

Drawings

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

Conclusion

- 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

BIM is....?

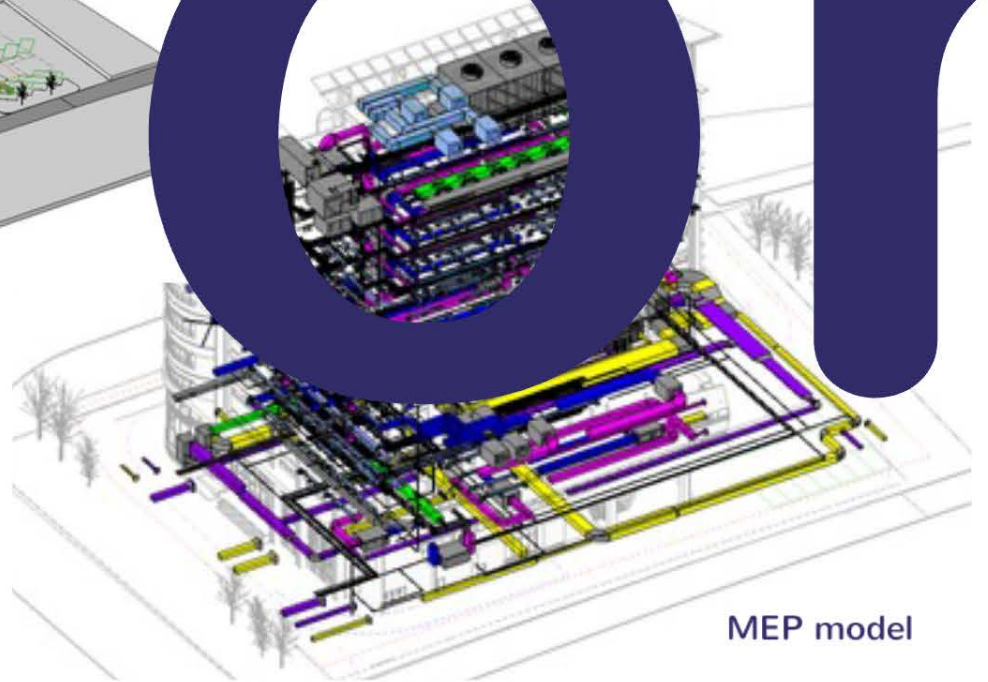
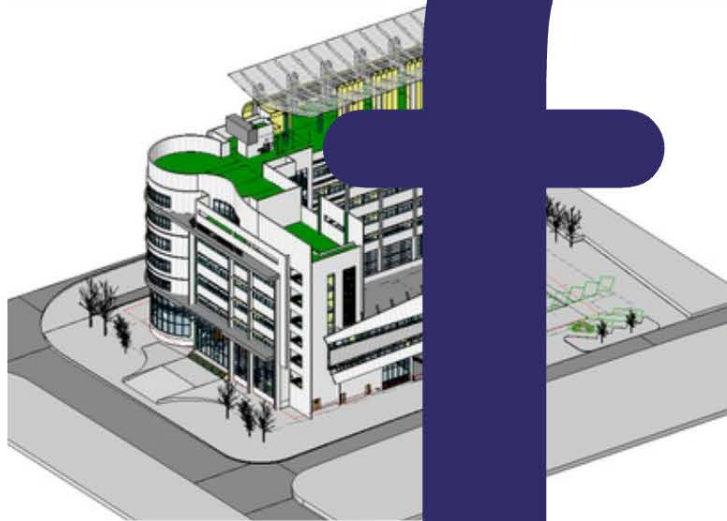
3D Modelling? Use for Clash Analysis?



