

PLUMBING PIPING LEGEND					
	DOMESTIC COLD WATER		INDUSTRIAL WASTE ABOVE FLOOR OR GROUND		
	COMPRESSED AIR		INDUSTRIAL WASTE BELOW FLOOR OR GROUND		
	CLEAR WATER INTAKE		KITCHEN WASTE ABOVE FLOOR/GROUND OR GROUND		
	CLEAR WATER WASTE ABOVE FLOOR OR GROUND		KITCHEN WASTE BELOW FLOOR/GROUND OR GROUND		
	DEIONIZED WATER SUPPLY		LIQUID PETROLEUM GAS		
	DEIONIZED WATER RETURN		NATURAL GAS		
	GRAY WATER ABOVE FLOOR OR GROUND		NATURAL GAS - HIGH PRESSURE		
	GRAY WATER BELOW FLOOR OR GROUND		NATURAL GAS - MEDIUM PRESSURE		
	DOMESTIC HOT WATER		PUMP DISCHARGE		
	HOT WATER (140°F)		RECLAIMED WATER		
	HOT WATER RETURN (140°F)		REVERSE OSMOSIS WATER		
	HOT WATER (160°F)		REVERSE OSMOSIS WATER RETURN		
	HOT WATER RETURN (160°F)		SANITARY SEWER ABOVE FLOOR/GROUND		
	DOMESTIC HOT WATER RETURN		SANITARY SEWER BELOW FLOOR/GROUND		
	SOFT COLD WATER		SECONDARY STORM DRAIN ABOVE FLOOR OR GROUND		
	SOFT HOT WATER		STORM DRAIN ABOVE FLOOR/GROUND		
	SOFT HOT WATER RETURN		STORM DRAIN BELOW FLOOR/GROUND		
	FUEL OIL RETURN		SECONDARY STORM DRAIN BELOW FLOOR OR GROUND		
	FUEL OIL SUPPLY		SUBSURFACE STORM DRAIN		
	INDUSTRIAL NONPOTABLE COLD WATER		TRAP PRIMER		
	INDUSTRIAL NONPOTABLE HOT WATER		TEMPERED WATER		
	INDUSTRIAL NONPOTABLE HOT WATER RETURN		TEMPERED WATER RETURN		
	INDUSTRIAL NONPOTABLE SOFT COLD WATER		VACUUM		
	INDUSTRIAL NONPOTABLE SOFT HOT WATER		VACUUM EXHAUST		
	INDUSTRIAL NONPOTABLE SOFT HOT WATER RETURN		WASTE OIL		
	INDUSTRIAL VENT		WASTE OIL VENT		
			DEMOLITION PIPING		
			DEMOLITION EQUIPMENT		

GENERAL ABBREVIATIONS			
°F	DEGREES FAHRENHEIT	MFR	MANUFACTURER
°C	DEGREES CELSIUS	MIN	MINIMUM
Ø	DIAMETER	MTD	MOUNTED
AD	ACCESS DOOR	N/A	NOT APPLICABLE
ADJ	ADJUSTABLE	NC	NORMALLY CLOSED OR NOISE CRITERIA
AFT	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AFG	ABOVE FINISHED GRADE	NO	NORMALLY OPEN OR NUMBER
BFF	BELOW FINISHED FLOOR	NOM	NOMINAL
BHP	BRAKE HORSEPOWER	NTS	NOT TO SCALE
BOD	BOTTOM OF DUCT	OB	OCTAVE BAND
BMS	BUILDING MANAGEMENT CONTROL SYSTEM	OC	ON CENTER
BOP	BOTTOM OF PIPE	OD	OUTSIDE DIAMETER
BTU	BRITISH THERMAL UNIT	OV	OUTLET VELOCITY
BTUH	BRITISH THERMAL UNIT PER HOUR	PD	PRESSURE DROP
CLG	CEILING	PH	PHASE
COL	COLUMN	POC	POINT OF CONNECTION
CUF	CUBIC FEET	POD	POINT OF DEMARCATION
DB	DRY BULB TEMPERATURE	POS	POSITION OR POSITIVE
DN	DOWN	PSG	POUNDS PER SQUARE INCH GAUGE
DP	DIFFERENTIAL PRESSURE	QTY	QUANTITY
DWG	DRAWING	RC	ROOM CRITERIA (NOISE)
EA	EACH	RET	RETURN
EFF	EFFICIENCY	REQD	REQUIRED
ELEV	ELEVATION	RH	RELATIVE HUMIDITY
ENT	ENTERING	RM	ROOM
EQUIP	EQUIPMENT	RPM	REVOLUTIONS PER MINUTE
EXH	EXHAUST	SGH	SCHEDULE
EXP	EXPANSION	SHT	SHEET
(E)	EXISTING	SPEC	SPECIFICATION
EXTRM	EXISTING TO BE REMOVED	SQ	SQUARE
ETR	EXISTING TO REMAIN	SOFT	SQUARE FEET
FA	FIRE ALARM	STD	STANDARD
FD	FLOOR DRAIN	SUP	SUPPLY
FLR	FLOOR	TEMP	TEMPERATURE
FPM	FEET PER MINUTE	TO	TRANSFER OPENING
FT	FEET	TOD	TOP OF DUCT
FT/SEC	FEET PER SECOND	TON	TONS OF REFRIGERATION
GA	GAUGE	TOP	TOP OF PIPE
GAL	GALLONS	TYP	TYPICAL
GPH	GALLONS PER HOUR	UND	UNLESS NOTED OTHERWISE
GPM	GALLONS PER MINUTE	UTR	UP THROUGH ROOF
HP	HORSEPOWER	V	VENT
HR	HOUR	VAV	VARIABLE AIR VOLUME
HZ	HERTZ	VEL	VELOCITY
ID	INSIDE DIAMETER	VFD	VARIABLE FREQUENCY DRIVE
IN	INCHES	VOL	VOLUME
KW	KILOWATT	VTR	VENT THROUGH ROOF
LB	POUND	W	WIDTH
LF	LINEAR FEET	W/	WITH
LVG	LEAVING	W/O	WITHOUT
MAX	MAXIMUM	WB	WET BULB TEMPERATURE
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR	WF	WIDE FLANGE
MEZZ	MEZZANINE	WG	WATER GAUGE
		WT	WEIGHT

AIR SYSTEM LEGEND			
	RECTANGULAR SUPPLY/ OUTSIDE AIR DUCT UP		SPACE PRESSURIZATION ARROW
	RECTANGULAR SUPPLY/ OUTSIDE AIR DUCT DOWN		DOOR LOUVER / UNDERCUT DOOR
	RECTANGULAR RETURN/ RELIEF AIR DUCT UP		SUPPLY AIRFLOW ARROW
	RECTANGULAR RETURN/ RELIEF AIR DUCT DOWN		RETURN OR EXHAUST AIRFLOW ARROW
	RECTANGULAR EXHAUST AIR DUCT UP		AIR VOLUME TRAVERSE STATION
	RECTANGULAR EXHAUST AIR DUCT DOWN		CEILING DIFFUSER (SUPPLY)
	ROUND SUPPLY/ OUTSIDE AIR DUCT UP		RETURN AIR GRILLE OR REGISTER
	ROUND SUPPLY/ OUTSIDE AIR DUCT DOWN		EXHAUST AIR GRILLE OR REGISTER
	ROUND RETURN/ RELIEF AIR DUCT UP		LIGHT TROFFER DIFFUSER
	ROUND RETURN/ RELIEF AIR DUCT DOWN		DIFFUSER WITH FLOW DIRECTION, NO FLOW ARROWS INDICATES STANDARD 4-WAY PATTERN
	ROUND EXHAUST AIR DUCT UP		CIRCULAR CEILING DIFFUSER (SUPPLY)
	ROUND EXHAUST AIR DUCT DOWN		SIDE WALL GRILLE
	DUCT WITH LINING OR SOUND INSULATION		HUMIDITY SENSOR / HUMIDISTAT & NUMBER
	STAINLESS STEEL DUCT		SENSOR AND NUMBER
	PVC COATED DUCT		SWITCH AND NUMBER
	DOUBLE WALL DUCT		TEMPERATURE SENSOR / THERMOSTAT & ZONE NUMBER
	AUTOMATIC CONTROL DAMPER FOR ROUND AND RECTANGULAR DUCT		TEMPERATURE SENSOR / THERMOSTAT W/ VANDAL GUARD & ZONE NUMBER
	BACKDRAFT DAMPER FOR ROUND AND RECTANGULAR DUCT		REMOTE DAMPER OPERATOR
	FIRE DAMPER FOR ROUND AND RECTANGULAR DUCT		DIFFERENTIAL PRESSURE SENSOR
	SMOKE DAMPER FOR ROUND AND RECTANGULAR DUCT		DUCT SMOKE DETECTOR
	COMBINATION SMOKE/FIRE DAMPER FOR ROUND AND RECTANGULAR DUCT		STATIC PRESSURE SENSOR
	SLIDE GATE DAMPER FOR ROUND AND RECTANGULAR DUCT		CARBON MONOXIDE SENSOR
	MANUAL VOLUME DAMPER FOR ROUND AND RECTANGULAR DUCT		CARBON DIOXIDE SENSOR
	FLEXIBLE CONNECTION		DIFFUSER TYPE - DIFFUSER SIZE
	ROOF EXHAUST FAN (SHOWN ON ROOF)		DIFFUSER CFM
	ROOF EXHAUST FAN (SHOWN ON FLOOR PLAN)		CONNECT TO EXISTING

PLUMBING SYMBOL LEGEND			
	PIPING TURN DOWN OR DROP		WALL HYDRANT
	PIPING TURN UP OR RISE		UNION
	PIPING TEE DOWN OR DROP		FLOW SWITCH
	PIPING TEE UP OR RISE		PRESSURE SWITCH
	GATE VALVE		EXPANSION JOINT
	CHECK VALVE		AUTOMATIC AIR VENT
	BALL VALVE		PRESSURE GAUGE WITH GAUGE COCK
	MIXING VALVE		VALVE ON PIPING RISE OR DROP
	BUTTERFLY VALVE		TRAP PRIMER
	GLOBE VALVE		THERMOMETER
	PRESSURE REDUCING VALVE		WATER HAMMER ARRESTOR
	BACKFLOW PREVENTER		DIRECTION OF FLOW
	BALANCING VALVE		SLOPE & DIRECTION OF FALL
	AUTOMATIC FLOW CONTROL VALVE		REDUCER OR INCREASER
	TEMP. & PRESSURE RELIEF VALVE		POINT OF CONNECTION
	PRESSURE RELIEF VALVE		POINT OF DEMARCATION
	MOTORIZED SHUT-OFF VALVE		DIAMETER
	SOLENOIOD VALVE		SQUARE FEET
	STRAINER		DRAIN RECEPTOR
	FLOOR CLEAN OUT		FLOOR DRAIN
	WALL CLEAN OUT		AREA DRAIN
	EXTERIOR CLEAN OUT		ROOF DRAIN
	CAPPED PIPE / CLEAN OUT		SECONDARY ROOF DRAIN
	FLEXIBLE CONNECTION (PIPE)		EXISTING
	HOSE BIBB		BY-PASS TERMINAL UNIT


TAGS & CALLOUTS			
	EQUIPMENT REQUIRING ELECTRICAL SERVICE, REFER TO SCHEDULES FOR PERFORMANCE REQUIREMENTS.		REVISION CALLOUT
	EQUIPMENT NOT REQUIRING ELECTRICAL SERVICE, REFER TO SCHEDULES FOR PERFORMANCE REQUIREMENTS.		KEYNOTE CALLOUT
	SECTION CALLOUT		POINT OF CONNECTION
	DETAIL CALLOUT		POINT OF DEMARCATION
	DETAIL DESIGNATION		FURNISHED & INSTALLED BY ELECTRICAL
			FURNISHED & INSTALLED BY MECHANICAL
			FURNISHED AND INSTALLED BY PLUMBING
			HEAT TRACE CIRCUIT START AND END
			HEAT TRACE CIRCUIT NUMBER

FIRE PROTECTION LEGEND	
	PORTABLE FIRE EXTINGUISHER

GENERAL NOTES	
1.	ALL DRAWINGS ARE DIAGRAMMATIC ONLY. THE ARRANGEMENTS OF EQUIPMENT SHOWN ARE APPROXIMATIONS ONLY AND MAY BE ALTERED BY THE ENGINEERS TO MEET THE REQUIREMENTS OF THE PROJECT. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECT'S, INTERIOR DESIGNER, AND MECHANICAL DRAWINGS FOR LOCATION OF ALL LUMINAIRES, SWITCHES, DEVICES, OUTLETS, FURNITURE FEEDING POINTS, DIMENSIONS, MOUNTING HEIGHTS, AND CONSTRUCTION DETAILS.
2.	IN EVERY INSTANCE WHERE IT IS REQUIRED IN THE SPECIFICATION OR ON DRAWING THAT EQUIPMENT AND MATERIALS BE REMOVED FROM EXISTING LOCATIONS AND RE-INSTALLED, EITHER IN WHOLE OR IN PART IN NEW LOCATIONS, ALL SUCH EQUIPMENT AND MATERIALS SHALL BE THOROUGHLY CLEANED AND WHERE NECESSARY PUT INTO GOOD OPERATING CONDITION BEFORE BEING RE-INSTALLED IN THE NEW LOCATION. TEST ALL PARTS OF THE RE-USED OR RELOCATED ELECTRICAL EQUIPMENT AND CORRECT ALL FAULTS AND GROUNDS.
3.	ALL SLAB OPENINGS SHALL BE X-RAYED AND REVIEWED WITH LANDLORD AND BASE BUILDING STRUCTURAL CONSULTANT. CONTRACTOR SHALL X-RAY THE FLOOR AND SUBMIT TO BASE BUILDING STRUCTURAL ENGINEER FOR WRITTEN APPROVAL AT LEAST 72 HOURS PRIOR TO ANY CORE DRILLING ON THE BUILDING. THE CONTRACTOR SHALL INCLUDE THE COST OF STRUCTURAL ENGINEER, COORDINATE ALL CORE DRILLING WITH LANDLORD'S SITE REPRESENTATIVE AND TENANT. ALL NOISY WORK SHALL BE PERFORMED AFTER HOURS.
4.	ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LANDLORD'S GUIDELINES AND SHALL ADHERE TO THE REQUIREMENTS STATED IN THE BASE BUILDING CONSTRUCTION MANUAL.
5.	CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL WORK WITH ALL OTHER TRADES, CONSULTANTS, TENANT & LANDLORD. ALL WORK SHALL BE SCHEDULED AND CARRIED OUT IN SUCH A MANNER TO ENSURE CONTINUED AND NON-INTERRUPTED OPERATION OF EXISTING FACILITY.
6.	ALL OPENINGS IN BUILDING RISER, IF APPLICABLE, SHALL BE SEALED WITH APPROVED FIRE STOP MATERIAL. ANY FIRE STOPPING MATERIAL REMOVED WILL BE REPLACED WITH A SUITABLE AND APPROVED FIRE STOPPING MATERIAL AND SHALL BE INSTALLED AS PER BUILDING AND FIRE CODE.
7.	ALL PIPE PENETRATIONS THROUGH FIRE RATED WALLS & FLOORS SHALL BE SEALED WITH FIRE STOP MATERIAL. FIRE STOP MATERIAL SHALL BE THAT WHICH IS APPROVED BY THE LANDLORD FOR USE IN THE BUILDING. REFER TO BASE BUILDING CONSTRUCTION MANUAL FOR FIRE STOPPING REQUIREMENTS.
8.	SEAL AIR-TIGHT AROUND ALL DUCT, PIPE, CONDUIT & WIRE PENETRATIONS THROUGH PARTITIONS, Baffles ABOVE CEILINGS & THROUGH FLOORS THAT ARE NOT FIRE RATED.
9.	COORDINATE WITH TENANT & LANDLORD TO CONFIRM EQUIPMENT, SYSTEMS & DEVICES TO REMAIN.
10.	PROVIDE TEMPORARY FILTERS ON ALL BASE BUILDING RETURN AIR OPENINGS, AND TRANSFER DUCTS CONNECTING TO THE ADJACENT TENANT SPACE THAT REMAIN OPERATIONAL DURING CONSTRUCTION. FILTERS SHALL HAVE A MERV RATING OF 13. FILTERS SHALL BE REPLACED WEEKLY & SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION.
11.	ALL FILTERS IN BASE BUILDING AIR HANDLING EQUIPMENT SERVING THE CONSTRUCTION AREA SHALL BE REPLACED UPON COMPLETION OF CONSTRUCTION.
12.	CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REFINISHING OF DAMAGED BUILDING AREAS AND FINISHES AFFECTED BY THE WORK AS OUTLINED UNDER SCOPE OF WORK OF THIS PROJECT.
13.	ALL INSTALLATIONS WITHIN EXISTING AREAS SHALL BE COORDINATED WITH LANDLORD AND BASE BUILDING MANAGEMENT. INSTALLATION MUST BE PERFORMED IN A MANNER TO ELIMINATE ANY INTERFERENCES TO STAFF AND NORMAL OPERATION OF THE FACILITY.
14.	THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND DISTRIBUTION OF TEMPORARY POWER WITHIN THE PREMISES DURING THE CONSTRUCTION PERIOD. EXPOSED ELECTRICAL CORDS OUTSIDE THE LEASED PREMISES SHALL NOT BE PERMITTED.
15.	DIMENSIONS ON DRAWINGS ARE EXPRESSED IN METRIC UNITS AND FLOWS ON DRAWINGS ARE EXPRESSED IN IMPERIAL UNITS.
16.	ALL HVAC CONTROLS WORK SHALL BE PERFORMED BY THE BASE BUILDING HVAC CONTROLS CONTRACTOR, CONVERGENT TECHNOLOGIES. CONTRACTOR SHALL CARRY BASE BUILDING HVAC CONTROLS CONTRACTOR FOR ALL HVAC CONTROLS WORK. CONTACT OMAR YAKOB: OMAR.YAKOB@CONVERGENT.COM OR (905) 602-8622.
17.	ALL SPRINKLER AND FIRE PROTECTION WORK SHALL BE PERFORMED BY THE A SPRINKLER CONTRACTOR APPROVED TO DO WORK IN THE BUILDING. REFER TO TENANT DESIGN AND CONSTRUCTION MANUAL.
18.	ALL TESTING, ADJUSTING, AND BALANCING (TAB) WORK SHALL BE PERFORMED BY AN INDEPENDENT AIR AND WATER BALANCING CONTRACTOR APPROVED TO DO WORK IN THE BUILDING. REFER TO TENANT DESIGN AND CONSTRUCTION MANUAL.
19.	ANY SHUTDOWN, DRAINAGE, AND/OR FILLING OF BASE BUILDING SYSTEMS AND/OR SERVICES SHALL BE DONE BY THE LANDLORD'S BUILDING MANAGEMENT STAFF. SCHEDULE & COORDINATE ANY SHUTDOWNS WITH THE LANDLORD AT LEAST 72 HOURS IN ADVANCE. CONTRACTOR SHALL FOLLOW ALL LANDLORD'S INSTRUCTIONS, & SHALL CARRY ALL COSTS ASSOCIATED WITH THIS WORK IN THE TENDER PRICE.
20.	ALL NOISY WORK (CORE DRILLING, ETC.) SHALL BE PERFORMED AFTER HOURS AND SHALL BE COORDINATED WITH THE LANDLORD & THE FACILITY AT LEAST 72 HOURS IN ADVANCE OF THE WORK TAKING PLACE.
21.	ALL CORE DRILLING SHALL BE COORDINATED WITH THE CLIENT AND THE LANDLORD AT LEAST 72 HOURS IN ADVANCE OF ANY WORK TAKING PLACE. LOCATIONS OF ALL CORE SHALL BE COORDINATED WITH, AND APPROVED BY THE LANDLORD'S STRUCTURAL ENGINEER.
22.	LOCATIONS OF CORES SHALL BE X-RAYED PRIOR TO START OF CORING WORK. COORDINATE X-RAY WORK WITH CLIENT AND LANDLORD AT LEAST 72 HOURS IN ADVANCE.
23.	SUBMIT TO TENANT & LANDLORD OPERATIONS & MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT PROVIDED UNDER THIS CONTRACT. OPERATION & MAINTENANCE MANUALS SHALL INCLUDE DATA SHEETS, BROCHURES, MAINTENANCE INFORMATION, RECOMMENDED SPARE PARTS LISTS, LUBRICATION INSTRUCTIONS, & START-UP CERTIFICATES.
24.	SUBMIT TO TENANT & LANDLORD A REVIEWED SET OF ALL SHOP DRAWINGS CLEARLY MARKED WITH "REVIEWED" BY THE INSTALLING CONTRACTOR & THE TENANT ENGINEER.
25.	SUBMIT TO TENANT & LANDLORD A COMPLETE SET OF AS-BUILT RECORD DRAWINGS. AS-BUILT DRAWINGS SHALL BE PREPARED USING CAD SOFTWARE (I.E. AUTOCAD) & SUBMITTED IN DIGITAL PDF & DWG FORMATS, AND AS A HARD COPY TO EACH THE TENANT & THE LANDLORD. SCANNED REDLINE MARKED-UP DRAWINGS ARE NOT ACCEPTABLE.

DRAWING LIST	
M-1	MECHANICAL NOTES AND LEGENDS
M-2	MECHANICAL SPECIFICATIONS
M-3	MECHANICAL SPECIFICATIONS
M-4	MECHANICAL SPECIFICATIONS
M-5	MECHANICAL SCHEDULES AND DETAILS
M-6	MECHANICAL - SECOND FLOOR - PLUMBING & FIRE PROTECTION PLAN
M-7	MECHANICAL - SECOND FLOOR - HVAC PLAN
M-8	MECHANICAL - ROOF PLAN

CLIENT		
MUNICIPALITY OF CASSELMAN		
PROJECT NORTH		
2	ISSUED FOR 99% COORDINATION	2025-02-24
1	ISSUED FOR 86% COORDINATION	2023-06-12
ISSUE	DESCRIPTION	DATE
IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND PROMPTLY REPORT ALL ERRORS AND/OR OMISSIONS TO THE CONSULTANT BEFORE WORK COMMENCES. ALL WORK IS TO FOLLOW THE OBC 2012 AND ANY OTHER APPLICABLE CODES AND REGULATIONS. DO NOT SCALE DRAWINGS.		
PROFESSIONAL STAMP		
<div>EXP Services Inc. T: 613.688.1899 100 - 2650 Queensview Drive Ottawa, ON K2B 8H6 Canada www.exp.com</div> <div>• BUILDINGS • EARTH & ENVIRONMENT • ENERGY • • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •</div>		
PROJECT		
1 INDUSTRIEL STREET OFFICE FIT-UP		
DRAWING		
MECHANICAL NOTES AND LEGENDS		
PROJECT No: MRK-23002008-A0		
REVISION:		
DRAWN: M. OMAR		DATE: JUNE 2023
APPROVED: B. BROWN		SCALE: AS SHOWN
DRAWING No:		M-1

			CLIENT	
			MUNICIPALITY OF CASSELMAN	
			PROJECT NORTH	
			2	ISSUED FOR 99% COORDINATION2025-02-24
			1	ISSUED FOR 66% COORDINATION2023-05-12
			ISSUE	DESCRIPTIONDATE
			IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND PROMPTLY REPORT ALL ERRORS AND/OR OMISSIONS TO THE CONSULTANT BEFORE WORK COMMENCES.	
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			PROJECT	
			1 INDUSTRIEL STREET OFFICE FIT-UP	
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			REVISION:	
			DRAWN:	M. OMAR
			DATE:	JUNE 2023
			APPROVED:	B. BROWN
			SCALE:	AS SHOWN
			DRAWING No:	M-3

[illegible]

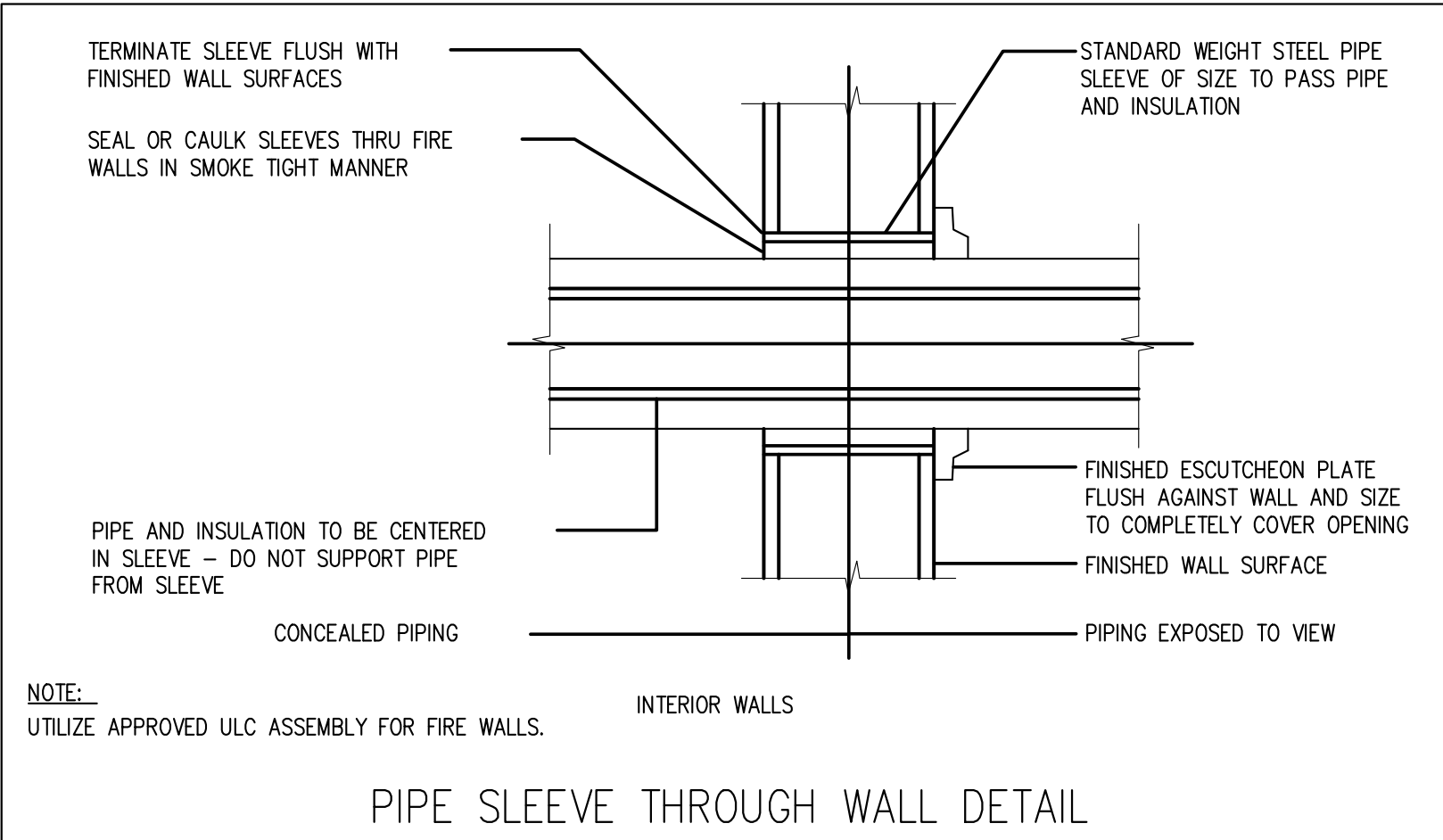
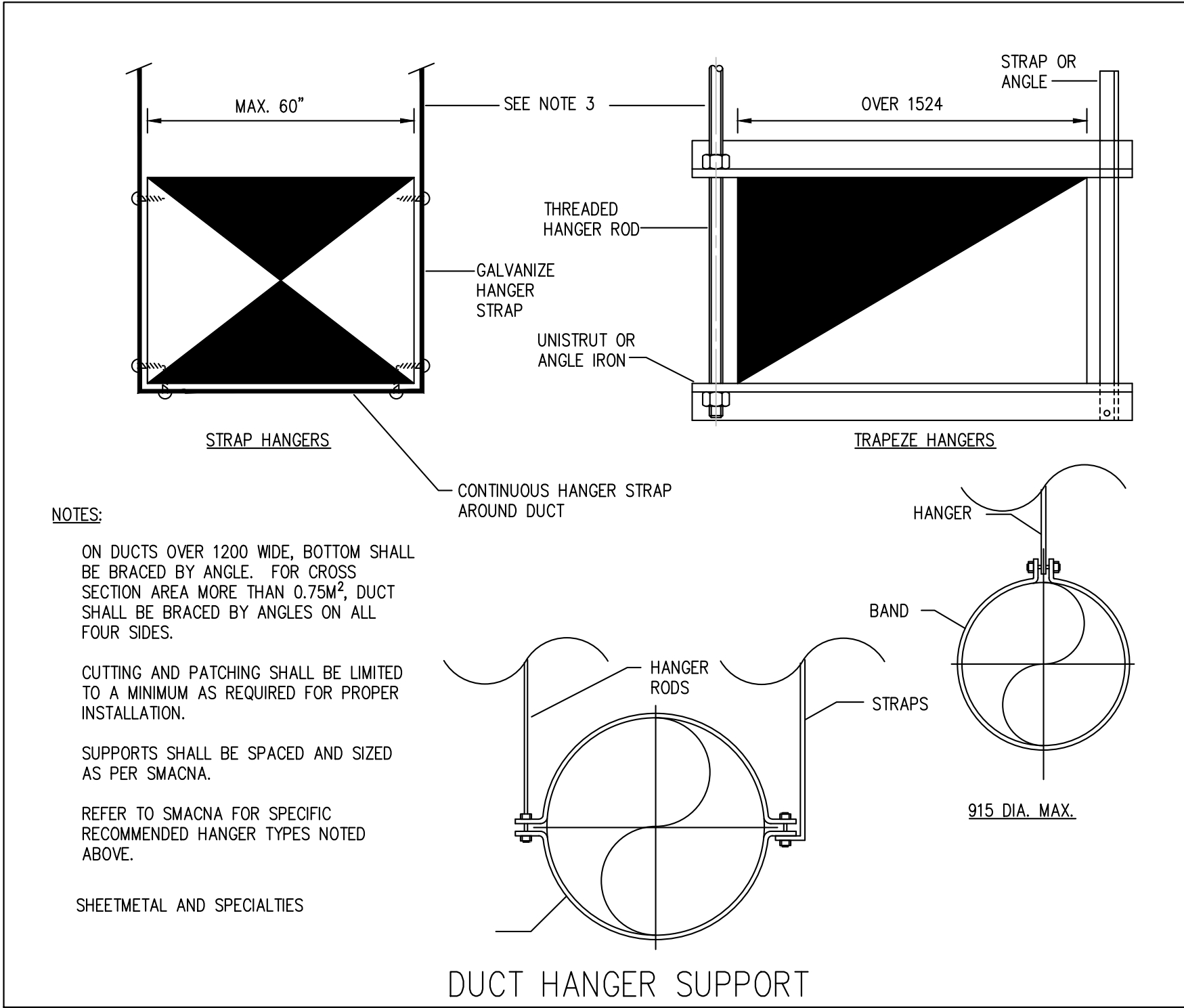
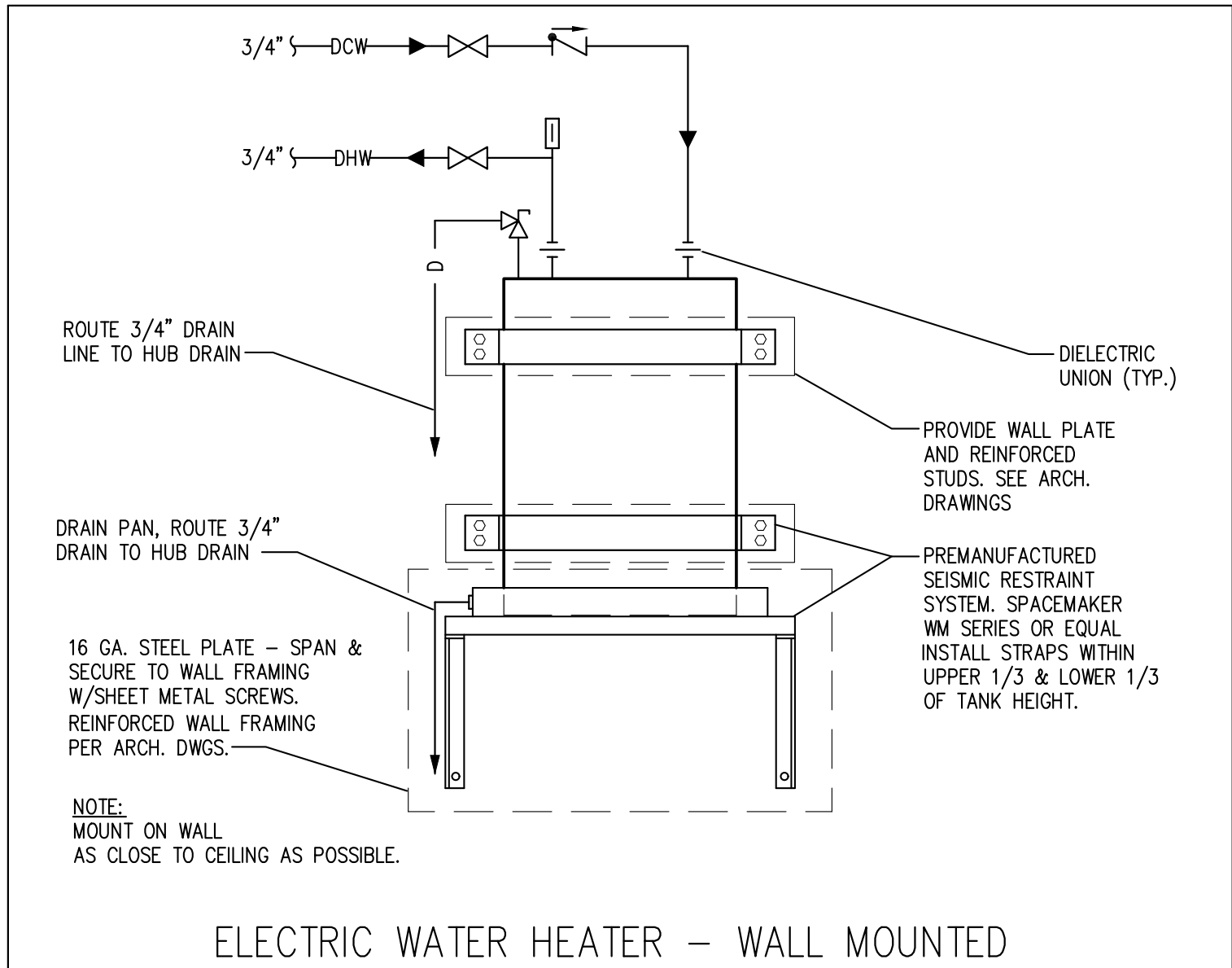
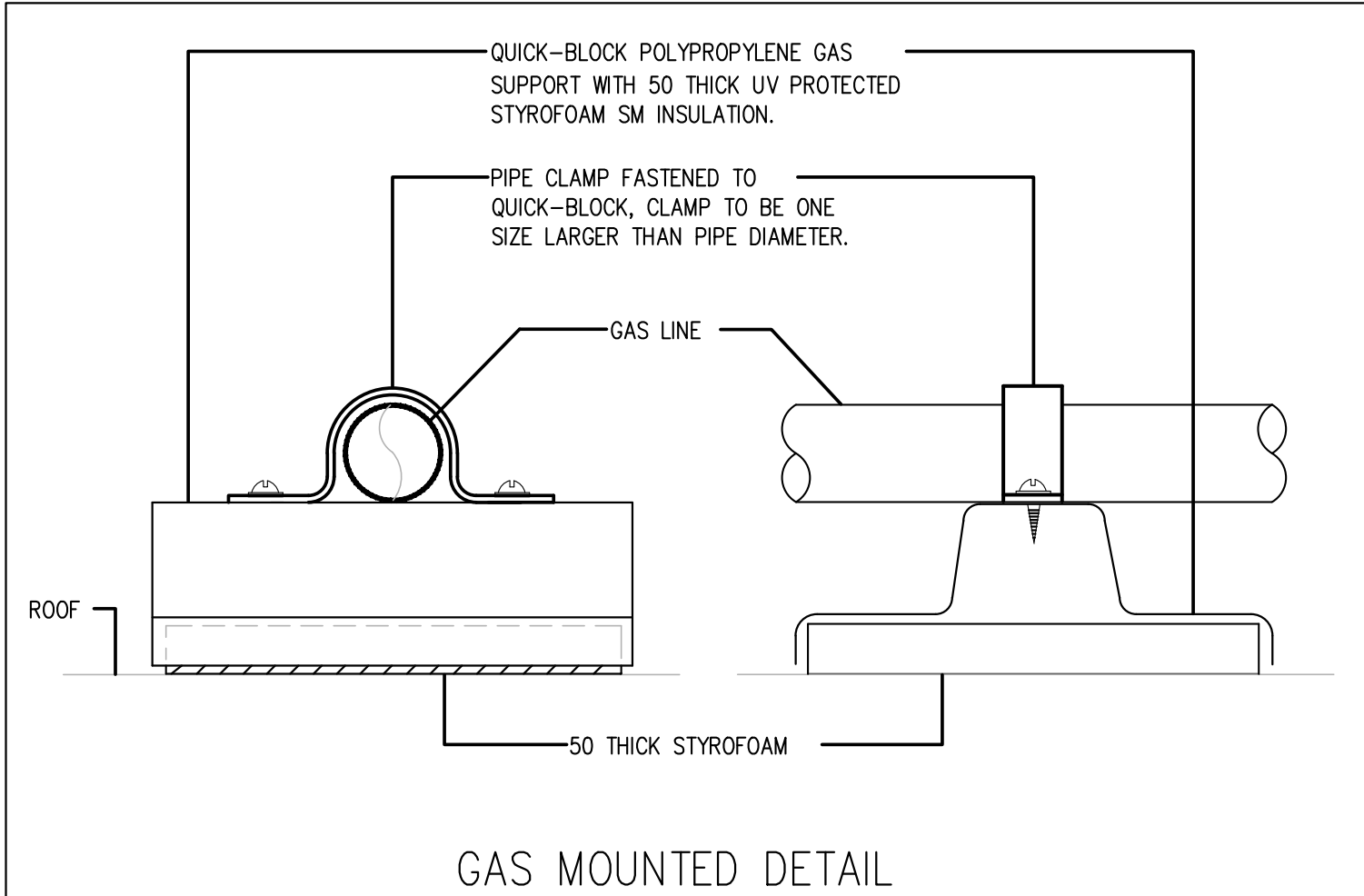
ROOFTOP UNIT SCHEDULE																	
TAG	LOCATION	WEIGHT (LBS)	COOLING			HEATING			SUPPLY AIR FAN				ELECTRICAL			BASIS OF DESIGN	REMARKS
			TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	POWER INPUT W/O BLOWER (kW)	FUEL SOURCE	INPUT CAPACITY (MBH)	OUTPUT CAPACITY (MBH)	SUPPLY AIR (CFM)	ESP (IN WG)	POWER INPUT (kW)	MOTOR HP	POWER SUPPLY (V/PH/Hz)	MCA	MOCP		
RTU-1	ROOFTOP AT NORTH SIDE OF BUILDING	1245	95.4	65.4	5.58	NATURAL GAS	180	146	3,300	0.75	2.01	3	575/3/60	18.8	20	YORK SINGLE PACKAGE R-454B AIR CONDITIONER MODEL # KJ090N18R5BBAE2A1	C/W 2-STAGE NATURAL GAS HEAT, ECONOMIZER W/BAROMETRIC RELIEF AND HOODS, DUAL ENTHALPY KIT (FIELD INSTALLED)
RTU-2	ROOFTOP AT SOUTH SIDE OF BUILDING	1245	101.1	68.5	6.28	NATURAL GAS	180	146	3,300	0.75	1.83	3	575/3/60	17.3	25	YORK SINGLE PACKAGE R-454B AIR CONDITIONER MODEL # KJ102S18R5BBAE2A1	C/W 2-STAGE NATURAL GAS HEAT, ECONOMIZER W/BAROMETRIC RELIEF AND HOODS, DUAL ENTHALPY KIT (FIELD INSTALLED)

