

Fake BIM, Half BIM, True BIM

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HKUSPACE, Lecturer

B

= Building

建築

I

= Information

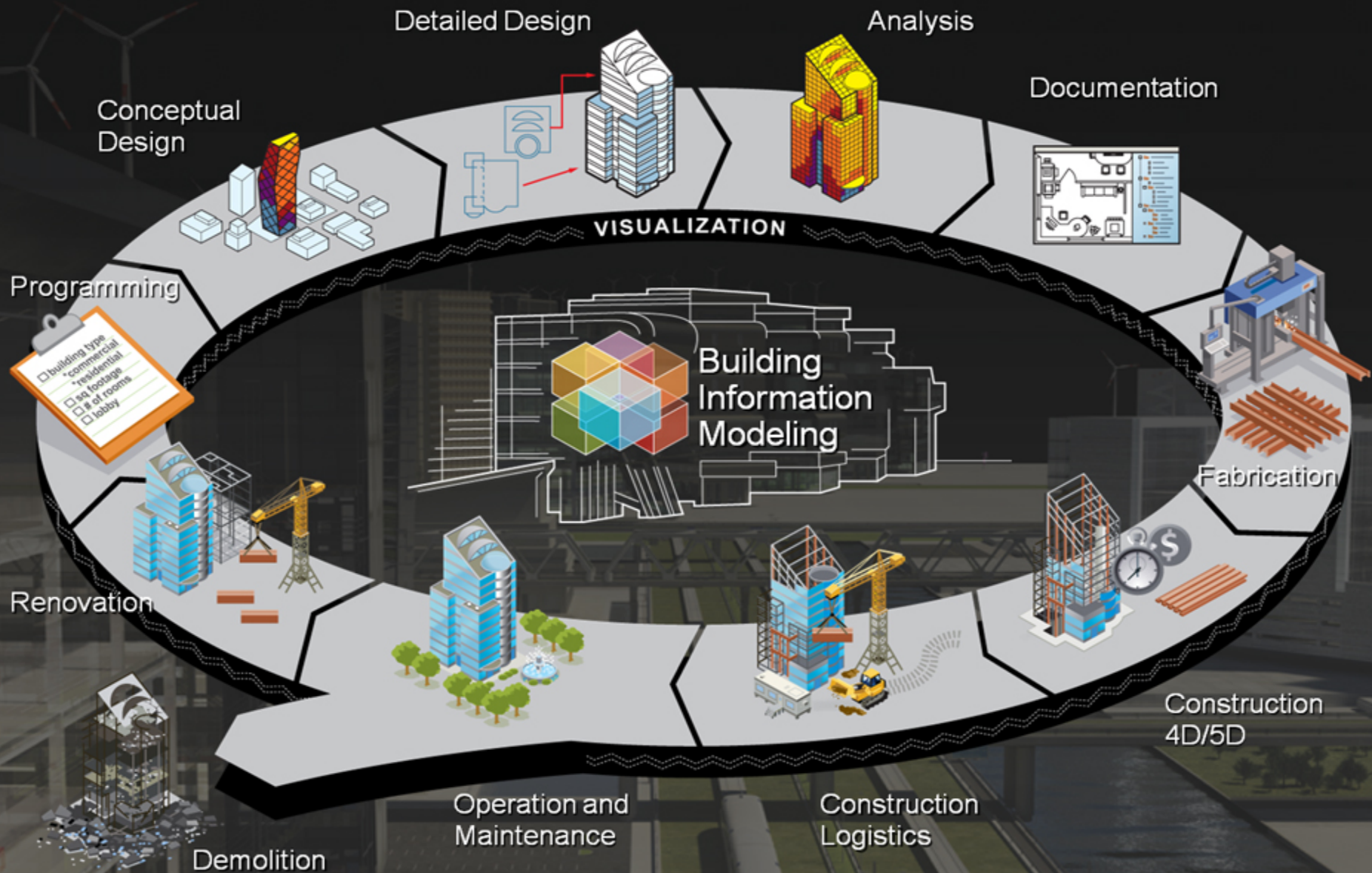
資訊

M

= Modelling

模型/ 模擬

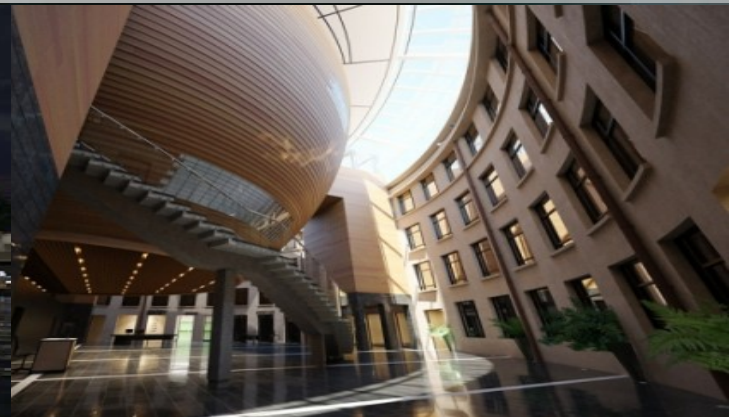
Use of Building Information Modeling (BIM)



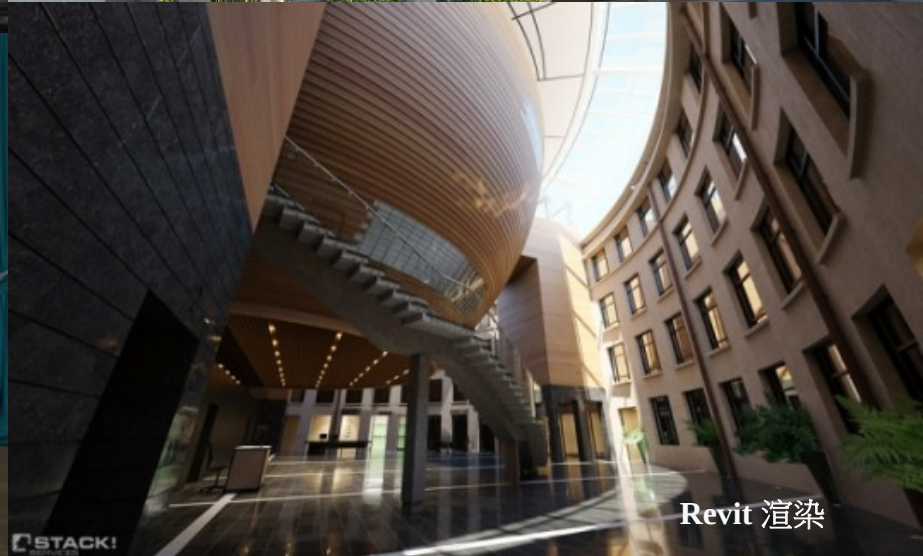
Fake BIM

M + ?

JUST 3D MODEL – NOT BIM



Fake BIM



Fake BIM

- Rendering
- CG (Computer Graphic)
- Animations
- Interactive Gaming

**Use BIM tools not
necessarily means
BIM!**

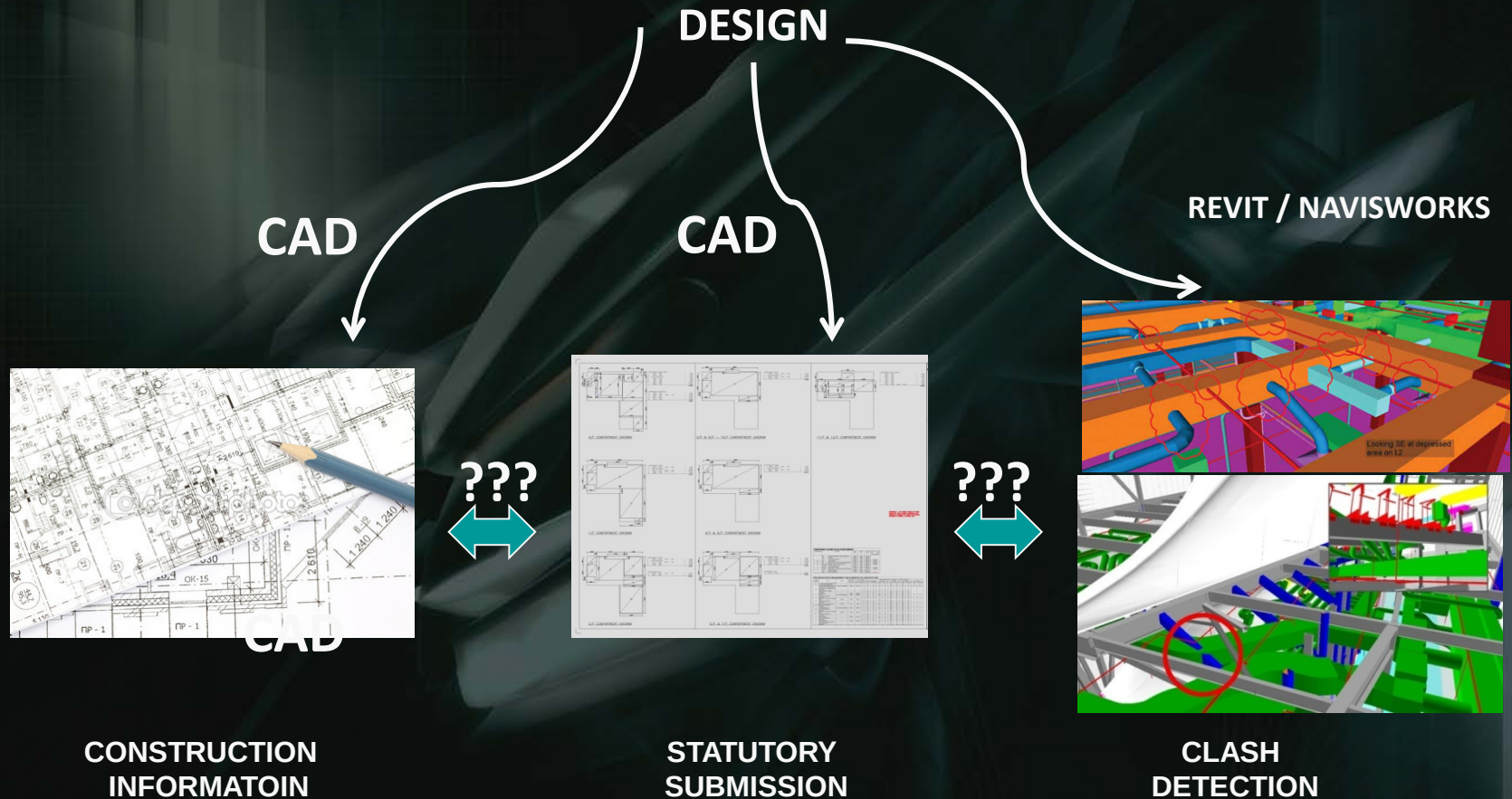


HALF-BIM

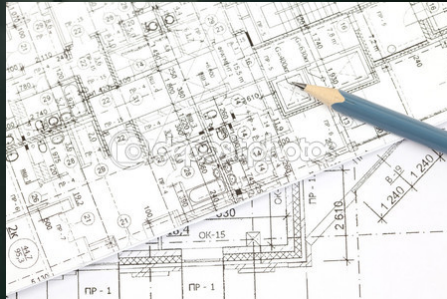
I <> M

3D MODEL >> QTO , CLASH ANALYSIS

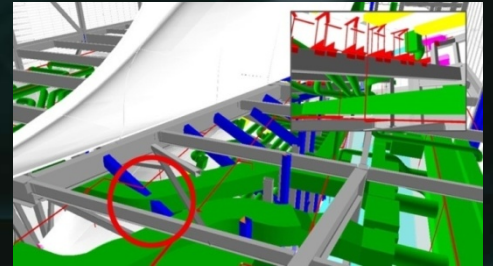
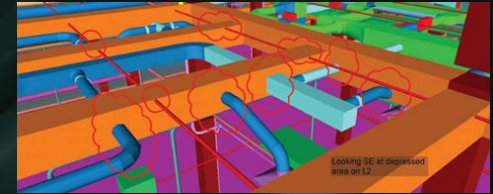
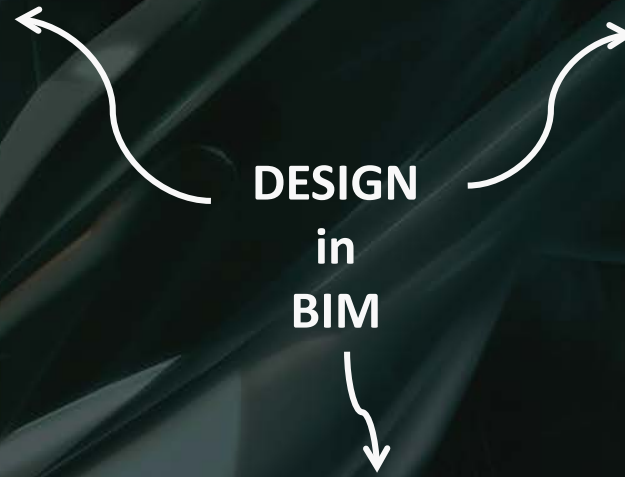
HALF BIM



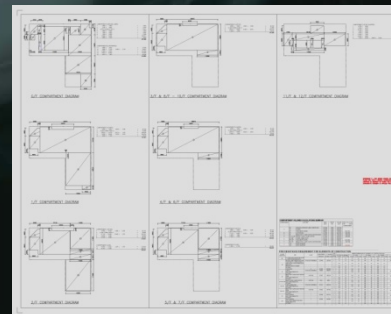
REAL BIM



CONSTRUCTION
INFORMATOIN



CLASH
DETECTION



STATUTORY
SUBMISSION

Drawings

Over Symbolized and
Needs collaboration among
Showing "Design Intent only" - not
actual routing Designer role and
tion Role

Conclusi

- BIM CAN produce E&M Drawings
BIM enhances collaboration
BIM facilitates automation



BIM in E&M Design and Drawings

h and Air conditioning Fire Services Plumbing & Drainage Electrical Telecommunications... Schematics Elevations and Sections (Setting out) Equipment Schedules Construction Details (Typical Details) Some Reference files (existing conditions)

Fut

Automate

Const

Combined

http://prezi.com/z2_-8nbjka13/copy-of-bim-in-em-design-and-documentation/

BIM is....?

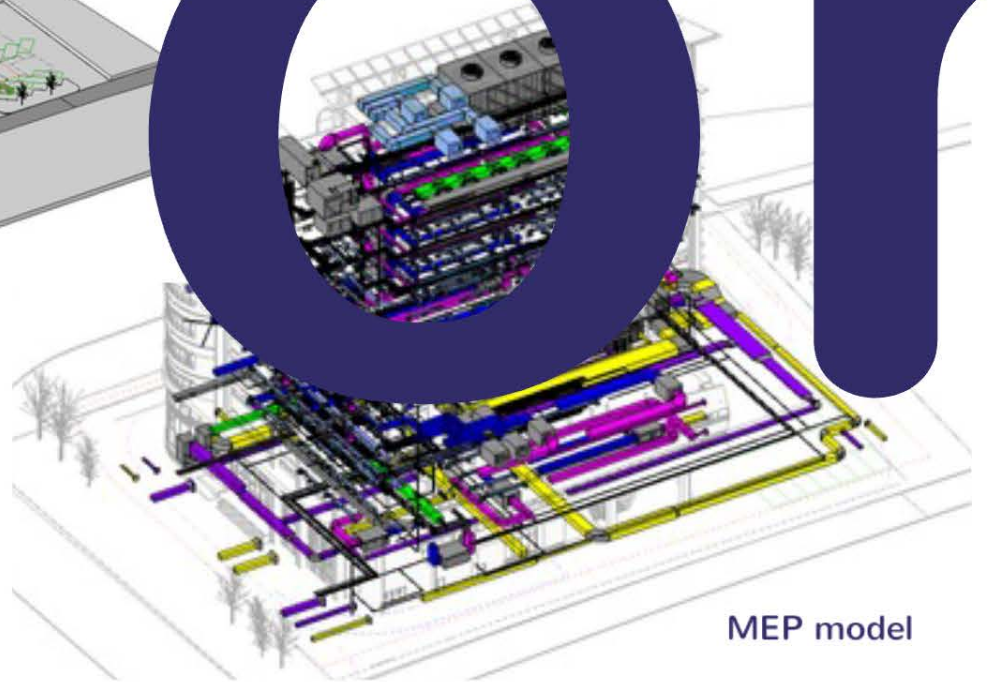
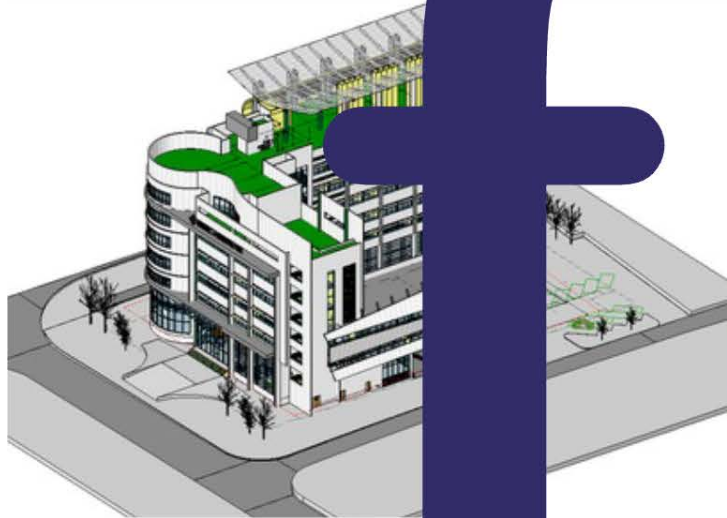
3D Modelling? Use for Clash Analysis?



[]



Architectural + Structural M



MEP model

CONTRACT [REDACTED]

[REDACTED]

TENDER DRAWINGS

TENDER ISSUE

[REDACTED]

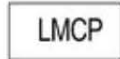
[REDACTED]

CONFIDENTIAL



CK004.B LIST					
Drawing Number	Drawing Title				
				Revision No.	Remark
CK004.B.T.Q.V.B.MTR	000000	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB		A	
CK004.B.T.Q.V.B.MTR	A00001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	DRAWING LIST	A	
CK004.B.T.Q.V.B.MTR	A00002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	CO-ORDINATED LAYOUT PLAN	A	
CK004.B.T.Q.V.B.MTR	A10001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GENERAL NOTE	A	
CK004.B.T.Q.V.B.MTR	A10002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	PROPOSED AND DETAILS OF FLOOR COATING SYSTEM	A	
CK004.B.T.Q.V.B.MTR	A10003	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 1 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10004	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 2 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10005	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 3 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10006	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 4 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10007	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 5 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10008	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	STANDARD BLOCKWORK DETAILS (SHEET 6 OF 6)	A	
CK004.B.T.Q.V.B.MTR	A10009	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	SITE LOCATION PLAN AND ACCESS ROUTE - QVB VENTILATION BUILDING	A	FOR REFERENCE ONLY
CK004.B.T.Q.V.B.MTR	A10010	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	CO-ORDINATED SECTIONS	A	
CK004.B.T.Q.V.B.MTR	A10011	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	CO-ORDINATED SECTIONS	A	
CK004.B.T.Q.V.B.MTR	A10012	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	CUTAWAY SECTIONS	A	FOR REFERENCE ONLY
CK004.B.T.Q.V.B.MTR	A10013	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	CUTAWAY SECTIONS	A	FOR REFERENCE ONLY
CK004.B.T.Q.V.B.MTR	A41001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	FINISHES SCHEDULE & LOUVER SCHEDULE	A	
CK004.B.T.Q.V.B.MTR	A53001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	DETAILS OF EXTERNAL ALUMINIUM LOUVRES	A	
CK004.B.T.Q.V.B.MTR	E00001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	LEGEND AND ABBREVIATION	A	
CK004.B.T.Q.V.B.MTR	E00002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	ELECTRICAL SERVICES - NOTES	A	
CK004.B.T.Q.V.B.MTR	E01001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GROUND FLOOR LEVEL (+5.1)	A	EXISTING LIGHTING AND SMALL POWER LAYOUT
CK004.B.T.Q.V.B.MTR	E01002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GROUND FLOOR LEVEL (+5.1)	A	NEW LIGHTING AND SMALL POWER LAYOUT
CK004.B.T.Q.V.B.MTR	E01003	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	MODIFICATION OF EXISTING LV SWITCHBOARD	A	
CK004.B.T.Q.V.B.MTR	E01004	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	SCHEMATIC DIAGRAM OF EXISTING LV SWITCHBOARD	A	
CK004.B.T.Q.V.B.MTR	E08001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GROUND FLOOR LEVEL (+5.1)	A	NEW POWER CABLE ROUTE
CK004.B.T.Q.V.B.MTR	E08002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	BASEMENT LEVEL 1 (-1.3)	A	NEW POWER CABLE ROUTE
CK004.B.T.Q.V.B.MTR	E12001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	SCHEMATIC DIAGRAM OF NEW MCB BOARD DB-4	A	
CK004.B.T.Q.V.B.MTR	F00001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	SCHEMATIC AND NOTES FOR FM200 GAS EXTINGUISHING SYSTEM	A	
CK004.B.T.Q.V.B.MTR	F08001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	QVB - GROUND FLOOR LEVEL	A	PROPOSED FS LAYOUT AT NEW 10kV SWITCHROOM
CK004.B.T.Q.V.B.MTR	M00001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GENERAL NOTES, LEGEND AND ABBREVIATIONS	A	
CK004.B.T.Q.V.B.MTR	M07001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	ECS CONTROL, SCHEMATIC DIAGRAM & CONTROL PRINCIPLES	A	
CK004.B.T.Q.V.B.MTR	M08001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	EXISTING CABLE CONTAINMENT LAYOUT AT	A	BASEMENT 1 (LEVEL -1.2)
CK004.B.T.Q.V.B.MTR	M08002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	EXISTING CABLE CONTAINMENT LAYOUT AT GF	A	FOR REFERENCE ONLY
CK004.B.T.Q.V.B.MTR	M08003	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GROUND FLOOR LEVEL	A	NEW ECS LAYOUT
CK004.B.T.Q.V.B.MTR	M08004	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	GROUND FLOOR LEVEL	A	SECTION VIEW A-A, B-B & EQUIPMENT SCHEDULE
CK004.B.T.Q.V.B.MTR	M08005	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	LOCATION OF ECS CONTROL ROOM AT BASEMENT 1 (LEVEL -1.2)	A	
CK004.B.T.Q.V.B.MTR	M11001	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	TYPICAL ECS INSTALLATION DETAILS	A	
Q04-023	30112001	LIGHTING & POWER SERVICE PRINCIPLE SCHEME	GROUND FLOOR LEVEL +5.1	D	FOR REFERENCE ONLY
C2819-05-10E-TQ.V.B.MTR	E07001	MODIFICATION OF EMERGENCY POWER SUPPLY SYSTEM	AT NAB, SUB, QVB & RTT QVB	A	FOR REFERENCE ONLY
Grand total 40					

Symbols & Abbreviations



LOCAL MOTOR CONTROL PANEL



13A SWITCHED FSU C/W INDICATOR AND MATT-CHROME FINISH FRONT PLATE



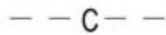
13A SWITCHED POWER SOCKET OUTLET C/W MATT-CHROME FINISH FRONT PLATE



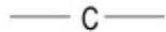
10A LIGHTING SWITCH, MATT-CHROME FINISH FRONT PLATE



EXISTING BULKHEAD LIGHTING



EXISTING CABLE ROUTE



NEW CABLE ROUTE



EXISTING EQUIPMENT

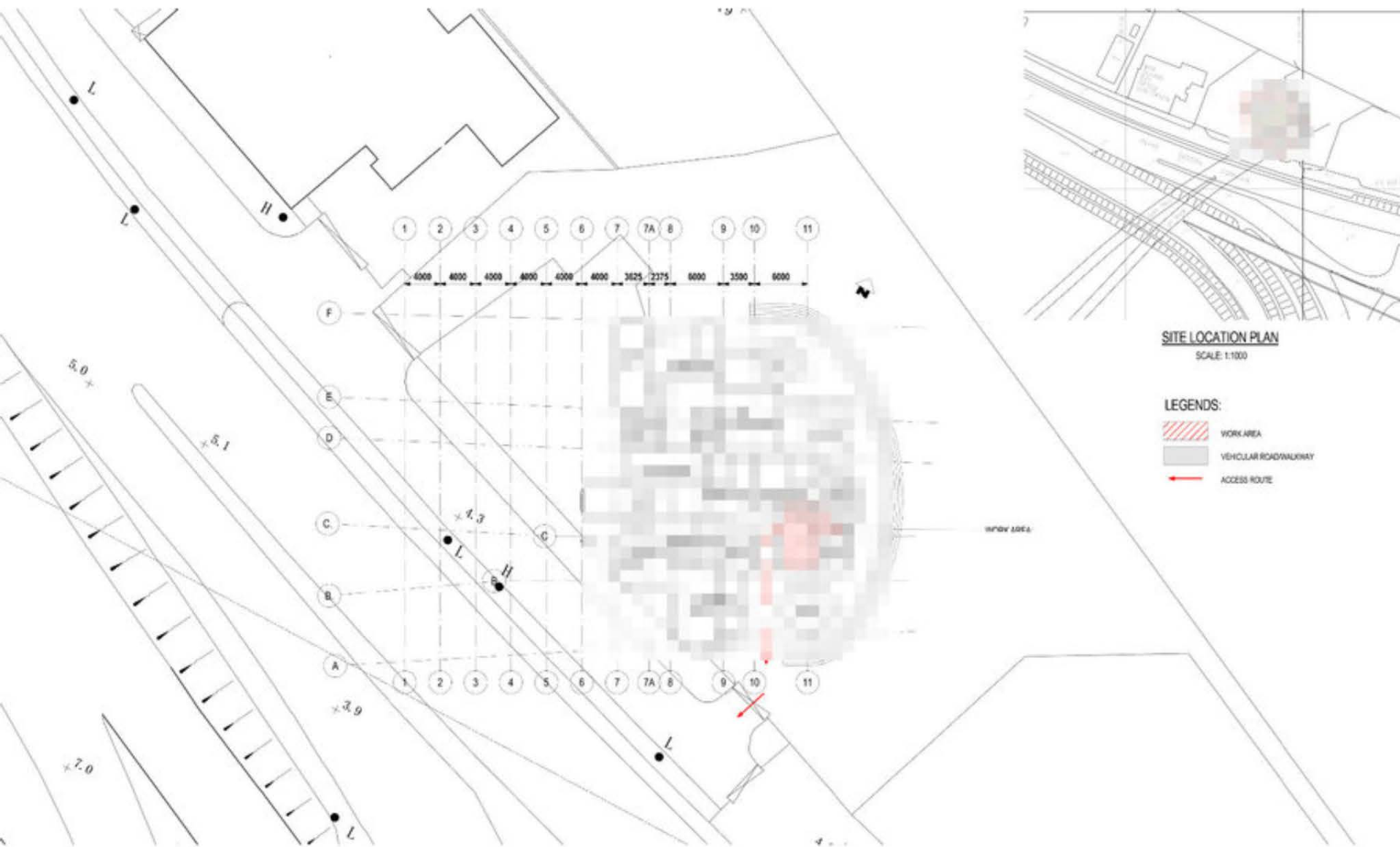


EXISTING EMERGENCY STOP BUTTON

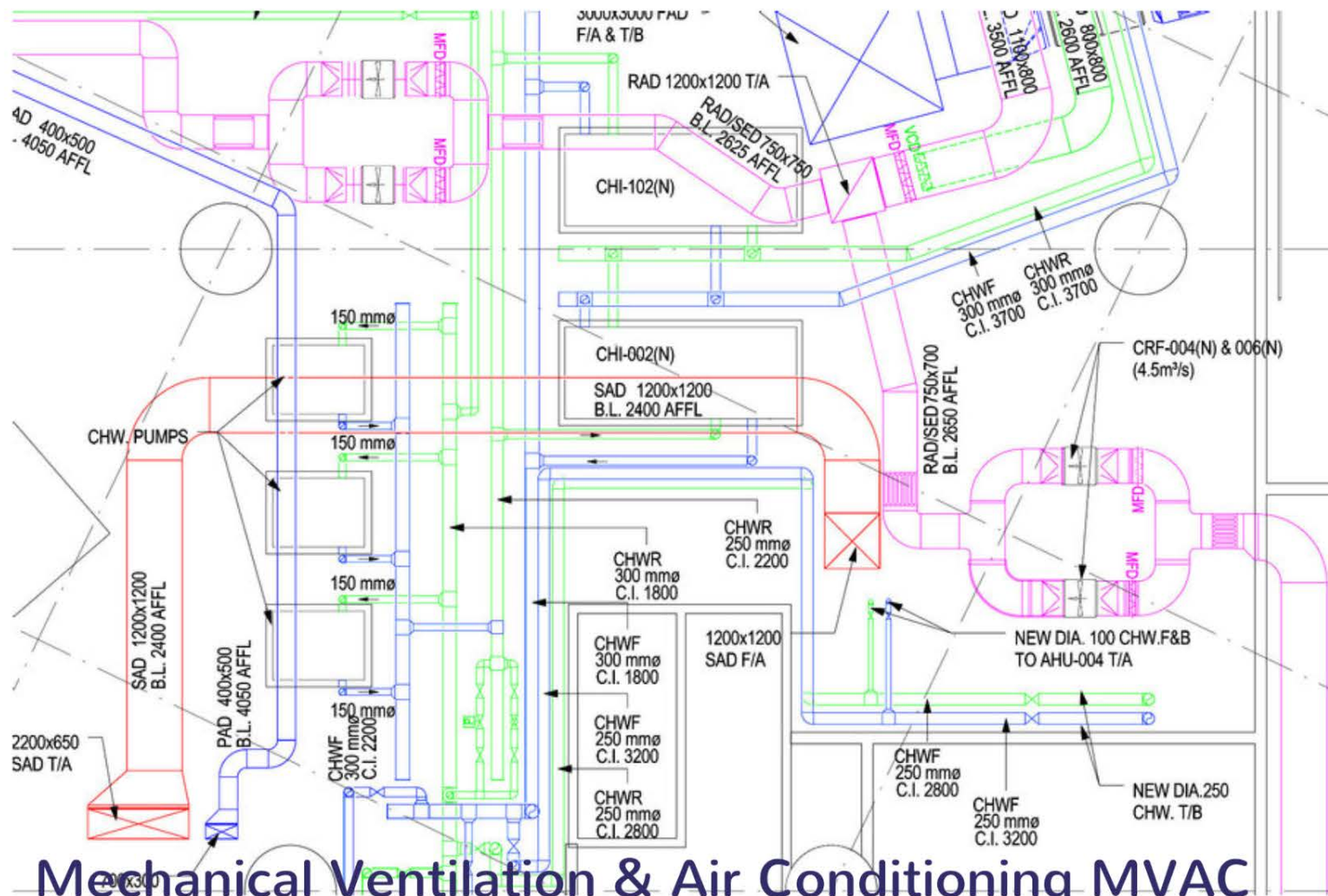
General Notes

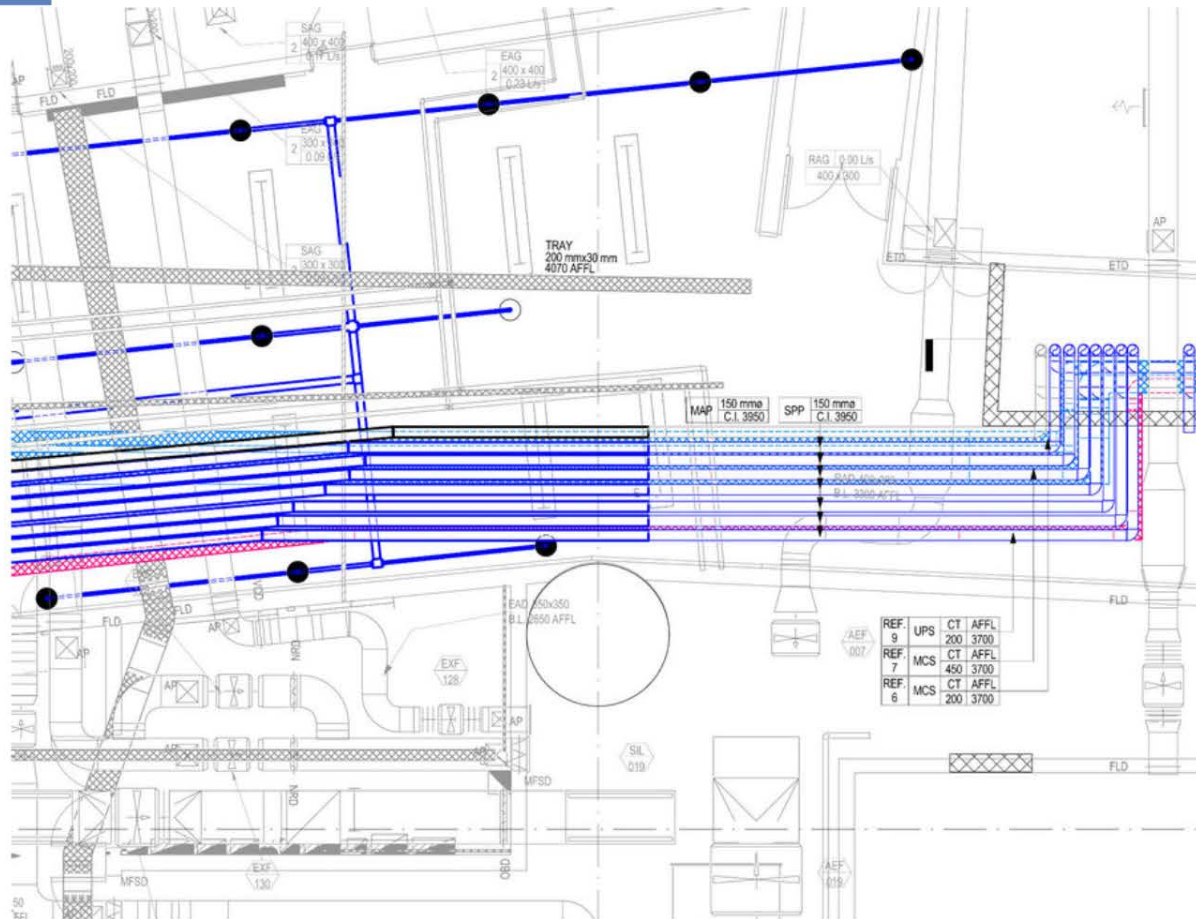
GENERAL NOTES:

- UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL DESIGN, SUPPLY & INSTALL ALL THE WHOLE ELECTRICAL WORKS / INSTALLATION SHOWN ON THE DRAWINGS EXCEPT FOR THOSE DESIGNATED AS BY OTHERS.
- ALL DIMENSION SHOWN IN mm.
- EXISTING INSTALLATION IS SHOWN IN DOTTED LINES OR IN DIM COLOR FOR EASE OF REFERENCE.
- ALL MOBS SHALL COMPLY WITH BS EN 60411-2. THE INSTANTANEOUS SHORT-CIRCUIT PROTECTION SHALL BE ADJUSTABLE TYPE, THE A.C. RATED SHORT-CIRCUIT CAPACITY SHALL BE NOT LESS THAN 40kA.
- ALL MOBS PANEL BOARD SHALL BE MANUFACTURED IN COMPLIANCE WITH BS EN 60411-1 OR IEC 60411 FORM 3b TYPE 2 STRUCTURE. THE DEGREE OF PROTECTION SHALL NOT BE LESS THAN IP42.
- ALL CABLE TRAY BRACKETS, CABLE BRACKETS, SUPPORTS AND SOCKET MOUNTING PLATES SHALL BE HOT DIPPED GALVANIZED TO BS729 AFTER WELDING AND FABRICATION.
- CABLE ROUTES AND SWITCH-GEAR LOCATIONS SHOWN ARE INDICATIVE ONLY. THE CONTRACTOR SHALL SUBMIT DETAILED POWER & CONTROL CABLE ROUTE AND SWITCH-GEAR ARRANGEMENT TO THE ENGINEER FOR APPROVAL AFTER HIS OWN SITE INSPECTION & COORDINATION AND PRIOR TO SITE INSTALLATION.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTION REQUIRED WHEN THE WORK IS TO BE CARRIED OUT IN A CONFINED SPACE & HIGH LEVEL.
- FIXING TO CONCRETE LINGS SHALL BE BY MEANS OF STAINLESS STEEL ANCHORS.
- THE CONTRACTOR SHALL DESIGN AND PROVIDE (1) ROD / SUPPORT AND STAINLESS STEEL BOLT & ANCHOR TO AVOID DISSIMILAR METAL SIDE EFFECT FOR THE ENGINEER'S APPROVAL PRIOR TO SITE INSTALLATION. THE CONTRACTOR SHALL SUBMIT CALCULATION FOR THE SIZE OF THE U-CANAL FOR APPROVAL.
- THE CONTRACTOR SHALL PROVIDE NEW CABLE BRACKETS, CABLE LADDERS AND CABLE TRAYS FOR FIXING NEW CABLES IF EXISTING CABLE BRACKETS, CABLE LADDERS AND CABLE TRAYS HAVE BEEN FULLY OCCUPIED BY EXISTING CABLES. SUCH NEW BRACKETS/LADDERS/TRAYS IN ADDITION TO THE EXISTING ONES SHALL HAVE BEEN INCLUDED IN THE CONTRACT SUM TO UTILIZE EXISTING CABLE CONTAINMENT FOR NEW CABLES. THE CONTRACTOR SHALL PROVIDE JUSTIFICATION, CALCULATIONS, PHOTOS ETC. TO DEMONSTRATE THAT THE EXISTING CABLE CONTAINMENT HAS ADEQUATE SPARE CAPACITY TO ACCOMMODATE THE NEW CABLES.
- ALL SLAB OPENINGS AND WALL OPENINGS FOR CABLE RUNNING SHALL BE KEPT AT 300mm MINIMUM AWAY FROM THE EXISTING CABLE SLOT OR ANY POSITION OF CABLE BEAM.
- THE CONTRACTOR SHALL MAKE GOOD ALL SLAB OPENINGS OR WALL OPENINGS BY BACKFILLING WITH FIRE RESISTANT NON-ASBESTOS MATERIAL WITH FIRE RATING NOT LESS THAN THE PENETRATED SLAB/WALL AND WITH ASBESTOS FREE MARKER ON BOTH SIDES FOR IDENTIFICATION. WATER PROOFING MATERIAL SHALL BE APPLIED ON SLAB OPENINGS FOR BACKFILLING.
- THE CONTRACTOR SHALL VERIFY ABSENCE OF ANY CONCEALED SERVICE PIPE OR CONCEALED CONDUIT RUNNING ACROSS THE PROPOSED LOCATIONS OF SLAB/WALL OPENING BEFORE ANY DRILLING OR DESTRUCTIVE WORK IS MADE.
- DRILLING THROUGH BEAM OR RIB OF SLAB IS NOT ALLOWED UNLESS WITH THE ENGINEER'S APPROVAL.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THEIR PROPOSED SLAB OPENINGS AND WALL OPENINGS ETC. FOR ENGINEER'S APPROVAL BEFORE CARRYING OUT CORING WORK.
- THE CONTRACTOR SHALL SUBMIT THE ACTUAL MOUNTING DETAILS INCLUDING DIMENSIONAL ELEVATION AND VIEW OF NEW INSTALLATIONS TOGETHER WITH BACKGROUND AS-CONSTRUCTED INFORMATION FOR ENGINEER'S APPROVAL BEFORE CARRYING OUT THE INSTALLATION.
- THE CONTRACTOR SHALL SUBMIT THE ACTUAL MOUNTING DETAILS INCLUDING DIMENSIONAL ELEVATION AND VIEW OF NEW MOBS BOARD, BOARD NEW MOBS PANEL AND ISOLATING SWITCH FOR ENGINEER'S APPROVAL BEFORE CARRYING OUT THE INSTALLATION.
- ALL EXISTING CABLE CONTAINMENT WITH CABLEING THE CLASHED WITH THAT NEW WORKS SHALL BE DIVERTED IF THEY ARE STILL USEFUL OR DISASSEMBLED IF THEY ARE REDUNDANT.
- CABLE DRIVERS SHALL INCLUDE ALL WORKS FOR RELOCATING, REARRANGING & STRAIGHTENING OF THE RELEVANT SECTION OF THE EXISTING CABLES BY GAINING CABLE SLACK AND PROVISION OF NEW CABLE CONTAINMENT AND ASSOCIATED ACCESSORIES.
- FOR EXISTING CABLES REQUIRED FOR DIVERSION BUT WITHOUT SUFFICIENT CABLE SLACK, NEW CABLES SHALL BE PROVIDED OR THE EXISTING CABLES SHALL BE EXTENDED BY ADDITION OF NEW CABLES WITH NEARLY CABLE JOINTS. THE CHOICE DEPENDS ON THE OPERATIONAL REQUIREMENT AND SITE CONDITION SUBJECT TO APPROVAL BY THE ENGINEER. THE ABOVE WORKS AND ALL NEW CABLES USED TO COMPLY WITH MIPRO'S STANDARD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISMANTLING THE EXISTING CABLEING, CABLE CONTAINMENT, POWER DISTRIBUTION EQUIPMENT AND CONTROL COMPONENTS WHICH ARE REDUNDANT FROM THE WORK, INCLUDING EXISTING LIGHTING SYSTEM, MOBS BOARD AND MOTORS.
- ALL CONDUITS SHALL BE OF CONCEALED TYPE WHEN MOUNTING BELOW FALSE CEILING AT PUBLIC AREA AND BACK OF HOUSE OFFICE AREA.
- FIRE RESISTANCE CABLE TO BS 6857 CAT. CHZ SHALL BE USED FOR THE CABLE BETWEEN EMERGENCY POWER PACK AND EMERGENCY LIGHTING FITTINGS.
- UNLESS OTHERWISE SPECIFIED, ALL INTERNAL CABLES FOR LIGHTING FITTINGS SHALL BE OPERATED UP TO 120°C AND OF LOW SMOKE AND ZERO HALOGEN TYPE.
- UNLESS OTHERWISE SPECIFIED, THE MINIMUM SIZE OF SMALL POWER AND CONTROL / SIGNAL CABLES SHALL BE 2.5mm² AND 1.5mm² COPPER CABLE ACCORDINGLY.
- UNLESS OTHERWISE SPECIFIED ALL CABLES OTHER THAN FIRE RESISTANT CABLE SHALL BE FIRE RETARDANT.
- EMERGENCY LIGHTING CIRCUITS AND OTHER CIRCUITS SHALL NOT BE IN THE SAME CONDUIT OR IN THE SAME TRUNKING COMPARTMENTS.
- ALL CIRCUITS SHALL BE PROVIDED WITH INDEPENDENT CIRCUIT PROTECTIVE CONDUCTORS.
- FOR RELOCATION OF PANEL BOARDS, THE CONTRACTOR SHALL EXTEND THE EXISTING CABLE LENGTH IN THE EVENT THAT THE EXISTING LENGTH IS NOT LONG ENOUGH. METHOD OF EXTENSION SHALL BE SUBMITTED FOR THE ENGINEER'S APPROVAL.
- THIS SET OF DRAWINGS SHOWS DESIGN INTENT ONLY. THE CONTRACTOR SHALL VERIFY ON SITE THE EXACT NUMBER AND LOCATION OF DEVICES / EQUIPMENT AND COORDINATE THE WORKS WITH THE OTHER CONTRACTORS AND MTR REPRESENTATIVES.
- LUMINAIRE MARKED WITH 'E' SHALL BE PROVIDED WITH SELF-CONTAINED TYPE EMERGENCY POWER PACK INCLUDING Ni-Cd BATTERIES, INVERTER AND CHARGER TO BACK UP ALL THE LAMPS.
- ALL OUT GONE CABLES FROM DISTRIBUTION BOARDS CONNECTED TO CIRCUITS WILL BE OF 1C FIRE RESISTANCE LSH/SH/PE COPPER CABLE IN CONDUIT/TRUNKING UNLESS OTHERWISE SPECIFIED.
- ALL OUTGOING CABLES FROM DISTRIBUTION BOARD ARE OF 1C LSH/SH/CL CABLE IN TRUNKING/CONDUIT UNLESS OTHERWISE SPECIFIED.
- * INDICATE CIRCUIT PROTECTED BY AN INDIVIDUAL OP-MCB OR BUILT-IN ROD OF 30mA SENSITIVITY.
- ALL CABLES TO EXTERNAL LIGHTING WILL BE 2C LSH/SH/SH/PE COPPER CABLES UNLESS OTHERWISE SPECIFIED.
- EACH MOBS DISTRIBUTION BOARD WILL BE OPERATED BY A METAL GLAZED ISOLATING SWITCH OF RATING AS SPECIFIED IN THE MOBS BOARD SCHEDULE/SCHEMATIC.
- ALL INSTALLATION SHALL FOLLOW THE NEW CABLE COLOUR CODE AS SPECIFIED BY THE ENDS OF THE MCBAR.
- LIGHTING FITTINGS WALL MOUNTED, SURFACE MOUNTED OR PENDANT TYPE SHALL BE PROPERLY COORDINATED WITH EQUIPMENT LAYOUT AND SERVICES ARRANGEMENT INSIDE THE PLANTROOM TO ACHIEVE EVEN ILLUMINATION AND TO AVOID THE LIGHTING FITTING OBSTRUCTED BY THE SERVICES OR EQUIPMENT. THE CONTRACTOR SHALL SEEK THE ENGINEER'S APPROVAL TO THE INSTALLATION.
- ALL NEW LIGHTINGS LAYOUT SHOWN ARE FOR REFERENCE ONLY. ACTUAL LIGHTINGS LAYOUT SHALL BE PROPOSED BY THE CONTRACTOR FOR APPROVAL. AT LEAST NUMBER OF LIGHT FITTINGS SPECIFIED IN THE DRAWINGS OR NUMBER OF LIGHT FITTINGS CALCULATED BY THE CONTRACTOR IN COMPLIANCE WITH THE REQUIREMENTS AS SPECIFIED IN THE APPENDIX D OF THE PS, WHICHEVER IS HIGHER, SHALL BE PROVIDED BY THE CONTRACTOR.
- EACH SWITCH/FUSE, FUSE SWITCH, ISOLATING SWITCH, BUSBAR CHAMBER, MOBS BOARD, ENERGY METER, FCU, CABLE TERMINATION BOX AND CABLE SHALL BE LABELLED ON FRONT COVER TO INDICATE:
 - THE CIRCUIT NAME / NUMBER.
 - THE RATING OF FUSE / CIRCUIT BREAKER.
 - THE PURPOSE OF THE CIRCUIT IT SERVES.
 - IN @ LIGHTING AT (ENTRANCE & etc).
- EXISTING GENERATOR SET AND ASSOCIATED COMPONENT SHALL BE DEMOLISHED AND DISPOSED BY OTHERS.

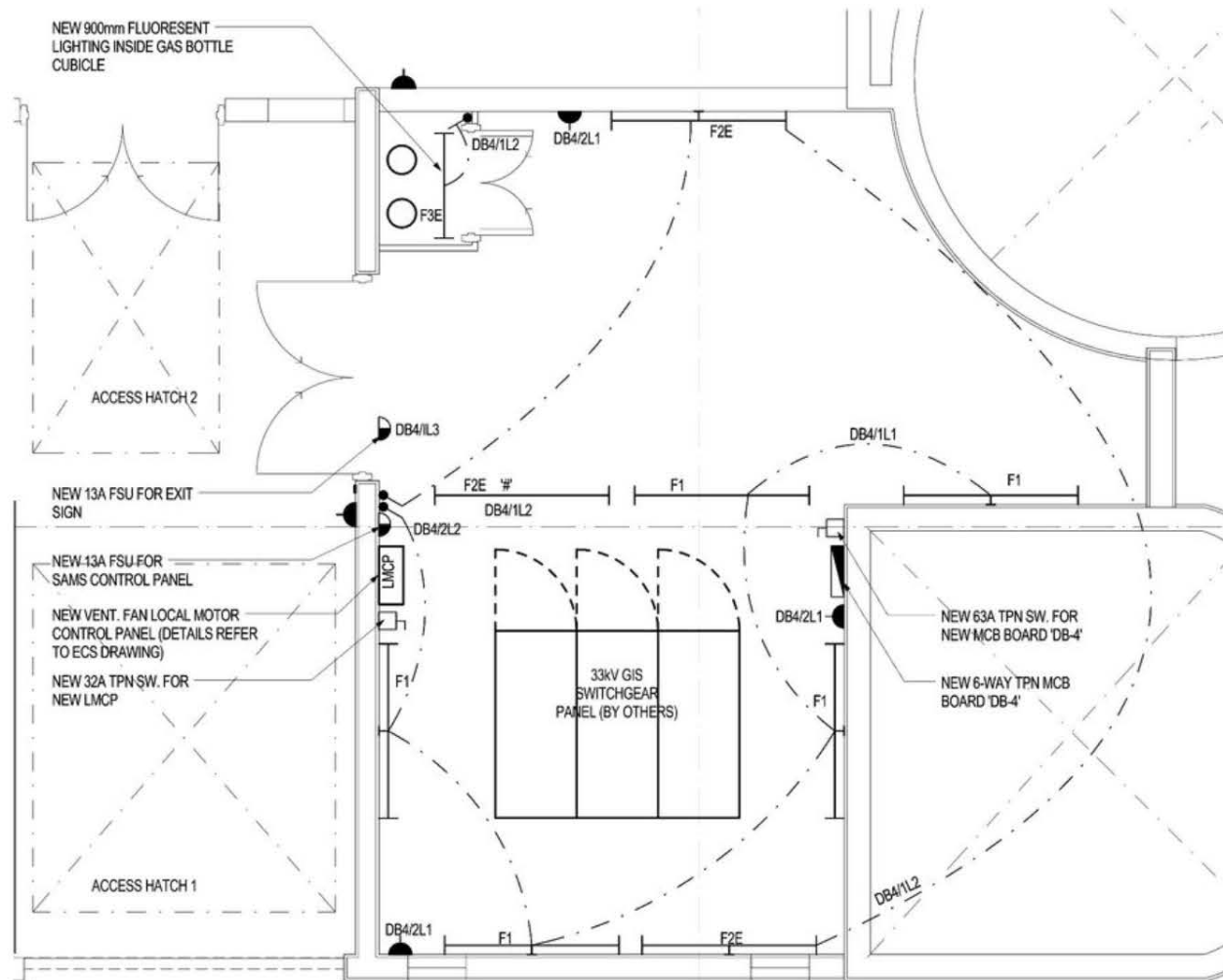


Site & Location Plan



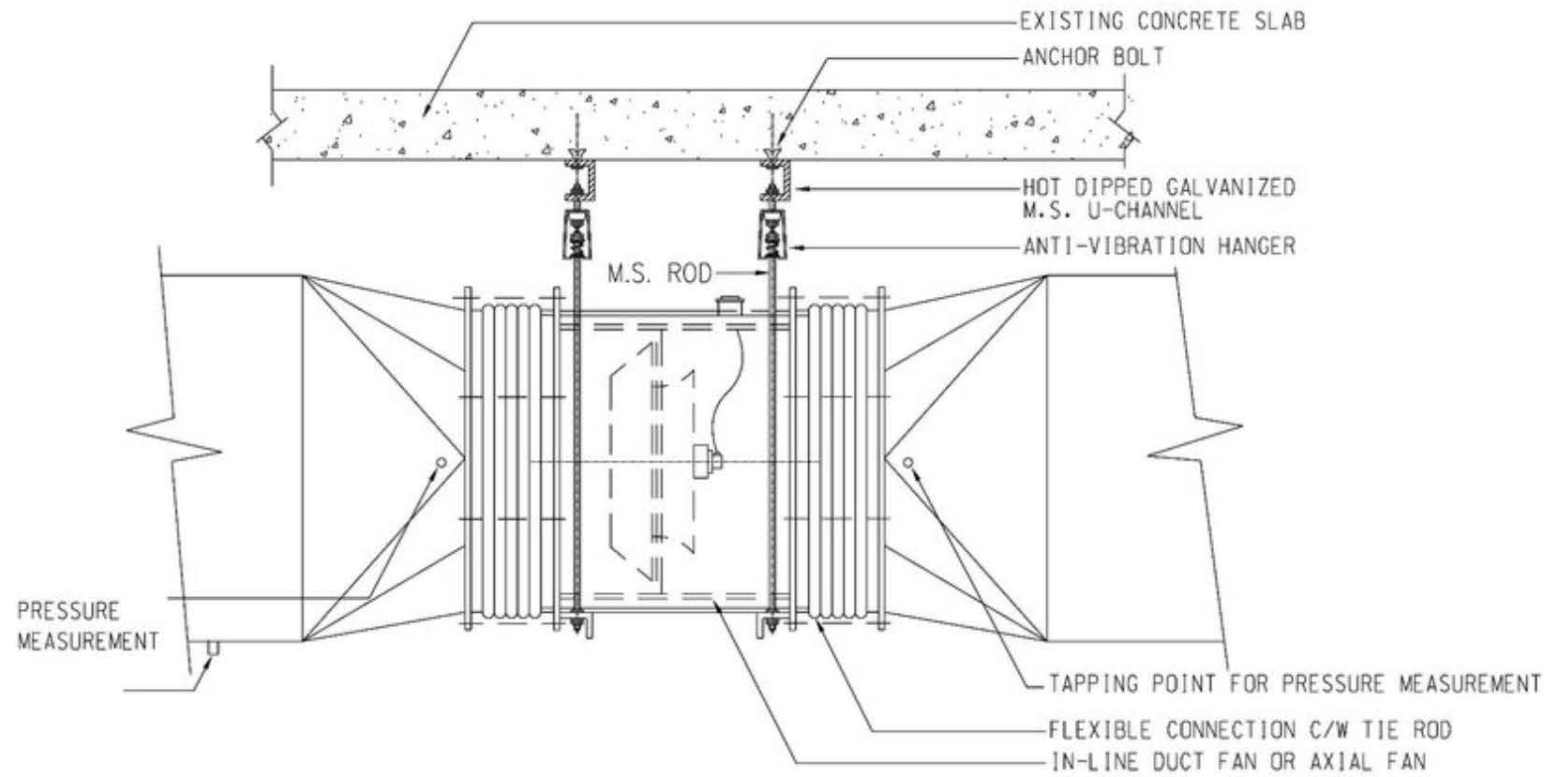


Fire Services, Plumbing & Drainage



Electrical





MOUNTING DETAIL FOR IN-LINE DUCT FAN & AXIAL FAN

Typical Details

PIPE SCHEDULE DIA.65 SPRINKLER PIPE SCHEDULE

Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP	65 mmø	SPP	127.167

PIPE SCHEDULE DIA.80 SPRINKLER PIPE SCHEDULE

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

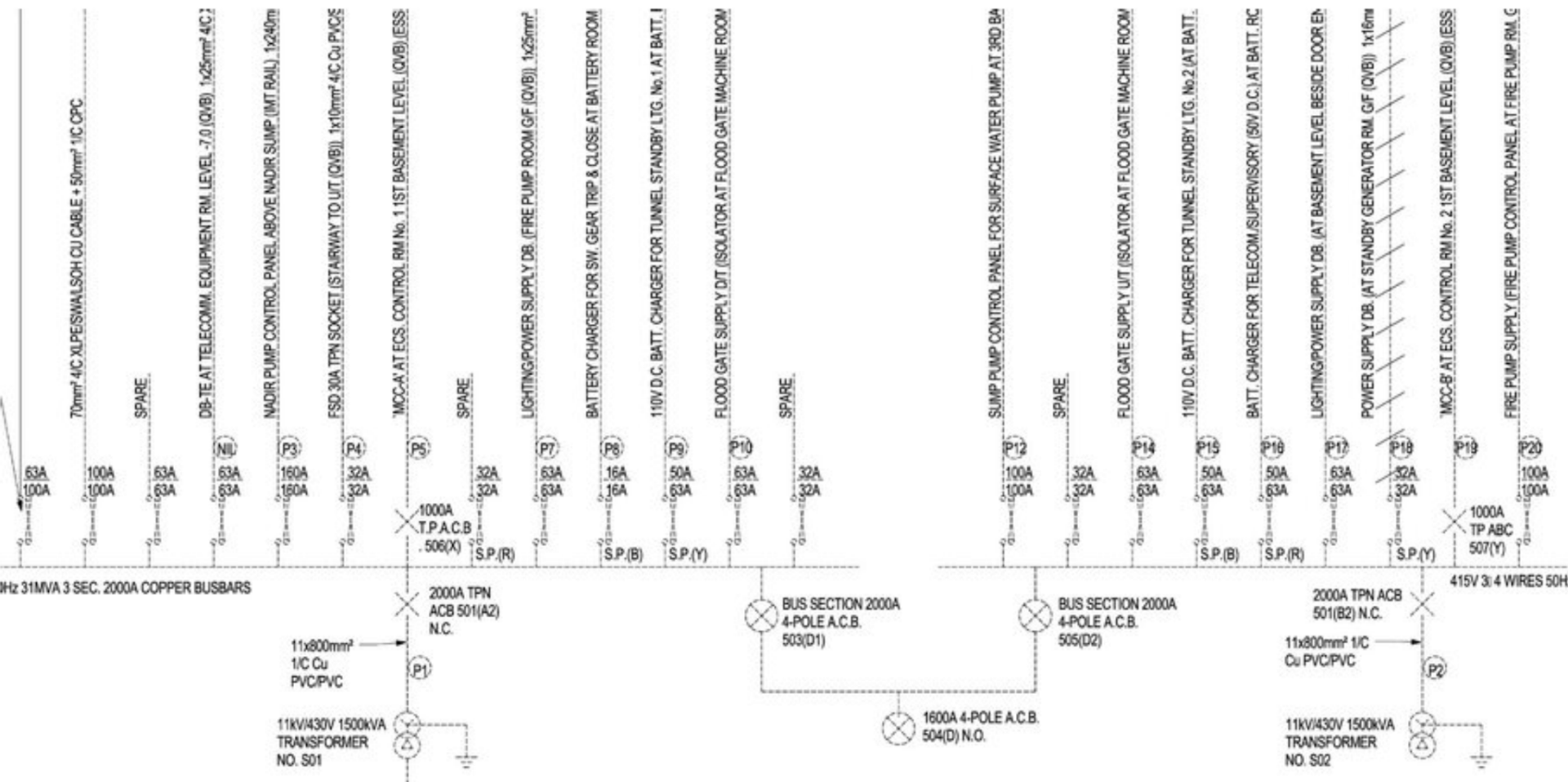
PIPE SCHEDULE DIA.100 SPRINKLER PIPE SCHEDULE

Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP	100 mmø	SPP	248.702

PIPE SCHEDULE DIA.150 SPRINKLER PIPE SCHEDULE

Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP	150 mmø	SPP	1746.315

Equipment Schedule





DRAWING NO.	REV.
004.B/T/ /M08/001	A

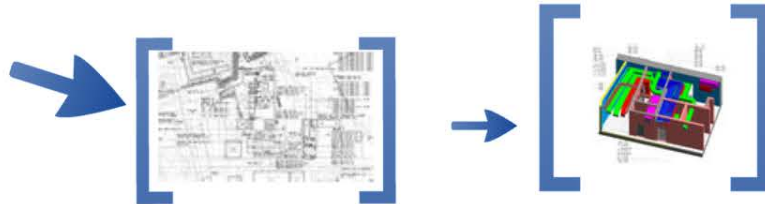


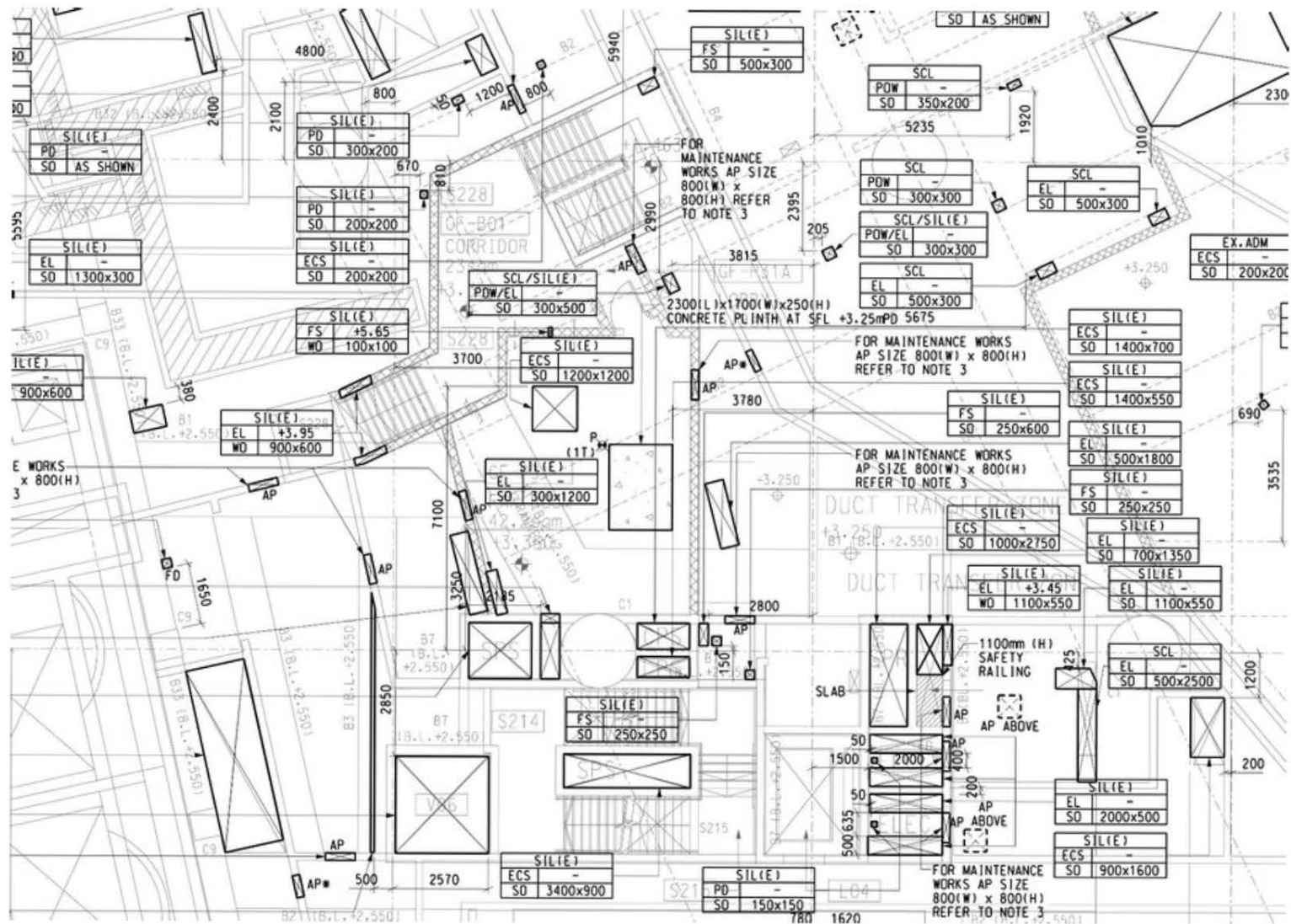
Reference Drawings



Construction drawings

Combined Services Drawings CSDCo-ordination of drawings





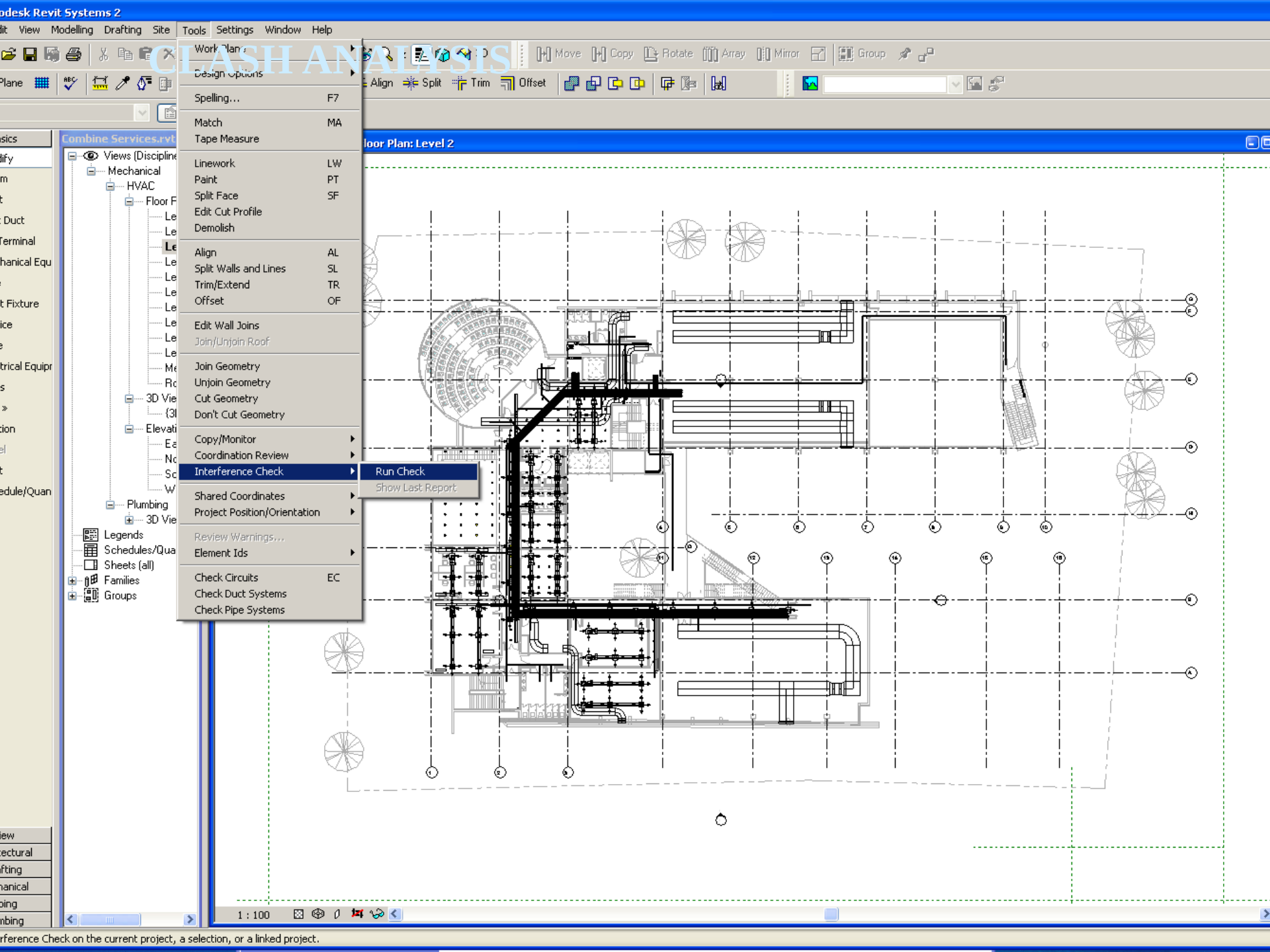
And one more thing...

BIM is becoming more popular in construction industry and even statutory in some countries.

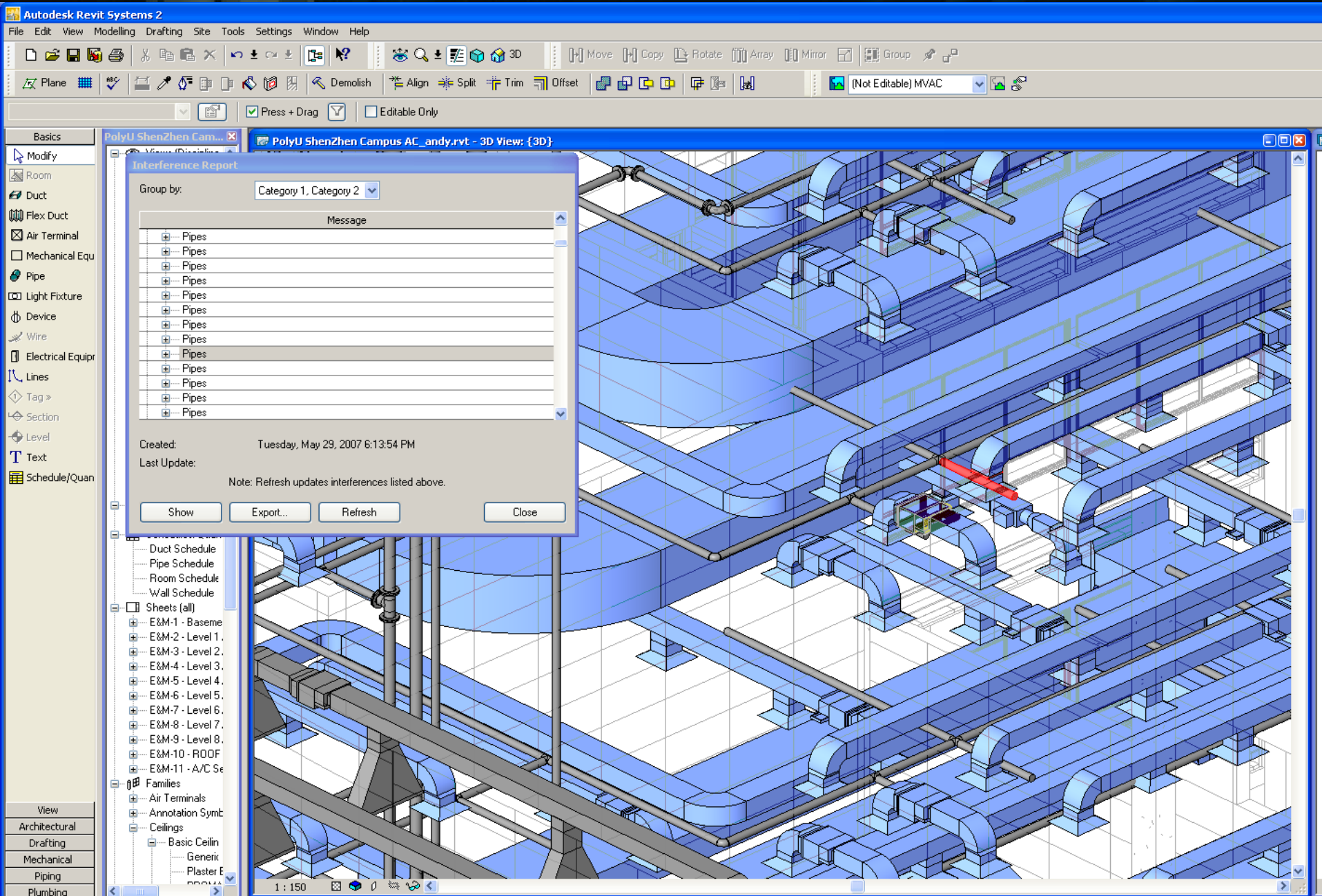
Conclusion

- BIM CAN produce E&M Drawings
BIM enhances collaboration
BIM facilitates automation

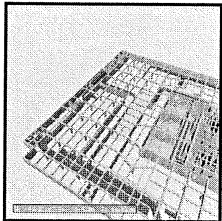
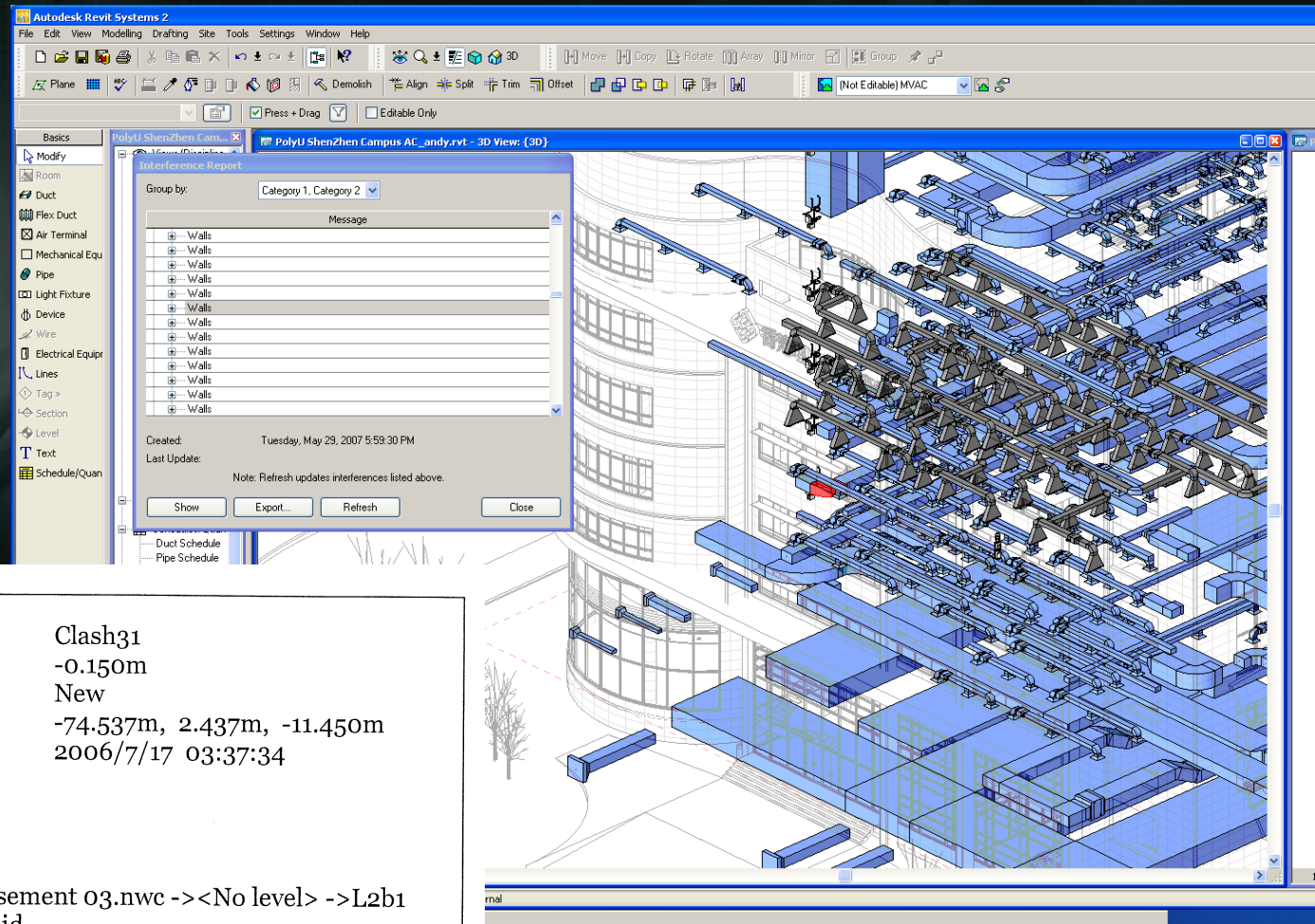




CLASH ANALYSIS



CLASH ANALYSIS REPORT



Name Clash31
 Distance -0.150m
 Status New
 Clash Point -74.537m, 2.437m, -11.450m
 Date Created 2006/7/17 03:37:34
 Approved By

Item 1

Path File ->File ->Basement 03.nwc -><No level> ->L2b1
 500 x 700 ->L2b1 500 x 700 ->Solid

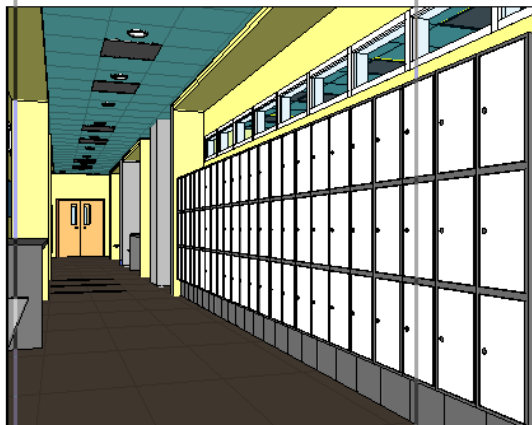
Item 2

Entity Handle 2AD6
 Path File ->File ->B3HVAC_Duct.nwd ->H-Ductwork-G -
 >Duct

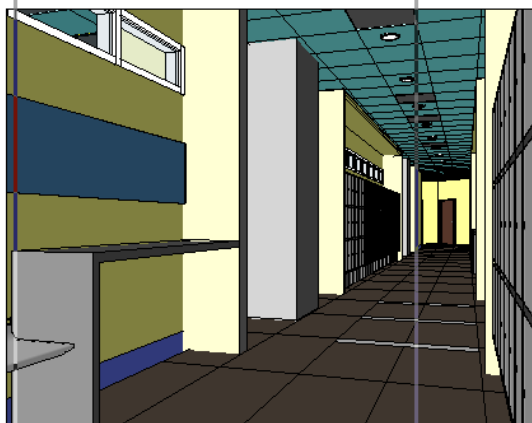
A 3D perspective view of a classroom layout. The room features a blue floor, yellow walls, and a whiteboard. There are several rows of desks and chairs, a teacher's desk at the front, and a door on the right side.

