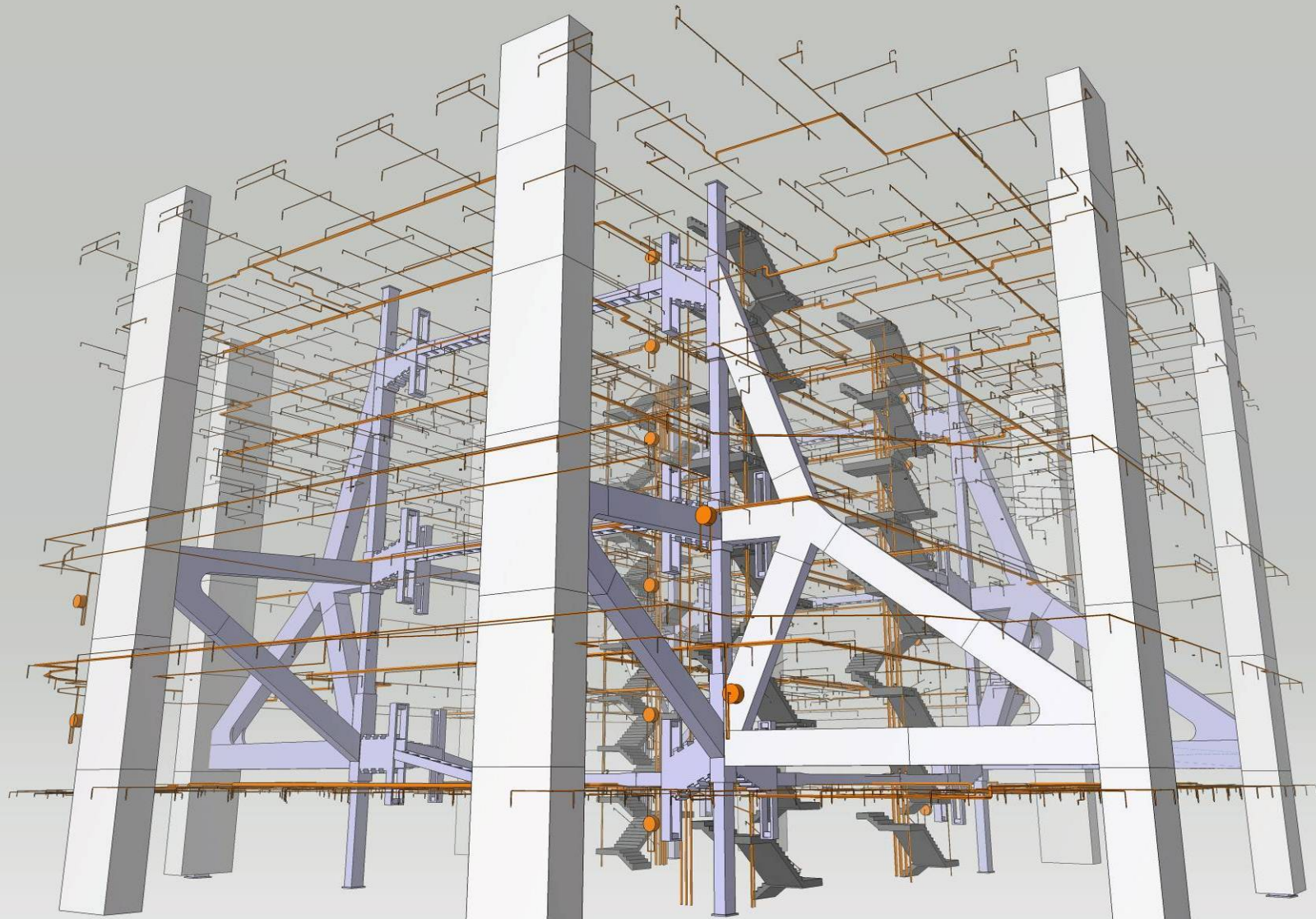


BIM Complex Structures Configuration

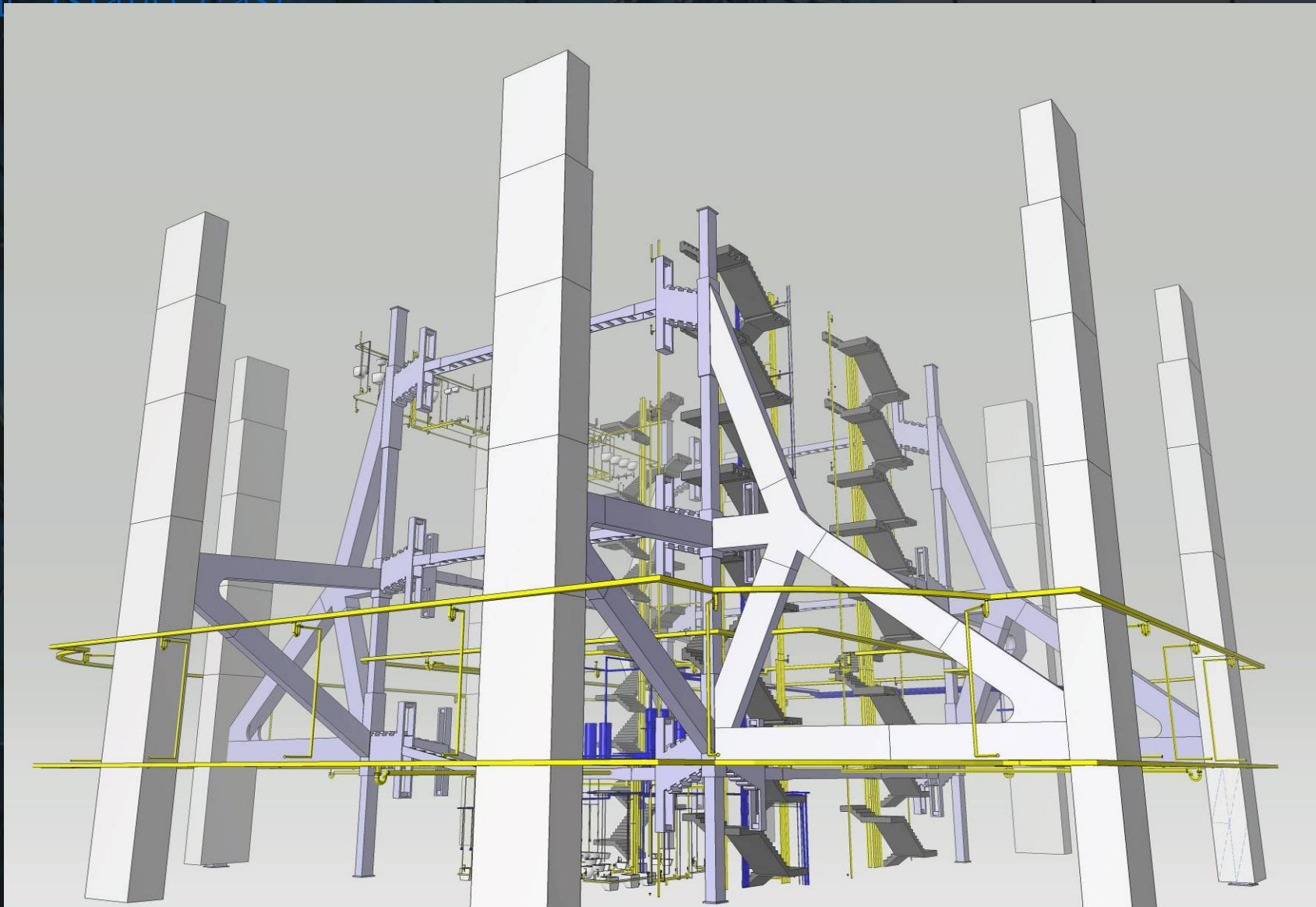


BIM HVAC Configuration

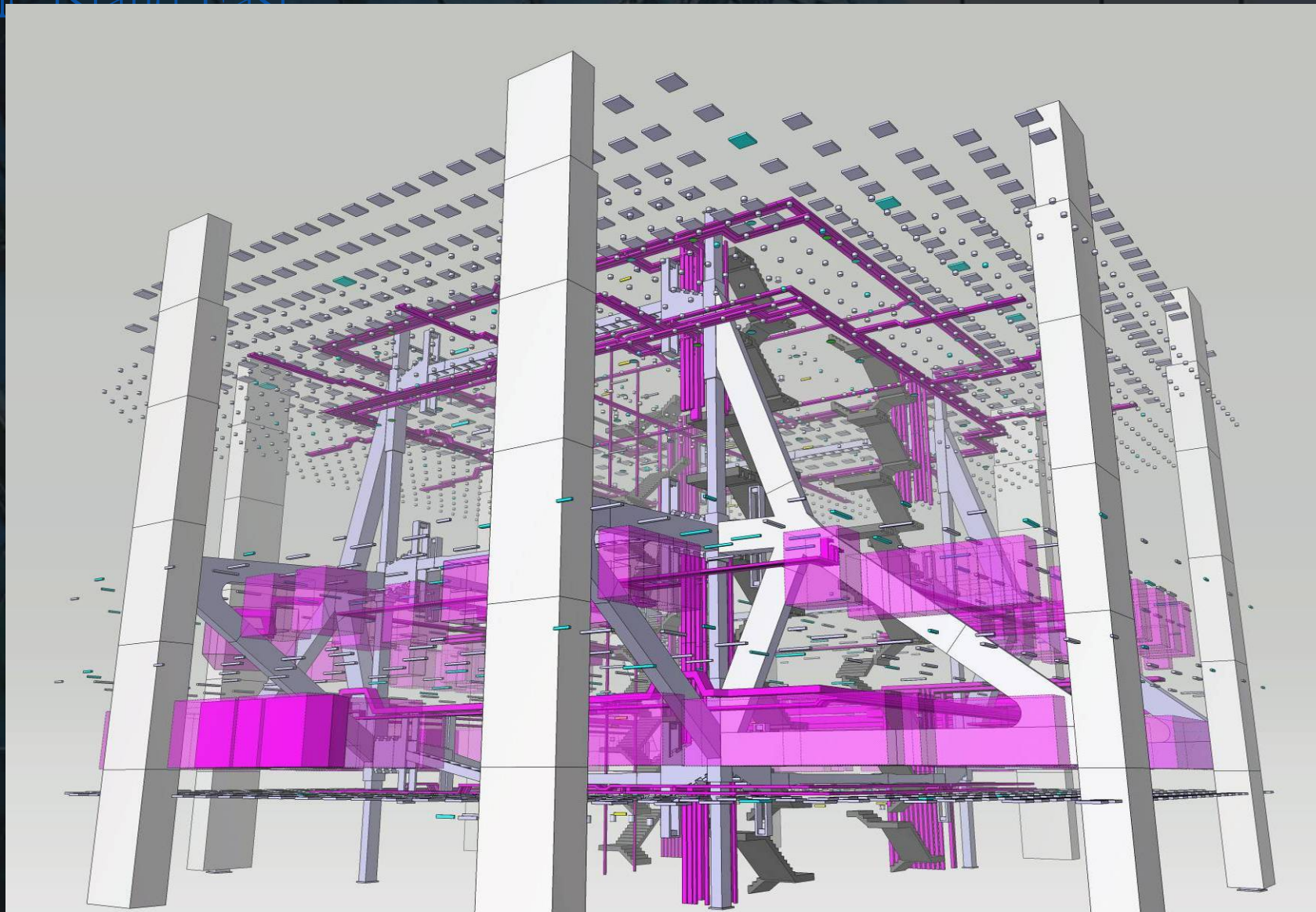
One Island East



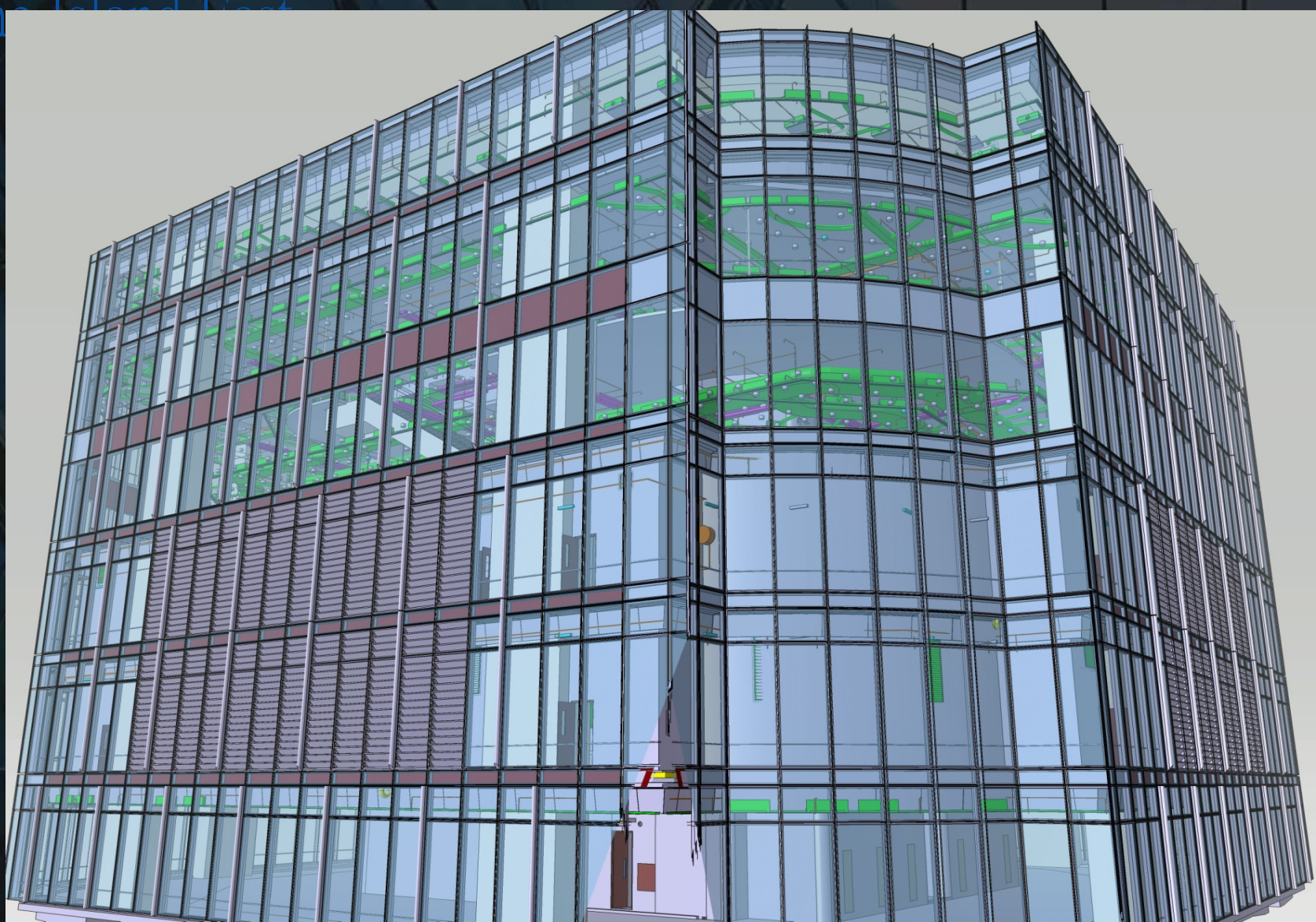
BIM FS Configuration



BIM Plumb & Drainage Configuration

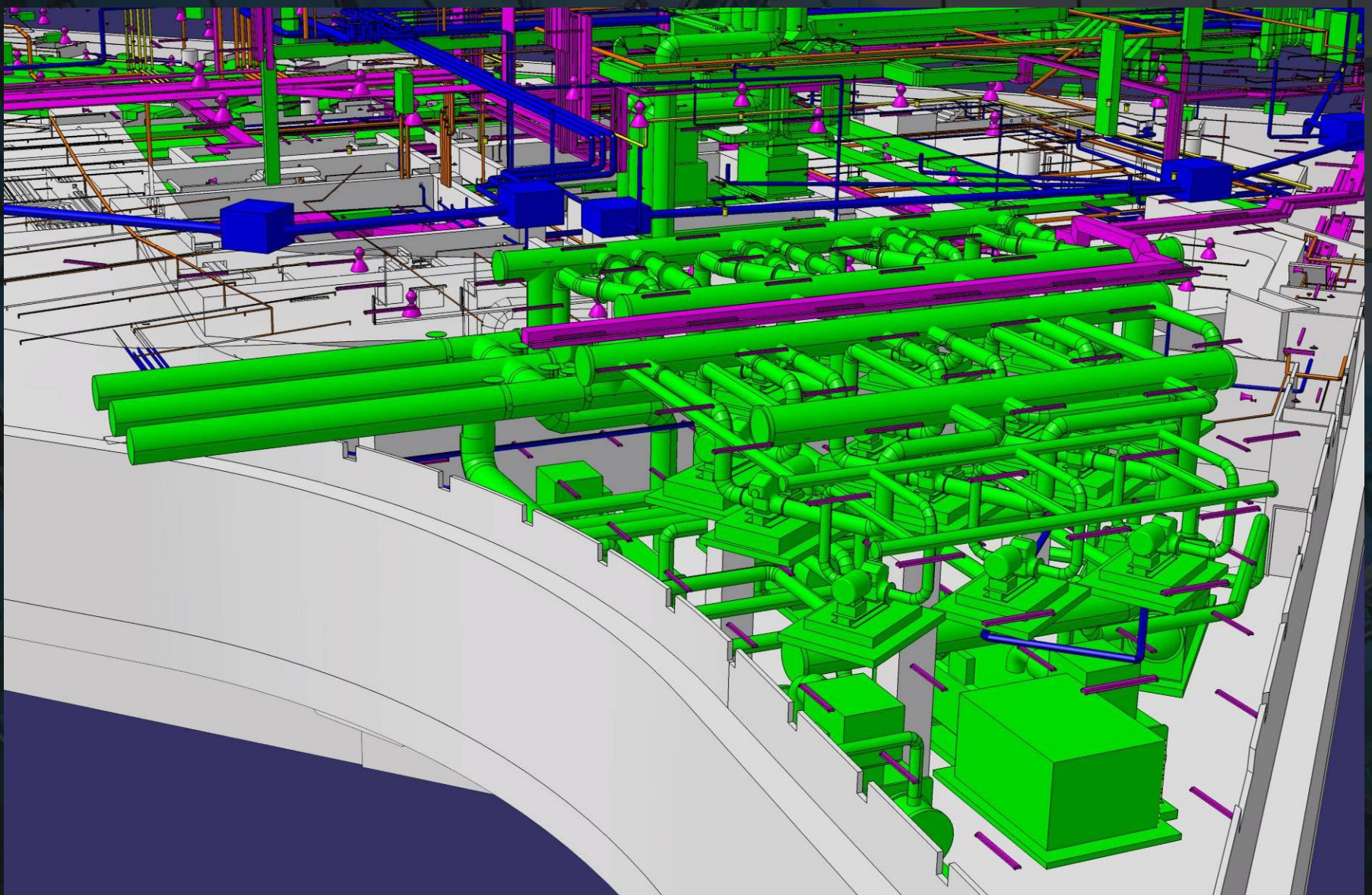


BIM ELEC Configuration



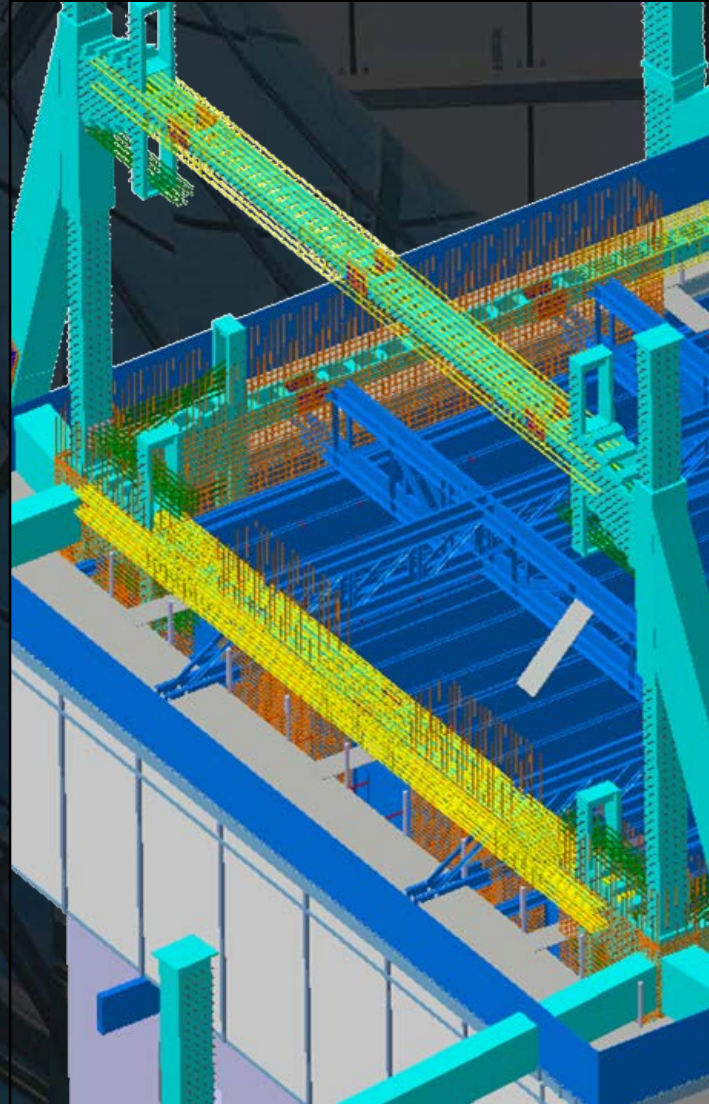
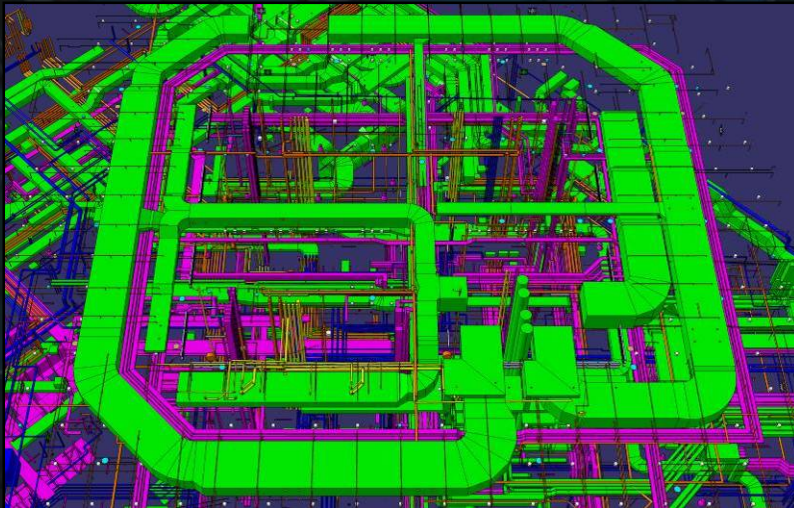
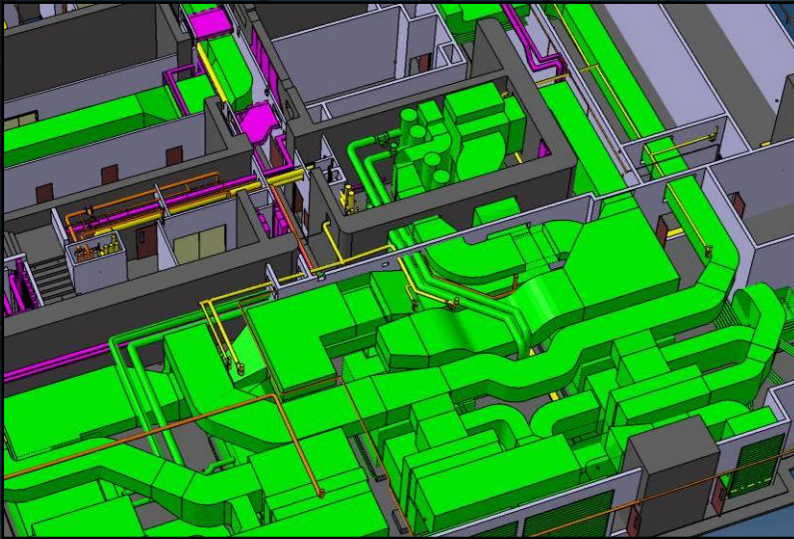
BIM MEP Configuration