ELECTRIC DOMESTIC HOT WATER HEATER SCHEDULE								
TAG	LOCATION	STORAGE CAPACITY (GAL.)	RECOVERY RATE @ 100F (GAL/H)	SHIPPING WEIGHT (LBS.)	INPUT (kW)	ELECTRICAL (V/Ph/Hz)	BASIS OF DESIGN	REMARKS
DHWT-1	JANITOR ROOM	20	21	–	5	208/3/60	A.O. SMITH DEL-20S-5	

ELECTRIC BASEBOARD HEATER SCHEDULE					
TAG	KW / BTU	VOLTS/PH/Hz	LENGTH (IN)	BASIS OF DESIGN	REMARKS
B-1	0.5 / 1706	120/1/60	22	STELPRO – CODE#SPR0501W	C/W INTEGRAL THERMOSTAT
B-2	0.75 / 2560	208/1/60	36	STELPRO – CODE#SPR1002W	C/W INTEGRAL THERMOSTAT
B-3	1 / 2560	208/1/60	36	STELPRO – CODE#SPR1002W	C/W INTEGRAL THERMOSTAT
B-4	1.5 / 2560	208/1/60	50	STELPRO – CODE#SPR1508W	C/W INTEGRAL THERMOSTAT

GRILLE AND DIFFUSER SCHEDULE					
TAG	TYPE	FACE SIZE (IN X IN)	NECK SIZE (IN)	BASIS OF DESIGN	REMARKS
D-1	SUPPLY DIFFUSER	24" X 24"	SHOWN IN PLANS	EH PRICE SCD	
D-2	SUPPLY DIFFUSER	12" X 12"	6"	EH PRICE SCD	
D-3	SUPPLY DIFFUSER	–	SHOWN IN PLANS	EH PRICE RCD	
G-1	EGG CRATE RETURN GRILLE	24" X 4"	–	EH PRICE 80	
G-2	EGG CRATE RETURN GRILLE	24" X 24"	–	EH PRICE 80	
ALL GRILLES AND REGISTERS TO BE COLOUR B12 (WHITE)					

FAN SCHEDULE						
TAG	LOCATION	TYPE	AIR FLOW (CFM)	SP (IN WG)	BASIS OF DESIGN	REMARKS
EF-1	BF WASHROOM 216	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH WASHROOM LIGHT. COORDINATE WITH ELECTRICAL
EF-2	JANITOR 217	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH LIGHT. COORDINATE WITH ELECTRICAL
EF-3	WASHROOM 218	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH WASHROOM LIGHT. COORDINATE WITH ELECTRICAL
EF-4	WASHROOM 219	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH WASHROOM LIGHT. COORDINATE WITH ELECTRICAL
EF-5	WASHROOM 220	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH WASHROOM LIGHT. COORDINATE WITH ELECTRICAL
EF-6	WASHROOM 221	INLINE EXHAUST FAN	70	0.25	GREENHECK SP-A70	INTERLOCK WITH WASHROOM LIGHT. COORDINATE WITH ELECTRICAL
TF-1	IT ROOM 213	INLINE CABINET FAN	200	0.5	GREENHECK CSP-A250-QD	INTERLOCK WITH THERMOSTAT
TF-2	ELECTRICAL ROOM 201	INLINE CABINET FAN	200	0.5	GREENHECK CSP-A250-QD	INTERLOCK WITH THERMOSTAT



MUNICIPALITY OF CASSELMAN

PROJECT NORTH

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PROFESSIONAL STAMP

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PROJECT

1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

MECHANICAL
SCHEDULES AND DETAILS

PROJECT No:

MRK-23002008-A0

REVISION:

DRAWN:

M. OMAR

DATE:

JUNE 2023

APPROVED:

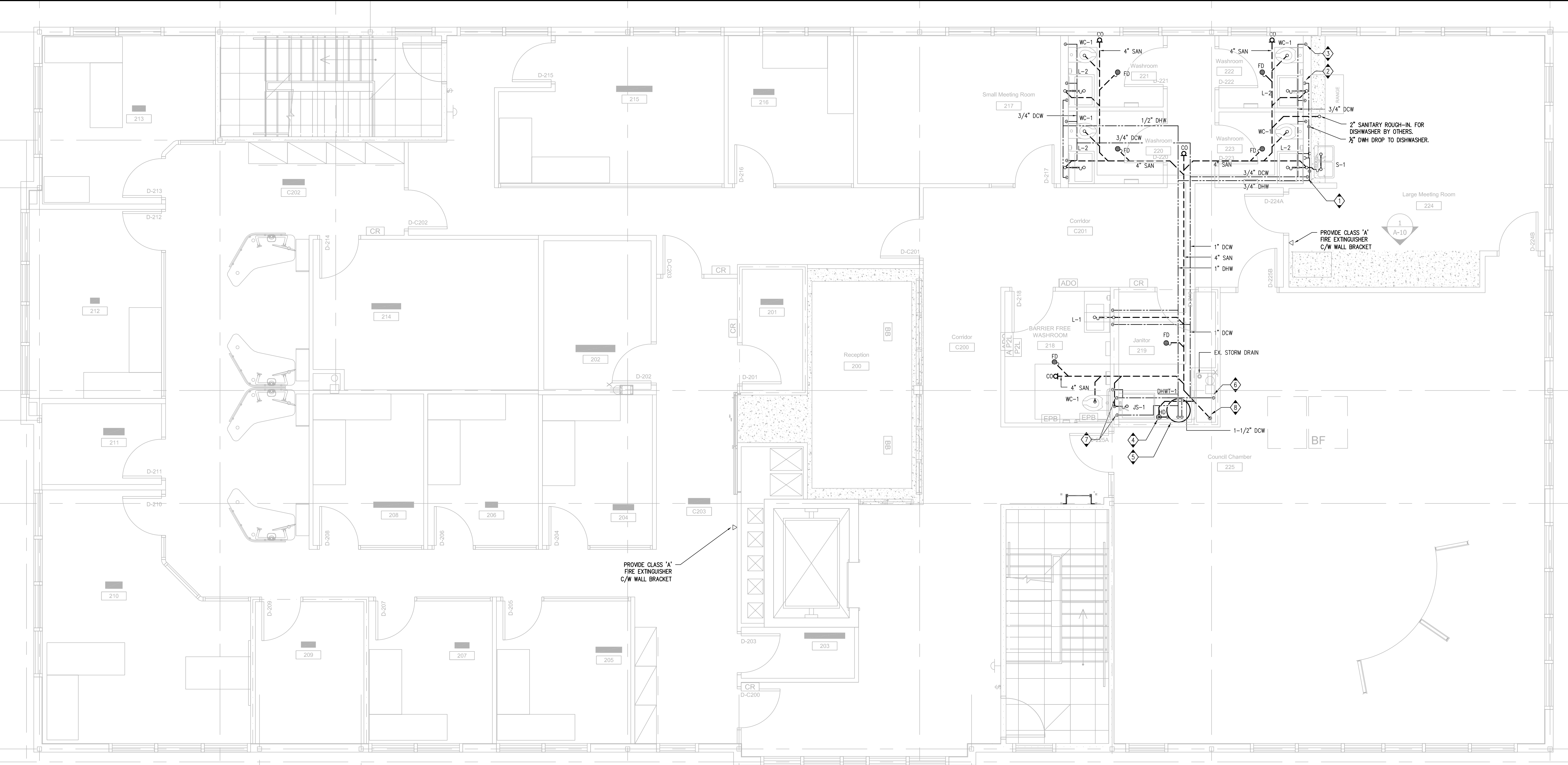
B. BROWN

SCALE:

AS SHOWN

DRAWING No:

M-5



MECHANICAL – SECOND FLOOR – PLUMBING & FIRE PROTECTION PLAN
SCALE: 1/4"=1'-0"

- GENERAL NOTES**
- ALL CUTTING AND PATCHING OF FLOORS AND WALLS BY THIS CONTRACTOR.
 - SUPPLY AND INSTALL PIPE SLEEVES FOR PIPES PASSING THROUGH EXISTING WALLS OR FLOORS.
 - COORDINATE PIPE RUNS WITH SHEETMETAL AND ELECTRICAL DIVISIONS.
 - ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED.
 - ENSURE MATERIALS AND INSTALLATION ARE COMPLIANT WITH ONTARIO BUILDING CODE REQUIREMENTS.
 - REFER TO DETAILS AND SPECIFICATIONS FOR EQUIPMENT & DUCTWORK INSTALLATION REQUIREMENTS.

- KEYNOTES**
- 1/2" DCW & DHW DOWN WITHIN WALL TO SERVE TYPE "L-1" SINKS AND KITCHEN SINKS WHERE APPLICABLE. PROVIDE 1/2" DCW & DHW CONNECTION PER FAUCET AS PER PLUMBING FIXTURE SCHEDULE.
 - 1/2" DCW & DHW DOWN WITHIN WALL TO SERVE LAVATORIES "L-1" & "L-2". TYP. FOR 5.
 - 3/4" DCW DOWN WITHIN WALL TO SERVE WATER CLOSET "WC-1". TYP. FOR 5.
 - RUN DRAINAGE AND RELIEF PIPING DOWN TO HUB DRAIN
 - 3/4" DCW & DHW DOWN TO SERVE NEW DOMESTIC HOT WATER TANK "DHW-1". REFER TO DETAIL ON M-05
 - PROVIDE 2" DCW UP FROM GROUND FLOOR TO SECOND FLOOR. CONNECT ON THE BUILDING SIDE OF THE WATER METER AND BACKFLOW PREVENTER IN THE GROUND FLOOR MECHANICAL ROOM
 - 1" DCW & DHW DOWN WITHIN WALL TO SERVE TYPE "JS-1" SINK.
 - EX. 4" SANITARY DOWN.

CLIENT

MUNICIPALITY OF CASSELMAN

PROJECT NORTH

ISSUE	DESCRIPTION	DATE
2	ISSUED FOR 99% COORDINATION	2025-02-24
1	ISSUED FOR 66% COORDINATION	2023-05-12

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND PROMPTLY REPORT ALL ERRORS AND/OR OMISSIONS TO THE CONSULTANT BEFORE WORK COMMENCES.

ALL WORK IS TO FOLLOW THE OBC 2012 AND ANY OTHER APPLICABLE CODES AND REGULATIONS.

DO NOT SCALE DRAWINGS.

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PROJECT

1 INDUSTRIEL STREET

OFFICE FIT-UP

DRAWING

MECHANICAL

SECOND FLOOR

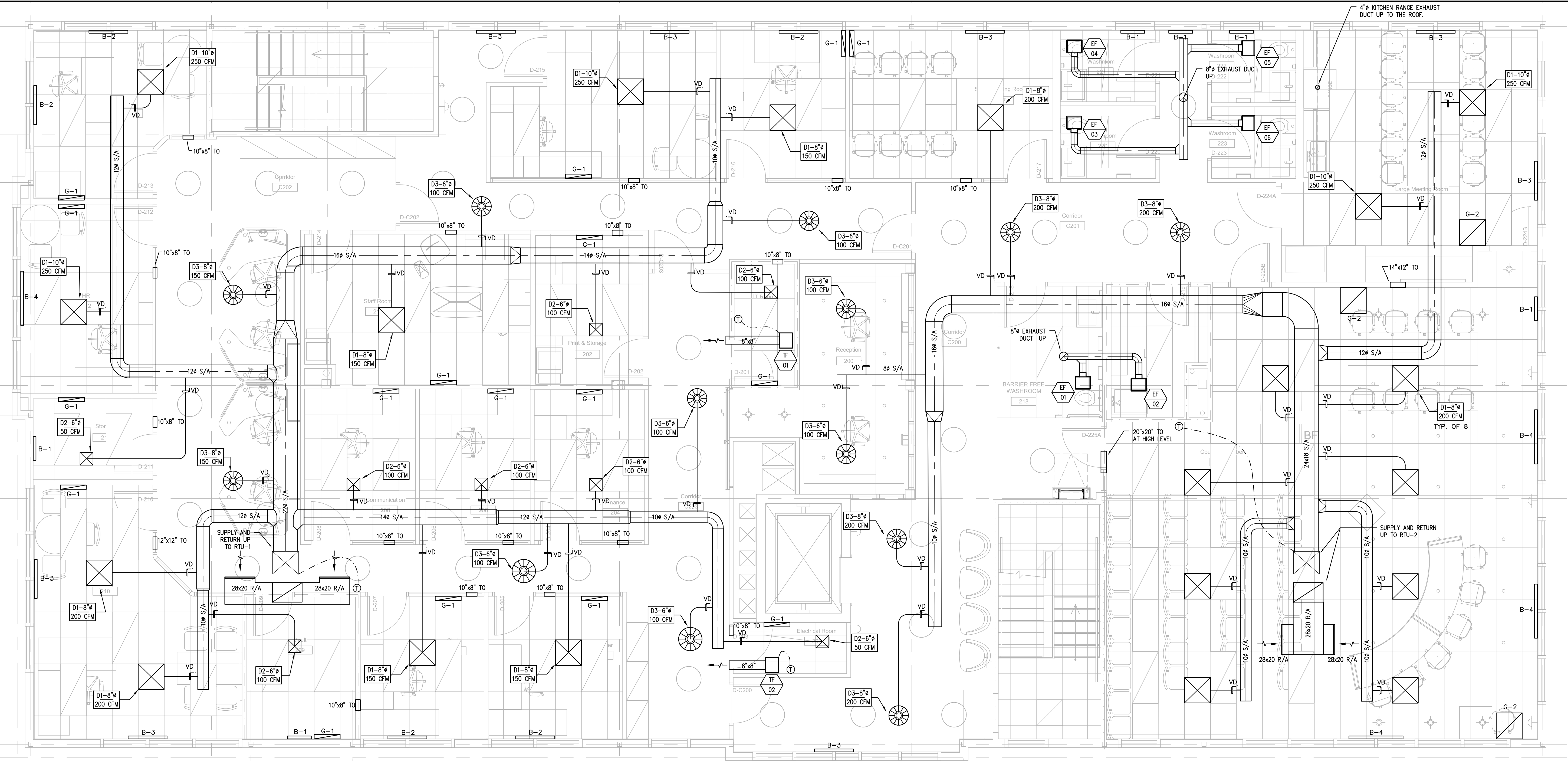
PLUMBING AND FIRE

PROTECTION PLAN

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	M. OMAR	DATE:	JUNE 2023
APPROVED:	B. BROWN	SCALE:	AS SHOWN

DRAWING No:

M-6



MECHANICAL — SECOND FLOOR — HVAC PLAN
SCALE: 1/4" : 1'-0"

GENERAL NOTES

- DUCTWORK LOCATIONS TO BE FULLY CO-ORDINATED WITH GENERAL, PLUMBING, SPRINKLER AND ELECTRICAL CONTRACTORS PRIOR TO FABRICATION OR INSTALLATION.
- ALL CUTTING AND PATCHING OF FLOORS AND WALLS BY GENERAL CONTRACTOR.
- DUCT RUN OUTS TO MATCH GRILLE/DIFFUSER NECK SIZE.
- CO-ORDINATE DUCT RUNS WITH ELECTRICAL CABLE TRAY AND STRUCTURE.
- PROVIDE BALANCING DAMPERS FOR ALL GRILLE/DIFFUSER DUCT RUNS.
- DUCT ELBOWS TO BE FULL RADIUS OR WITH TURNING VANES. REFER TO SPECIFICATIONS.
- ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED.
- ENSURE MATERIALS AND INSTALLATION ARE COMPLIANT WITH ONTARIO BUILDING CODE REQUIREMENTS.
- REFER TO DETAILS AND SPECIFICATIONS FOR EQUIPMENT & DUCTWORK INSTALLATION REQUIREMENTS.

DRAWING NOTES

- ALL TRANSFER OPENINGS (TO) TO BE AT HIGH LEVEL.
- SUPPLY AND RETURN DUCTWORK TO BE ACOUSTICALLY LINED WITHIN 10 FEET OF ROOFTOP UNIT
- SUPPLY DUCTWORK MAINS TO BE THERMALLY INSULATED

CLIENT

MUNICIPALITY OF CASSELMAN

PROJECT NORTH

ISSUE	DESCRIPTION	DATE
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PROJECT

1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

MECHANICAL
SECOND FLOOR
HVAC PLAN

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	M. OMAR	DATE:	JUNE 2023
APPROVED:	B. BROWN	SCALE:	AS SHOWN

DRAWING No:

M-7



DRAWING No: M-8

Municipality of Casselman Office Fit-Up

Washroom Design Concept



Prepared by Pye & Richards – Temprano & Young Architects Inc.

824 Meath St, Ottawa, ON,

(613) 724-7700



Conceptual Reference Image

Floating Sink Concept:



Floating Sink Finish:
Solid Surface
Corian – Designer White



ACT Grid & Tiles



Black Frame Rectangular Mirror



Wall Tile (textured, behind sink only)
Centura: Avorio – Cortina
\$7.95 sq.ft.



Floor & Wall Tile (remaining walls)
Centura: Avorio – Cortina
\$6.40 sq.ft.

Council Chamber Washroom Option 2



Conceptual Reference Image

Floating Sink Concept:

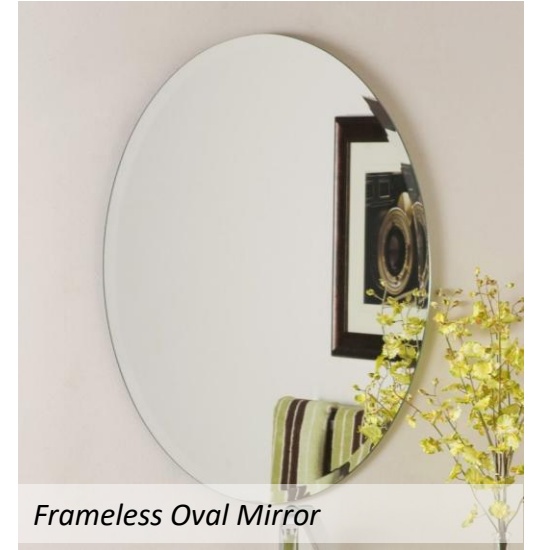


Floating Sink Finish: Solid Surface
Corian – Dove

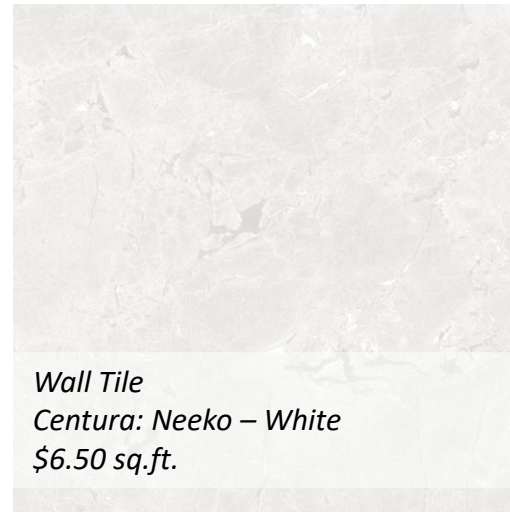
ACT Grid & Tiles



Frameless Oval Mirror



Wall Tile
Centura: Neeko – White
\$6.50 sq.ft.



Floor Tile
Centura: Lakeland – Haya
\$6.50 sq.ft.



Council Chamber Washroom Option 3



Conceptual Reference Image

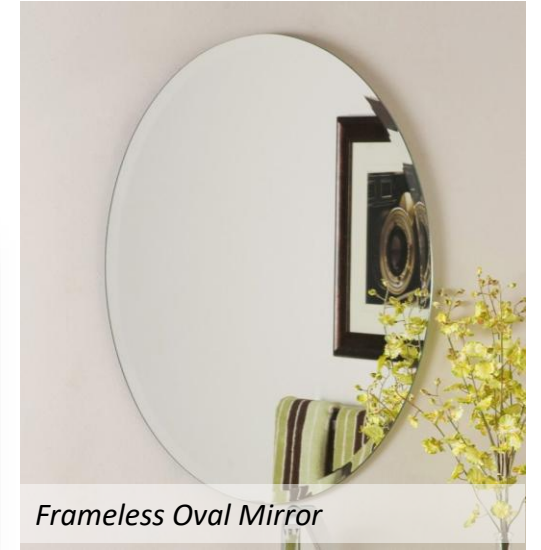
Floating Sink Concept:



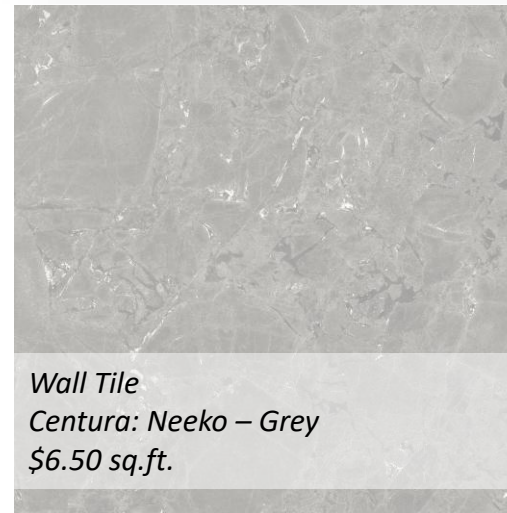
Floating Sink Finish:
Solid Surface
Corian – Designer White



ACT Grid & Tiles



Frameless Oval Mirror



Wall Tile
Centura: Neeko – Grey
\$6.50 sq.ft.



Floor Tile
Centura: Lakeland – Haya
\$6.50 sq.ft.

Municipality of Casselman Office Fit-Up

Final Design Concept



Prepared by Pye & Richards – Temprano & Young Architects Inc.