A 3D perspective view of a classroom layout. The room features a blue floor, yellow walls, and a grey ceiling. There are two sets of double doors on the left wall. The seating area is filled with rows of light blue desks and grey chairs. A teacher's desk with a brown top and a black chair is positioned at the front of the room. A long, low grey counter or partition runs along the right side of the room. The room is enclosed by a white frame.

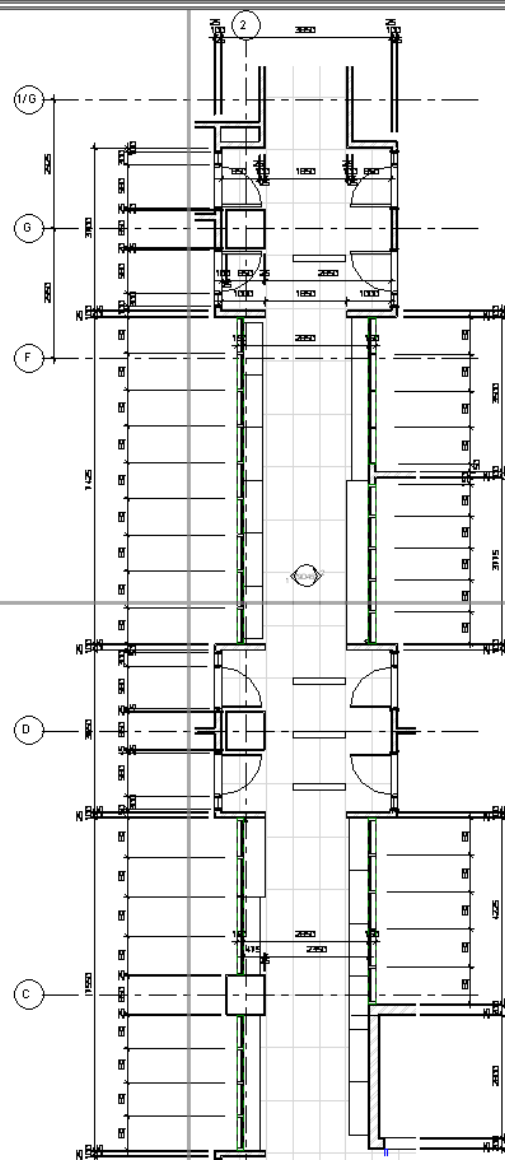
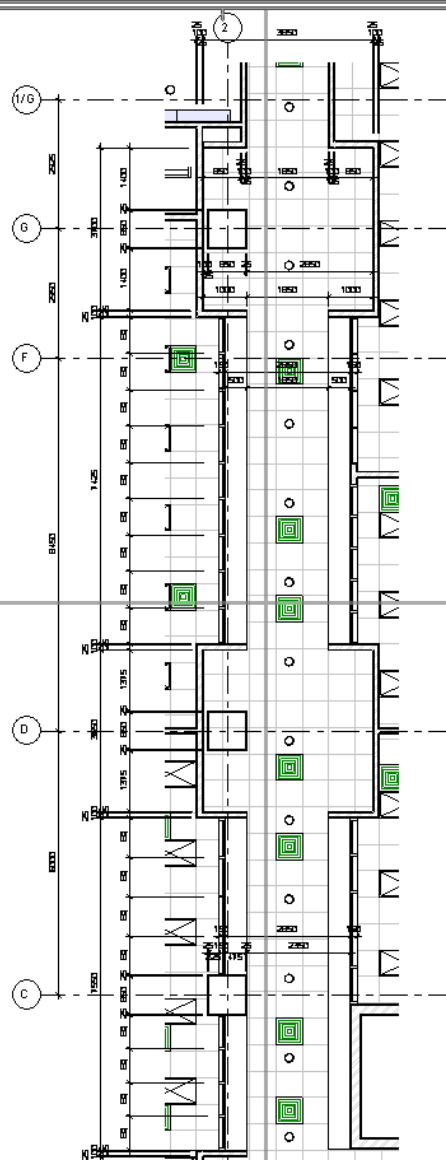
[illegible]

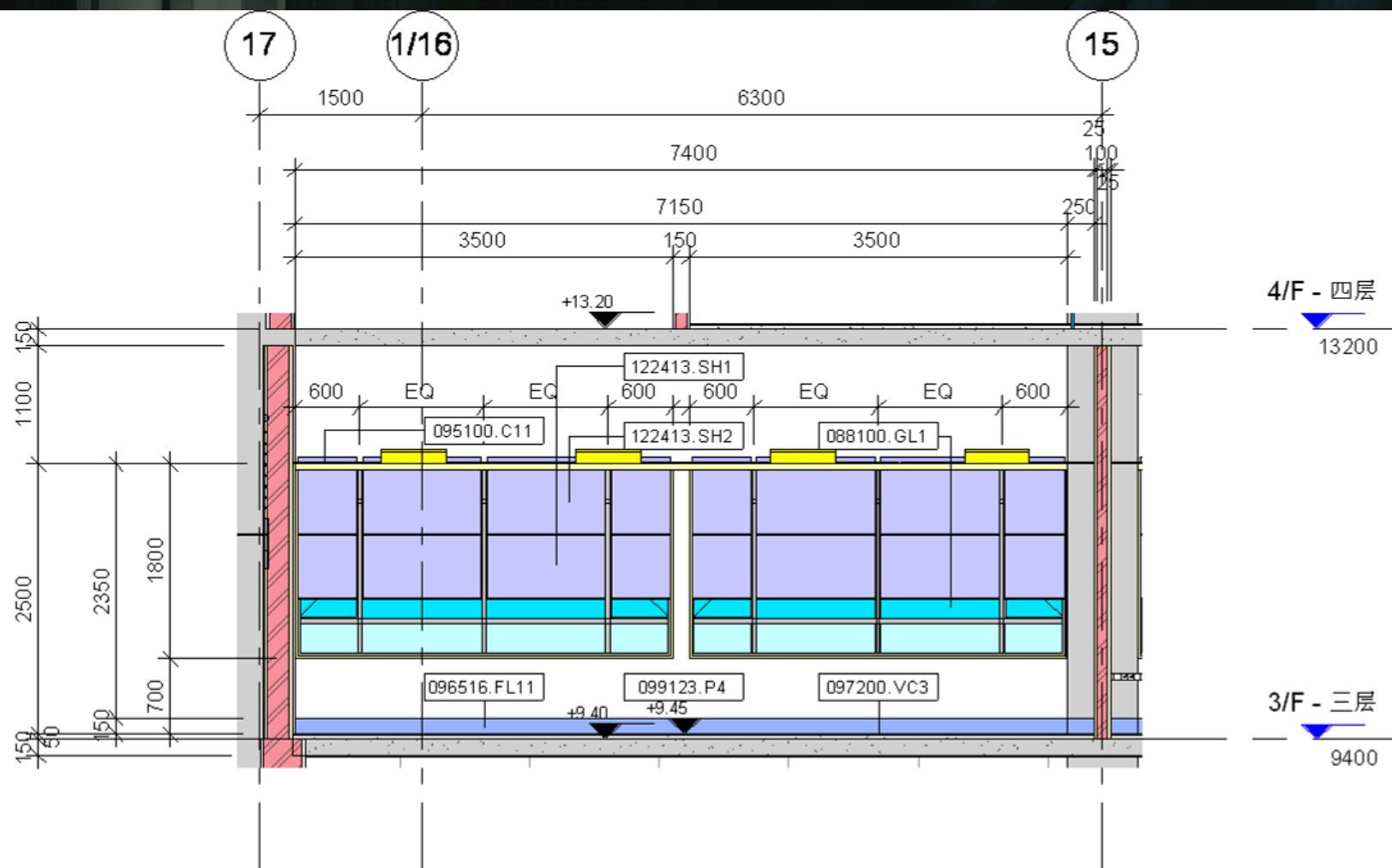


4 走廊立体示意图(低楼三至四层)2



3 走廊立体示意图(低楼三至四层)1

[illegible]



2

行政人员培训室立面图(高楼三层)6

1:50

REAL BIM

I = M

I > M

INFORMATION FROM MODEL,
INFORMATION MORE IMPORTANT

B I M



Modelling

Information

Business

REAL BIM

$$M + I = B$$

BIM is a process, Business is the objective

Case 1

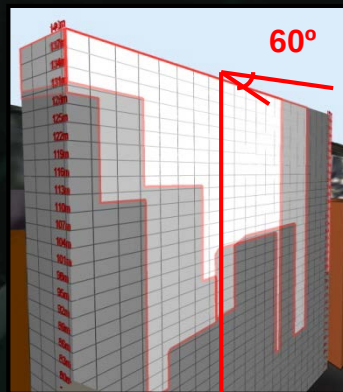
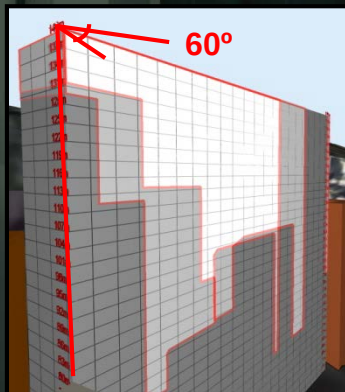
Real BIM – Design

$$M + I = B$$

(Development Potential)



140m



140m

135m

130m

125m

120m

115m

110m

105m

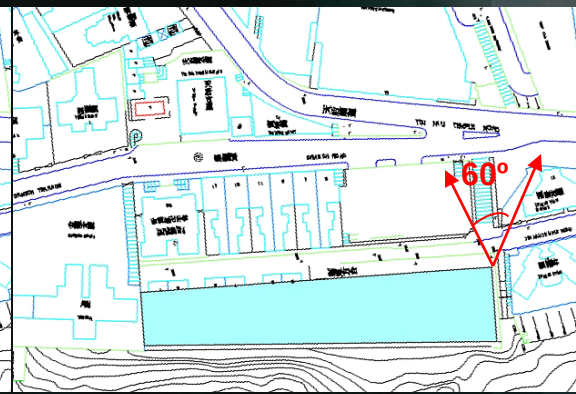
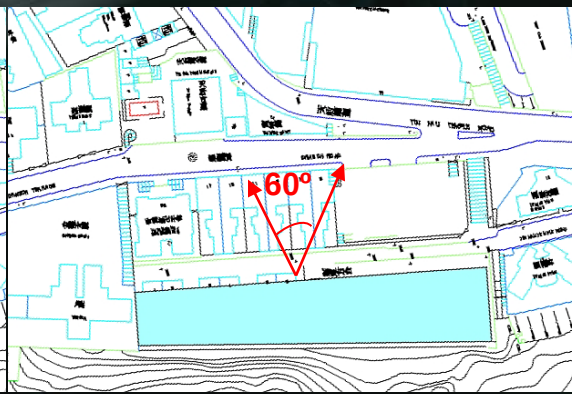
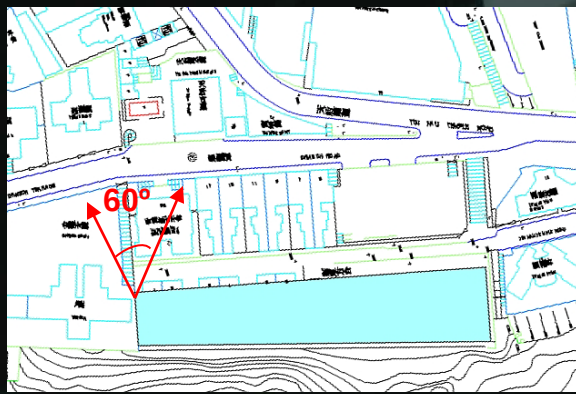
100m

95m

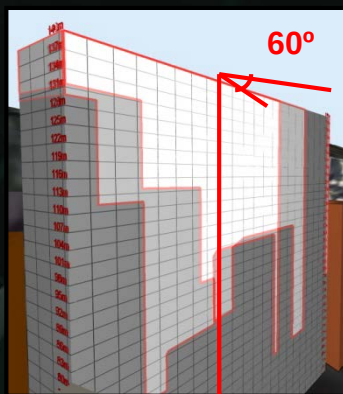
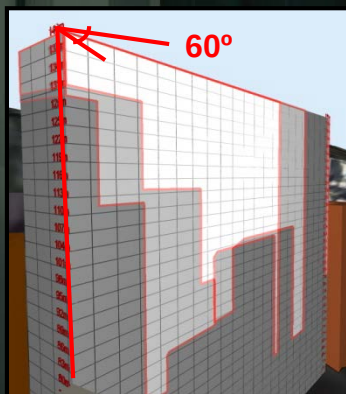
90m

85m

80m



135m



140m

135m

130m

125m

120m

115m

110m

105m

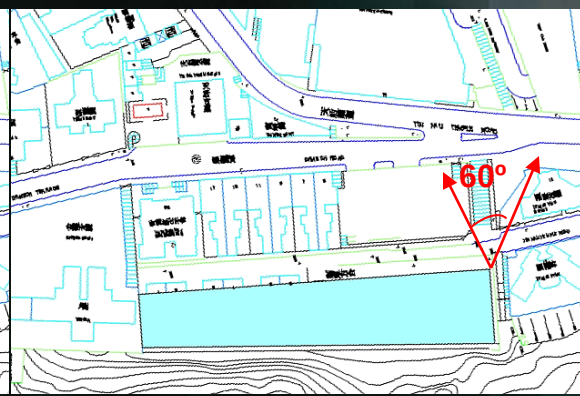
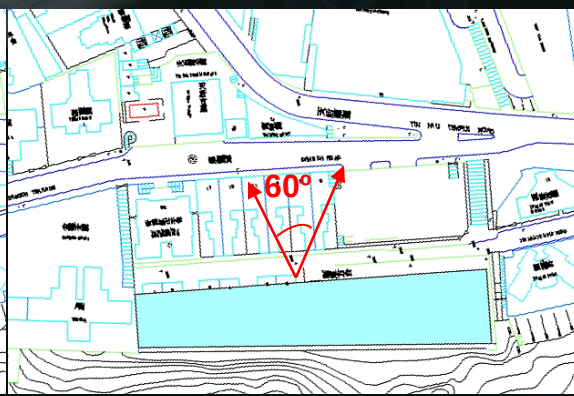
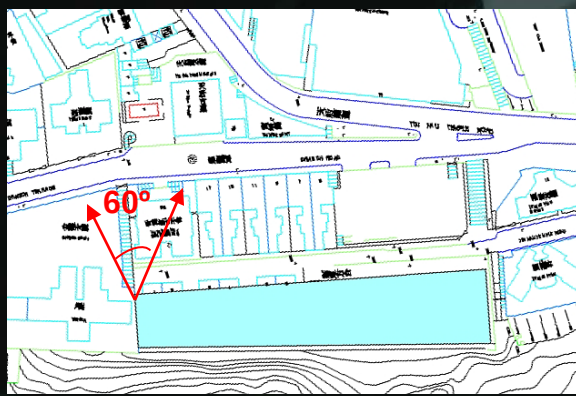
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95m

90m

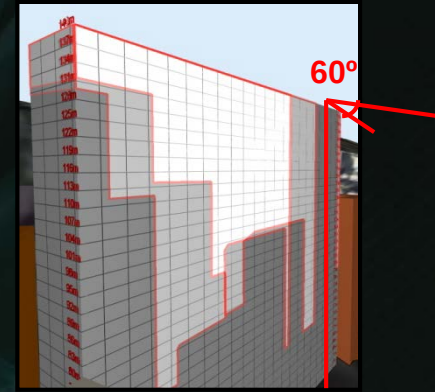
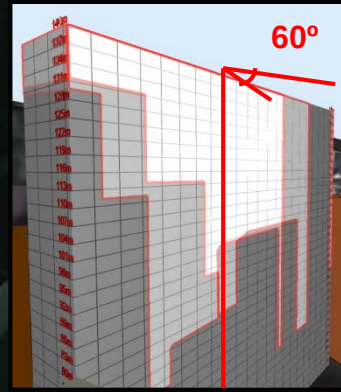
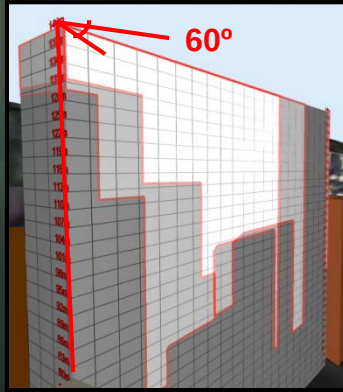
85m

80m



Tin Hau Temple Road No.1

130m



140m

135m

130m

125m

120m

115m

110m

105m

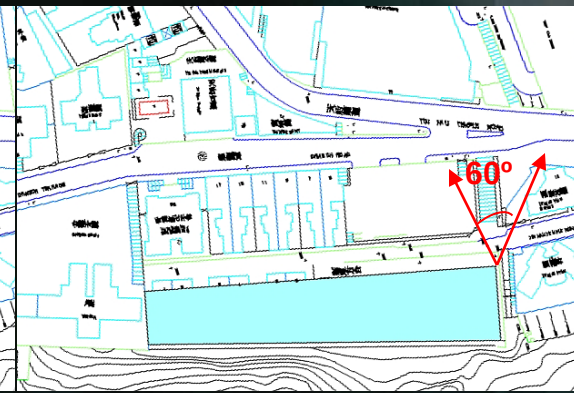
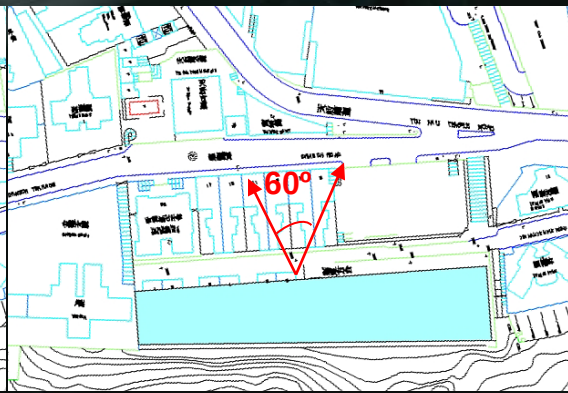
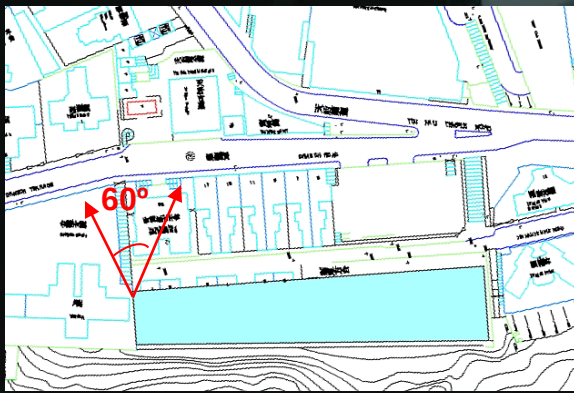
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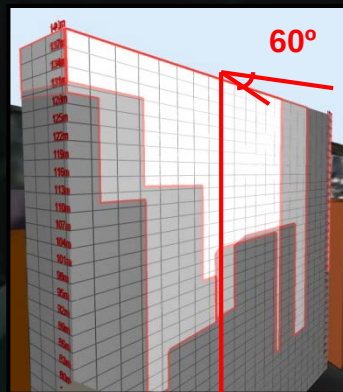
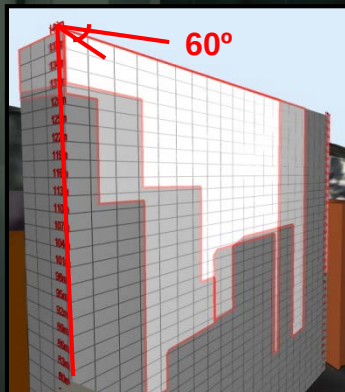
90m

85m

80m



125m



140m

135m

130m

125m

120m

115m

110m

105m

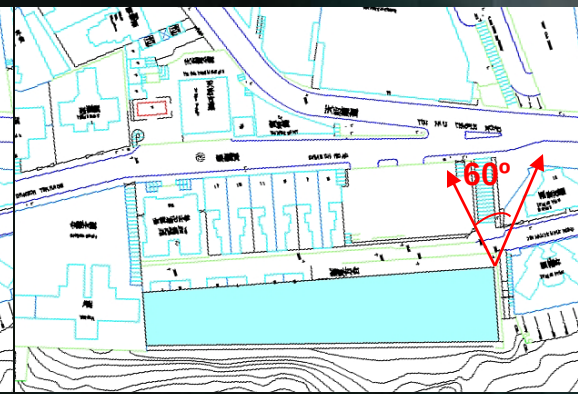
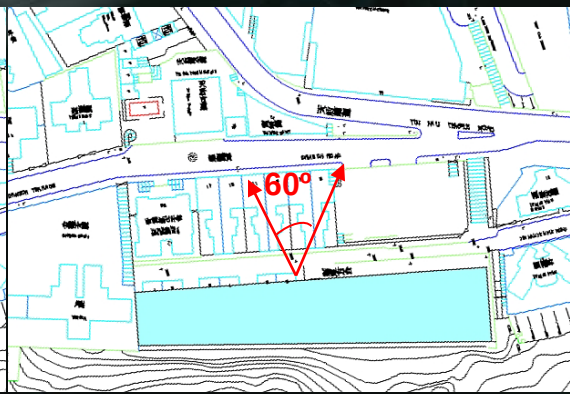
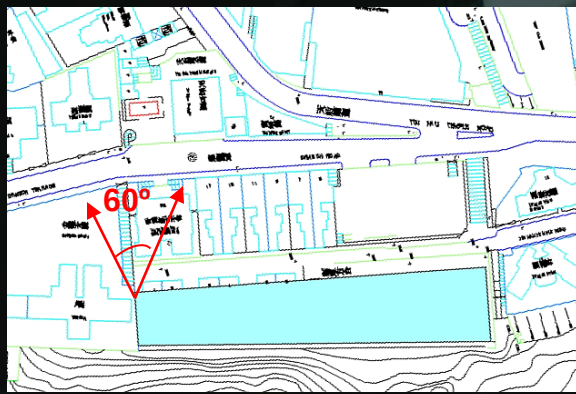
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95m

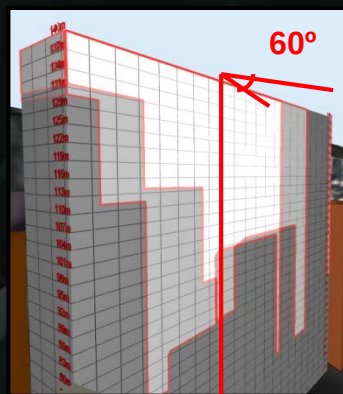
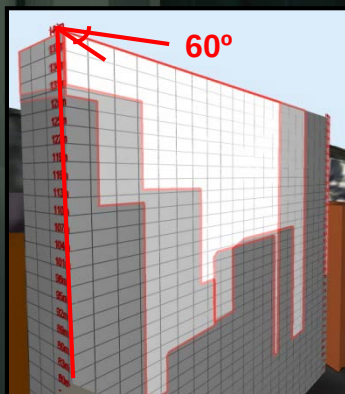
90m

85m

80m



120m



140m

135m

130m

125m

120m

115m

110m

105m

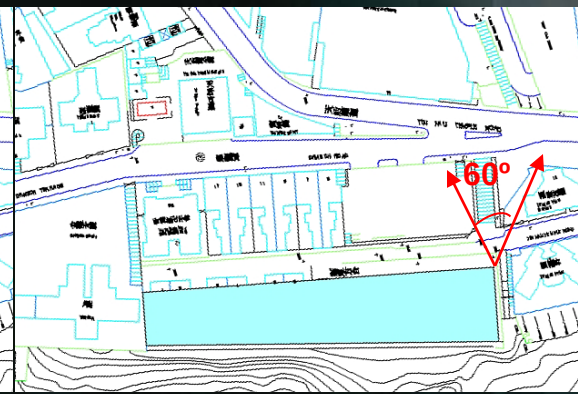
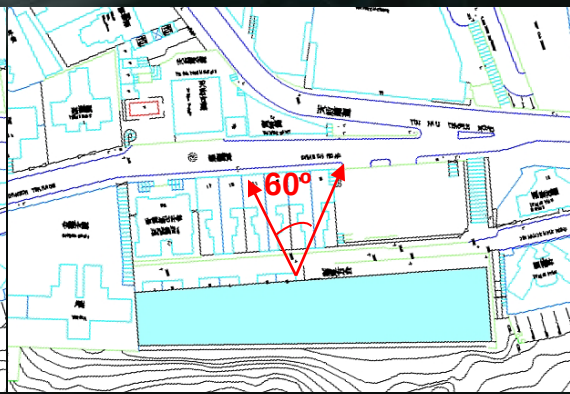
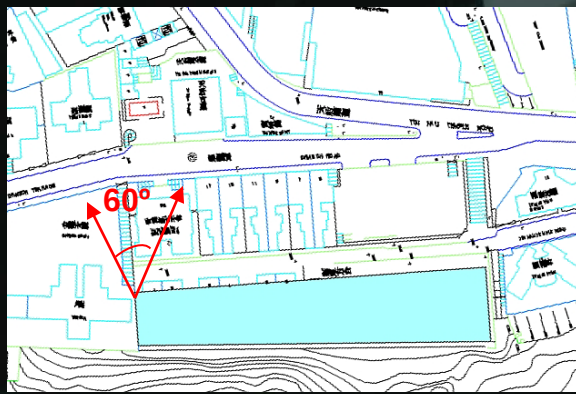
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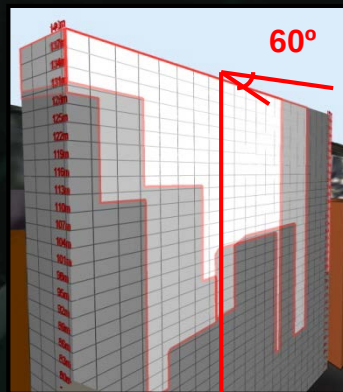
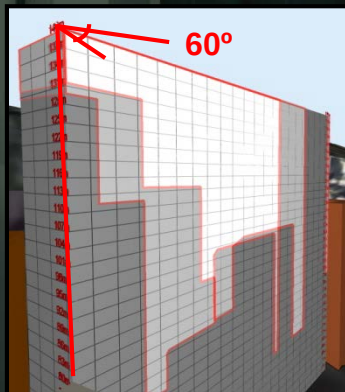
90m

85m

80m



115m



140m

135m

130m

125m

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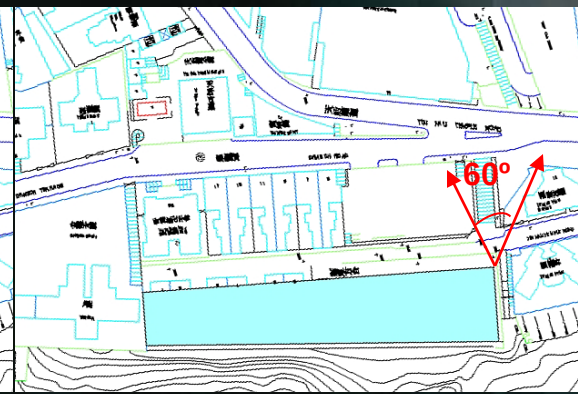
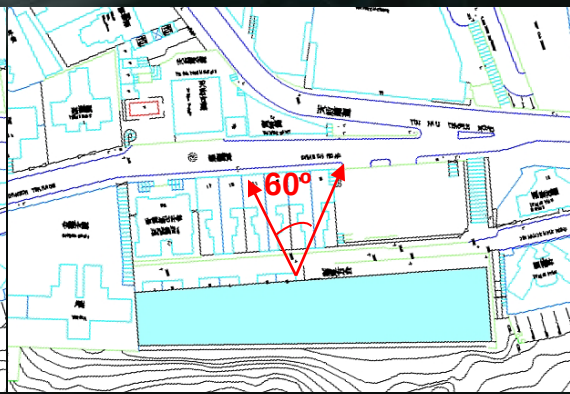
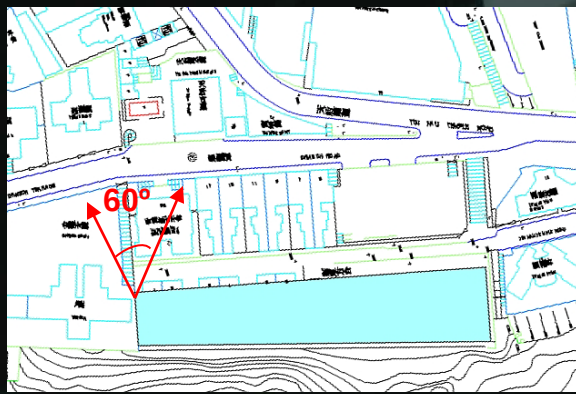
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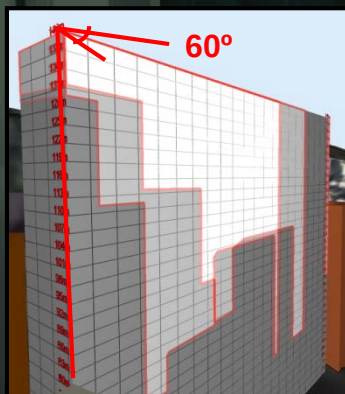
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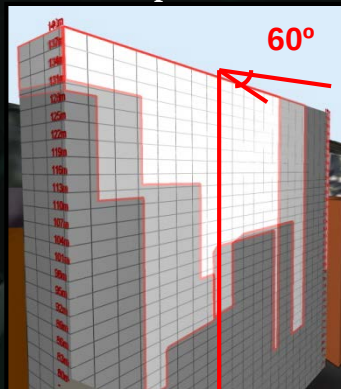
80m



110m



Tin Hau Temple Road No.1



Tin Hau Temple Road No.1



140m

135m

130m

125m

120m

115m

110m

105m

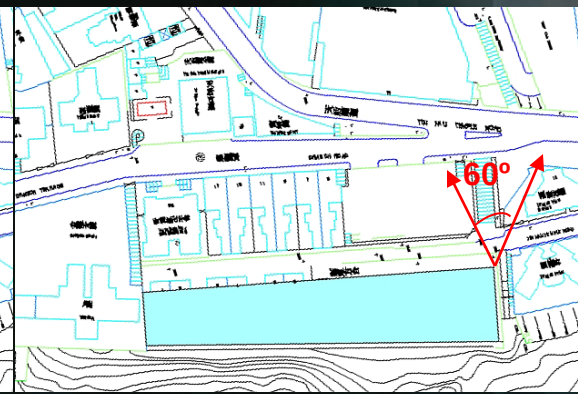
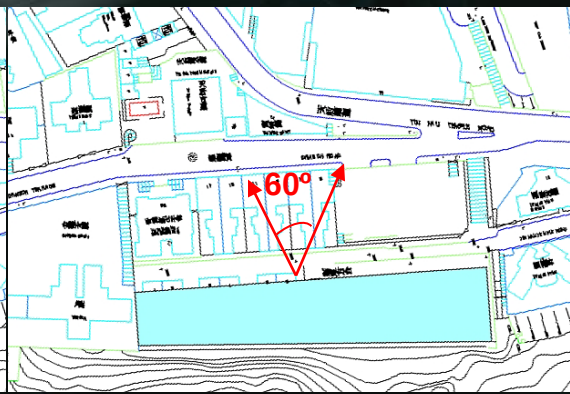
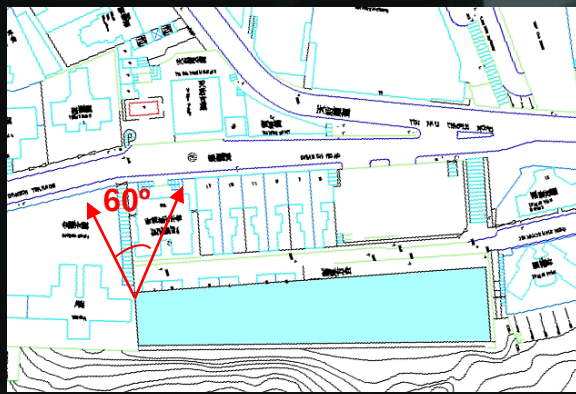
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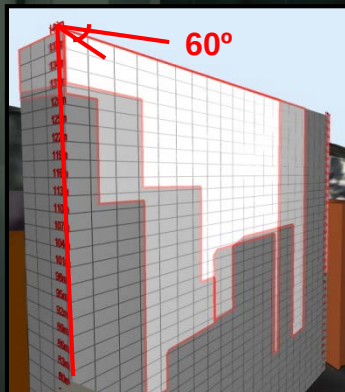
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85m

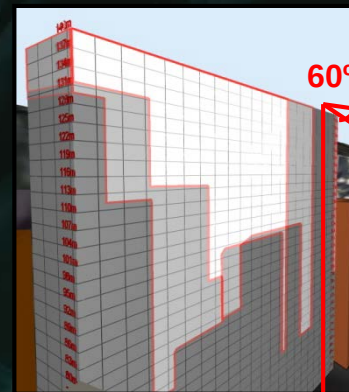
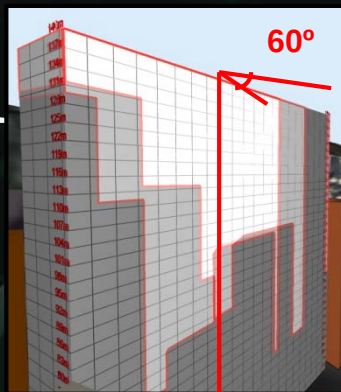
80m