Contractor Construction Model

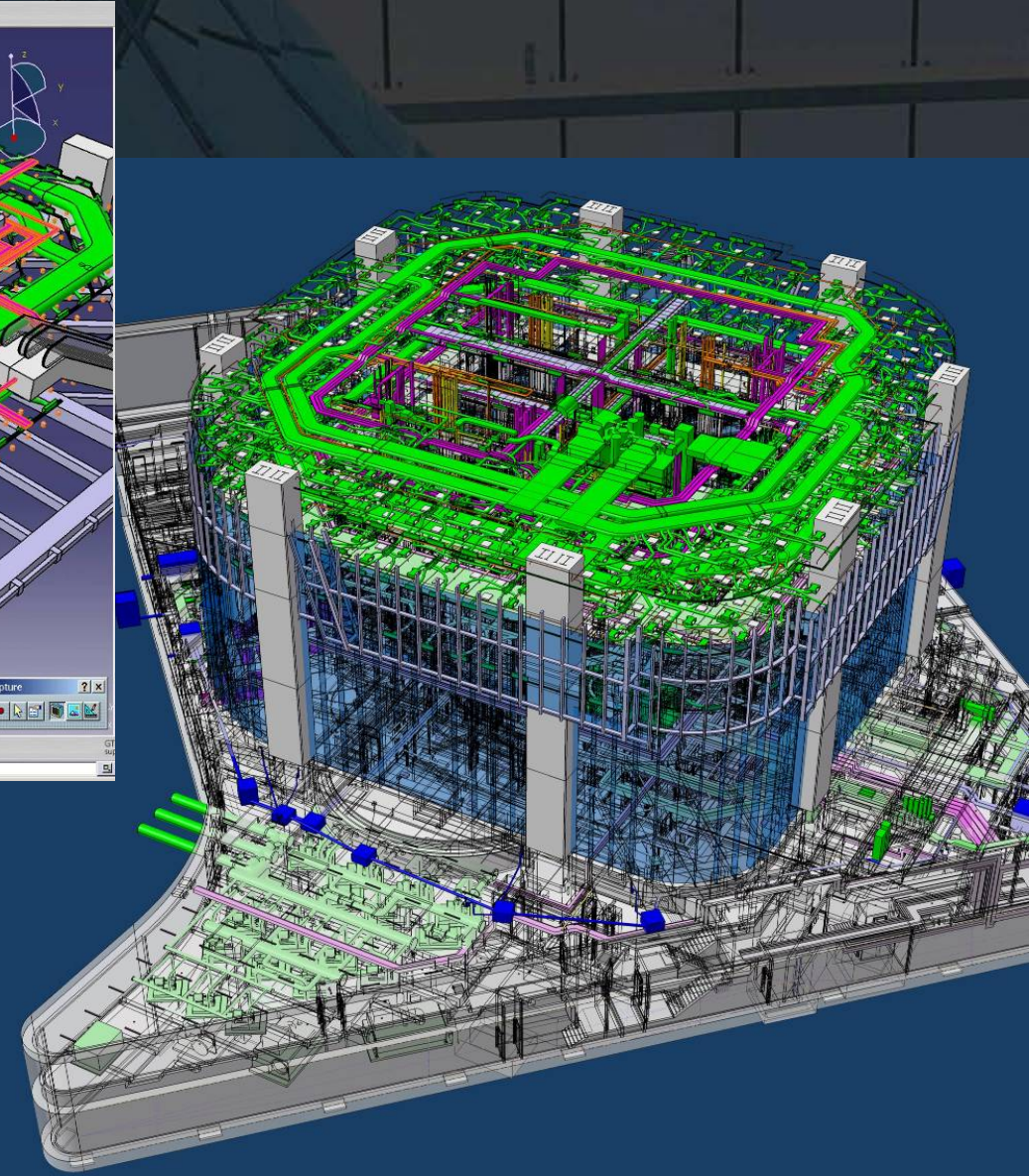
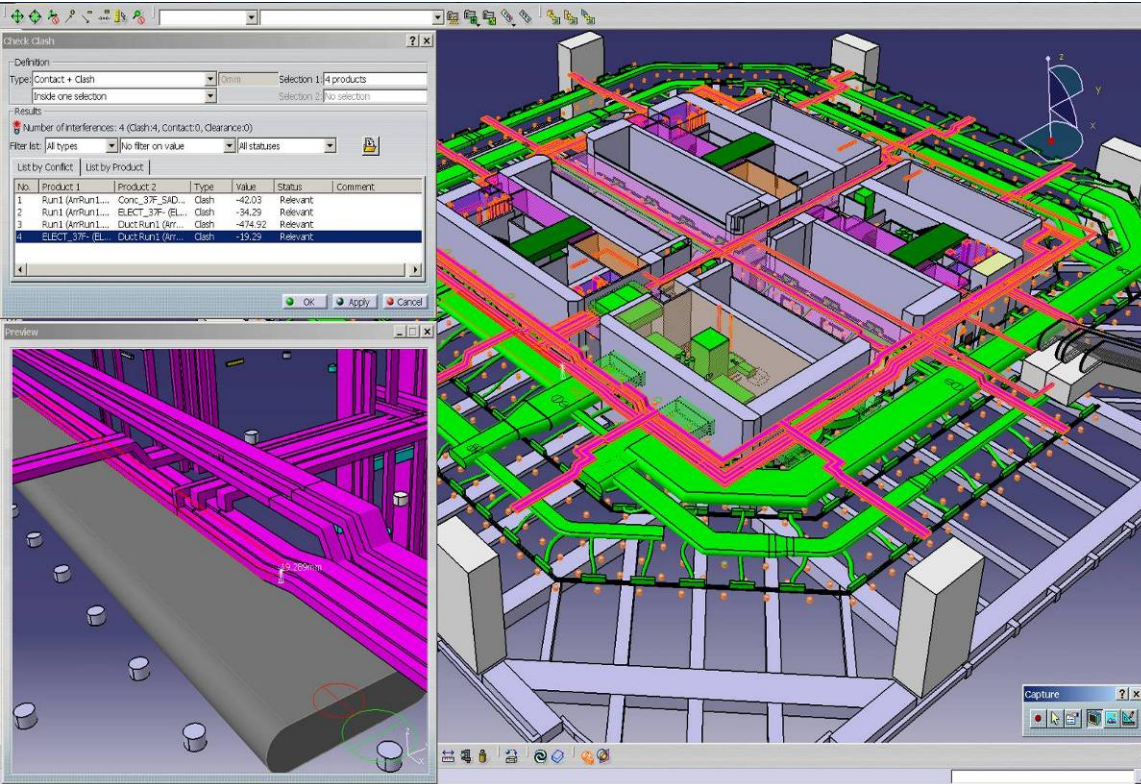


- Chiller Plants at ISE Basement

Contractor Construction Model

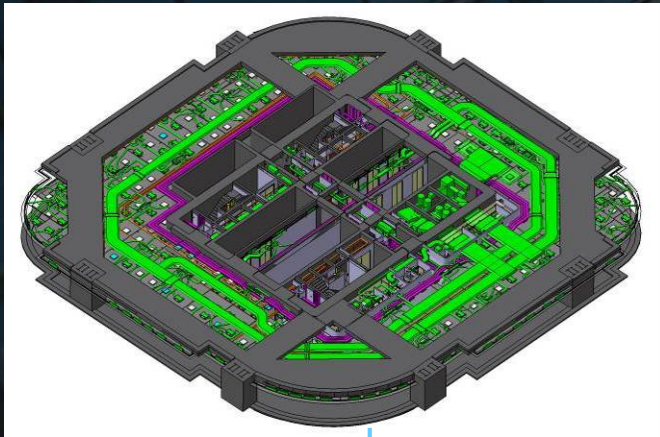


Contractor Construction Model

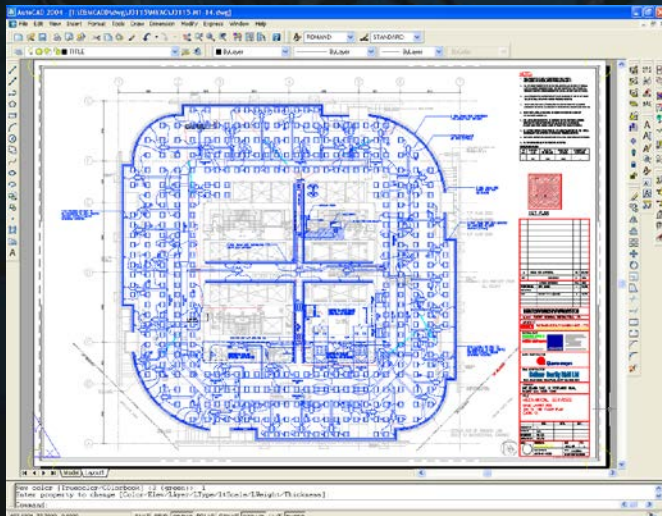


Automatic Clash Identification and Management

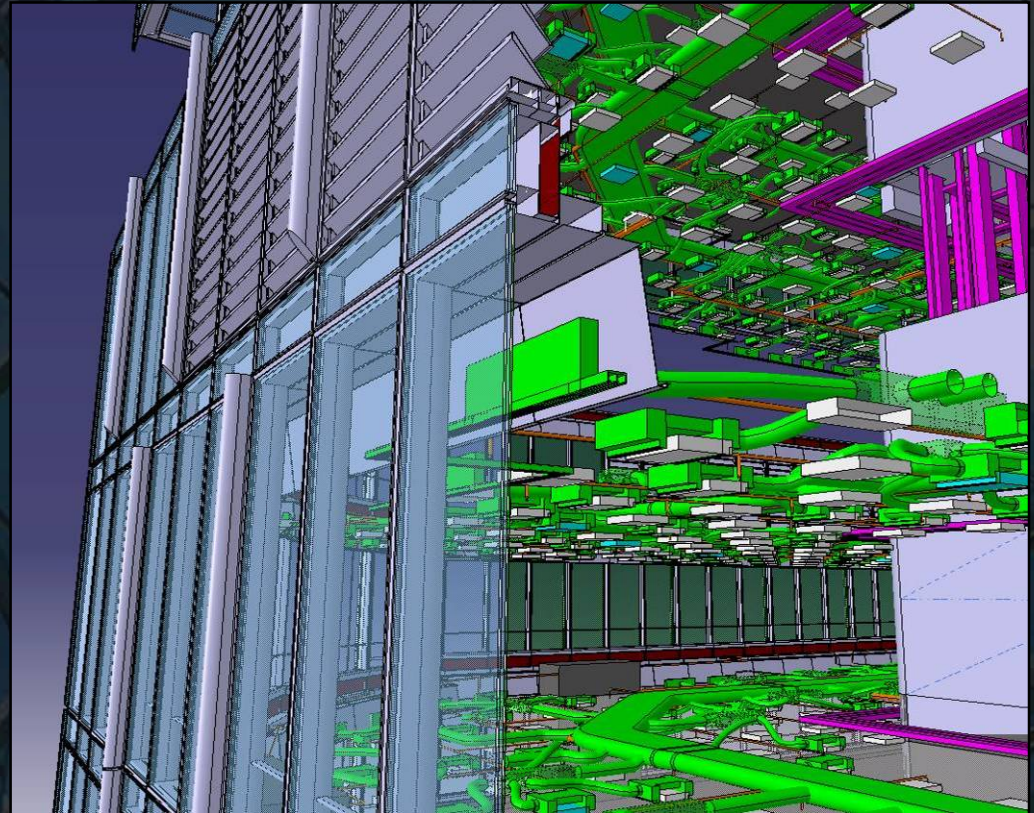
Work Document Co-ordination



Coordinated 3D geometries

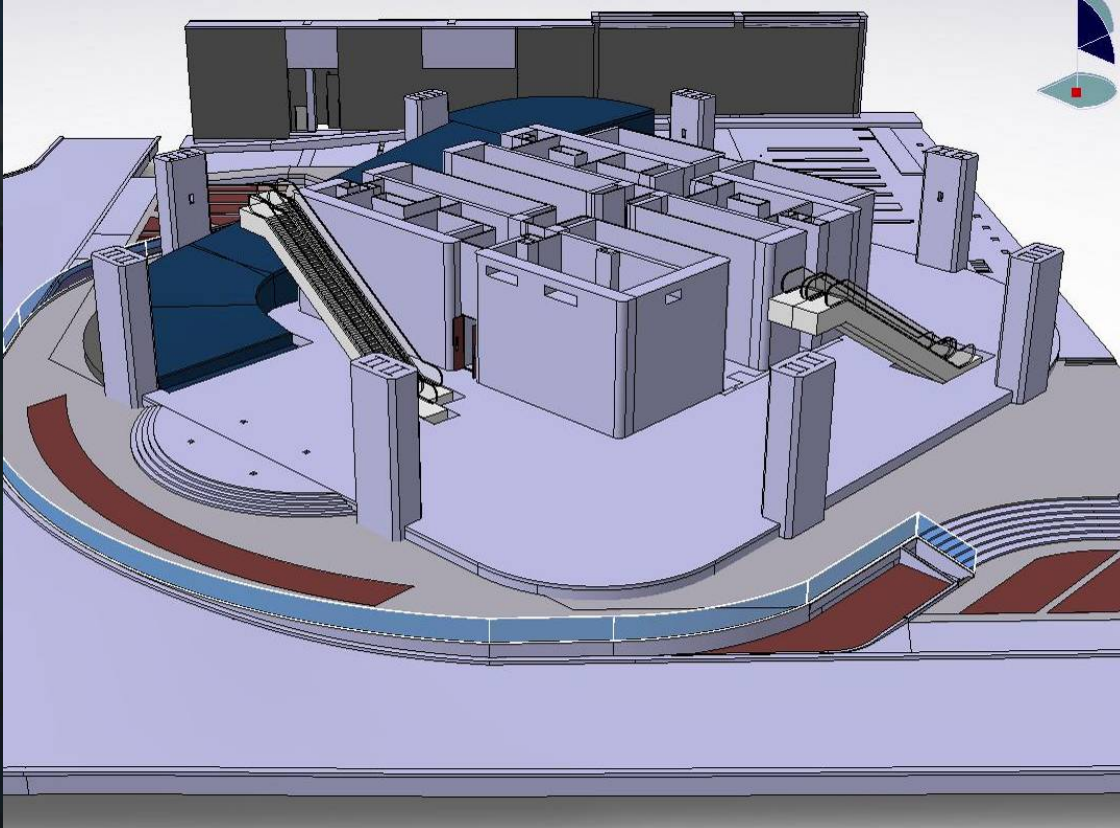


2D geometries output to ACAD for further coordination

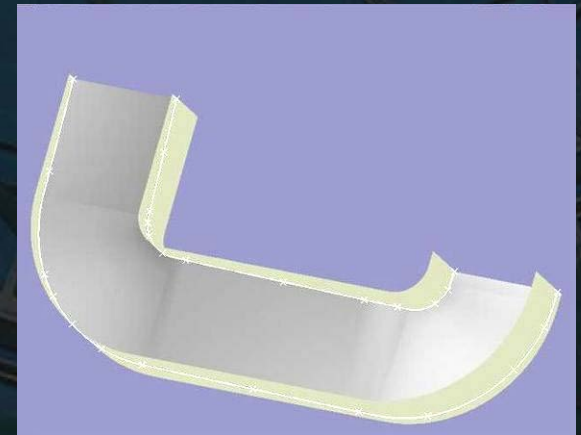
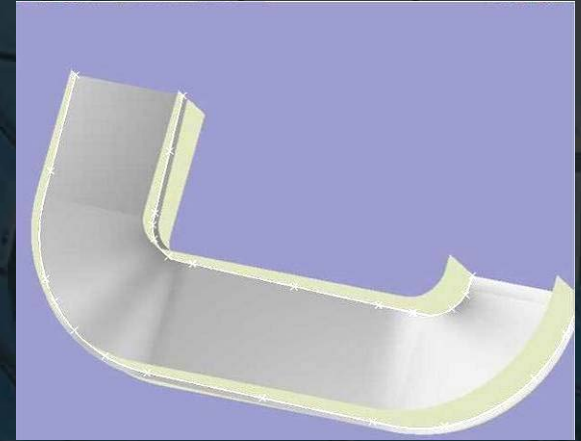


Live Sectioning

Faciliate Design Development

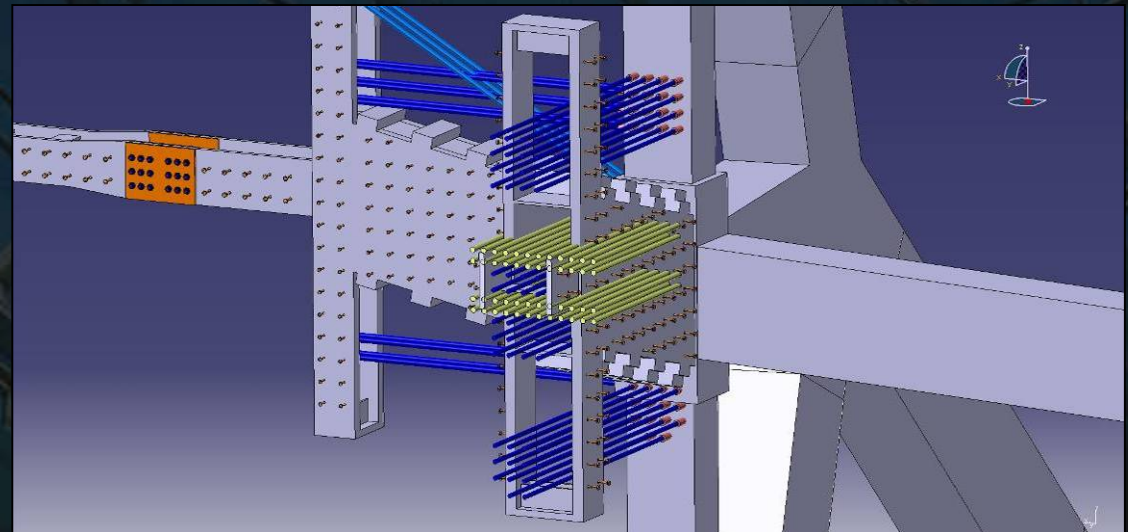
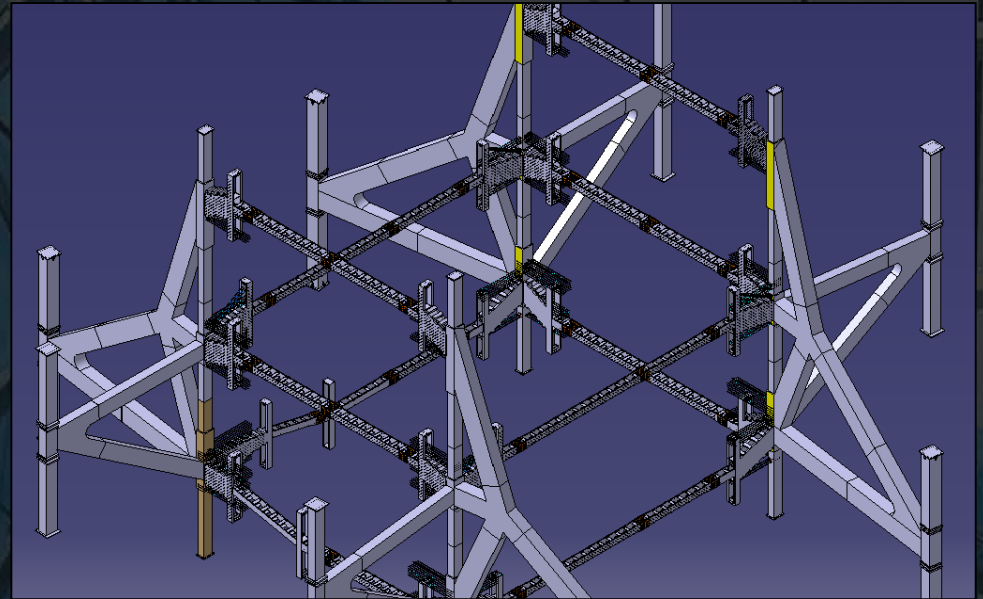


Road Curb Design Review

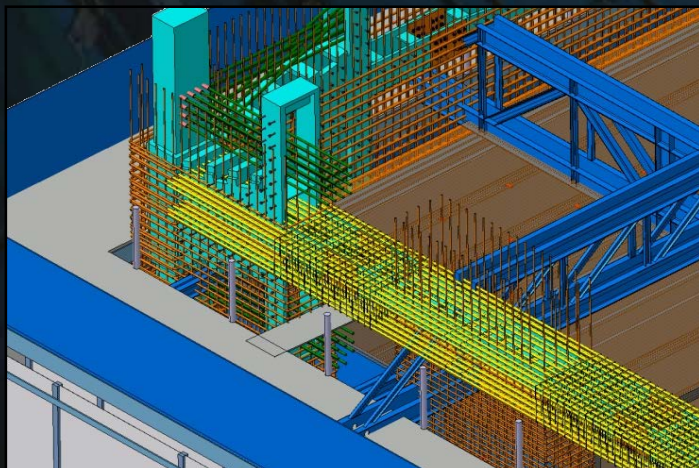
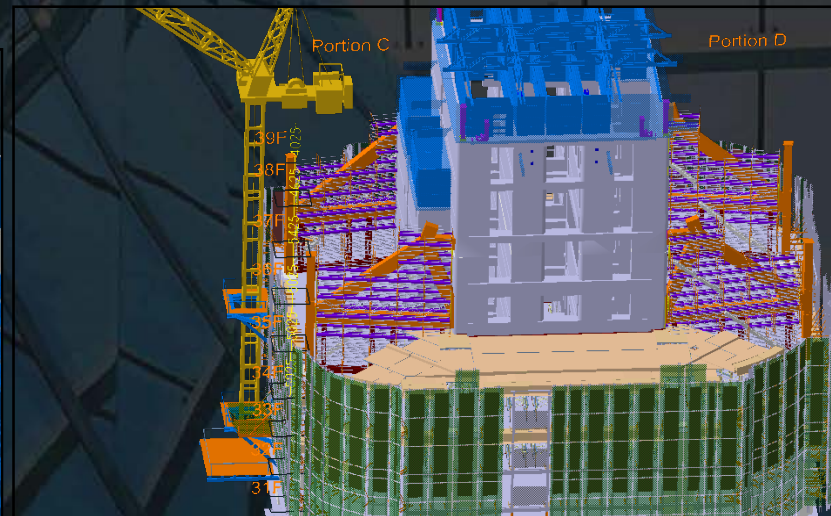


Car-ramp Design Review

Critical Detail Checking

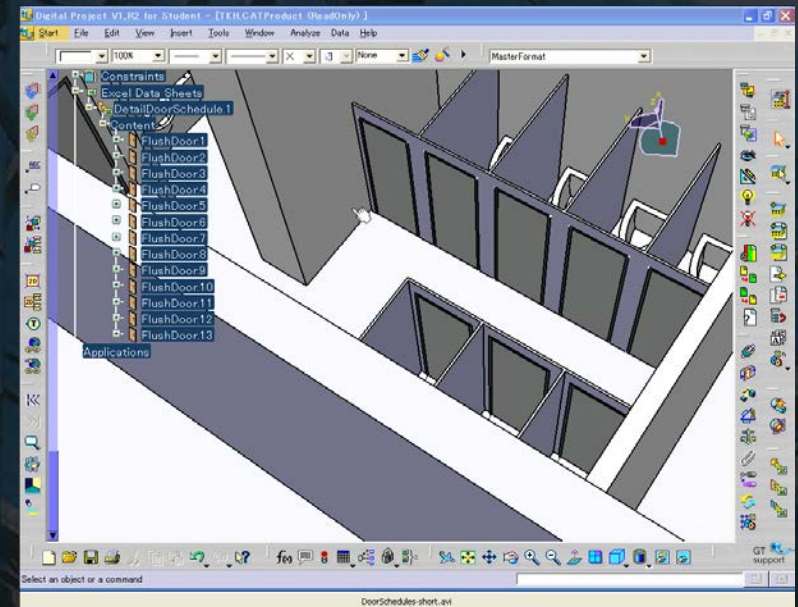
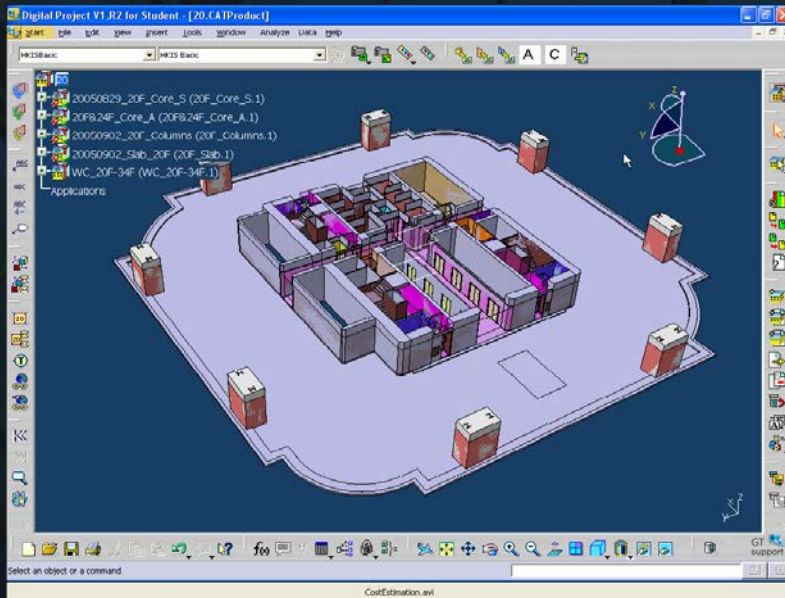