824 Meath St, Ottawa, ON,

(613) 724-7700

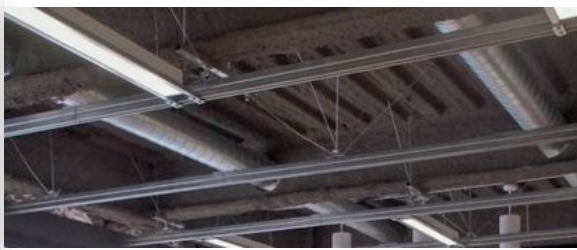
General Paint

Accent Paint

Accent Paint

Baseboard (Office)

LVT Flooring or Polished Concrete (Reception & Washroom)



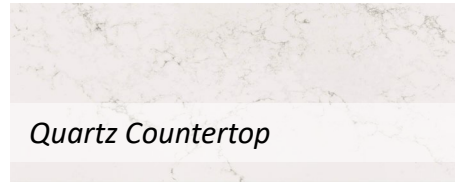
Open Ceiling in the Corridor, all exposed fixtures & equipment to be painted black



Linear Acoustic Baffles – Ebbs & Flows Pattern



Accent Wallcovering (Reception)



Quartz Countertop



Millwork (Reception Desk & Washroom)



Yellow accents through furniture

Council Chamber (opt. 1) & Closed Session Room

General Paint



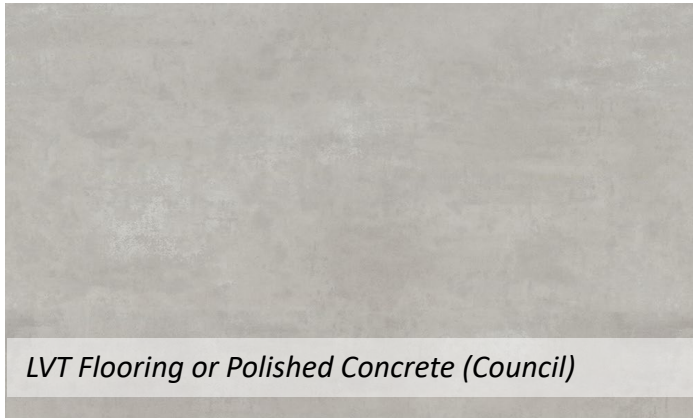
Accent Wallcovering



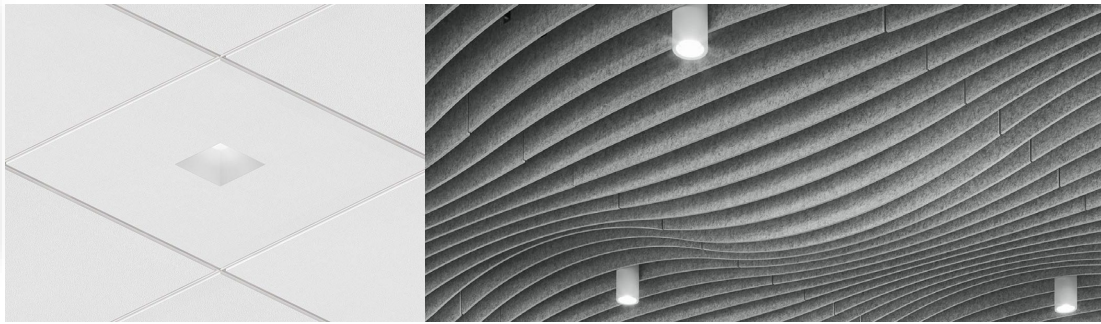
Wood Veneer -
Millwork & Wall



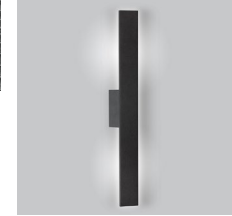
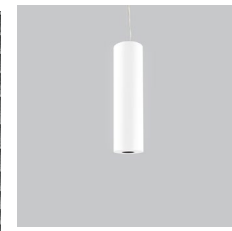
Baseboard



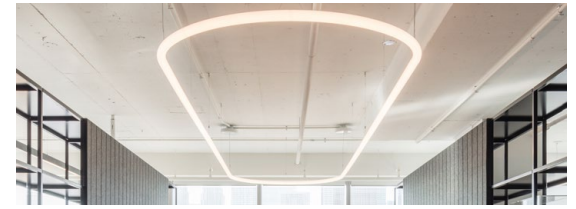
LVT Flooring or Polished Concrete (Council)



ACT Ceiling Grid and Tiles in Council Chamber with Linear Acoustic Baffles – Ebbs & Flows Pattern in smoke colour, Suspended over Millwork



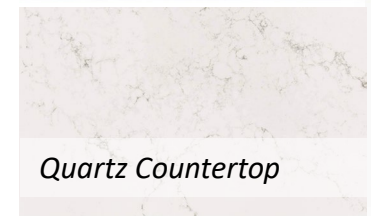
ACT Grid & Tiles (Closed Session)



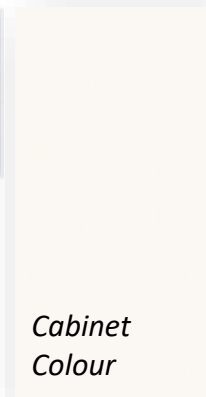
Suspended Light Fixture, centered in the room (Closed Session)



Glass Backsplash Tile



Quartz Countertop



Cabinet
Colour



Two different floor types to differentiate between council and public seating in lieu of having a stage



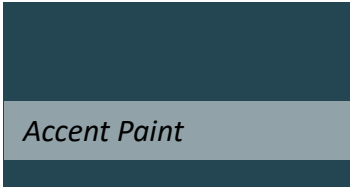
LVT Flooring (Council & Closed Session)

Council Chamber (opt. 2) & Closed Session Room

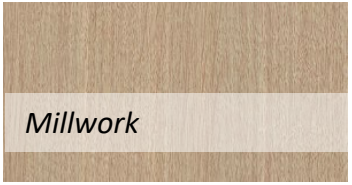
General Paint



Accent Wallcovering



Accent Paint



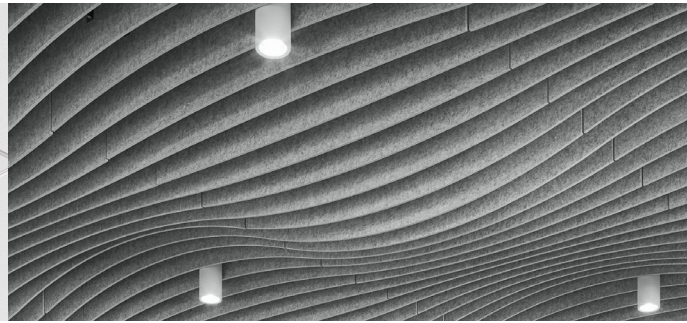
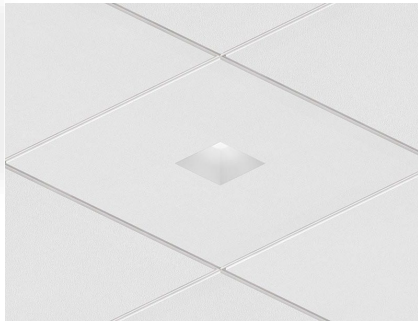
Millwork



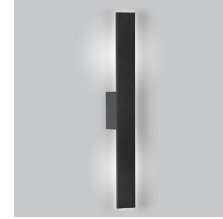
Baseboard



LVT Flooring or Polished Concrete (Council)



ACT Ceiling Grid and Tiles in Council Chamber with Linear Acoustic Baffles – Ebbs & Flows Pattern in Whisper Colour, Suspended over Millwork



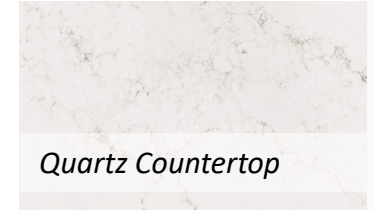
ACT Grid & Tiles (Closed Session)



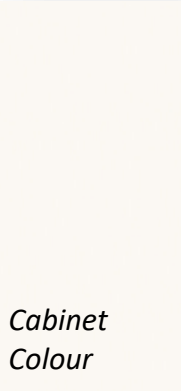
Suspended Light Fixture, centered in the room (Closed Session)



Glass Backsplash Tile



Quartz Countertop



Cabinet Colour



Two different floor types to differentiate between council and public seating in lieu of having a stage



LVT Flooring (Council & Closed Session)

General Paint

ACT Grid & Tiles (Enclosed Rooms)

Accent Paint (Offices)

Accent Paint

Baseboard (Office)

LVT Flooring (Office)

Staff Area Lighting –
Acoustic Felt Fixtures

Open Ceiling in the Corridor, all exposed
fixtures & equipment to be painted black



Glass Backsplash Tile

Quartz Countertop

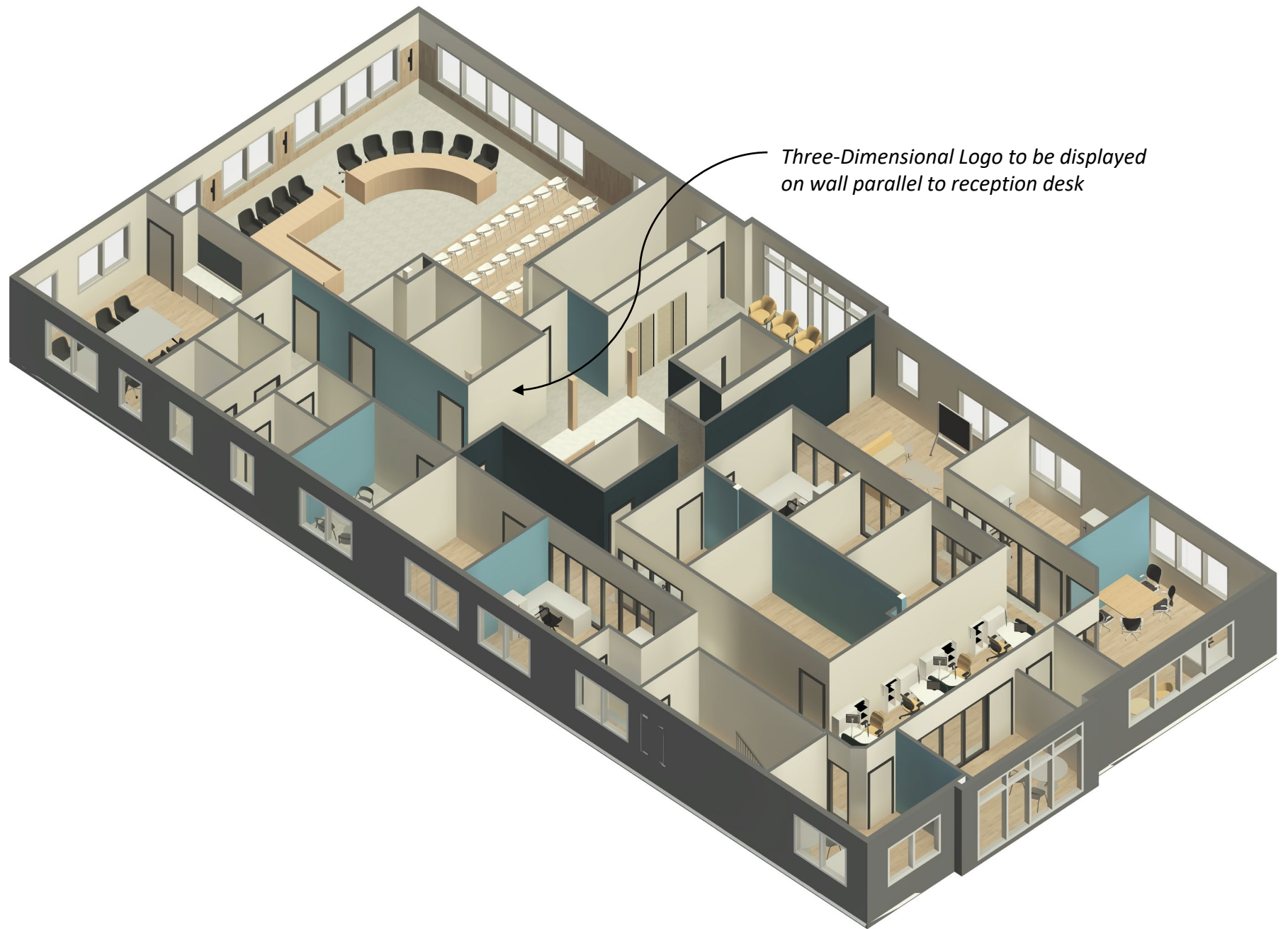
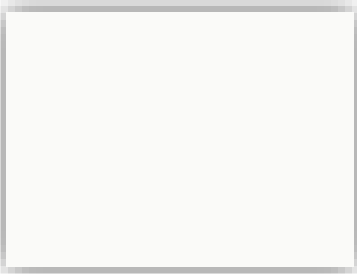
Cabinet Colour

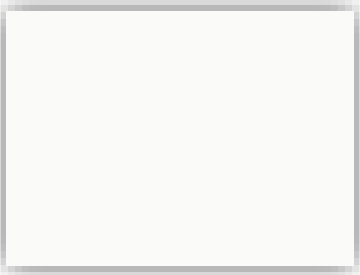
Decorative Window Film used for privacy.
Pattern: Subtle Waves

LVT Flooring Used for Wayfinding to offices,
located under glazing)

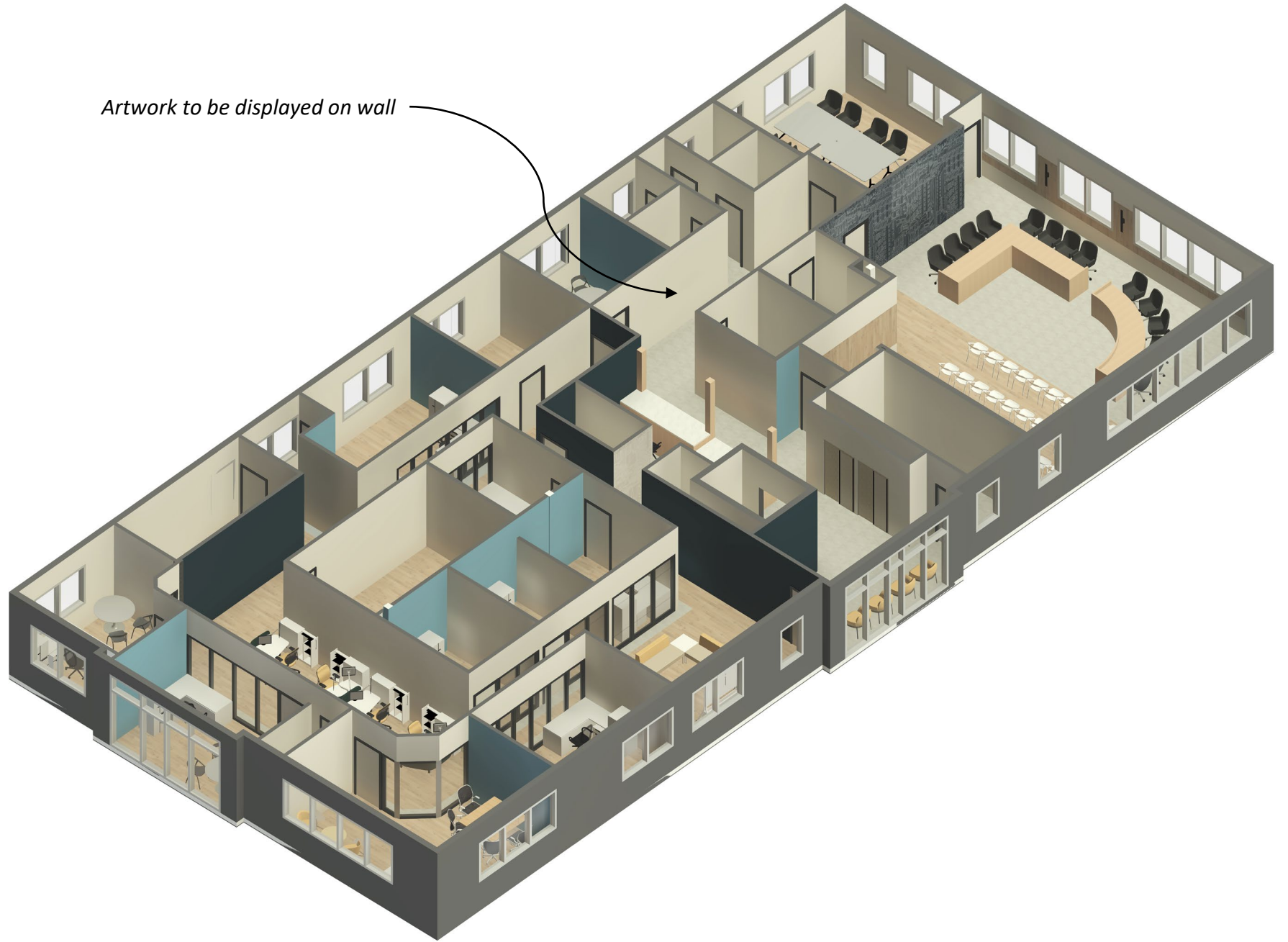


Yellow accents
through furniture





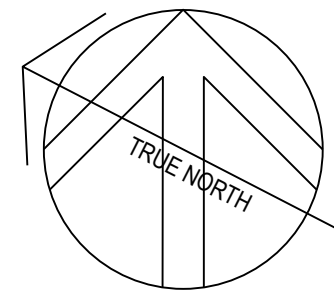
Artwork to be displayed on wall



CLIENT

MUNICIPALITY OF CASSELMAN

PROJECT NORTH



2	ISSUED FOR REVISED 99% COORDINATION	2025-02-25
1	ISSUED FOR 99% REVIEW	2023-06-13
ISSUE	DESCRIPTION	DATE

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PROJECT

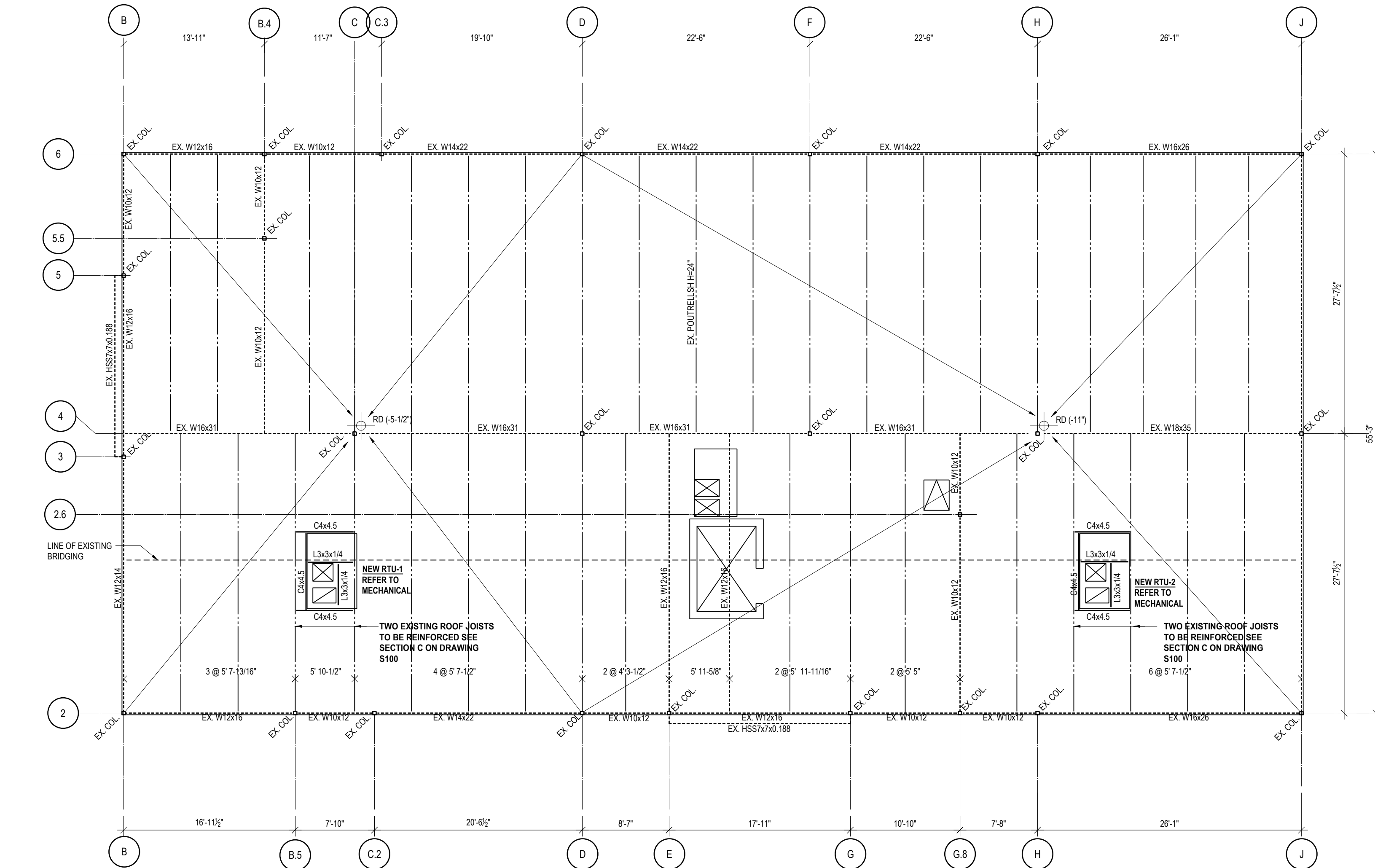
1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

ROOF FRAMING PLAN
SECTION AND DETAILS

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	CJ	DATE:	MAY 2023
APPROVED:	KAB	SCALE:	AS SHOWN
DRAWING No:			

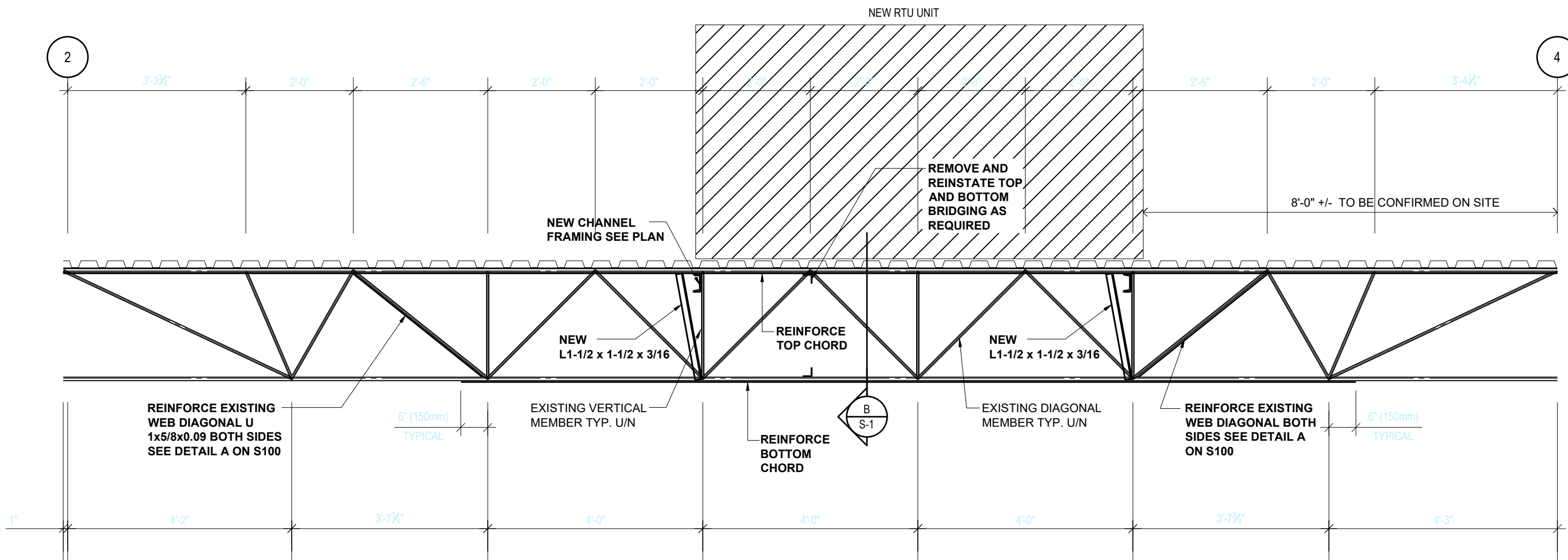
S-1



NEW ROOFTOP UNITS RTU-1 TO RTU-2 TO BE SUPPLIED C/W MANUFACTURER'S STANDARD 450 HIGH METAL CURB. REFER TO MECHANICAL DRAWINGS. ROOFING CONTRACTOR TO PROVIDE NEW ROOF OPENING AND BLOCKING FOR LEVELING AND CURB SUPPORT, NEW FLASHING AND SEALING TO CRCA AND MEMBRANE MANUFACTURER'S STANDARDS, REFER TO ARCHITECTURAL DRAWING

ROOF FRAMING PLAN FOR RTU INSTALLATION
SCALE: 1/4" = 1'-0"

REINFORCEMENT OF JOISTS BASED ON RTU WEIGHING 1315 LB AND 51" IN HEIGHT, 89" IN LENGTH AND 99" IN WIDTH

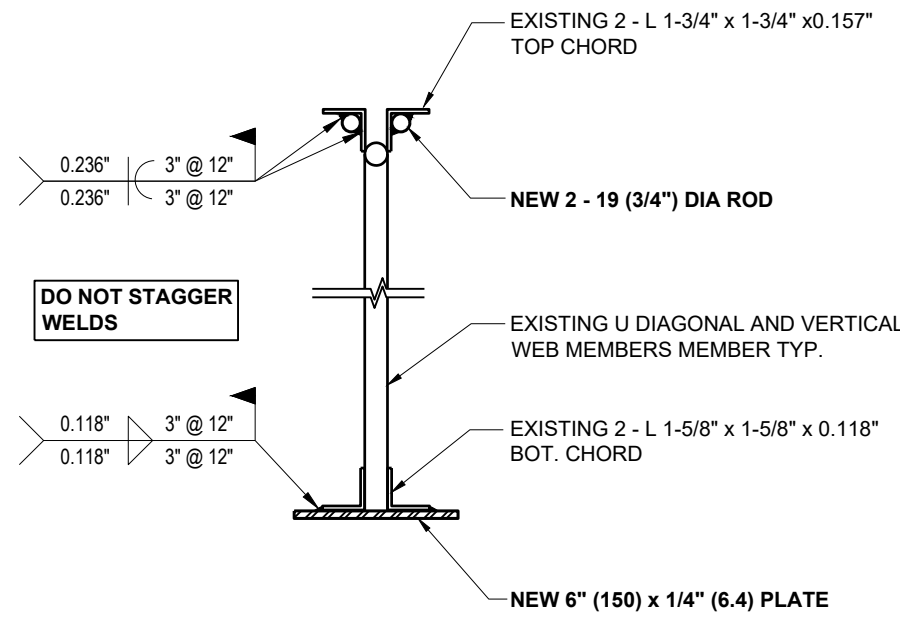


CONTRACTOR TO VERIFY JOIST CONFIGURATION PRIOR TO PROCEEDING WITH SHOP DRAWINGS.
SHORE JOIST TO BE REINFORCED TO RELIEVE LOAD. ENSURE NO SNOW IS ON THE ROOF (ROOF BAY) WHILE REINFORCING JOIST.

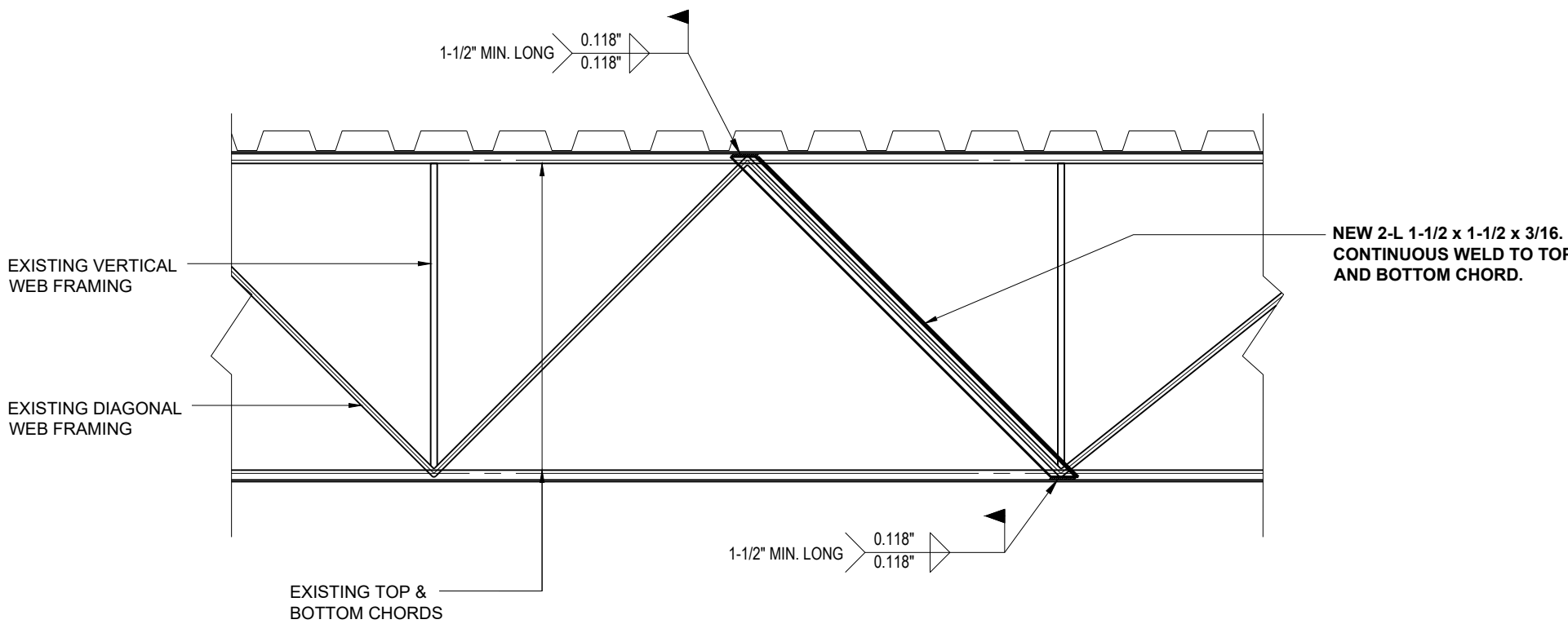
C
S-1
1/2"=1'-0"

JOIST REINFORCEMENT DETAIL FOR WEB DIAGONAL

A
S-1
1"=1'-0"



B
S-1
1"=1'-0"



GENERAL NOTES

1. CHECK ALL DIMENSIONS ON STRUCTURAL DRAWINGS WITH OTHER DRAWINGS AND EXISTING SITE CONDITIONS. REPORT ANY INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE THESE DRAWINGS.

2. ALL WORK SHALL COMPLY WITH CURRENT PROVISIONS OF THE ONTARIO BUILDING CODE, THE WORKPLACE SAFETY AND INSURANCE BOARD AND BEST TRADE PRACTICES. WORK SHALL COMPLY WITH ALL LOCAL AND PROVINCIAL REGULATIONS AND WITH APPLICABLE C.S.A. STANDARDS. IN ALL CASES, THE LATEST EDITIONS OF CODES AND STANDARDS SHALL APPLY.

3. STRUCTURAL DESIGN COMPLIES WITH THE MINIMUM STANDARDS OF PART 4 OF THE ONTARIO BUILDING CODE 2025.

4. BEFORE SUBMITTING TENDERS CONTRACTORS SHALL CAREFULLY EXAMINE EXISTING CONDITIONS TO ESTABLISH THE EXTENT OF THE WORK.

5. CONFIRM OWSJ MEMBER SIZES TO ENGINEER AT LOCATIONS TO BE REINFORCED PRIOR TO PROCEEDING WITH WORK.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING, AND SHORING NECESSARY TO UNDERTAKE THE WORK.

7. WHERE MECHANICAL EQUIPMENT IS SUPPORTED ON CURBS DIRECTLY ON ROOF DECK PROVIDE WEDGES IN FLUTES OF DECK UNDER SLEEPER AT STRUCTURAL SUPPORT (BEAMS, JOISTS).

8. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING EXCESS MATERIALS AND CLEANING UP ON COMPLETION OF THE WORK.

MATERIALS SPECIFICATIONS

1. ROLLED STRUCTURAL STEEL SHAPES - GENERAL REQUIREMENTS TO CSA-S16:19, ROLLED SHAPES TO CSA- G40.21-13(R2023), 350W MINIMUM. ANGLES AND PLATES, 300W MINIMUM.

2. WELDING - TO CSA-W59-13, E49XXCH OR LH BASIC ELECTRODES CONFORMING TO CSA-W48:23.

3. PRIME PAINT TO STRUCTURAL STEEL - TO CAN/CGSB-1.40, ONE SHOP COAT, ONE TOUCH UP FIELD COAT.

SUBMITTALS

1. SUBMIT STRUCTURAL SHOP DRAWINGS TO CONSULTANT.

FIELD QUALITY CONTROL

1. INSPECTION AND TESTING COMPANY SHALL PERFORM INSPECTION OF WELDED JOINTS, GENERAL INSEPTION OF FIELD CUTTING AND ALTERATIONS AND GENERAL INSPECTION OF COATING TOUCH-UP.

DESIGN LOADS AS INDICATED ON STRUCTURAL DRAWING S4 REV. 1 PREPARED BY SOLIDER AND DATED 2012-04-27

ROOF

TOTAL DEAD LOAD23 psf (1.1 kN/m²)

LIVE (SNOW)
S = Ss (Cb Cw Cs Ca) + Sr = 48.5 psf (2.32 kN/m²)

NEW MECHANICAL RTUS

SEE PLAN

JOIST REINFORCEMENT 4 - CHORD SPLICE

RN-024

EXISTING ROOF JOIST

MIN. 200 (8")

PROVIDE 450 (1'-6") LONG MIN. LAP BAR TO MATCH TOP REINF. CENTERED ON SPLICE WHERE REQUIRED, TYP.

5/8 (16")

150 (6") EACH SIDE OF EACH EDGE

75 (3") WELD EACH END OF LAP PLATE

TOP CHORD SPLICE DETAIL

EXISTING ROOF JOIST

MIN. 200 (8")

SPLICE TO BE LOCATED AT PANEL POINT OF JOIST

PROVIDE 450 (1'-6") LONG MIN. LAP PLATE TO MATCH TOP & BOT. REINF. CENTERED ON SPLICE WHERE REQUIRED, TYP.

5/8 (16")

150 (6") EACH SIDE OF EACH EDGE

75 (3") WELD EACH END OF LAP PLATE

EXISTING ROOF JOIST

MIN. 200 (8")

PLATE LAP

BOTTOM CHORD SPLICE DETAIL

JOIST REINFORCEMENT 2

RN-022

WELD WEB REINFORCED DIRECTLY TO TOP CHORD AND BOTTOM CHORD

PROVIDE 6 (1/4") THICK BATTEN PLATE

EXISTING BRIDGING

BATTEN PLATE

WEB REINFORCEMENT SEE SCHEDULE ON RN-021

EXISTING JOIST WEB MEMBER U-BAR

A-A BATTEN PLATE DETAIL

NEW MECHANICAL UNIT CURB BY MECHANICAL CONTRACTOR

PROVIDE WOOD BLOCKING IN DECK FLUTES (TYP.)

CURB BY MECH.

TOP AND BOTTOM CHORD JOIST REINFORCED SEE SEE DRAWING S-1

CHANNEL FRAMING TIGHT TO UIS OF DECK CONNECTED WITH CLIP ANGLE TO JOIST EXACT LOCATION TO BE COORDINATED WITH MECHANICAL CONTRACTOR, SEE PLAN (TYPICAL)

PROVIDE SHIM AS REQUIRED.

