

MECHANICAL/ELECTRICAL DRAWING LIST

M000	GENERAL NOTES & LEGENDS
M001	GENERAL MECHANICAL SPECIFICATIONS
M002	HVAC SPECIFICATIONS
M200	IT ROOM PROPOSED DRAINAGE PLAN
M300	IT ROOM PROPOSED HVAC PLAN
M301	IT ROOM MECHANICAL PROPOSED ROOF PLAN
M600	MECHANICAL SCHEDULE AND DETAILS

GENERAL NOTES

1. REFER TO SITE AND OWNER INSTRUCTIONS FOR PHASING AND STAGING.
2. CO-ORDINATE WITH THE STRUCTURAL TO PROVIDE OPENINGS AND SLEEVES THROUGH STRUCTURAL ELEMENTS WHERE REQUIRED.
3. SAW-CUT OR CORE BORE PENETRATIONS OF CONCRETE. DO NOT USE IMPACT HAMMERS, SEAL DUCTWORK & SLEEVES TO PREVENT LEAKAGE THRU FLOOR.
4. DO NOT SCALE DRAWINGS FOR INSTALLATION PURPOSES. OBTAIN DIMENSIONS FROM ARCHITECTURAL PLANS, MANUFACTURER'S SHOP DRAWINGS, AND ON SITE INSPECTIONS.
5. MECHANICAL, DIV. 2-14 AND ELECTRICAL TRADES SHALL WORK IN CONJUNCTION WITH ONE ANOTHER SO AS TO AVOID INTERFERENCES BETWEEN PIPING, DUCTWORK, CONDUIT, LIGHTING FIXTURES, ETC.
6. CO-ORDINATE WORK THROUGH THE GENERAL CONTRACTOR PRIOR TO INSTALLATION OF ANY MECHANICAL DUCTWORK AND CONTROLS. CO-ORDINATE WITH ARCHITECTURAL ELEVATIONS FOR ARCHITECTURAL, MECHANICAL, AND ELECTRICAL SPACE ALLOCATIONS.
7. PROPERLY SUPPORT CEILING MOUNTED EQUIPMENT AND ANY OTHER EQUIPMENT INDEPENDENT OF CEILING SUPPORT SYSTEM. REFER TO ARCHITECTURAL DETAILS AND CO-ORDINATE WITH STRUCTURAL TRADE.
8. REFER TO ARCHITECTURAL FOR OWNER SUPPLIED EQUIPMENT, CONFIRM MECHANICAL REQUIREMENTS AND PROVIDE TO SUIT.
9. REVIEW ARCHITECTURAL, ELECTRICAL, AND STRUCTURAL DRAWINGS AND PROVIDE ON SITE INSPECTIONS TO DETERMINE FULL EXTENT OF PROJECT PRIOR TO SUBMITTING BID.
10. MAINTAIN MECHANICAL SERVICES TO THE OCCUPIED AREA THROUGHOUT THE PHASING OF THE WORK. PROVIDE CONSTRUCTION VALVES, TEMPORARY DUCTWORK AND PIPING AS REQUIRED TO LIMIT THE SHUT DOWN OF SERVICES TO ONE TIME.
11. EXISTING MECHANICAL SERVICES SHOWN ON THESE DRAWINGS WERE TAKEN FROM THE ORIGINAL CONTRACT DRAWINGS AS LISTED BELOW. VERIFY EXACT SIZE AND LOCATION OF EXISTING SERVICES ON SITE. REMOVE ALL REDUNDANT SERVICES IN THE AREAS OF CONSTRUCTION.
12. ALL DRAWINGS ARE INTEGRATED WITH THE SPECIFICATIONS WHICH ACCOMPANY THEM. DO NOT CONSIDER THEM ALONE. ANY ITEM OR SUBJECT OMITTED FROM ONE BUT INCLUDED IN THE OTHER IS FULLY AND PROPERLY REQUIRED, WHEREVER DIFFERENCE OCCURS, THE MOST ONEROUS CONDITION GOVERNS.
13. SLEEVE AND SEAL PENETRATIONS OF EITHER FIRE OR SMOKE BARRIER RESISTANT WALLS AGAINST THE PASSAGE OF FLAME OR SMOKE W/ SUITABLE NON-COMBUSTIBLE MATERIALS EQUAL TO THE CONSTRUCTION TO BE PENETRATED.