Critical Detail Checking



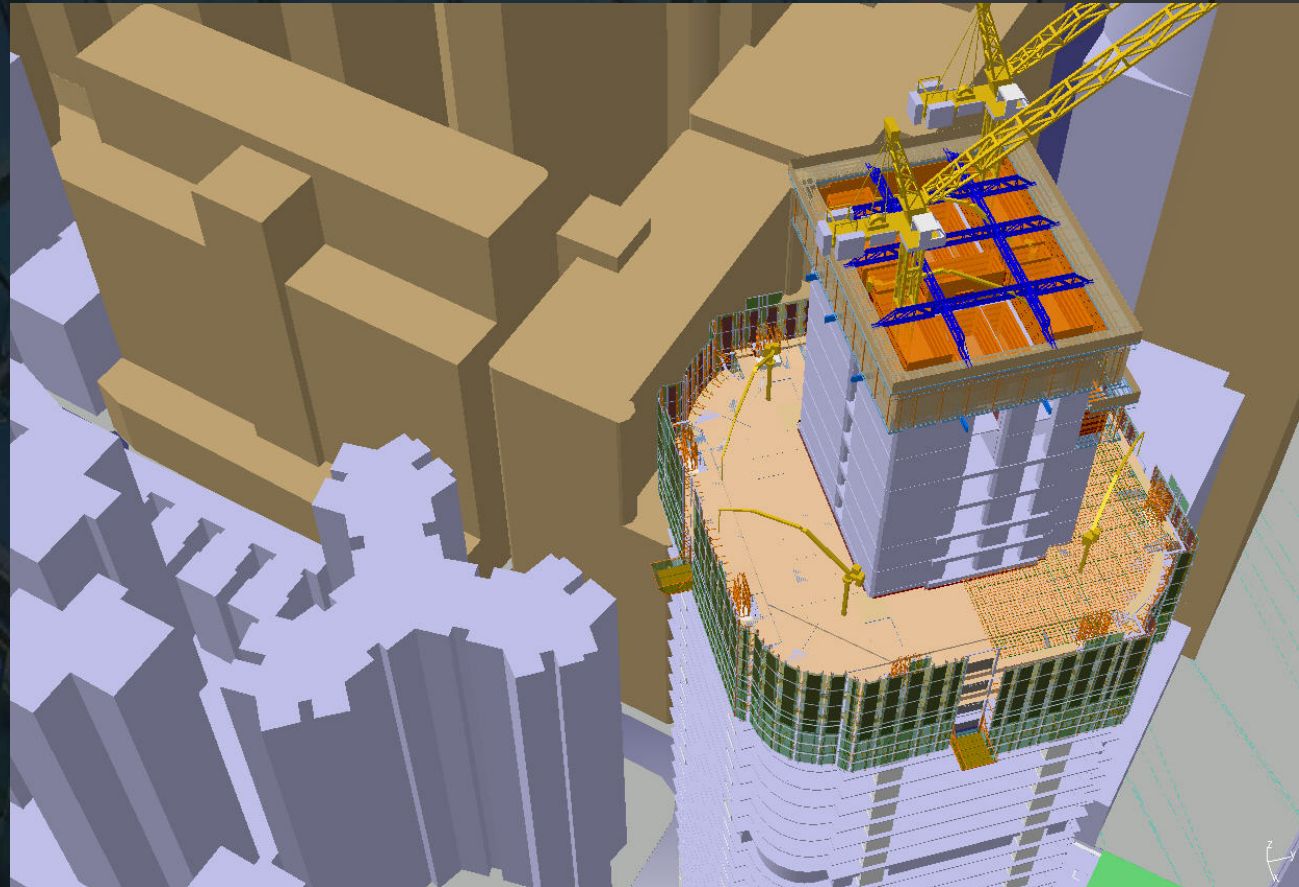
Scheduling and Data Extraction

- Quantity Extraction from BIM
- Work Scheduling utilizing BIM



Virtual Prototyping (4D Model)

- Detail study on the critical process
 - 4-day floor cycle



Virtual Prototyping

4 Day Cycle Simulation (Day 1)

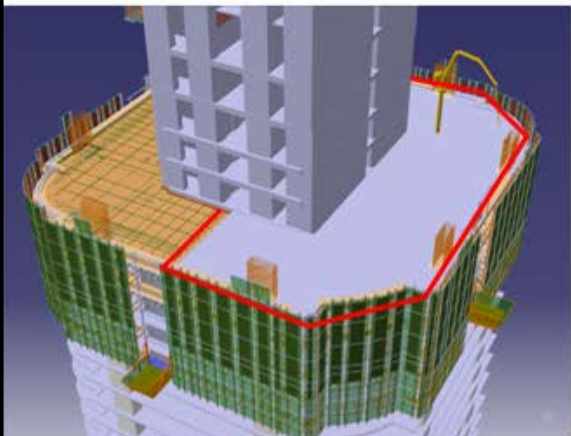
Morning



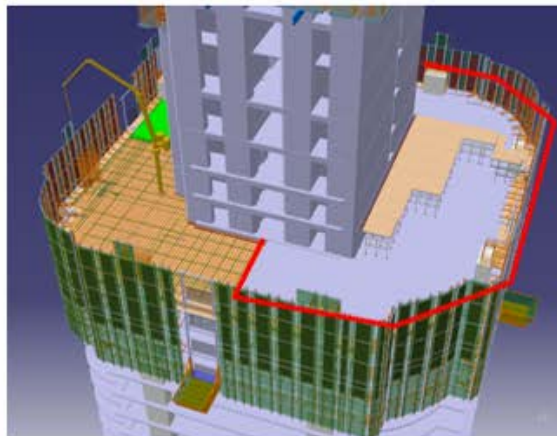
Afternoon



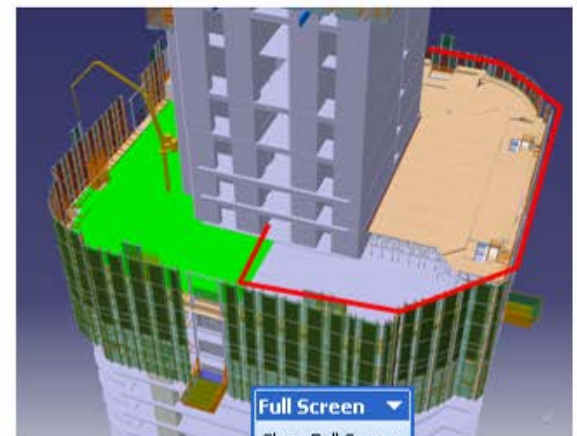
Evening



1. Set Up Table Form
2. Lift Safety Screen
3. Fixing Column Form



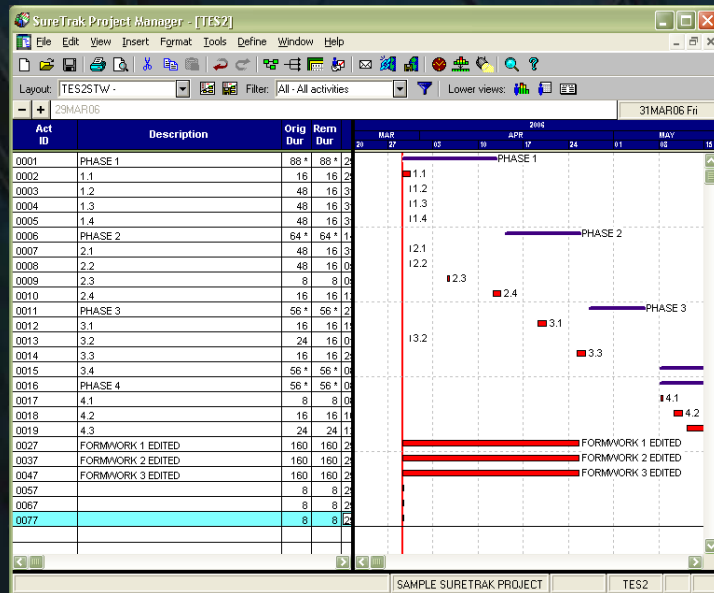
1. Set Up Table Form
2. Lift Safety Screen
3. Fixing Column Form



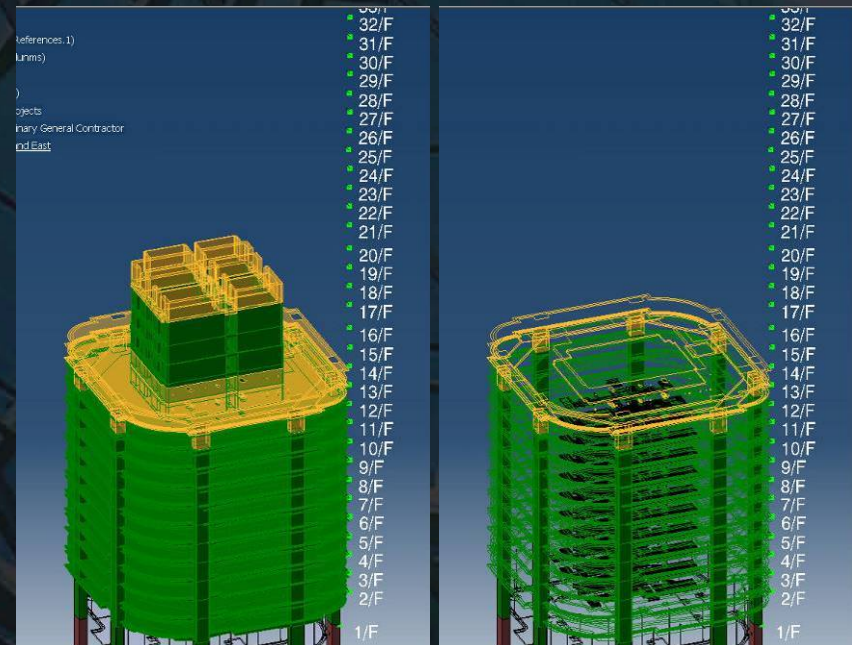
1. Set Up Table

Visualize Master Progress with 4D Model

Data exchanging between Primavera and Digital Project

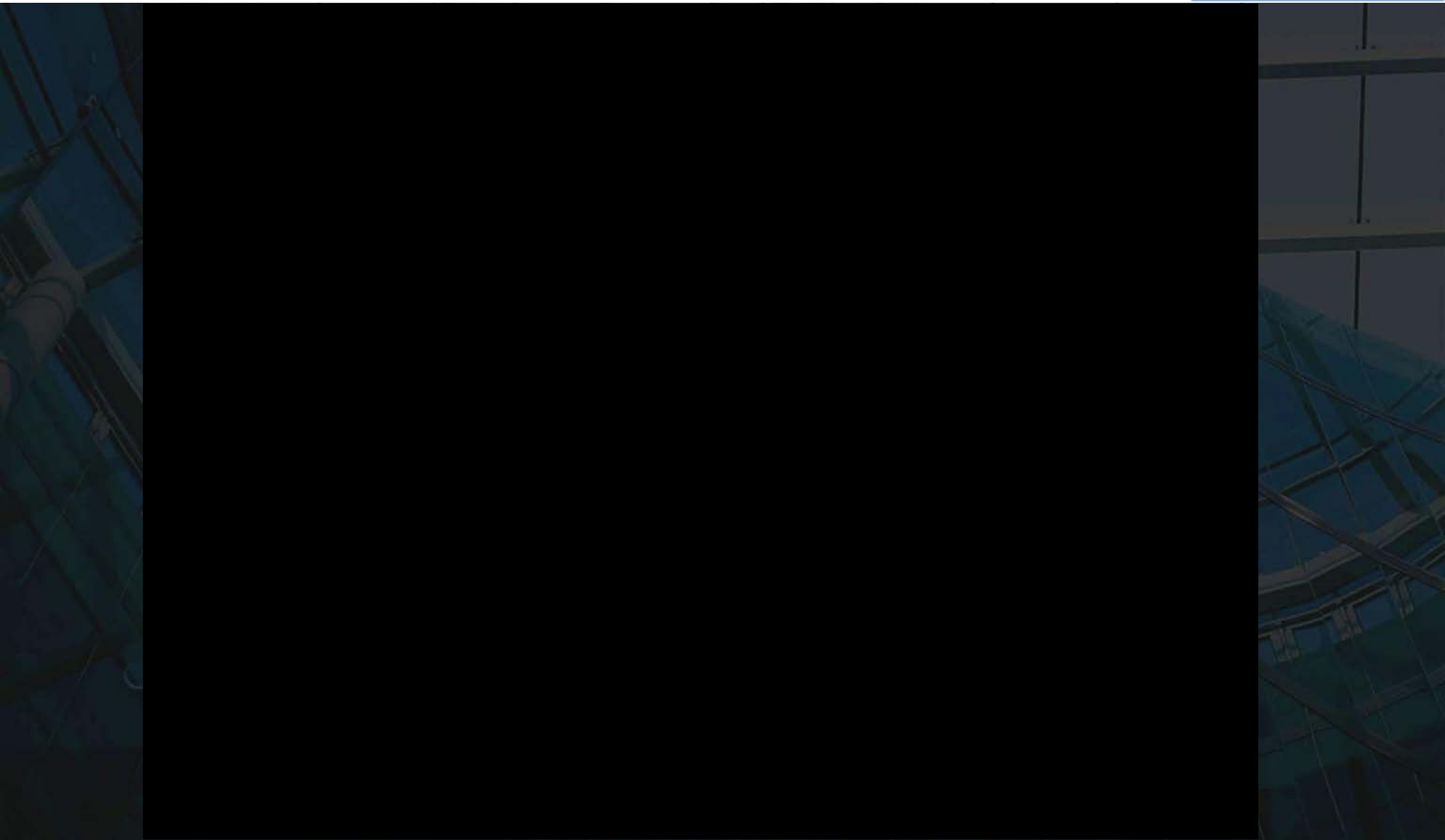


Primavera



Digital Project

Procurement, Delivery, Installation Process



Use of BIM in Operation Phase

1. As built field checking
2. Sustainability Study
3. Security Study - CCTV
4. Marketing Application
5. Signage Management
6. Maintenance
7. Asset Management
8. IRS

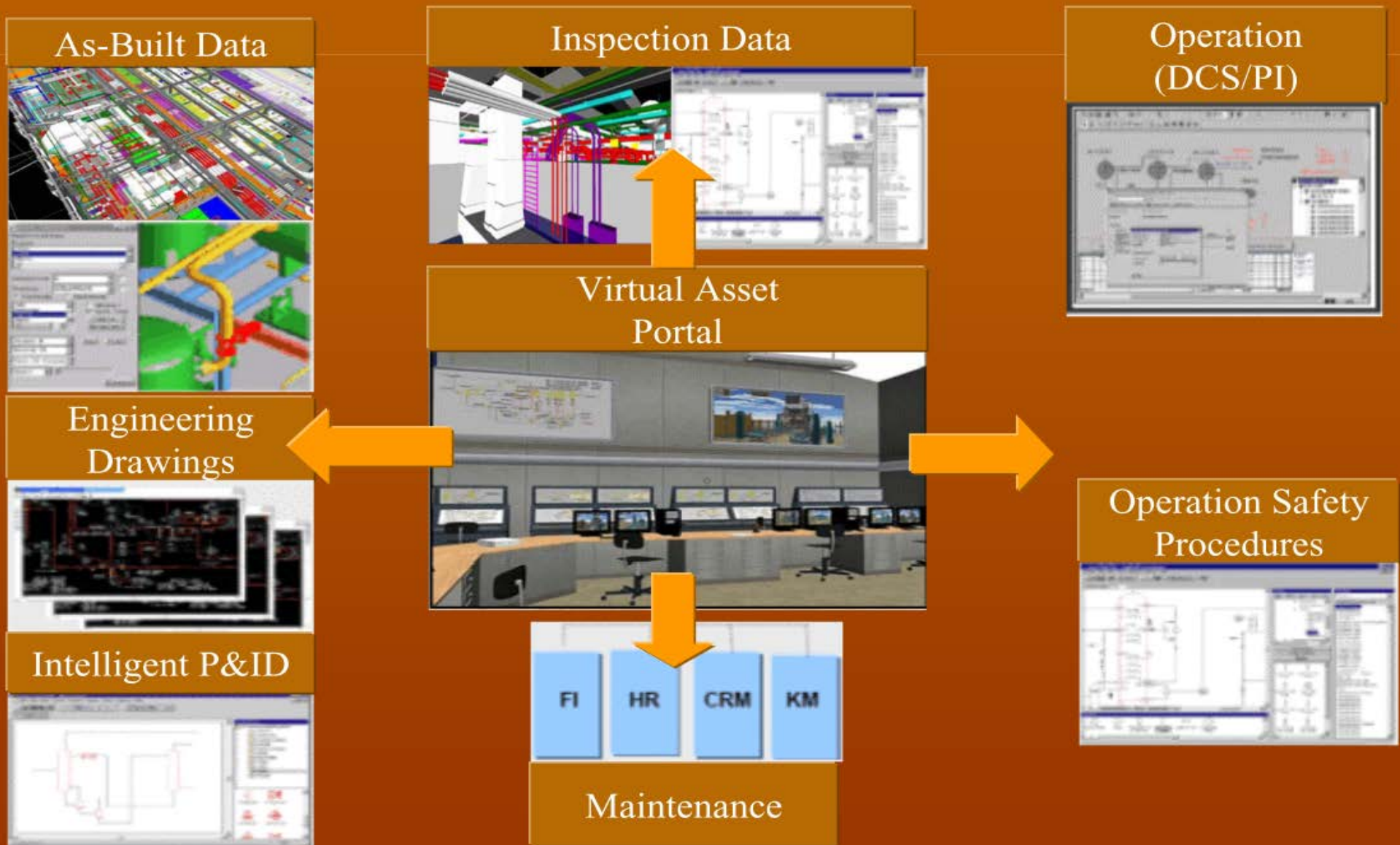
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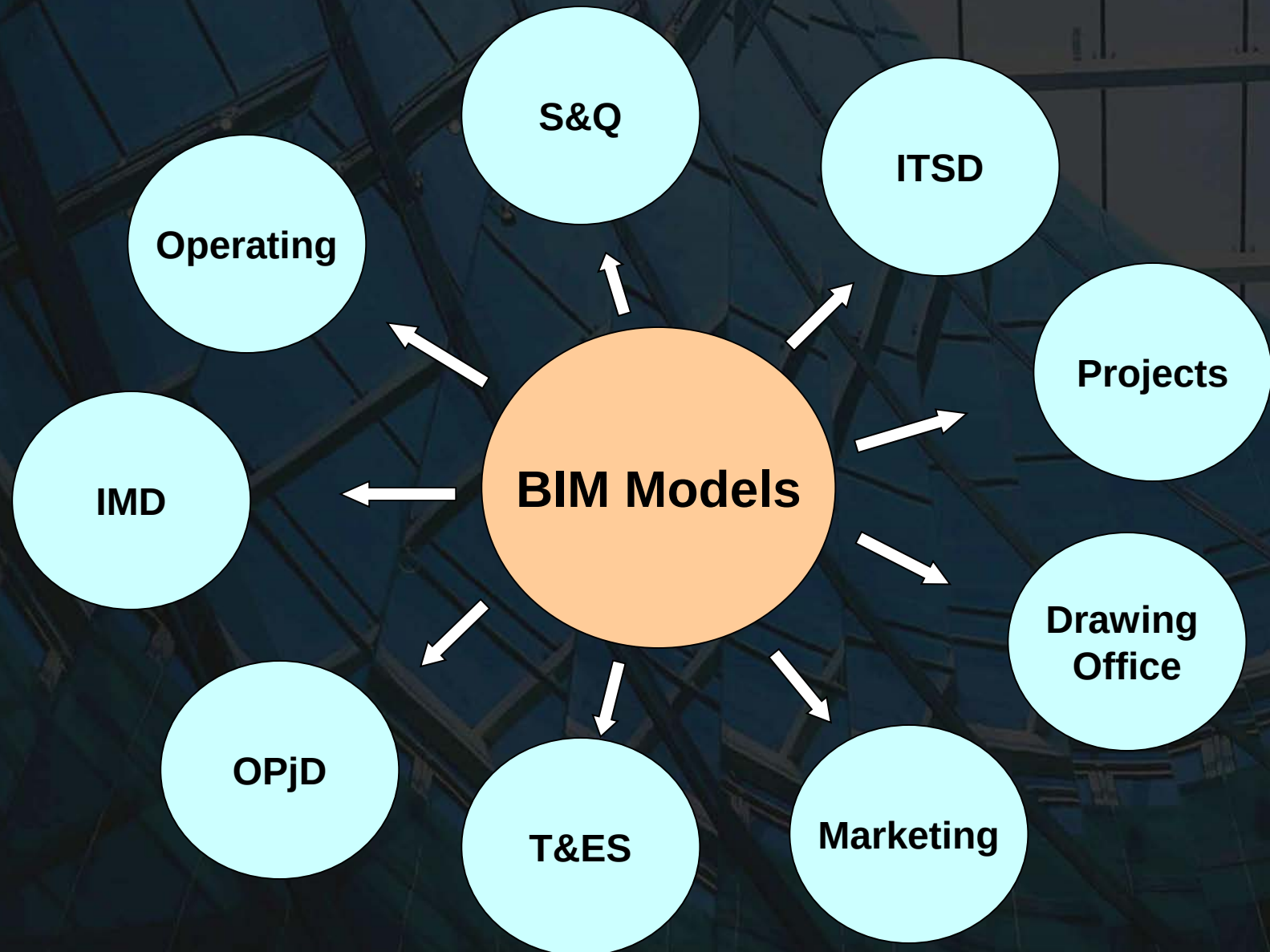
The Real Estate Cash Flow-25 years



❑ Setting realistic expectations of BIM from the facility maintenance operation team's perspectives.