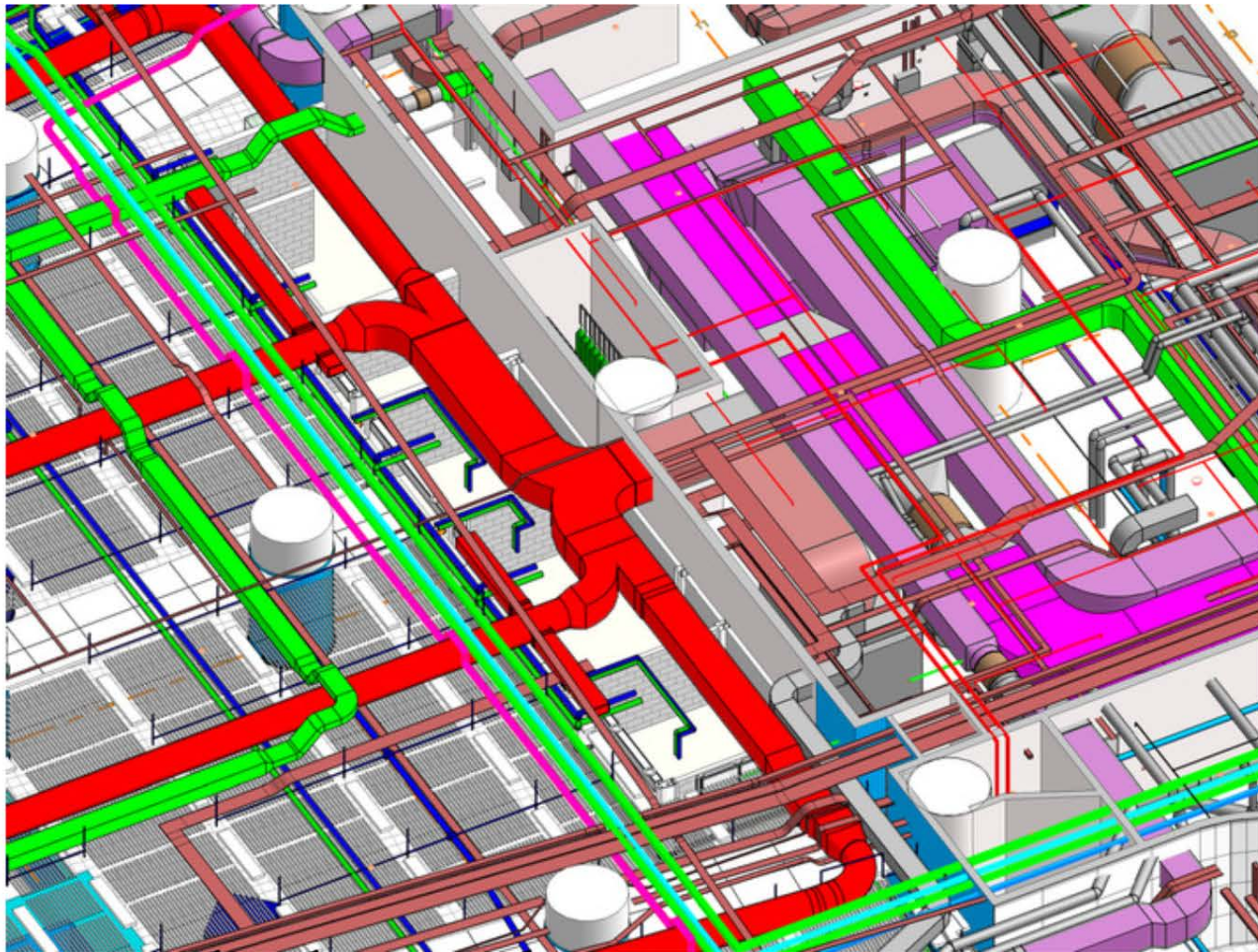
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Architectural + Structural M



MEP model



Clash Analysis

Can BIM be used to produce Drawings the construction site get used to?

E&M drawings

- Complicated Over Symbolized and simplified Needs collaboration among disciplines Showing "Design Intent only" - not reflecting actual routing Designer role and Construction Role

E&M Tender drawings

Title SheetDrawing listSymbols and AbbreviationsGeneral NotesLo

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	A50001	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	M01001	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	M11001	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	M11002	CONVERSION OF EXISTING GENERATOR ROOM TO 10kV SWITCH ROOM AT QVB	TYPICAL ECS INSTALLATION DETAILS	A	
Q04-003	30112001	LIGHTING & POWER SERVICE PRINCIPLE SCHEME	GROUND FLOOR LEVEL +5.1	D	FOR REFERENCE ONLY
C2819-05-10E-T.Q.V.B.MTR	E07001	MODIFICATION OF EMERGENCY POWER SUPPLY SYSTEM	AT NUB, 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