WELD NEW L1-1/2" x 1-1/2" x 3/16" TO TOP CHORD TO NEAREST BOTTOM PANEL POINT, TYPICAL

CLIENT

MUNICIPALITY OF CASSELMAN

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BUILDINGS

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SUSTAINABILITY

PROJECT

1 INDUSTRIEL STREET

OFFICE FIT-UP

DRAWING

GENERAL NOTES

TYPICAL DETAILS

PROJECT No:MRK-23002008-A0

REVISION:

DRAWN:CJ

DATE:MAY 2023

APPROVED:KAB

SCALE:AS SHOWN

DRAWING No:

S-2

POWER SINGLE LINE DIAGRAM SYMBOLS

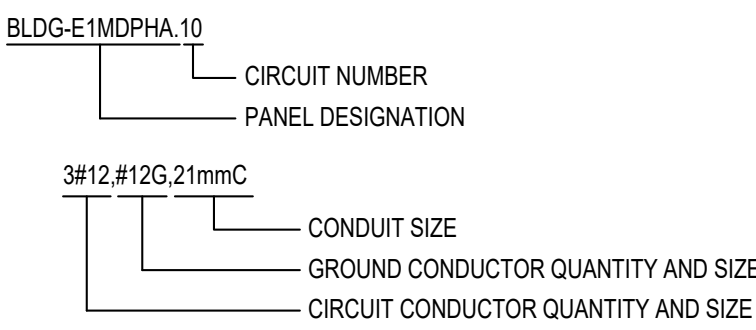
	CKT BREAKER, '###' INDICATES TRIP SETTING, '#' INDICATES NUMBER OF POLES
	FUSED SWITCH, '###' INDICATES TRIP SETTING, '#' INDICATES NUMBER OF POLES
	ENCLOSED CIRCUIT BREAKER
	ENCLOSED NON-FUSED SWITCH
	ENCLOSED FUSED SWITCH
	KIRK KEY INTERLOCK
	SOLID STATE, ELECTRONIC ADJUSTABLE TRIP
	GROUND FAULT PROTECTION
	SURGE PROTECTIVE DEVICE
	DIGITAL MULTIMETER
	UTILITY METER
	TRANSFORMER
	PANELBOARD
	GROUND
	POTENTIAL TRANSFORMER
	CURRENT TRANSFORMER

POWER DISTRIBUTION AND SMALL POWER

	DUPLEX RECEPTACLE, WALL MOUNTED		DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED
	DUPLEX RECEPTACLE, ABOVE BACKPLASH OF CABINET, COUNTERTOP OR SINK		DOUBLE DUPLEX RECEPTACLE, ABOVE BACKPLASH OF CABINET, COUNTERTOP OR SINK
	DUPLEX RECEPTACLE, FLUSH MTD IN CEILING		DOUBLE DUPLEX RECEPTACLE, FLUSH MOUNTED IN CEILING
	HALF SWITCHED DUPLEX RECEPTACLE, WALL MOUNTED		SIMPLEX RECEPTACLE, WALL MOUNTED
	SPECIAL PURPOSE RECEPTACLE, WALL MOUNTED, NEMA CONFIGURATION AS NOTED ON PLANS		SPECIAL PURPOSE RECEPTACLE, CEILING MOUNTED NEMA CONFIGURATION AS NOTED ON PLANS
	SHADING REPRESENTS RECEPTACLE ON LIFE SAFETY BRANCH		SHADING REPRESENTS RECEPTACLE ON UPS BRANCH
	SHADING REPRESENTS RECEPTACLE ON NON-LIFE SAFETY BRANCH		SHADING REPRESENTS RECEPTACLE WITH ISOLATED GROUND
	DISCONNECT SWITCH, REFER TO EQUIPMENT CONNECTION SCHEDULE FOR DISCONNECT TYPE, U ON		MOTOR, SUBSCRIPT 'X' DENOTES MOTOR DESIGNATION, REFER TO EQUIPMENT CONNECTION SCHEDULE
	DIRECT CONNECTION, WALL MOUNTED, SUBSCRIPT 'X' INDICATES UNIQUE IDENTIFIER, REFER TO EQUIPMENT CONNECTION SCHEDULE.		DIRECT CONNECTION, CEILING MOUNTED, SUBSCRIPT 'X' INDICATES UNIQUE IDENTIFIER, REFER TO EQUIPMENT CONNECTION SCHEDULE.
	GROUND BUS BAR		COMBINATION MOTOR STARTER DISCONNECT
	FURNITURE OUTLET, WALL MOUNTED		MOTOR STARTER
	PANELBOARD		VARIABLE FREQUENCY DRIVE
	TRANSFORMER		
	FLOOR BOX, DUPLEX RECEPTACLE		POWER, LOW VOLTAGE FLOOR POKE-THROUGH [2-120V, 20A DUPLEX RECEPTACLES] [1-DATA OUTLET FOR COMMUNICATION] [1-OUTLET FOR AV SYSTEM]
	FLOOR BOX, DOUBLE DUPLEX RECPT		

RECEPTACLE TYPE
x 12
NUMBER INDICATES BRANCH CIRCUIT NUMBER

CIRCUITING



TAGS AND CALL OUT SYMBOLS

	DETAIL CALLOUT DETAIL DESIGNATION SHEET NUMBER		REVISION CALLOUT
			KEYNOTE CALLOUT

LIGHTING, LIGHITNG SWITCHING & CONTROLS

	AF10 7ab	UPPER CASE LETTERS INDICATE LIGHTING FIXTURE TYPE NUMBER INDICATES CIRCUIT NUMBER, LOWER CASE LETTER INDICATES SWITCH/LEG
		LIGHTING FIXTURE ON NORMAL BRANCH POWER - CEILING MOUNTED
		LIGHTING FIXTURE ON NORMAL BRANCH POWER - WALL MOUNTED
		STRIP LIGHTING FIXTURE ON NORMAL BRANCH POWER
		PENDANT LINEAR FIXTURE ON NORMAL BRANCH POWER
		DOWNLIGHT LIGHTING FIXTURE ON NORMAL BRANCH POWER - RECESSED MOUNTED
		WALL WASH LIGHTING FIXTURE ON NORMAL BRANCH POWER - ARROW INDICATES DIRECTION OF BEAM
		WALL SCONCE LIGHTING FIXTURE ON NORMAL BRANCH POWER - WALL MOUNTED
		BOLLARD LIGHT FIXTURE ON NORMAL BRANCH POWER
		EXIT SIGN - SINGLE FACE - CEILING MOUNTED
		EXIT SIGN - SINGLE FACE - WALL MOUNTED
		LOW LEVEL EXIT SIGN - SINGLE FACE - WALL OR DOOR MOUNTED
		DUAL HEAD EMERGENCY LIGHT WITH INTEGRAL BATTERY PACK - WALL MOUNTED
		LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST - CEILING MOUNTED
		LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST - WALL MOUNTED
		STRIP LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST
		PENDANT LINEAR FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST
		DOWNLIGHT LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST - RECESSED MOUNTED
		WALL WASH LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST - ARROW INDICATES DIRECTION OF BEAM
		WALL SCONCE LIGHTING FIXTURE ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST - WALL MOUNTED
		BOLLARD ON EMERGENCY BRANCH POWER OR EMERGENCY BALLAST
		EXIT SIGN - DUAL FACE - CEILING MOUNTED
		EXIT SIGN - DUAL FACE - WALL MOUNTED
		SINGLE REMOTE EMERGENCY LIGHT - WALL MOUNTED
		DUAL REMOTE EMERGENCY LIGHT - WALL MOUNTED
	\$ x ab	SPST SWITCH, WALL MOUNTED.
	OS	OCCUPANCY SENSOR, CEILING MOUNTED
	H-OS	OCCUPANCY SENSOR, WALL MOUNTED
	VS	VACANCY SENSOR, CEILING MOUNTED
	H-VS	VACANCY SENSOR, WALL MOUNTED
	DIM x	DIMMING CONTROL STATION, SUBSCRIPT 'X' INDICATES TYPE OR UNIQUE IDENTIFIER
	LCP	LIGHTING CONTROL PANEL
		SHUNT TRIP PUSH BUTTON
	TC x	TIME CLOCK, SUBSCRIPT 'X' INDICATES UNIQUE IDENTIFIER
	DS x	DAYLIGHT SENSOR, CEILING MOUNTED
	PC x	PHOTOCELL
		'ab' INDICATES INDIVIDUAL GANGED SWITCHES AND ASSOCIATED SWITCH LEGS CONTROLLED, SUBSCRIPT 'X' INDICATES: 2 - DOUBLE POLE 3 - THREE WAY 4 - FOUR WAY D - WALL BOX DIMMER K - KEY OPERATED LV - LOW VOLTAGE P - PILOT LIGHT T - WALL BOX TIMER WP - WEATHER PROOF

AUDIOVISUAL SYSTEM DEVICES

DEVICE LEGEND	DEVICE TAG	AAA ^M Y	MOUNTING TAG SECONDARY ATTRIBUTE
ALL AV SYSTEM DEVICES ARE WALL MOUNTED UNLESS OTHERWISE INDICATED BY MOUNTING TAG			
	AVx	AV CONNECTIVITY PLATE	'x' DENOTES TYPE. REFER TO AV SYSTEMS DETAILS
	FBx	FLOOR BOX	'x' DENOTES TYPE. REFER TO AV SYSTEMS DETAILS
	PTx	POKE THROUGH	'x' DENOTES TYPE. REFER TO AV SYSTEMS DETAILS
	TBx	TABLE BOX	'x' DENOTES TYPE. REFER TO AV SYSTEMS DETAILS
	D	DISPLAY	
	TV	TELEVISION OUTLET	
	PRS	PROJECTOR SCREEN	
	PRJ	PROJECTOR	
	CAM	AV SYSTEM CAMERA	
	IRR	INFRARED RADIATOR	
	ANT	ANTENNA	
	ROS	AV SYSTEM ROOM OCCUPANCY SENSOR	
	PS	AV SYSTEM PARTITION SENSOR	
	LS	PHOTOMETRIC SENSOR	
	BN	BACnet INTERFACE TO AV SYSTEM	
	RSP	ROOM SCHEDULING PANEL	
	RSS	ROOM SCHEDULING SIGN	
	BP	BUTTON PANEL	
	S	AV SYSTEM SPEAKER	
	SUB	SUBWOOFER SPEAKER	
	LCR	LOCAL CRENDENZA RACK	
	AVR	AV RACK	
	SI	SHADE/DRAPE INTERFACE TO AV SYSTEM	
	MIC	MICROPHONE	
	TS	TOUCH SCREEN	
	LI	LIGHTING INTERFACE TO AV SYSTEM	

TELECOMMUNICATIONS SYSTEM

	WALL MOUNT VOICE OUTLET		FLOOR MOUNT VOICE OUTLET
	WALL MOUNT DATA OUTLET		FLOOR MOUNT DATA OUTLET
	WALL MOUNT DATA/VOICE OUTLET		FLOOR MOUNT DATA/VOICE OUTLET
	CEILING MOUNT DATA FOR WIRELESS ACCESS POINT		
DEVICE LEGEND			
	x		x/y
	y		
NO SUBSCRIPT = (1) DATA/VOICE			
MOUNTING: OUTLET MOUNTING HEIGHTS TO BE COORDINATED WITH INTERIOR DESIGNER DURING DD PHASE			

SECURITY SYSTEM

DEVICE LEGEND	DEVICE TAG	AAA ^M Y	MOUNTING TAG SECONDARY ATTRIBUTE
ALL SECURITY SYSTEM DEVICES ARE WALL MOUNTED UNLESS OTHERWISE INDICATED BY MOUNTING TAG			
	ACP	ACCESS CONTROL PANEL	
	ALM	ALARM DEVICE	
	DC	DOOR CONTACT	
	EL	ELECTRIFIED LOCKSET	
	ES	ELECTRIC STRIKE	
	IC	INTERCOM	
	KP	KEYPAD	
	ML	MAGNETIC LOCK	
	PB	PUSH BUTTON	
	PO	PUSH TO OPEN PLATE	
	LFE	LOW FREQUENCY EXCITER	
	IR	INFRARED READER	
	ROU	REMOTE DISPLAY UNIT	
	LAR	LOCAL AREA RECEIVER	
	CD	DIRECTIONAL PASSIVE TAG DETECTOR	
	IRC	INFRARED CURTAIN	
	RFR	RF READER	
	RFM	RF READER MASTER	
	RFLR	RF LONG RANGE READER	
	ARL	ASSISTANCE REQUEST LED ANNUNCIATOR WITH SOUNDER	
	ADO	AUTO DOOR OPERATOR	
	CR	CARD READER	
	DCR	DOOR CONTROLLER	
	EP	ELECTRIFIED PANIC HARDWARE	
	GB	GLASS BREAK DETECTOR	
	ID	INTRUSION DETECTION DEVICE	
	KEY	KEY SWITCH	
	MS	MOTION SENSOR	
	PNL	PANEL / CONTROLLER	
	PTX	POWER TRANSFER	
	REX	REQUEST TO EXIT DEVICE	
	SEN	ALARM SENSOR	
	SPS	SECURITY SYSTEM POWER SUPPLY	
	SVR	SERVER	
	WKS	SECURITY WORKSTATION	
	CCV	CCTV CAMERA, WALL-MOUNTED	
	CCV	CCTV CAMERA, CEILING-MOUNTED	
	RFER	RF ETHERNET READER	
	DL	LED DOME LIGHT WITH SOUNDER	
	PL	PUSH TO LOCK	

MISCELLANEOUS DEVICES

	JB	JUNCTION BOX, WALL MOUNTED		C x	CONTACTOR, SUBSCRIPT 'X' INDICATES UNIQUE IDENTIFIER
	JB	JUNCTION BOX, CEILING MOUNTED		R	CONTROL RELAY & REQUIRED INPUT/OUTPUT MODULE

DEMOLITION

< R >	EXISTING TO BE REMOVED		DEMOLITION CONDUIT
< RL >	EXISTING TO BE RELOCATED		DEMOLITION EQUIPMENT
< EX >	EXISTING TO REMAIN		EXISTING TO REMAIN CONDUIT
< NL >	EXISTING - NEW LOCATION		EXISTING TO REMAIN EQUIPMENT

ABBREVIATIONS

A	ANALOG	MCB	MAIN CIRCUIT BREAKER
AFCI	ARC FAULT CIRCUIT INTERRUPTOR	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
ATS	AUTOMATIC TRANSFER SWITCH	MH	MOUNTING HEIGHT
CK	CLOCK HANGER	NC	NORMALLY CLOSED
CL	CEILING MOUNTED	NO	NORMALLY OPEN
EMT	ELECTRICAL METALLIC TUBING	OC	OVER THE COUNTER
EP	EXPLOSION PROOF	PTZ	PAN, TILT, ZOOM
F	FURNITURE OR MILL/WORK MOUNTED	ST	SHUNT TRIP
FL	FLOOR MOUNTED	TP	TAMPER PROOF
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TV	OUTLET AT TV HEIGHT. COORDINATE ON SITE.
GFI	GROUND FAULT INTERRUPTER	WP	WEATHER PROOF
USB	USB TYPE OF RECEPTACLE		

DRAWING LIST

E-01	ELECTRICAL LEGEND, GENERAL NOTES, AND DRAWING LIST
E-02	ELECTRICAL DEMOLITION PLAN
E-03	POWER & SYSTEM SECOND FLOOR LAYOUT- NEW WORK
E-04	ELECTRICAL ROOF LAYOUT- NEW WORK
E-05	LIGHTING SECOND FLOOR LAYOUT- NEW WORK
E-06	ELECTRICAL SCHEDULE AND DIAGRAM
E-07	ELECTRICAL DETAILS
E-08	ELECTRICAL SPECIFICATIONS
E-09	COMMUNICATIONS SPECIFICATIONS
E-10	COMMUNICATIONS SPECIFICATIONS
E-11	SECURITY SPECIFICATIONS
E-12	SECURITY SPECIFICATIONS

GENERAL NOTES

- ALL DRAWINGS ARE DIAGRAMMATIC ONLY. THE ARRANGEMENTS OF EQUIPMENT SHOWN ARE APPROXIMATIONS ONLY AND MAY BE ALTERED BY THE ENGINEERS TO MEET THE REQUIREMENTS OF THE PROJECT. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE CONSULTANTS, AND MECHANICAL DRAWINGS FOR LOCATION OF ALL DEVICES. ALL EXISTING ELECTRICAL SYSTEMS, INCLUDING BUT NOT LIMITED TO EQUIPMENT DEVICES AND CONNECTIONS, SHALL REMAIN UNLESS SPECIFICALLY NOTED TO BE REMOVED. DURING CONSTRUCTION IF REQUIRED/IMPACTED BY OTHER WORKS, CONTRACTOR TO TEMPORARILY REMOVE/RELOCATE ELECTRICAL SYSTEMS AND/OR PROVIDE TEMPORARY CONNECTIONS ON SITE TO ALLOW CONSTRUCTION OF OTHERS WORKS. EXISTING ELECTRICAL SYSTEM ARE TO REMAIN FUNCTIONAL DURING THE CONSTRUCTION.
- MAINTAIN EXISTING FIRE ALARM, EXIT SIGNS AND EMERGENCY LIGHTS IN FULL OPERATION DURING THE ENTIRE CONSTRUCTION STAGE. WHERE DISRUPTION TO LIFE SAFETY SYSTEM ARE REQUIRED, PROVIDE CONTINUOUS MONITORING DURING SHUT DOWN PERIOD AND ENSURE THAT ALL SYSTEMS ARE REACTIVATED PRIOR TO LEAVING THE SITE AT THE END OF EACH WORKING DAY.
- ALL OPENINGS, IF APPLICABLE, SHALL BE SEALED WITH APPROVED FIRE STOP MATERIAL. ANY FIREPROOFING MATERIAL REMOVED WILL BE REPLACED WITH A SUITABLE AND APPROVED FIREPROOFING MATERIAL AND SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS TO APPLICABLE BUILDING AND FIRE CODES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REFINISHING OF DAMAGED BUILDING AREAS AND FINISHES AFFECTED BY THE WORK AS OUTLINED UNDER SCOPE OF WORK OF THIS PROJECT. SHOULD ANY EXISTING SYSTEM BE DAMAGED, MAKE FULL REPAIR/REPLACES WITHOUT EXTRA COST, AND TO THE SATISFACTION OF CONSULTANT.
- CONTRACTOR TO PROVIDE WRITTEN NOTICE TO OWNER FOR ANY SHUTDOWN REQUIRED.
- CONTRACTOR IS RESPONSIBLE FOR STORAGE AND PROTECTION OF ALL EXISTING ITEMS WHICH WILL BE RELOCATED/REUSED IN THIS PROJECT.
- EXPOSED ELECTRICAL CORDS OUTSIDE THE LEASED PREMISES SHALL NOT BE PERMITTED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL THE WORK WITH ALL OTHER TRADES, CONSULTANTS, AND THE OWNER. ALL WORK SHALL BE SCHEDULED AND CARRIED OUT BY THE CONTRACTOR IN A MANNER TO ENSURE CONTINUED AND NON-INTERRUPTED OPERATION OF EXISTING FACILITY.
- CONTRACTOR SHALL IDENTIFY AND LABEL CLEARLY ALL CIRCUITS, WIRING, SERVICES, JUNCTION BOXES, PULLBOXES, DEVICES AND EQUIPMENT INSTALLED AND CONNECTED UNDER THE SCOPE OF WORK OF THIS PROJECT. IDENTIFICATION SHALL BE AS PER OWNER'S REQUIREMENTS AND ALL MARKINGS SHALL BE OF NON-ERASEABLE LAMACOID TYPE. COORDINATE ALL LABELING WITH THE OWNER AND CONSULTANT.
- CONTRACTOR TO PAY FOR AND OBTAIN ALL REQUIRED PERMITS, FEES, LICENSES, CERTIFICATES OF INSPECTION ETC IF REQUIRED.
- CONTRACTOR TO REPORT BACK TO THE ENGINEER AND OWNER ON ANY ELECTRICAL SYSTEM FAILURES THAT OCCUR DURING THE CONSTRUCTION PHASE.
- PHASING AND SCHEDULING OF THE WORK IS REQUIRED IN ORDER TO MAINTAIN EXISTING BUILDING OPERATIONS. INCLUDE COSTS FOR "OFF-HOURS" WORK.
- FOR ALL LUMINAIRES THAT EXCEED 150V SHOWN, SUPPLY AND INSTALL NEW LUMINAIRES DISCONNECT THAT COMPLY WITH RECOMMENDATION SPECIFIED IN CANADIAN ELECTRICAL CODE, RULE 30-308(4). ALL NEW RELOCATED FIXTURES (THAT EXCEED 150V) SHALL BE MARKED IN A CONSPICUOUS LEGIBLE AND PERMANENT MANNER ADJACENT TO THE CONNECTING MEANS, IDENTIFYING THE SPECIFIC PURPOSES.
- NEW AND EXISTING ELECTRICAL WIRING AND CABLES EXPOSED WITHIN THE CEILING SPACES SHALL CONFORM TO THE PLENUM REQUIREMENTS OF ONTARIO BUILDING CODE SENTENCE 3.6.4.3. (1).

CLIENT

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PROJECT NORTH

3	ISSUED FOR REVISED 99% REVIEW	2025-02-19
2	ISSUED FOR 99% COORDINATION	2023-06-13
1	ISSUED FOR 66% COORDINATION	2023-05-12
ISSUE	DESCRIPTION	DATE

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND PROMPTLY REPORT ALL ERRORS AND/OR OMISSIONS TO THE CONSULTANT BEFORE WORK COMMENCES.

ALL WORK IS TO FOLLOW THE OBC 2012 AND ANY OTHER APPLICABLE CODES AND REGULATIONS.

DO NOT SCALE DRAWINGS.

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PROJECT

1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

ELECTRICAL LEGEND,
GENERAL NOTES, AND
DRAWING LIST

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	KL	DATE:	MAY 2023
APPROVED:	DL	SCALE:	AS SHOWN
DRAWING No:			

E-01



1 ELECTRICAL DEMOLITION PLAN
E-02 SCALE: 1/4"=1'-0"

DEMO POWER:

- THIS DEMOLITION DRAWING IS DIAGRAMMATIC AND MAY NOT REPRESENT ALL OF THE DEVICES TO BE REMOVED. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO ENSURE THE COMPLETE REMOVAL/RELOCATION OF POWER AND SYSTEMS IS COMPLETE IN THE AREAS OF SCOPE OF WORK. ALL ELECTRICAL ITEMS IN THIS AREA/ROOM NOT SHOWN WITHIN SCOPE OF WORK AREA ARE TO REMAIN.
- DEMOLISH EXISTING LIGHT FIXTURES NOTED ON THE DRAWING IN THE DEMOLITION AREA C/W CONTROLS CONDUIT, WIRING, JUNCTION BOXES, ETC. BACK TO SOURCE. WHERE CIRCUIT AND/OR CONTROLS ARE BEING UTILIZED BY OTHER ELEMENTS, THE CIRCUIT IS TO BE REMOVED BACK TO NEAREST JUNCTION BOX.
- DURING CONSTRUCTION ENSURE ALL LUMINAIRES IN AND/OR OUT OF SCOPE OF WORK ARE FREE OF DUST AND DEBRIS. CONTRACTOR TO CLEAN LENSES AFFECTED BY CONSTRUCTION DUST AND/OR DEBRIS.
- ALL EXISTING FIXTURES TO BE REMOVED ARE TO BE DISPOSED OF AND IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
- ALL EXISTING POWER SUCH THAT SURROUNDING AREAS REMAIN OPERATIONAL AND ARE NOT AFFECTED AS A RESULT OF BUILDING DEMOLITION.
- ALL EXISTING DEVICES TO REMAIN ARE TO BE PROTECTED FROM DUST DEBRIS DURING CONSTRUCTION.
- WHERE EXISTING CIRCUITS ON PANELS ARE NOT AFFECTED, THOSE CIRCUITS WILL BE INCLUDED IN THE NEW PANEL DIRECTORIES WHERE PANELS HAVE BEEN AFFECTED BY THIS PROJECT.
- EXISTING BASE BUILDING ACCESS CONTROL SYSTEM TO REMAIN OPERATIONAL DURING THE WORK. COORDINATE ALL SHUTDOWNS AS REQUIRED WITH OWNER.
- ANY EXISTING CONDUITS NOT BEING REUSED DURING THE NEW CONSTRUCTION TO BE REMOVED.

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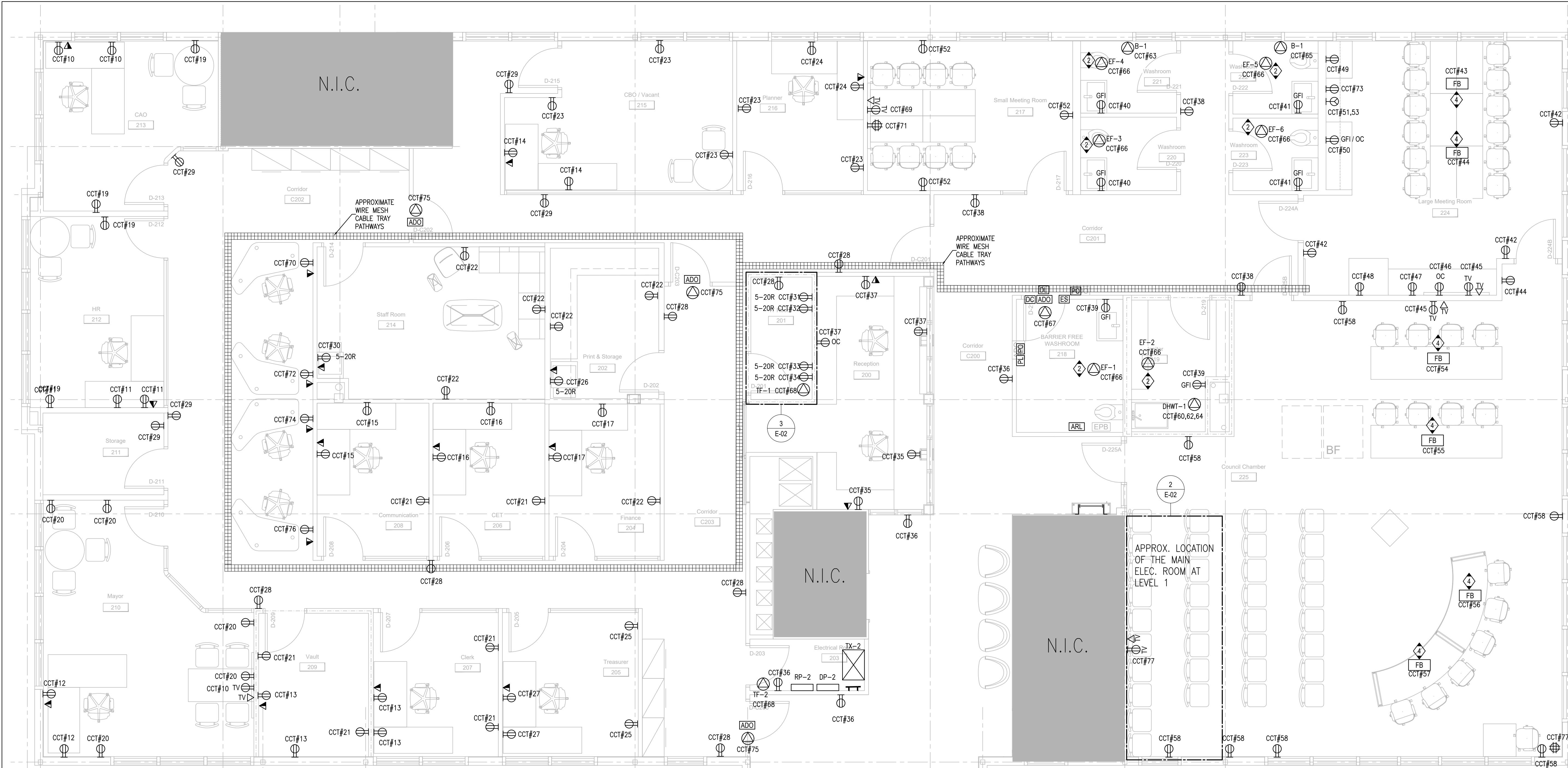
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PROJECT	
1 INDUSTRIEL STREET OFFICE FIT-UP	
DRAWING	
ELECTRICAL DEMOLITION PLAN	
PROJECT No: MRK-23002008-A0	REVISION:
DRAWN: KL	DATE: MAY 2023
APPROVED: DL	SCALE: AS SHOWN
DRAWING No:	E-02



1 POWER & SYSTEMS SECOND FLOOR LAYOUT- NEW WORK
E-03 SCALE: 1/4"=1'-0"

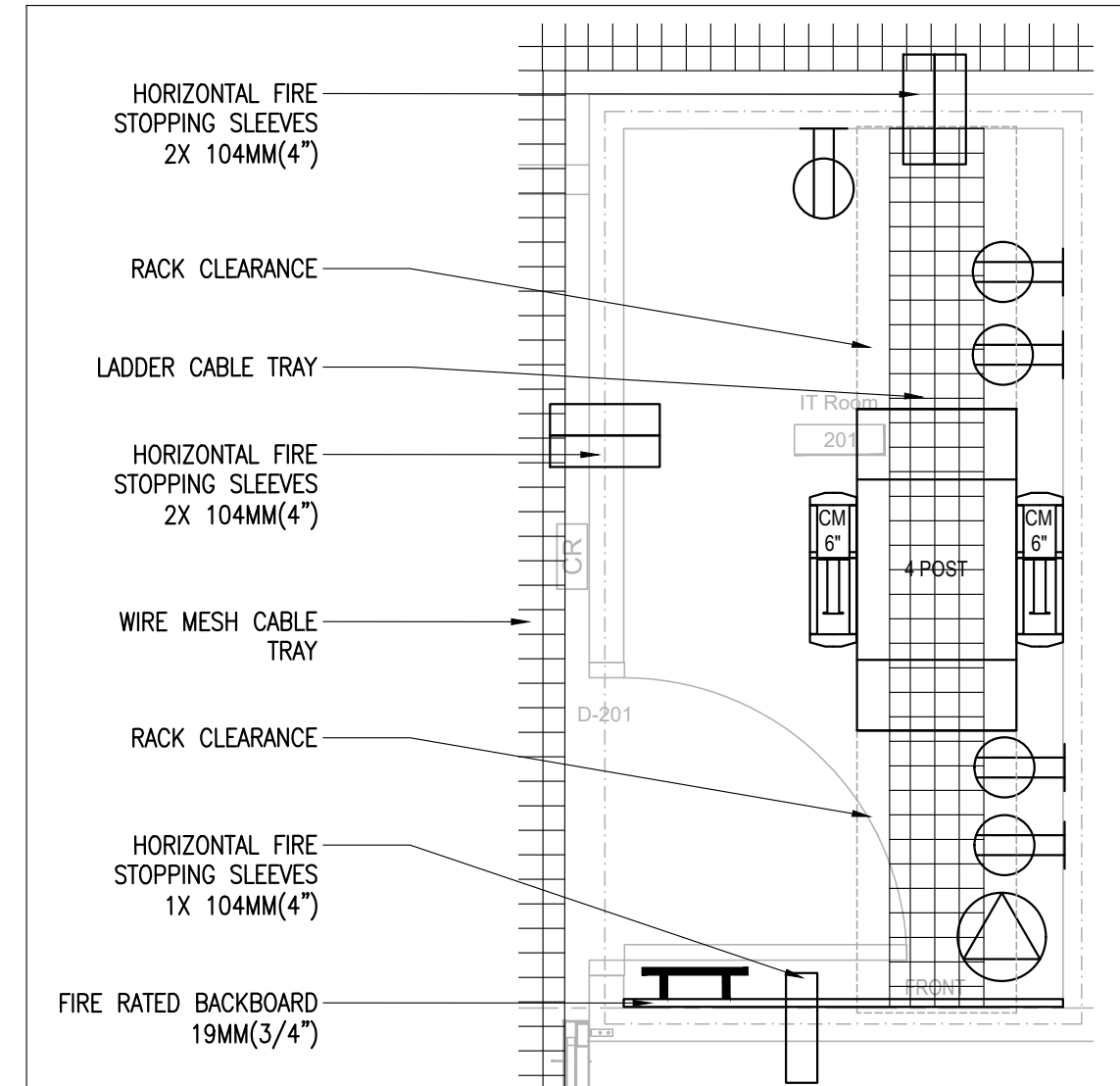
UPDATED ARCH. DRAWING AS PER FEB 13 2025

GENERAL NOTES:

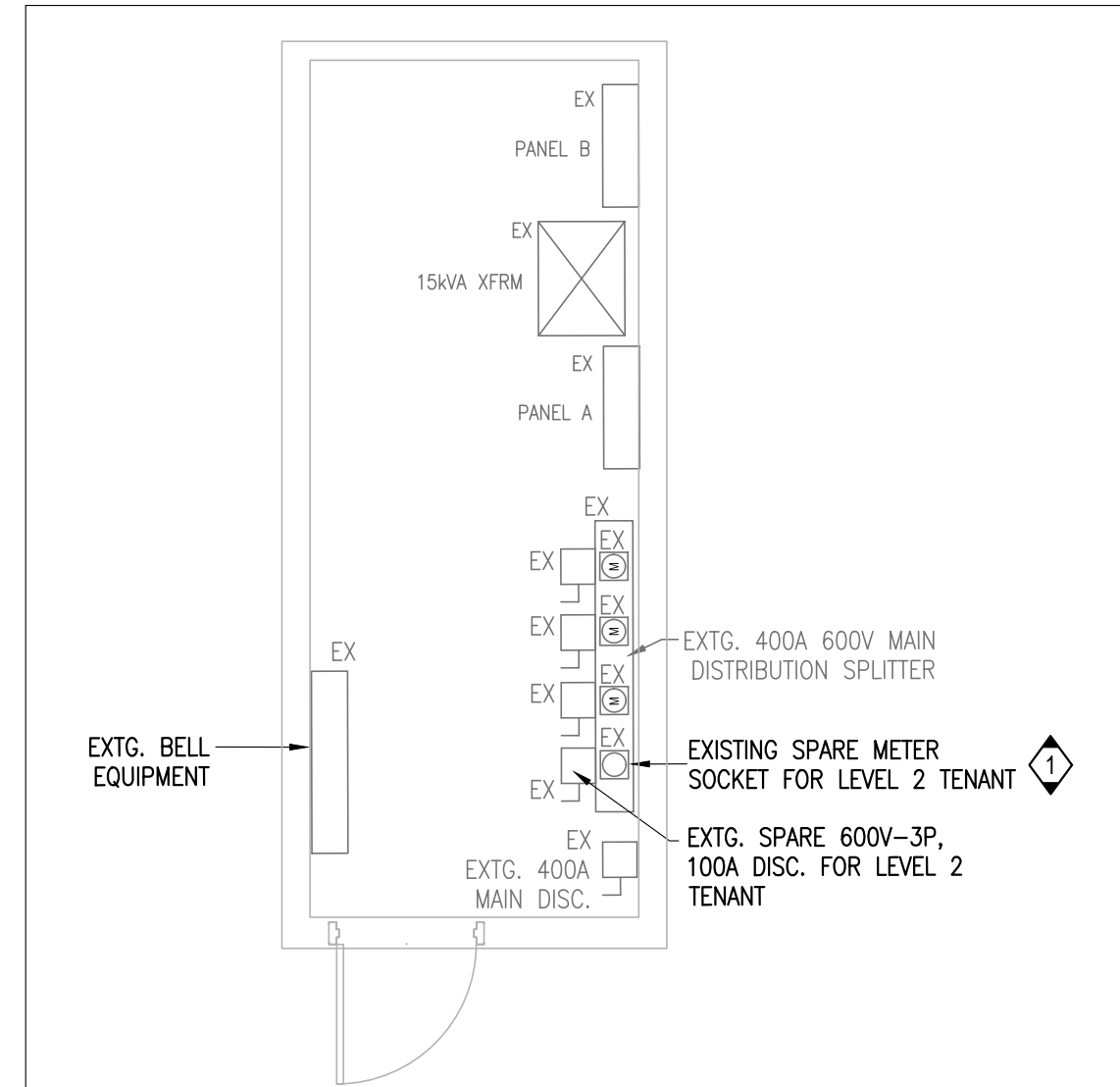
- ELECTRICAL WORK OF THE MAIN FEEDER INSTALLATION AND WORK IN COMMON/PUBLIC AREA WHICH REQUIRE ANY DISCONNECTION, ETC. MAY HAVE TO BE DONE AFTER HOURS ON WEEKEND AND/OR AT OTHER TIMES SUITABLE FOR BUILDING OWNER AND TENANTS WITHIN THE BUILDING. INCLUDE IN PRICE SUBMITTAL PREMIUM TIME AND ALL ASSOCIATED COSTS TO PERFORM THE WORK.
- PLACEMENT OF ALL DEVICES SHALL BE ALIGNED AND STRATEGICALLY PLACED. VERIFY WITH ARCHITECT FOR EXACT MOUNTING LOCATIONS OF ALL ELECTRICAL DEVICES.
- PROVIDE A SEPARATE NEUTRAL INSULATED CONDUCTOR FOR EACH NEW CIRCUIT.
- 120V 20A DUPLEX RECEPTACLE (NEMA 5-20R ALTERNATE - 'T-SLOT') RECEPTACLE SHALL BE FED FROM A 20A-1P BREAKER. #10 AWG. WIRE SHALL BE USED.
- ALL EXTRA LOW VOLTAGE WALL OUTLETS LOCATED WITHIN DRYWALL CEILING AREAS SHALL BE INSTALLED C/W CONDUIT ROUTED BACK TO ACCESSIBLE CEILING SPACE AREA. CEILING MOUNTED EXTRA LOW VOLTAGE OUTLETS DESIGNATED FOR SECURITY CAMERAS AND WIRELESS ACCESS POINTS LOCATED WITHIN DRYWALL CEILING AREAS, ARE TO BE INSTALLED C/W CONDUIT ROUTED BACK TO ACCESSIBLE CEILING SPACE AREA.
- COORDINATE EXACT COMMUNICATION J-HOOK PATHWAY ON SITE TO AVOID INTERFERENCES WITH LIGHTING FIXTURE, MECHANICAL DUCTING, AND STRUCTURAL BEAMS.
- IN EXPOSED CEILING AREAS, ALL CONDUITS SHALL RUN PARALLEL AND PERPENDICULAR TO BUILDING LINES; ALL COMMUNICATION CABLEING TO BE CONCEALED IN METAL CONDUIT READY TO ACCEPT PAINT FINISH.
- INDICATED CIRCUITS ON THIS SHEET TO BE CIRCUITED BACK TO PANEL 'RP-2' UNLESS NOTED OTHERWISE.