BIM in Operation Phase

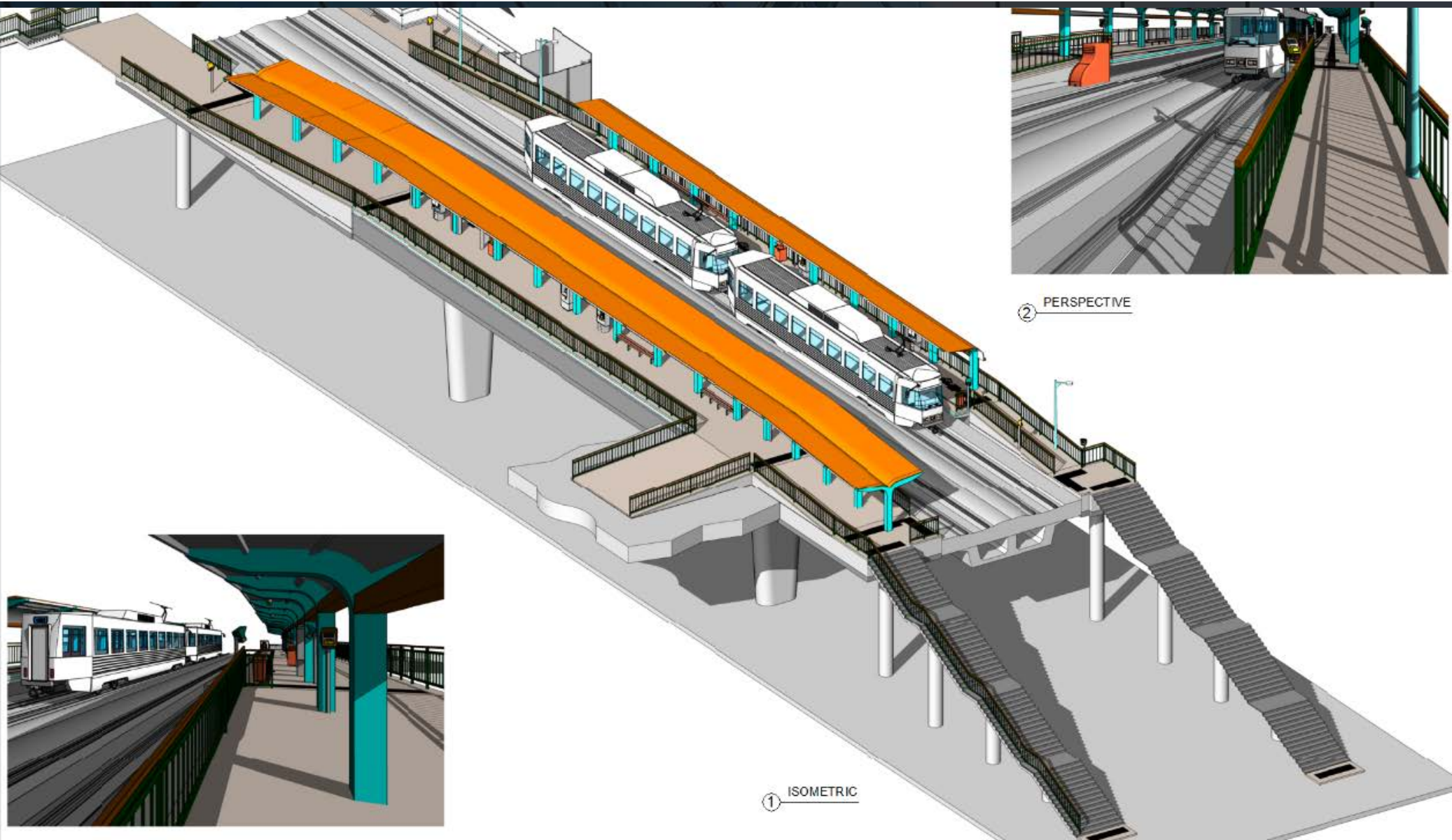




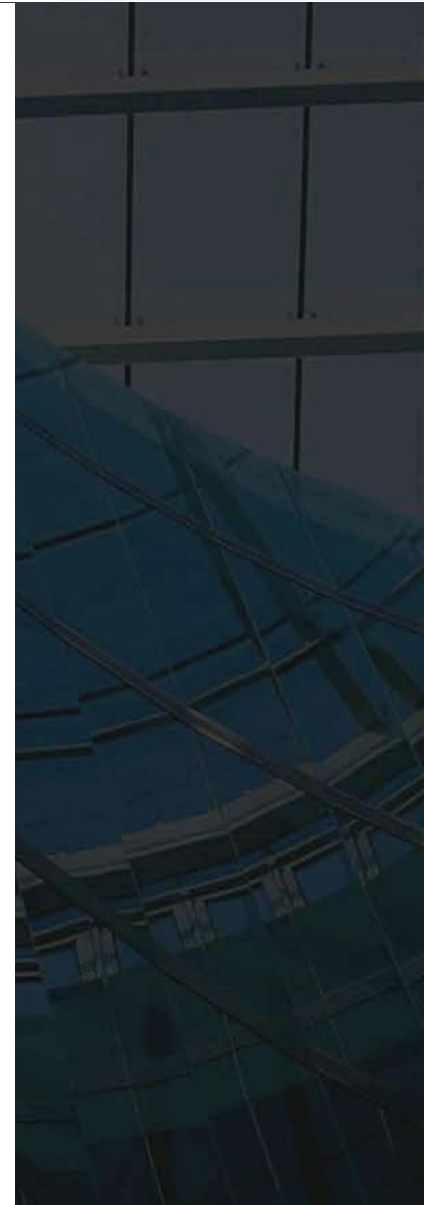
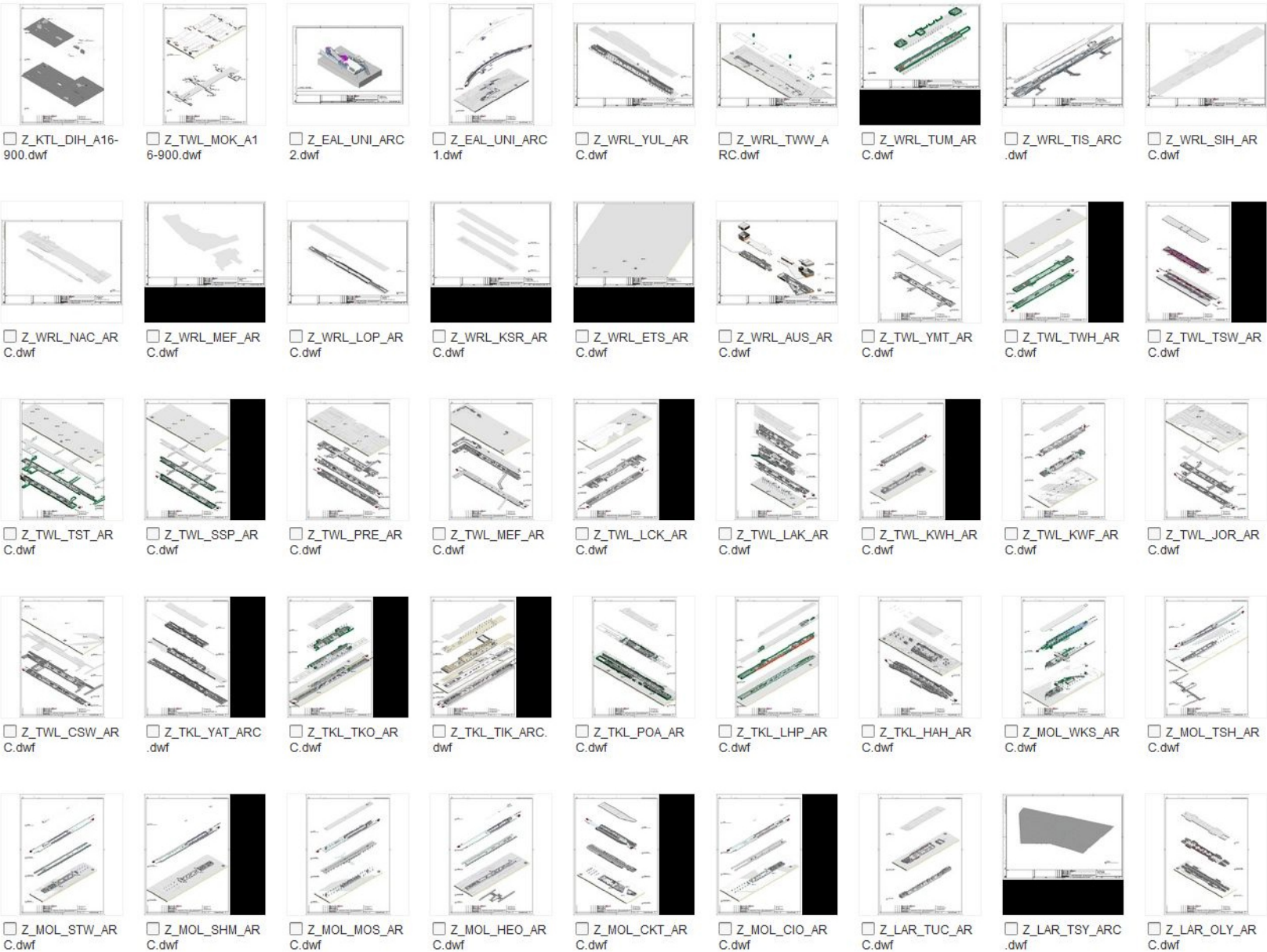
As-Built LRL stops



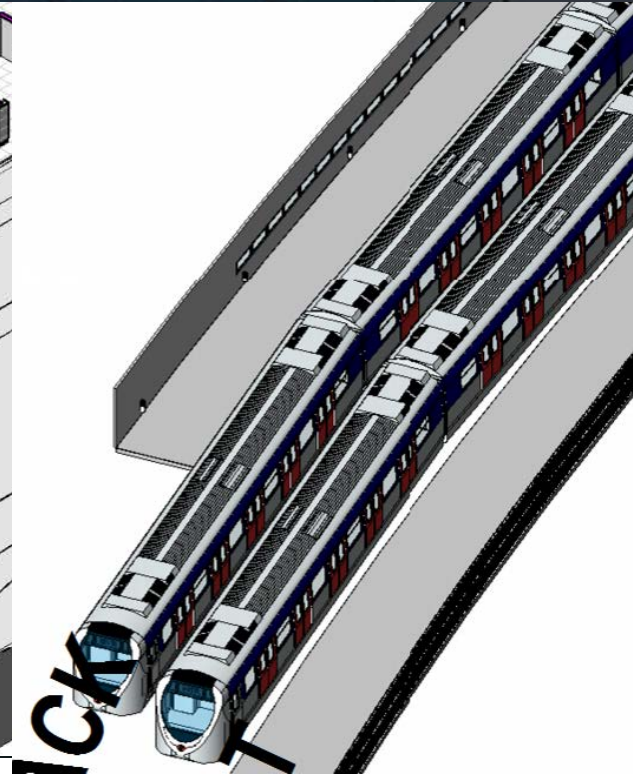
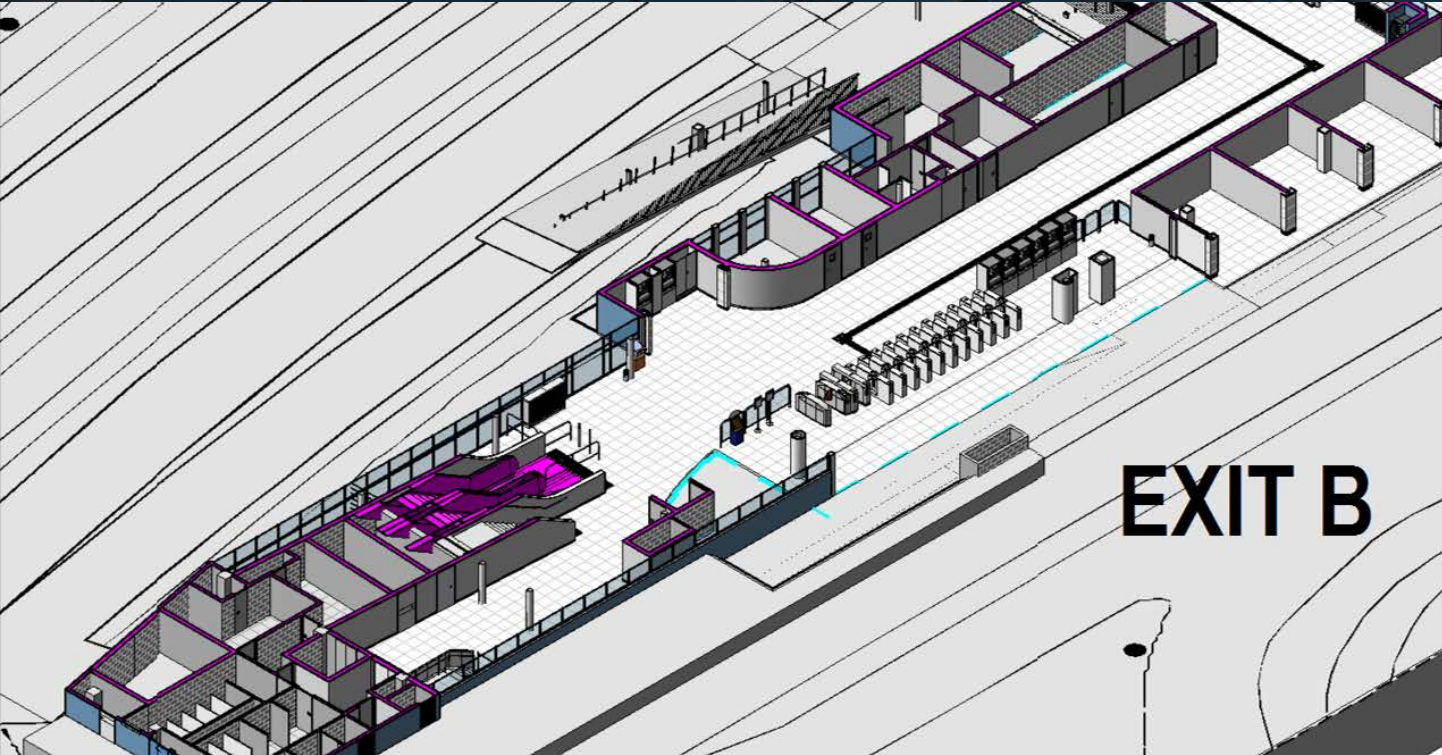
As-Built LRL stops



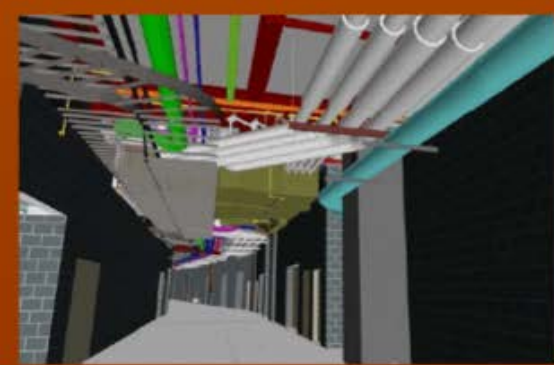
As-Built Station Information



As-Built Station Information



Assets



Virtual Asset



Physical Asset



Physical Asset



Virtual Asset

As-Built Field Checking



Signage/ Marketing Checking

Z_JSL_ADM_ARC.rvt - Floor Plan: (CONTRACT)_Z_S100 CONCOURSE LEVEL

Type a keyword or phrase

Home Insert Annotate Analyze Structure Massing & Site Collaborate View Manage Add-Ins Modify

Modify Select Materials Object Snaps Styles Project Information Parameters Project Units Shared Parameters Transfer Project Standards Purge Unused Additional Settings Location Coordinates Position Design Options Main Model Add to Set Pick to Edit Manage Links Manage Images Decal Starting View Phases Demolish IDs of Selection Select by ID Warnings Macro Manager Macro Security

Properties

Floor Plan

Floor Plan: (CONTRACT)_Z_S100 Edit Type

Underlay	None
Underlay Orientation	Plan
Orientation	Project North
Wall Join Display	Clean all wall joins
Discipline	Architectural
Color Scheme Locati...	Background
Color Scheme	Department
Default Analysis Disp...	None
Sun Path	

Properties help Apply

Z_JSL_ADM_ARC.rvt - Project Browser

Views (all)

Floor Plans

- (CONTRACT)_Z_S200 VENT SHAFT W
- (CONTRACT)_Z_S100 CONCOURSE I**
- (CONTRACT)_Z_S100 ROOF LEVEL
- (CONTRACT)_Z_S200 CONCOURSE LE
- (CONTRACT)_Z_S200 LOW PLATFORM
- (CONTRACT)_Z_S200 UPPER PLATFORM
- (CONTRACT)_Z_S200 VENT SHAFT W
- (CONTRACT)_Z_S300 CONCOURSE LE
- (CONTRACT)_Z_S500 BASE LEVEL
- (CONTRACT)_Z_S500 CONCOURSE LE
- (CONTRACT)_Z_S500 GROUND LEVEL
- (CONTRACT)_Z_S500 LOWER PLATFORM
- (CONTRACT)_Z_S500 LOWER TRACK L
- (CONTRACT)_Z_S500 ROOF LEVEL
- (CONTRACT)_Z_S500 UPPER PLATFORM

1: 100

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

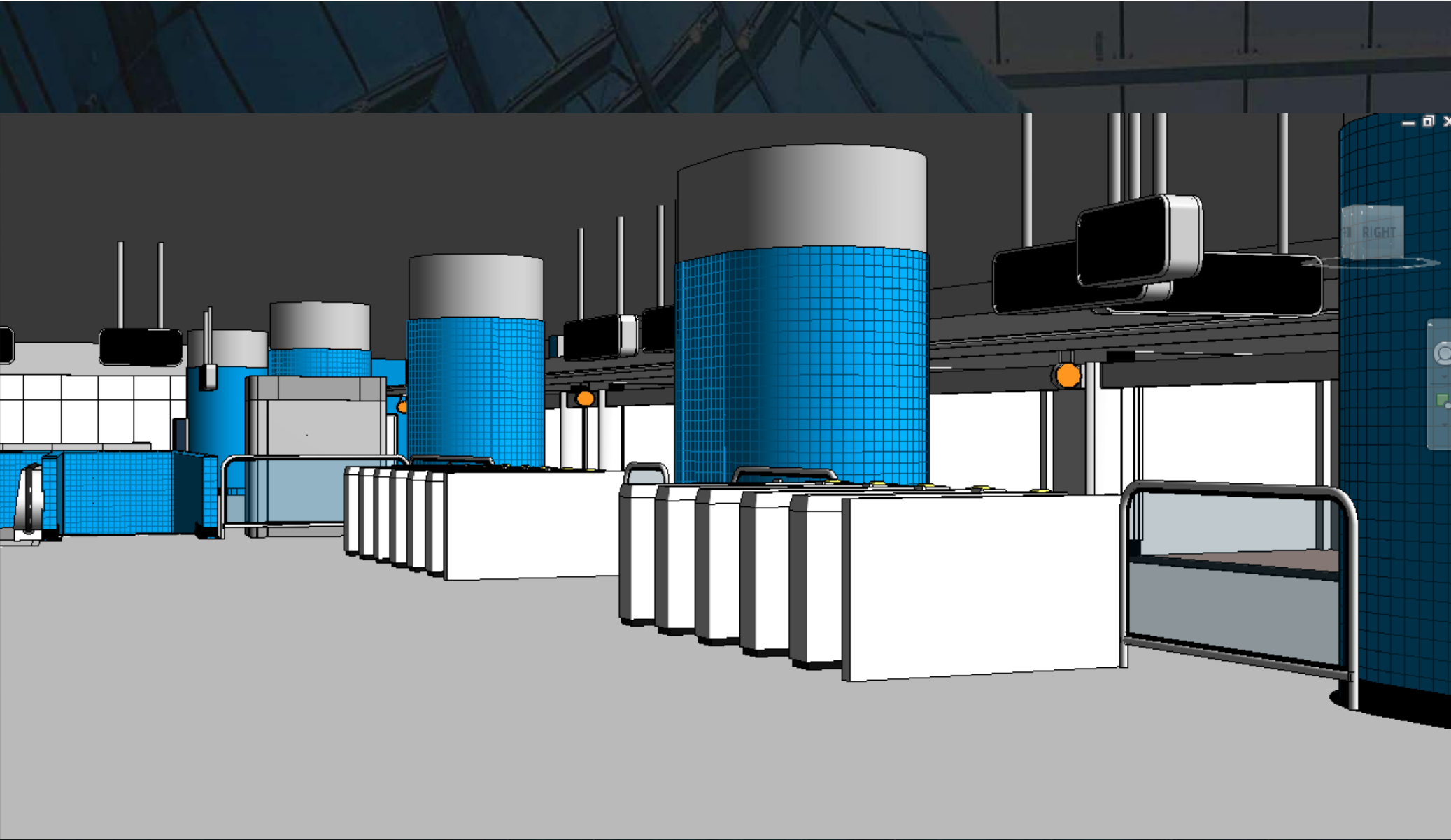
Concourse Level

Main Model

Editable Only Press & Drag

9:32 24/6/2011

Signage/ Marketing/ Security Checking



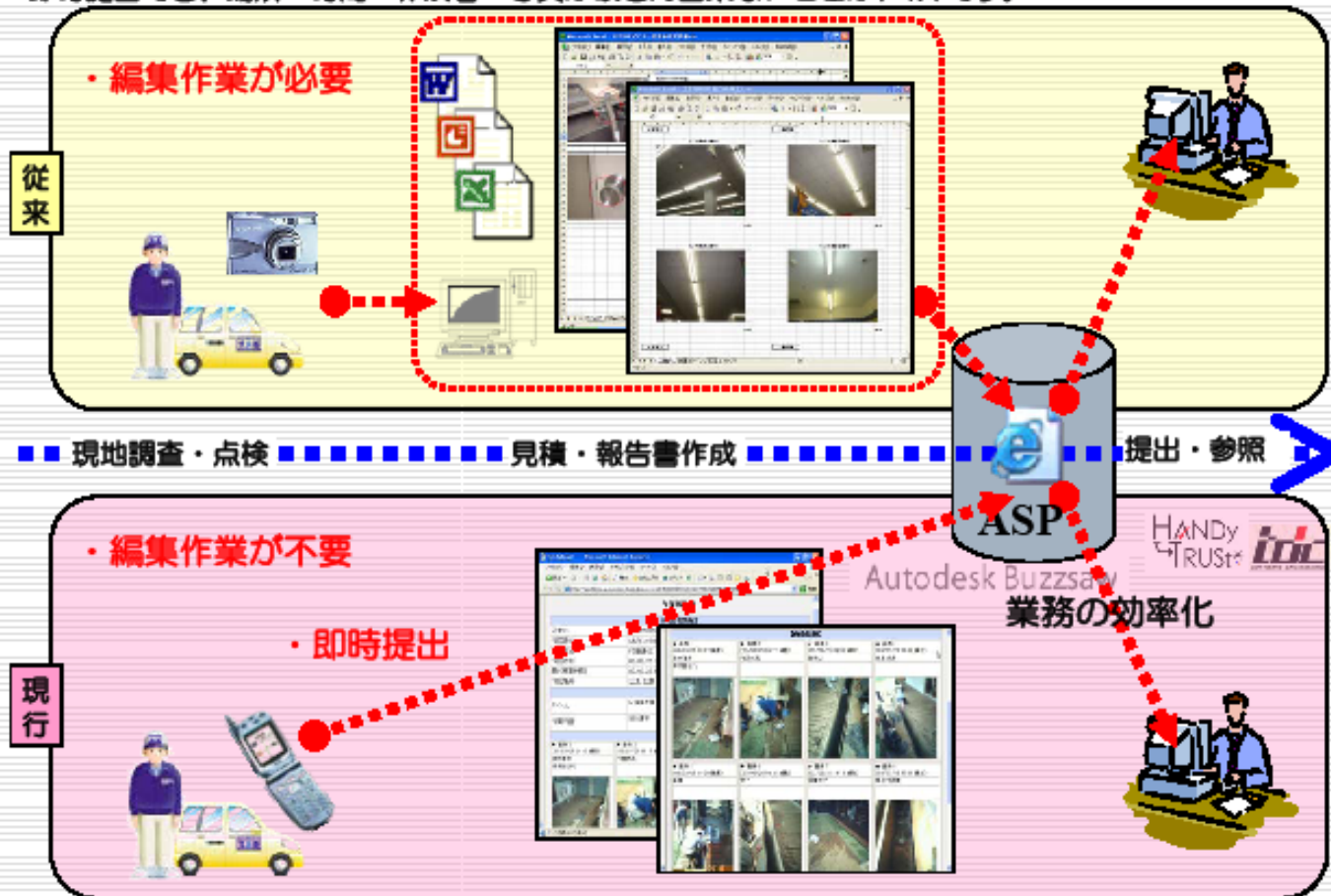
Possible Kiosk/ Marketing Management

																			Shop C
Level	Shop No.	Shop Name	STA No.	Shop Location (Paid/Unpaid)	Usable Floor Area	Type of Shop	Toilet Inside Shop	Floor Finish	Wall Finish	Ceiling Finish	TV Points No.	Tel. Outlet No.	Fire Shutter					Shutter No.	Meta
													Fire Shutter No.	Operation/ Fire Rating	A/V Unit	Intercom			
CONCOURSE LEVEL	16	ADM 16			23.00 m²		✓											✓	
CONCOURSE LEVEL	17	ADM 17			14.89 m²		✓											✓	
CONCOURSE LEVEL	18	ADM 18			22.55 m²		✓											✓	
CONCOURSE LEVEL	19	ADM 19			14.89 m²		✓											✓	
CONCOURSE LEVEL	20	ADM 20			17.75 m²		✓											✓	
CONCOURSE LEVEL	21	ADM 21			17.76 m²		✓											✓	
CONCOURSE LEVEL	22	ADM 22			17.73 m²		✓											✓	
CONCOURSE LEVEL	23	ADM 23			16.89 m²		✓											✓	
CONCOURSE LEVEL	24	ADM 24			18.05 m²		✓											✓	
CONCOURSE LEVEL	25	ADM 25			18.19 m²		✓											✓	
CONCOURSE LEVEL	26-27	ADM 26-27			41.84 m²		✓											✓	
CONCOURSE LEVEL	28	ADM 28			25.14 m²		✓											✓	
CONCOURSE LEVEL	29	ADM 29			26.12 m²		✓											✓	
CONCOURSE LEVEL	30	ADM 30			27.52 m²		✓											✓	
CONCOURSE LEVEL	31	ADM 31			22.20 m²		✓											✓	
CONCOURSE LEVEL	32	ADM 32			30.67 m²		✓											✓	
CONCOURSE LEVEL	33	ADM 33			29.38 m²		✓											✓	