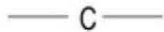
10A LIGHTING SWITCH, MATT-CHROME FINISH FRONT PLATE



EXISTING BULKHEAD LIGHTING



EXISTING CABLE ROUTE



NEW CABLE ROUTE



EXISTING EQUIPMENT

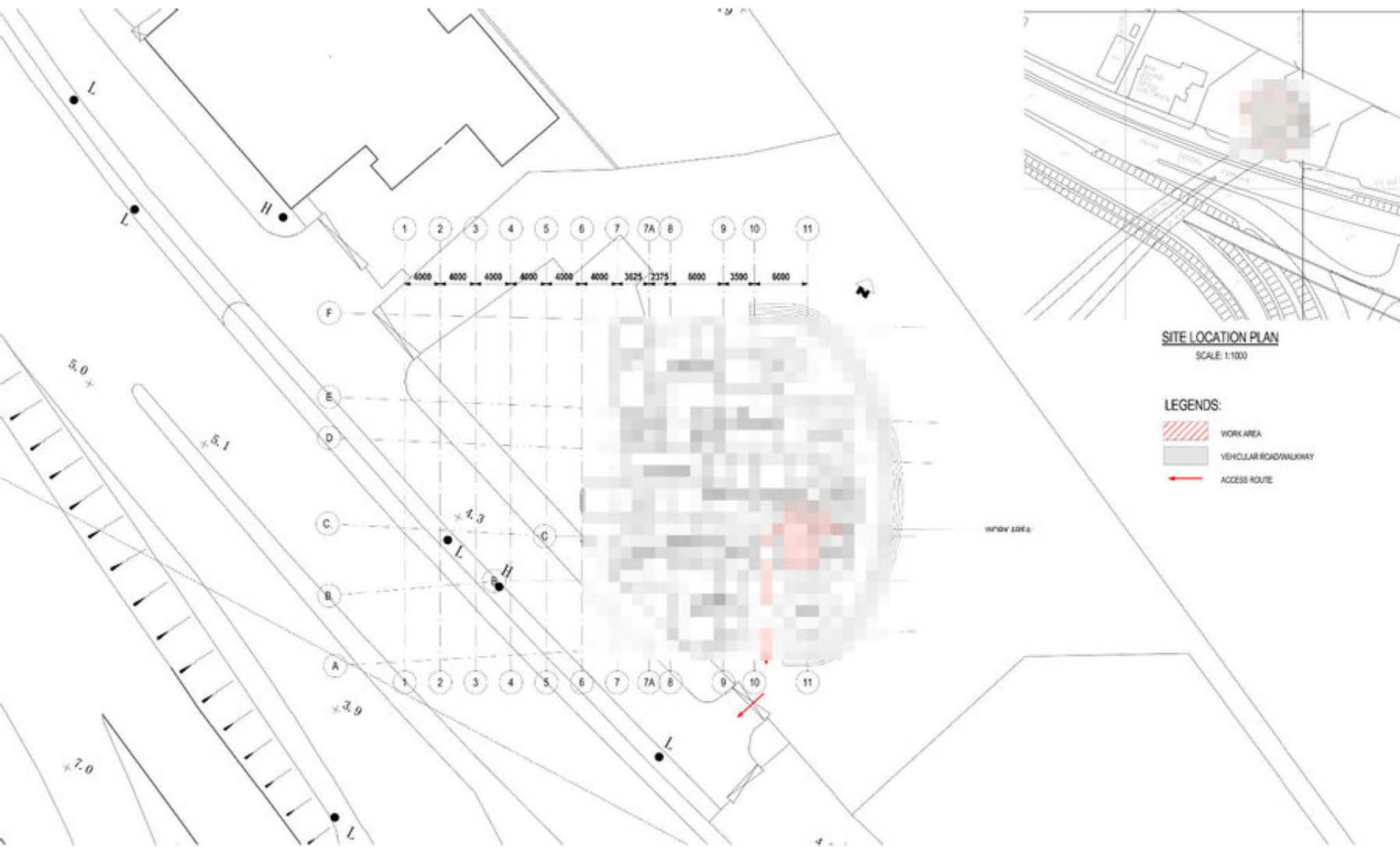


EXISTING EMERGENCY STOP BUTTON

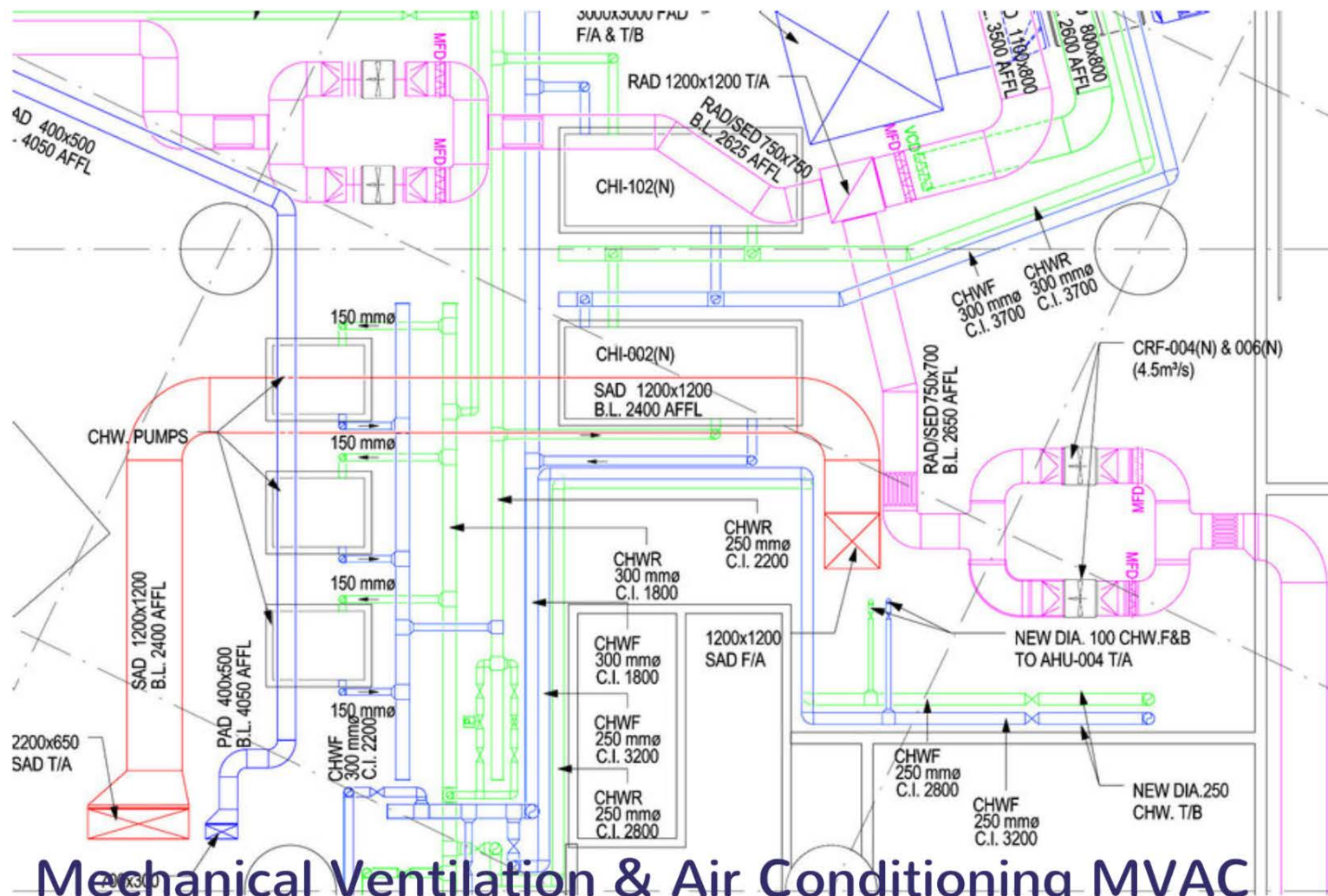
General Notes

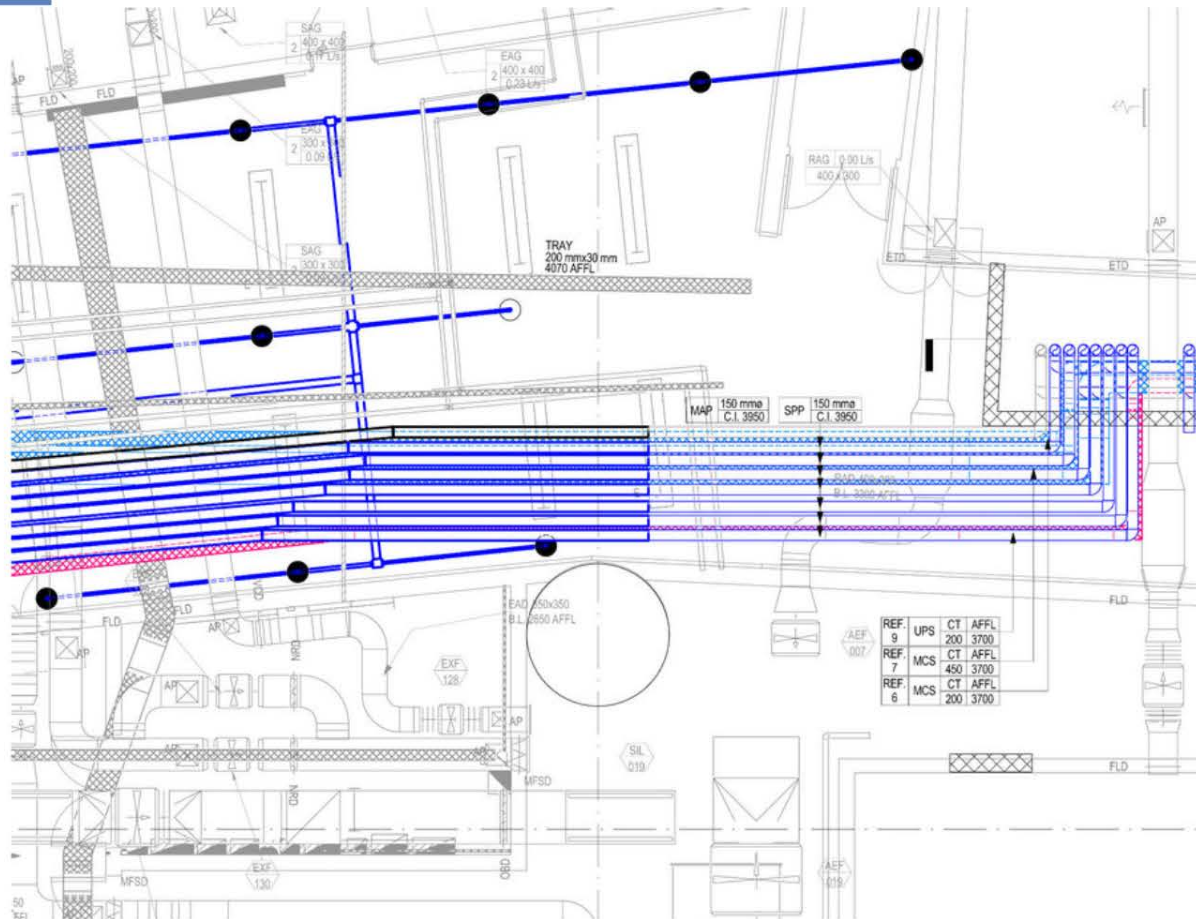
GENERAL NOTES:

- 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 G.I. U-CHANNEL BETWEEN G.I. 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-CHANNEL 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 MOB BOARD, BOARD NEW MOB 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 ADEQUATE 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, MOB 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 6807 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/PE CABLE IN TRUNKING/CONDUIT UNLESS OTHERWISE SPECIFIED.
- * INDICATE CIRCUIT PROTECTED BY AN INDIVIDUAL OPB/CB ON BUILT-IN ROD OF 30mA SENSITIVITY.
- ALL CABLES TO EXTERNAL LIGHTING WILL BE 2C LSH/SH/PE COPPER CABLES UNLESS OTHERWISE SPECIFIED.
- EACH MOB DISTRIBUTION BOARD WILL BE OPERATED BY A METAL GLAZED ISOLATING SWITCH OF RATING AS SPECIFIED IN THE MOB BOARD SCHEDULE/SCHEMATIC.
- ALL INSTALLATION SHALL FOLLOW THE NEW CABLE COLOUR CODE AS SPECIFIED BY THE ENDS OF THE HKBAR.
- 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, MOB 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.