KEY NOTES:

- EXISTING SPARE METER SOCKET FOR SECOND FLOOR.
- WASHROOM AND JANITOR ROOM EXHAUST FAN SHALL BE TIED INTO THE LIGHTING SWITCH WITHIN THE ROOM.
- RECEPTACLE FOR KITCHEN HOOD AT HIGH LEVEL. COORDINATION HEIGHT AND CONNECTION ON SITE.
- INCLUDE FOR CORE DRILLS AND X-RAY, ALL ASSOCIATED JUNCTION BOX(ES) AND CONDUITS FROM FLOOR MONUMENT/FEED LOCATION IN CEILING SPACE OF FLOOR BELOW BACK TO RESPECTIVE ELECTRICAL ROOM (FOR POWER) AND IT ROOM (FOR COMMUNICATIONS CABLES). COORDINATE WITH OWNER'S AV VENDOR FOR ADDITIONAL CONDUIT REQUIREMENTS FOR A/V SYSTEM AS IDENTIFIED AT FLOOR MONUMENT LOCATION. INCLUDE FOR PREMIUM TIME IN TENDER SUBMITTAL TO CARRY-OUT THIS SCOPE OF WORK. WORK SHALL BE DONE AFTER HOURS, ON WEEKENDS AND/OR AT OTHER TIME THAT SUITABLE TO THE TENANT ON FLOOR BELOW. COORDINATE AND SCHEDULE WITH BUILDING OWNER AND OBTAIN APPROVAL PRIOR TO PROCEEDING WITH THIS SCOPE OF WORK. BUILDING OWNER SHALL BE GIVEN AT LEAST 72 HOURS NOTICE PRIOR TO X-RAYING. COORDINATE EXACT FLOOR MONUMENT LOCATION/DIMENSIONS WITH FURNITURE SUPPLIER PRIOR TO DRILLING.



3 ENLARGED MAIN IT ROOM LAYOUT
E-03 N.T.S.



2 ENLARGED MAIN ELECTRICAL ROOM LAYOUT
E-03 N.T.S.

MUNICIPALITY OF CASSELMAN

PROJECT NORTH

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PROJECT

1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

POWER & SYSTEMS
SECOND FLOOR LAYOUT
- NEW WORK

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	KL	DATE:	MAY 2023
APPROVED:	DL	SCALE:	AS SHOWN
DRAWING No:	E-03		



1 ELECTRICAL ROOF LAYOUT- NEW WORK
E-04 SCALE: 1/4"=1'-0"

GENERAL NOTES:

- ELECTRICAL WORK OF THE MAIN FEEDER INSTALLATION AND WORK IN COMMON/PUBLIC AREA WHICH REQUIRE ANY DISCONNECTION, ETC. MAY HAVE TO BE DONE AFTER HOURS ON WEEKEND AND/OR AT OTHER TIMES SUITABLE FOR BUILDING OWNER AND TENANTS WITHIN THE BUILDING. INCLUDE IN PRICE SUBMITTAL PREMIUM TIME AND ALL ASSOCIATED COSTS TO PERFORM THE WORK.
- PROVIDE A SEPARATE NEUTRAL INSULATED CONDUCTOR FOR EACH NEW CIRCUIT.

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PROJECT NORTH		
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1	ISSUED FOR 66% COORDINATION	2023-05-12
ISSUE	DESCRIPTION	DATE

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DO NOT SCALE DRAWINGS.

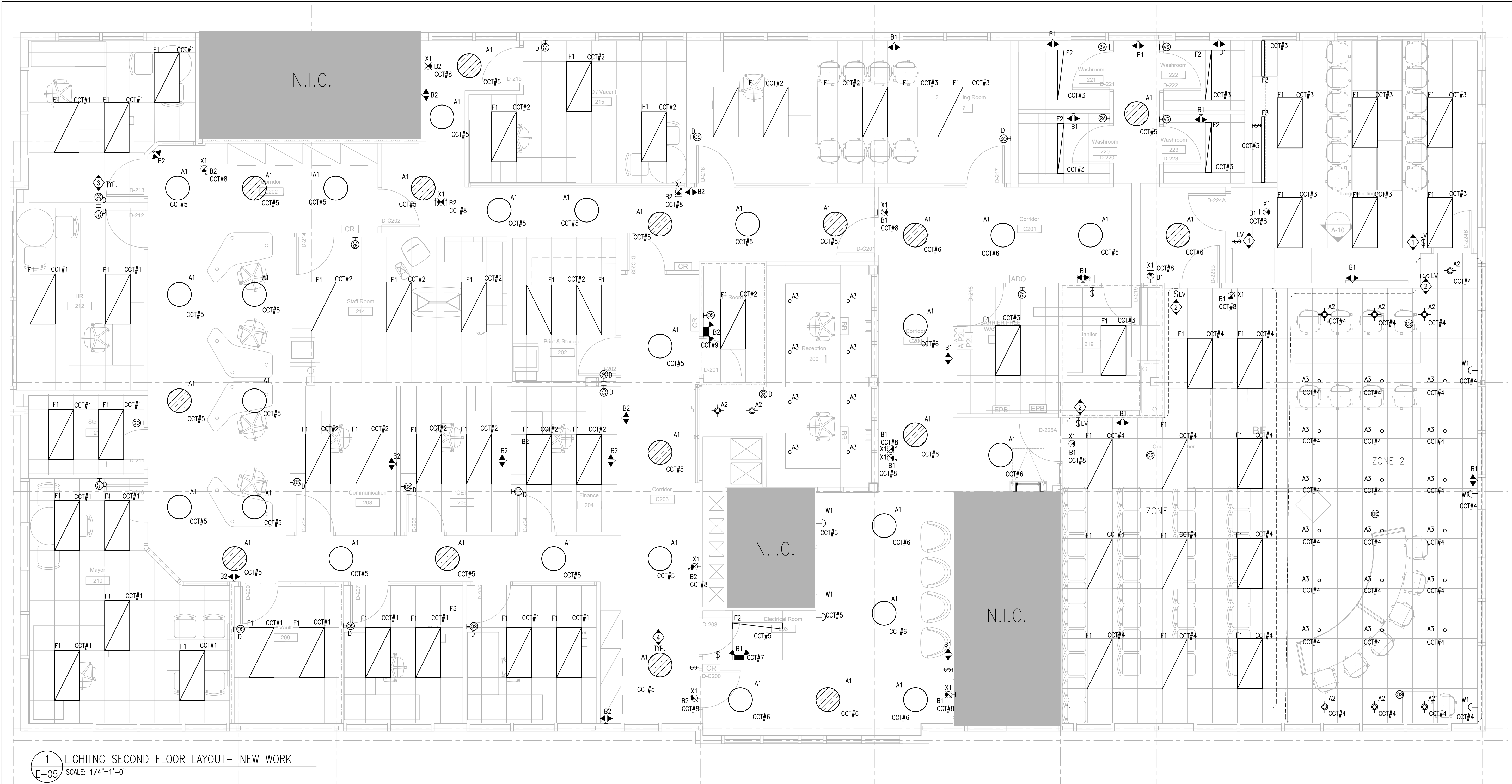
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PROJECT		
1 INDUSTRIEL STREET OFFICE FIT-UP		
DRAWING		
ELECTRICAL ROOF LAYOUT - NEW WORK		
PROJECT No:	MRK-23002008-A0	REVISION:
DRAWN:	KL	DATE: MAY 2023
APPROVED:	DL	SCALE: AS SHOWN
DRAWING No:	E-04	



1 LIGHTING SECOND FLOOR LAYOUT- NEW WORK
E-05 SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. ELECTRICAL CONTRACTOR TO COORDINATE EXACT LOCATIONS OF LIGHT FIXTURE WITH ARCHITECT AND CLIENT PRIOR TO INSTALLATION.
2. RUN 2#10-1/2" C. FROM REMOTE EMERGENCY HEAD(S) OR DC BACK-UP FROM NEW EXIT SIGN TO EMERGENCY BATTERY UNIT. TOTAL LOAD SHOULD NOT EXCEED 36W ON EACH RUN. IF RUN EXCEED 94' #8 WIRE SHALL BE USED.
3. NEW EXIT SIGNS TO BE CONNECTED TO NEW EMERGENCY DC BATTERY BACK-UP UNIT AND DEDICATED 120V NON-RELAY/NON-SWITCHING CIRCUIT.
4. PLACEMENT OF ALL FIXTURES SHALL BE ALIGNED AND STRATEGICALLY PLACED. VERIFY WITH ARCHITECT FOR EXACT MOUNTING LOCATIONS.
5. PROVIDE A SEPARATE NEUTRAL INSULATED CONDUCTOR FOR EACH NEW CIRCUIT.
6. CIRCUIT NUMBERS SHOWN ARE DIAGRAMMATIC ONLY. CONNECT TO CIRCUITS MADE AVAILABLE BY THESE RENOVATIONS.
7. IN EXPOSED CEILING AREAS, ALL CONDUITS SHALL RUN PARALLEL AND PERPENDICULAR TO BUILDING LINES; ALL COMMUNICATION CABLING TO BE CONCEALED IN METAL CONDUIT READY TO ACCEPT PAINT FINISH.
8. INDICATED CIRCUITS ON THIS SHEET TO BE CIRCUITED BACK TO PANEL 'RP-2' UNLESS NOTED OTHERWISE.

GENERAL NOTES:

1. CURRENT LIGHTING NXSW SERIES OR EQUIVALENT WALL MOUNTED EXTRA LOW VOLTAGE DIMMER SWITCH. ELECTRICAL CONTRACTOR SHALL PROVIDE THE ASSOCIATED CONTROL MODULE, ACCESSORIES AND COORDINATE WITH THE MANUFACTURER TO ENSURE THE SWITCH IS COMPATIBLE WITH THE LIGHT FIXTURES.
2. CURRENT LIGHTING NXSW SERIES OR EQUIVALENT WALL MOUNTED EXTRA LOW VOLTAGE DIMMER SWITCH COMPLETE WITH SCENE SELECTION. ELECTRICAL CONTRACTOR SHALL PROVIDE THE ASSOCIATED CONTROL MODULE, ACCESSORIES AND COORDINATE WITH THE MANUFACTURER TO ENSURE THE SWITCH IS COMPATIBLE WITH THE LIGHT FIXTURES.
3. LINE VOLTAGE WALL MOUNTED DUAL TECHNOLOGY DIMMING SENSOR SWITCH.
4. NIGHT LIGHT SHALL NOT BE CONTROLLER BY CORRIDOR SWITCH AND TO BE REMAIN ON ALL THE TIME.

CLIENT		
MUNICIPALITY OF CASSELMAN		
PROJECT NORTH		
3	ISSUED FOR REVISED 99% REVIEW	2025-02-19
2	ISSUED FOR 99% COORDINATION	2023-06-13
1	ISSUED FOR 66% COORDINATION	2023-05-12
ISSUE	DESCRIPTION	DATE

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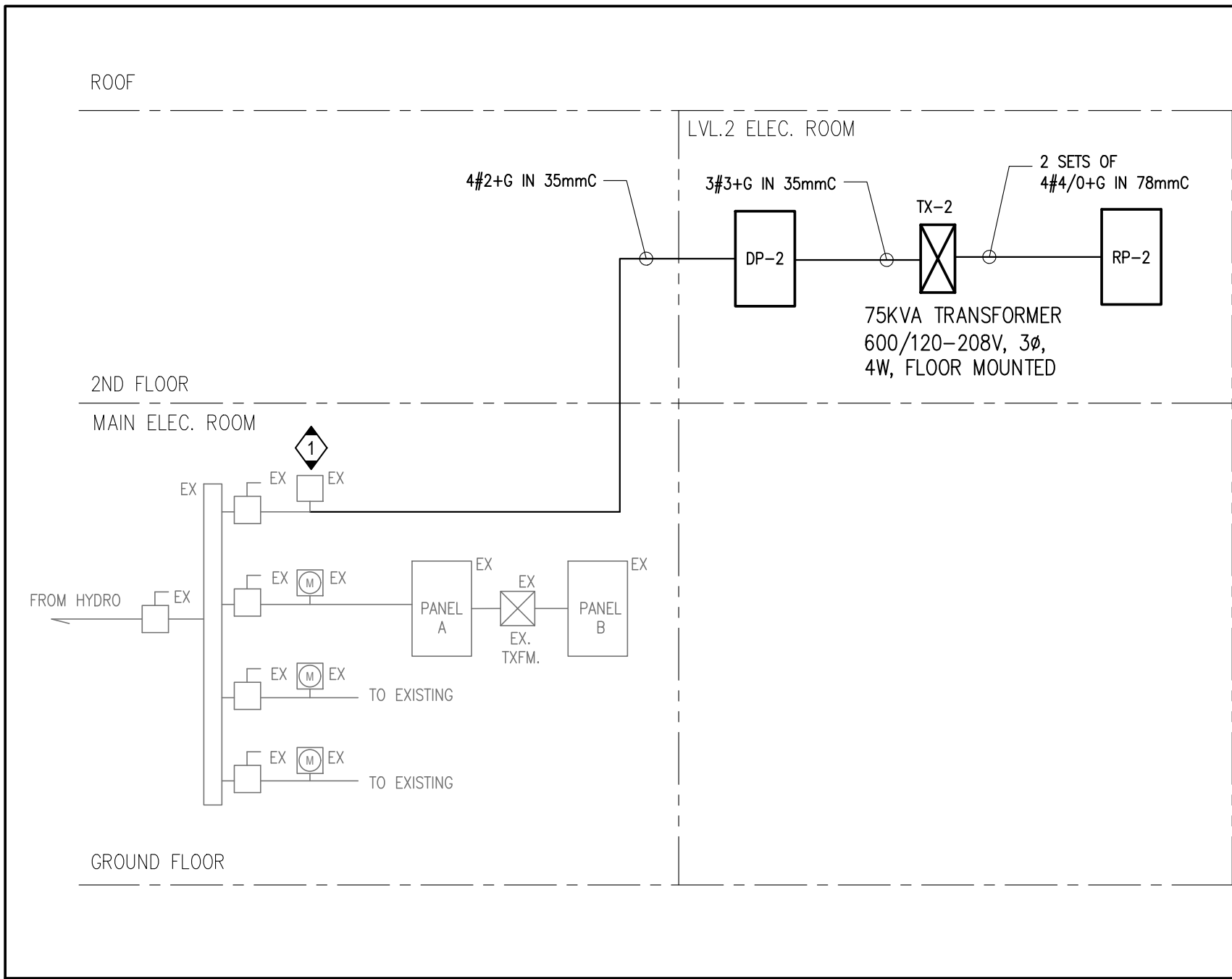
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PROJECT	
1 INDUSTRIEL STREET OFFICE FIT-UP	
DRAWING	
LIGHTING SECOND FLOOR LAYOUT - NEW WORK	
PROJECT No:	MRK-23002008-A0
REVISION:	
DRAWN:	KL
DATE:	MAY 2023
APPROVED:	DL
SCALE:	AS SHOWN
DRAWING No:	E-05



GENERAL NOTES:

1. PROVIDE LAMICOID NAMEPLATE FOR NEW PANELS AND TRANSFORMER. PROVIDE CLEAR AND LEGIBLE WRITTEN DIRECTORY FOR EACH PANEL.
2. ELECTRICAL WORK OF THE MAIN FEEDER INSTALLATION AND WORK IN COMMON/PUBLIC AREA WHICH REQUIRE ANY DISCONNECTION, ETC. MAY HAVE TO BE DONE AFTER HOURS ON WEEKEND AND/OR AT OTHER TIMES SUITABLE FOR BUILDING OWNER AND TENANTS WITHIN THE BUILDING. INCLUDE IN PRICE SUBMITTAL PREMIUM TIME AND ALL ASSOCIATED COSTS TO PERFORM THE WORK.

KEY NOTES:

1. EXISTING SPARE METER SOCKET FOR SECOND FLOOR. METER SHALL BE COORDINATED AND PROVIDED BY HYDRO OTTAWA.

1 ELECTRICAL DISTRIBUTION RISER DIAGRAM
E-06 N.T.S.

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	PART NO.	MANUFACTURER	NOTES
F1	2X4 LED TROFFER	CPX 2X4 4000LM 35K M2 MW	LITHONIA	
F2	4'X4' LED TROFFER	LSIX 4FT 3000LM 80CRI 35K FFR SWL MIN10 ZT MVOLT MW	LITHONIA	
F3	LED TAPE	6020-FL-COB-3.1W24V-35K (LED tape) + 6100-AP-SM-1708 (aluminum extrusion + frosted lens) + 5030-PSU-60W24V-TRI-DIM-JB-CL2 (dimmmable power supply)	PRISM	
A1	17" CEILING PENDANT	4275-17-LED.REG-35K-90-120V-DV-C60-RC1-BLKE-BLK-WH	EUREKA	
A2	4" DOWNLIGHT	JPD24 DC AL010 SWW5WD 90CRI JPDZRMJBX MVOLT ZT10 WWH	JUNO	
A3	3' PENDANT	4048-10-LED-35-80-120V-DV-ME-FRO-C60-RC2-WHE-WHE-WHE	EUREKA	
L1	ACOUSTIC SUSPENDED LINEAR PENDANT	LX-BL-M-H1-S-LG-35-UNV-RD-LG	MVP	
L2	ACOUSTIC SUSPENDED LINEAR PENDANT	LX-BL-M-H2-S-LB-35-UNV-RD-LB	MVP	
L3	ACOUSTIC SUSPENDED LINEAR PENDANT	LX-BL-M-H0-S-LG-35-UNV-RD-LG	MVP	
W1	WALL SCONCE	1125-BL-H6-40K	MVP	
X1	STEEL PICTOGRAM EXIT SIGN UNIVERSAL FACE	LS3WU STEEL PICTOGRAM EXIT SIGN UNIV	LUMACELL	
	12V STEEL EMERG. BATTERY UNIT C/W 4W MR16-LED	RG12S1442LD7	LUMACELL	
	PLASTIC EMERG. REMOTE HEAD DBL 12V4W-LED WS	MQM2LD7	LUMACELL	

NOTES:

1. ALL FINISHES, FLANGE AND PLASTER COLOURS TO BE CONFIRMED WITH ARCHITECT/INTERIOR DESIGNER PRIOR TO ORDERING LUMINAIRES.
2. CONTRACTOR TO PROVIDE SUITABLE MOUNTING ACCESSORIES AND HARDWARE ACCORDINGLY TO CEILING FINISHES.
3. PROVIDE SUITABLE STEP-DOWN TRANSFORMER FOR ANY LOW VOLTAGE LIGHTING AS REQUIRED.

		PANEL DESIGNATION: DP-2				PROJECT NAME: MUNICIPALITY OF CASSELMAN OFFICE FIT-UP			
MAIN BUS: 100A	MAIN BREAKER: 100A	VOLTAGE: 347/600V, 3φ, 4W, 25kA				SURFACE MOUNTED. NEW PANEL			
LOAD DESCRIPTION	BRKR SIZE	CCT. No.	PHASE			CCT. No.	BRKR SIZE	LOAD DESCRIPTION	
			A	B	C				
TRANSFORMER TX-2	90A 3P	1	●			2	20A	RTU-1	
		3		●		4			
		5			●	6	3P		
		7	●			8	25A		
		9		●		10	RTU-2		
		11			●	12	3P		
		13	●			14			
		15		●		16			
		17			●	18			
		19	●			20			
		21		●		22			
		23			●	24			
		25	●			26			
		27		●		28			
		29			●	30			
		31	●			32			
		33		●		34			
		35			●	36			
		37	●			38			
		39		●		40			
		41			●	42			

		PANEL DESIGNATION: RP-2				PROJECT NAME: MUNICIPALITY OF CASSELMAN OFFICE FIT-UP			
MAIN BUS: 400A	MAIN BREAKER: 250A	VOLTAGE: 120/208V, 3φ, 4W, 10kA				SURFACE MOUNTED. NEW PANEL			
LOAD DESCRIPTION	BRKR SIZE	CCT. No.	PHASE			CCT. No.	BRKR SIZE	LOAD DESCRIPTION	
			A	B	C				
OFFICE LIGHTS	20A	1	●			2	20A	OFFICE LIGHTS	
OFFICE LIGHTS	20A	3		●		4	20A	OFFICE LIGHTS	
CORRIDOR LIGHTS	20A	5			●	6	20A	CORRIDOR LIGHTS	
BATTERY UNIT	20A	7	●			8	20A	EXIT SIGNS	
BATTERY UNIT	20A	9		●		10	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	11			●	12	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	13	●			14	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	15		●		16	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	17			●	18	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	19	●			20	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	21		●		22	15A	OFFICE RECEPTACLE	
OFFICE RECEPTACLE	15A	23			●	24	15A	PRINTER ROOM REC.	
TREASURE ROOM REC.	15A	25	●			26	20A	PRINTER REC.	
TREASURE ROOM REC.	15A	27		●		28	15A	CORRIDOR REC.	
CORRIDOR REC.	15A	29			●	30	20A	PRINTER REC.	
IT ROOM REC.	20A	31	●			32	20A	IT ROOM REC.	
IT ROOM REC.	20A	33		●		34	20A	IT ROOM REC.	
RECEPTION REC.	15A	35			●	36	15A	CORRIDOR REC.	
RECEPTION REC.	15A	37	●			38	15A	CORRIDOR REC.	
WASHROOM REC.	15A	39		●		40	15A	WASHROOM REC.	
WASHROOM REC.	15A	41			●	42	15A	LARGE MEETING ROOM REC.	
LARGE MEETING ROOM REC.	20A	43	●			44	20A	LARGE MEETING ROOM REC.	
LARGE MEETING ROOM TV REC.	15A	45		●		46	15A	LARGE MEETING ROOM COUNTER REC.	
LARGE MEETING ROOM FRIDGE REC.	15A	47			●	48	15A	LARGE MEETING ROOM FRIDGE REC.	
LARGE MEETING ROOM REC.	15A	49	●			50	15A	LARGE MEETING ROOM COUNTER REC.	
LARGE MEETING RANGE REC.	40A 2P	51		●		52	15A	SMALL MEETING ROOM REC.	
COUNCIL CHAMBER REC.	20A	55	●			54	15A	COUNCIL CHAMBER REC.	
COUNCIL CHAMBER REC.	20A	57		●		56	20A	COUNCIL CHAMBER REC.	
ROOF REC.	20A	59			●	58	15A	COUNCIL CHAMBER REC.	
ROOF REC.	20A	61	●			60	20A	DHW-1	
BASEBOARD HEATER	15A	63		●		62	3P		
BASEBOARD HEATER	15A	65			●	64			
UNIV. WASHROOM DOOR CONTROLLER	15A	67	●			66	15A	EXHAUST FAN	
SMALL MEETING ROOM TV REC.	15A	69		●		68	15A	TRANSFER FAN	
SMALL MEETING ROOM REC.	20A	71			●	70	15A	WORK STATION REC.	
KITCHEN HOOD REC.	15A	73	●			72	15A	WORK STATION REC.	
ADO	15A	75		●		74	15A	WORK STATION REC.	
TV REC.	15A	77			●	76	15A	WORK STATION REC.	
SPACE		79	●			78	20A	SPARE	
SPACE		81		●		80	20A	SPARE	
SPACE		83			●	82	20A	SPARE	
						84	20A	SPARE	

CLIENT

MUNICIPALITY OF CASSELMAN

PROJECT NORTH

3	ISSUED FOR REVISED 99% REVIEW	2025-02-19
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1	ISSUED FOR 66% COORDINATION	2023-05-12
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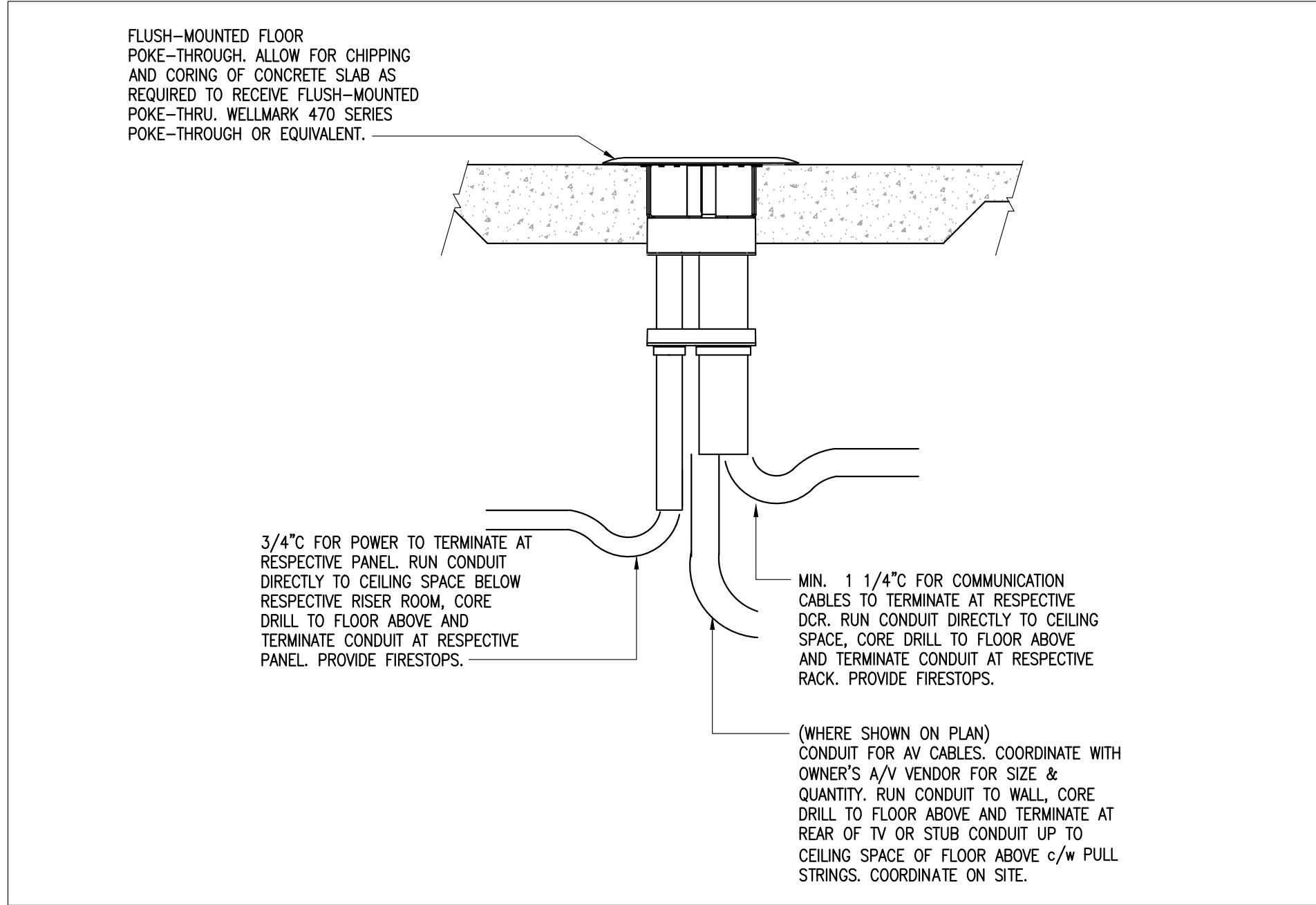
PROJECT


1 INDUSTRIEL STREET
OFFICE FIT-UP

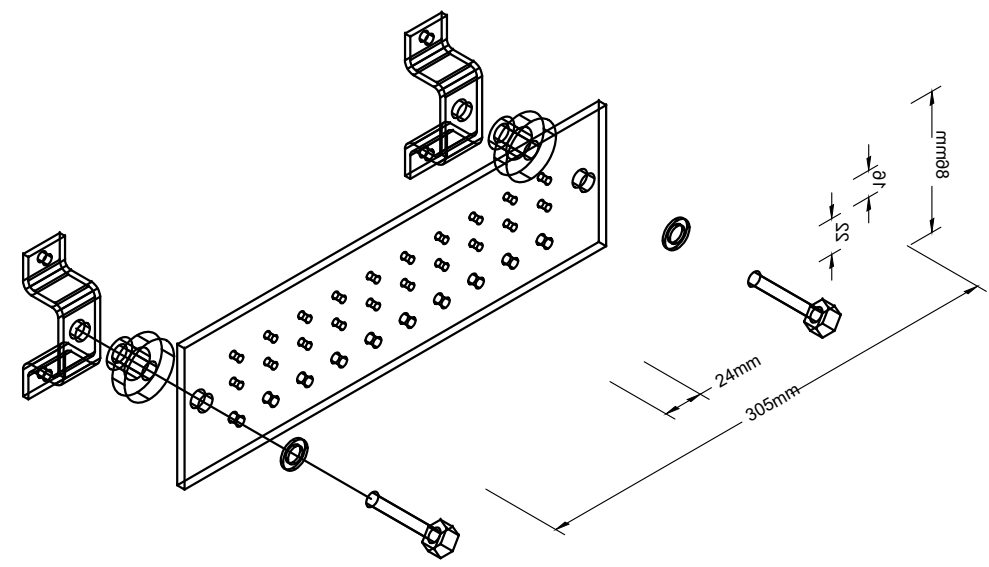
DRAWING

ELECTRICAL SCHEDULE
AND DIAGRAM

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	KL	DATE:	MAY 2023
APPROVED:	DL	SCALE:	AS SHOWN
DRAWING No:	E-06		



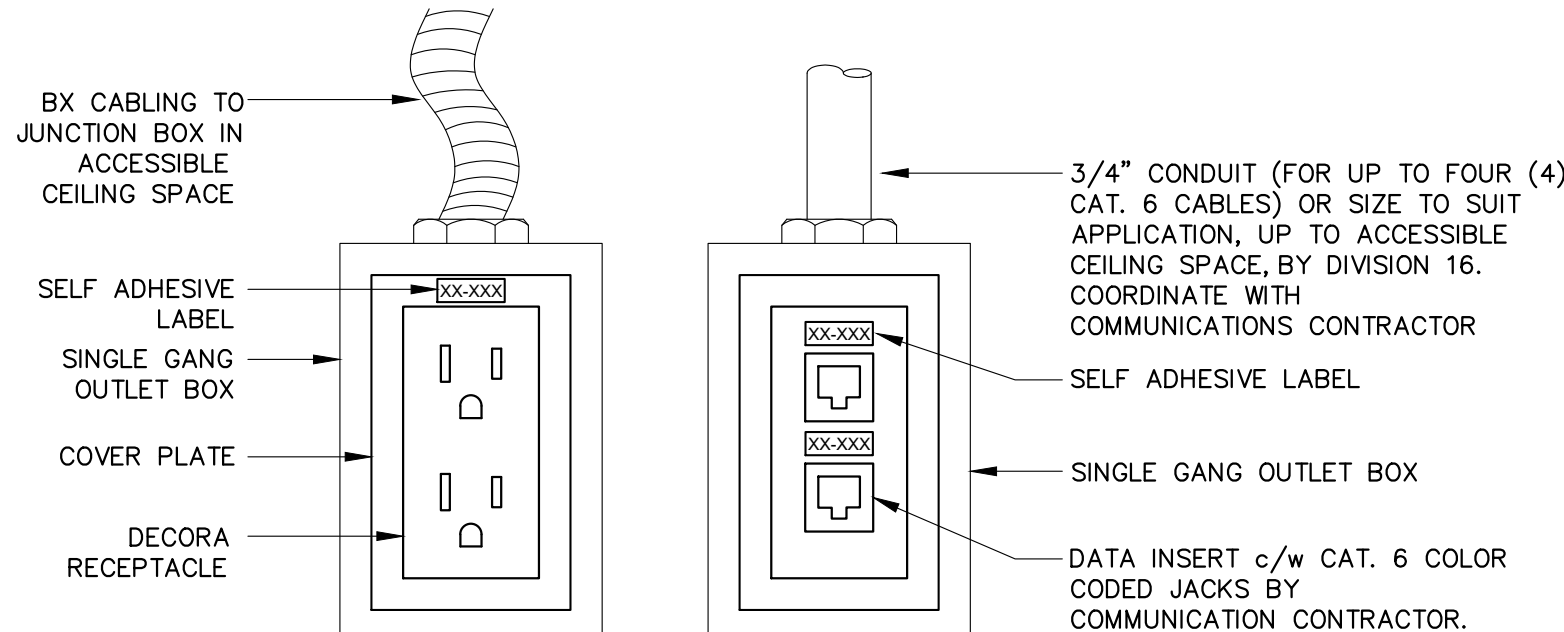
4
E-07
DETAIL OF FLOOR POKE-THROUGH
SYMBOL: 



NOTES:

- BUS TO BE MOUNTED AT LOWER CORNER OF PLYWOOD BACKBOARD.
- EQUIPMENT RACKS, CABINETS AND CABLE TRAY ARE TO BE TERMINATED ON THE BUS BAR. GROUND EACH EQUIPMENT USING 'STAR' CONFIGURATION, DAISY CHAIN NOT ACCEPTABLE.
- ONE #6 AWG INSULATED GREEN GROUND WIRE IS TO BE PROVIDED IN 1"Ø FROM THE GROUND BUS BACK TO THE BUILDING GROUND RISER.