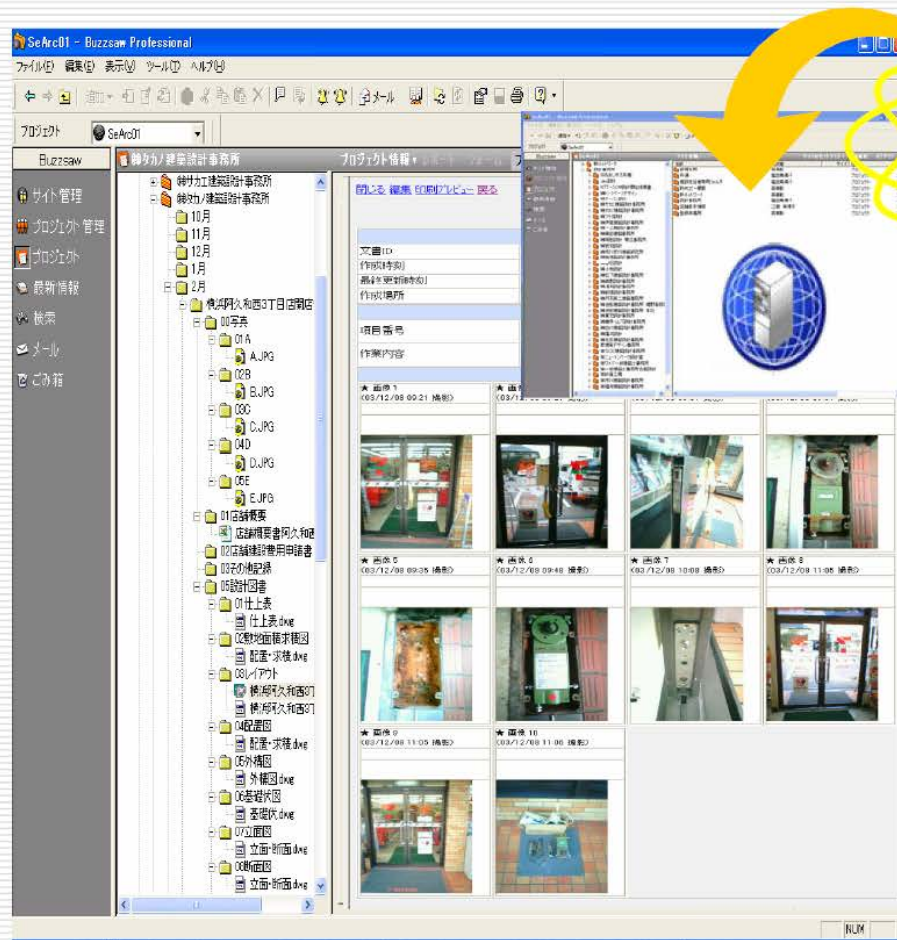
Shop Detail			ECS (A/C System)															
Level	Shop No.	Shop Name	Refrigerant System			Fresh Air Provision			Mechanical Ventilation (For F&B Kiosk)				Air Curtain Nos.	Cabin Concept				
			VRV Unit -	Split Type Unit -	Total Installed	Supply Air Flow Rate	Treated Air via PAUU	Untreated Outdoor Air	Supply Flow	Treated Air via PAU	Untreated Outdoor air	Exhaust Flow Rate		Yes/No	Smoke Zone	Smoke Free Height (m)	Tenant's Perforated	% of Fr Area
CONCOURSE LEVEL	16	ADM 16					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	17	ADM 17					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	18	ADM 18					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	19	ADM 19					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	20	ADM 20					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	21	ADM 21					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	22	ADM 22					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	23	ADM 23					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	24	ADM 24					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	25	ADM 25					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	26-27	ADM 26-27					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	28	ADM 28					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	29	ADM 29					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	30	ADM 30					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	31	ADM 31					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	32	ADM 32					☒	☒		☒	☒			☒				
CONCOURSE LEVEL	33	ADM 33					☒	☒		☒	☒			☒				

HandyBuz (Handy Trust + Buzzsaw)

作業の立証・証明のため、カメラ付き携帯電話を用いて報告書を作成するシステムで、作業現場から簡単な操作で即時提出でき、場所・時間・作成者・写真が改ざん出来ないことがメリットです。



HandyBuz (Handy Trust + Buzzsaw)



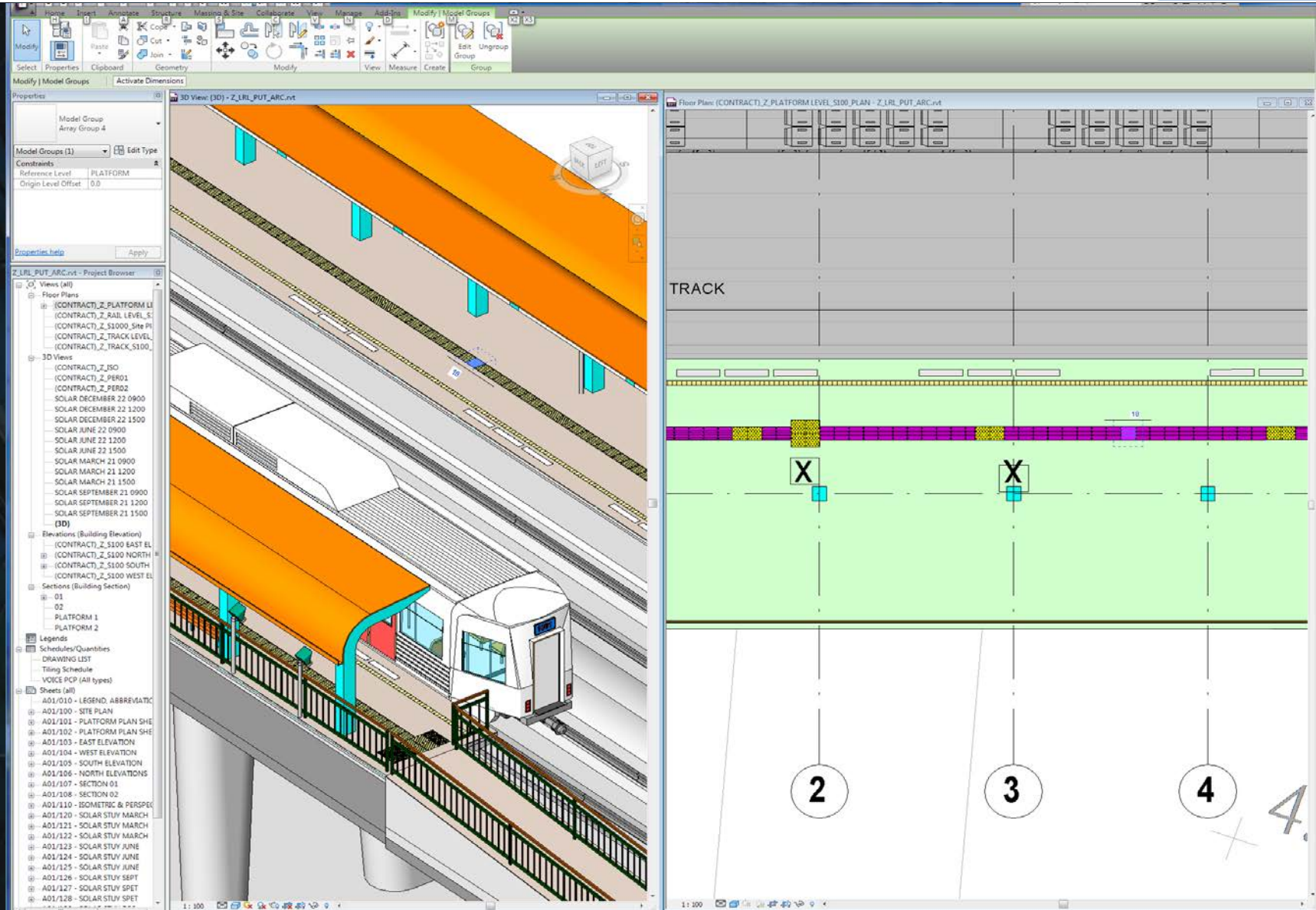
携帯による撮影

お問い合わせは
株式会社 JM
 システム管理グループ
 〒102-0083 東京都千代田区麹町5-4 KY麹町ビル5F
 TEL: 03-5276-5185
 FAX: 03-5276-5321
 システム担当: 岩松 まで

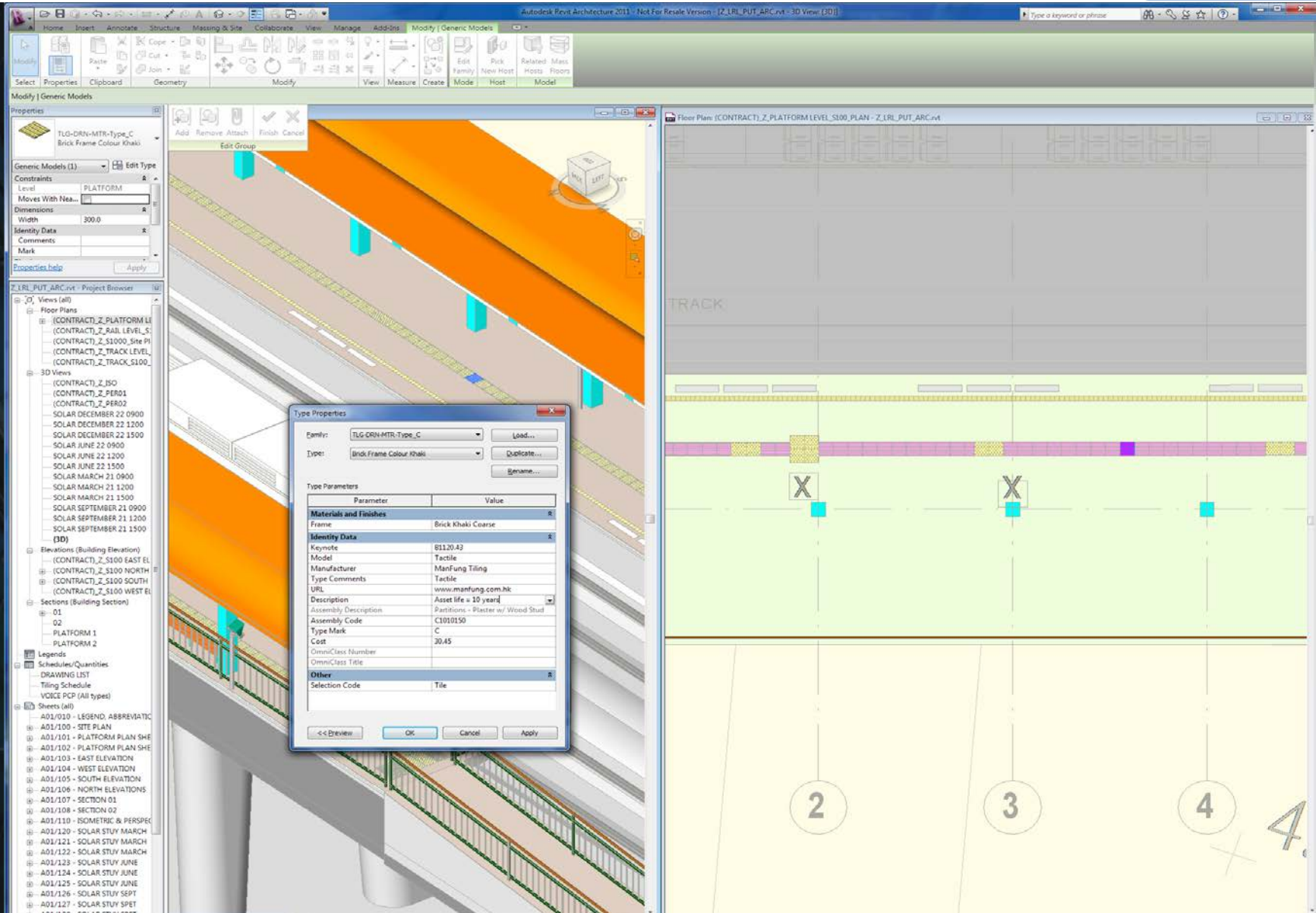
Maintenance



AS E Possible Asset Management



ASB Possible Asset Management



Possible Assets

Select
Build
Model
Circulation
Opening
Room & Area
Work Plane

Properties

Sheet: LEGEND, ABBREVI...
Edit Type

Graphics
 Visibility/Graphics... Edit...
 Scale
 Text
 C&R No.
 Figure No. Prefix Z/LRL/PUT/M...
 Sheet Name 2nd...
 Identity Data
[Properties help](#) Apply

Z_LRL_PUT_ARC.rvt - Project Browser

Views (all)

Floor Plans

- (CONTRACT)_Z_PLATFORM LE
- (CONTRACT)_Z_RAIL LEVEL_S
- (CONTRACT)_Z_S1000_Site Pl
- (CONTRACT)_Z_TRACK LEVEL
- (CONTRACT)_Z_TRACK_S100...

3D Views

- (CONTRACT)_Z_ISO
- (CONTRACT)_Z_PER01
- (CONTRACT)_Z_PER02
- SOLAR DECEMBER 22 0900
- SOLAR DECEMBER 22 1200
- SOLAR DECEMBER 22 1500
- SOLAR JUNE 22 0900
- SOLAR JUNE 22 1200
- SOLAR JUNE 22 1500
- SOLAR MARCH 21 0900
- SOLAR MARCH 21 1200
- SOLAR MARCH 21 1500
- SOLAR SEPTEMBER 21 0900
- SOLAR SEPTEMBER 21 1200
- SOLAR SEPTEMBER 21 1500
- (3D)

Elevations (Building Elevation)

- (CONTRACT)_Z_S100 EAST EL
- (CONTRACT)_Z_S100 NORTH
- (CONTRACT)_Z_S100 SOUTH
- (CONTRACT)_Z_S100 WEST EL

Sections (Building Section)

- 01
- 02
- PLATFORM 1
- PLATFORM 2

Legends

- Schedules/Quantities
- DRAWING LIST
- Tiling Schedule
- VOICE PCP (All types)

Sheets (all)

- A01/010 - LEGEND, ABBREVIAT**
- A01/100 - SITE PLAN
- A01/101 - PLATFORM PLAN SHE

DRAWING LIST

DRAWING	DRAWING TITLE	REVISION	SHEET ISSUE DATE
A01/010	LEGEND, ABBREVIATION, DRAWING LIST		07/23/10
A01/100	SITE PLAN		07/22/10
A01/101	PLATFORM PLAN SHEET 1 OF 2		07/22/10
A01/102	PLATFORM PLAN SHEET 2 OF 2		07/30/10
A01/103	EAST ELEVATION		08/26/10
A01/104	WEST ELEVATION		07/22/10
A01/105	SOUTH ELEVATION		07/23/10
A01/106	NORTH ELEVATIONS		07/22/10
A01/107	SECTION 01		07/23/10
A01/108	SECTION 02		07/30/10
A01/110	ISOMETRIC & PERSPECTIVES		07/23/10
A01/120	SOLAR STUDY MARCH		07/23/10
A01/121	SOLAR STUDY MARCH		07/23/10
A01/122	SOLAR STUDY MARCH		08/26/10
A01/123	SOLAR STUDY JUNE		08/26/10
A01/124	SOLAR STUDY JUNE		08/26/10
A01/125	SOLAR STUDY JUNE		08/26/10
A01/126	SOLAR STUDY SEPT		08/26/10
A01/127	SOLAR STUDY SPET		08/26/10
A01/128	SOLAR STUDY SPET		08/26/10
A01/129	SOLAR STUDY DEC		08/26/10
A01/130	SOLAR STUDY DEC		08/26/10
A01/131	SOLAR STUDY DEC		08/26/10
A01/132	SECTIONS		10/20/10

Tiling Schedule

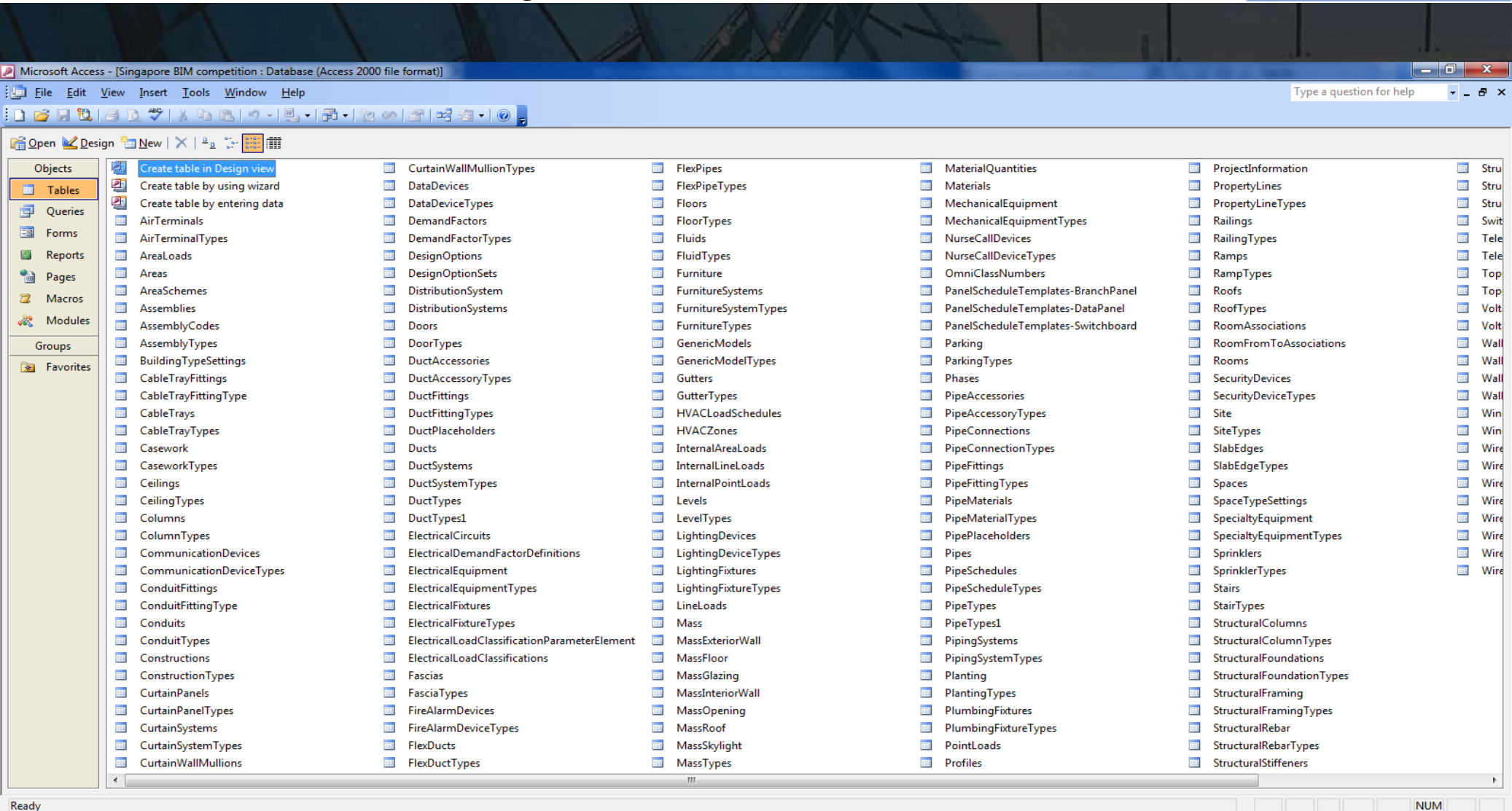
Family	Level	Type	Type Mark	Keynote	Count
GEM_MTR_Floor Care Mark Based_DimGray	PLATFORM	GEM_MTR_Floor Care Mark Based_DimGray			12
GEM_MTR_Floor Security Line Based_Yellow	PLATFORM				2
TLG-DRN-MTR-Type_A	PLATFORM	Brick Frame Colour Khaki	A		36
TLG-DRN-MTR-Type_B		Brick Frame Colour Khaki	B		194
TLG-DRN-MTR-Type_C	PLATFORM		C		240

VOICE PCP (All types)

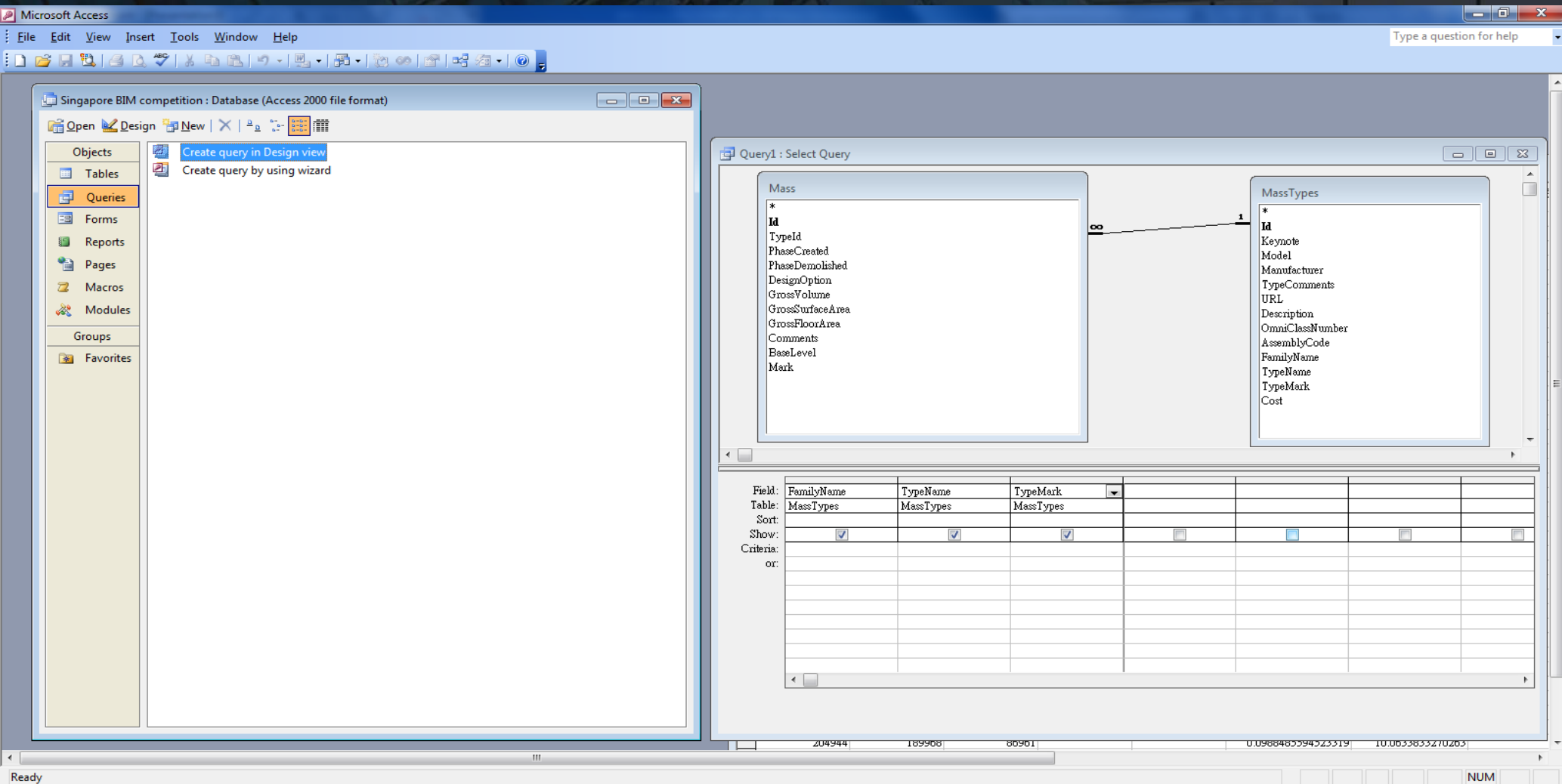
Family	Mark	Type Mark
ELF-ARC-MTR-PCP	xxxx	E
ELF-ARC-MTR-PCP	xxxx	E
ELF-ARC-MTR-PCP	xxxx	E
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	E
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	E
ELF-ARC-MTR-PCP	xxxx	X
ELF-ARC-MTR-PCP	xxxx	X
ELF-ARC-MTR-PCP	xxxx	X
ELF-ARC-MTR-PCP	xxxx	X
ELF-ARC-MTR-PCP	xxxx	X
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	X
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	X
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	X
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	X
ELF-ARC-MTR-PCP.Ext_Voice	xxxx	X
Grand total: 15		