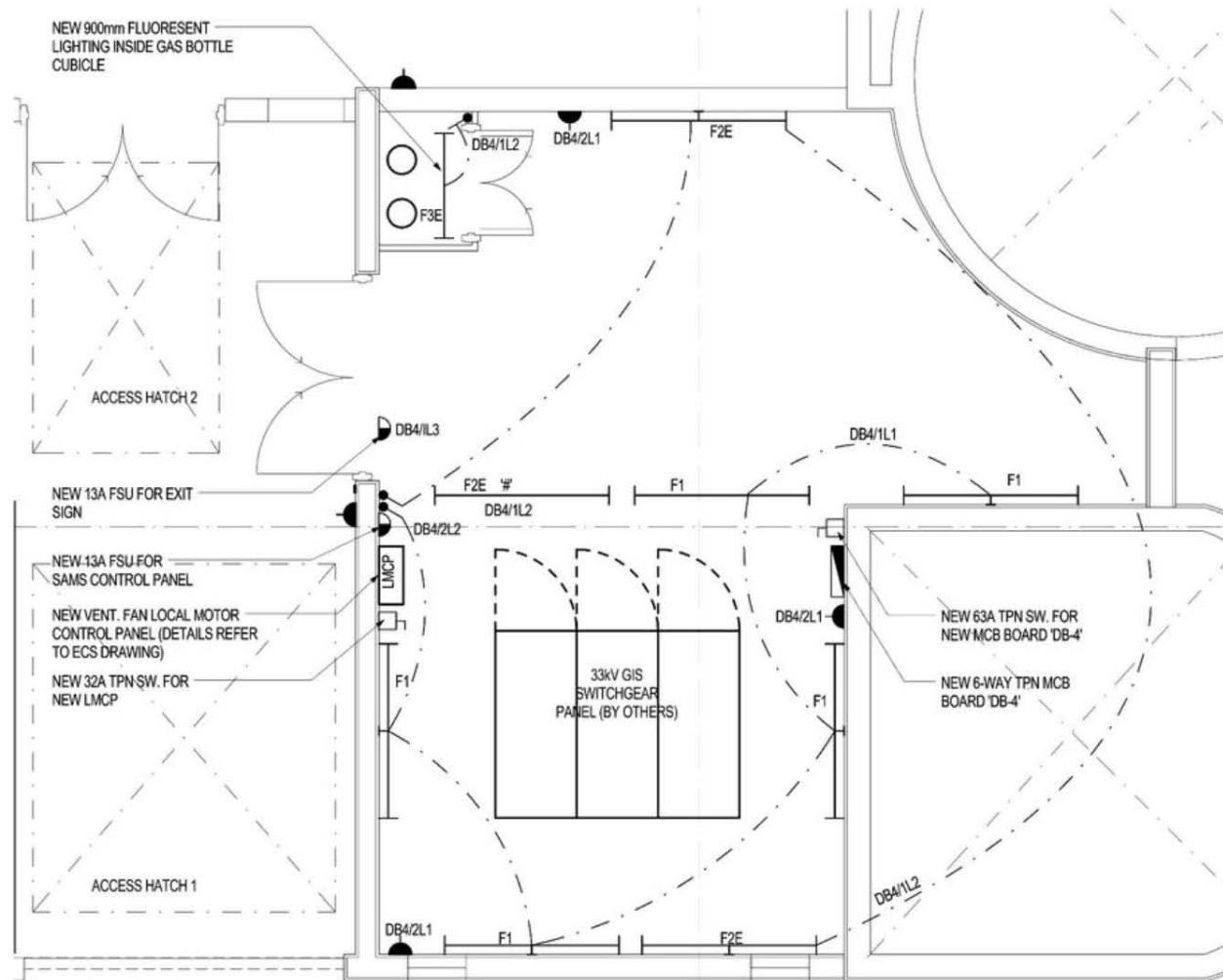


Site & Location Plan



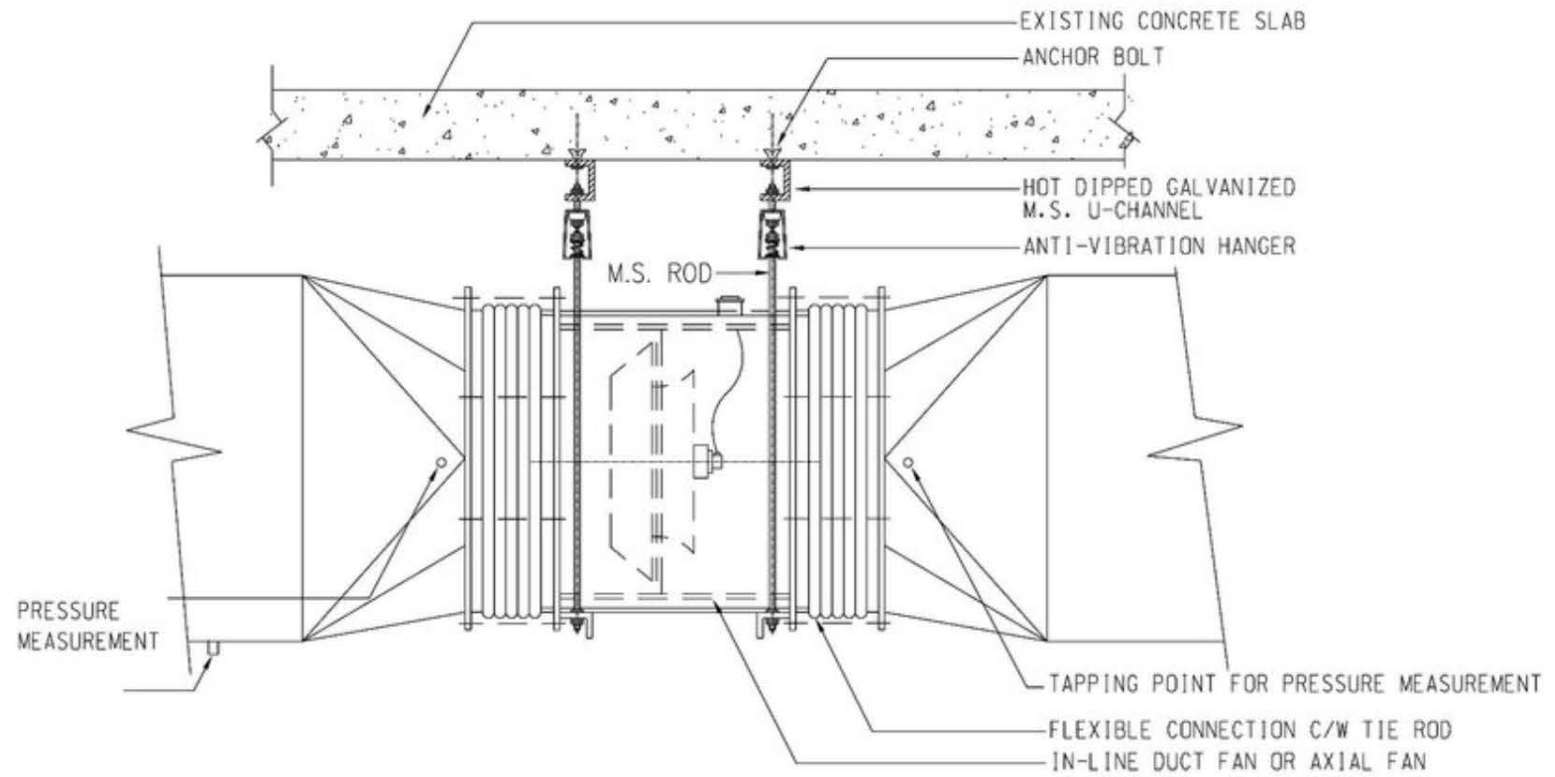


Fire Services, Plumbing & Drainage