14. AVOID ANY DIRECT CONTACT BETWEEN ANY PIPING, DUCTING AND ELECTRICAL CONDUIT SYSTEMS. TO PREVENT SOUND TRANSMISSION.
15. IF ANY AREAS ARE AFFECTED BY THE NEW SCOPE OF WORK, CARRY COSTS FOR THE REMOVAL AND INSTALLATION OF THE EXISTING CEILING TILES. REFER TO ARCHITECTURAL NEW REFLECTED CEILING PLAN FOR SCOPE OF NEW CEILING.
16. PROVIDE INSTALLATION COMPLETE AND FULLY FUNCTIONAL. PROVIDE ALL LABOR, MATERIALS, TOOLS, SERVICES, EQUIPMENT, ETC, AS REQUIRED.
17. PROVIDE ACCESS FOR SERVICING EQUIPMENT AS INDICATED, AS REQUIRED BY CODE AND AS RECOMMENDED BY THE MANUFACTURER.
18. PROVIDE ACCESS DOORS AS NECESSARY FOR ACCESS TO VALVES, DAMPERS, AND OTHER COMPONENTS REQUIRING MONITORING, INSPECTION, AND MAINTENANCE.
19. INSTALL EQUIPMENT, DUCTS, AND PIPES PARALLEL TO OR PERPENDICULAR TO BUILDING LINES, PROVIDE SPACE, UNIONS AND FLANGES FOR DISASSEMBLY. SERVICING AND REMOVAL OF EQUIPMENT.
20. REMOVE, REARRANGE AND/OR RELOCATE ANY OBSTRUCTIONS WHICH INTERFERE WITH INSTALLATION OF NEW WORK. OBTAIN OWNER'S PRIOR APPROVAL.
21. OBTAIN OWNER'S CONSENT FOR SHUTDOWN OF ANY PORTION OF EXISTING BUILDING SYSTEMS. COORDINATE WITH THE OWNER FOR TIME AND DURATION OF SERVICE INTERRUPTIONS, INCLUDE NOTICE TO PLUMB THE IN ADVANCE OF CONTRACT PRICE FOR WORK PERFORMED DURING NIGHTS, WEEK-ENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS AS NECESSARY TO MAINTAIN MECHANICAL SERVICES IN OPERATION.
22. WHEN A CONFLICT OCCURS BETWEEN INSTALLATION DETAILS, DIAGRAMS, ETC., INDICATED IN THE CONTRACT DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS, FOLLOW THE MANUFACTURER'S INSTRUCTIONS.
23. CONFORM TO CODES, APPLICABLE STANDARDS, BULLETINS ETC., AND REQUIREMENTS OF ALL INSPECTION AUTHORITIES FOR THE CITY OF HAMILTON.
24. DUE TO INCONSISTENT RECORD OF EXISTING SERVICES NOT ALL SERVICES MAY BE SHOWN, OR IF SHOWN MAY NOT BE ACCURATE. FIELD CONFIRM EXISTING SERVICES.
25. VERIFY CONNECTION POINTS TO EXISTING SERVICES ON SITE.
26. CHECK AND VERIFY LOCATION OF PIPES, DUCTS AND EQUIPMENT WITH OTHER TRADES TO PREVENT INTERFERENCE. REMOVAL OR RELOCATION OF ANY SUCH WORK INTERFERING WITH WORK OF OTHER TRADES IS THE RESPONSIBILITY OF THE MECHANICAL TRADE CONCERNED UNLESS OTHERWISE APPROVED IN WRITING.
27. BEFORE CUTTING ANY HOLES THROUGH THE EXISTING SLAB REFER TO STRUCTURAL DRAWINGS FOR GENERAL REQUIREMENTS.
28. PROVIDE SIGN IDENTIFYING LOCATION OF ALL VALVES INSTALLED IN CEILING SPACE.