105m



1



140m

135m

130m

125m

120m

115m

110m

105m

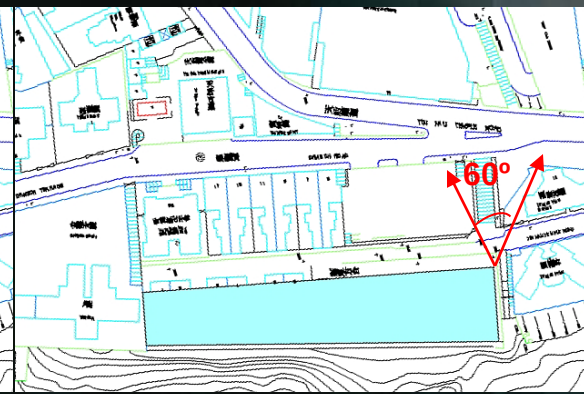
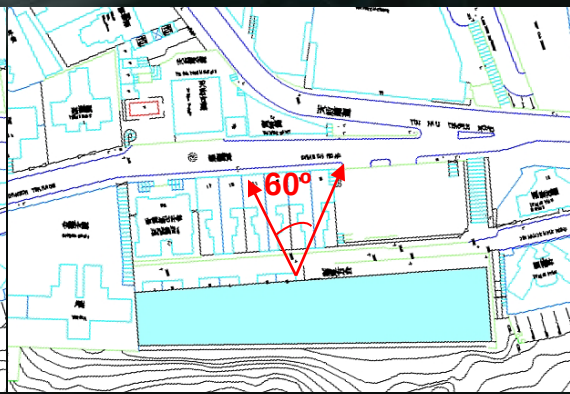
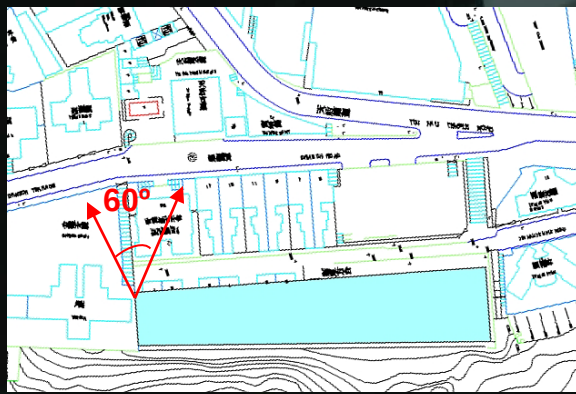
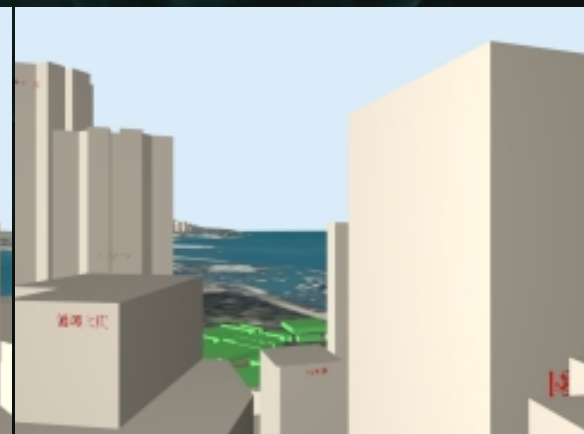
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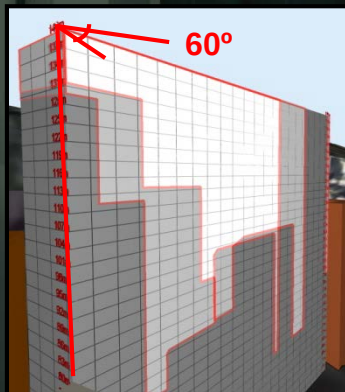
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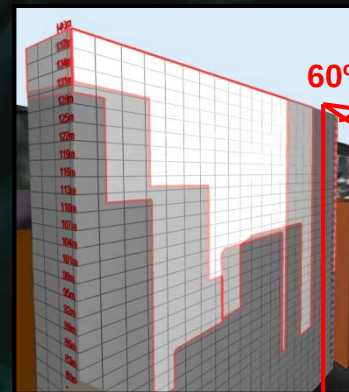
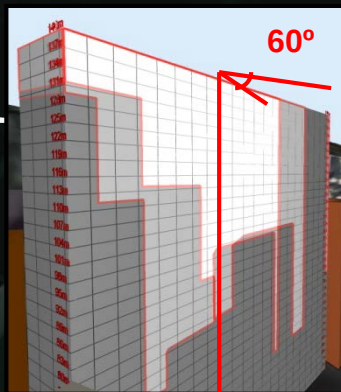
80m



100m



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140m

135m

130m

125m

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110m

105m

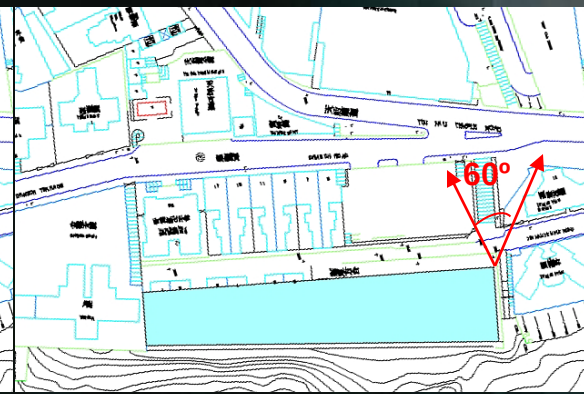
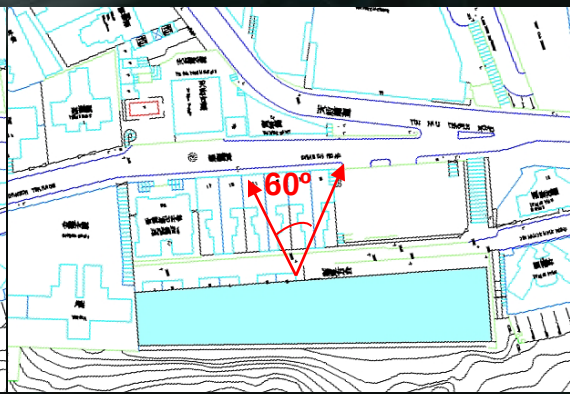
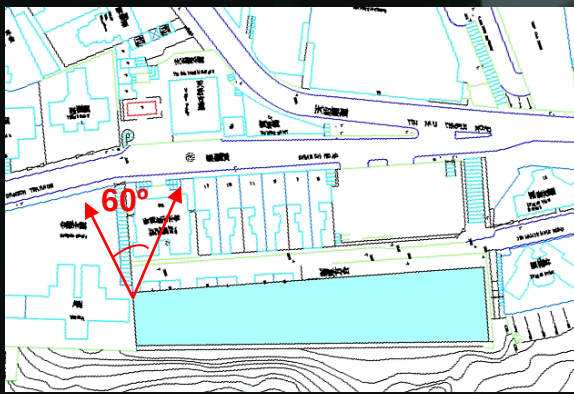
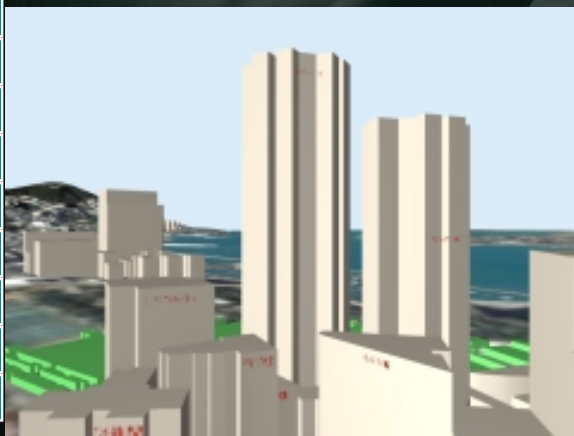
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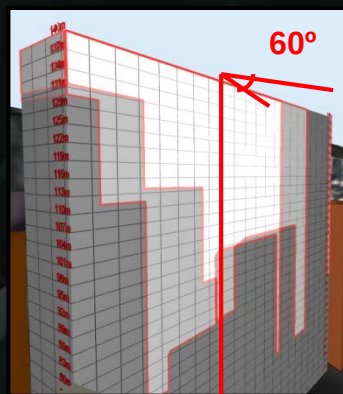
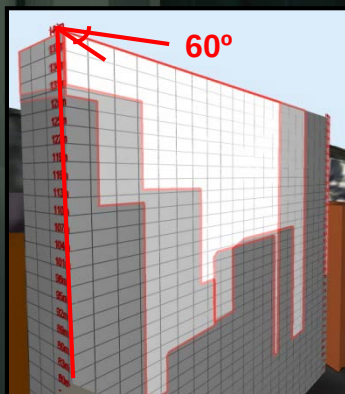
90m

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80m



95m



140m

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125m

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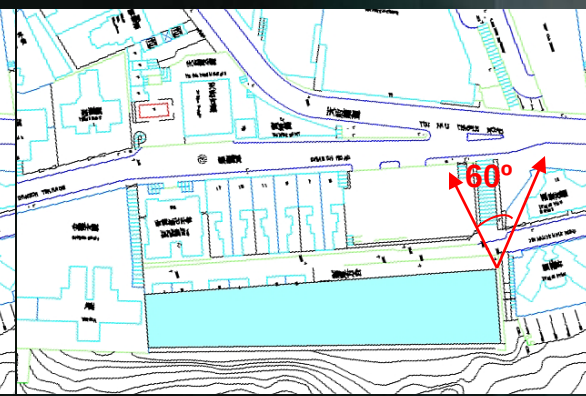
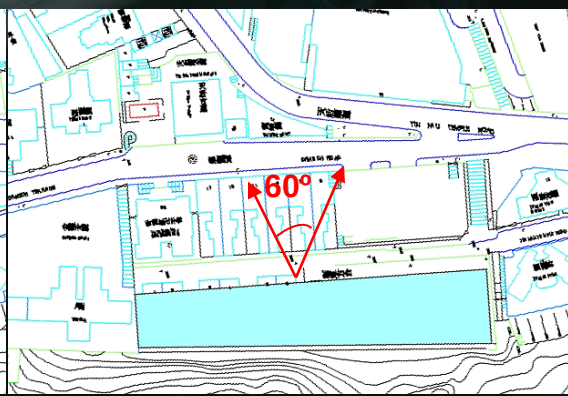
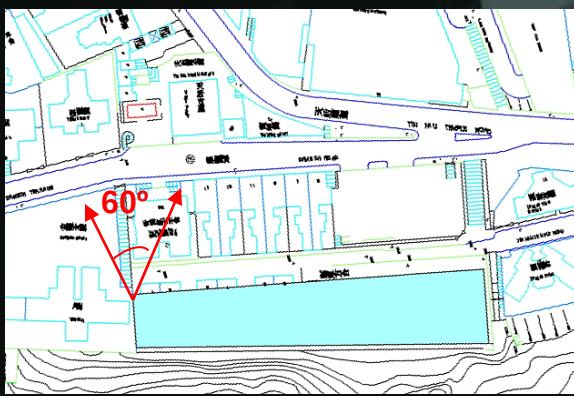
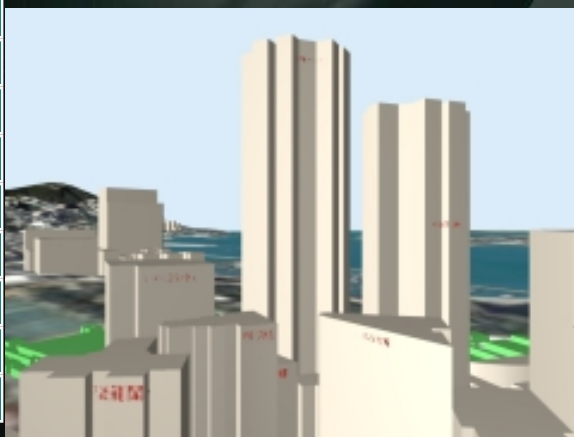
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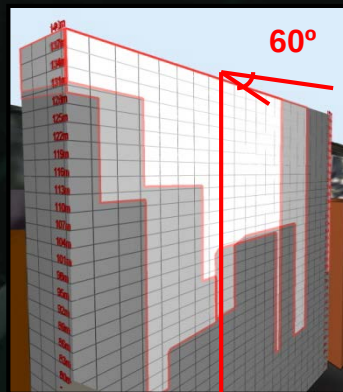
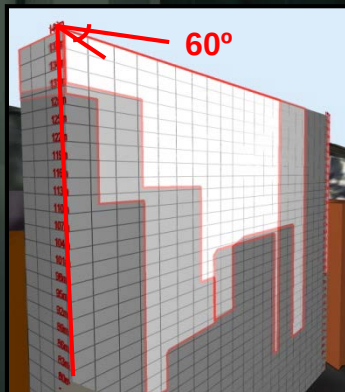
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90m



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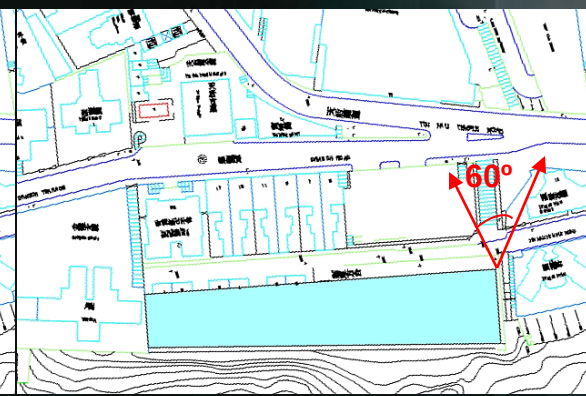
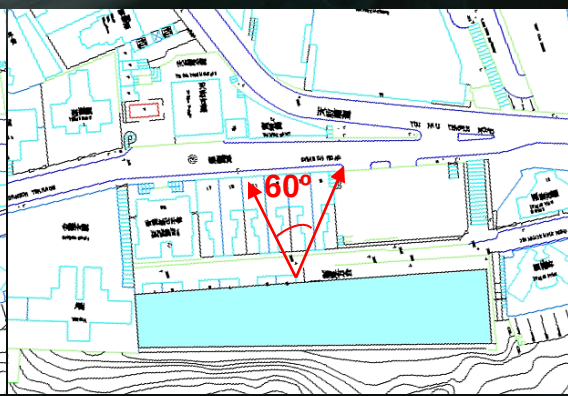
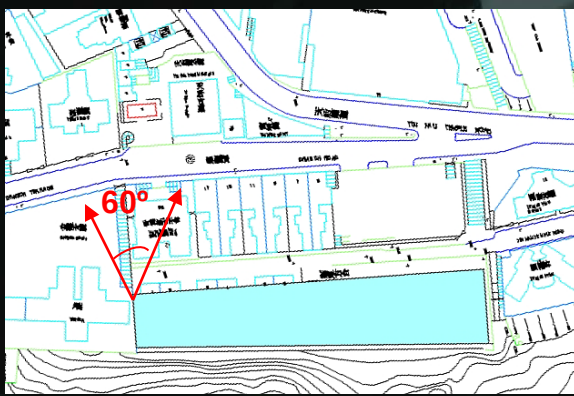
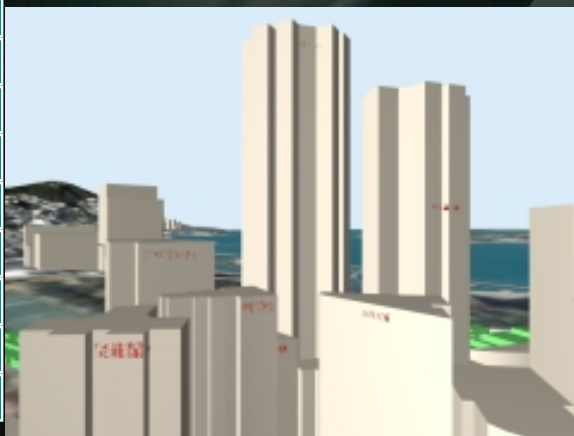
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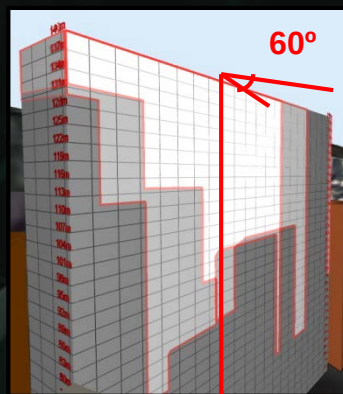
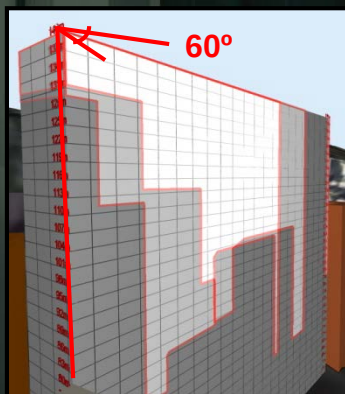
90m

85m

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85m



140m

135m

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110m

105m

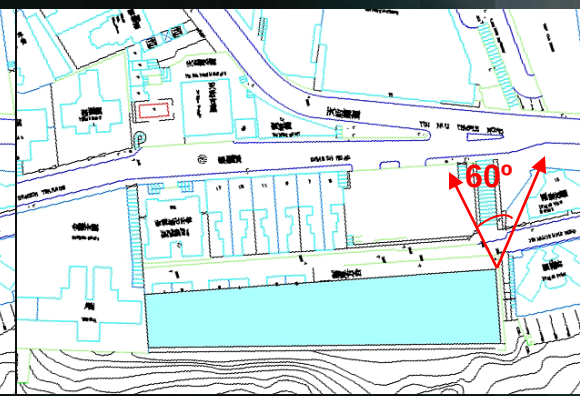
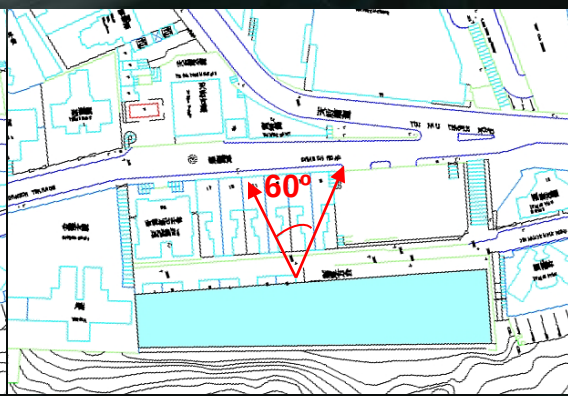
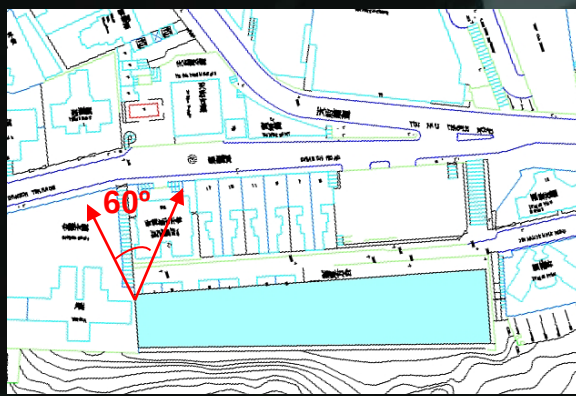
100m

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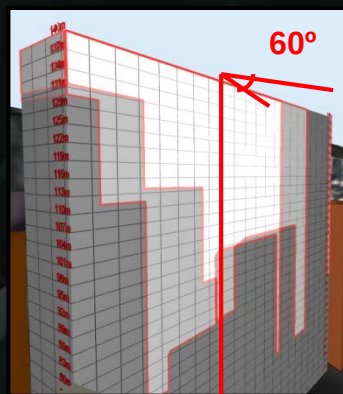
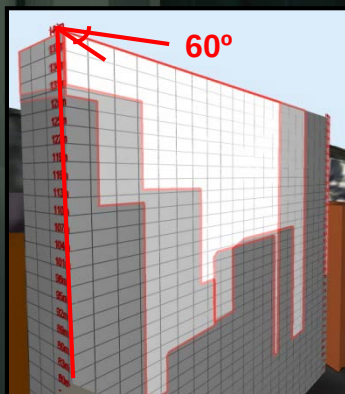
90m

85m

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80m



140m

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125m

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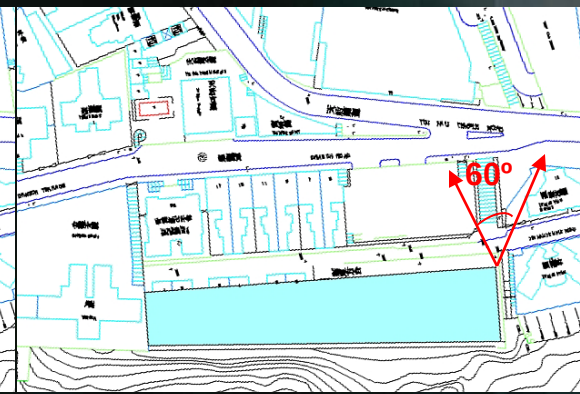
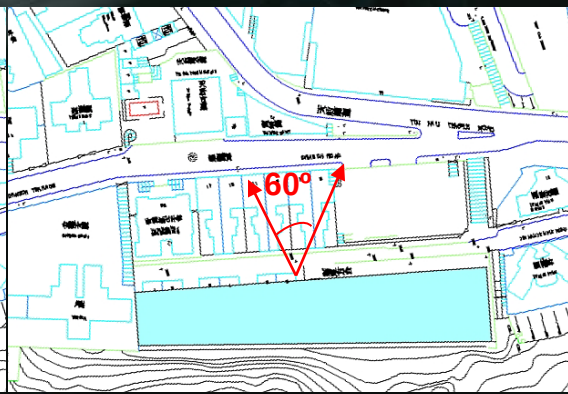
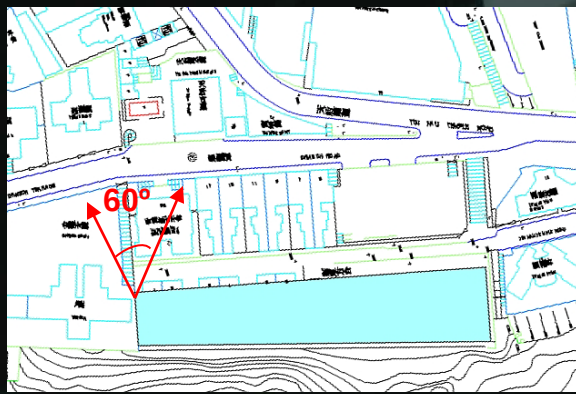
100m

95m

90m

85m

80m



方案 A



方案 B

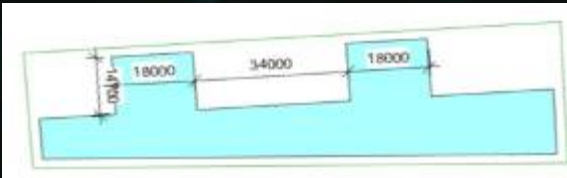
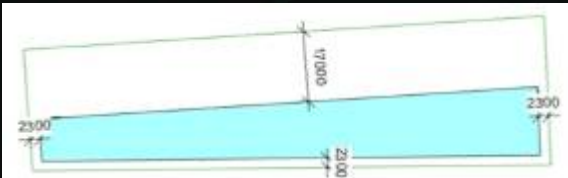
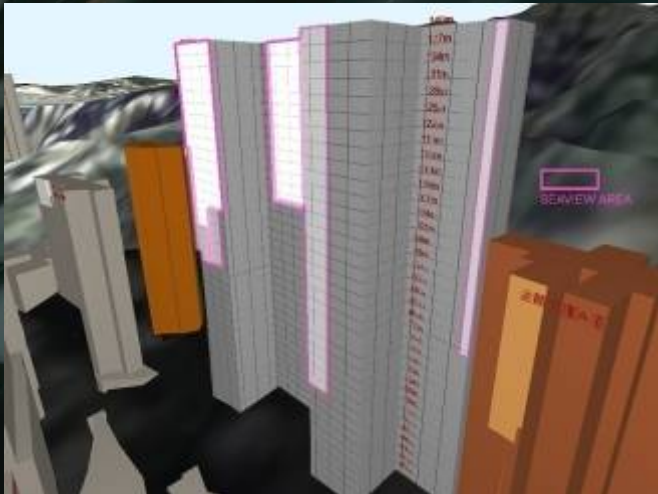
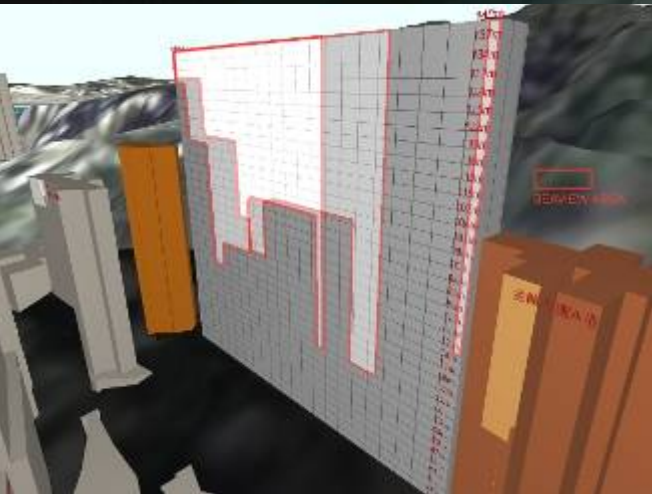


方案 A

海景

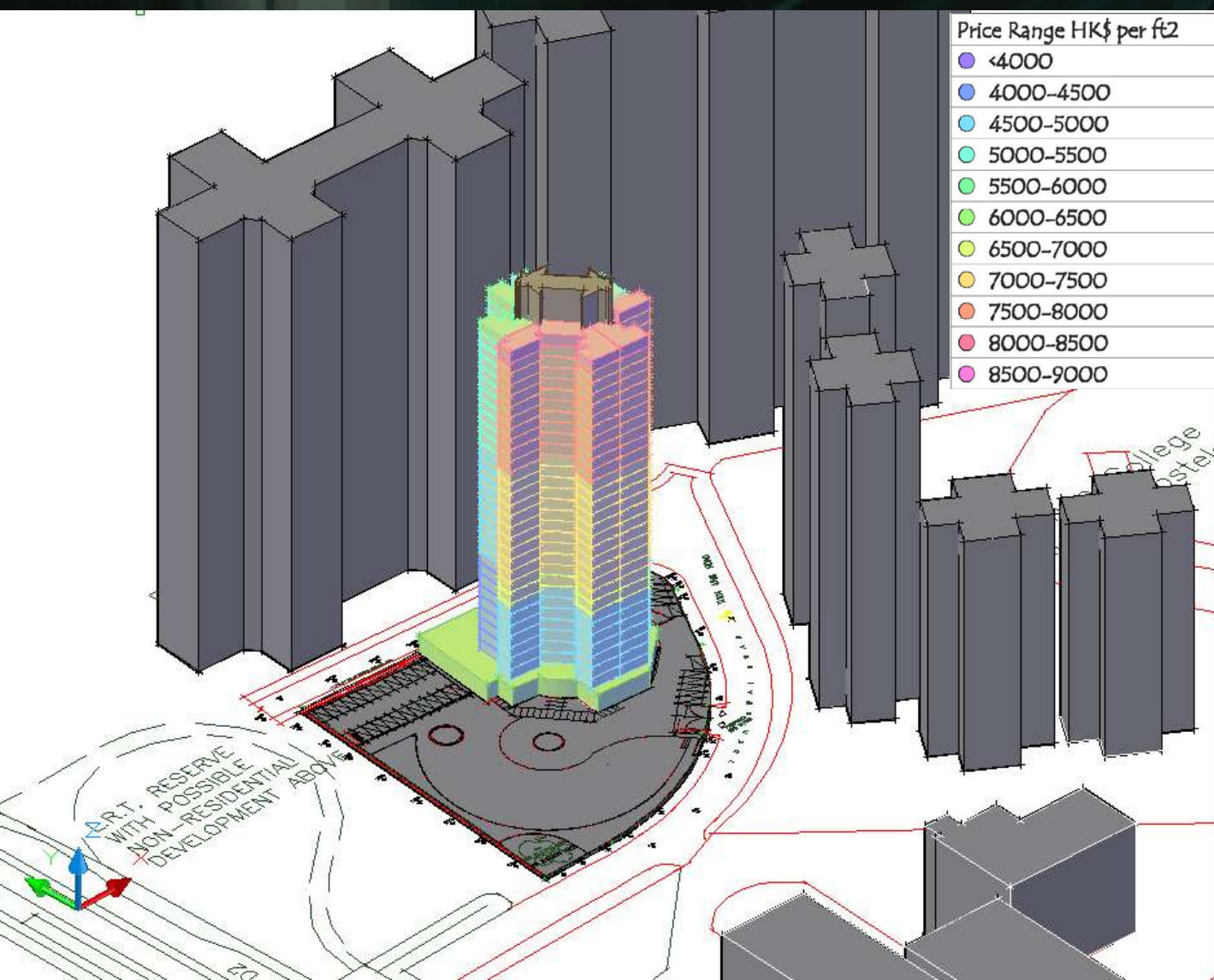
方案 B

海景



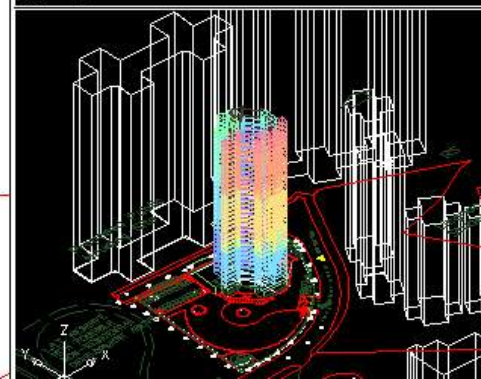
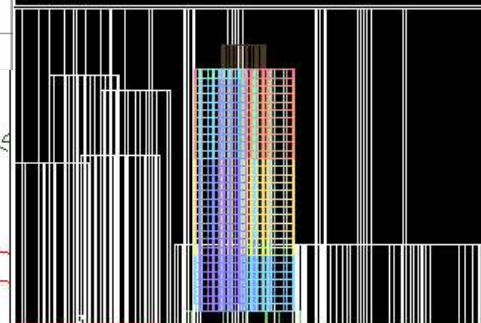
可研通設計平台

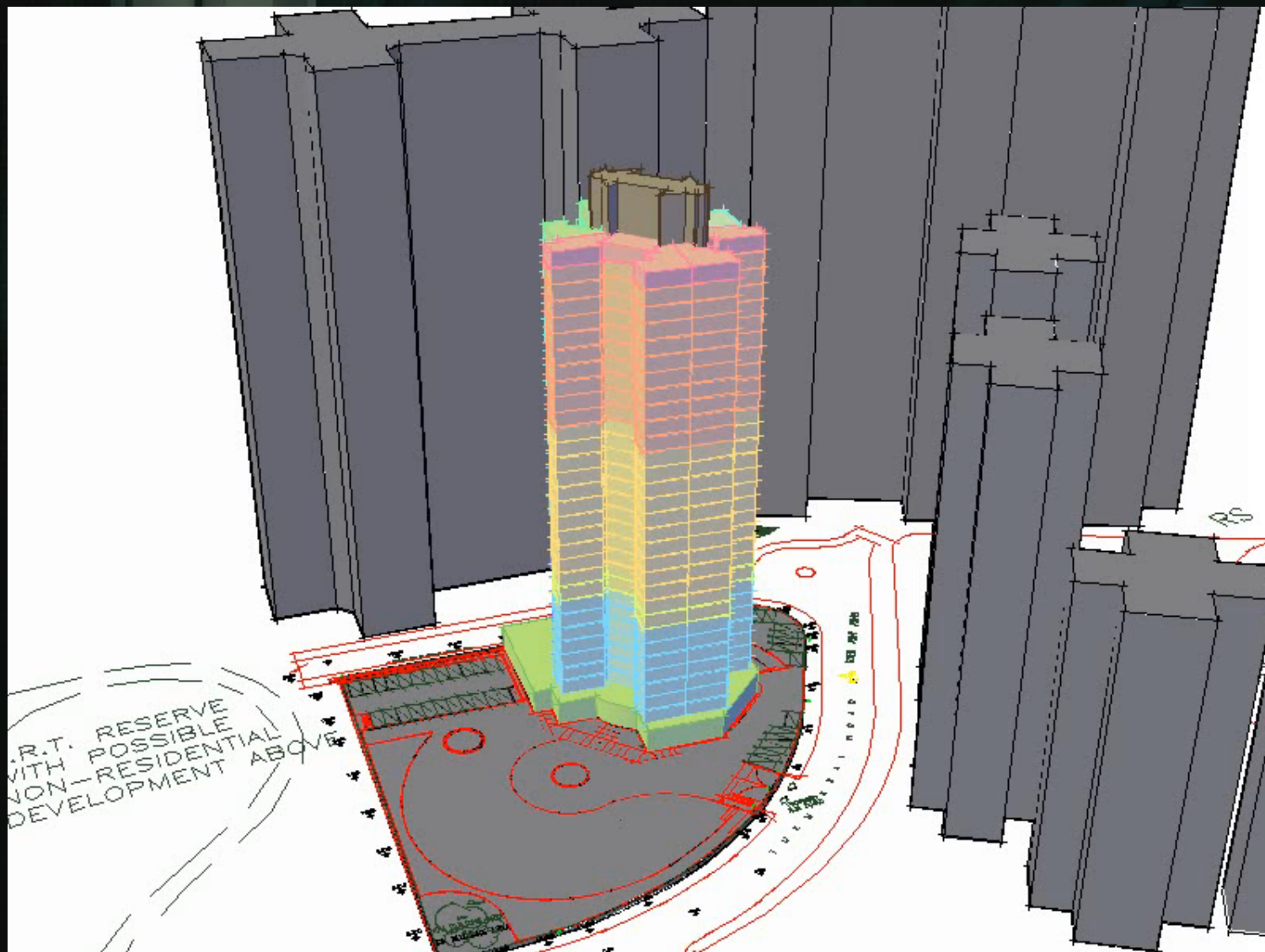
網上整合佈置,收益,景觀,成本,等等數據



Analysis

Area	Price / Flat
66	\$3,256,000
50	\$2,198,000
15780	\$967,386,000

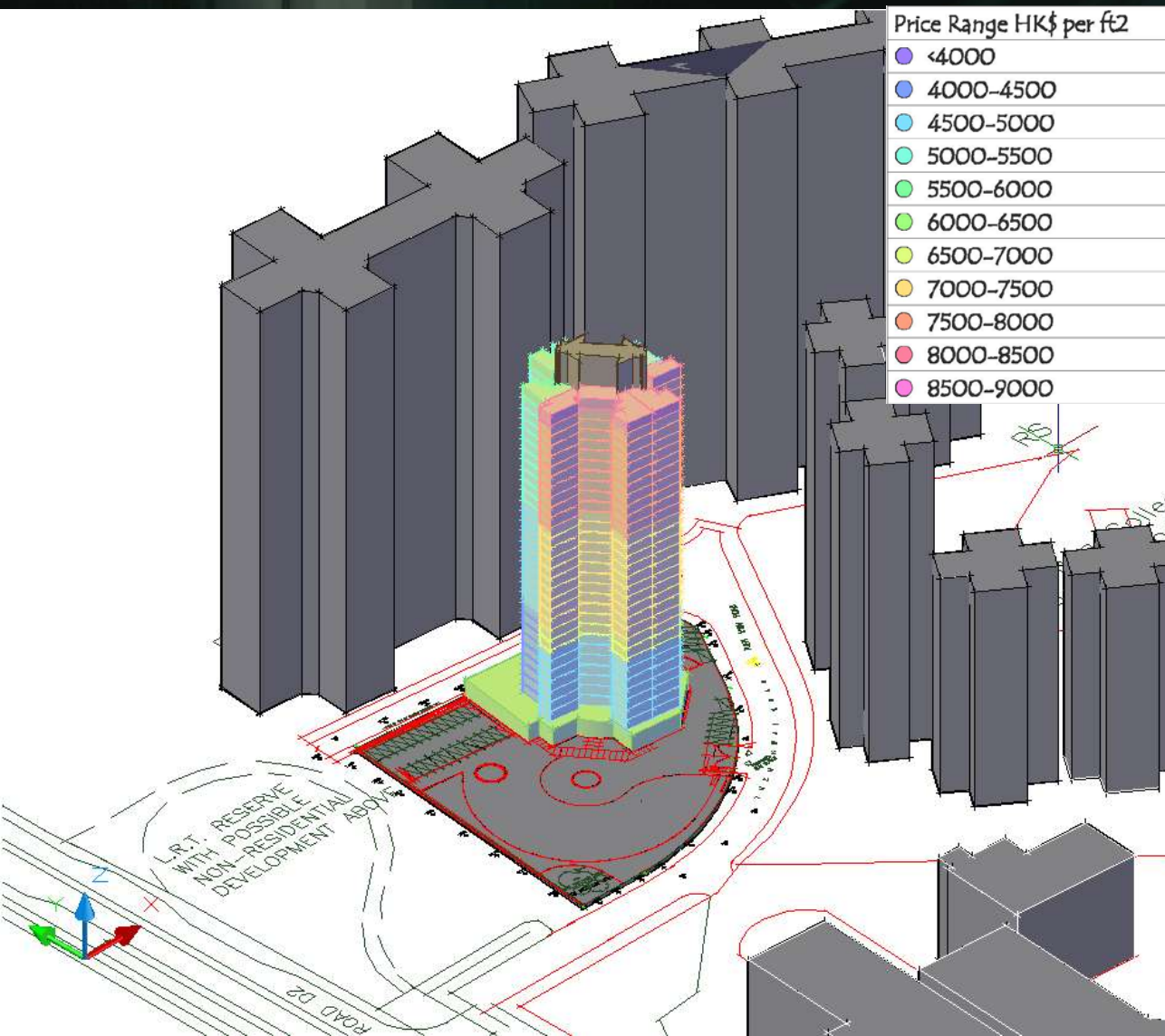






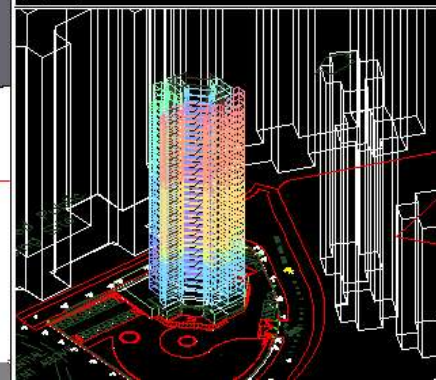
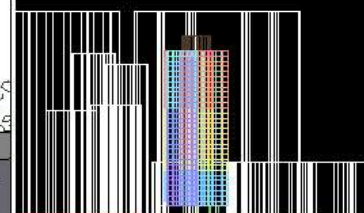
可研通設計平台