A14		1530141	
	A	J	K
1	Id	FamilyName	TypeName
2	7848	Model Text	600mm Arial
3	1148899	Model Text	200mm - wood
4	1148901	Model Text	300mm - black
5	1148904	Model Text	50mm - steel
6	1193027	GEM_MTR_Floor_Care_Mark_Based_DimGray	GEM_MTR_Floor_Care_Mark_Based_DimGray
7	1194842	GEM_MTR_Floor_Security_Line_Based_Yellow	Security_Line_MTR_Floor_Based_Yellow
8	1206709	GEM_MTR_Floor_Security_Line_Based_Yellow	Security_Line_MTR_Floor_Based_Yellow_W39600mm
9	1282975	GEM_MTR_Floor_Security_Line_Based_Yellow	Security_Line_MTR_Floor_Based_Yellow_W39500mm
10	1528388	TLG-DRN-MTR-Type_A	Brick_Frame_Colour_Khaki
11	1528390	TLG-DRN-MTR-Type_A	Brick_Frame_Colour_DimGray
12	1529333	TLG-DRN-MTR-Type_B	Brick_Frame_Colour_Khaki
13	1529335	TLG-DRN-MTR-Type_B	Brick_Frame_Colour_DimGray
14	1530141	TLG-DRN-MTR-Type_C	Brick_Frame_Colour_Khaki
15	1530143	TLG-DRN-MTR-Type_C	Brick_Frame_Colour_DimGray
16	1532279	TLG-DRN-MTR-Type_C	Brick_Frame_Colour_Khaki_W200mm
17	1606926	TRN-TRN-MTR-LRL-Headstock	TRN-TRN-MTR-LRL-Headstock
18	1618524	TRN-TRN-MTR-LRL-Coach	TRN-TRN-MTR-LRL-Coach
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49			

Possible Asset Management



Possible Asset Management



Possible Asset Management

Query1 : Select Query		
	FamilyName	TypeName
▶	SAT Tower Mullion	SAT Tower Mullion
	SAT Tower Surface Ref	SAT Tower Surface Ref
	Tower Panel	S01-P001
	Tower Panel	S01-P002
	Tower Panel	S01-P003
	Tower Panel	S01-P004
	Tower Panel	S01-P005
	Tower Panel	S01-P006
	Tower Panel	S01-P007
	Tower Panel	S01-P008
	Tower Panel	S01-P009
	Tower Panel	S01-P010
	Tower Panel	S01-P011
	Tower Panel	S01-P012
	Tower Panel	S01-P013
	Tower Panel	S01-P014
	Tower Panel	S01-P015
	Tower Panel	S01-P016
	Tower Panel	S01-P017
	Tower Panel	S01-P018
	Tower Panel	S01-P019
	Tower Panel	S01-P020
	Tower Panel	S01-P021
	Tower Panel	S01-P022
	Tower Panel	S01-P023
	Tower Panel	S01-P024
	Tower Panel	S01-P025
	Tower Panel	S01-P026
	Tower Panel	S01-P027
	Tower Panel	S01-P028
	Tower Panel	S01-P029
	Tower Panel	S01-P030
	Tower Panel	S01-P031
	Tower Panel	S01-P032
	Tower Panel	S01-P033
	Tower Panel	S01-P034
	Tower Panel	S01-P035
	Tower Panel	S01-P036
	Tower Panel	S01-P037
	Tower Panel	S01-P038
	Tower Panel	S01-P039
	Tower Panel	S01-P040
Record: 1 of 2503		

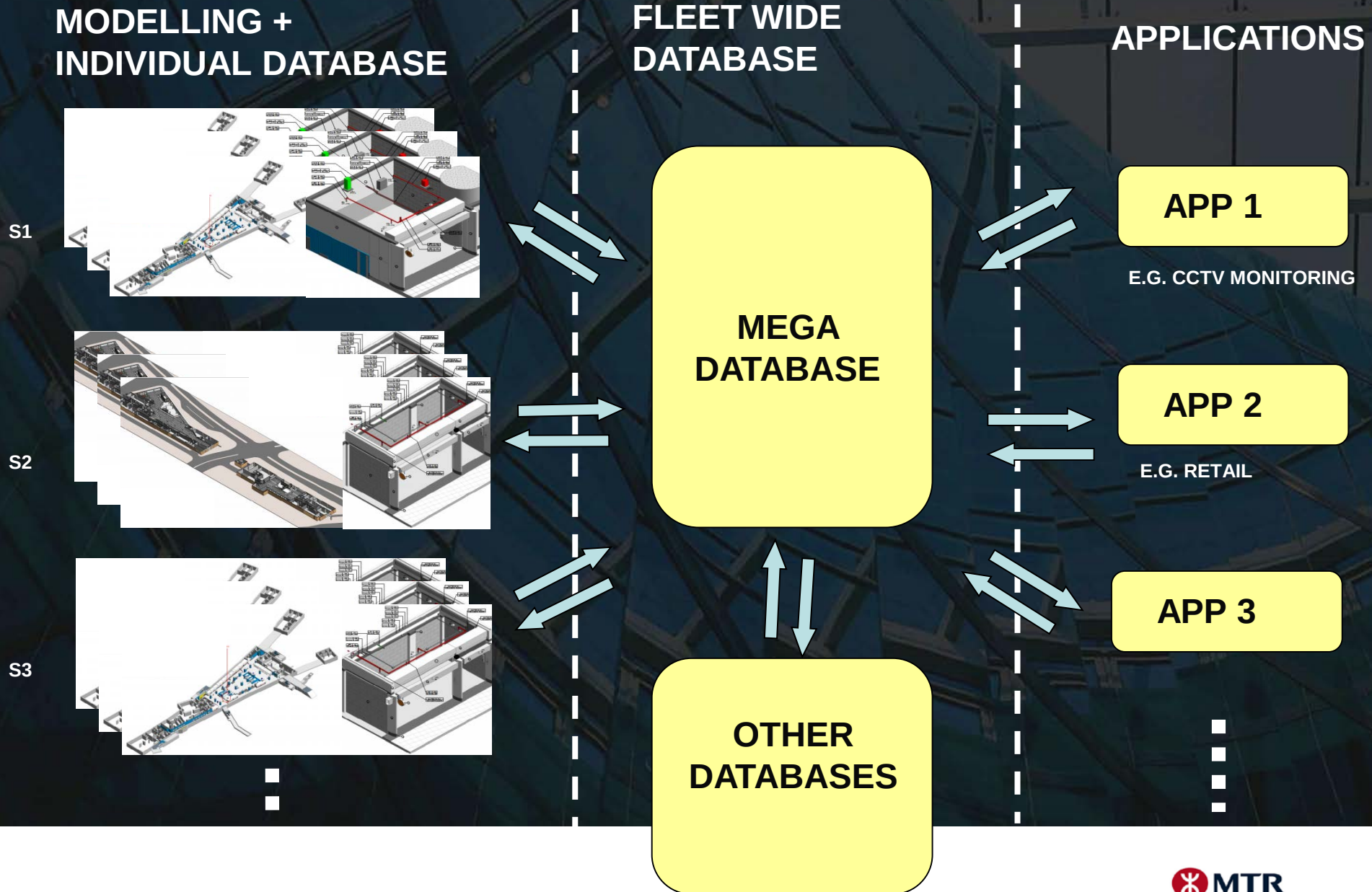
Room No. 3.3 - Cleaners' Room									
Function	A room for storage of small volume of cleansing materials, tools and short stay of cleaners								
Size	15 - 20 m ²								
Occupants	3-5 persons								
Location	Non-public area								
Fire Rating	# In accordance with Fire Safety Standard for KTL/TWL/ISL Stations - S/ARC/PD/005								
Security Level	Low								
Finish	Floor	Skirting			Wall		Ceiling		
	Vitrified ceramic tiles, 150x150x8, on c/s screed - "Pilkington Dorset, colour Dark Grey" or equal approved; on liquid-applied waterproof membrane - "Lacticeret 9235 with fabric reinforcement" or equal approved	Coved ceramic tiles, 150x150x8, on c/s backing - "Pilkington Dorset, colour Dark Grey" or equal approved; on liquid-applied waterproof membrane - "Lacticeret 9235 with fabric reinforcement" or equal approved			Glazed ceramic tiles, 150x150x6.5, on c/s backing - "Pilkington Architectural Colours, colour Vellum White" or equal approved; Duralic paint on c/s render above 2100 high - "Alphadecor, colour 9010 White" or equal approved		Durable paint on fairface concrete - "Alphadecor, colour 9010 White" or equal approved		
Door Set	Size	Fire Rating	Acting		Frame	Inside Finish	Outside Finish	Air Resistance	Others
	900 x 2100 mm	# (see above)	Swing In 90°		Painted/ S/S *	Painted/ S/S *	Painted/ S/S *	N/A	Durable kickplate to u/s of push plate
Ironmongery	Lock Set	Security Level	Access Card		Remote Control	Inside Handle	Outside Handle	Accessories	
	Night Latch	Low	No	No	No	Lever handle on back plate	Pull handle on back plate	Door closer, door stop	
Signage	Door Plate (supply by Ops)								
Environment	Temperature	Ventilation	Humidity			Acoustic		Thermal	
	24 °C A/C	N/A	50% ± 10%			NC 50		---	
Lighting	Normal Illuminance	Emergency Illuminance	Type			Diffusers		Source	
	300 Lux	10 Lux	Fluorescent, surface mounted			---		Fluorescent	
Fire	Detection		Suppression			Extinguisher		Smoke Extraction	
	Smoke Detectors		N/A			Relocate existing		---	
Plumbing & Drainage	Water Supply					Drainage			
	Yes					Yes + Floor drain			
E & M, C & C	Equipment		Socket Type			Socket No. / Location		Communications	
	PABX (no outside call feature)		RJ11 provided by in-house C&C			1 / At 1440mm AFFL		Telephone wire to MTRC distribution box	
	General		Twin 13A			2 / Skirting level		---	
Fixtures & Furniture	Slop sink connect to foul drainage, storage cabinets, lockers, vacuum cleaner, table and chair.								
Others	---								

* Dependent on location - stainless steel door to be used when facing public areas.
- painted doors to be used when facing BofH areas.

Revision D

ROOM
DATA
SHEET

Possible Asset Management



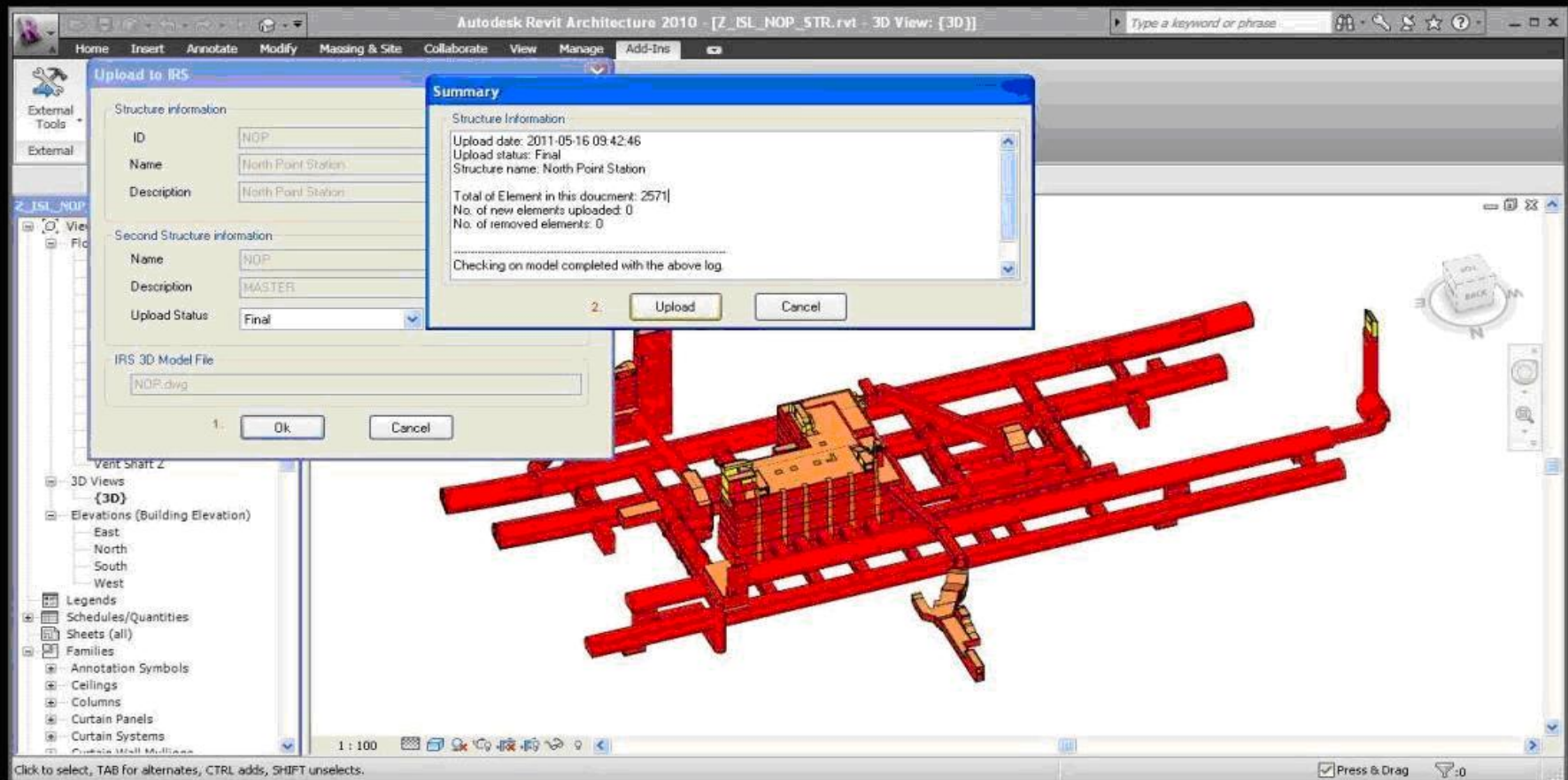
Possible Marketing Management



Possible Marketing Management



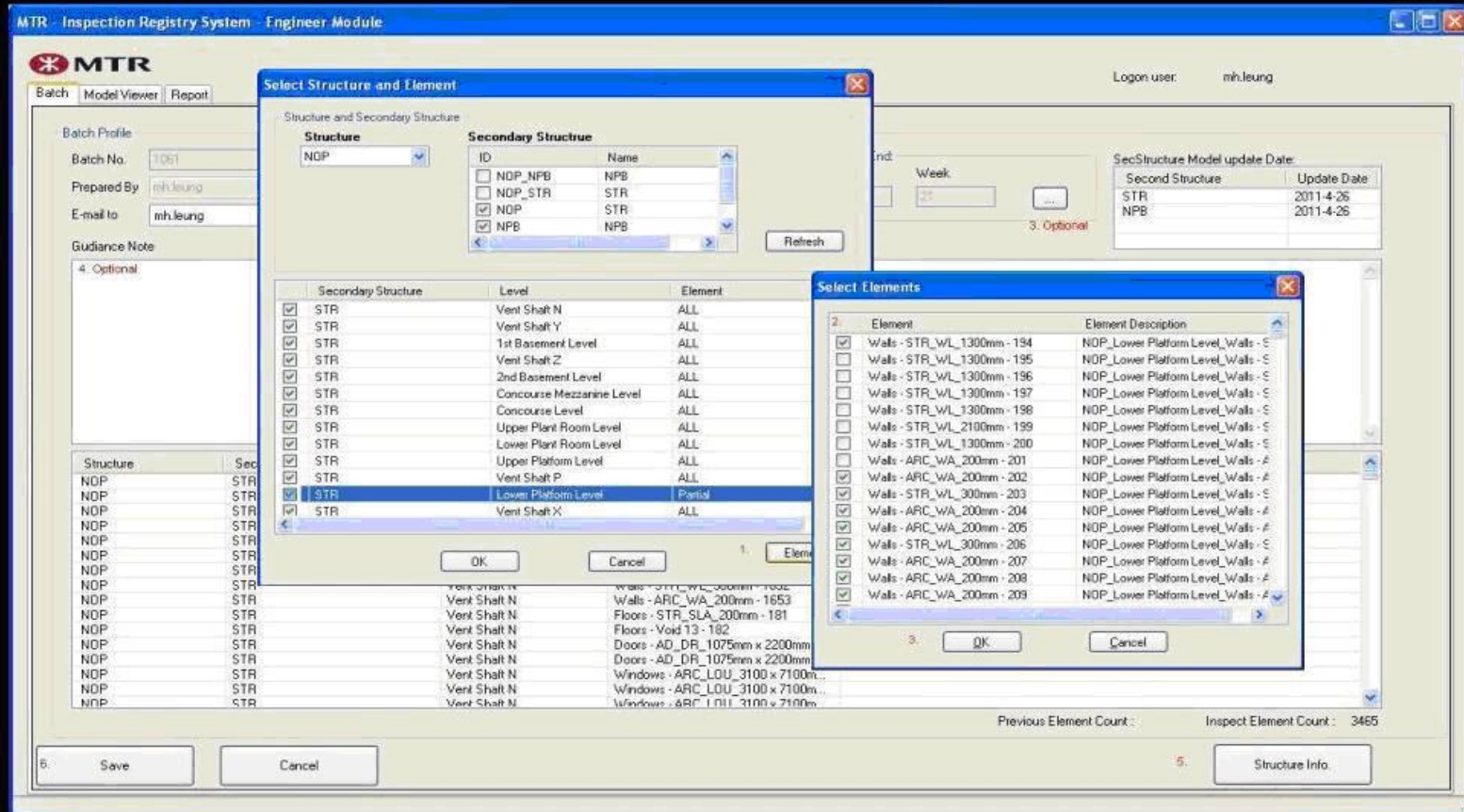
Inspection Registry System



1. BIM model preparation

With the help of the Revit application, 3D model of the station structures with detail attributes are prepared. This is the starting point for the lifecycle of the inspection process. After that, the 3D model will be uploaded to the central system server by using customized Revit plug-in to complete the BIM model preparation process.

Inspection Registry System



2. Creating inspection order

The second stage of process is creation of inspection order by Engineers. Previously prepared BIM model will be the targeted structure for inspection. Relevant parameters including levels to be inspected, inspection schedule, and responsible Inspector will be assigned in this stage.

Defect_ID	Batch	Structure	Sec_Structure	Level	Element	Def_Yr	Defect_Type	Defect_Code	Count	UnLinkedGroupID	Media Count
0047/CD/953	1050	NDP	NPB	Upper Chiller Level	Walls - STR_WL_30...	2011	Line	CD(Crack Dry)	1		0
0048/DS/10949	1050	NDP	NPB	Upper Chiller Level	Walls - STR_WL_30...	2011	Area	DS(Canc. Spall)	1		0
0049/OA/23145	1050	NDP	NPB	Upper Chiller Level	Walls - STR_WL_30...	2011	Area	OA(Other Area Defect)	1		1
0050/OP/	1050	NDP	NPB	Upper Chiller Level	Walls - STR_WL_30...	2011	Point	OP(Other Point Defect)	2		0
0051/OB/2606	1050	NDP	NPB	Upper Chiller Level	Walls - STR_WL_30...	2011	Line	OB(Drip Tray, Blocked)	2		1

MTR - Inspection Registry - Inspector Module

Defect: [Empty field]

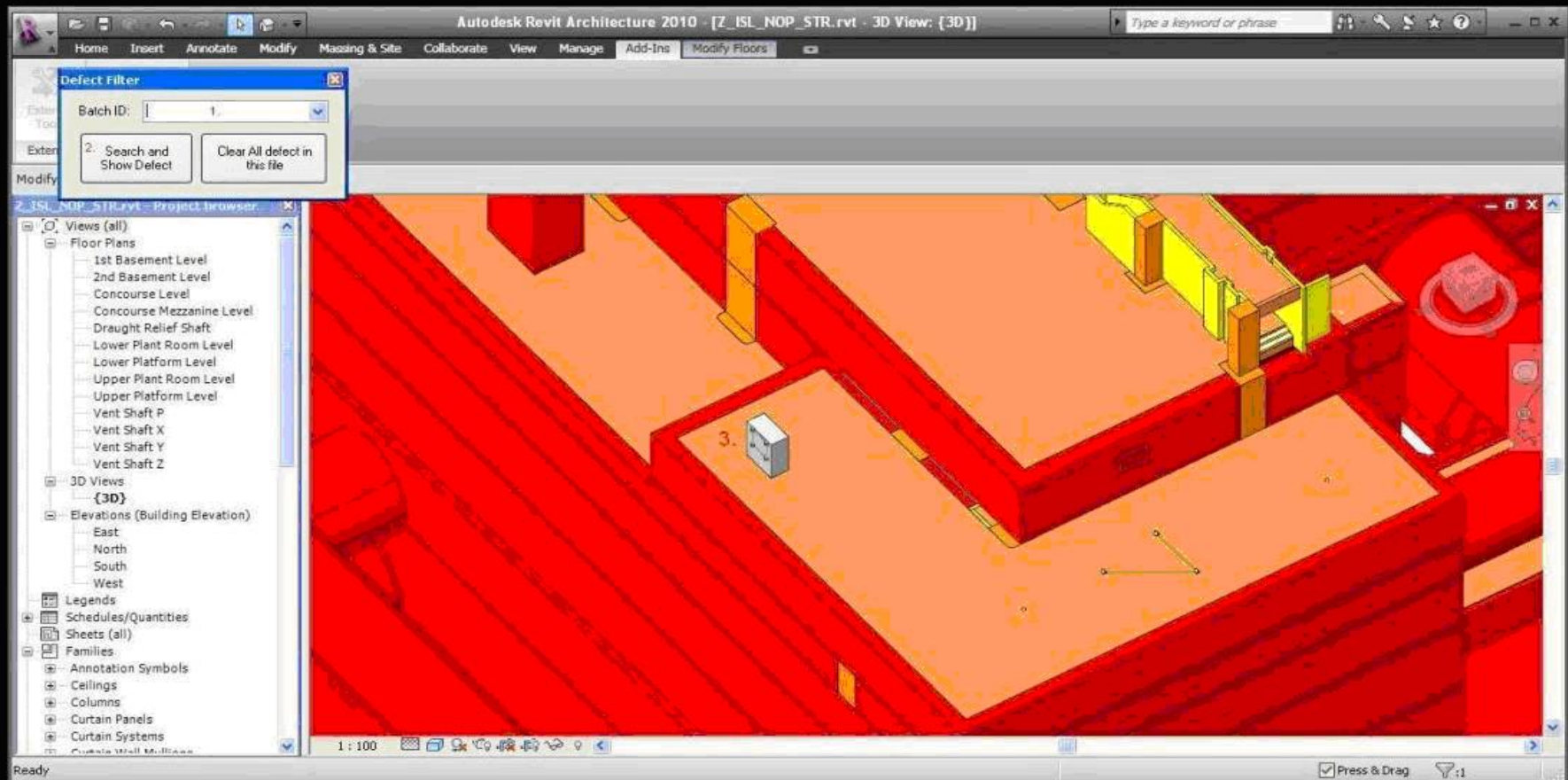
Sec. Structure: **NPB** Level: **Upper Chiller Le** Element: **Walls - STR_WL_30** Defect: [Empty field]