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

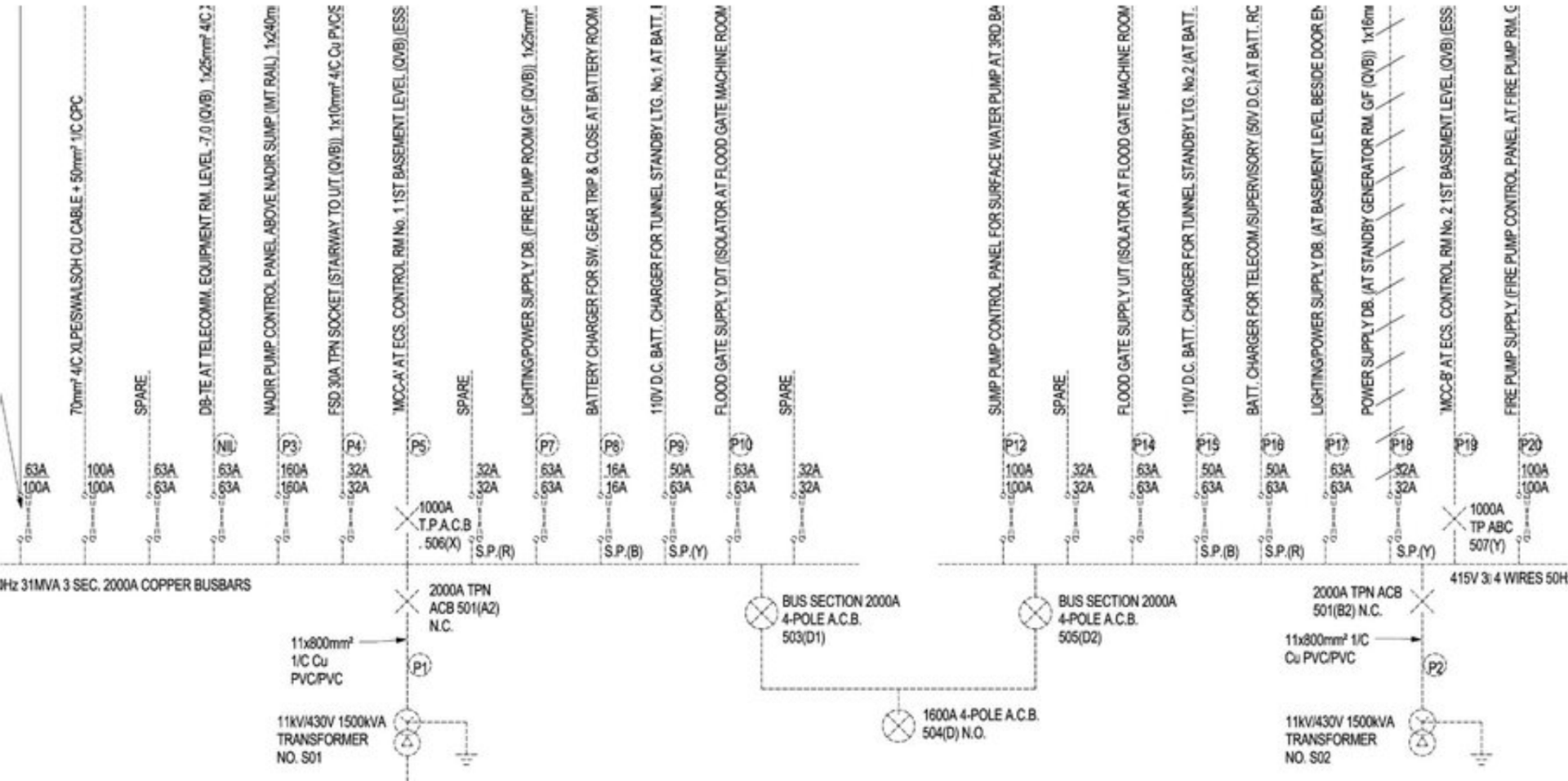
Family and Type	Size	Type Mark	Estimate Length (m)
Pipe Types: SPP	100 mmø	SPP	248.702