網上整合佈置,收益,景觀,成本,等等數據



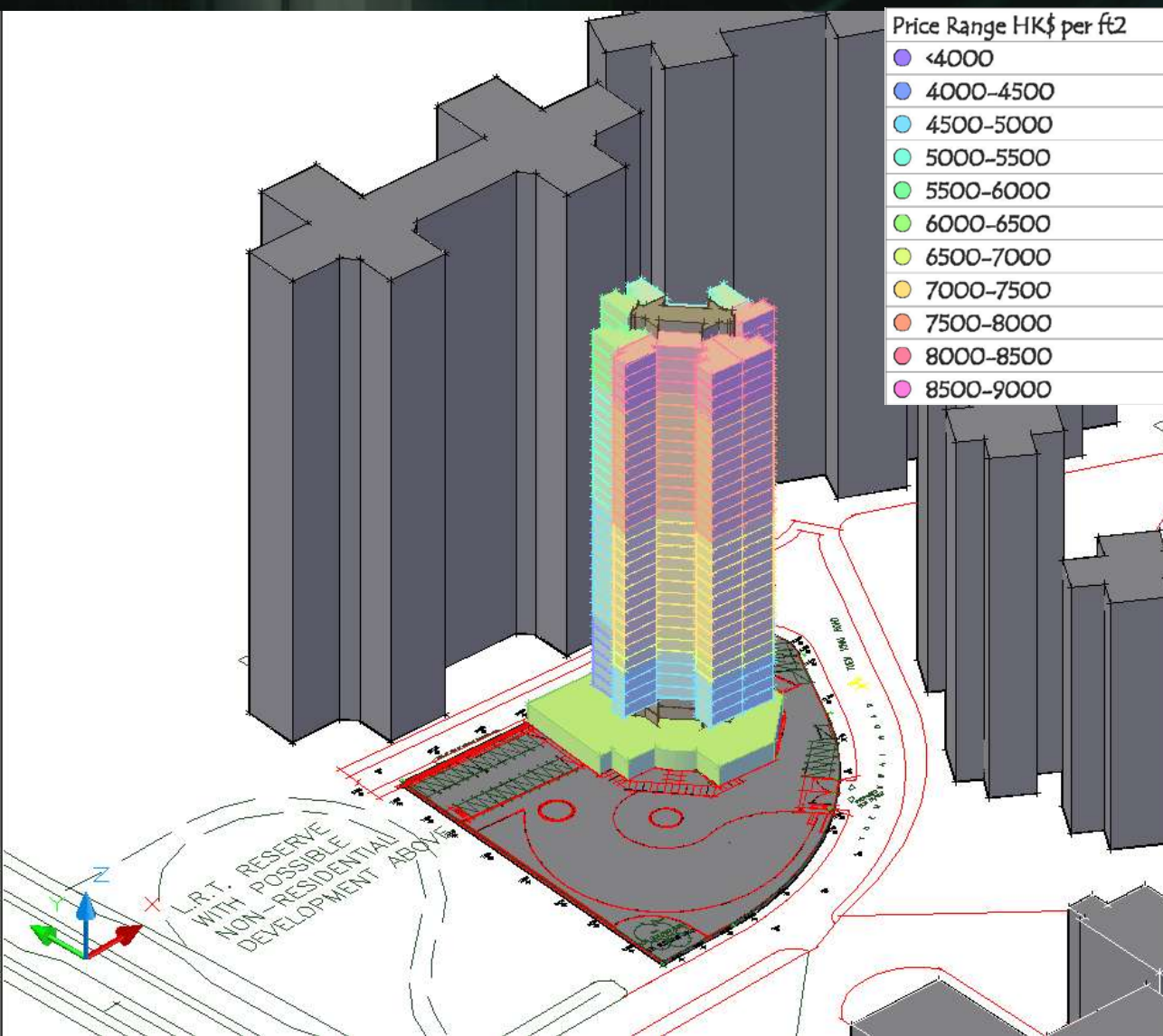
Analysis

Area	Price / Flat
66	\$3,256,000
50	\$2,198,000
15780	\$967,386,000



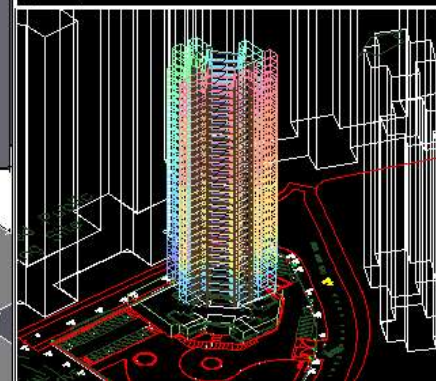
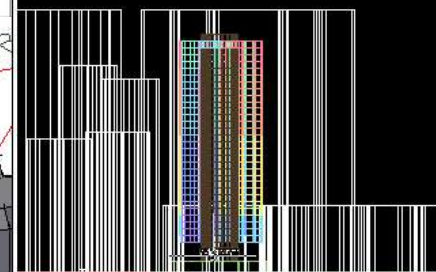
可研通設計平台

網上整合佈置,收益,景觀,成本,等等數據



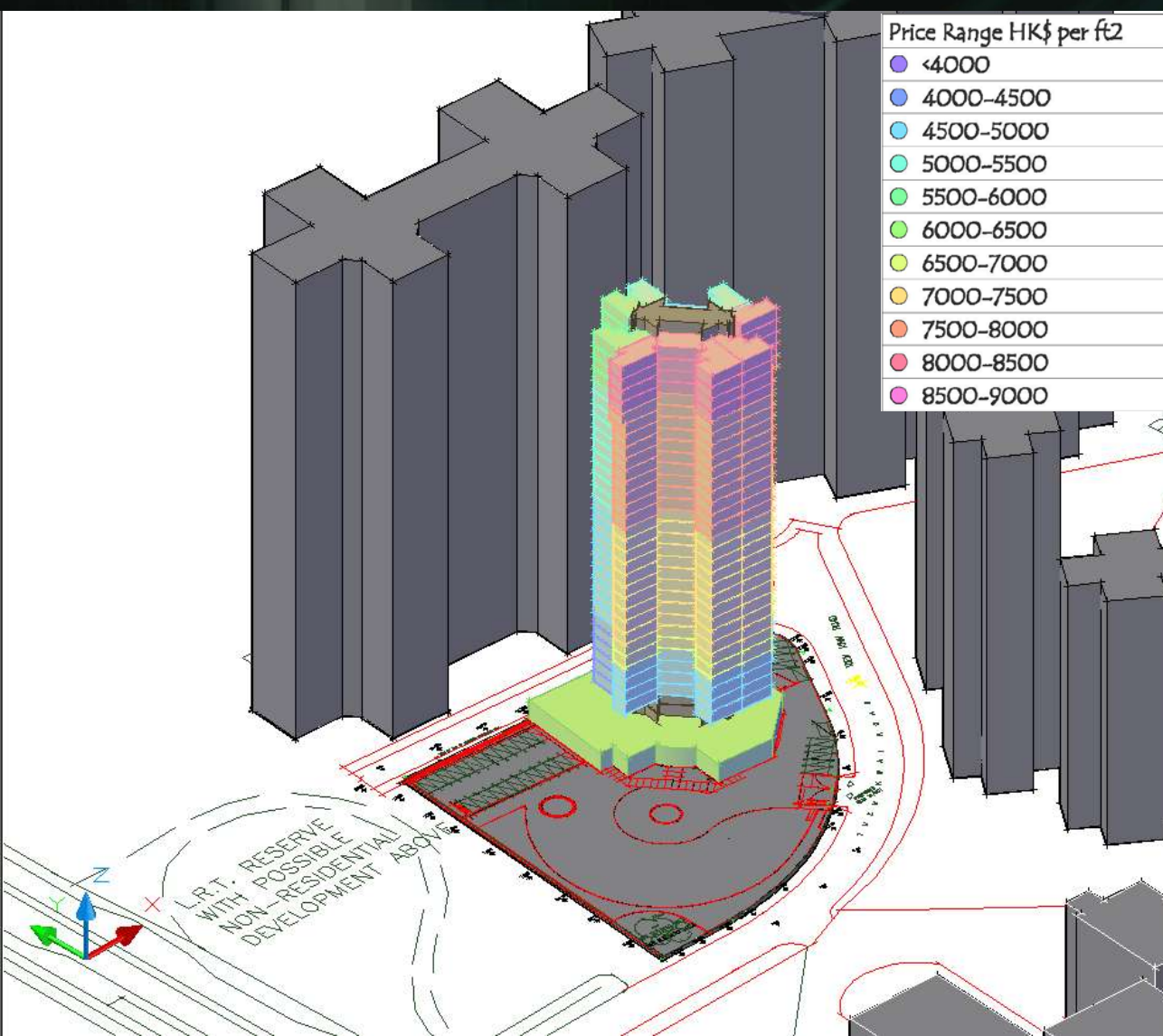
Value Analysis

ft2	Area	Price / Flat
3	66	\$3,363,000
3	50	\$2,279,000
	15780	\$1,010,820,000

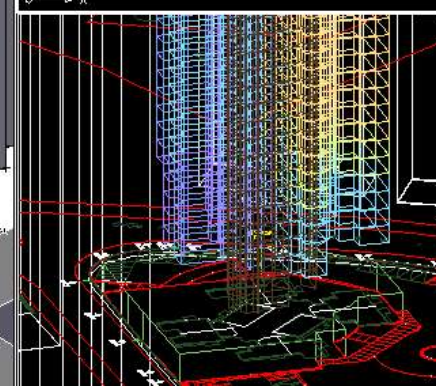
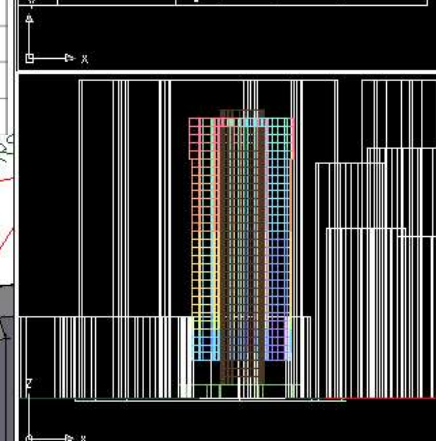


可研通設計平台

網上整合佈置,收益,景觀,成本,等等數據



45	\$2,051,000
50	\$2,010,000
65	\$3,312,000
66	\$3,363,000
46	\$1,849,000
50	\$2,279,000
15780	\$1,012,542,000



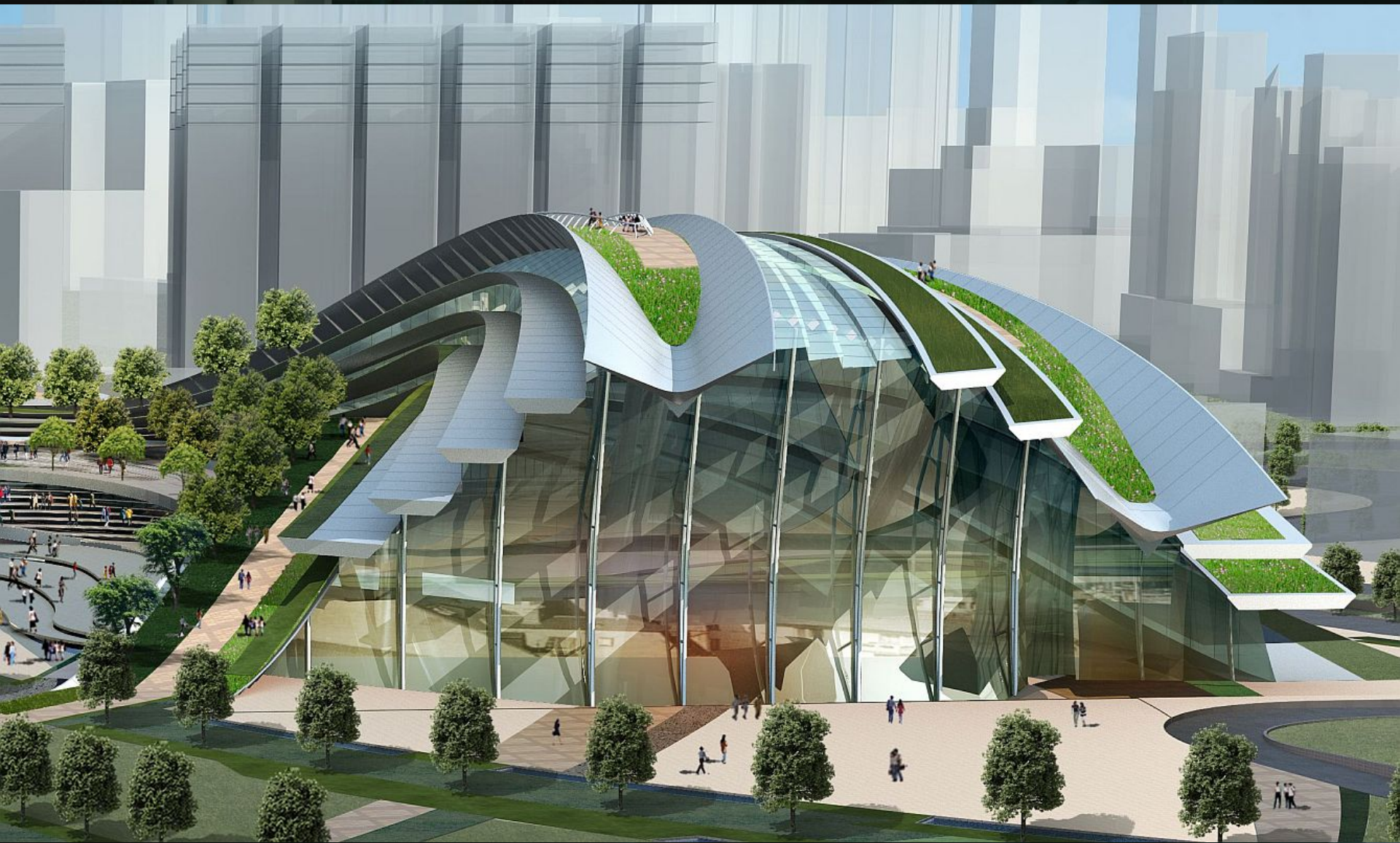
Case 2

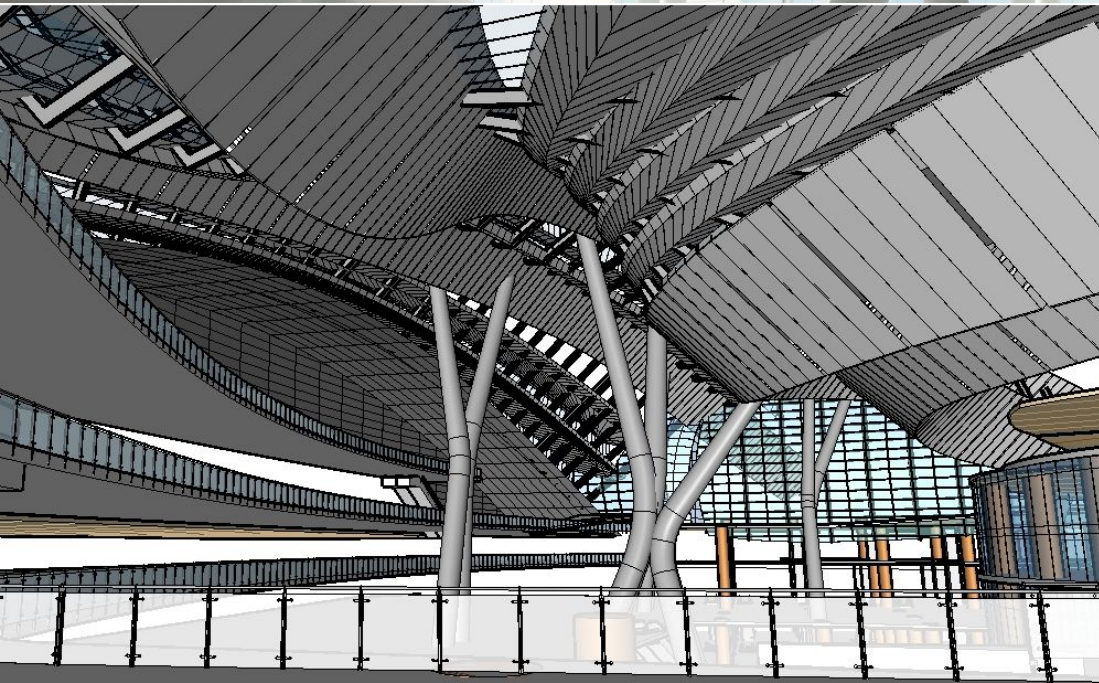
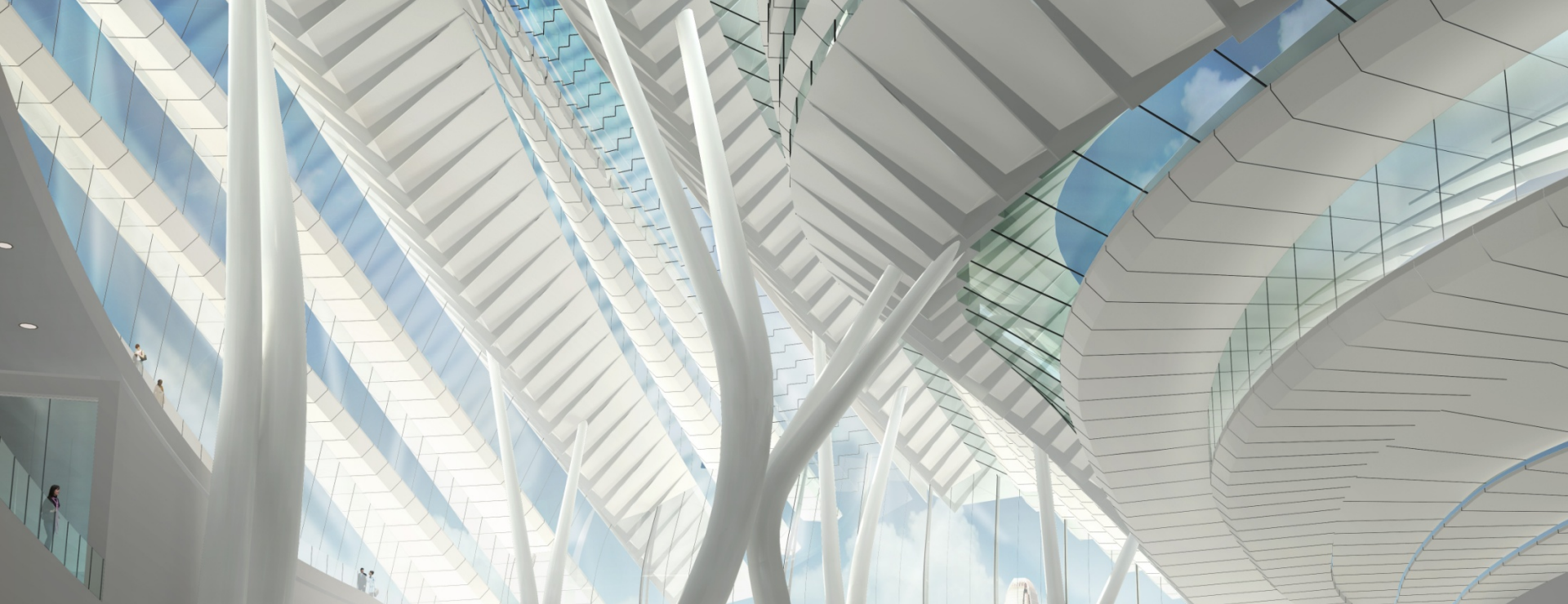
Real BIM (Construction)

M + I = B (Fabrication)











DESIGN

RHINO



PANELIZATION

GRASSHOPPER



EXPORT

DATABASE

REVIT API



IMPORT

RATIONALIZATION

REVIT API



BIM RECREATION

REVIT



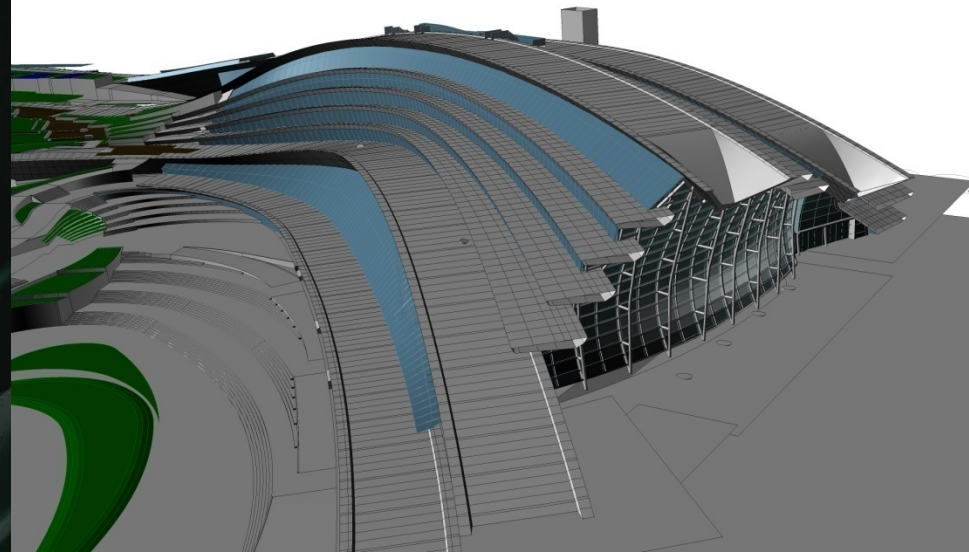
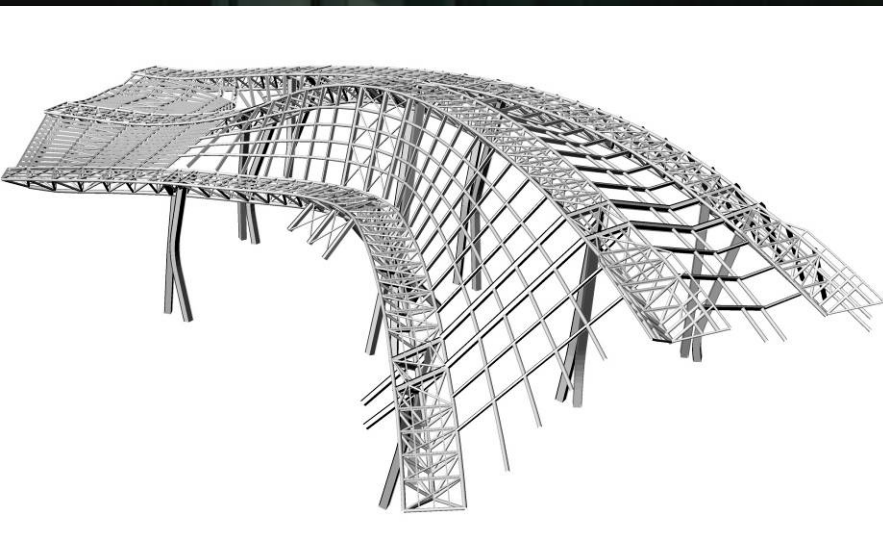
DOCUMENTATION

REVIT



TENDER

MANUF/CONSTRUCTION

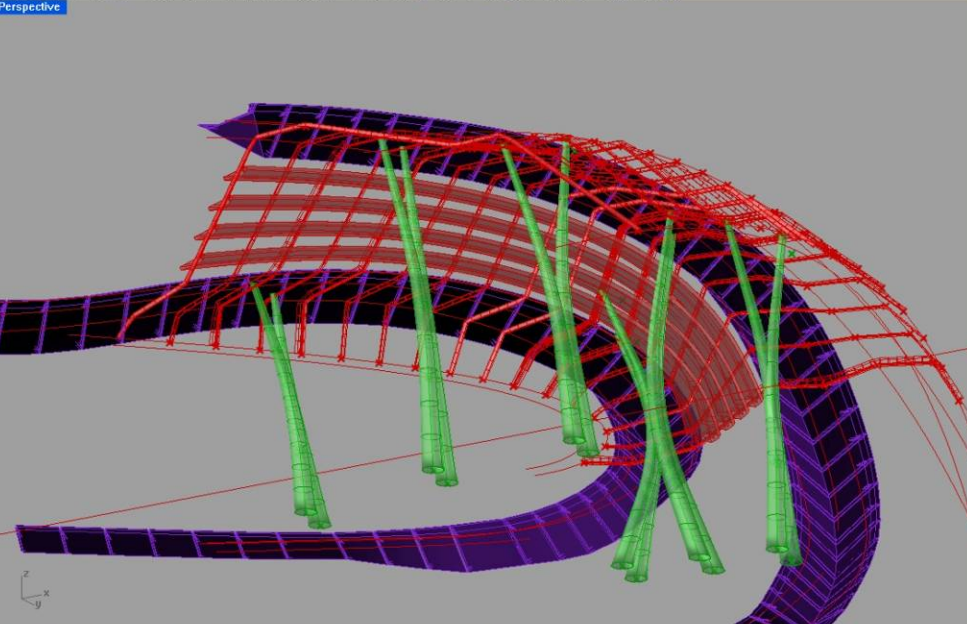


COLUMN HEAD STUDY - Rhinoceros [Commercial] - [Perspective]

File View Curve Surface Solid Mesh Dimension Transform Tools Analyze Render Help

Hide
Invert
Instances, 111 hatches, 452 points, 1924 curves, 117 polysurfaces, 126 surfaces, 36 text added to selection.
Hide

Perspective



☒ Near
 ☒ Point
 ☒ Mid
 ☐ Cen
 ☐ Int
 ☐ Perp
 ☐ Tan
 ☐ Quad
 ☐ Knot
 ☐ Project
 ☐ STrack
 ☐ Disable

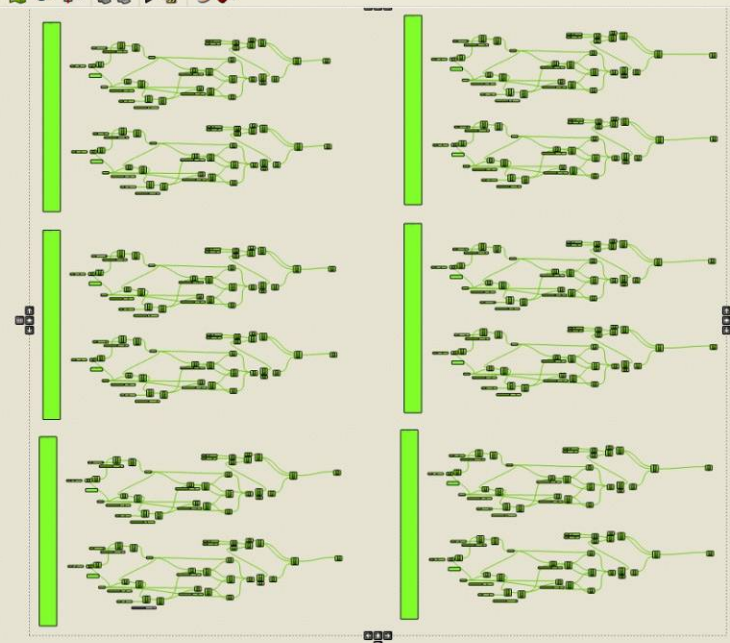
356.991 y 191.236 z 0.000 0.000 Layer 12 Snap Ortho Planar Osnap Record History

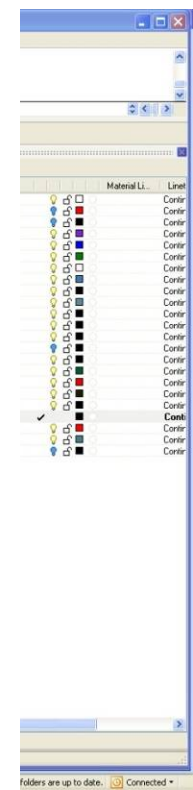
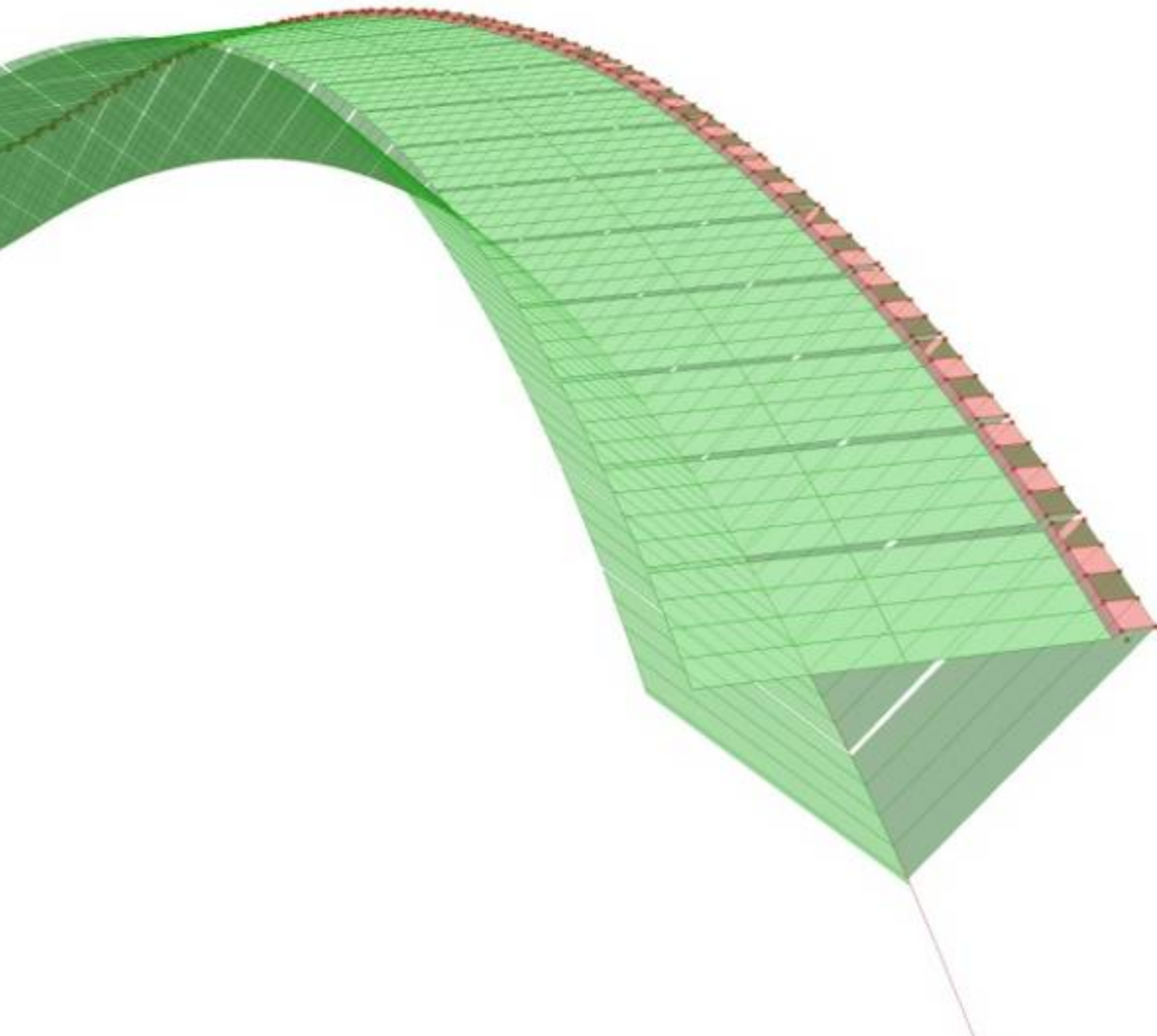
Grasshopper - column head with secondary structure until eastern arch