Attached Photo List

Description	Filename	Create Date
0051/OB/2606 (1)	1041000.jpg	2011/05/16

Buttons: Remove from list, Browse new photo, Edit photo, Update selected, OK, Cancel

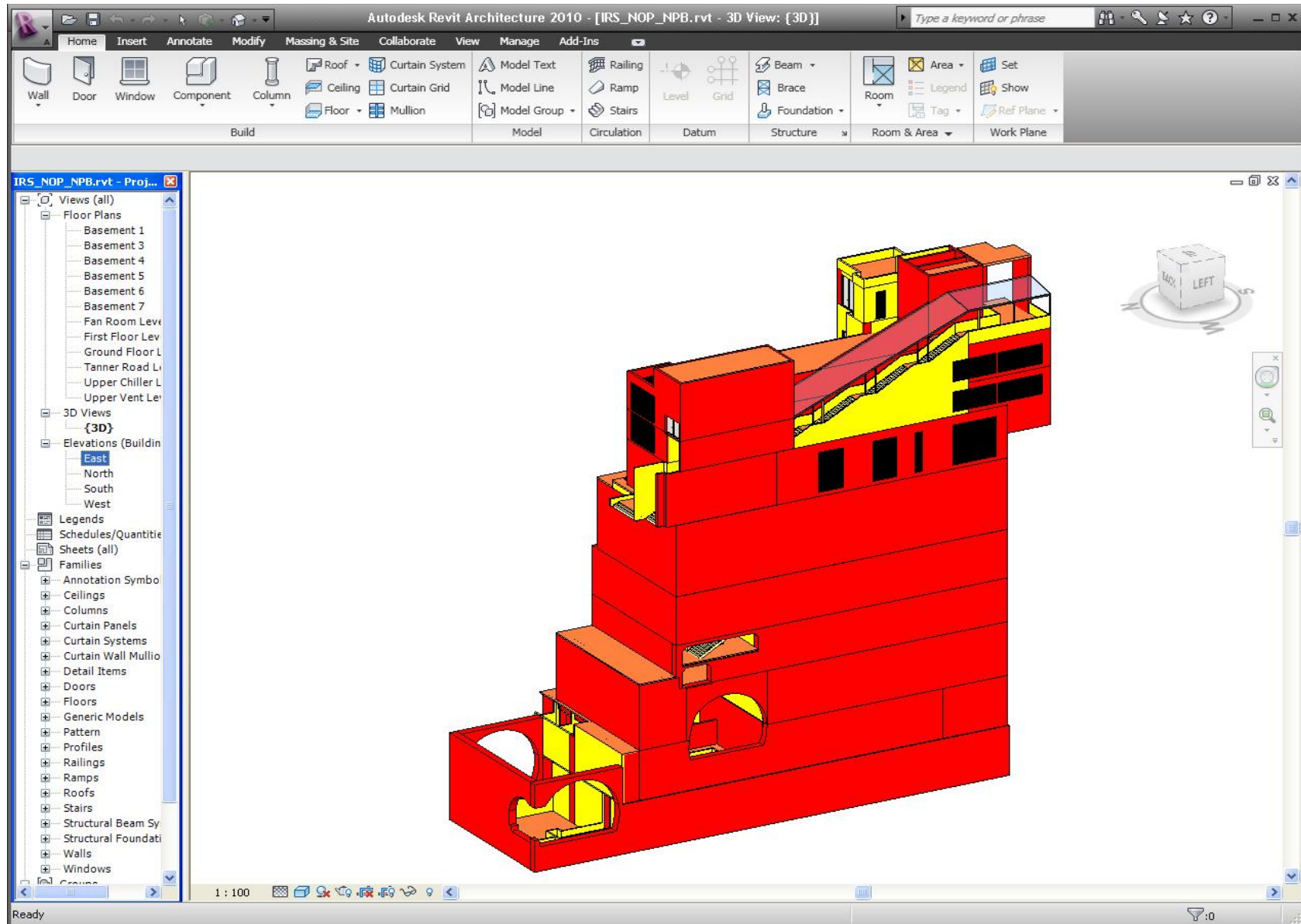
On-site inspection using handheld device will be performed by Inspectors after order assignment. Inspector will make use of the 3D model viewer to perform defect reporting and photo taking. Eventually, all reported defect will be uploaded to the system for Engineer's vetting process.



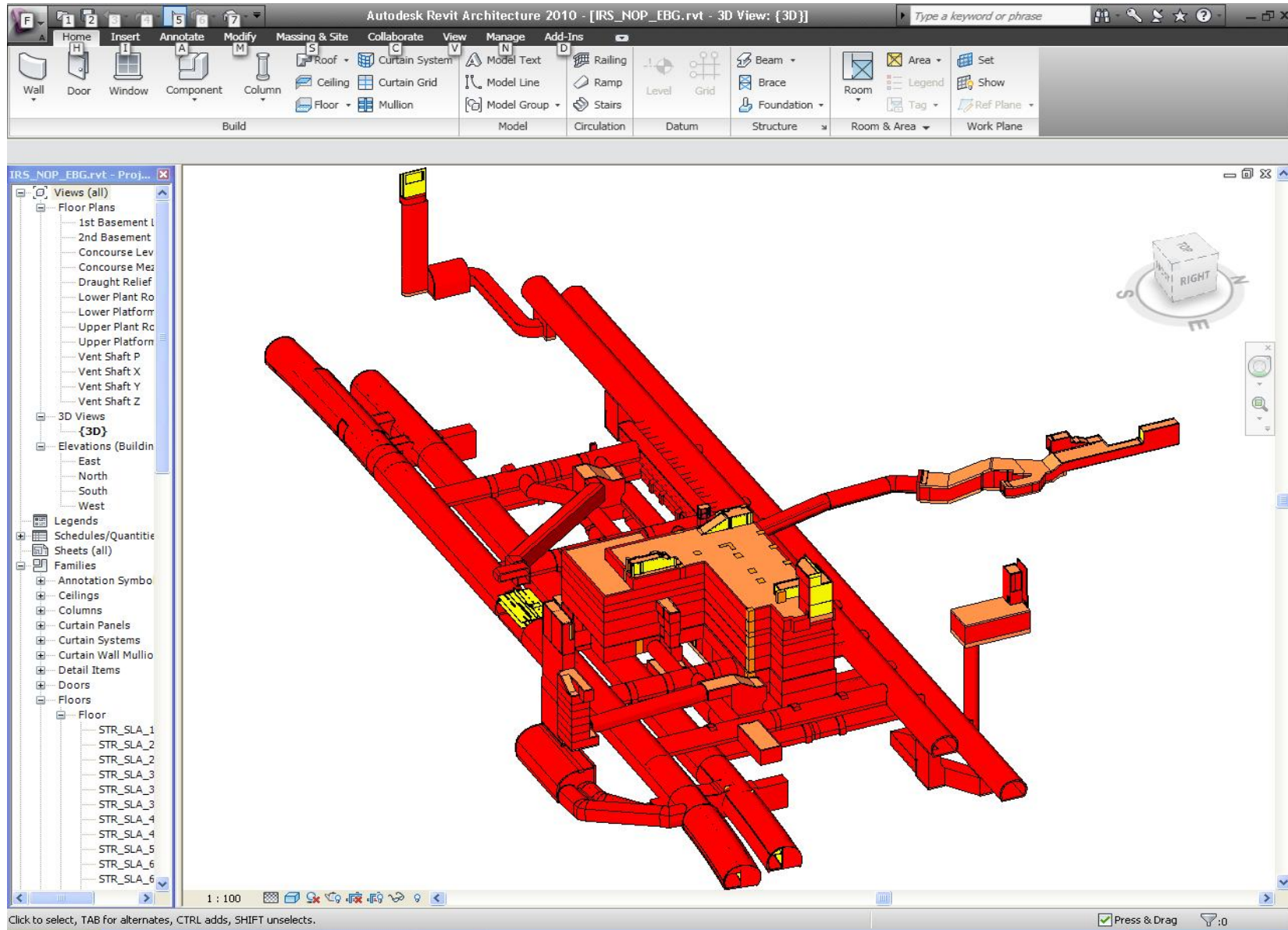
5. BIM model adjustment and checking

During the stage of on-site inspection, Inspector could also report discrepancy found between the BIM model and actual situation (modification, additional facility / feature, etc.). All information can be retrieved and displayed in BIM model inside Revit application thru the customized Revit plug-in tool. The BIM model can then be updated and reload back to IRS system.

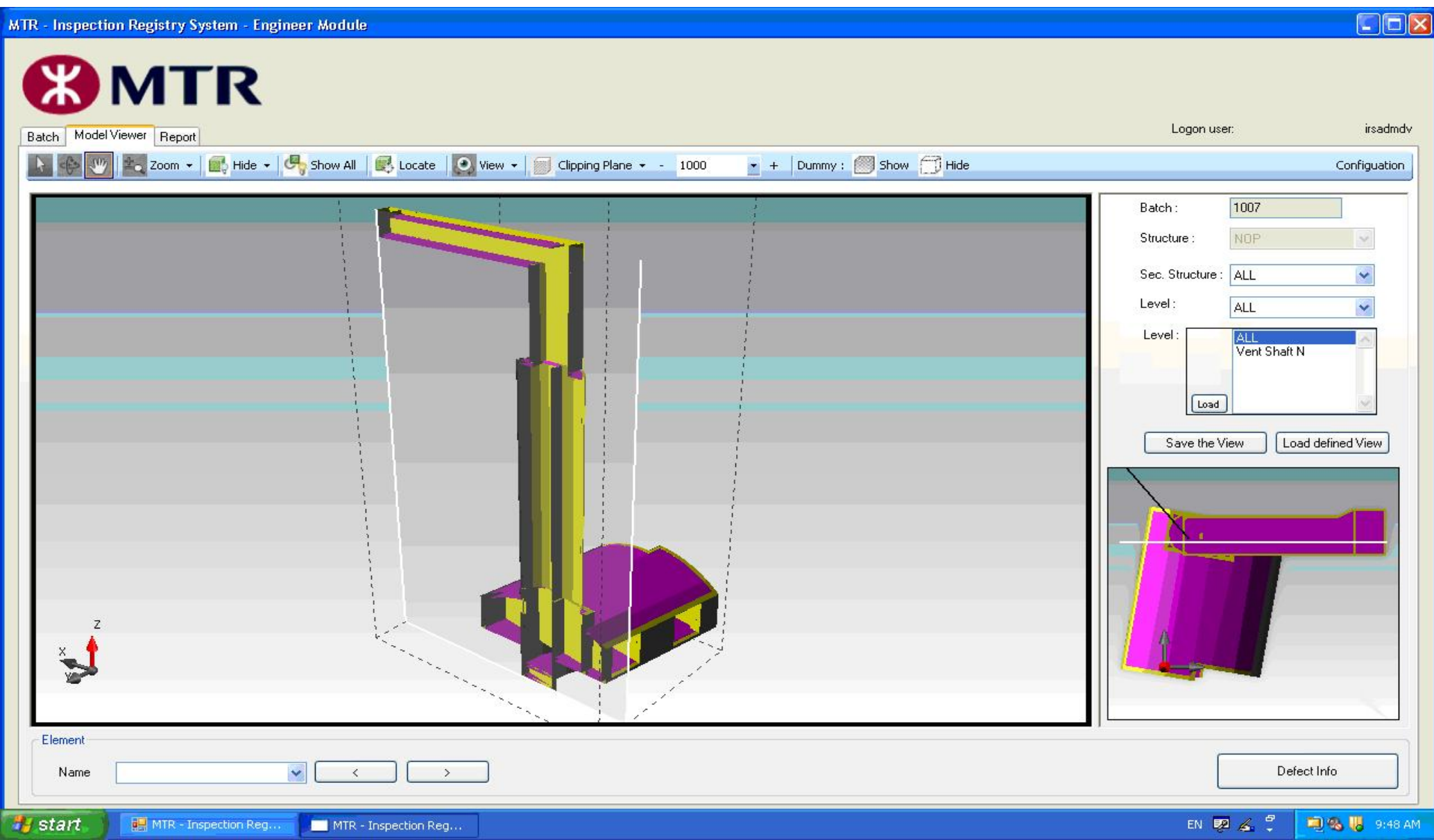
Inspection Registry System



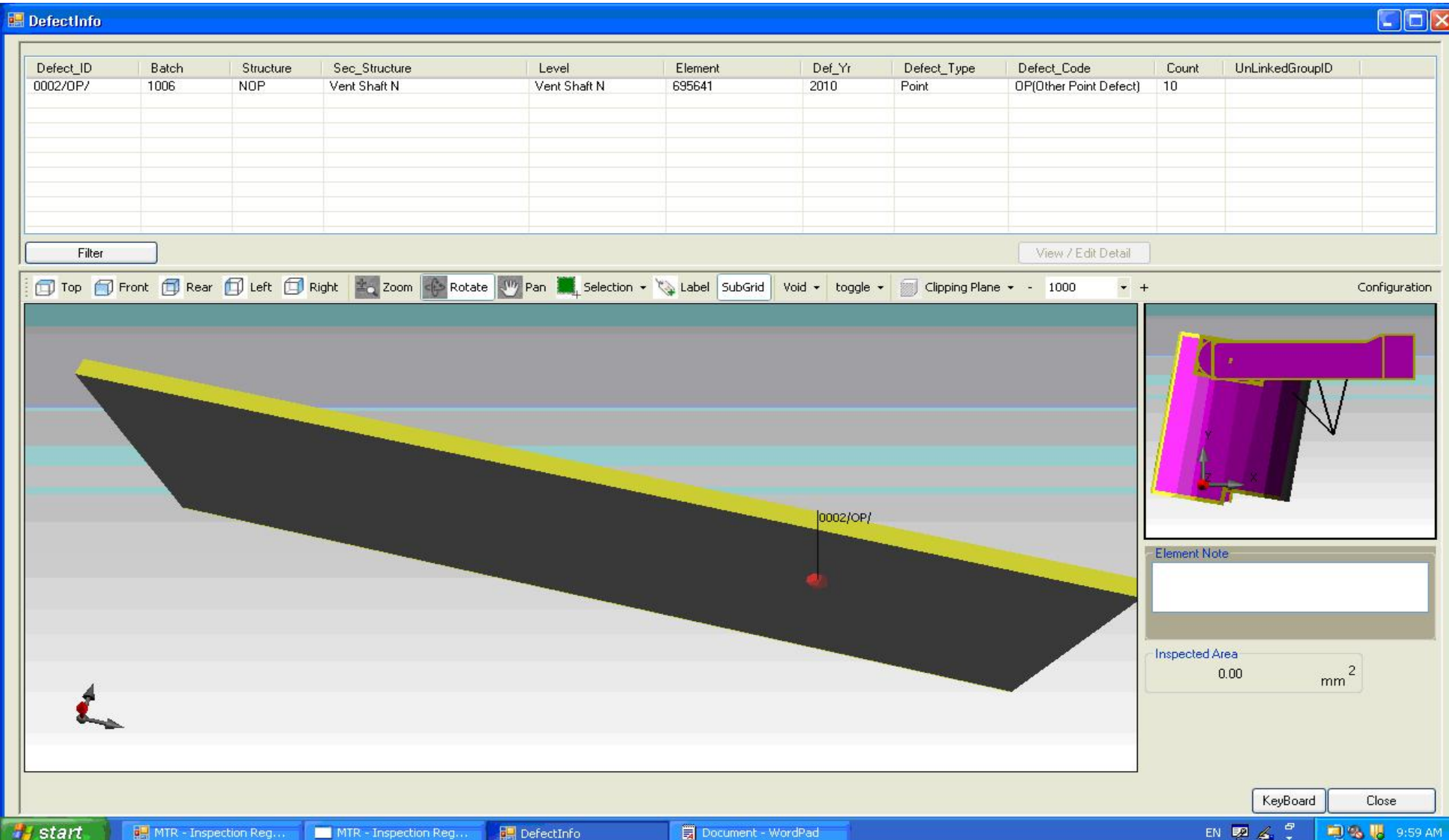
Inspection Registry System



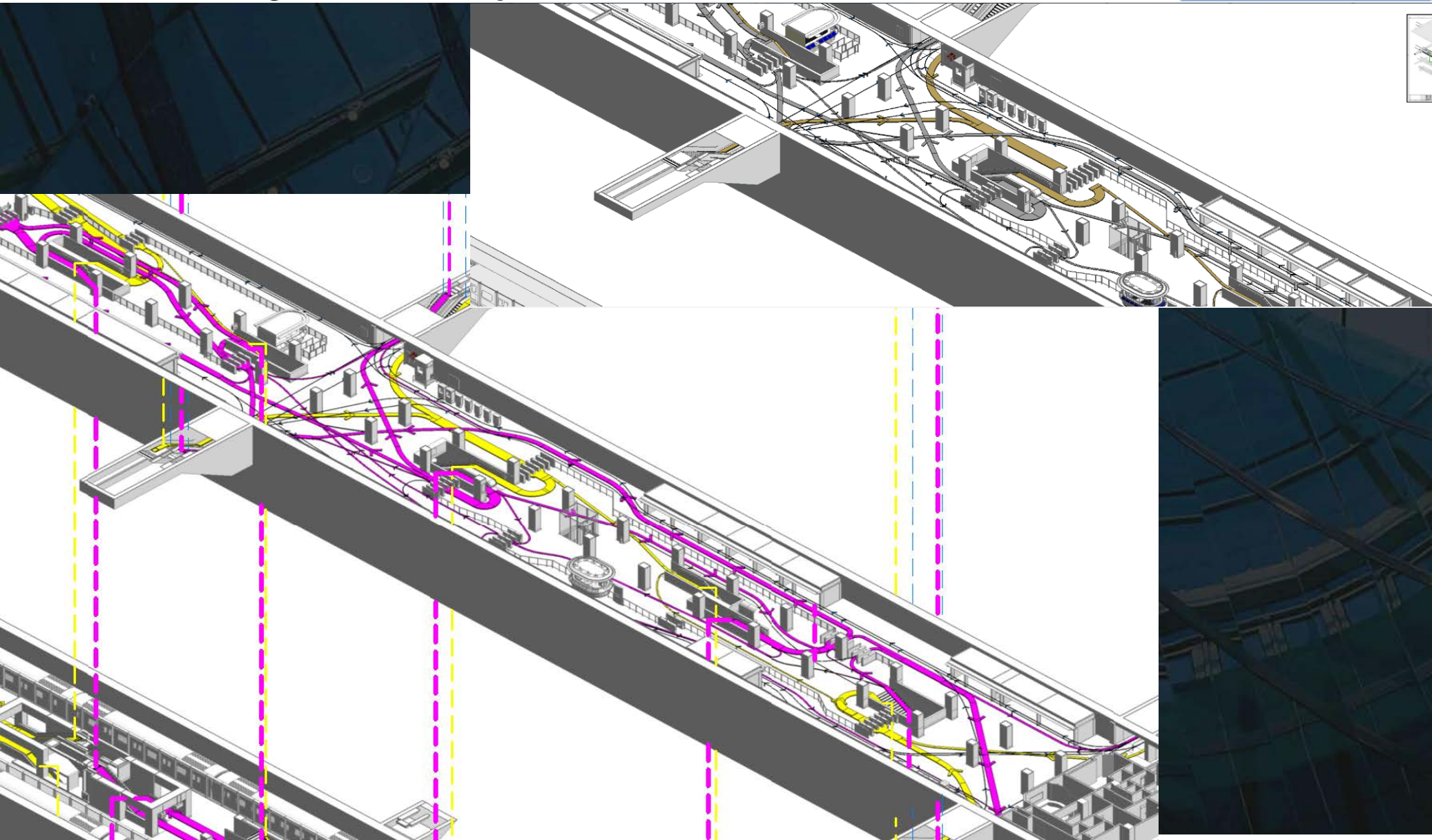
Inspection Registry System



Inspection Registry System



Passenger Flow Study



Beyond BIM – Augmented Reality (AR)



Beyond BIM

VTT TECHNICAL RESEARCH CENTRE OF FINLAND

Building & Construction



ARScaleModel



ARWebCam



ARPhone



ARonPDA



Google Earth
"on Earth"



AROnSite



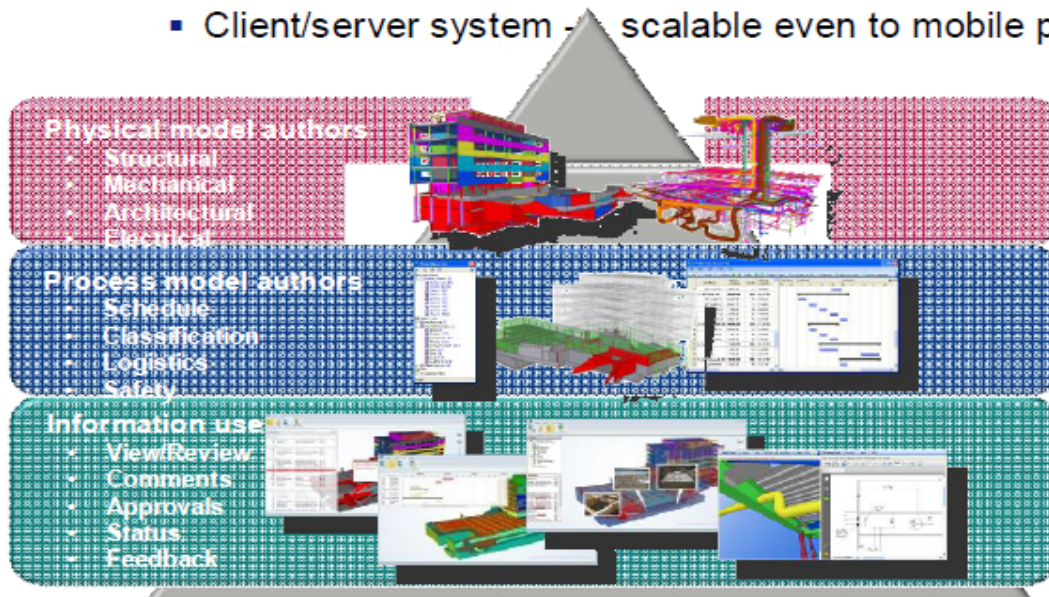
3D Model placed on a
Google Earth...