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

Schematic



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Reference Drawings



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

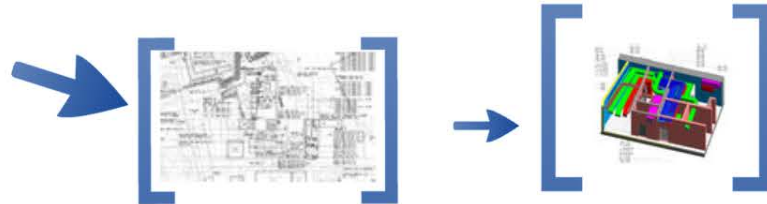
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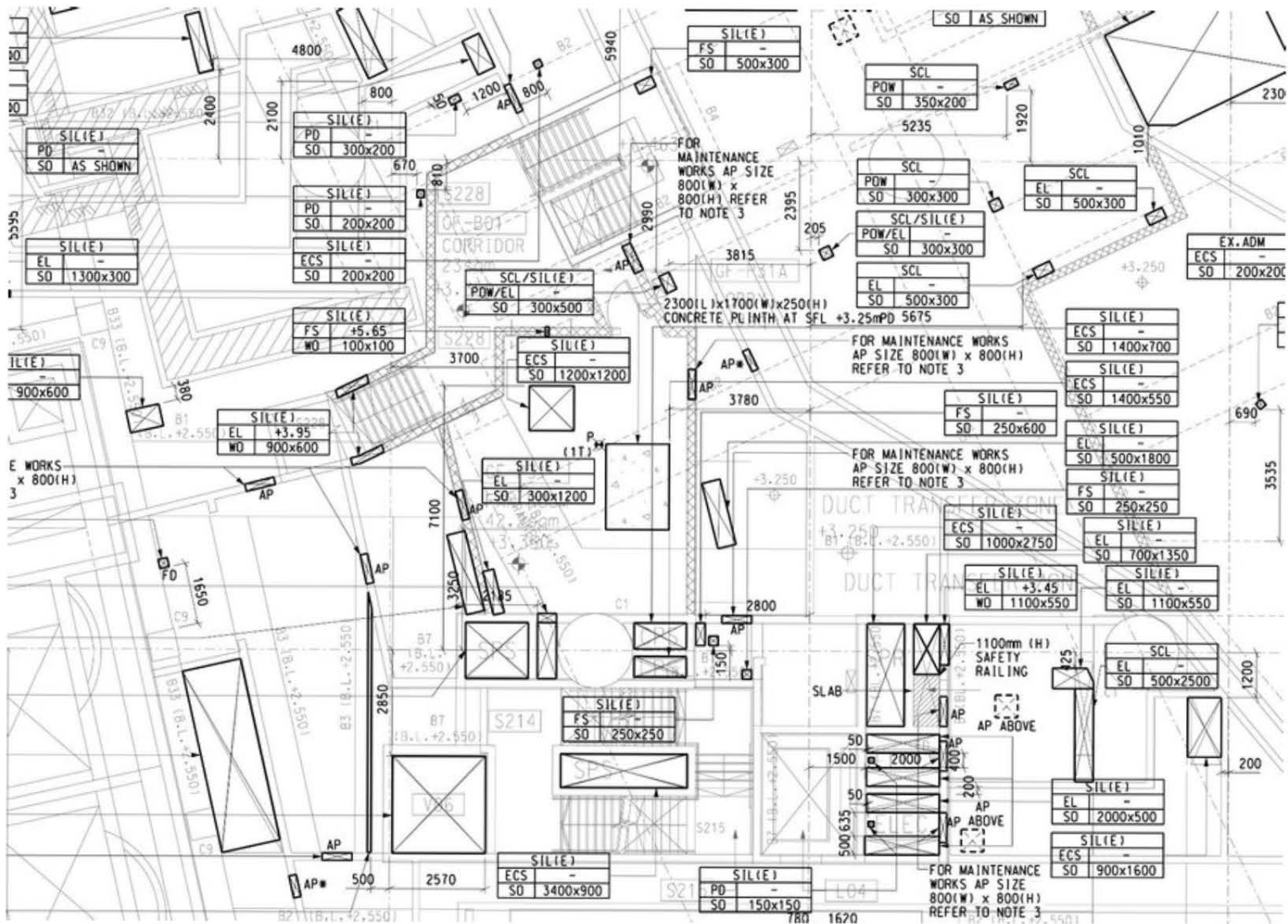