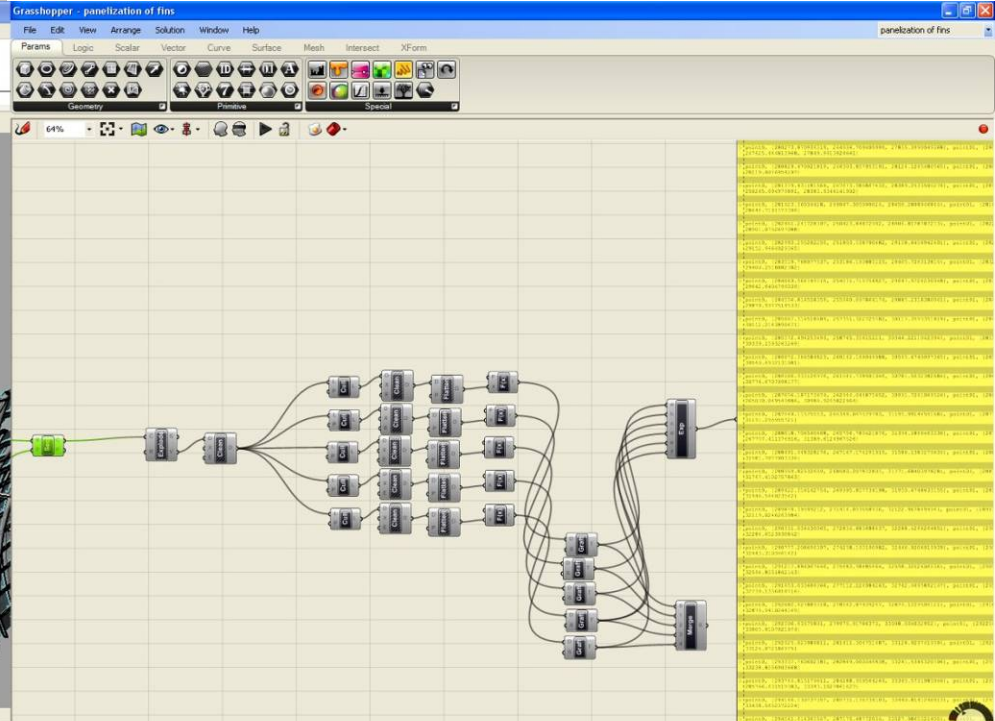
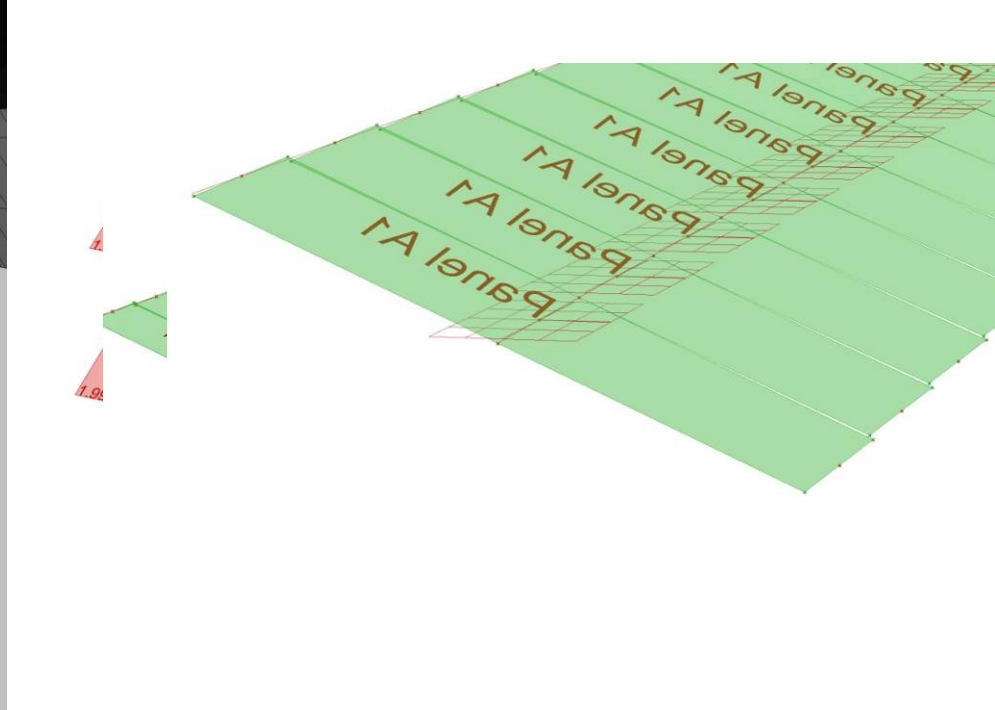
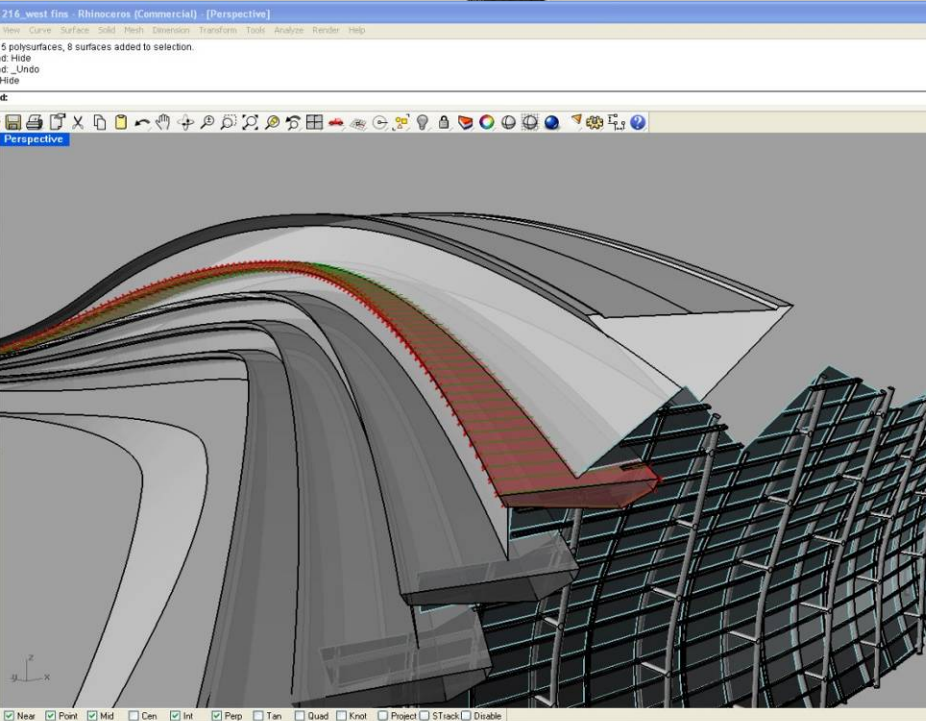
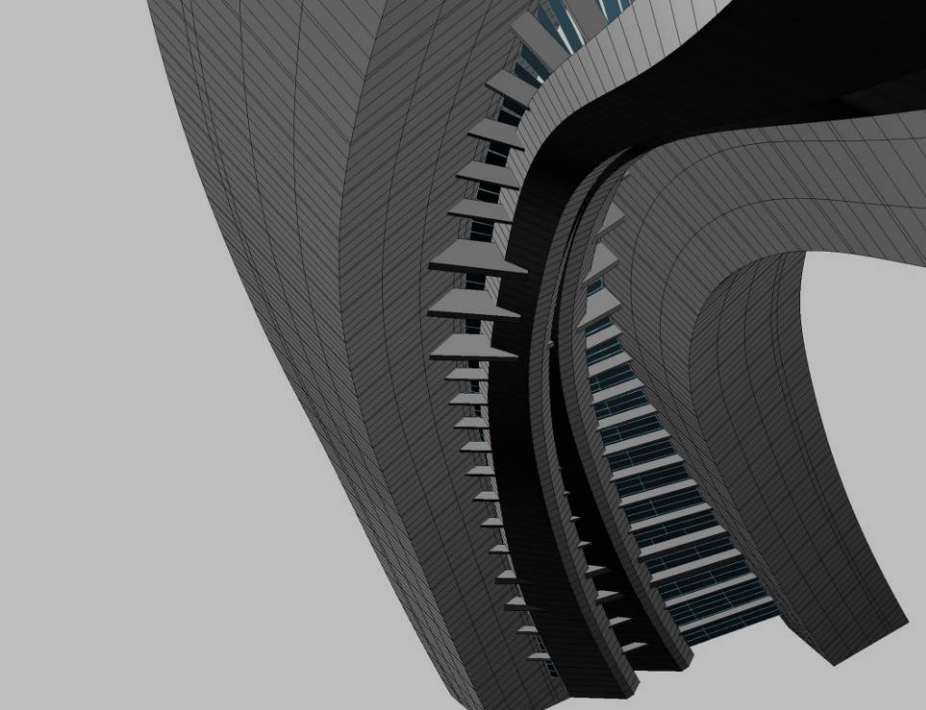
File Edit View Arrange Solution Window Help

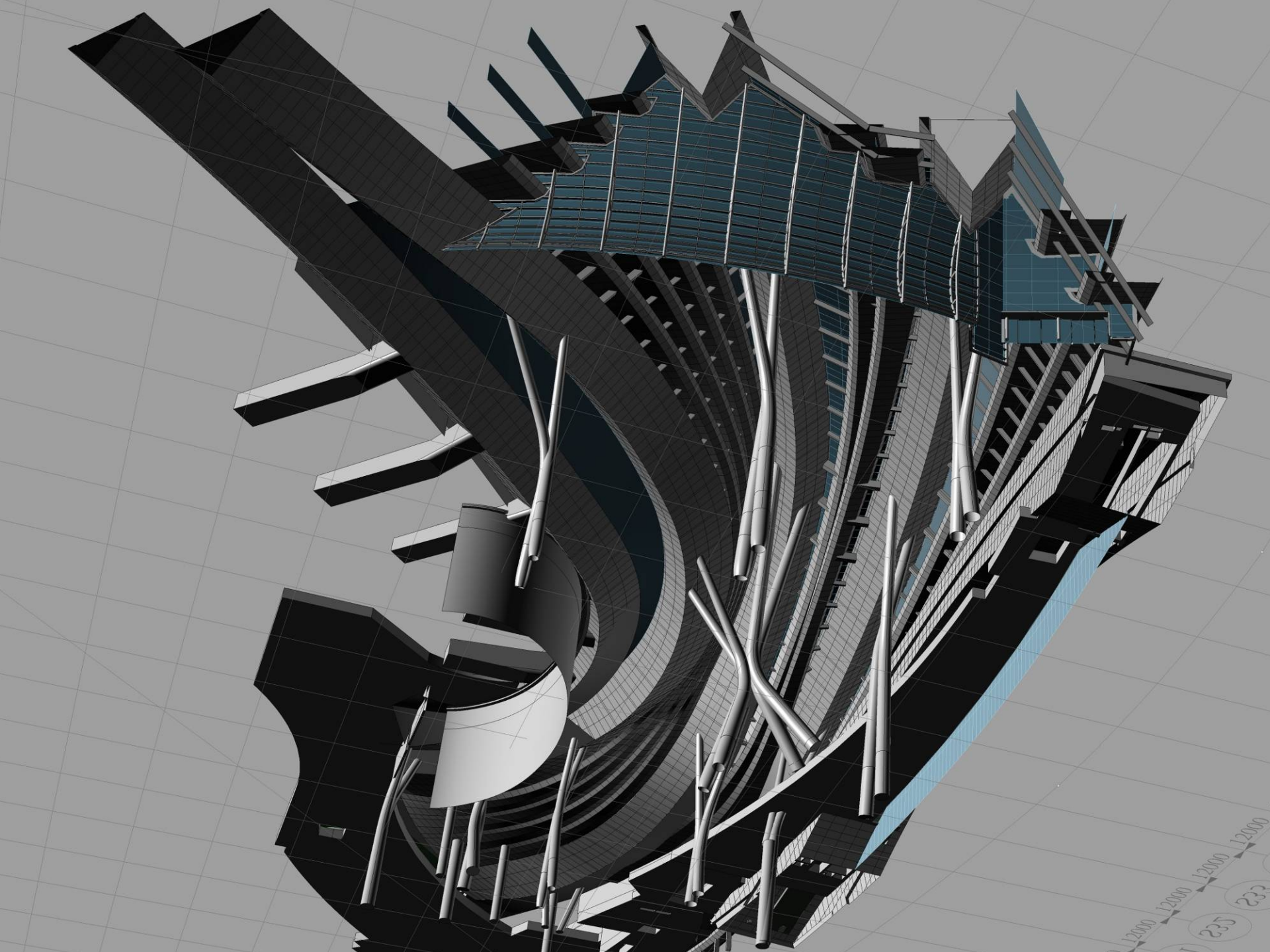
Params Logic Scalar Vector Curve Surface Mesh Intersect XForm
 Geometry Primative Special

13%

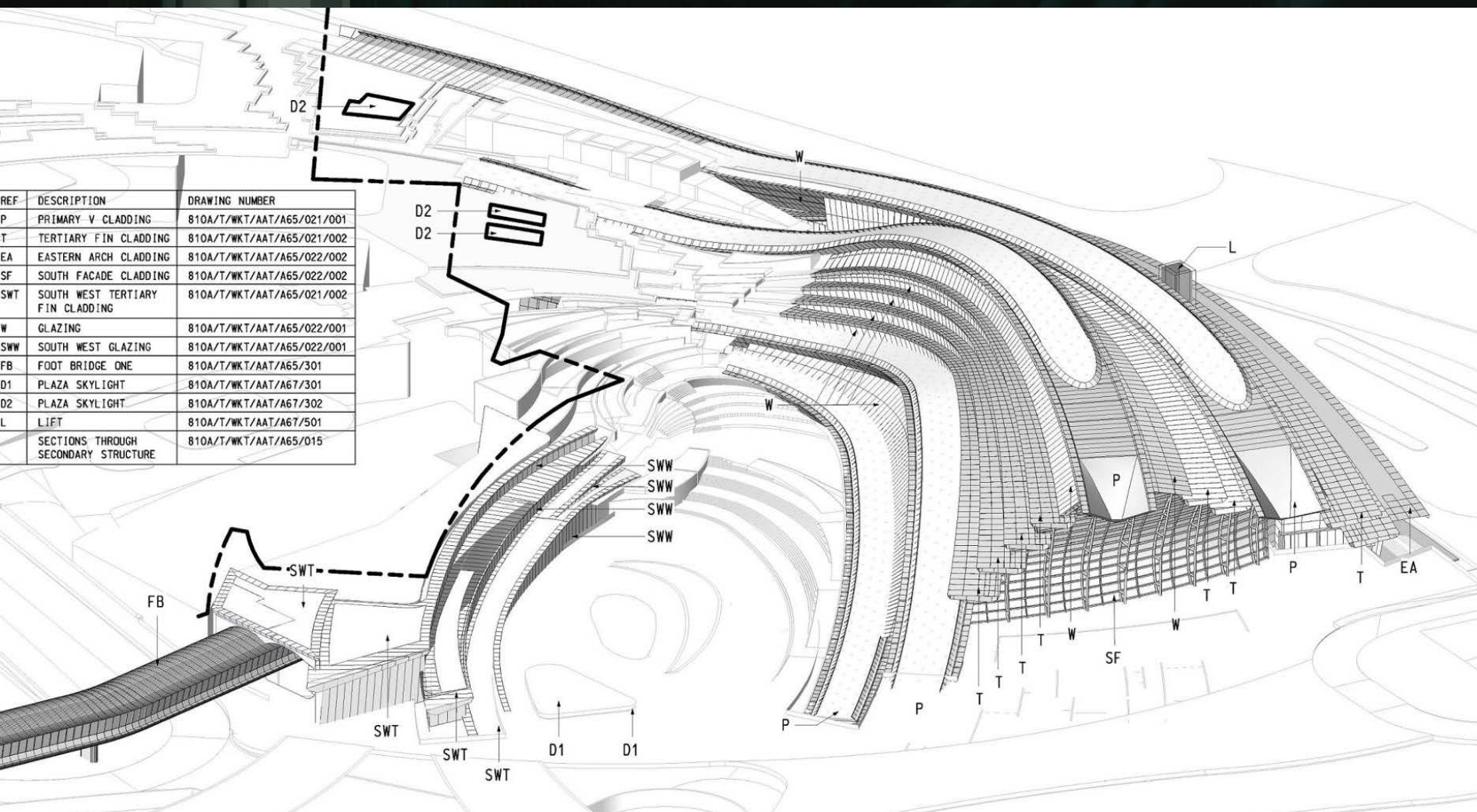


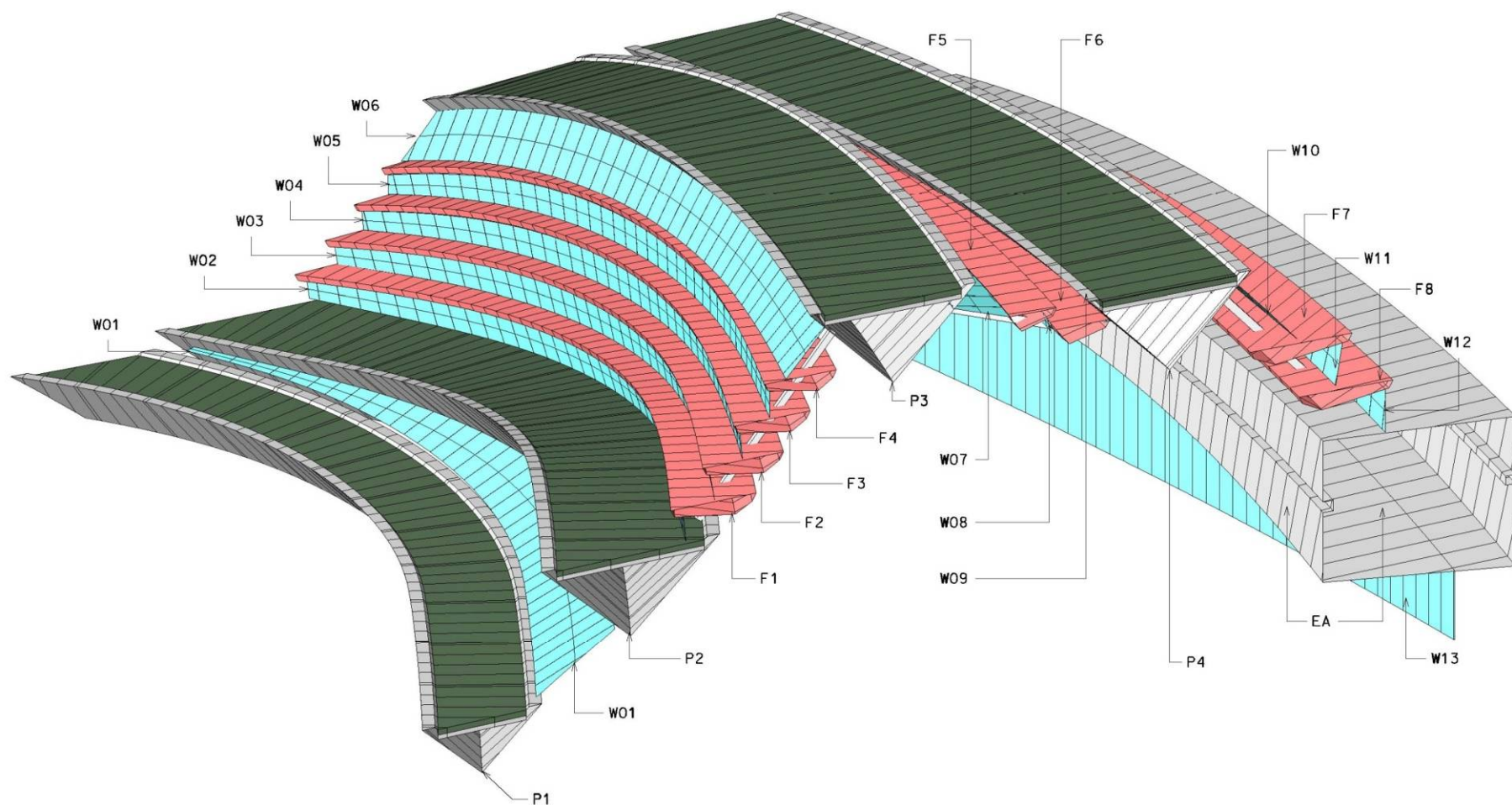


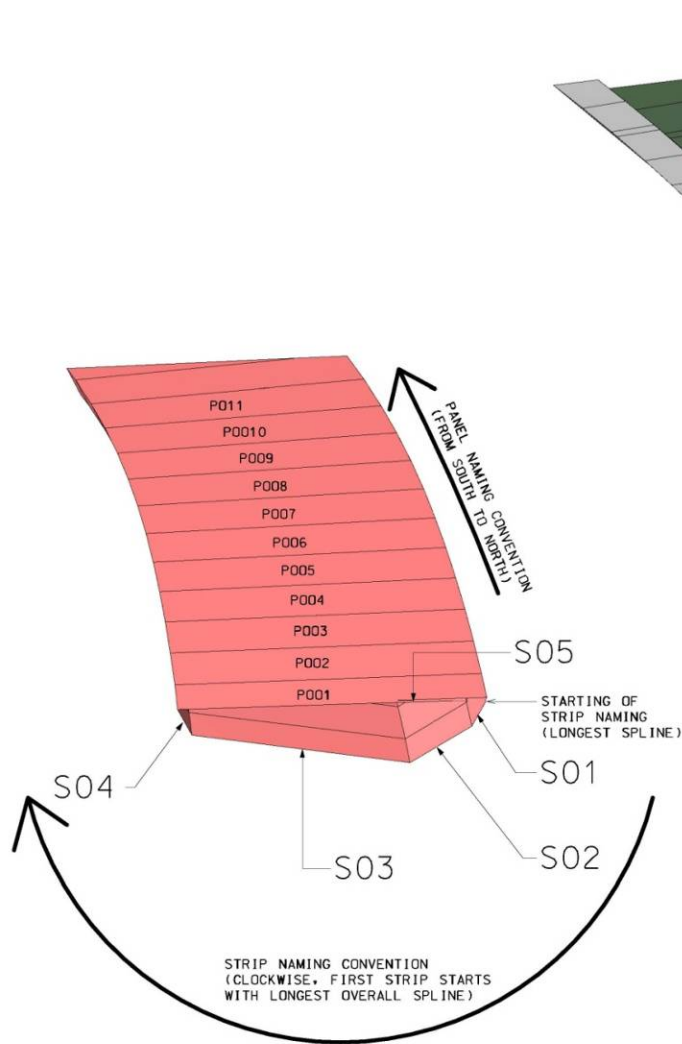




REF	DESCRIPTION	DRAWING NUMBER
P	PRIMARY V CLADDING	810A/T/WKT/AAT/A65/021/001
T	TERTIARY FIN CLADDING	810A/T/WKT/AAT/A65/021/002
EA	EASTERN ARCH CLADDING	810A/T/WKT/AAT/A65/022/002
SF	SOUTH FACADE CLADDING	810A/T/WKT/AAT/A65/022/002
SWT	SOUTH WEST TERTIARY FIN CLADDING	810A/T/WKT/AAT/A65/021/002
W	GLAZING	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



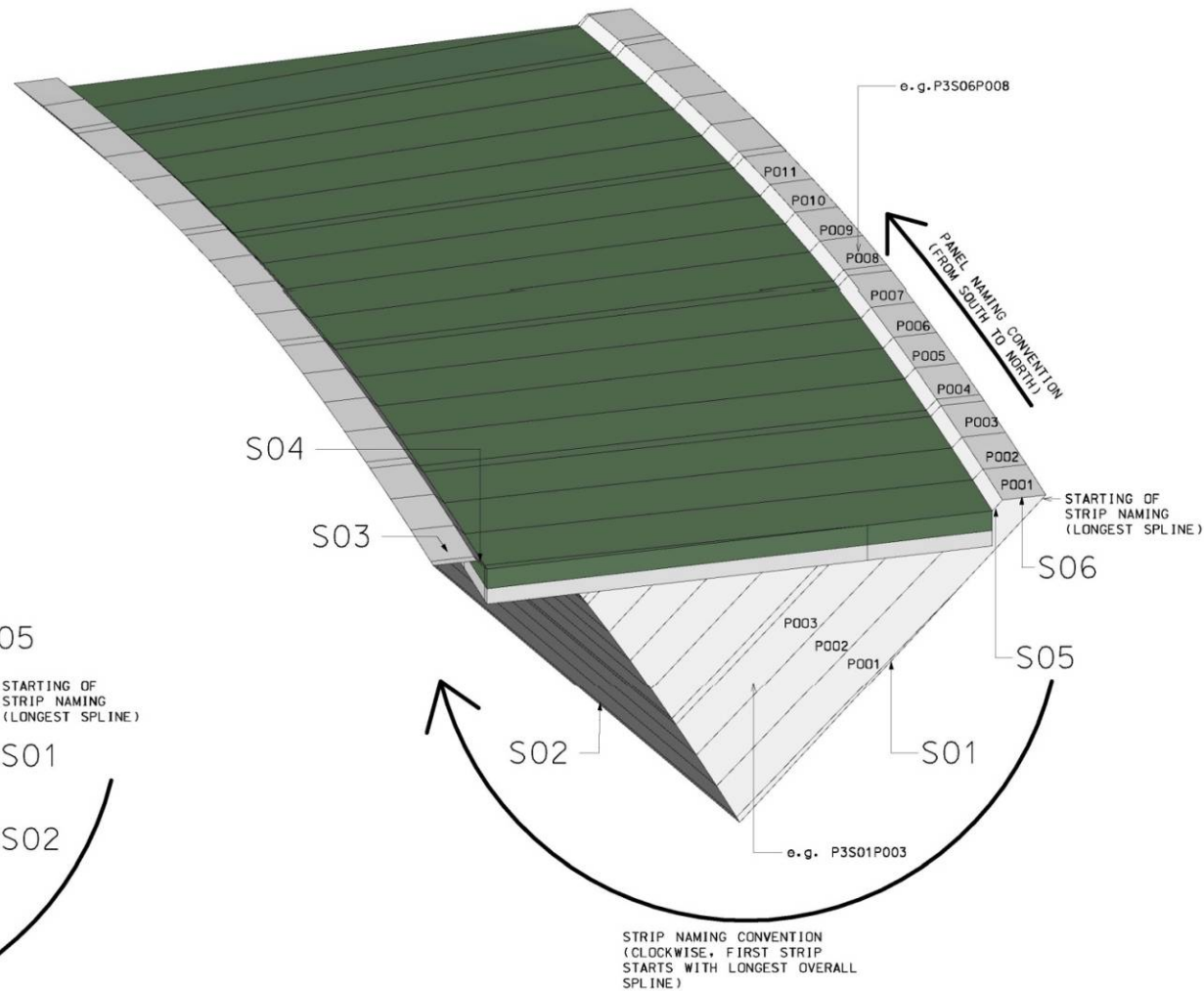




Nomenclature - Fin Cladding

2 e.g. F1

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

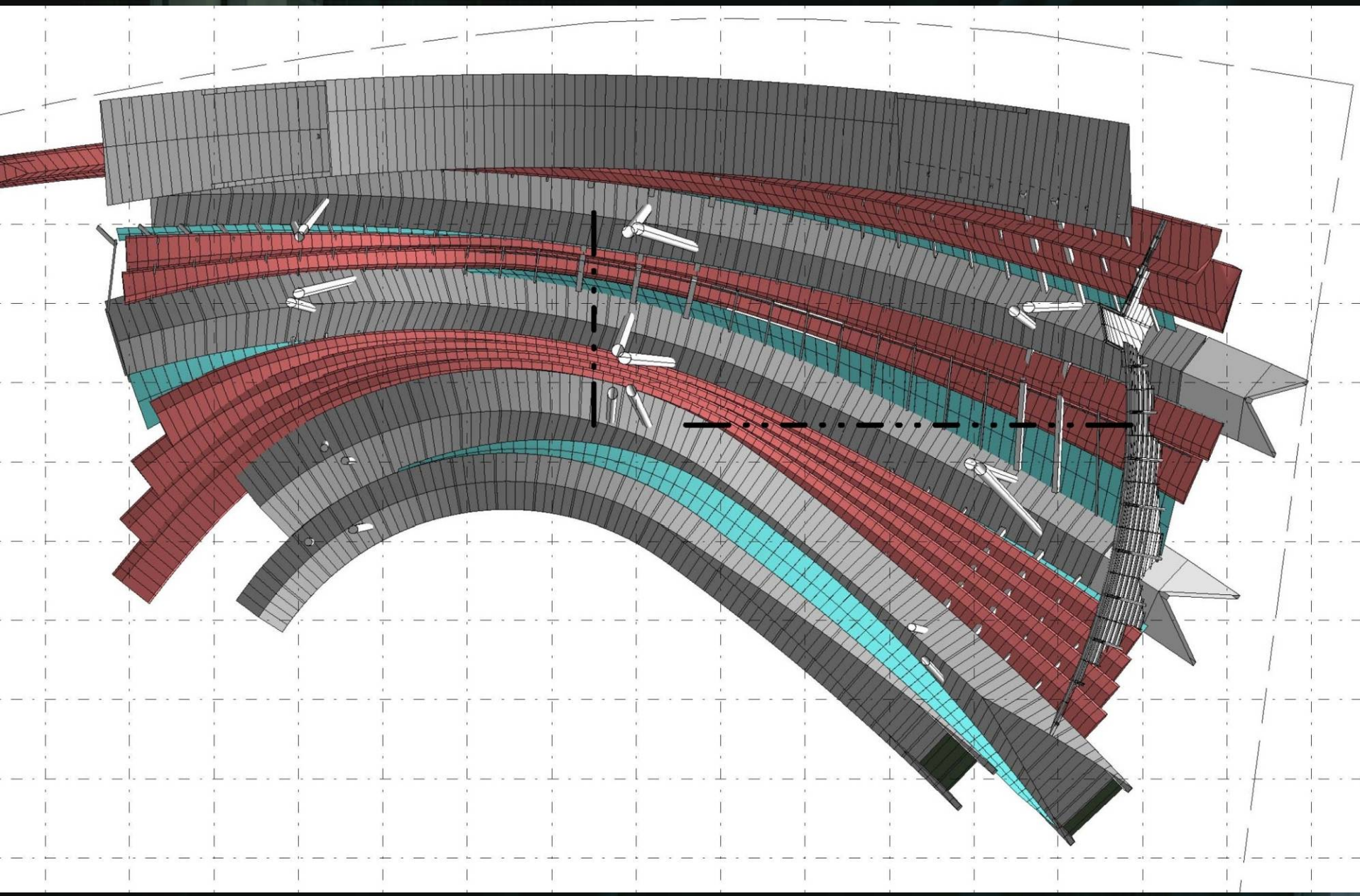


Nomenclature - V Cladding

1 e.g. P3

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





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	##not
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 CompareEdgesWith(EdgeGroup otherPanel, 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;
}

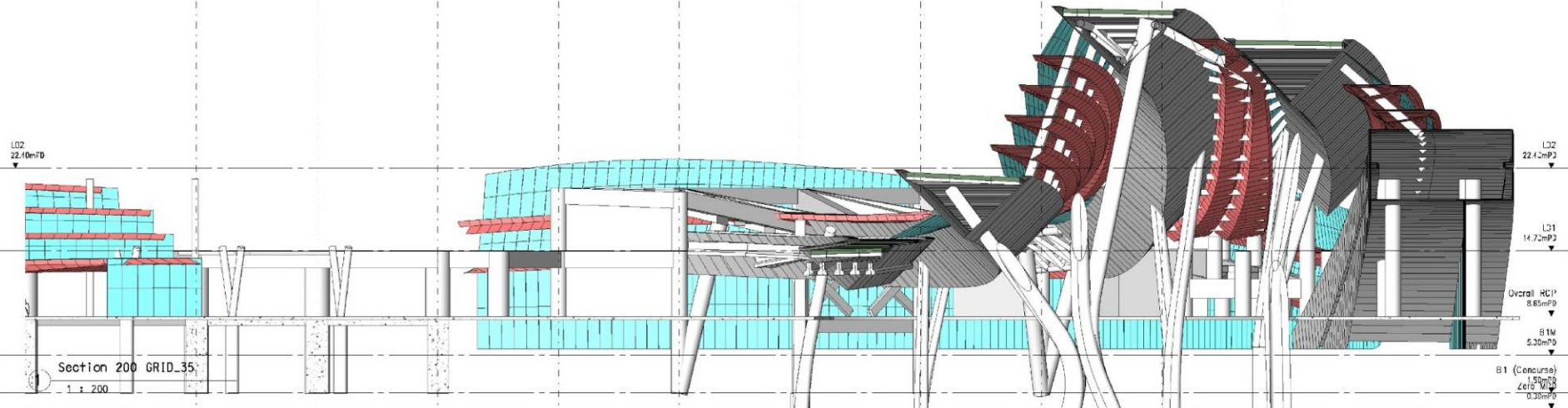
double toFeet(double value) //conversion of linear sizes for family instances
{
    return value * FACTOR_MMtoFT;
}