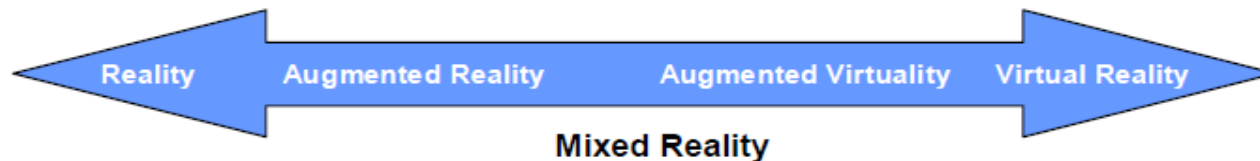
Project "AR4BC"

Augmented Reality for Building and Construction

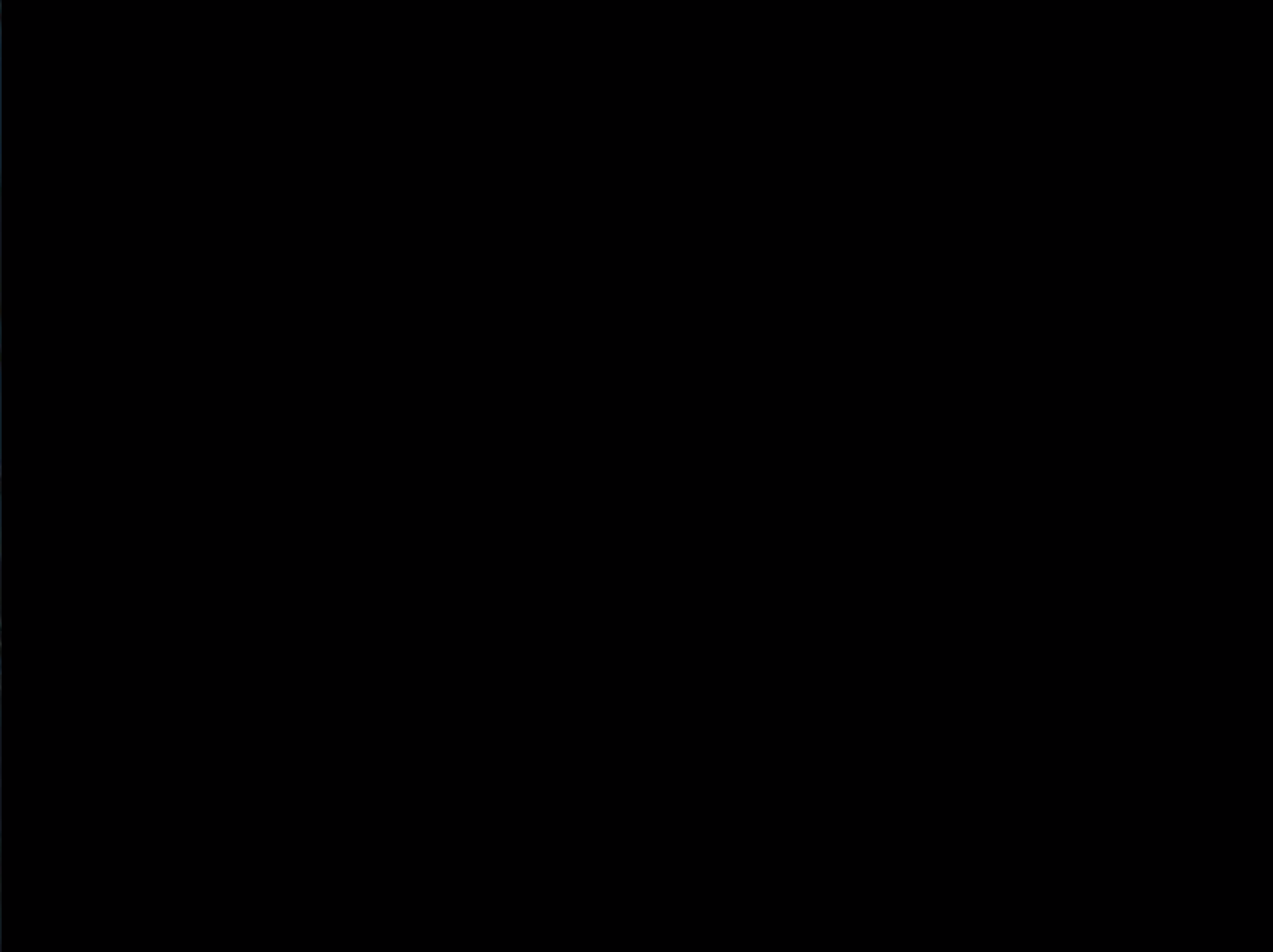
- Compare project plans (4D BIM) with situation on site
- Provide real time mobile feedback from site to BIM system
- Client/server system - scalable even to mobile phones



Building Information Models (BIM)



Beyond BIM – Augmented Reality



Beyond BIM – Augmented Reality

Professional Institute - HKIBIM

http://hkibim.org/ - Windows Internet Explorer

http://www.hkibim.org/

File Edit View Favorites Tools Help

http://hkibim.org/ www.aec-uk.org

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Links About Us

 The Hong Kong Institute of Building Information Modelling
香港建築信息模擬學會

HKIBIM Launch on 8th Jan 2010

Hong Kong Institute of Building Information Modelling (HKIBIM) was established in Jan 2009. After one year's preparation, it is proud to announce the launch of HKIBIM. On 8 Jan, 2010, the Launch was successfully held at the Hong Kong Club Building.

After opening speech by Ir Francis Leung, the Chairman of HKIBIM, the first fellow member of HKIBIM, Ms Ada Fung, made her speech followed by Architect Mr David Fung, Vice Chairman, sharing the membership application method and further direction of HKIBIM.

The launch ended with cocktail and networking until late night.



Click here to view the event photos.

Link: www.hkibim.org

Search for:

Recent Posts

HKIBIM Launch on 8th Jan 2010
Official Launch of The Hong Kong Institute of Building Information Modelling (HKIBIM)

Useful Links

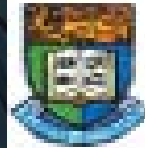
Membership Application Form:


PDF format

Institutions – BIM Curriculum



The University of Hong Kong
Knowledge Exchange



Community
College 香港大學附屬學院



香港中文大學
The Chinese University of Hong Kong



CUSCS

香港中文大學專業進修學院
School of Continuing and Professional Studies
The Chinese University of Hong Kong



珠海學院

CHU HAI COLLEGE
OF HIGHER EDUCATION



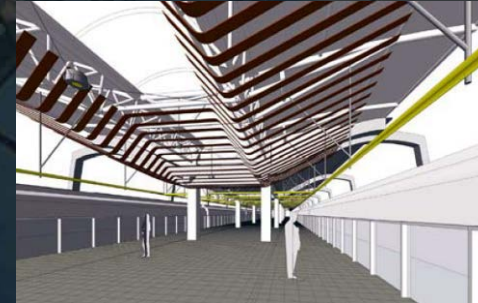
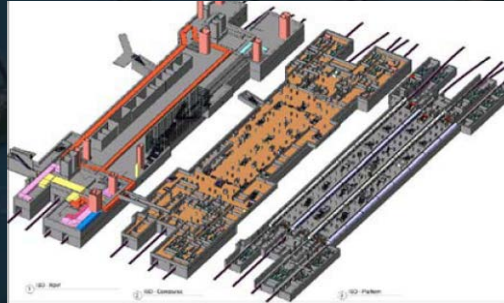
THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

School of Professional Education
and Executive Development
專業進修學院

SPEED

Industry Recognition – HK BIM Awards since 2007

MTR won in 2008 Operation, 2009 SCL/XRL, 2011 IRS



AECOM

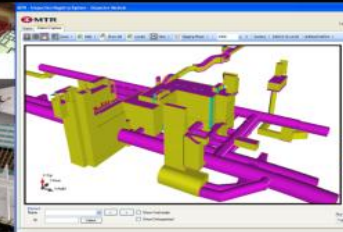
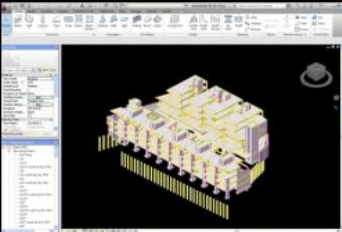
恒基兆業地產有限公司
HENDERSON LAND DEVELOPMENT COMPANY LIMITED

hok

Hong Kong Housing Authority

MTR

瑞安建築有限公司
SHUI ON CONSTRUCTION COMPANY LIMITED



AECOM
Projects:
• Proposed Commercial Development at No. 123-127, Hoi Bun Road
• Proposed Residential Development at 55-57 Binney Road, Pokfulam
Location:
• Kowloon
• Pokfulam
Types:
• Commercial Development
• Residential Redevelopment
Scheduled Time of Completion:
• Hoi Bun Road – March 2013
• Binney Road – September 2013

"The concept took around two months to develop, compared to perhaps three to six months with the traditional approach," says Ir. Alan Yuen, Principal Engineer, Building Engineering (Structural), AECOM. "And we would usually expect this to take three to four months for a building like this."

Henderson Land Development Co Ltd.
Projects:
• The Gloucester
• A Luxurious Boutique Hotel at 388 Jaffe Road
Location:
• 388 Gloucester Road, Wanchai
• 388 Jaffe Road, Wanchai
Types:
• Residential Development
• Hotel
Scheduled Time of Completion:
• 2012

"BIM is a catalyst for project innovation and a tool for speedier design development," says Kevin Ng, Deputy General Manager, Project Management (I) Department, Henderson Land. "We couldn't effectively and efficiently visualise 2D combined services drawings for complicated projects, but with BIM we can realistically appraise problems and opportunities."

HOK International (Asia/Pacific) Ltd.
Project: Bengaluru International Airport Terminal 1 Expansion
Location: Bengaluru, India
Type: Airport
Scheduled Time of Completion: 2013 & 2015
"The client can get a better understanding of the design via Revit's inherent 3D environment, and therefore become more engaged with the design process," says Mr. Benjamin Thomas, Senior Design Architect, Associate with HOK.
"The BIM model was a massive help in the design process," says Ir. Andrew Mole, Associate Director of Arup. "There is only so much information you can show in 2D drawings, since they must be interpreted to understand the full spatial information. 3D models communicate better. The BIM model allowed creation of multiple views of the airport design, with minimum additional effort."

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Hong Kong Housing Authority
Projects:
• Tai Pak Tin Street Public Housing Development
• Redevelopment of Lower Ngau Tau Kok Estate
• Redevelopment of So Uk Estate
Location:
• Tai Pak Tin Street
• Lower Ngau Tau Kok Estate
• So Uk Estate
Type:
• Public Housing
Having worked on projects with BIM used in standard ways – such as reducing clashes during construction, Hong Kong Housing Authority has recently progressed to helping accelerate a construction project in Tai Pak Tin Street, and even demolished old buildings using BIM in Lower Ngau Tau Kok and So Uk.

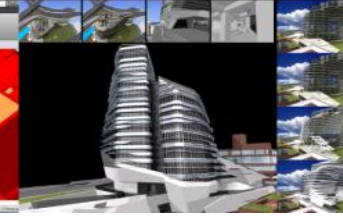
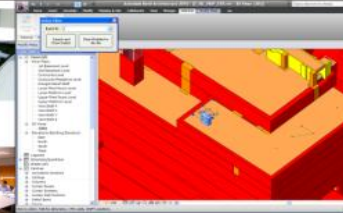
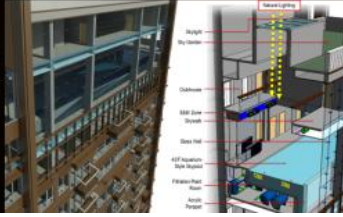
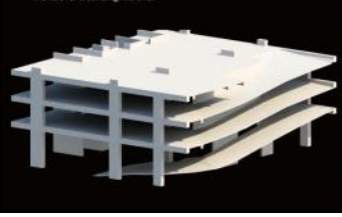
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MTR Corporation Limited
Project: Re-Development of Inspection Registry System
Location: Hong Kong
Type: System Development
Scheduled Time of Completion: 2011
"One BIM model is for all, so inspectors can work efficiently," notes Mr. Duncan Leung, Structural Inspection and Investigation Manager, MTR Corporation.
"I think BIM will become more popular in the long term," says Mr. Dickson Luk, System Analyst, MTR Corporation. "Now, it is mainly used by BIM professionals. In future, inspectors, engineers and managers will gain more and more access to BIM models – which will enhance our expertise in managing the Corporation's railway assets."

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Shui On Construction Co. Ltd.
Project: The Innovation Tower, The School of Design
Location: The Hong Kong Polytechnic University, Hung Hom
Type: Academic Building
Scheduled Time of Completion: 2012
With BIM, correlations between various disciplines would be far clearer than with 2D drawings and sections, and Shui On could construct Innovation Tower as envisaged by the architect.
Mr. Chan Tsang Shing, Senior Engineer of Shui On Construction Co. Ltd. says Shui On is now training staff to use BIM, and they find that Revit helps them easily visualise construction projects in 3D. "Most colleagues find it very useful, and know there's a trend to use BIM," he adds.

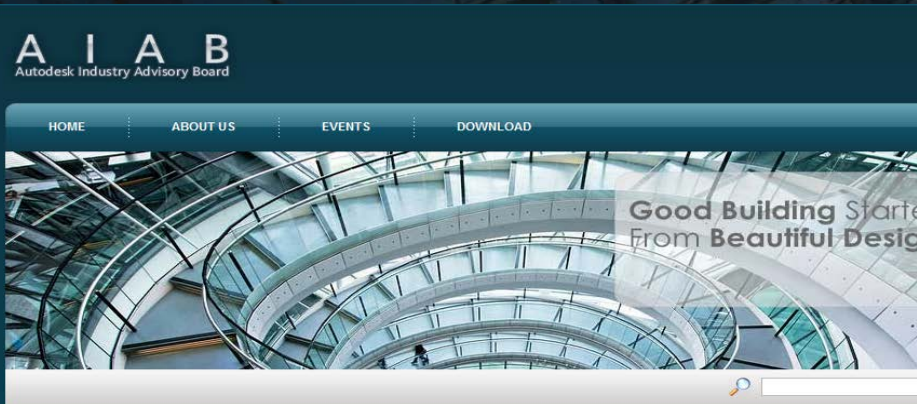
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MTR

BIM Knowledge Pool – User groups

www.revit.com.hk



WELCOME TO AIAB!
Written by admin
June 1st, 2009

AIAB (Autodesk Industry Advisory Board) is formed by a group of expertise who are willing to share valuable experience in BIM (Building Information Modeling) to the public. We currently have members Hong Kong and Macau region.

SING TAO DAILY ARTICLES – 綠色建築新思路 – 23 JUN 2010
Written by admin
June 24th, 2010

綠色建築新思路
李煥明

- Autodesk香港及澳門區域總監
- 香港建築信息模擬學會義務秘書
- 英國電腦學會(香港分會)義務秘書
- 電郵: wendy.lee@autodesk.com

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Creating Success (5.5 MiB, 737 hits)

科學園連水立方? (769.2 KiB, 241 hits)

www.revitcity.com



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55 Users Online (26 Members): Show Users Online - Most ever was 428 - Mon, Nov 12, 2007 at 5:48:43 PM

RevitRadio
A light-hearted way to get your Revit questions answered and learn new techniques from award-winning instructors! Free!

RevitCity.com News

2010-03-02 **Sorry to the Users**
Hi, Jeremy Jacobs apologize to all the users of RevitCity.com I made a mistake with the server on Monday morning, knocking out the server for about 34 hours. Everything should be back up and running...

2009-07-08 **Upgrade Complete**
We've moved the site over to newer hardware. In case you're curious about the new hardware, here it is:
2 - 2.53 Ghz Quad Core Nehalem Xeon processors
8 GB of RAM
4 - Intel X25-E...

2009-07-02 **Coming Upgrades**
We're in the process of setting up a new server over the next couple of days. Please bear with us if you notice glitches as we make the transition over to some faster hardware.

2009-02-24 **PLEASE READ: Note To Members About RevitCity**
Hi Everybody,
Thank you all for making RevitCity what it is. For those of you who don't know RevitCity is a part-time volunteer effort by my brother, me, and our fantastic moderators (c...)

Industry News

2009-11-09 Latest AUGI Edge is now available.

2009-07-07 Update 1 for Autodesk Revit Architecture 2010 is now available

2009-04-07 Revit Technology Conference 2009

2009-03-13 Autodesk publishes Revit 2010 User Interface Tour to YouTube

2007-05-24 Revit. AutoCAD Architecture Get Full IFC 2x3 Certification

Site Stats

Members: 155306
Objects: 9799
Forum Posts: 78343
Job Listings: 3

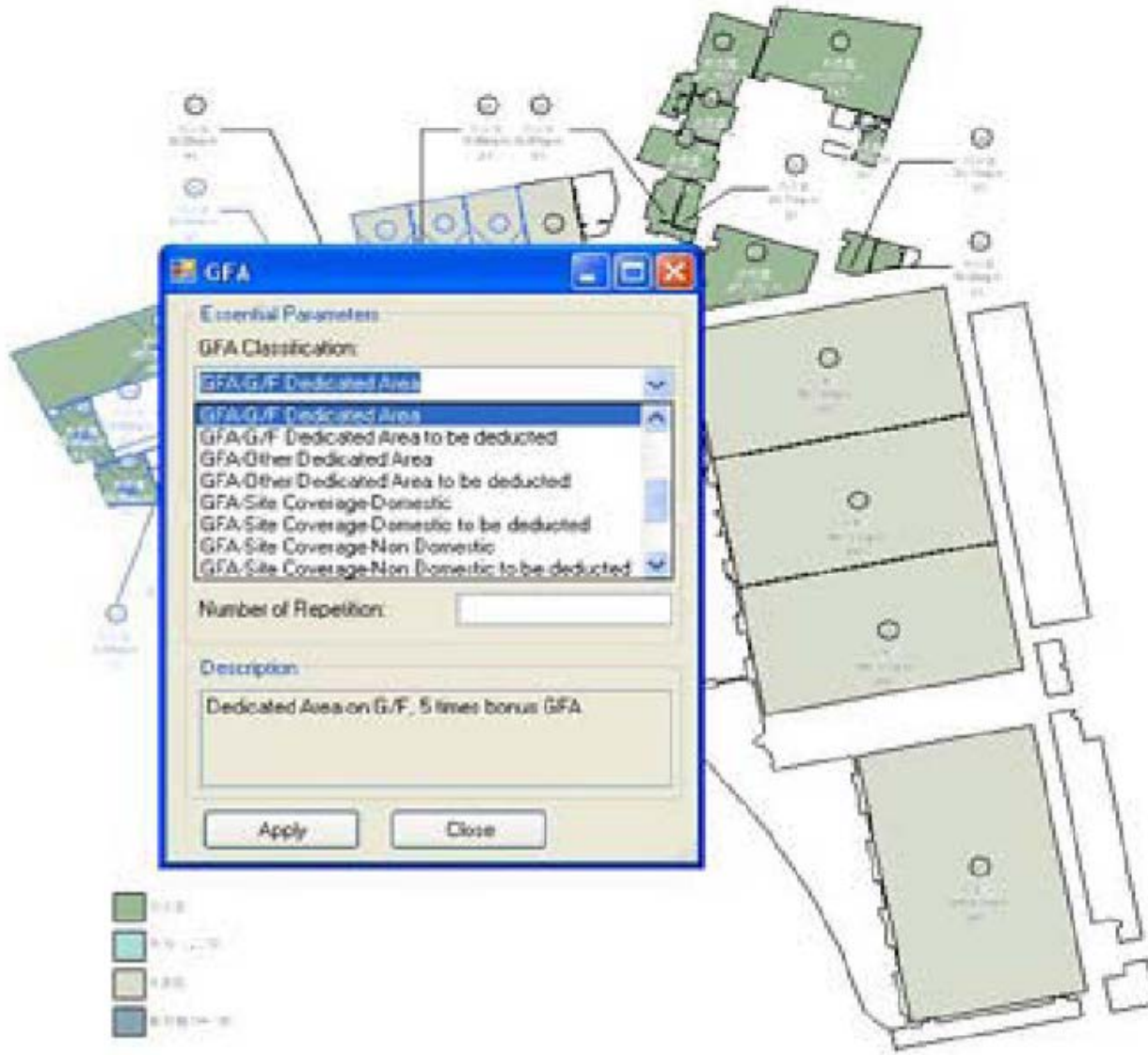
Revit Content

BIM Further developments – Statutory, BQ, Automated Design etc.

The screenshot displays the Solibri Model Checker v6 software interface. The top menu bar includes File, Checking, Settings, Window, and Help. The main window is titled "Solibri Model Checker - Hospital in Helsinki". The interface is divided into several panels:

- Checking Panel:** Contains a tree view of rule sets. The "Egress Analysis" rule set is selected, showing a list of rules with associated status icons (red triangle for error, yellow triangle for warning, green checkmark for pass). The "Escape Route Analysis" rule is highlighted.
- Results Panel:** Displays the results of the "Escape Route Analysis" rule. It shows three error messages:
 - No routes to exits (0/6)
 - Inadequate Information (0/1)
 - Travel distance is too long (0/600)
- Info Panel:** Provides detailed information about the selected rule, "Escape Route Analysis". It includes a description: "This rule checks that it is possible to exit safely in case of fire or other emergency. The building must have sufficient amount of suitable located exit passageways that have sufficient capacity, so that exit time is not dangerously long." It also lists the version (Solibri, Inc. - 14.05.2009) and the support tag (SOL/179/1.4.0).
- 3D View:** Shows a 3D model of a multi-story hospital building. The model is rendered in a light blue color. A construction crane is visible in the background.

BIM Further developments – Statutory



LINK: WWW.BIT-WORLD.COM

ACS · C@REVIT 产品说明

中国建筑设计与
[核算系统，系统
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、属性及用途等资
；成规范核算。相
；升其效率达数倍



算、经济技术指
算、疏散走道要
火分区面积结算。

经济技术指标			
建筑面积汇总表			
楼层	面积	用途	备注
1层	12168.288	住宅	
2层	11112.714	住宅	
3层	11112.714	住宅	
4层	11112.714	住宅	
5层	11112.714	住宅	
6层	11112.714	住宅	
7层	11112.714	住宅	
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100层	11112.714	住宅	

算包括:

同功能性质的建
积率
地率

2. 使用面积运算包括:

• 根据使用面积用途计算人数

• 根据不同楼层或防火分区的总人数及其建筑物功能性质计算疏散走道要求

• 根据不同楼层或区域的总人数及其用途，计算男女人数分布，及

BIM Standards (Overseas)

United States

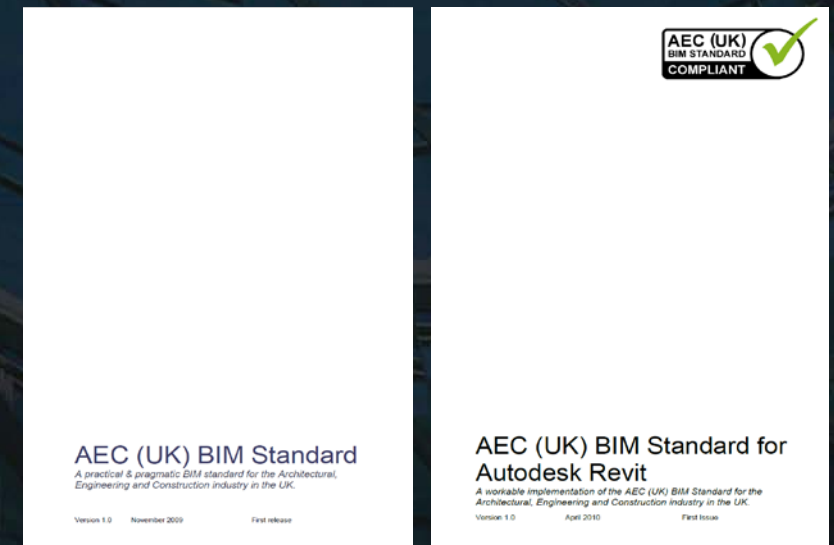
NATIONAL BUILDING INFORMATION MODELING STANDARD

Version 1 - Part 1:
Overview, Principles, and Methodologies

Transforming the Building Supply Chain
Through Open and Interoperable Information Exchanges



National Institute of
BUILDING SCIENCES
Facilities Information Council
National BIM Standard



BIM Standard (Local)

Hong Kong Institute of
Building Information Modelling

BIM Project Specification



HKIBIM Specification (Rev 1.0)

Page 1 of 22

MTR Building Information Modelling (BIM) Standard

Autodesk Revit

Version 1.0

09/2010

Building Information Modelling (BIM) Standards Manual for Development and Construction Division of Hong Kong Housing Authority



(Version 1.0)
November 2009

Prepared by Business Information Technology Unit
Development & Construction Division
Housing Department

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The Government of the Hong Kong Special Administrative Region

Singapore BCA visit to HK



TARGET



**Singapore Construction
Industry to Use BIM
Widely by 2015**

PHASED MANDATORY BIM E-SUBMISSION

2013

Mandatory Architecture BIM e-Submissions for all new building projects > 20,000 m²

2014

Mandatory Engineering BIM e-Submissions for all new building projects > 20,000 m²

2015

Mandatory Architecture & Engineering BIM e-Submissions for all new building projects > 5,000 m²

**** will be calibrated in a gradual manner by taking into consideration the readiness of the industry practitioners and technology**

“十二五” 建筑业信息化发展纲要

（一）总体目标

“十二五”期间，基本实现建筑企业信息系统的普及应用，加快建筑信息模型（BIM）、基于网络的协同工作等新技术在工程中的应用，推动信息化标准建设，促进具有自主知识产权软件的产业化，形成一批信息技术应用达到国际先进水平的建筑企业。

住房和城乡建设部 10/5/2011

<http://www.c-bm.com/news/2011/5-19/B16543600.shtml>

Thank You!