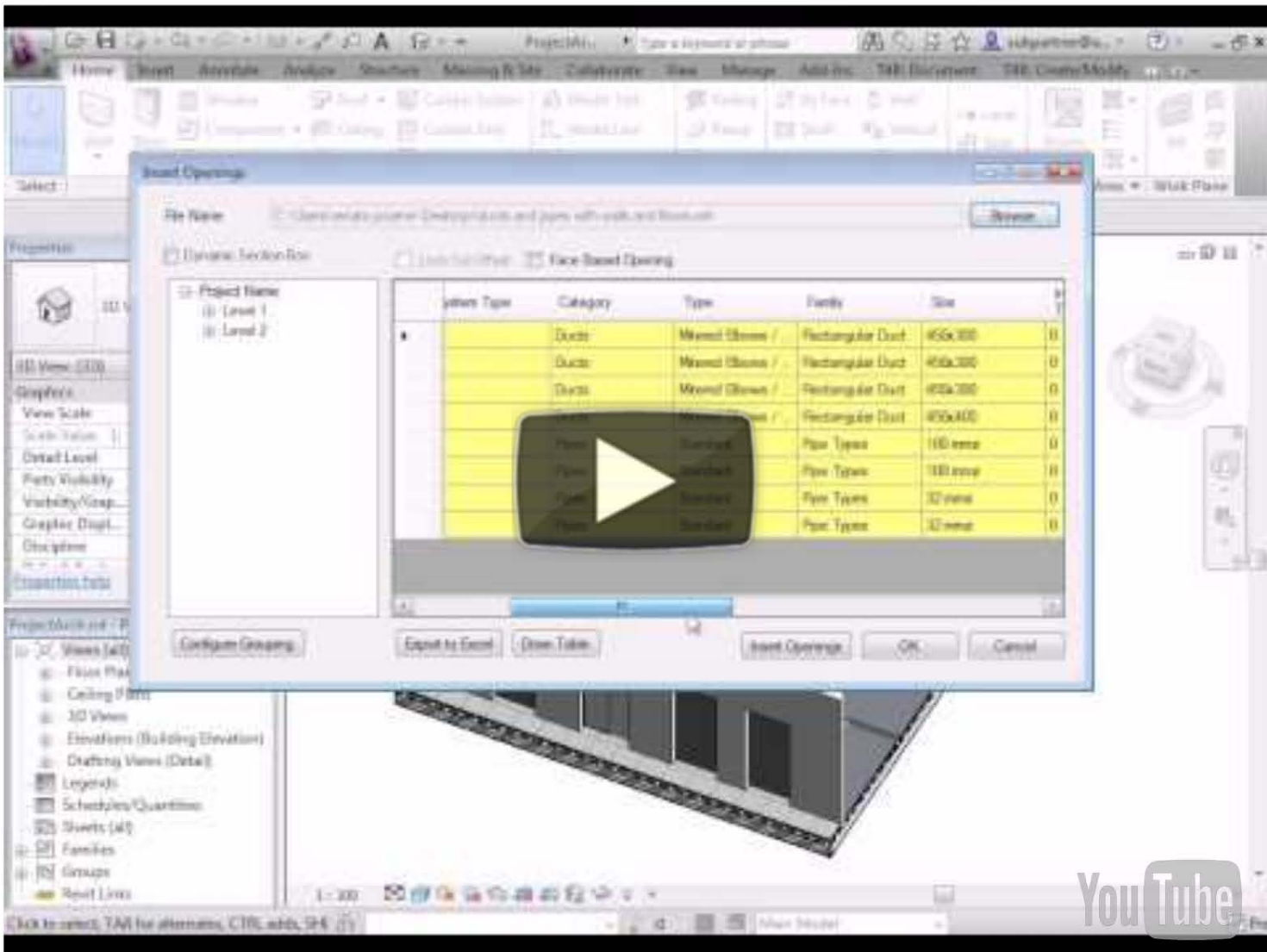
Perspective in tender document?
Why not?

Construction drawings

Combined Services Drawings CSDCo-ordination of drawings







Futther Development

Automated Design



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

And one more thing...

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