1
E-07
DETAIL OF WALL MOUNTED GROUND BUS BAR:
N.T.S.



NOTES:

- REFER TO SPECIFICATIONS FOR MAXIMUM LENGTH OF WIRE IN FLEXIBLE CONDUIT (BX CABLING) ALLOWED.
- CO-ORDINATE WITH DESIGNER FOR EXACT VOICE/DATA CONFIGURATION OUTLETS.
- CO-ORDINATE WITH DESIGNER FOR EXACT COLOUR FINISH OF RECEPTACLES AND VOICE/DATA OUTLETS. NEW RECEPTACLES SHALL MATCH WITH EXISTING.
- ALL ITEMS SHOWN BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED.
- IDENTIFICATION FOR RECEPTACLES BY ELECTRICAL CONTRACTOR, IDENTIFICATION FOR COMMUNICATIONS OUTLETS BY COMMUNICATIONS CONTRACTOR.
- REFER TO COMMUNICATION DRAWINGS AND SPECIFICATIONS FOR VOICE AND DATA CABLES AND QUANTITIES

2
E-07
TYPICAL WALL MOUNTED POWER/DATA OUTLET DETAIL
N.T.S.

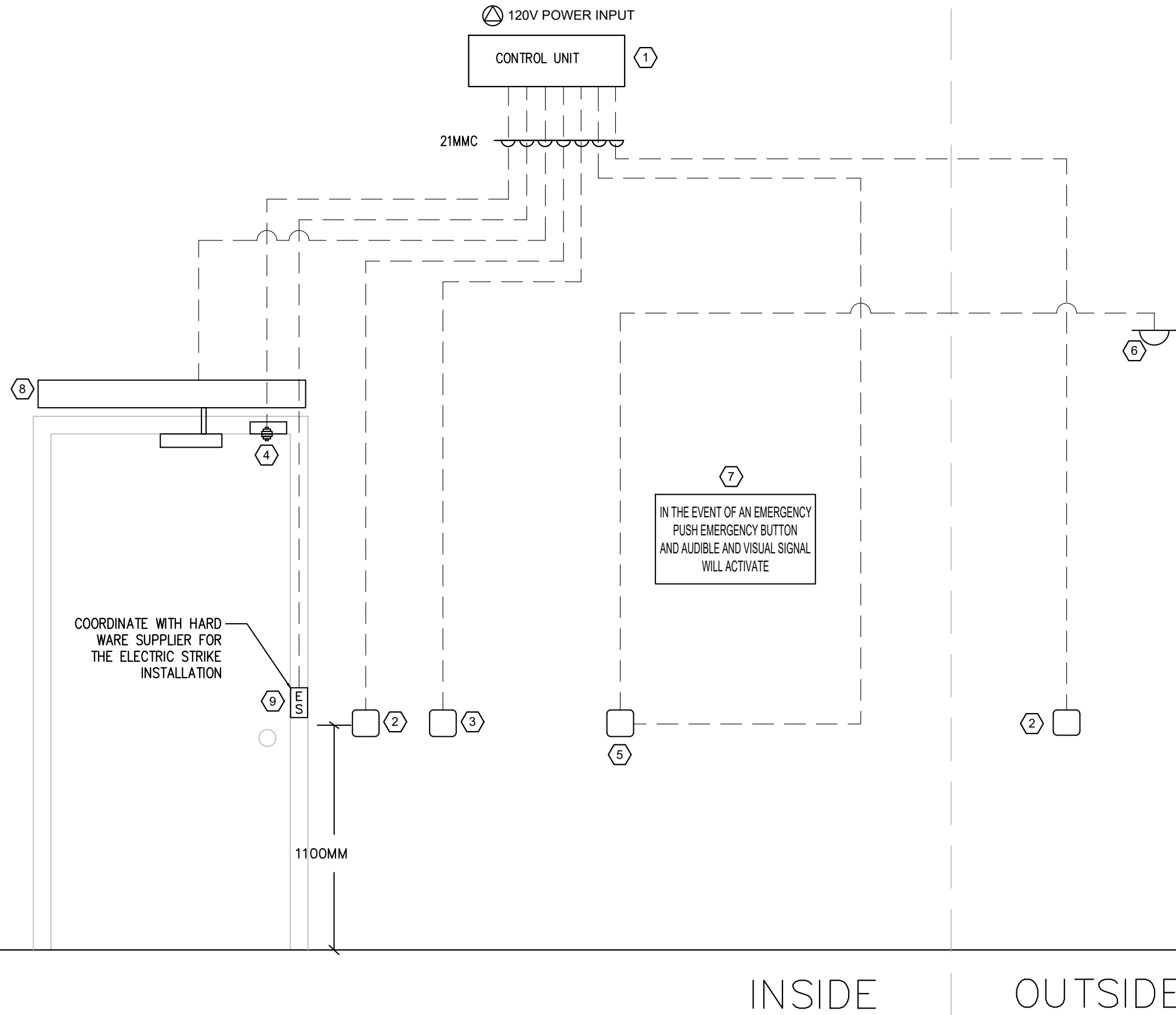
DESCRIPTION

EQUIPMENT PACKAGE:

- MULTI-FUNCTION RELAY
- VERTICAL SURFACE MOUNTED PUSH TO OPEN
- PUSH TO LOCK PLATE WITH ENCLOSURE AND SIGN
- DOOR CONTACT
- 'PRESS FOR EMERGENCY ASSISTANCE' AND 'ASSISTANCE REQUESTED' LED ANNUNCIATOR WITH SOUNDER
- 'ASSISTANCE REQUIRED' DOME LIGHT WITH SOUNDER MOUNTED ABOVE THE DOOR OUTSIDE OF THE WASHROOM
- EMERGENCY ASSISTANCE SIGN
- DOOR OPERATOR
- ELECTRIC STRIKE

NOTES:

- DOOR HARDWARE AND DOOR MOTORS SHALL BE SUPPLIED AND INSTALLED BY DOOR HARDWARE, CONDUIT AND WIRING TO THE MOTORS SHALL BE BY THE ELECTRICAL CONTRACTOR.
- ALL ROUGH-INS AND CONDUIT BY THE ELECTRICAL CONTRACTOR. COORDINATE WITH THE ROUGH-IN LOCATION FOR THE DOOR PUSH BARS AND DOOR LOCK BUTTONS WITH INTERIOR DESIGNER/ARCHITECT.
- ALL DOOR CONTROL DEVICES INCLUDING DOOR PUSH BARS, LOCK BUTTONS AND EMERGENCY CALL ASSISTANCE DEVICES SHALL BE SUPPLIED AND INSTALLED DOOR HARDWARE.
- FINAL CONNECTIONS TO THE DOOR CONTROL DEVICES SHALL BE COMMISSIONED BY THE AUTHORIZED MANUFACTURER TECHNICIAN. ALL COSTS SHALL BE INCLUDED IN THIS CONTRACT.
- LOW VOLTAGE CABLES C/W CONDUIT SHALL BE SUPPLIED AND INSTALLED BY DOOR HARDWARE. CONDUIT WITH PULL STRING SHALL BE BY THE ELECTRICAL CONTRACTOR.
- COORDINATE WITH ARCHITECT AND DOOR HARDWARE CONTRACTOR FOR THE EXACT REQUIREMENTS.
- ALL CONDUIT AND BACK BOXES WITH PULL CORDS AND WIRES ARE TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ELECTRICIAN IS TO CONFIRM ALL WIRE LOCATIONS WITH THE AUTO DOOR OPERATOR SUPPLIER PRIOR TO PULLING WIRES.



3
E-07
BARRIER FREE WASHROOM EMERGENCY CALL ASSISTANCE AND DOOR CONTROL DETAIL
N.T.S.

CLIENT

MUNICIPALITY OF CASSELMAN

PROJECT NORTH

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PROJECT

1 INDUSTRIEL STREET
OFFICE FIT-UP

DRAWING

ELECTRICAL DETAILS

PROJECT No:	MRK-23002008-A0	REVISION:	
DRAWN:	KL	DATE:	MAY 2023
APPROVED:	DL	SCALE:	AS SHOWN
DRAWING No:			

E-07

[illegible]