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

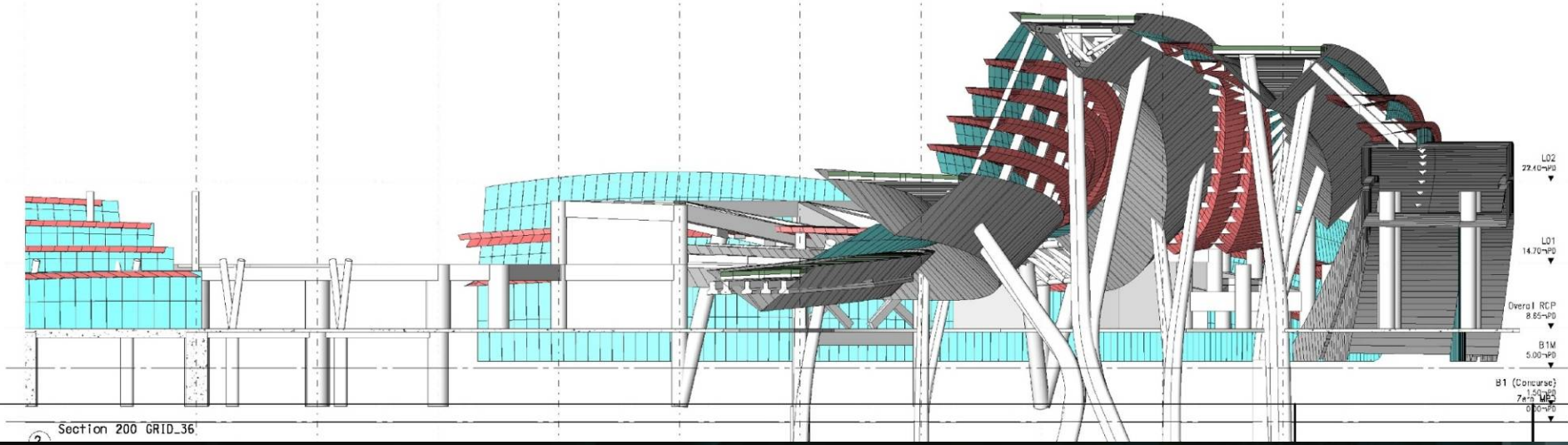
```


SK SJ SH SG SF SE SD SC SB SA

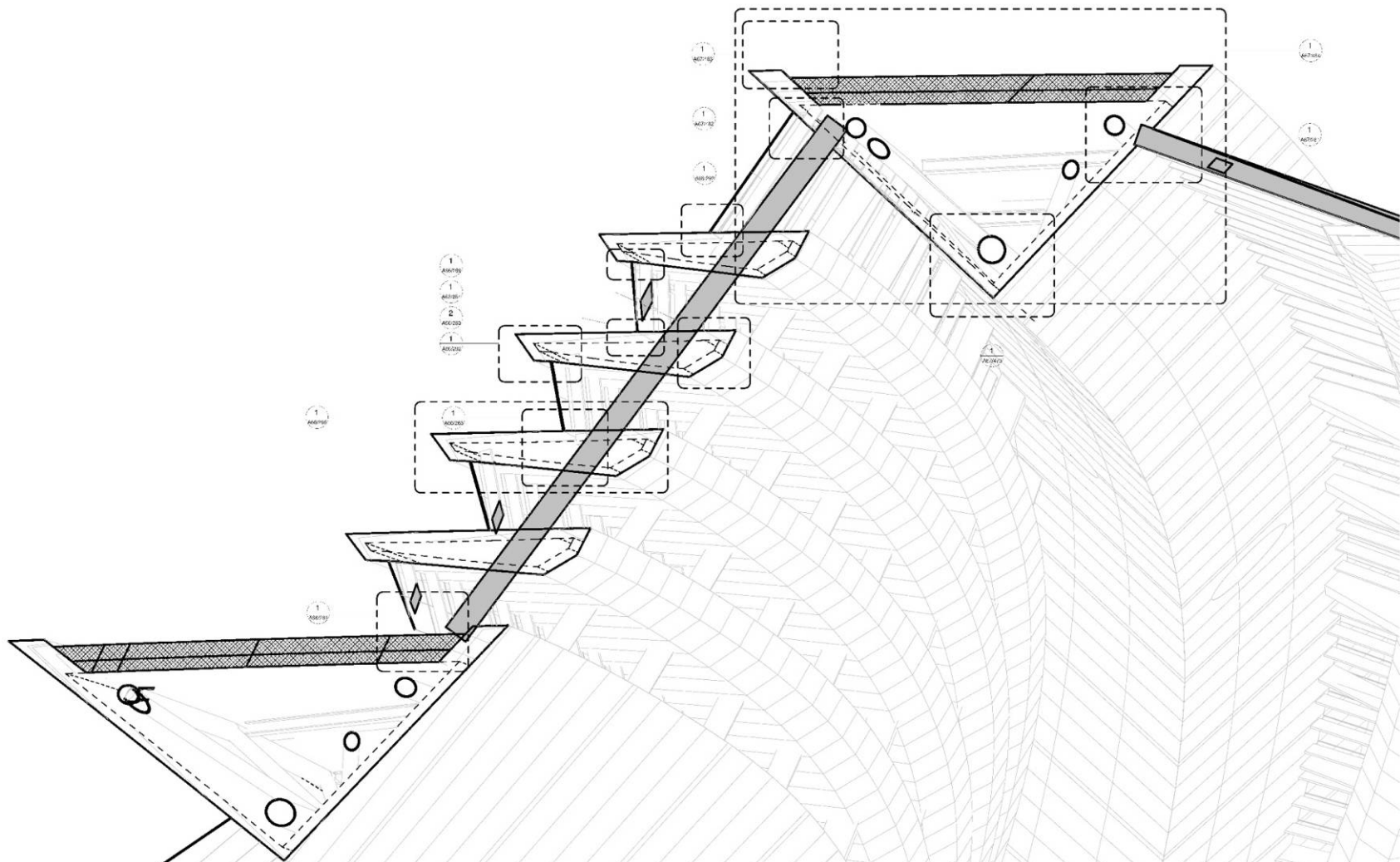
L02
22.10mPD

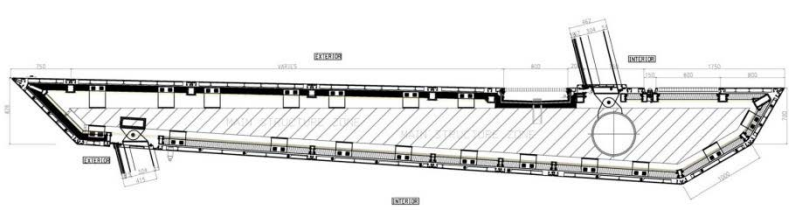
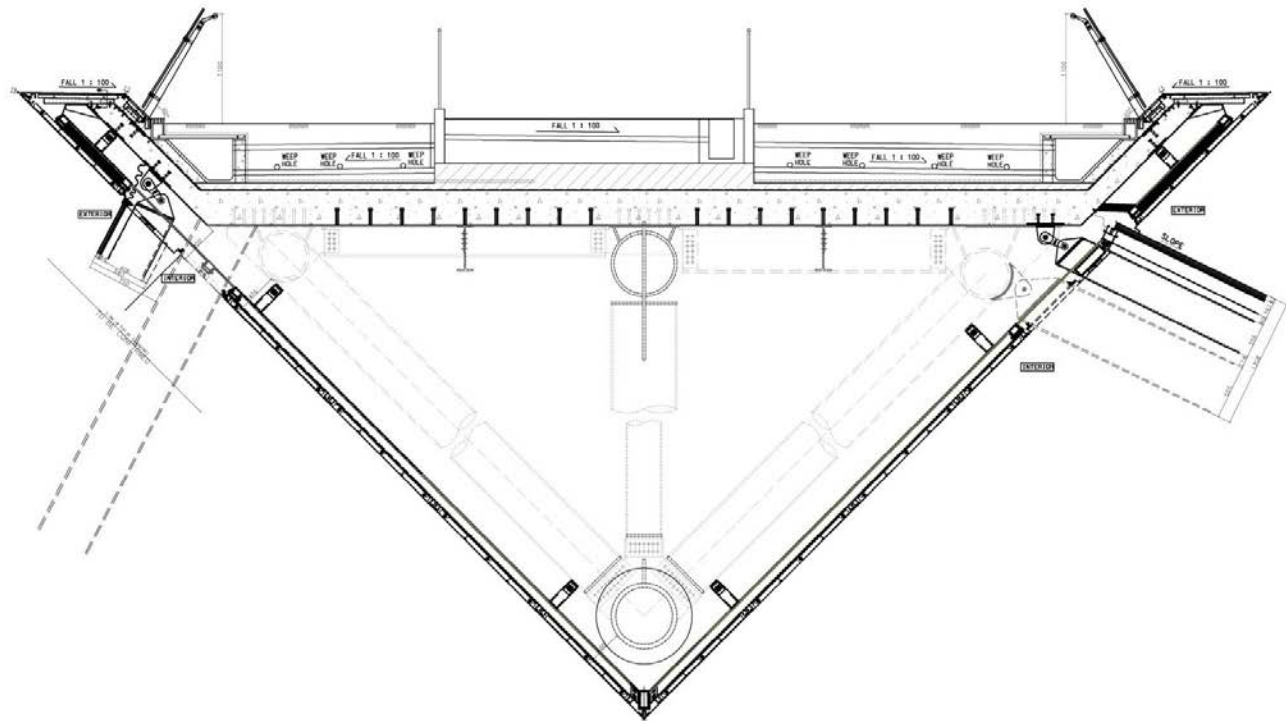


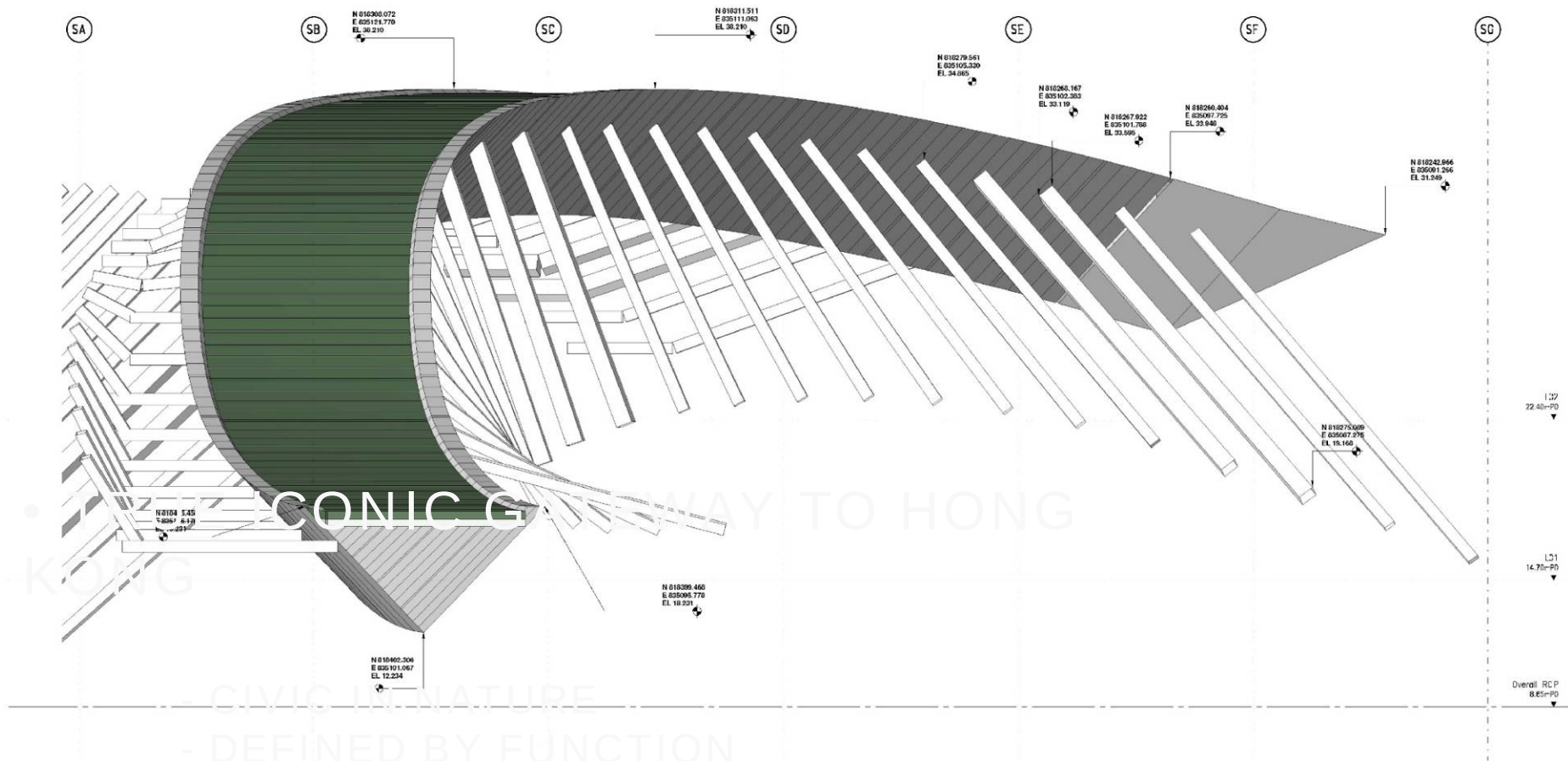
SL SK SJ SH SG SF SE SD SC SB SA



Section 200 GRID_36





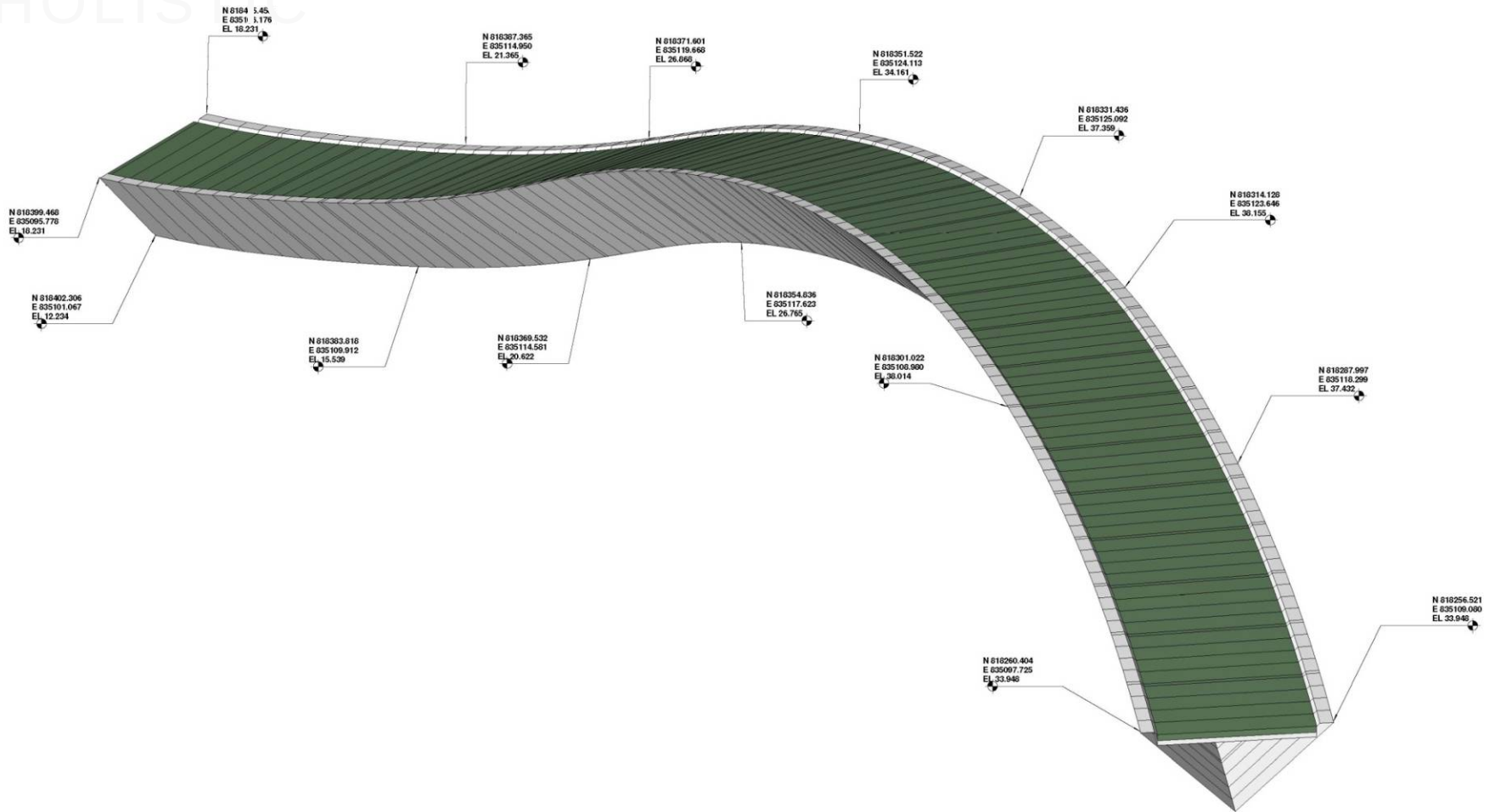


Component Elevation P3 North

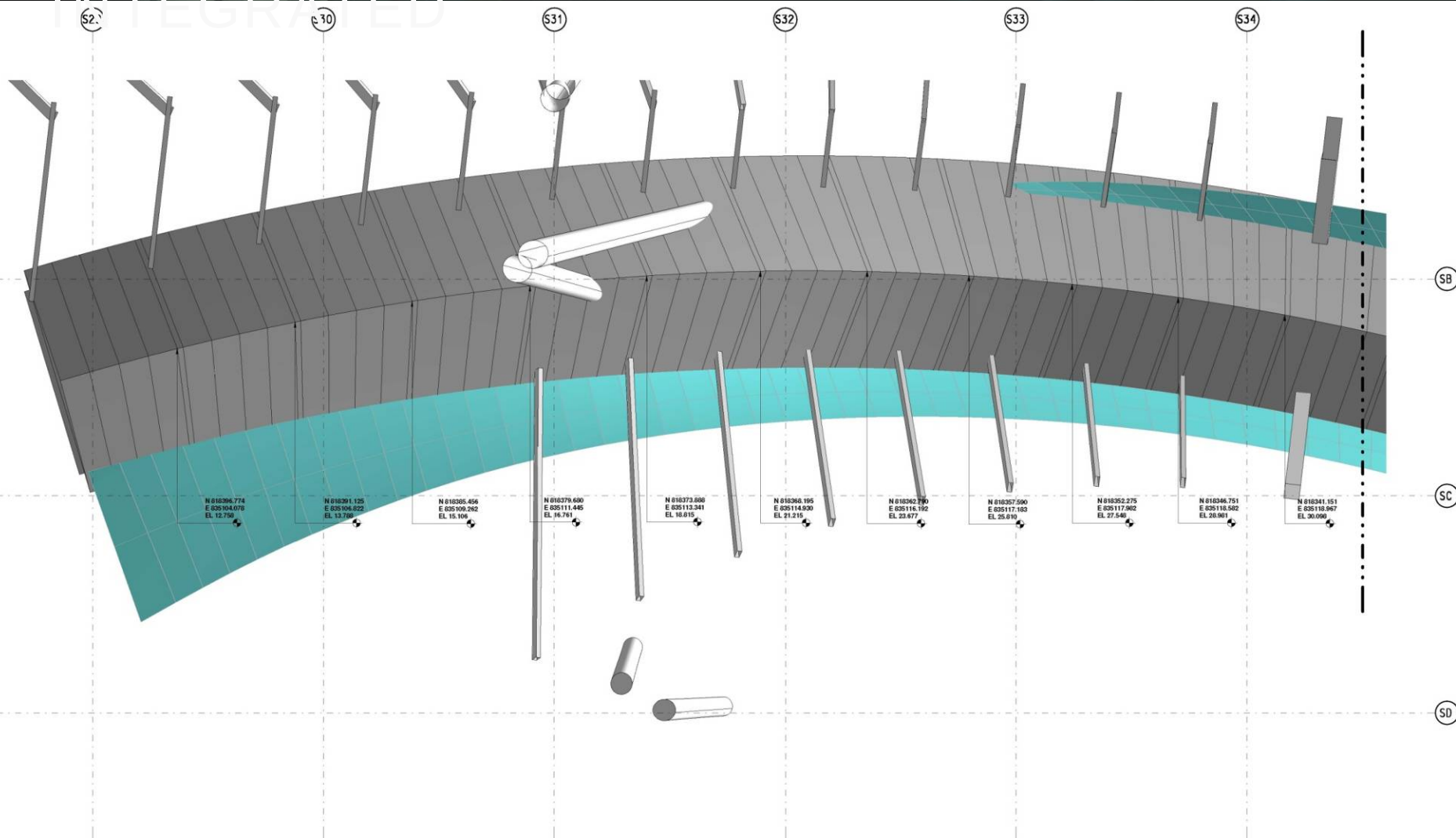
1 : 100

- EXCEEDING EXPECTATIONS

HOLISTIC



INTEGRATED



LEFT_Component RCP P3

1 : 100

Panel P3S03P082

Group AL 36
 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

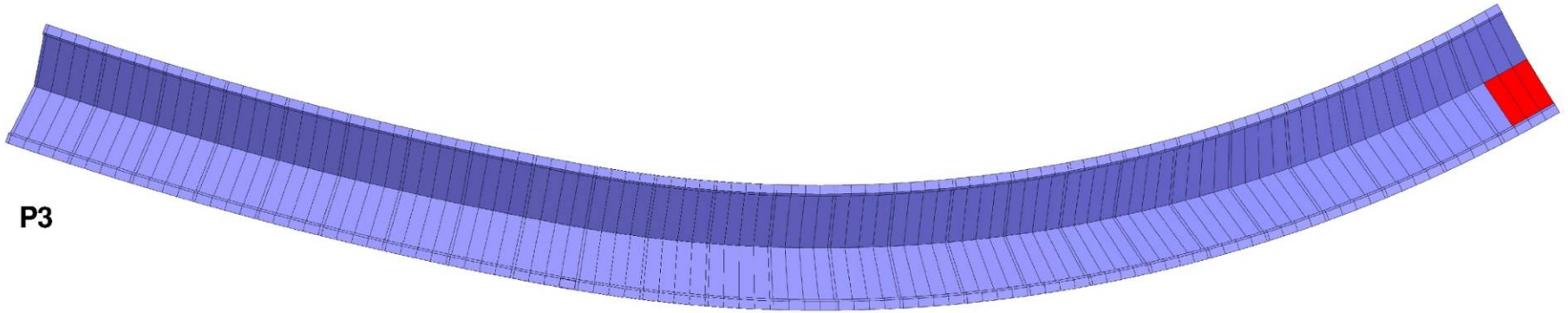
Panel P3S02P078

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	8351061129	8184055541	18298	835101017	818402394	12231	835106871	818404239	18290	835101802	818401012	12299	835103955	818403297	15262	1493	8446	1583	8446	8565	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	8565	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	8565	13.111 m²	AL 1		
AL 1.3																								
P3S01P004	835108310	818401617	18528	835103312	818398241	12560	835109007	818400300	18696	835104033	818396862	12745	835106166	818399255	15533	1493	8446	1559	8446	8563	13.010 m²	AL 2		
AL 2.1																								
P3S01P005	835109007	818400300	18696	835104033	818396862	12745	835109144	818400036	18736	835104175	818396658	12786	835106560	818398446	15741	294	8313	305	8313	8318	2.594 m²	AL 3		
P3S01P010	83511765	818394722	19674	835106783	818391211	13770	835111890	818394544	19728	835109506	818390943	13826	835109336	818392833	16760	294	8313	305	8313	8318	2.594 m²	AL 3		
P3S01P015	835114256	818398075	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	818393092	22499	835111414	818379769	16734	835116575	818383121	22582	835111511	818379492	16822	835113994	818381444	19659	294	8313	305	8313	8318	2.594 m²	AL 3		
P3S01P025	835118417	818377721	24432	835113315	818373975	16781	835118503	818377451	24534	835113398	818373701	16888	835115906	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	24068	294	8313	305	8313	8318	2.594 m²	AL 3		
AL 3.6																								
P3S01P006	835109144	818400036	18736	835104175	818396588	12786	835108267	818396714	18942	835104583	818395227	13005	835107001	818397641	15867	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P018	835115454	818386190	21740	835110405	818383231	15899	835116476	818383744	22094	835110918	818381150	16305	835113167	818383632	19002	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P019	835115974	818386746	22094	835110918	818381150	16305	835116476	818383744	22094	83511414	818379769	16734	835113995	818382264	19008	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P021	835116575	818383121	22582	835111511	818379492	16822	835117059	818379608	23013	835116987	818378111	17278	835114263	818390623	19254	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P022	835117059	818379608	23013	835116987	818378111	17278	835117528	818380417	23465	835117528	818380417	23465	835117528	818380417	23465	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P023	835117528	818380417	23465	835112447	818376700	17757	835117980	818376826	23938	835112890	818375351	17278	835115251	818377981	20855	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P024	835117980	818376826	23938	835112890	818375351	17278	835118417	818377721	24432	835113315	818373975	16781	835115950	818376529	21933	1493	8448	1534	8448	8561	12.901 m²	AL 4		
P3S01P026	835117980	818376826	23938	835113398	818373701	16888	835118917	818376718	25052	835113302	818372032	16822	835116156	818374988	21933	1493	8448	1534	8448	8561	12.901 m²	AL 4		
AL 4.8																								
P3S01P007	835109822	818398714	18942	835104583	818395227	13005	835110485	818397388	19174	835105522	818393885	13210	835107673	818396303	16060	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P031	835110485	818397388	19174	835105522	818393885	13210	835111132	818399027	19474	835106183	818392551	13510	835106326	818394702	16392	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P039	835114574	818398075	20934	835109228	818385543	15084	835117059	818379608	23013	835116987	818378111	17278	835115251	818377981	20855	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P041	835114574	818398075	20934	835109228	818385543	15084	835117059	818379608	23013	835107512	818395059	13716	835110702	818392604	16460	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P012	835112504	818393115	20086	835107510	818395899	14116	835113103	818397120	20086	835108079	818382502	14422	835110304	818390634	17211	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P013	835113103	818397120	20086	835109097	818388252	14412	835113688	818399425	20609	835108079	818386500	14422	835110890	818390637	17519	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P014	835113688	818399425	20609	835108079	818386500	14412	835114256	818398075	20934	835109628	818385543	15084	835111480	818397968	17243	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P016	835114256	818398075	20934	835109337	818385271	15154	835114919	818397453	21346	835109678	818383086	15516	835112126	818396359	18254	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P017	835114919	818397453	21346	835109678	818383086	15516	835114594	818380110	21710	835114050	818382351	15899	835112654	818394989	18818	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P027	835118921	818376106	23506	835113802	818372332	19436	835119324	818377466	25900	835114189	818377021	20086	835110589	818373544	22249	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P028	835119324	818377466	25900	835114189	818377021	20086	835119711	818374288	26716	835114599	818368280	21178	835116946	818376136	23661	1493	8445	1507	8445	8578	12.786 m²	AL 5		
P3S01P029	835119711	818374288	26716	835114599	818368280	21178	835120964	818372092	26716	835114599	818368280	21178	835117316	818370855	23656	1493	8445	1507	8445	8578	12.786 m²	AL 5		
AL 5.12																								
P3S01P032	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																								

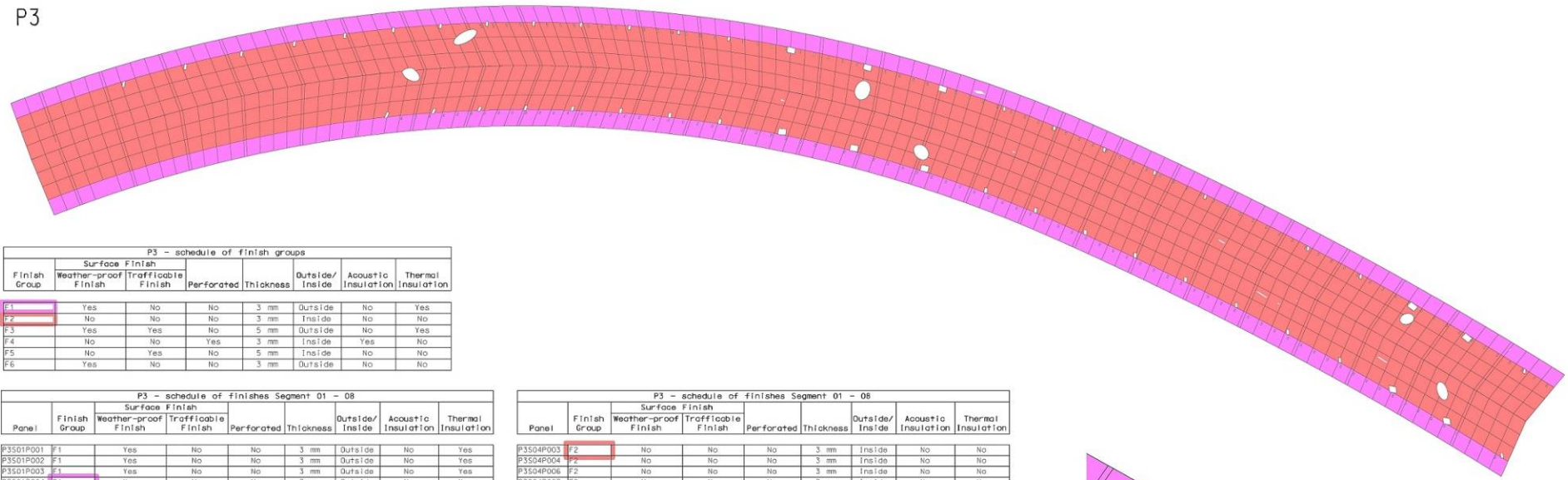
P3

Schedule of panel groups								
Group Name	Number of panels	Edge 1	Edge 2	Edge 3	Edge 4	Diagonal	Panel area	Group Area
AL 1	3	1493	8448	1583	8448	8585	13 111 m²	39 333 m²
AL 2	1	1493	8448	1583	8448	8583	13 010 m²	13 010 m²
AL 3	6	294	8313	305	8313	8318	2 594 m²	15 564 m²
AL 4	8	1493	8448	1534	8448	8581	12 901 m²	103 208 m²
AL 5	12	1483	8445	1507	8445	8578	12 786 m²	153 433 m²
AL 6	1	1493	8445	1477	8445	8574	12 661 m²	12 661 m²
AL 7	32	1493	8444	1452	8444	8572	12 554 m²	401 734 m²

N 818402394
E 835101017
EL 12231

Schedule of panel groups								
Group Name	Number of panels	Edge 1	Edge 2	Edge 3	Edge 4	Diagonal	Panel area	Group Area
AL 1	3	1493	8446	1583	8446	8585	13,111 m ²	39,333 m ²
AL 2	1	1493	8446	1559	8446	8583	13,010 m ²	13,010 m ²
AL 3	6	294	8513	305	8313	8318	2,984 m ²	15,584 m ²
AL 4	8	1493	8446	1534	8446	8581	12,981 m ²	103,206 m ²
AL 5	12	1493	8445	1507	8445	8578	12,798 m ²	153,433 m ²
AL 6	1	1493	8444	1477	8445	8574	12,661 m ²	12,661 m ²
AL 7	32	1493	8444	1452	8444	8572	12,554 m ²	401,734 m ²
AL 8	5	1493	8444	1424	8444	8569	12,439 m ²	62,180 m ²
AL 9	13	1493	8444	1398	8444	8567	12,325 m ²	160,227 m ²
AL 10	23	294	8303	272	8302	8307	2,453 m ²	86,933 m ²
AL 11	25	1493	8443	1369	8443	8564	12,199 m ²	304,979 m ²
AL 12	3	1493	8443	1354	8443	8562	12,139 m ²	36,037 m ²
AL 13	3	1493	8443	1338	8443	8560	12,069 m ²	36,208 m ²
AL 14	3	1583	8445	1387	8445	8568	12,573 m ²	37,718 m ²
AL 15	1	1589	8445	1385	8445	8565	12,479 m ²	12,479 m ²
AL 16	8	1583	8445	1369	8445	8556	12,372 m ²	99,979 m ²
AL 17	3	1513	8445	1374	8445	8547	12,311 m ²	36,932 m ²
AL 18	1	1497	8446	1385	8445	8536	12,290 m ²	12,290 m ²
AL 19	1	1477	8445	1387	8445	8534	12,209 m ²	12,209 m ²
AL 20	1	1452	8446	1387	8445	8531	12,102 m ²	12,102 m ²
AL 21	1	1424	8445	1387	8445	8529	11,984 m ²	11,984 m ²
AL 22	1	1388	8444	1386	8444	8527	11,871 m ²	11,871 m ²
AL 23	11	272	8298	272	8298	8598	2,361 m ²	25,974 m ²
AL 24	6	1369	8444	1385	8444	8524	11,742 m ²	70,452 m ²
AL 25	5	1444	8384	1444	8384	8524	11,614 m ²	57,156 m ²
AL 26	3	1338	8443	1381	8443	8524	11,595 m ²	34,786 m ²
AL 27	8	1362	8442	1389	8442	8539	11,648 m ²	93,185 m ²
AL 28	3	1380	8442	1387	8442	8543	11,714 m ²	35,143 m ²
AL 29	10	1400	8443	1367	8443	8551	11,801 m ²	118,005 m ²
AL 30	1	1412	8444	1400	8443	8559	11,992 m ²	11,992 m ²
AL 31	10	1427	8444	1431	8444	8564	12,187 m ²	121,867 m ²
AL 32	24	1440	8444	1453	8444	8568	12,334 m ²	296,014 m ²
AL 33	52	1358	839	1366	839	1600	1,169 m ²	60,791 m ²
AL 34	16	267	824	269	824	867	0,524 m ²	3,748 m ²
AL 35	13	1372	839	1378	839	1611	1,181 m ²	15,348 m ²
AL 36	1	1391	839	1398	839	1629	1,197 m ²	1,197 m ²
AL 37	31	1422	839	1425	839	1653	1,222 m ²	37,880 m ²
AL 38	3	1444	839	1447	839	1671	1,240 m ²	3,720 m ²
AL 39	34	284	825	285	825	873	0,248 m ²	8,448 m ²
AL 40	54	1347	276	1354	276	1379	0,392 m ²	21,163 m ²
AL 41	24	265	271	268	271	381	0,078 m ²	1,883 m ²
AL 42	11	1361	276	1366	276	1396	0,396 m ²	4,353 m ²
AL 43	1	1378	276	1378	276	1405	0,400 m ²	0,400 m ²
AL 44	32	1406	276	1408	276	1432	0,408 m ²	13,052 m ²
AL 45	10	1456	276	1455	276	1450	0,414 m ²	4,877 m ²
AL 46	26	281	271	281	271	390	0,083 m ²	2,154 m ²
AL 47	100	1456	276	1453	276	1481	0,422 m ²	42,209 m ²
AL 48	100	1456	276	1483	839	1700	1,269 m ²	129,892 m ²
Grand total: 750								2923,908 m ²

P3

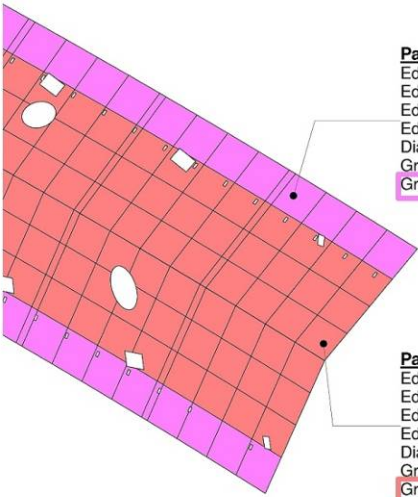


P3 - schedule of finish groups							
Finish Group	Surface Finish		Perforated	Thickness	Outside/ Inside	Acoustic Insulation	Thermal Insulation
	Weather-proof Finish	Trafficable Finish					
F1	Yes	No	No	3 mm	Outside	No	Yes
F2	No	No	No	3 mm	Inside	No	No
F3	Yes	Yes	No	5 mm	Outside	No	Yes
F4	No	No	Yes	3 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 1: 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
P3503P005	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 2: 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 6: 29								

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



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

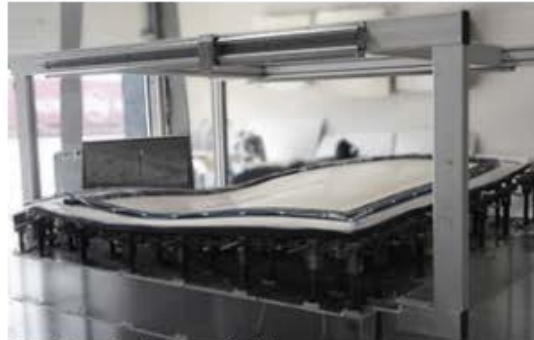


P4S04P073	AL 1011 AF 4	P4S03P070	AL 1005 AF
P4S05P073	AL 1030 AF 5	P4S03P071	AL 1003 AF
P4S05P074	AL 1005 AF 5	P4S03P072	AL 1004 AF
P4S05P075	AL 1004 AF 5	P4S03P073	AL 1005 AF
P4S05P076	AL 1031 AF 5	P4S03P074	AL 1003 AF 5
P4S05P077	AL 1007 AF 5	P4S03P075	AL 1004 AF
P4S04P078	AL 1005 AF 4	P4S03P076	AL 1008 AF 4
P4S04P079	AL 1006 AF 4	P4S04P077	AL 1005 AF 4
P4S04P080	AL 1004 AF 4		
P4S04P081	AL 1030 AF 4		
P4S04P082	AL 1005 AF 4		
P4S04P083	AL 1005 AF 4		
P4S04P084	AL 1003 AF 4		
P4S04P085	AL 1004 AF 4		
P4S04P086	AL 1007 AF 4		
P4S04P087	AL 1005 AF 4		
P4S04P088	AL 1005 AF 4		
P4S04P089	AL 1003 AF 4		
P4S04P090	AL 1004 AF 4		
P4S04P091	AL 1007 AF 4		
P4S04P092	AL 1005 AF 4		
P4S04P093	AL 1005 AF 4		
P4S04P094	AL 1003 AF 4		
P4S04P095	AL 1004 AF 4		
P4S04P096	AL 1007 AF 4		
P4S04P097	AL 1005 AF 4		
P4S04P098	AL 1005 AF 4		
P4S04P099	AL 1003 AF 4		
P4S04P100	AL 1004 AF 4		
P4S05P081	AL 1031 AF 5		
P4S05P082	AL 1050 AF 5		
P4S05P083	AL 1050 AF 5		
P4S05P084	AL 1005 AF 5		
P4S05P085	AL 1004 AF 5		
P4S05P086	AL 1033 AF 5		
P4S05P087	AL 1011 AF 5		
P4S05P088	AL 1011 AF 5		
P4S05P089	AL 1006 AF 5		
P4S05P090	AL 1004 AF 5		
P4S05P091	AL 1030 AF 5		
P4S05P092	AL 1011 AF 5		
P4S05P093	AL 1011 AF 5		
P4S05P094	AL 1006 AF 5		
P4S05P095	AL 1004 AF 5		
P4S05P096	AL 1030 AF 5		
P4S05P097	AL 1011 AF 5		
P4S05P098	AL 1011 AF 5		
P4S05P099	AL 1006 AF 5		
P4S05P099	AL 1004 AF 4		
P4S03P088	AL 1003 AF 5		
P4S03P089	AL 1003 AF 5		
P4S03P090	AL 1004 AF 5		
P4S03P091	AL 1005 AF 5		
P4S03P092	AL 1003 AF 5		
P4S03P093	AL 1003 AF 5		
P4S03P094	AL 1003 AF 5		
P4S03P095	AL 1004 AF 5		
P4S03P096	AL 1005 AF 5		
P4S03P097	AL 1003 AF 5		
P4S03P098	AL 1003 AF 5		
P4S03P099	AL 1003 AF 5		

From Construction to Manufacturing



2.1 – Casting sides



2.2 – Panel shape verification



2.3 – Material application



3.1 – Casting verified panel



3.2 – Panel hardening

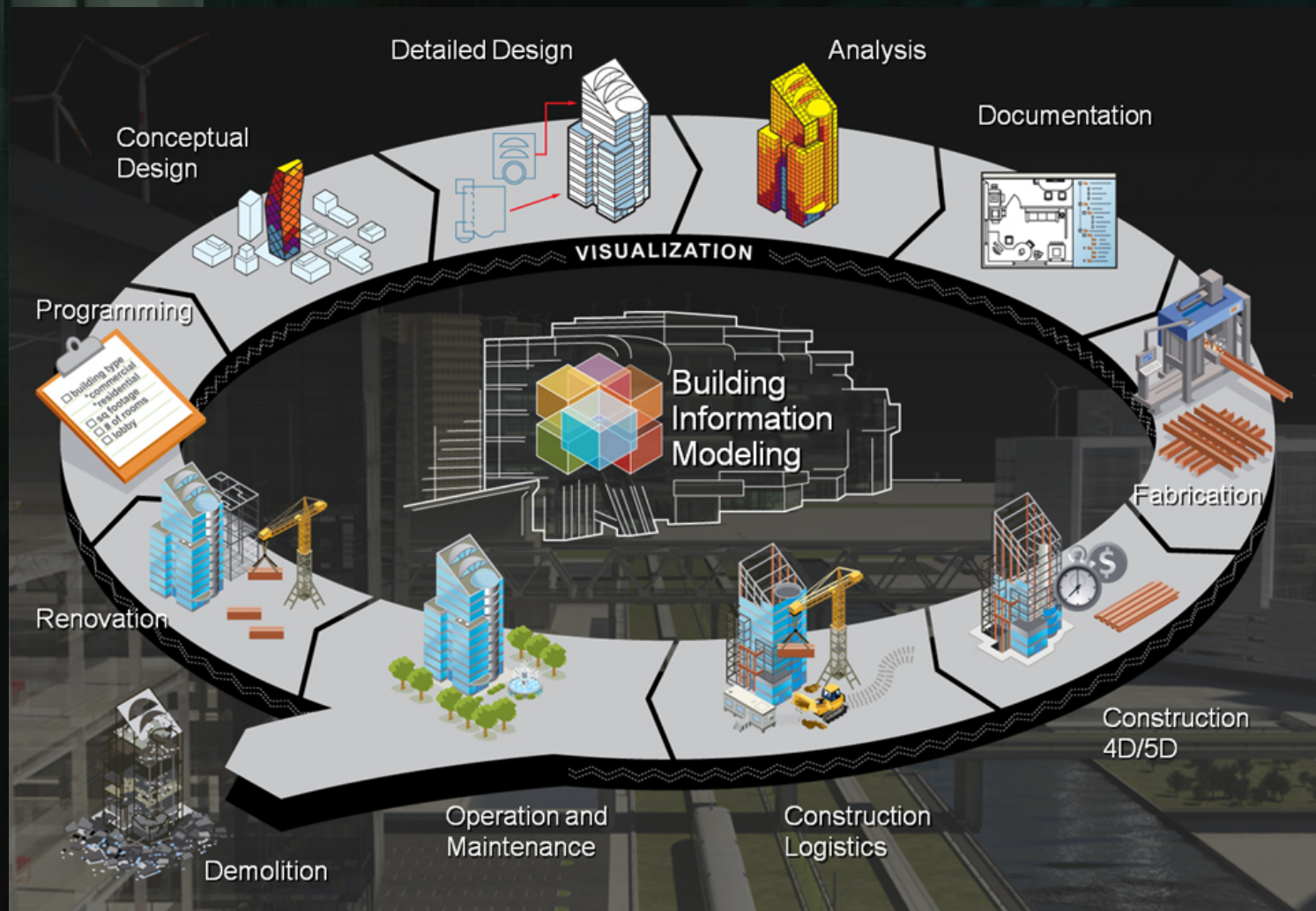


3.3 – Panel release

Case 3

True BIM (Operation Phaes)

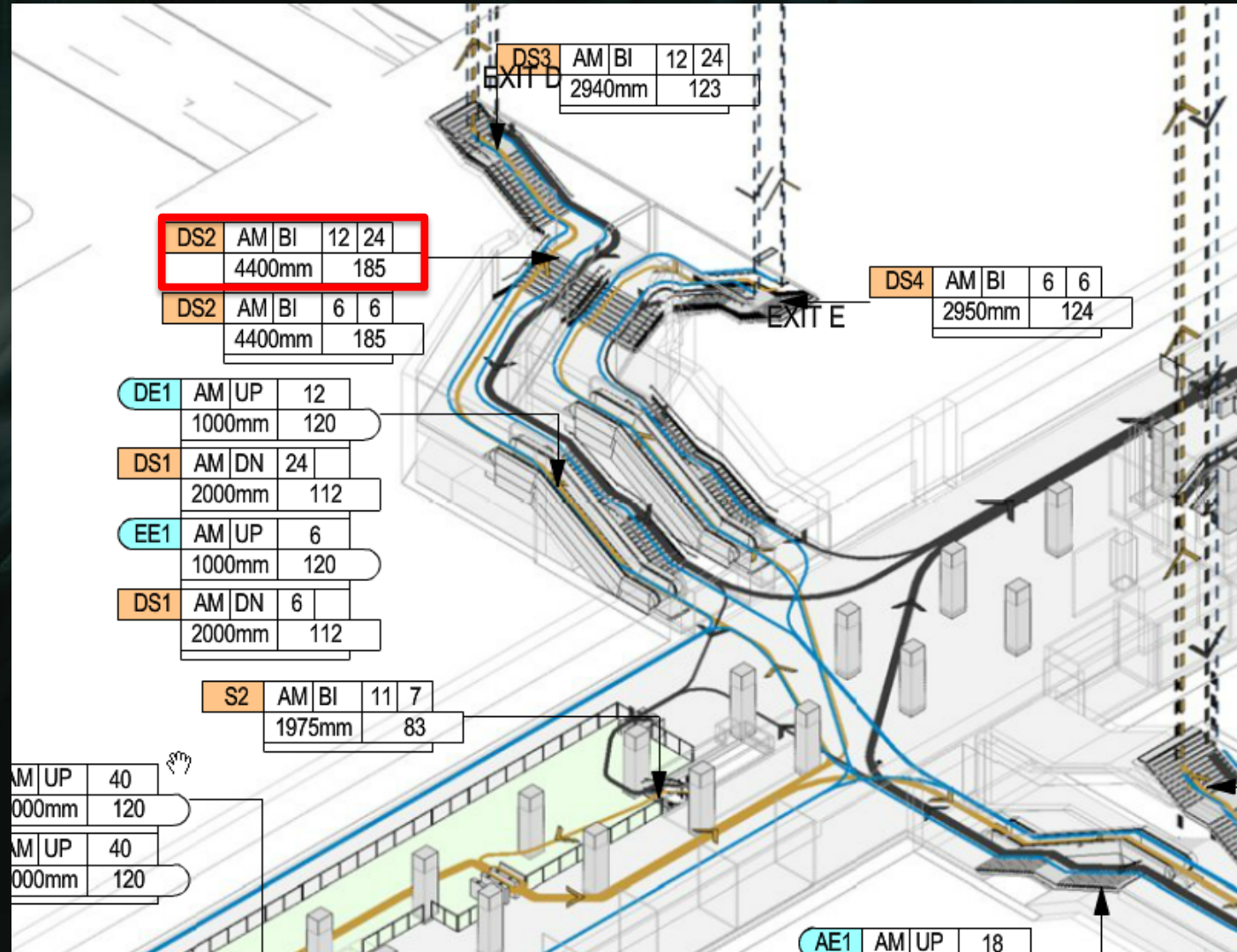
$$M + I = B \text{ (Safety)}$$



True BIM

STAIR SCHEDULE

NAME	STAIR WIDTH (mm)	NORMAL AM PEAK				
		DIR. (UP/DN/BI)	CAL.CAP.			TOTAL CAPACITY (U)
			UP	DN	BI	
AS1	2050	DN	103	115	86	115
AS2	4400	BI	220	246	185	185
AS2E	4400	UP	220	246	185	220
BS1	2000	UP	100	112	84	100
BS2	2000	UP	100	112	84	100
BS3	4450	BI	223	249	187	187
BS4	4370	BI	219	245	184	184
BS4E	2630	UP	132	147	110	219
BS5	4370	BI	219	245	184	184
BS5E	4370	DN	219	245	184	245
CS1	4400	BI	220	246	185	185
CS2	2010	DN	101	113	84	113
CS3	2370	BI	119	133	100	100
CS3E	2370	UP	119	133	100	119
CS4	2370	BI	119	133	100	100
CS4E	2370	UP	119	133	100	119