1. GENERAL REQUIREMENTS:		4.3.4. CATEGORY 6+ – 400MHZ AND A DATA RATE OF 2.4GB/S 4.3.5. CATEGORY 6 – 250MHZ AND A DATA RATE OF 2.4GB/S		SITE WITH THE OWNER BEFORE ORDERING FURNITURE ADAPTER.																12.9. VERTICAL CABLE MANAGERS: 12.9.1.CONSTRUCTED OF MINIMUM 16 GA (0.060") STEEL WITH STIFFENERS RIVETED/WELDED INSIDE FOR ADDITIONAL STRENGTH. 12.9.2. PROVIDE SIZE OF 6" (152mm) / 10" (254mm) / 12" (305mm) WIDE VERTICAL CABLE MANAGER. REFER TO LAN ROOM LAYOUT QUANTITY. 12.9.3. MANAGEMENT PANELS SHALL HAVE A HINGED DOOR WITH NONMAGNETIC CLOSING MECHANISM. A FULLY SHIELDED MAGNETIC CLOSING MECHANISM SHALL ALSO BE ACCEPTED. 12.9.4. OPENINGS FOR CABLE ROUTING SHALL HAVE GROMMETS TO ENSURE SMOOTH TRANSITION OF THE CABLES. 12.9.5. MANAGEMENT PANELS SHALL HAVE LANCETS ALONG THE BACK OF THE CABLE MANAGER TO ALLOW FOR THE FASTENING OF THE CABLE(S) TO THE OUTSIDE OF THE MANAGER ITSELF. 12.10. HORIZONTAL CABLE MANAGERS: 12.10.1. WELDED CONSTRUCTION, FABRICATED OF A MINIMUM OF 16 GA (0.060") STEEL AND SHALL BE A MINIMUM OF 2U AND 76mm (3"J). 12.10.2. PANEL SHALL HAVE HINGED COVER WITH NONMAGNETIC CLOSING MECHANISM. A FULLY SHIELDED MAGNETIC CLOSING MECHANISM SHALL ALSO BE ACCEPTED. 12.10.3. OPENINGS FOR CABLE ROUTING SHALL HAVE GROMMETS TO ENSURE SMOOTH TRANSITION OF THE CABLES. 12.10.4. INSTALL ONE HORIZONTAL CABLE MANAGER PER ONE PATCH PANEL AND EVERY NETWORK SWITCH WHEN NO RACK ELEVATION IS PROVIDED, OTHERWISE QUANTITIES ON RACK ELEVATION DRAWING SHALL SUPERCEDE THIS REQUIREMENT. 12.11. VERTICAL POWER DISTRIBUTION UNIT (PDU): 12.11.1. FABRICATED FROM 18 GA (0.048") STEEL AND MOUNTABLE INTO 19" EIA CABINET FRAMES OR NETWORK RACKS. 12.11.2. EACH POWER BAR SHALL HAVE 16 NEMA 5–20, 12 IEC C13, AND 2 IEC C19 OUTPUT RECEPTACLES AND COME WITH A MINIMUM OF 3 METERS (10 FEET) CORD AND NEMA L14–30P INPUT PLUG. 12.11.3. SHIELDED CORD FEATURES A 300V CAPACITY, 100% COVERAGE ALUMINUM FOIL–POLYESTER TAPE SHIELD, 7 X 28 AWG TINNED COPPER DRAIN WIRE (20 AWG), AND A DURABLE PVC OUTER COATING. 12.11.4. FEATURES BREAKER PROTECTION WITH RESET BUTTON, THREE–STAGE SURGE PROTECTION, FUSED AND NON–SWITCHED WITH ILLUMINATED POWER SWITCH SHOWING POWER "ON". 12.11.5. THE POWER BAR(S) SHALL BE UL/ULC LISTED. 12.11.6. INSTALL ONE (1) VERTICAL POWER DISTRIBUTION UNIT PER ONE NETWORK RACK/CABINET WHEN NO RACK ELEVATION IS PROVIDED, OTHERWISE QUANTITIES ON RACK ELEVATION DRAWING SHALL SUPERCEDE THIS REQUIREMENT. 12.11.7. VERTICAL PDUs ARE TO BE MOUNTED ON THE REAR SIDES OF THE RACK WITH THE CORD END LOCATED AT THE BOTTOM OF THE RACK TO CONNECT TO CLIENT SUPPLIED UPS. 12.12. HORIZONTAL POWER DISTRIBUTION UNIT (PDU): 12.12.1. FABRICATED FROM 18 GA (0.048") STEEL AND MOUNTABLE INTO 19" EIA CABINET FRAMES OR NETWORK RACKS. 12.12.2. EACH POWER BAR SHALL HAVE A MINIMUM 8 NEMA 5–20 OUTPUT RECEPTACLES AND COME WITH A MINIMUM OF 3 METERS (10 FEET) CORD AND NEMA L5–30P INPUT PLUG. 12.12.3. SHIELDED CORD FEATURES A 100V CAPACITY, 100% COVERAGE ALUMINUM FOIL–POLYESTER TAPE SHIELD, 7 X 28 AWG TINNED COPPER DRAIN WIRE (20 AWG), AND A DURABLE PVC OUTER COATING. 12.12.4. FEATURES BREAKER PROTECTION WITH RESET BUTTON, THREE–STAGE SURGE PROTECTION. 12.12.5. THE POWER BAR(S) SHALL BE UL/ULC LISTED. 12.12.6. INSTALL ONE (1) HORIZONTAL POWER DISTRIBUTION UNIT PER ONE NETWORK RACK/CABINET WHEN NO RACK ELEVATION IS PROVIDED, OTHERWISE QUANTITIES ON RACK ELEVATION DRAWING SHALL SUPERCEDE THIS REQUIREMENT. 12.12.7. HORIZONTAL PDUs ARE TO BE MOUNTED ON THE REAR SIDES OF THE RACK WITH THE CORD END LOCATED AT THE BOTTOM OF THE RACK TO CONNECT TO CLIENT SUPPLIED UPS. 13. REMOVAL OF CABLES: 13.1. THE COMMUNICATIONS CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL EXISTING DATA, VOICE, AND COAXIAL HORIZONTAL CABLING AND ACCESSORIES, EXCEPT FOR THOSE CABLES THAT PASS THROUGH THE SPACE. 13.2. THE COMMUNICATIONS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF REMOVED CABLES WHICH ARE TO BE RETAINED AND REINSTALLED. THE COMMUNICATIONS CONTRACTOR IS RESPONSIBLE FOR THE REPAIRS OR REPLACEMENT OF DAMAGED EQUIPMENT WITHOUT ADJUSTMENT TO THE CONTRACT PRICE. 14. COMMUNICATIONS PATHWAYS: 14.1. CABLE TRAYS AND CONDUITS: COMMUNICATIONS CONTRACTOR SHALL UTILIZE CABLE TRAYS, CONDUITS, FURNITURE FEEDS AND RACEWAYS PROVIDED BY DIVISION 16 (ELECTRICAL) FOR COMMUNICATIONS CABLE PATHWAYS. EXERCISE CAUTION WHEN PULLING CABLES IN PATHWAYS TO AVOID DAMAGE TO ANY EXISTING CABLES AND FOLLOW THE MANUFACTURER'S MAXIMUM PULL–FORCE AND MINIMUM BEND RADIUS. 14.3. J–HOOK SUPPORT: WHERE CABLE TRAYS AND CONDUITS HAVE NOT BEEN PROVIDED, J–HOOK SUPPORT IS TO BE INSTALLED BY COMMUNICATIONS CONTRACTOR AT A 4" (MAXIMUM) INTERVAL. CABLES SHALL BE RUN SUCH THAT THE SAG BETWEEN SUPPORTS DOES NOT EXCEED 4". SECURE ALL CABLES TO J–HOOKS WITH VELCRO. ALL CABLES SHALL BE COMPLETELY SUPPORTED BY J–HOOKS SO AS TO NOT TRANSFER ANY WEIGHT TO EXISTING FIXTURES OR STRUCTURES IN THE CEILING SPACE. COMMUNICATIONS CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIAL AND ACCOUNT FOR ANY LABOUR INVOLVED. ALL J–HOOKS ARE TO BE INSTALLED PARALLEL TO BUILDING LINES. 14.4. INNERDUCT: COMMUNICATIONS CONTRACTOR SHALL PROVIDE INNERDUCT TO PROTECT FIBER EXCEPT WHERE A DEDICATED FIBER CONDUIT IS INSTALLED THAT IS 1.5" IN DIAMETER OR LESS, OR WHERE ARMORED FIBER CABLE IS SPECIFIED. INNERDUCT SHALL BE CMP (F76) RATED. FIBER OPTIC CABLES SHALL BE COMPLETELY PROTECTED WITH INNERDUCT FOR THE ENTIRE LENGTH OF THE CABLE RUN. COMMUNICATIONS CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIAL AND ACCOUNT FOR ANY LABOUR INVOLVED. ALL J–HOOKS ARE TO BE INSTALLED PARALLEL TO BUILDING LINES. 14.5. NO. OF CABLES AT 70% FILL RATE:																																																																																																																																																
1.1. THIS DOCUMENT SPECIFIES THE USE OF AN END TO END STRUCTURED CABLING SOLUTION AS MANUFACTURED, WARRANTED, AND CERTIFIED BY A SINGLE MANUFACTURER. THE ACCEPTABLE MANUFACTURERS ARE AS FOLLOWS: BELDEN, COMMScope, PANDUIT, OR HUBBELL. NO SUBSTITUTION IS ALLOWED. WORK DONE UNDER THIS SECTION SHALL INCLUDE FURNISHING OF LABOUR, MATERIALS, AND EQUIPMENT REQUIRED FOR INSTALLATION, TESTING, AND PUTTING INTO PROPER OPERATION A COMPLETE COMMUNICATIONS SYSTEMS AS SHOWN, AS SPECIFIED AND AS OTHERWISE REQUIRED.		4.4. DATA CABLES: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE.		7.4. CEILING MOUNTED OUTLETS TO BE: 7.4.1. 1–PORT OR 2–PORT SURFACE MOUNT BOXES, AS INDICATED ON DRAWINGS. COLOUR TO BE WHITE.		10.5. A GREEN JACKETED #6 AWG STRANDED COPPER CONDUCTOR SHALL BE USED TO GROUND THE TELECOMMUNICATIONS GROUNDING SYSTEM TO ALL TELECOMMUNICATIONS RACKS, CABINETS, METALLIC PATHWAYS (INCLUDING CABLE TRAYS, CONDUITS, ETC.) AND METALLIC SHEATH OF ALL BACKBONE CABLES (USE APPROPRIATE MANUFACTURER'S BOND CLAMP).		10.6. THE COMMUNICATIONS CONTRACTOR SHALL PROVIDE ONE (1) RACK GROUNDING STRIP C/W # 6 AWG GREEN GROUNDING WIRE CONNECTION BACK TO GROUNDING BUSBAR FOR EACH COMMUNICATIONS RACKS, CABINETS, AND CABLE TRAYS AS DEPICTED ON I.T. CLOSET DETAILED LAYOUT. DO NOT DAISY CHAIN.		10.7. THE COMMUNICATIONS CONTRACTOR SHALL PROVIDE ONE (1) RACK JUMPER KIT FOR EACH PIECE OF NETWORK EQUIPMENT.		10.8. THE COMMUNICATIONS CONTRACTOR SHALL UTILIZE THREAD FORMING SCREWS, BONDING SCREWS, AND ANY OTHER HARDWARE NECESSARY TO COMPLETE THE GROUND SYSTEM.		11. FIRE STOPPING: 11.1. ALL OPENINGS ARE TO BE "FIRE STOPPED" AS REQUIRED PER THE BUILDING AND ELECTRICAL CODES. INSTALL NON–PERMANENT CSA APPROVED INTUMESCENT FIRE STOPPING TO CAP ALL EMPTY SLEEVES AND AROUND CABLES THAT ARE PASSING THROUGH SLEEVES/CORE HOLES LOCATED IN I.T. CLOSET AND TEL. RISER ROOM. ALL FIRE STOPPING MUST MEET OR EXCEED APPLICABLE FEDERAL, PROVINCIAL AND LOCAL BUILDING CODES.		11.2. THE COMMUNICATIONS CONTRACTOR SHALL MAKE GOOD ALL FIRE STOPPING AND WATER PROOFING WHERE FIRE STOPPING AND/OR WATER PROOFING HAS BEEN DISTURBED DURING CABLE REMOVAL, OR WHERE FIRE STOPPING AND/OR WATER PROOFING WAS NON–EXISTENT.		11.3. THE COMMUNICATIONS CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, PRODUCT DATA AND DOCUMENTATION FOR FIRE STOPPING AND/OR WATER PROOFING DEVICES PROPOSED FOR USE. INCLUDE ANY FIRE RETARDANT PAINTS TO BE USED.		12. TELECOMMUNICATIONS RACKS, CABLE MANAGERS, POWER BARS AND PLYWOOD BACKBOARD: 12.1. COMMUNICATIONS CONTRACTOR TO SUPPLY AND INSTALL THE BELOW EQUIPMENT AS SPECIFIED IN THE COMMUNICATIONS DRAWINGS. COMMUNICATIONS CONTRACTOR TO REUSE EXISTING EQUIPMENT AS INDICATED ON THE COMMUNICATIONS DRAWINGS. 12.2. UTILIZE PROPER FASTENERS FOR THE VERTICAL CABLE MANAGERS, POWER BARS AND ALL ACCESSORIES AS PER THE MANUFACTURER'S RECOMMENDATIONS.		12.3. WALL MOUNTED BRACKET: 12.3.1.ALL WALL MOUNT COMMUNICATIONS BRACKETS TO BE SUPPLIED FOR THIS PROJECT SHALL BE BLACK, 19" MOUNTING, WALL MOUNTED WITH SWING OPEN CAPABILITY. 12.3.2. BRACKETS SHALL HAVE 10U MOUNTING SPACE, WITH AN ADJUSTABLE DEPTH UP TO 20". 12.3.3. CONSTRUCTION SHALL CONSIST OF A MINIMUM OF 16GA (0.060") STEEL. 12.3.4. THE WALL MOUNT BRACKETS SHALL BE TAPPED WITH MOUNTING HOLES AS PER EIA–310–C, SIZE 10–32. 12.4. WALL MOUNTED RACK: 12.4.1.STANDARD SWING OUT, 482 MM (19") HINGED RACK, WELDED FRAME CONSTRUCTED OF MINIMUM 11 GA (0.120") STEEL. 12.4.2. RACKS SHALL HAVE A MINIMUM OF 45 STANDARD EIA VERTICAL RACK POSITIONS WITH PERMANENTLY MARKED U–SPACING IDENTIFICATION. 12.4.3. MOUNTING HOLES AS PER EIA–310–C, SIZE 10–32 TAPPED DOUBLE SIDED. 12.4.4. ALL EQUIPMENT RACKS SHALL BE SECURED TO THE WALL (AND FLOOR WHERE APPLICABLE) WITH PROPERLY SIZED HARDWARE. RACKS SHALL MOUNT TO COMMUNICATIONS PLYWOOD BACKBOARD AND ON TOP OF THE FINISHED FLOOR IN ALL TELECOMMUNICATIONS SPACES WHERE APPLICABLE. 12.4.5. RACKS SHALL BE COMPLETE WITH A MINIMUM OF ONE (1) DUAL BOLT GROUND LUG MOUNTING POSITION.		12.5. WALL MOUNTED CABINET: 12.5.1.WALL MOUNTED 482 MM (19") DOUBLE SWING OUT CABINET TO ACCOMMODATE A MINIMUM 16 STANDARD EIA VERTICAL RACK POSITIONS SHALL BE USED. 12.5.2. FULLY WELDED, FABRICATED FROM A MINIMUM OF 16GA. (0.060") STEEL. 12.5.3. LEXAN FRONT DOOR, 12.5.4. SOLID SIDE PANELS, 12.5.5. 10–32 TAPPED MOUNTING ANGLE STYLE, 12.5.6. HINGED CABINET BODY, 12.5.7. MINIMUM OF ONE (1) 75 C.F.M OR GREATER COOLING FAN, 12.5.8. VERTICAL CABLE MANAGEMENT PANELS WITH HINGED DOORS WITH NONMAGNETIC CLOSING MECHANISMS, AND 12.5.9. ONE (1) DUAL BOLT GROUND LUG		12.6. FLOOR MOUNT 2–POST RACK: 12.6.1.FLOOR MOUNTED, 482mm (19") TWO–POST FRAME WITH WELDED FRAME CONSTRUCTED OF MINIMUM 11 GA. (0.120") STEEL. 12.6.2. FRAME SHALL HAVE A 45 STANDARD EIA VERTICAL RACK POSITIONS WITH PERMANENTLY MARKED U–SPACING IDENTIFICATION. MOUNTING HOLES AS PER EIA–310–C. 12.6.3. 2–POST RACK SHALL BE COMPLETE WITH A MINIMUM OF ONE (1) DUAL BOLT GROUND LUG MOUNTING POSITION. FRAME SHALL BE PROPERLY LEVELED ONCE IN FINAL POSITION ON TOP OF THE FINISHED FLOOR IN I.T. ROOM. 12.6.4. PROVIDE TWO (2) VERTICAL POWER DISTRIBUTION UNITS (PDU's) PER RACK. PDU's TO BE INSTALLED AT THE REAR OF THE RACK. 12.7. FLOOR MOUNT 4–POST RACK: 12.7.1.FLOOR MOUNTED, 482 MM (19") FOUR–POST FRAME WITH WELDED FRAME CONSTRUCTED OF MINIMUM 11 GA (0.120") STEEL. 12.7.2. FRAME SHALL HAVE A MINIMUM OF 45 STANDARD EIA VERTICAL RACK POSITIONS WITH PERMANENTLY MARKED U–SPACING IDENTIFICATION. 12.7.3. MOUNTING HOLES AS PER EIA–310–C, SIZE 10–32 TAPPED FRONT AND BACK RAILS. 12.7.4. FRAME SHALL BE COMPLETE WITH A MINIMUM OF ONE (1) DUAL BOLT GROUND LUG MOUNTING POSITION. 12.7.5. FRAME SHALL HAVE FOUR (4) LEVELING FEET & SHALL BE PROPERLY LEVELED ONCE IN FINAL POSITION ON TOP OF THE FINISHED FLOOR IN ALL TELECOMMUNICATIONS SPACES.		12.8. FLOOR MOUNT ENCLOSED CABINET: 12.8.1.FLOOR MOUNTED, 482 MM (19") FOUR–POST FRAME WITH WELDED FRAME CONSTRUCTED OF MINIMUM 11 GA (0.120") STEEL. 12.8.2. FRAME SHALL HAVE A MINIMUM OF 44 STANDARD EIA VERTICAL RACK POSITIONS WITH PERMANENTLY MARKED U–SPACING IDENTIFICATION. 12.8.3. MOUNTING HOLES AS PER EIA–310–C, SIZE 10–32 TAPPED FRONT AND BACK RAILS. 12.8.4. FRAME SHALL HAVE REMOVABLE POSITIONS FOR CABLE ENTRY & COOLING FANS AT TOP AS WELL AS ADEQUATE OPENING IN BASE OF FRAME FOR AIR DISTRIBUTION & CABLE ENTRY. 12.8.5. CABINETS SHALL BE COMPLETE WITH A MINIMUM OF ONE (1) DUAL BOLT GROUND LUG MOUNTING POSITION. 12.8.6. FRAME SHALL HAVE FOUR (4) LEVELING FEET & SHALL BE PROPERLY LEVELED ONCE IN FINAL POSITION ON TOP OF THE FINISHED FLOOR IN ALL TELECOMMUNICATIONS SPACES. 12.8.7. CABINETS SHALL BE CANDED TOGETHER WITH PROPER GANGLING KIT WHEREVER TWO OR MORE CABINETS ARE POSITIONED IN A SIDE–BY–SIDE CONFIGURATION.		9.1. UTP COPPER PATCH CORDS: ALL PATCH CORDS SHALL BE CONNECTED IN THE TELECOM ROOM TO THE CLIENT SUPPLIED ACTIVE EQUIPMENT USING 8 POSITION 4–PAIR PATCH CORDS, WITH A SMALL OUTSIDE DIAMETER. THE PATCH CORDS SHALL BE CMR RATED, FT4, AND STAMPED ACCORDINGLY, AND SHALL BE CONSISTENT WITH THE GRADE AND MANUFACTURER OF THE CABLE BEING WARRANTED. PATCH CORDS TO HAVE STRANDED COPPER CONDUCTORS (WHERE SYSTEM DICTATES) AND DESIGNED TO PROVIDE A MATED–CONNECTION PERFORMANCE THAT EXCEEDS THE REQUIREMENTS PER ANSI/TIA/EIA–568–B. PATCH CORDS TO BE FACTORY ASSEMBLED AND NOT SITE PREPARED, COMPLETE WITH SNAGLESS BOOT. THE PATCH CORDS SHALL BE: 9.1.1. AT THE LAN ROOM – QUANTITIES AS PER TOTAL NO. OF CABLES INSTALLED. PATCH CORDS LENGTHS ARE TO BE COORDINATED WITH THE IT REPRESENTATIVE. PATCH CORDS COLOUR TO BE: <table><thead><tr><th></th><th>LENGTH</th><th>CABLE DESIGNATION</th><th>TERMINATION</th><th>COLOUR</th></tr></thead><tbody><tr><td>BLUE</td><td>DATA 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>YELLOW</td><td>WIRELESS ACCESS POINTS 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>WHITE</td><td>VOICE 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>GREEN</td><td>AUDIO/VISUAL 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>GREY</td><td>SECURITY 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>BLACK</td><td>INTER–CABINET CONNECTIVITY 10 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr></tbody></table> 9.1.2. AT THE WORKSTATION – QUANTITIES AS PER TOTAL NO. OF CABLES INSTALLED. PATCH CORD LENGTHS ARE DEPENDENT ON THE TYPICAL LOCATIONS OF THE FURNITURE ADAPTER ON SYSTEMS FURNITURE. COORDINATE PATCH CORD LENGTH WITH THE IT REPRESENTATIVE PRIOR TO ORDERING. PATCH CORD COLOUR TO BE: <table><thead><tr><th></th><th>LENGTH</th><th>CABLE DESIGNATION</th><th>TERMINATION</th><th>COLOUR</th></tr></thead><tbody><tr><td>BLUE</td><td>DATA 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>YELLOW</td><td>WIRELESS ACCESS POINTS 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>WHITE</td><td>VOICE 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>GREEN</td><td>AUDIO/VISUAL 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>GREY</td><td>SECURITY 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr><tr><td>BLACK</td><td>INTER–CABINET CONNECTIVITY 15 FEET</td><td></td><td>RJ45/RJ45</td><td></td></tr></tbody></table> 9.2. OPTICAL FIBRE PATCH CORDS: ALL OPTICAL FIBER BACKBONE CABLE STRANDS SHALL BE CONNECTED TO THE CLIENT SUPPLIED ACTIVE EQUIPMENT USING FIBER PATCH CORDS. THE FIBER PATCH CORDS SHALL BE CMR RATED, FT4, AND STAMPED ACCORDINGLY. FIBER PATCH CORDS SHALL BE CONSISTENT WITH THE GRADE AND MANUFACTURER OF THE FIBER CABLES THAT IS BEING WARRANTED. 9.2.1. DUPLEX FIBRE PATCH CORDS QUANTITIES AND LENGTHS ARE AS FOLLOWS: <table><thead><tr><th></th><th>INSTALL AT:</th><th>TYPE</th><th>LENGTH</th><th>END 1</th></tr></thead><tbody><tr><td>END 2</td><td>SM</td><td></td><td></td><td></td></tr><tr><td>SC</td><td>TR #1</td><td>MM</td><td>62.5/125 UM</td><td>7 FEET SC</td></tr><tr><td>SC</td><td>TR #</td><td>MM</td><td>50/125 UM 1GB</td><td>7 FEET SC</td></tr><tr><td>SC</td><td>TR #1</td><td>MM</td><td>50/125 UM 10GB</td><td>7 FEET SC</td></tr><tr><td>SC</td><td>TR #1</td><td></td><td></td><td></td></tr></tbody></table>			LENGTH	CABLE DESIGNATION	TERMINATION	COLOUR	BLUE	DATA 10 FEET		RJ45/RJ45		YELLOW	WIRELESS ACCESS POINTS 10 FEET		RJ45/RJ45		WHITE	VOICE 10 FEET		RJ45/RJ45		GREEN	AUDIO/VISUAL 10 FEET		RJ45/RJ45		GREY	SECURITY 10 FEET		RJ45/RJ45		BLACK	INTER–CABINET CONNECTIVITY 10 FEET		RJ45/RJ45			LENGTH	CABLE DESIGNATION	TERMINATION	COLOUR	BLUE	DATA 15 FEET		RJ45/RJ45		YELLOW	WIRELESS ACCESS POINTS 15 FEET		RJ45/RJ45		WHITE	VOICE 15 FEET		RJ45/RJ45		GREEN	AUDIO/VISUAL 15 FEET		RJ45/RJ45		GREY	SECURITY 15 FEET		RJ45/RJ45		BLACK	INTER–CABINET CONNECTIVITY 15 FEET		RJ45/RJ45			INSTALL AT:	TYPE	LENGTH	END 1	END 2	SM				SC	TR #1	MM	62.5/125 UM	7 FEET SC	SC	TR #	MM	50/125 UM 1GB	7 FEET SC	SC	TR #1	MM	50/125 UM 10GB	7 FEET SC	SC	TR #1				4.5. WIRELESS ACCESS POINT (W.A.P.): DATA: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE. COMMUNICATIONS CONTRACTOR TO PROVIDE A MINIMUM OF 20 FEET SLACK AT THE OUTLET LOCATION FOR CLIENT TO HAVE THE FLEXIBILITY TO RELOCATE THE OUTLET. 4.6. VOICE CABLES: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE. 4.7. AUDIO VISUAL (AV) CABLES: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE. 4.8. SECURITY CABLES: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE. 4.9. INTER–CABINET CABLES: UTP, 24 AWG SOLID CONDUCTOR, CMP CABLE. CABLE COLOUR TO BE BLUE. 4.10. CATV CABLE: RG–6 COAXIAL CABLE, CMP CABLE.		5. VERTICAL/BACKBONE AND INTERCONNECTIVITY TRANSMISSION MEDIA: 5.1. THE COMMUNICATIONS CONTRACTOR SHALL SUPPLY BACKBONE CABLING AS REQUIRED BY THE CONTRACT DOCUMENTS. THE COMMUNICATIONS CONTRACTOR SHALL USE PATHWAYS (BY DIVISION 16) TO DISTRIBUTE THE CABLES THROUGHOUT THE FACILITY. WHERE THE CABLES LEAVE THE PATHWAYS AND EXTEND TO THE TERMINATION POINT THEY SHALL USE J–HOOKS AS SPECIFIED. 5.2. THE COMMUNICATIONS CONTRACTOR SHALL VERIFY ALL BACKBONE CABLE RUN LENGTHS ON SITE PRIOR TO ORDERING. 5.3. OPTICAL FIBRE BACKBONE CABLE: 5.3.1. ALL FIBRE OPTIC CABLES SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF EIA/TIA–568 C–3. THE CABLES SHALL HAVE SEQUENTIAL LENGTH MARKINGS PRINTED ON THE CABLE JACKET. THE CABLES SHALL HAVE A CRUSH RESISTANCE OF 2000 N/CM AS PER EIA–455–41. THE CABLES SHALL HAVE AN IMPACT RESISTANCE OF 1000 IMPACTS WITH 1.6 N–M AS PER EIA–455–25. THE CABLES SHALL HAVE A MINIMUM FLEXURE RATING OF 2000 CYCLES AS PER EIA–455–104. 5.3.2. ALL COMPONENTS OF THE MULTIMODE FIBER OPTIC BACKBONE CHANNEL SHALL MEET THE MINIMUM PERFORMANCE CHARACTERISTICS OF: 5.3.3.1. OM5 – 50/125UM LASER OPTIMIZED WITH MINIMUM BANDWIDTH OF 2000MHZ/KM AT 850NM & 500MHZ/KM AT 1300NM UP TO 550 METERS. 5.3.3.2. OM3 – 50/125UM LASER OPTIMIZED WITH MINIMUM BANDWIDTH OF 2000MHZ/KM AT 850NM & 500MHZ/KM AT 1300NM UP TO 300 METERS. 5.3.2. ALL COMPONENTS OF THE SINGLEMODE FIBER OPTIC BACKBONE CHANNEL SHALL MEET THE MINIMUM PERFORMANCE CHARACTERISTICS OF: 5.3.2.1. OS1 – 8/125UM TO 9/125UM WITH MINIMUM BANDWIDTH STIPULATED BY THE CABLE MANUFACTURER AT 1310NM & 1550NM. CABLE/PATCH CORD COMPONENT SHALL BE ZERO WATER PEAK DESIGN ALLOWING USE OF ENTIRE SPECTRUM FROM 1260NM TO 1620NM. 5.4. MULTIPAIR COPPER BACKBONE CABLE: 5.4.1. THE MULTIPAIR CABLE SHALL MEET THE ICEA S–910–661–1997 AND BE COMPLIANT WITH BELLCORE AND REA SPECIFICATIONS. THE MULTIPAIR CABLE SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF EIA/TIA–568B. THE CABLE SHALL HAVE 24 AWG SOLID COPPER CONDUCTORS AND POLYOLEFIN INSULATION. THE CABLE CORE SHALL CONSIST OF 25 PAIR SUB–UNITS. THE CABLE SHALL HAVE SEQUENTIAL LENGTH MARKINGS PRINTED ON THE CABLE JACKET. THE CABLE SHALL HAVE ONE JACKET EQUIPPED WITH A JACKET SPLITTING CORD. 5.4.2. ALL COMPONENTS OF THE MULTIPAIR COPPER BACKBONE CHANNEL SHALL MEET THE MINIMUM PERFORMANCE CHARACTERISTICS OF: 5.4.2.1. CATEGORY 5E – 100MHZ AND A DATA RATE OF 1.0GB/S 5.4. CATV COAXIAL BACKBONE CABLE: COAXIAL BACKBONE CABLE FROM I.T. CLOSET TO SERVICE PROVIDER DEMARCATION TO BE ARRANGED BY THE OWNER'S I.T. REPRESENTATIVE WITH THE SERVICE PROVIDER. 6. MODULAR JACKS: 6.1. MODULAR JACKS MUST BE MATCHED APPROPRIATELY WITH THE CABLES TO ENSURE THAT END TO END VENDOR WARRANTIES WILL BE APPLICABLE. 6.2. MODULAR JACKS TO BE T568A 8P8C MDVO STYLE (OR EQUIVALENT) MODULAR JACK FOR WALL MOUNTED OUTLETS AND T568A 8P8C KEYSTONE (OR EQUIVALENT) STYLE FOR FLOOR AND MEETING ROOM TABLE OUTLETS. THE GRADE AND MANUFACTURER SHALL BE CONSISTENT WITH THE CABLING BEING WARRANTED. 6.3. ALL HORIZONTAL CABLING SHALL BE TERMINATED AT EACH END WITH THE MODULAR JACK COLOURS AS FOLLOWS: <table><thead><tr><th></th><th>CABLE DESIGNATION</th><th>COLOUR</th></tr></thead><tbody><tr><td></td><td>DATA</td><td>BLUE</td></tr><tr><td></td><td>WIRELESS ACCESS POINTS</td><td>YELLOW</td></tr><tr><td></td><td>VOICE</td><td>WHITE</td></tr><tr><td></td><td>AUDIO/VISUAL</td><td>GREEN</td></tr><tr><td></td><td>SECURITY</td><td>RED</td></tr><tr><td></td><td>INTER–CABINET CONNECTIVITY</td><td>BLACK</td></tr></tbody></table> 6.4. BLANK INSERT TO BE PROVIDED WHERE PORTS DO NOT CONTAIN JACKS. COLOUR SHALL MATCH FACEPLATE.			CABLE DESIGNATION	COLOUR		DATA	BLUE		WIRELESS ACCESS POINTS	YELLOW		VOICE	WHITE		AUDIO/VISUAL	GREEN		SECURITY	RED		INTER–CABINET CONNECTIVITY	BLACK	7. COMMUNICATION OUTLETS AND ACCESSORIES: 7.1. WALL OUTLETS TO BE: 7.1.1. 3–PORT AND 1–PORT DECORA + MODULES. COLOUR TO MATCH DIVISION 16 (ELECTRICAL) UNLESS OTHERWISE NOTED. COLOUR TO BE VERIFIED BY INTERIOR DESIGNER PRIOR TO PURCHASE AND INSTALLATION. 7.1.2. SOME LOCATIONS ON THE FLOOR PLAN MAY INDICATE A WALL MOUNT TELEPHONE. PROVIDE A WALL MOUNT FACEPLATE SUITABLE FOR WALL MOUNTING A TELEPHONE SET IN THESE LOCATIONS. 7.2. FLOOR AND MEETING ROOM TABLE OUTLETS TO BE: 7.2.1. 3–PORT KEYSTONE DECORA + KEYSTONE MODULES. COLOUR TO MATCH DIVISION 16 (ELECTRICAL) UNLESS OTHERWISE NOTED. COLOUR TO BE VERIFIED BY INTERIOR DESIGNER PRIOR TO PURCHASE AND INSTALLATION. 7.3. SYSTEM FURNITURE OUTLETS TO BE: 7.3.1. 3–PORT MODULAR FURNITURE ADAPTER (IF SYSTEM FURNITURE HAS A STANDARD OPENING FOR COMMUNICATIONS CABLING) OR 1–PORT SIDE ENTRY BOX (IF SYSTEM FURNITURE HAS NO OPENING FOR COMMUNICATIONS CABLING) OR TEKION FURNITURE ADAPTER (IF THE SYSTEM FURNITURE IS TEKION). COMMUNICATIONS CONTRACTOR TO CONFIRM SYSTEM FURNITURE TYPE ON		1.2. WHILE EVERY ATTEMPT HAS BEEN MADE TO ENSURE ALL INFORMATION IS CORRECT AT THE TIME OF PUBLICATIONS, THE PRODUCTS SPECIFIED ARE AVAILABLE, AND THAT THE PART NUMBER IDENTIFIED ARE CORRECT, IT IS THE RESPONSIBILITY OF THE COMMUNICATIONS CONTRACTOR TO VERIFY ALL PART NUMBER AND TO REPORT AND ERRORS AND/OR OMISSIONS IN THE DRAWINGS AND SPECIFICATIONS WITH THEIR BID SUBMISSIONS. 1.3. THE COMMUNICATIONS CONTRACTOR SHALL SUPPLY AND INSTALL A COMPLETE STRUCTURED CABLING SOLUTION BASED ON A PHYSICAL STAR WIRING TOPOLOGY THAT IS DESIGNED IN ACCORDANCE WITH, AND SUPPORTED BY A MANUFACTURER BACKED CERTIFICATION AND WARRANTY AS SPECIFIED HEREIN. 1.4. THE COMMUNICATIONS CONTRACTOR IS REQUIRED TO BE ON SITE DURING EACH PHASE/MOVE. THEY SHOULD PROVIDE FOR EIGHT (8) HOURS SUPPORT ON EACH OF THE PHASES/MOVES ON WEEKENDS. THE COMMUNICATIONS CONTRACTOR SHALL INCLUDE IN THEIR BID ALL NECESSARY ALLOWANCES FOR OVERTIME WORK AFTER REGULAR HOURS AND/OR WEEKENDS AS DICTATED BY THE PROJECT SCHEDULE. 1.5. THE COMMUNICATIONS CONTRACTOR SHALL BE RESPONSIBLE FOR THE ASSEMBLY OF THE COMMUNICATIONS SYSTEM AND PROTECTION OF THE MATERIAL AND EQUIPMENT AND RELATED ITEMS UNTIL PROJECT OUT OVER. ANY DAMAGE TO MATERIALS AND EQUIPMENT SHALL BE THE LIABILITY OF THE COMMUNICATIONS CONTRACTOR. ALL DAMAGE SHALL BE REPAIRED OR AT THE CLIENT'S REQUEST, THE EQUIPMENT SHALL BE REPLACED AT NO EXTRA CHARGE TO THE CLIENT. 1.6. PROVIDE EQUIPMENT, MATERIALS, AND LABOUR NOT SPECIFICALLY MENTIONED OR SHOWN WHICH MAY BE NECESSARY TO PERFECT ALL PARTS OF THIS INSTALLATION AND IN COMPLIANCE WITH REQUIREMENTS STATED OR REASONABLY INFERRED BY THE CONTRACT DOCUMENTS. 1.7. PRIOR TO SUBMITTING THEIR TENDER RESPONSE, THE COMMUNICATIONS CONTRACTOR SHALL PERFORM A SITE SURVEY TO FAMILIARIZE THEMSELVES WITH THE SITE AND ALL CONDITIONS OF THE SITE AFFECTED BY THE PROPOSED WORK. NO CLAIMS FOR EXTRA PAYMENT WILL BE CONSIDERED BECAUSE OF FAILURE TO DO SO.		2. SCOPE OF WORK 2.1. THIS PROJECT CONSISTS OF THE SUPPLY AND INSTALLATION OF AN END TO END STRUCTURED CABLING SOLUTION TO SUPPORT DATA AND VOICE APPLICATIONS, CATV CABLING SYSTEM APPLICATIONS, INTRA–BUILDING BACKBONE CABLING CONSISTING OF MULTIPAIR COPPER CABLING AND INTRA–BUILDING BACKBONE CABLING CONSISTING OF FIBER OPTIC CABLING. THIS SOLUTION SHALL BE INSTALLED, TESTED AND WARRANTED TO A UTP STANDARD CONSISTENT WITH THE GRADE OF CABLE BEING PROVIDED AS DETAILED IN ANSI/TIA–568–C.0, 568–C.1, 568–C.2, AND 568–C.3. 2.2. THE COMMUNICATIONS CONTRACTOR IS RESPONSIBLE TO KEEP THE WORKPLACE CLEAN, SAFE, AND FREE FROM ALL DEBRIS. ALL DEBRIS MUST BE REMOVED ON A DAILY BASIS. 2.3. THE COMMUNICATIONS CONTRACTOR IS RESPONSIBLE FOR THE STORAGE, HANDLING, DELIVERY AND INSTALLATION OF ALL MATERIALS USED IN THE PERFORMANCE OF THE WORK. 2.4. ALL CABLE PAIRS MUST BE TERMINATED AT EACH END USING EIA/TIA T568A, UNLESS OTHERWISE SPECIFIED. 2.5. THE CABLE LENGTH TO THE FARTHEST WORK AREA FROM THE I.T. CLOSET WILL BE LIMITED TO 90 METERS (295 FEET). COMMUNICATIONS CONTRACTOR TO PROVIDE A 10 FOOT SERVICE LOOP ON ALL CABLES AT EACH END UNLESS OTHERWISE NOTED. IT IS THE RESPONSIBILITY OF THE COMMUNICATIONS CONTRACTOR TO NOTIFY THE COMMUNICATION ENGINEER'S REPRESENTATIVE IMMEDIATELY UPON DISCOVERY OF ANY CABLE RUN EXCEEDING 90m (295 FEET).		3. BREAKOUT PRICING: 3.1. COMMUNICATIONS CONTRACTOR TO PROVIDE A UNIT PRICE TO SUPPLY AND INSTALL ONE (1) CABLE C/W PERIPHERALS FOR COMPLETE CONNECTIVITY, TERMINATED, TESTED AND LABELED. COMMUNICATIONS CONTRACTOR TO ASSUME THAT CABLE LENGTHS WILL BE APPROXIMATELY 250 FEET AND THAT WORK WILL BE DONE DURING REGULAR HOURS. 3.1.1. ADD _____ DELETE _____ 3.2. COMMUNICATIONS CONTRACTOR TO PROVIDE A UNIT PRICE TO SUPPLY AND INSTALL ONE (1) RG–6 COAXIAL CMP CABLE C/W PERIPHERALS FOR COMPLETE CONNECTIVITY, TERMINATED, TESTED AND LABELED. COMMUNICATIONS CONTRACTOR TO ASSUME THAT CABLE LENGTHS WILL BE APPROXIMATELY 250 FEET AND THAT WORK WILL BE DONE DURING REGULAR HOURS. 3.2.1. ADD _____ DELETE _____ 3.3. COMMUNICATIONS CONTRACTOR TO PROVIDE A UNIT PRICE TO SUPPLY AND INSTALL ONE (1) CABLE C/W PERIPHERALS FOR COMPLETE CONNECTIVITY, TERMINATED, TESTED AND LABELED. COMMUNICATIONS CONTRACTOR TO ASSUME THAT CABLE LENGTHS WILL BE APPROXIMATELY 250 FEET AND THAT WORK WILL BE DONE DURING AFTER HOURS. 3.3.1. ADD _____ DELETE _____ 3.4. COMMUNICATIONS CONTRACTOR TO PROVIDE A UNIT PRICE TO SUPPLY AND INSTALL ONE (1) RG–6 COAXIAL CMP CABLE C/W PERIPHERALS FOR COMPLETE CONNECTIVITY, TERMINATED, TESTED AND LABELED. COMMUNICATIONS CONTRACTOR TO ASSUME THAT CABLE LENGTHS WILL BE APPROXIMATELY 250 FEET AND THAT WORK WILL BE DONE DURING AFTER HOURS. 3.4.1. ADD _____ DELETE _____ 3.5. COMMUNICATIONS CONTRACTOR SHALL PROVIDE A SEPARATE PRICE TO SUPPLY AND INSTALL ONE HUNDRED (100) ADDITIONAL CABLES. COMMUNICATIONS CONTRACTOR TO ASSUME THAT CABLE LENGTHS WILL BE APPROXIMATELY 250 FEET. LOCATIONS TO BE DETERMINED ON SITE WITH CLIENT. 3.6. COMMUNICATIONS CONTRACTOR SHALL PROVIDE AN ALTERNATE PRICE TO SUPPLY AND INSTALL A CATEGORY 6 CABLING SOLUTION. 4. HORIZONTAL TRANSMISSION MEDIA: 4.1. THE COMMUNICATIONS CONTRACTOR SHALL SUPPLY HORIZONTAL CABLING AS REQUIRED BY THE CONTRACT DOCUMENTS. THE COMMUNICATIONS CONTRACTOR SHALL USE PATHWAYS (BY DIVISION 16) TO DISTRIBUTE THE CABLES THROUGHOUT THE FACILITY. WHERE THE CABLES LEAVE THE PATHWAYS AND EXTEND TO THE TERMINATION POINT THEY SHALL USE J–HOOKS AS SPECIFIED. 4.2. COMMUNICATIONS CONTRACTOR TO PROVIDE A 12 FOOT SERVICE LOOP AT EACH END ON ALL CABLES, UNLESS OTHERWISE NOTED. 4.3. ALL COMPONENTS OF THE HORIZONTAL CHANNEL SHALL MEET THE MINIMUM PERFORMANCE CHARACTERISTICS OF: 4.3.1. CATEGORY 6A+ – 750MHZ AND A DATA RATE OF 10GB/S 4.3.2. CATEGORY 6A+ – 625MHZ AND A DATA RATE OF 10GB/S 4.3.3. CATEGORY 6A – 500MHZ AND A DATA RATE OF 10GB/S	
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DIV 27 COMMUNICATIONS SPECIFICATIONS CONTINUATION

1. LABELLING:
- 1.1. LABELING: ALL LABELING SHALL BE PANDUIT PAN-CODE IDENTIFICATION PRODUCTS FOR NETWORK SYSTEMS UNLESS OTHERWISE INDICATED. LABELING SHALL:
- 1.1.1. INCLUDE VINYL, MACHINE PRINTED WRAP-AROUND LABELS WITHIN 4 INCHES OF THE ENDS OF EVERY CABLE.
- 1.1.2. INCLUDE VINYL OR PVC MACHINE PRINTED LABELS AT ALL PATCH PANELS, IDC TERMINATION BLOCKS, WRING BLOCKS, FACEPLATES, AND EACH END OF THE TELECOMMUNICATIONS CONDUIT.
- 1.1.3. CONVENTION SHALL FOLLOW ANSI/TIA-606-B "ADMINISTRATION STANDARD FOR TELECOMMUNICATIONS" AND AS PER CLIENT'S PREFERRED LABELING SCHEME. COMMUNICATIONS CONTRACTOR TO COORDINATE ON SITE WITH THE OWNER'S I.T. REPRESENTATIVE FOR ANY PREFERRED LABELING SCHEME.
- 1.1.4. HAND-WRITTEN LABELS ARE NOT PERMITTED.

- 1.2. PROVIDE 25% ADDITIONAL LABELS TO BE LEFT IN EACH TELECOMMUNICATIONS ROOM ON SITE FOR FUTURE GROWTH.

14. CLOSE-OUT DOCUMENTATION:

- 14.1. CABLE TESTING:
- 14.1.1. 100% OF CABLES INSTALLED SHALL BE TESTED AND MUST PASS THE REQUIREMENTS OF THE STANDARDS AS DEFINED WITHIN THIS DOCUMENT. THE COMMUNICATIONS CONTRACTOR SHALL ALSO CERTIFY 100% OF THE INSTALLED CABLES. ANY FAILING CABLES MUST BE DIAGNOSED, AND HAVE CORRECTIVE ACTION TAKEN. THE CORRECTIVE ACTION SHALL BE FOLLOWED WITH A NEW TEST TO PROVE THAT THE CORRECTED LINK MEETS THE PERFORMANCE REQUIREMENTS. THE FINAL AND PASSING TEST RESULT OF THE TESTS FOR ALL LINKS SHALL BE PROVIDED IN THE TEST RESULT DOCUMENTATION.
- 14.1.2. THE COMMUNICATIONS CONTRACTOR IS REQUIRED TO SUBMIT A CABLE TEST REPORT BASED ON THE CABLE SCHEDULE TO THE COMMUNICATIONS ENGINEER'S REPRESENTATIVE FOR APPROVAL. THE REPORT SHOULD INDICATE FOR EACH INDIVIDUAL CABLE, THE TIME AND DATE OF THE SUCCESSFUL TEST AND THE SIGNATURE OF THE TECHNICIAN WHO PERFORMED THE TEST, LOCATION, CABLE TYPE, CABLE NUMBER AS PER THE CABLE SCHEDULE, AND TESTER MAKE AND MODEL.
- 14.1.3. THE COMMUNICATIONS CONTRACTOR TO USE A LEVEL III TESTER THAT IS CAPABLE OF TESTING THE SPECIFIED CABLE TO THE PERFORMANCE LEVEL(S) INDICATED IN THIS DOCUMENT. THE TESTER SHOULD HAVE THE LATEST VERSION OF FIRMWARE AND SOFTWARE TO TEST THE UTP CABLING SYSTEM.

- 14.2. AS-BUILT DRAWINGS:--
- 14.2.1. THE COMMUNICATIONS CONTRACTOR SHALL BE SUPPLIED WITH, UPON WRITTEN REQUEST, A SOFT COPY OF DRAWINGS BY THE COMMUNICATION ENGINEER'S REPRESENTATIVE FOR THE PURPOSE OF CREATING AS-BUILT DRAWINGS. THE COMMUNICATIONS CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS IDENTIFYING 100% OF THE INSTALLED CABLES (DATA AND WIRELESS ACCESS POINT), VOICE AND COAXIAL OUTLETS AND PATCH PANEL/IDC CONNECTIONS). THE AS-BUILTS SHALL INCLUDE ALL ADDITIONAL CABLES INSTALLED DURING THE PROJECT.
- 14.2.2. IF THE COMMUNICATIONS CONTRACTOR CANNOT COMPLY WITH THIS REQUIREMENT, WILL TRANSFER ALL HAND-DRAWN AS-BUILTS TO AUTOCAD. THE COST FOR THIS SERVICE SHALL BE BASED ON PER DIEM RATES AT THE TIME OF COMPLETION. THE COMMUNICATIONS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THIS WORK.

- 14.3. CERTIFICATIONS AND WARRANTY:
- 14.3.1. THE COMMUNICATIONS CONTRACTOR IS REQUIRED TO PROVIDE A MINIMUM OF A 3-YEAR, UNCONDITIONAL, PARTS AND LABOUR WARRANTY FOR ALL EQUIPMENT AND LABOUR PROVIDED UNDER THIS CONTRACT FROM THE DATE OF SUBSTANTIAL COMPLETION, FOR EACH COMMUNICATIONS CABLING SYSTEM.
- 14.3.2. COMMUNICATIONS CONTRACTOR SHALL BE CURRENTLY AUTHORIZED AND CERTIFIED BY THE END TO END STRUCTURED CABLING SYSTEM SOLUTION MANUFACTURER TO INSTALL AND WARRANTY THE SOLUTION. THE COMMUNICATIONS CONTRACTOR'S TECHNICIANS DESIGNATED TO THE PROJECT MUST BE FULLY TRAINED BY THE MANUFACTURER TO INSTALL THE RESPECTIVE SYSTEM. THE COMMUNICATIONS CONTRACTOR SHALL BE CAPABLE OF ISSUING WARRANTY ON MATERIALS AND WORKMANSHIP. THEY MUST ALSO ISSUE A MANUFACTURER'S WARRANTY IN NAME OF THE CLIENT. THE WARRANTY SHALL SPAN A DURATION OF 25 YEARS AND COVER ALL PRODUCTS WITHIN THE SYSTEM INCLUDING, BUT NOT LIMITED TO JACKS, CABLES, PATCH CORDS, AND CROSS CONNECTS. IN THE EVENT THAT THE CERTIFIED SYSTEM CEASES TO OPERATE, THE COMMUNICATIONS CONTRACTOR SHALL COMMIT TO PROMPTLY IMPLEMENT CORRECTIVE ACTION. RESPONSE TIME FOR WARRANTY ITEMS SHALL BE 24 HOURS.

- 14.4. THE PROJECT SHALL NOT BE CONSIDERED COMPLETE AND A HOLDBACK WILL BE RETAINED UNTIL THE CLIENT RECEIVES THE COMMUNICATION ENGINEER'S REPRESENTATIVE APPROVED CLOSE-OUT DOCUMENTATION PACKAGE. THE VALUE FOR THE CLOSE-OUT DOCUMENTATION PACKAGE FOR PAYMENT PURPOSES, SHALL BE SET AT 10% OF THE BASE CONTRACT OR \$10,000; WHICHEVER IS GREATER. THIS AMOUNT WILL BE WITHHELD FROM THE COMMUNICATIONS CONTRACTOR UNTIL TESTING AND CORRECTION OF DEFICIENCIES IS 100% COMPLETE.

- 14.5. THE COMMUNICATIONS CONTRACTOR SHALL PROVIDE THE CLIENT WITH A LAMINATED, FULL SIZE, AS-BUILT DRAWING FOR EACH FLOOR MOUNTED IN THAT FLOOR'S RESPECTIVE LAN ROOM. WHERE THERE ARE MULTIPLE LAN ROOMS PER FLOOR, PROVIDE ONE LAMINATED, FULL SIZE, AS-BUILT DRAWING IN EACH ROOM ON THAT FLOOR.

15. MISCELLANEOUS ITEMS:

- 15.1. COMMUNICATIONS COMPONENTS INCLUDING, BUT NOT LIMITED TO OUTLETS, DEVICES, RACKS, CABINETS, BRACKETS AND BACKBOARDS MAY BE/ON RELOCATED PRIOR TO INSTALLATION, FROM THE LOCATIONS SHOWN ON THE CONTRACT DOCUMENTS, TO A MAXIMUM DISTANCE OF 3.05m (10 FEET) WITHOUT ADJUSTMENT TO THE CONTRACT PRICE.

- 15.2. CABLES WILL BE SUPPORTED SUCH THAT A MINIMUM OF 3 INCHES OF CLEAR VERTICAL SPACE WILL BE MAINTAINED DIRECTLY ABOVE THE CEILING TILES. THIS CLEAR SPACE WILL BE FREE OF CABLES, RACEWAYS AND CABLES AND RACEWAYS SUPPORTS.

- 15.3. SPIRAL WRAP: CABLES RUNNING FROM SYSTEM FURNITURE FEED POINTS TO THE SYSTEM FURNITURE SHALL BE NEATLY WRAPPED. SIZE THE SPIRAL WRAPPED ACCORDING TO QUANTITY OF CABLES, NO CABLES SHALL BE EXPOSED. COORDINATE LOCATIONS ON ARCHITECTURAL DRAWINGS

- 15.4. CABLE BUNDLES AND TIES: CABLES SHALL BE ARRANGED IN BUNDLES OF NO MORE THAN 24 CABLES PER BUNDLE. CABLES SHALL BE SECURED IN BUNDLES WITH VELCRO TIE-WRAPPS. UNDER NO CIRCUMSTANCES ARE PLASTIC TIE-WRAPPS TO BE USED. IF PLASTIC TIE-WRAPPS ARE USED, THE COMMUNICATIONS CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE ALL AFFECTED CABLES AT THEIR OWN EXPENSE.

- 15.5. DIMENSIONS SHOWN ON DRAWINGS ARE APPROXIMATE. VERIFY DIMENSIONS BY REFERENCE TO SHOP DRAWINGS AND FIELD MEASUREMENTS.

- 15.6. QUANTITIES OR LENGTHS INDICATED IN ANY OF THE CONTRACT DOCUMENTS ARE APPROXIMATE ONLY AND SHALL NOT BE HELD TO GAUGE OR LIMIT THE WORK.

- 15.7. COMMUNICATIONS CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE FURNITURE AND CARPET INSTALLERS FOR FURNITURE COMMUNICATIONS OUTLETS CABLING CONNECTION.

END OF DIV 27 SPECIFICATIONS

DIV 28 SECURITY SPECIFICATIONS

16. GENERAL

17. THIS SPECIFICATION SHALL BE READ IN CONJUNCTION WITH PROJECT RELATED ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS INCLUDING DOOR HARDWARE SCHEDULES AND SPECIFICATIONS.

18. CONFORM TO THE REQUIREMENTS OF DIVISIONS 0 AND 1, WHICH APPLY TO AND FORM PART OF ALL SECTIONS OF THE WORK.

19. WHERE THERE IS A CONFLICT IN THE REQUIREMENTS OUTLINED IN THIS ELECTRONIC SAFETY AND SECURITY SPECIFICATIONS DOCUMENT, DIVISIONS 0 AND 1, ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS INCLUDING DOOR HARDWARE SCHEDULES AND SPECIFICATIONS THE MORE STRINGENT AND OR MORE ONEEROUS REQUIREMENT SHALL APPLY.

20. READ AND COMPLY WITH ALL SECTIONS OF THIS DOCUMENT.

21. REFER TO OTHER DIVISIONS AND SECTIONS TO ENSURE A COMPLETE AND OPERATIONAL SYSTEM.

22. PROVIDE ELECTRONIC SAFETY AND SECURITY COMPONENTS AND ACCESSORIES WHICH MAY NOT BE SPECIFICALLY SHOWN ON THE DRAWINGS OR STIPULATED IN THE SPECIFICATIONS, BUT ARE REQUIRED TO ENSURE COMPLETE, TURNKEY AND OPERATIONAL SYSTEMS.

23. PROVIDE ALL LABOUR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED FOR THE COMPLETE INSTALLATION, COMMISSIONING AND START-UP OF ELECTRONIC SAFETY AND SECURITY SYSTEMS CALLED FOR IN ALL SECTIONS OF THE CONTRACT DOCUMENTS.

24. PROVIDE ALL NECESSARY WIRING, CABLING, LABOUR, TOOLS, EQUIPMENT, AND ANCILLARY MATERIALS REQUIRED TO FURNISH AND INSTALL COMPLETE AND OPERATIONAL ELECTRONIC SAFETY AND SECURITY SYSTEMS.

25. SCOPE

26. THE ELECTRONIC SAFETY AND SECURITY SYSTEMS SHALL INCLUDE ALL COMPUTER HARDWARE AND SOFTWARE, CONTROL PANELS, INTERFACES, CARD READERS/KEYPADS, ACCESS CARDS, VIDEO RECORDERS, CAMERAS, ALARM SENSING DEVICES, COMMUNICATION DEVICES, ELECTRIC DOOR LOCKING HARDWARE, POWER SUPPLIES, CABLE/WIRE, CONDUIT, RACEWAYS, ENCLOSURES, MOUNTING HARDWARE, AND ALL OTHER EQUIPMENT AS INDICATED ON CONTRACT DRAWINGS AND AS SPECIFIED HEREIN. EXCEPT WHERE NOTED TO REUSE EXITING, ALL MATERIALS SHALL BE NEW, COMMERCIAL GRADE AND OF GOOD QUALITY.

27. ALL ELECTRONIC SAFETY AND SECURITY SYSTEMS SHALL BE TURNKEY COMPLETE AND FULLY OPERATIONAL. ALL ELECTRONIC SAFETY AND SECURITY SYSTEMS SHALL BE INTEGRATED AS PER THE CONTRACT DRAWINGS AND SPECIFICATIONS.

28. ALL CABLES SHALL BE INSTALLED VIA CONDUITS.

29. PROVIDE ALL CONDUIT UNLESS OTHERWISE NOTED.

30. SUPPLY AND INSTALL ALL CABLE SUPPORTS FOR ALL CABLING. ALL CABLE SUPPORTS SHALL BE INSTALLED FOLLOWING BUILDING LINES, AND IN ACCORDANCE WITH THE BUILDING'S REQUIREMENTS / GUIDELINES.

31. CO-ORDINATE ON SITE FOR INTERFERENCES AND WITH OTHER DISCIPLINES / TRADES. SUPPLY AND INSTALLATION OF ALL ACTIVE AND PASSIVE HARDWARE AND CABLES AS SPECIFIED WITHIN THIS DOCUMENT TO SUPPORT THE ELECTRONIC SAFETY AND SECURITY SYSTEMS.

32. WHERE ACTIVE AND PASSIVE HARDWARE AND CABLING IS NOT SPECIFIED BUT ARE REQUIRED TO MAKE THE ELECTRONIC SAFETY AND SECURITY SYSTEMS TURNKEY AND TO MEET THE INTENT, SUPPLY AND INSTALL SUCH ACTIVE AND PASSIVE HARDWARE AND CABLING AT NO EXTRA COST.

33. SUPPLY AND INSTALL ALL EQUIPMENT CABINETS, COMPLETE WITH ALL ACCESSORIES.

34. SUPPLY AND INSTALL ALL FIRE STOP MATERIALS / MECHANISMS FOR ALL PENETRATIONS.

35. WHILE EVERY ATTEMPT HAS BEEN MADE TO ENSURE ALL INFORMATION IS CORRECT AT THE TIME OF PUBLICATION, THE PRODUCTS SPECIFIED ARE AVAILABLE AND THAT THE PART NUMBERS IDENTIFIED ARE CORRECT, IT IS THE RESPONSIBILITY OF THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR TO VERIFY ALL PART NUMBERS AND TO REPORT ANY ERRORS AND OR OMISSIONS IN THIS SPECIFICATION WITH THEIR BID SUBMISSIONS.

36. DIMENSIONS SHOWN ON CONTRACT DRAWINGS ARE APPROXIMATE. VERIFY DIMENSIONS BY REFERENCE TO SHOP DRAWINGS AND FIELD MEASUREMENTS.

37. QUANTITIES OR LENGTHS INDICATED IN ANY OF THE CONTRACT DOCUMENTS ARE APPROXIMATE ONLY AND SHALL NOT BE HELD TO GAUGE OR LIMIT THE WORK.

38. INCLUDE IN BID ALL LABOUR, MATERIALS, PLANT, TRANSPORTATION, STORAGE COSTS, TRAINING, EQUIPMENT, INSURANCE, TEMPORARY PROTECTION, PERMITS, REVIEWS, BONDING, TAXES AND ALL NECESSARY AND RELATED ITEMS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL ELECTRONIC SAFETY AND SECURITY SYSTEMS.

39. INTENT

40. MENTION IN THE SPECIFICATIONS OR INDICATION ON THE DRAWINGS OF EQUIPMENT, MATERIALS, OPERATION AND METHODS, REQUIRES PROVISION OF THE QUALITY NOTED, THE QUANTITY REQUIRED, AND THE SYSTEMS COMPLETE IN EVERY RESPECT.

41. THE SPECIFICATIONS ARE AN INTEGRAL PART OF THE ACCOMPANYING DRAWINGS. ANY ITEM OR SUBJECT OMITTED FROM ONE OR THE OTHER, BUT WHICH IS EITHER MENTIONED OR REASONABLY IMPLIED, SHALL BE CONSIDERED AS PROPERLY AND SUFFICIENTLY SPECIFIED.

42. BE COMPLETELY RESPONSIBLE FOR THE ACCEPTABLE CONDITION AND OPERATION OF ALL SYSTEMS, EQUIPMENT AND COMPONENTS FORMING PART OF THE INSTALLATION OR DIRECTLY ASSOCIATED WITH IT. PROMPTLY REPLACE DEFECTIVE MATERIAL, EQUIPMENT AND REPAIR RELATED DAMAGES. THE REPLACEMENT OF EQUIPMENT AND REPAIR TO DAMAGES SHALL BE COORDINATED WITH OTHER TRADES COMPLETED IN A TIMELY FASHION SO AS NOT TO AFFECT THE COMPLETE CONSTRUCTION OF THE ELECTRONIC SAFETY AND SECURITY SYSTEMS AND OR WORK BY OTHERS.

43. LABOUR

44. COMPLY WITH ALL PROJECT JOB-SITE REQUIREMENTS FOR THE DURATION OF THE PROJECT.
45. DO NOT ASSIGN OR SUB-CONTRACT ANY WORK WITHOUT THE PRIOR WRITTEN CONSENT OF THE PROJECT MANAGER. A LIST OF SUB-CONTRACTORS SHALL BE SUBMITTED WITH THE TENDER RESPONSE.

46. FOR ALL WORK RELATED TO THIS PROJECT, THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL USE ONLY TRADESMEN WHO ARE FULLY TRAINED, QUALIFIED AND EXPERIENCED ON THE INSTALLATION AND COMMISSIONING OF THE ELECTRONIC SAFETY AND SECURITY SYSTEMS.
47. PROJECT MANAGEMENT

48. PROVIDE COMPLETE PROJECT MANAGEMENT FOR THIS PROJECT.

49. DEVELOP A DETAILED GANTT CHART PROJECT PLAN AND SUBMIT TO OWNER AND ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE FOR REVIEW AND APPROVAL PRIOR TO START OF PROJECT.

50. ATTEND AND CHAIR BIWEEKLY CONSTRUCTION MEETINGS FOR THE DURATION OF THE PROJECT. CONSTRUCTION MEETINGS SHALL BE ON SITE OR VIA CONFERENCE CALL AT THE OWNER'S AND OR ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE'S DISCRETION.

51. GENERATE AND SUBMIT DETAILED BIWEEKLY CONSTRUCTION PROGRESS REPORTS TO OWNER AND ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE. EACH PROGRESS REPORT SHALL INCLUDE ITEMIZED DETAILED DESCRIPTION AND EXTENT OF TASKS COMPLETED, ITEMIZED DETAILED DESCRIPTION AND QUANTIFICATION OF MATERIALS INSTALLED AND LABELED PHOTOS THAT CLEARLY SHOW THE EXTENT OF CONSTRUCTION PROGRESS.

52. DRAWINGS, CHANGES AND INSTALLATION

53. THE DRAWINGS ARE INTENDED TO SHOW THE GENERAL CHARACTER AND SCOPE OF THE WORK AND NOT THE EXACT DETAILS OF THE INSTALLATION. THE INSTALLATION SHALL BE COMPLETE WITH ALL ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIVE INSTALLATION.

54. THE LOCATION, ARRANGEMENT AND CONNECTION OF EQUIPMENT AND MATERIAL AS SHOWN ON THE DRAWINGS REPRESENT A CLOSE APPROXIMATION TO THE INTENT AND REQUIREMENTS OF THE CONTRACT. THE RIGHT IS RESERVED BY THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE TO MAKE REASONABLE CHANGES REQUIRED TO ACCOMMODATE CONDITIONS ARISING DURING THE PROGRESS OF THE WORK, AT NO EXTRA COST.

55. CERTAIN DETAILS INDICATED ON THE DRAWINGS ARE GENERAL IN NATURE AND SPECIFIC LABELED DETAIL REFERENCES TO EACH AND EVERY OCCURRENCE OF USE ARE NOT INDICATED, HOWEVER, SUCH DETAILS SHALL BE APPLICABLE TO EVERY OCCURRENCE ON THE DRAWINGS.

56. THE LOCATION AND SIZE OF EXISTING SERVICES SHOWN ON THE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL VERIFY THE ACTUAL LOCATION OF EXISTING SERVICES IN THE FIELD BEFORE WORK IS COMMENCED.

57. CHANGES AND MODIFICATIONS NECESSARY TO ENSURE CO-ORDINATION AND TO AVOID INTERFERENCE AND CONFLICTS WITH OTHER TRADES, OR TO ACCOMMODATE EXISTING CONDITIONS, SHALL BE MADE AT NO EXTRA COST TO THE CLIENT.

58. LEAVE AREAS CLEAR WHERE SPACE IS INDICATED AS RESERVED FOR FUTURE EQUIPMENT, AND EQUIPMENT FOR OTHER TRADES.

59. ADEQUATE SPACE AND PROVISIONS SHALL BE LEFT FOR REMOVAL OF COMPONENTS AND SERVICING OF EQUIPMENT, WITH MINIMUM INCONVENIENCE TO THE OPERATION OF SYSTEMS.

60. WHERE EQUIPMENT IS SHOWN TO BE 'ROUGHED IN ONLY' OBTAIN ACCURATE INFORMATION FROM THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.

61. LOCATION OF OUTLETS, LUMINAIRES, DIFFUSERS, GRILLES, REGISTERS, THERMOSTATS, SPRINKLERS AND ALL OTHER EQUIPMENT SHOWN ON DRAWINGS (IF SHOWN) IS DIAGRAMMATIC.

62. THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR, AT HIS EXPENSE, SHALL REMEDY ANY WORK NOT INSTALLED IN CORRECT LOCATION (AT THE SOLE DISCRETION OF THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE). THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR IS RESPONSIBLE TO MARK-OUT HIS WORK AND FULLY CO-ORDINATE WITH ALL OTHER TRADES. REVIEW WITH ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE PRIOR TO ROUGH IN. PREPARE DIMENSIONED LAYOUTS OF EACH ROOM PRIOR TO ROUGH IN. FOR REVIEW BY ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE. DO NOT PROCEED WITH ANY WORK UNTIL THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE HAS REVIEWED AND APPROVED THE LAYOUT DRAWINGS.
63. APPROVED EQUAL

64. WHEREVER THE TERM 'OR APPROVED EQUAL' IS USED HEREIN, IT IS TO BE UNDERSTOOD THAT REFERENCE TO THE SPECIFIED TRADE NAME, BRAND NAME, MANUFACTURER'S NAME, MODEL NUMBER AND OR CATALOGUE NUMBER HAS BEEN MADE SOLELY FOR THE PURPOSE OF INDICATING THE MINIMUM STANDARD OF QUALITY REQUIRED IN MATERIAL, WORKMANSHIP AND SERVICE. ANY PROPOSED ALTERNATE SHALL BE SUBMITTED FOR REVIEW AND ACCEPTANCE PRIOR TO PROCUREMENT AND INSTALLATION. THE REVIEW AND ACCEPTANCE SHALL BE AT THE SOLE DISCRETION OF THE OWNER AND THEIR ENGINEER'S REPRESENTATIVES.

65. PROPOSED SUBSTITUTIONS IN ORDER TO BE ASSESSED MUST INCLUDE THE FOLLOWING:

66. DESCRIPTION OF PROPOSED SUBSTITUTION.

67. RESPECTIVE COST OF ITEMS ORIGINALLY SPECIFIED AND THE PROPOSED SOLUTION.

68. COMPLIANCE WITH THE APPLICABLE BUILDING CODES, STANDARDS AND THE REQUIREMENTS OF JURISDICTIONAL AUTHORITIES.

69. AFFECT CONCERNING COMPATIBILITY WITH AND INTERFACE WITH ADJACENT BUILDING MATERIALS AND COMPONENTS.

70. COMPLIANCE WITH THE INTENT OF THE CONTRACT DOCUMENTS.

71. REASONS FOR THE REQUEST.

72. THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE'S DECISION REGARDING THE ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTION SHALL BE FINAL. SUBSTITUTIONS MAY BE ACCEPTED IF THE DELIVERY OF THE COMPONENT OR ITEM IS SUCH THAT IT WILL NOT JEOPARDIZE THE CONSTRUCTION SCHEDULE. OTHERWISE SUBSTITUTION WILL NOT BE ALLOWED.

73. MATERIALS AND EQUIPMENT SUPPLIED BY THIS DIVISION SHALL BE NEW AND FREE FROM DEFECTS.

74. ALL EQUIPMENT AND MATERIAL FOR WHICH THERE IS A LISTING SERVICE SHALL BEAR A UL/ULC AND OR CSA LABEL.

75. EQUIPMENT SHALL MEET ALL APPLICABLE FCC/CRTC REGULATIONS.

76. MATERIALS SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPED RATING OF 50 OR LESS, IN ACCORDANCE WITH NFPA 255.

77. CO-OPERATION WITH OTHER DIVISION

78. ELECTRONIC SAFETY AND SECURITY CABLING SHALL NOT TOUCH OR BE SUPPORTED FROM PIPING, DUCTWORK, CONDUITS, CEILING SUPPORTS OR ANY OTHER STRUCTURE / EQUIPMENT. ELECTRONIC SAFETY AND SECURITY CABLING SHALL BE SUPPORTED BY LADDER TRAY (WHERE PROVIDED) OR SHALL BE INSTALLED WITHIN CONDUIT (WHERE PROVIDED).

79. SUPPLY ALL ITEMS TO BE BUILT IN AMPLE TIME FOR RAPID PROGRESS OF THE WORK. SCHEDULE AND PROCEED WITH WORK AS REQUIRED TO SATISFY THE CONSTRUCTION SCHEDULE.

80. ALL CHANGES AND CONNECTIONS TO EXISTING SERVICES SHALL BE MADE ONLY IN A MANNER AND AT A TIME APPROVED BY THE SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE AND OR THE CLIENT SO AS TO AVOID ANY INTERRUPTION OF SUCH SERVICES DURING NORMAL WORKING HOURS. IF NECESSARY, CHANGES AND CONNECTIONS TO EXISTING SERVICES SHALL BE MADE OUTSIDE OF NORMAL WORKING HOURS, AT NO EXTRA COST TO THE CONTRACT.

81. WHERE CONNECTIONS ARE MADE TO EXISTING SERVICES, EXISTING FIRE STOPPING SHALL BE MADE GOOD UNDER THIS DIVISION.

82. PARTICULAR CARE SHALL BE TAKEN WITH IMPERIAL VERSUS METRIC CONVERSIONS. THIS APPLIES TO ALL SERVICES INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, MATERIAL AND SITE SERVICES IN BOTH NEW AND EXISTING INSTALLATIONS.

83. SCHEDULE, ACCESS, PROTECTION AND CLEAN-UP

84. THE CONSTRUCTION SCHEDULE PLACES RESTRICTIONS ON THE DURATION OF CONSTRUCTION WITHIN AREAS AND THE DURATION OF SHUT-DOWN OF EQUIPMENT. REFER TO THE GENERAL CONDITIONS FOR ALL REQUIREMENTS.

85. REFER TO THE GENERAL CONDITIONS AND CONFORM TO ALL

REQUIREMENTS.

86. REFER TO THE SECURITY AND PROTECTION REQUIREMENTS IN THE GENERAL CONDITIONS AND CONFORM TO ALL REQUIREMENTS. THERE SHALL BE NO SMOKING, AND THE SITE SHALL BE KEPT CLEAN AT ALL TIMES.

87. CUTTING, PATCHING AND REPAIRING

88. IT IS THE RESPONSIBILITY OF THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR TO PERFORM ALL CUTTING, PATCHING AND REPAIR RELATED TO THE ELECTRONIC SAFETY AND SECURITY SYSTEMS WORK INCLUDING ANY PENETRATIONS THROUGH WALLS OR FLOORS.

89. WHERE CUTTING, PATCHING AND REPAIR IS THE RESPONSIBILITY OF OTHER TRADES THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COST ASSOCIATED WITH CUTTING AND PATCHING RELATED TO THE ELECTRONIC SAFETY AND SECURITY SYSTEMS WORK INCLUDING ANY PENETRATIONS THROUGH WALLS OR FLOORS.

90. THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL PAINT ALL VISIBLE ELECTRONIC SAFETY AND SECURITY SYSTEMS CONDUIT TO MATCH EXISTING.

91. THE ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL COORDINATE THE COLOUR AND LOCATION OF ALL CONDUITS, SECURITY DEVICES AND THEIR HOUSING WITH ARCHITECT AND ARCHITECTURAL DRAWINGS ON SITE PRIOR TO INSTALLATION.

92. THIS DIVISION SHALL PROVIDE ITS OWN HOISTING FACILITIES.

93. HOISTING FACILITIES PROVIDED BY THE GENERAL CONTRACTOR MAY BE AVAILABLE FOR SUBCONTRACTORS' USE AT NO COST (VERIFY WITH GENERAL CONTRACTOR PRIOR TO BID, OR ASSUME THAT NO HOISTING FACILITIES ARE PROVIDED). IF HOIST FACILITIES ARE INADEQUATE THEN ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL PROVIDE AS REQUIRED. ELECTRONIC SAFETY AND SECURITY CONTRACTOR SHALL INFORM GENERAL CONTRACTOR(S) OF REQUIREMENTS BEFORE TENDER CLOSING DATE.

94. ALL EQUIPMENT, MATERIAL AND INSTALLATION SHALL CONFORM TO THE LATEST VERSION OF THE APPLICABLE CODES, STANDARDS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION. IN THE CASE OF CONFLICT OR DISCREPANCY THE MORE STRINGENT CODE, STANDARD OR REGULATION SHALL APPLY.

95. PROVIDE SECURITY TAMPERPROOF FASTENERS FOR ALL VISIBLE EXPOSED DEVICES, EQUIPMENT AND COMPONENTS IN ALL AREAS. COORDINATE FASTENER TYPE WITH THE OWNER.

96. FIRE STOP

97. PROVIDE FIRE STOP AROUND ALL CABLES AND ALL CONDUITS IN ALL FIRE RATED SEPARATIONS AND FIREWALLS TO FORM TIGHT BARRIERS TO RETARD THE PASSAGE OF FLAME AND SMOKE.

98. FIRE STOP MATERIALS AND SMOKE SEAL MATERIALS SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS, NATIONAL FIRE PROTECTION ASSOCIATION (NFPA CLASS "A").

99. ALL FIRE STOP SYSTEMS SHALL BE TESTED TO THE LATEST APPLICABLE STANDARDS.

100. OBTAIN AND PAY FOR ALL PERMITS AND REVIEW REQUIRED FOR WORK PERFORMED INCLUDING BUT NOT LIMITED TO REVIEW AND APPROVAL BY CSA AND OR LOCAL AUTHORITIES HAVING JURISDICTION. SUBMIT REQUIRED DOCUMENTS AND SHOP DRAWINGS TO AUTHORITIES HAVING JURISDICTION IN ORDER TO OBTAIN APPROVAL FOR THE WORK. PREPARE ANY ADDITIONAL INFORMATION, DETAILS AND DRAWINGS THAT THESE AUTHORITIES MAY REQUIRE.

101. SUBMIT DETAILED BIWEEKLY CONSTRUCTION PROGRESS REPORTS TO OWNER AND ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE. EACH PROGRESS REPORT SHALL INCLUDE ITEMIZED DETAILED DESCRIPTION AND EXTENT OF TASKS COMPLETED, ITEMIZED DETAILED DESCRIPTION AND QUANTIFICATION OF MATERIALS INSTALLED AND LABELED PHOTOS THAT CLEARLY SHOW THE EXTENT OF CONSTRUCTION PROGRESS.

102. KEEP THE SITE AND SURROUNDING AREA CLEAN, SAFE AND FREE FROM DEBRIS AT ALL TIMES.

103. ALLOW FOR THE REMOVAL AND RE-INSTALLATION OF ALL FLOOR/CEILING TILES IN AREAS AFFECTED BY THE INSTALLATION. THIS SHALL BE DONE ON A DAILY BASIS FOR ALL AREAS THAT ARE OCCUPIED DURING THE CONSTRUCTION PERIOD. OTHERWISE REMOVE AND RE-INSTALL THE TILES AFTER INSTALLATION IS COMPLETE.

104. REPLACE ALL SOILED AND OR DAMAGED CEILING TILES DURING THE INSTALLATION OF ANY WORK DESCRIBED IN THIS DOCUMENT. DAMAGES INCLUDE CHIPPING, BREAKING OR FINGERPRINTS.

105. RECTIFY ALL DAMAGES CAUSED DURING INSTALLATION. RECTIFICATION SHALL INCLUDE COMPLETE REPLACEMENT OF DAMAGED MATERIAL.

106. PROVIDE COMPLETE AND ADEQUATE TRAINING TO THE OWNER ON ALL ELECTRONIC SAFETY AND SECURITY SYSTEMS. TRAINING SHALL INCLUDE BUT NOT LIMITED TO THE OPERATIONS PERSONNEL ON THE OPERATION AND MAINTENANCE OF ALL ELECTRONIC SAFETY AND SECURITY SYSTEMS. ALL TRAINING SESSIONS ON MINIMUM 4 FLASH DRIVES FOR LATER USE BY OWNER.

107. RECORD DRAWINGS

108. PROVIDE DETAILED RECORD DRAWINGS OF ALL INSTALLED SYSTEMS. RECORD DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO, DETAILED RISER SCHEMATIC DRAWINGS SHOWING CONNECTIVITY OF ALL SYSTEMS, DETAILED FLOOR PLAN DRAWINGS SHOWING ALL INSTALLED DEVICES, DEVICES SCHEDULES, PROGRAMMING SCHEDULES, ETC. RECORD DRAWINGS SHALL BE PROVIDED IN AUTOCAD FORMAT ON FLASH DRIVE.

109. SHOP DRAWINGS

110. PROVIDE SHOP DRAWINGS FOR ALL MATERIALS FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT OF MATERIALS.

111. SHOP DRAWINGS SHALL INCLUDE BUT NOT LIMITED TO:

112. CATALOGUE DATA SHEETS FOR EACH PRODUCT THAT WILL BE PROVIDED BY THE CONTRACTOR

113. DETAILED SOHEMATIC RISER DRAWINGS CLEARLY INDICATING THE PHYSICAL AND LOGICAL CONNECTIVITY OF EACH SYSTEM AND HOW EACH PRODUCT WILL BE IMPLEMENTED IN THE PHYSICAL AND LOGICAL CONNECTIVITY OF EACH SYSTEM.

114. AN ITEMIZED SHOP DRAWING INDEX WITH A SUMMERY LIST OF ITEMS BEING SUBMITTED FOR REVIEW. THE LIST SHALL INDICATE ITEM NUMBER, ITEM MANUFACTURE AND MODEL NUMBER AND ITEM NAME AND A REVIEW COMMENTS COLUMN.

115. ALL ADDITIONAL REQUESTED INFORMATION AS DETERMINED BY THE ENGINEER'S REPRESENTATIVE

116. INSTALLATION OF ANY EQUIPMENT SHALL NOT START UNTIL AFTER THE ENGINEER'S REPRESENTATIVE HAS REVIEWED SHOP DRAWINGS.

117. WHEN REQUESTED, SHOP DRAWINGS SHALL BE SUPPLEMENTED BY DATA EXPLAINING THE THEORY OF OPERATION.

118. GROUNDING

119. ALL CABLES, AND EQUIPMENT SHALL BE BONDED TO GROUND AS PER APPLICABLE CODES AND STANDARDS.

120. PATHWAYS

121. NOT USED.

122. LABELING

123. A CLASS 3 SYSTEM OF ADMINISTRATION AS PER ANSI/TIA/EIA 606 STANDARDS SHALL BE UTILIZED.

124. ALL ELEMENTS OF EACH SYSTEM SHALL BE LABELED WITH UNIQUE IDENTIFIERS.
125. ALL CABLE AND EQUIPMENT LABELS SHALL MEET THE LEGIBILITY, DEFAACEMENT, AND ADHESION REQUIREMENTS SPECIFIED IN ANSI/UL 969. IN ADDITION THE LABELS SHALL MEET THE GENERAL EXPOSURE REQUIREMENTS IN ANSI/UL 969 FOR INDOOR AND OUTDOOR USE.
126. CABLE LABELS SHALL BE OF SELF-LAMINATING VINYL CONSTRUCTION WITH A WHITE PRINTING AREA AND A CLEAR TAIL THAT SELF LAMINATES THE PRINTED AREA WHEN WRAPPED AROUND A CABLE. THE CLEAR AREA SHOULD BE OF SUFFICIENT LENGTH TO WRAP AROUND THE CABLE AT LEAST ONE AND ONE-HALF TIMES. THE WIDTH SHALL BE SUFFICIENT TO ACCOMMODATE THE APPROPRIATE LABEL DESIGNATION.
127. ALL BACKBONE AND HORIZONTAL CABLES INCLUDING PATCH CORD LABELS SHALL BE PRINTED IN 10 POINT ARIAL NARROW, BLACK, BOLD FONT.
128. ALL EQUIPMENT LABELS SHALL BE PRINTED IN 14 POINT ARIAL NARROW, BLACK, BOLD FONT.
129. ALL HUB AND MAIN CABINETS LABELS SHALL BE BLACK LAMACOID PLATES WITH WHITE 60 POINT ARIAL NARROW, ENGRAVED UPPER CASE LETTERS ENCLOSED BY WHITE BORDER ON.
130. ALL LABELS SHALL BE MECHANICALLY PRINTED USING A LASER PRINTER. HAND-WRITTEN LABELS ARE NOT PERMITTED.
131. ALL LABELS SHALL BE VISIBLE WHEN INSTALLED.
132. COMMISSIONING
133. ALL DEVICES INCLUDING ALL WIRING SHALL BE TESTED INDIVIDUALLY AND AS INTEGRATED SYSTEMS.
134. IDENTIFY ALL COMPONENTS, FUNCTIONS AND SYSTEMS THAT SHALL BE COMMISSIONED.
135. DEVELOP DEVICE CHECKLISTS, FUNCTIONAL TEST FORMS AND SYSTEM INTEGRATION TEST FORMS THAT SHALL BE EXECUTED.
136. PERFORM PRE-START-UP TESTS, DEVICE TESTS, FUNCTIONAL TESTS, SYSTEM INTEGRATION TESTS. PERFORM RETESTS AS NECESSARY.
137. PROVIDE TESTING AND COMMISSIONING DOCUMENTATION IN SOFT AND PRINTED FORMAT FOR ALL SYSTEMS AND THEIR RELATED COMPONENTS TO THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE PRIOR TO THE COMPLETION OF THE PROJECT OR AT THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVES REQUEST. INCLUDE MAINTENANCE MANUALS AND OPERATING INSTRUCTIONS FOR CLIENT'S STAFF USE.

138. PRODUCT:

139. CONDUCTORS AND CABLES
140. SUPPLY AND INSTALL CONDUCTORS AND CABLES AS DETAILED IN CONTRACT DOCUMENTS AND AS REQUIRED AND AS RECOMMENDED BY THE MANUFACTURER TO ENSURE PROPER OPERATION ALL DEVICES AND SYSTEMS.
141. CONDUCTORS AND CABLES SHALL BE CMR WHERE INSTALLED COMPLETELY IN CONDUIT AND OR WHERE INSTALLED IN NON-PLENUM RATED AREAS. CONDUCTORS AND CABLES SHALL BE CMP WHERE NOT COMPLETELY INSTALLED IN CONDUIT AND OR INSTALLED IN PLENUM RATED AREAS. ALL CABLE SHALL CONFORM TO THE RECOMMENDATIONS OF THE MANUFACTURERS OF THE ELECTRONIC SAFETY AND SECURITY SYSTEMS.
142. CONDUCTORS AND CABLES SHALL BE OUTDOOR RATED WHERE INSTALLED OUTDOOR AND OR INSTALLED IN LOCATIONS WHERE THEY WILL BE EXPOSED TO WEATHER ELEMENTS.
143. PROVIDE AND INSTALL SHIELDED CABLES WHERE REQUIRED AND OR RECOMMENDED BY THE MANUFACTURER OF THE ELECTRONIC SAFETY AND SECURITY SYSTEMS.
144. ALL WIRING SHALL BE OF PROPER GAUGE, TYPE AND QUANTITY OF CONDUCTORS AS REQUIRED AND AS RECOMMENDED BY THE MANUFACTURER TO ENSURE PROPER OPERATION OF ELECTRONIC SAFETY AND SECURITY SYSTEMS AND PERIPHERAL DEVICES.
145. MAKE ANY NECESSARY CHANGES OR ADDITIONS TO ROUTING OF CABLES, PATHWAYS TO ACCOMMODATE STRUCTURAL, MECHANICAL, ELECTRICAL AND ARCHITECTURAL CONDITIONS. WHERE PATHWAYS OR CABLES ARE SHOWN DIAGRAMMATICALLY RUN THEM PARALLEL TO BUILDING COLUMNS. IF IT IS NECESSARY TO RUN CABLES OTHERWISE TO ACCOMMODATE ACCEPTABLE CABLE LENGTHS, WRITTEN PERMISSION MUST BE OBTAINED FROM THE ELECTRONIC SAFETY AND SECURITY ENGINEER'S REPRESENTATIVE PRIOR TO INSTALLATION.
146. ALL CONDUCTORS AND CABLES SHALL BE CSA APPROVED AND SHALL BE STAMPED ACCORDINGLY.
147. DOOR CONTACT: MINIMUM 4 CONDUCTOR, AWG 22 OR AS REQUIRED BASED ON DISTANCE FROM CONTROLLER.
148. MOTION DETECTOR, GLASS BREAK DETECTOR, KEYPAD: MINIMUM 4 CONDUCTOR, AWG 22 AS REQUIRED BASED ON DISTANCE FROM CONTROLLER.
149. CARD READER: MINIMUM 6 CONDUCTOR, AWG 22 SHIELDED CABLE.
150. ELECTRIC STRIKES, MAGLOCKS: MINIMUM 4 CONDUCTOR, AWG 18 CABLE.
151. VIDEO SURVEILLANCE CAMERAS: 4 PAIR CATEGORY 6 CABLE
152. INTERCOM AND MASER INTERCOMS: 4 PAIR CATEGORY 6 CABLE

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