DS1	2000	DN	100	112	84	112
DS1	2000	DN	100	112	84	112
DS2	4400	BI	220	246	185	185
DS2	4400	BI	220	246	185	185
DS3	2940	BI	147	165	123	123



True BIM

Edit Label

Select parameters to add to the label. Parameters will be combined into a single label.

Enter sample values to represent this label in the family environment. ☐ Wrap between parameters only

Category Parameters
Select available fields from:
Stairs

- Actual Number of Risers
- Actual Riser Height
- Actual Tread Depth
- Assembly Code
- Assembly Description
- Assembly Name
- Calculated Capacity_AM
- Calculated Capacity_Evacuation**
- Comments
- Cost
- Description
- Dir_AM (UP/DN/BI)
- Dir_EVA (UP/DN)
- Dir_PM (UP/DN/BI)

Label Parameters

	Parameter Name	Spaces	Prefix	Sample Value	Suffix	Break
1	Calculated Capacity_Evacuation			EVA		☐

↑E ↓E #

OK Cancel Apply

True BIM

Architecture Structure Systems

Properties Parameters

Modify Schedule/Quantities

A	B	C
Esc. No	Stair Name	Type Mark
E7		ESC
E8		ESC
E9		ESC
E10		ESC
E23		ESC
E11		ESC
E12		ESC
E13		ESC
E26		ESC
E25		ESC
E17		ESC
E18		ESC
E19		ESC
E15		ESC
E16		ESC
E14		ESC
E24		ESC
E1		ESC
E2		ESC
E3		ESC
E4		ESC
E6		ESC
E5		ESC
E20		ESC
E21		ESC
E22		ESC
BE1	BE1	ESC
BE2	BE2	ESC
BE3	BE3	ESC
BE4	BE4	ESC
BE5	BE5	ESC

Category: 0.0

Parameter: Format Calculated Unit

Parameter Properties

Parameter Type

☐ Project parameter
(Can appear in schedules but not in tags)

☒ Shared parameter
(Can be shared by multiple projects and Families, exported to ODBC, and appear in schedules and tags)

Select... Export...

Parameter Data

Name: Calculated Capacity_AM

Discipline: Common

Type of Parameter: Integer

Group parameter under: Other

☒ Add to all elements in the selected categories

Categories

Filter list: <show all>

☐ Hide un-checked categories

- ☐ Air Terminals
- ☐ Analytical Beams
- ☐ Analytical Braces
- ☐ Analytical Columns
- ☐ Analytical Floors
- ☐ Analytical Foundation S...
- ☐ Analytical Isolated Founda
- ☐ Analytical Links
- ☐ Analytical Nodes
- ☐ Analytical Wall Foundat...
- ☐ Analytical Walls
- ☐ Areas
- ☐ Assemblies

Check All Check None

OK Cancel Help

参数定义

Add Parameter... Calculated Value...

Edit... Delete

Select available fields from: Stairs

☒ Include elements in linked files

确定 取消 帮助

14% ↑ 30.5K/S ↓ 23.9K/S

Horizontal Vertical Highlight in Model Element

LOWER PLATFORM 120 135

UPPER PLATFORM 120 135

CONCOURSE (E) 120 135

True BIM

A	B	C	D	E	F
Esc. No	Stair Name	Type Mark	Width	Actual Number of	Actual Riser
E7		ESC	1000	23	246
E8		ESC	1000	23	246
E9		ESC	1000	23	246
E10		ESC	1000		
E23		ESC	1000		
E11		ESC	1000		
E12		ESC	1000		
E13		ESC	1000		
E26		ESC	1000		
E25		ESC	1000		
E17		ESC	1000		
E18		ESC	1000		
E19		ESC	1000		
E15		ESC	1000		
E16		ESC	1000		
E14		ESC	1000		
E24		ESC	1000		
E1		ESC	1000		
E2		ESC	1000		
E3		ESC	1000		
E4		ESC	1000		
E6		ESC	1000		
E5		ESC	1000		
E20		ESC	1000		
E21		ESC	1000		
E22		ESC	1000		
BE1	BE1	ESC	1000		
BE2	BE2	ESC	1000		
BE3	BE3	ESC	1000		
BE4	BE4	ESC	1000	22	227
BE5	BE5	ESC	1000	22	227
BE6	BE6	ESC	1000	22	227
	ES2	FINISH	1850	17	147
	ES2		1900	17	147
	ES3	FINISH	1850	19	134
	ES3		1900	19	132
	ES5	FINISH	1850	9	173

The screenshot shows the 'Properties' dialog box for a staircase. The 'Schedule' tab is active, displaying a list of 'Scheduled fields (in order)'. The fields listed are: Esc. No, Stair Name, Type Mark, Width, Actual Number of Risers, Actual Riser Height, Actual Tread Depth, Assembly Code, Assembly Description, Assembly Name, Base Level, Calculated Capacity_AM, and Calculated Capacity_Evacuat. The 'Width' field is highlighted with a red rectangle. The 'Edit Type' button is visible in the top right corner. The 'Formatting' and 'Appearance' tabs are also visible at the bottom.

J	K	L
Assembly Name	Base Level	Calculated
	BASEMENT (E)	120
	BASEMENT (E)	120
	BASEMENT (E)	120
	BASEMENT (E)	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	UPPER PLATFORM	120
	UPPER PLATFORM	120
	UPPER PLATFORM	120
	UPPER PLATFORM	120
	UPPER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	LOWER PLATFORM	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	CONCOURSE (E)	120
	BASEMENT (E)	93
	CONCOURSE LEV	
	BASEMENT (E)	93
	CONCOURSE LEV	
	CONCOURSE (E)	93

True BIM

Autodesk Revit 2014 - S

Architecture Structure Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Modify Modify Schedule/Quantities

Properties Parameters Columns Rows Titles & Headers Appearance

Modify Schedule/ Schedule Properties

Fields Filter Sorting/Grouping Formatting Appearance

Available fields:

- Actual Number of Risers
- Actual Riser Height
- Actual Tread Depth
- Assembly Code
- Assembly Description
- Assembly Name
- Base Level
- Calculated Capacity_AM
- Calculated Capacity_Evacuation
- Comments
- Cost
- Count
- Critical
- Description
- Dir_AM (UP/DN/BI)
- Dir_EVA (UP/DN)
- Esc. No
- Escalator
- Escalator/Passenger Conveyor
- Family
- Family and Type
- Function
- Keynote
- Landing Type
- Left Support Type
- Machine/Controller Location (MIT/MOT/ MIT/CO)
- Manufacturer
- Mark
- mark test
- Maximum Riser Height

Edit... Delete

Select available fields from:

Stairs

☒ Include elements in linked files

Calculated Value

Name: Capacity Up

☒ Formula ☐ Percentage

Discipline: Common

Type: Integer

Formula: Width / 1000 mm * 50

OK Cancel Help

Scheduled fields (in order):

- Type Mark
- Dir_PM (UP/DN/BI)
- Width
- Capacity Up
- Capacity Down
- Capacity - Bi Direction
- Calculated Capacity_PM
- Stair Name

Add --> <-- Remove

Add Parameter... Calculated Value...

Edit... Delete

Move Up Move Down

确定 取消 帮助

运算定义

BI	99	111	83	83
DN	99	111	83	111
BI	99	111	83	83

Area Sched
Column Sched
ESC SCHED
Esc Schedu
ESCALATOR
EVA_ESC S
EVA_STAIR
PM_ESC S
PM_STAIR
Room Sched
STAIR SCHEDULE
Stair Schedule-mickeymoka2
Stair Schedule_mickeymoka
Structural Column Schedule
Wall Schedule

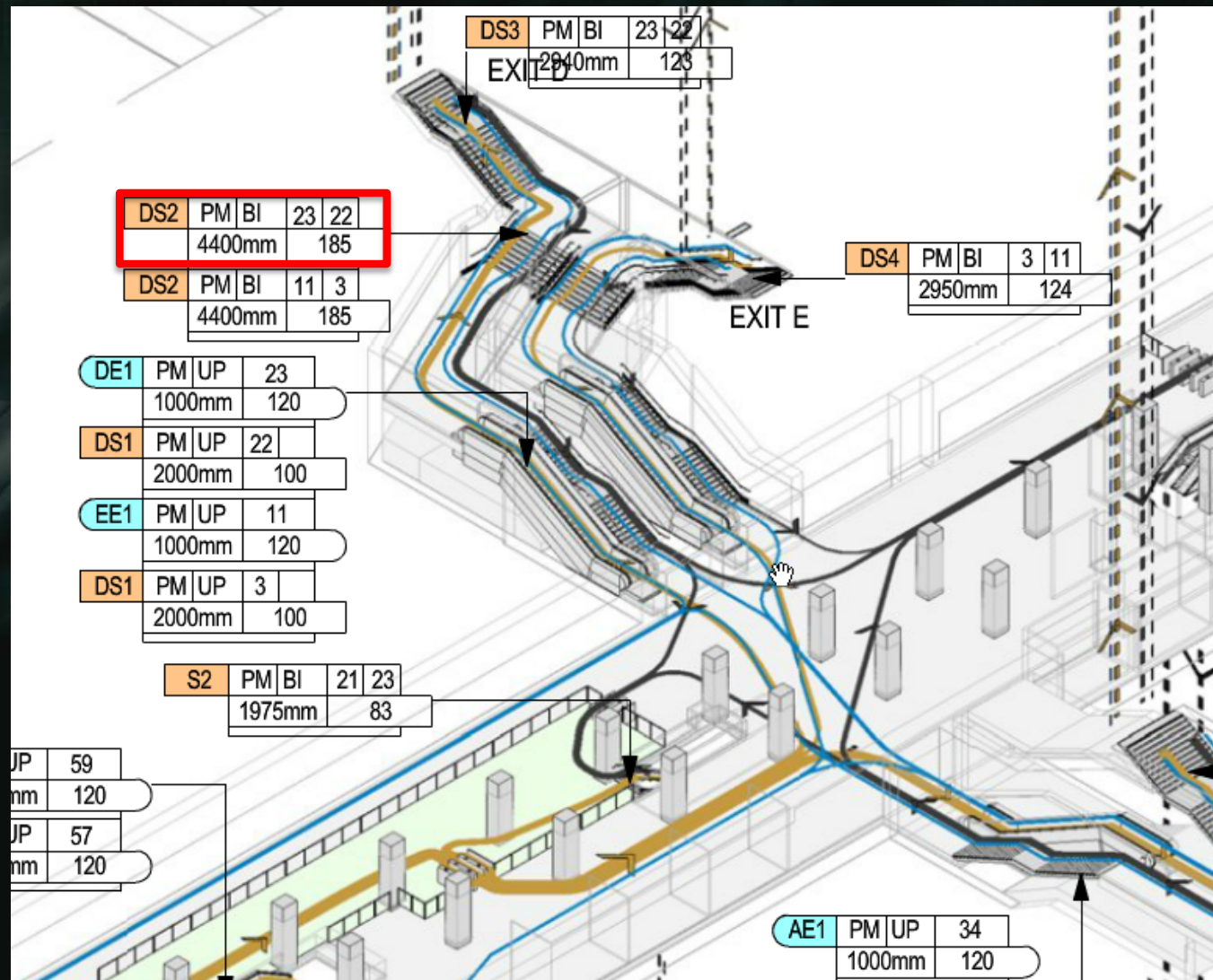
True BIM

$$(23 + 22) / 185$$

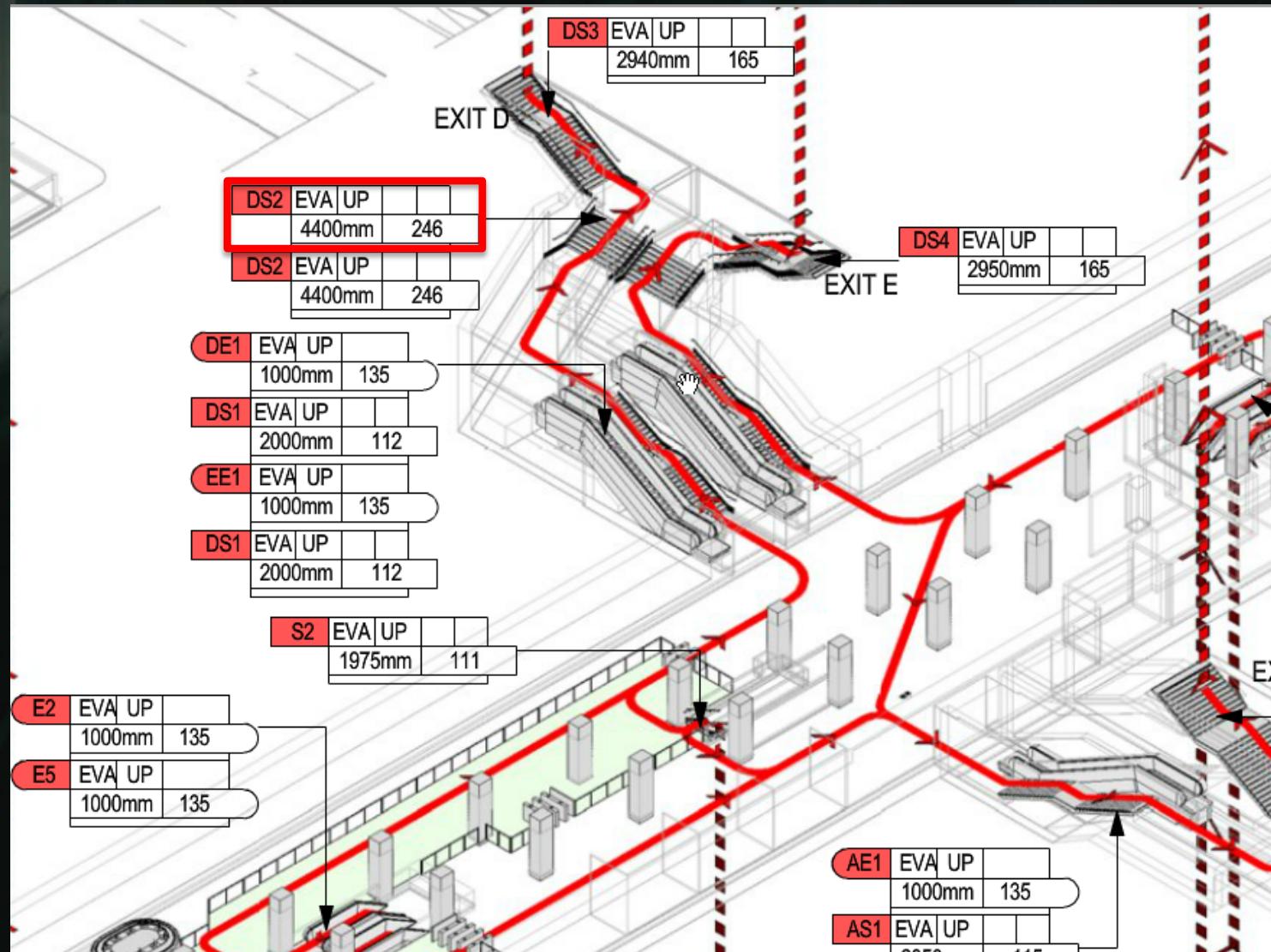
$$= 24.3\%$$

$$= \text{Safe}$$

(Safety factor –
over 80% Potential
Danger)



True BIM



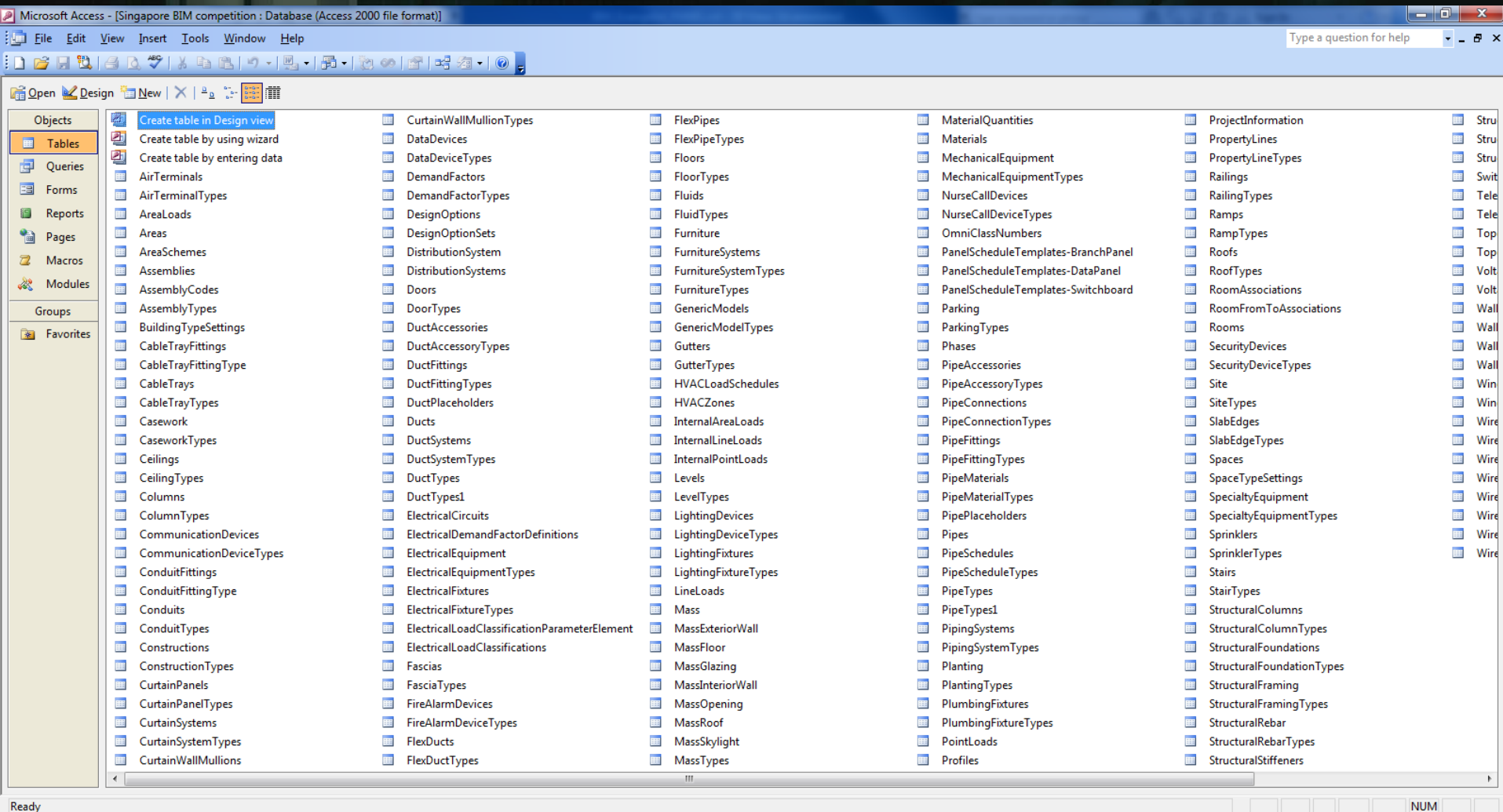
Case 4

True BIM (Operation Phase)

$$M + I = B$$

(Operation & Maintenance)

物业管理 - 维修保养



True BIM – Operation & Maintenance

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		07/22/10
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		08/25/10
A01/104	WEST ELEVATION		07/22/10
A01/105	SOUTH ELEVATION		07/22/10
A01/106	NORTH ELEVATIONS		07/22/10
A01/107	SECTION 01		07/22/10
A01/108	SECTION 02		07/30/10
A01/110	ISOMETRIC & PERSPECTIVES		07/22/10
A01/120	SOLAR STUDY MARCH		07/22/10
A01/121	SOLAR STUDY MARCH		08/28/10
A01/122	SOLAR STUDY JUNE		08/28/10
A01/123	SOLAR STUDY JUNE		08/28/10
A01/124	SOLAR STUDY JUNE		08/28/10
A01/125	SOLAR STUDY SEPT		08/28/10
A01/126	SOLAR STUDY SEPT		08/28/10
A01/127	SOLAR STUDY SEPT		08/28/10
A01/128	SOLAR STUDY DEC		08/28/10
A01/129	SOLAR STUDY DEC		08/28/10
A01/130	SOLAR STUDY DEC		08/28/10
A01/131	SOLAR STUDY DEC		08/28/10
A01/132	SECTIONS		10/28/10

Tiling Schedule

Family	Level	Type	Type Mark	Keynote	Count
GEM_MTR_Floor Care Mark Based_DimGray		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	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	L
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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The screenshot displays the Microsoft Access application interface. The main window is titled "Singapore BIM competition : Database (Access 2000 file format)". The left-hand "Objects" pane shows a tree view with categories: Objects, Tables, Queries (highlighted), Forms, Reports, Pages, Macros, Modules, Groups, and Favorites. The "Queries" pane contains two items: "Create query in Design view" and "Create query by using wizard".

The right-hand pane shows a query named "Query1 : Select Query" in Design view. It features a relationship diagram between two tables: "Mass" and "MassTypes". The "Mass" table has fields: Id, TypeId, PhaseCreated, PhaseDemolished, DesignOption, GrossVolume, GrossSurfaceArea, GrossFloorArea, Comments, BaseLevel, and Mark. The "MassTypes" table has fields: Id, Keynote, Model, Manufacturer, TypeComments, URL, Description, OmniClassNumber, AssemblyCode, FamilyName, TypeName, TypeMark, and Cost. A one-to-many relationship is established between the "Id" field of "MassTypes" (marked with a '1') and the "TypeId" field of "Mass" (marked with an infinity symbol).

Below the relationship diagram is a table grid for the query. The grid has columns for "Field:", "TableName", "TypeMark", and several empty columns. The "Field:" column lists "FamilyName", "TypeName", and "TypeMark". The "TableName" column lists "MassTypes", "MassTypes", and "MassTypes". The "TypeMark" column has a dropdown menu. The "Show:" row has checkboxes for each field, all of which are checked. The "Criteria:" row is empty. The "or:" row is also empty.

The status bar at the bottom of the window shows the text "Ready" and a series of numbers: 204944, 189908, 80901, 0.098848294223319, 10.063283270203, and NUM.

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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 - "Lactierete 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 - "Lactierete 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; Dural le paint on c/s render above 2100 high - "Alphadecor, colour 9010 White" or equal approved		Durable paint on fairface concrete - "Alpl' adecor, 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			---		Direct	
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

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The screenshot displays a web application interface for 'Work Order Tracking' running in a Windows Internet Explorer browser. The browser address bar shows the URL: <http://localhost:7001/maximo/ui/?event=loadapp&value=wotrack&uisessionid=1253495337442>.

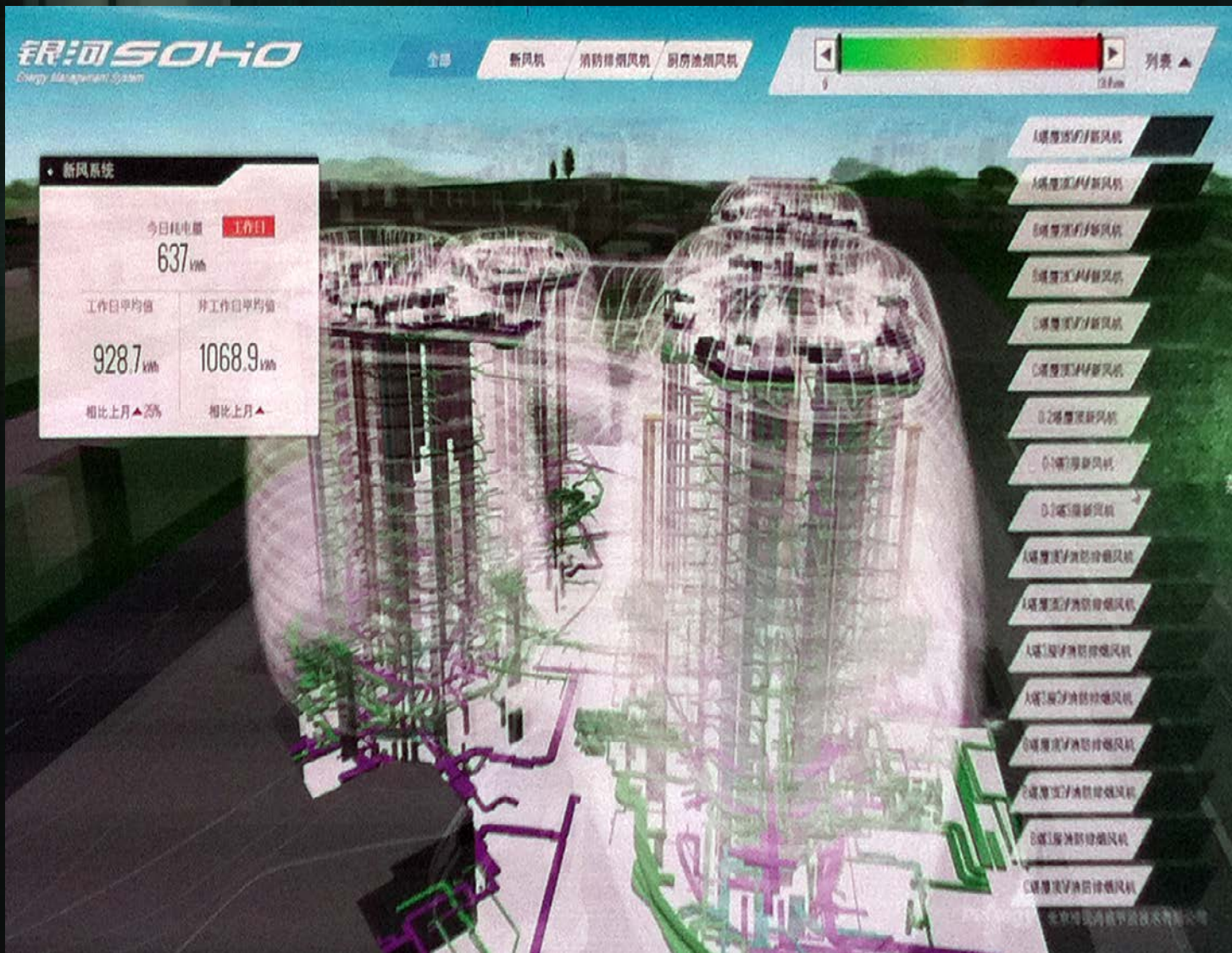
The main application window has a left sidebar with 'Datasets' and 'Report Datasets' (MAXIMO). The main content area is titled 'Reports' and contains a 'Select a report from the list, or click Create Report to create an ad hoc report.' instruction. Below this, there are tabs for 'On Demand Reports' and 'Scheduling Status'. Under 'On Demand Reports', there are links for 'Estimated vs Actual Work Order Costs', 'Open Work Orders and PM', 'SSRS First Report', and 'SSRS Work Order by Work Type'. A 'Request Page' section is also visible.

A 'Select Value' dialog box is open, displaying a table of reports. The table has columns for 'Location', 'Description', 'Type', and 'Site'. The table lists 20 reports, with the first 10 shown in the screenshot. The 'Type' column contains values like 'OPERATING' and 'LABOR', and the 'Site' column contains 'BEDFORD'.

The 'Parameters' section at the bottom of the main window includes a 'Search Location Hierarchy' field and a 'Submit' button.

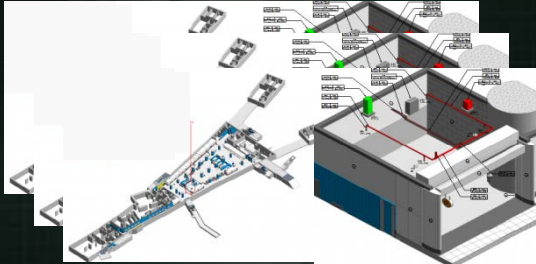
Location	Description	Type	Site
☐ ADDR2001	Address Unit #2001 Oak St. - W560	OPERATING	BEDFORD
☐ ADDR2002	Address Unit #2002 Oak St. - W560	OPERATING	BEDFORD
☐ ADDR2003	Address Unit #2003 Oak St. - W560	OPERATING	BEDFORD
☐ AIR100	Supply Duct Inlet- Conf. Room #100	OPERATING	BEDFORD
☐ AIR101	Supply Duct Inlet- Office #101	OPERATING	BEDFORD
☐ AIR102	Supply Duct Inlet- Office #102	OPERATING	BEDFORD
☐ AIR103	Supply Duct Inlet- Office #103	OPERATING	BEDFORD
☐ AIR104	Supply Duct Inlet- Office #104	OPERATING	BEDFORD
☐ AIR105	Supply Duct Inlet- Office #105	OPERATING	BEDFORD
☐ AIR211	East Wing, First Floor Supply Duct	OPERATING	BEDFORD
☐ AIR212	West Wing, First Floor Supply Duct	OPERATING	BEDFORD
☐ BALL	Allan Ball	LABOR	BEDFORD
☐ BASIN-W1	Main Storm Water Basin - W1	OPERATING	BEDFORD
☐ BLK1000	1000 Block, Oak St. - W560	OPERATING	BEDFORD
☐ BLK2000	2000 Block, Oak St. - W560	OPERATING	BEDFORD
☐ BLK3000	3000 Block, Oak St. - W560	OPERATING	BEDFORD
☐ BOILER	Boiler Room	OPERATING	BEDFORD
☐ BONEY	Joe Boney	LABOR	BEDFORD
☐ BOSTON	City of Boston	OPERATING	BEDFORD
☐ BOW-W1	Harbour Run-off - W1	OPERATING	BEDFORD

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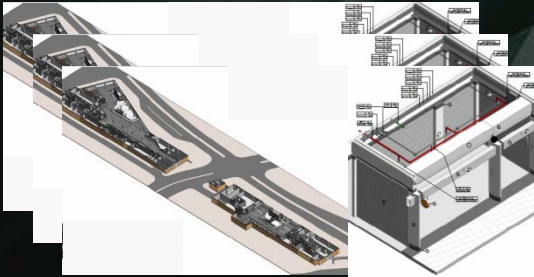


MODELLING + INDIVIDUAL DATABASE

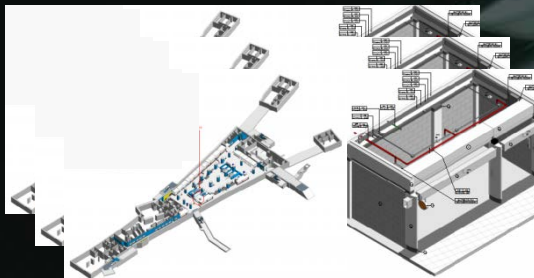
S1



S2



S3



FLEET WIDE DATABASE

MEGA
DATABASE

OTHER
DATABASES

APPLICATIONS

APP 1

E.G. CCTV
MONITORING

APP 2

E.G. RETAIL

APP 3



The background is a dark, moody composition. It features large, fluid, and somewhat crystalline shapes that resemble liquid or smoke in motion, rendered in shades of deep teal and black. These organic forms are layered over a subtle, light-colored grid pattern that covers the entire frame. The lighting is dramatic, with highlights catching the edges of the flowing shapes, creating a sense of depth and movement.

THANK YOU