GENERAL DEMOLITION NOTES

1. ENSURE THAT ALL EXISTING PIPING SERVING EXITING AREAS REMAIN IN SERVICE UNTIL THESE AREAS ARE RECONNECTED TO NEW SERVICES. ONLY THEN OBSOLETE PIPING IS TO BE REMOVED AS SHOWN.
2. FILL IN DISTURBED SURFACES AFTER PIPE REMOVAL OR REROUTING WITH APPROPRIATE MATERIAL TO MAINTAIN FIRE SEPARATION AND PATCHED TO MATCH EXISTING OR NEW.

DRAWING NOTES

- ① ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE ONTARIO BUILDING CODE, NFPA STANDARDS NO.'S 10, 13, & 14 AND TO THE LOCAL AUTHORITIES REQUIREMENTS.
- ② THE CONTRACTOR SHALL COORDINATE THE INSTALLATION WITH THE WORK OF OTHER TRADES. PROVIDE HORIZONTAL AND/OR VERTICAL OFFSETS AS REQUIRED TO SUIT THIS COORDINATION.

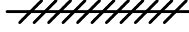
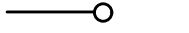
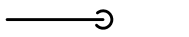
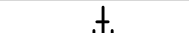
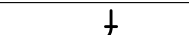
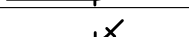
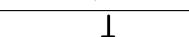
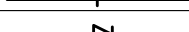
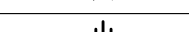
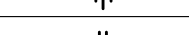
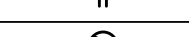
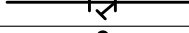
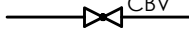
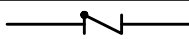
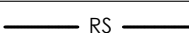
LEGEND - HVAC - AIR DISTRIBUTION

REFER	DESCRIPTION
	POSITIVE PRESSURE (SUPPLY) DUCT UP
	POSITIVE PRESSURE (SUPPLY) DUCT UP
	NEGATIVE PRESSURE (RETURN) DUCT UP
	POSITIVE PRESSURE (SUPPLY) DUCT DOWN
	POSITIVE PRESSURE (SUPPLY) DUCT DOWN
	NEGATIVE PRESSURE (RETURN) DUCT DOWN
	EXISTING DUCTWORK TO BE REMOVED
	EXISTING DUCTWORK TO REMAIN
	NEW DUCTWORK
	DUCTWORK WITH INSULATION
	SIDEWALL GRILLE
	RETURN/EXHAUST GRILLE
	SUPPLY AIR DIFFUSER (SQUARE)
	SUPPLY AIR DIFFUSER (LAMINAR FLOW)
	SHADING INDICATES DIFFUSER TO HAVE A BLANK OFF PANEL
	LINEAR OR SLOT DIFFUSER WITH PLENUM
	SUPPLY AIR DIFFUSER (ROUND)
	INDICATES EXISTING SUPPLY AIR OULET
	INDICATES EXISTING RETURN AIR OULET
	INDICATES EXISTING VAV BOX
	INDICATES NEW SUPPLY AIR OULET
	INDICATES NEW RETURN AIR OULET
	INDICATES EXISTING SUPPLY/RETURN AIR OULET TO BE RE-BALANCED TO AIR FLOW INDICATED
	INDICATES NEW VAV BOX
DIFFUSER / GRILLE	
	TYPE
	SIZE (IN)
	AIR FLOW (CFM)

GENERAL SITE SERVICE NOTES

1. VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. MAINTAIN AND SUPPORT EXISTING UTILITIES AND SERVICES TO THE SATISFACTION OF THE OWNER OF THE UTILITY.

LEGEND - HVAC - PIPING

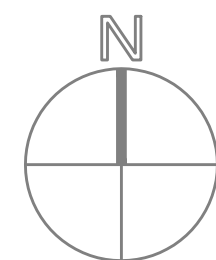
REFER	DESCRIPTION
	EXISTING PIPING SHOWN HATCHED TO BE REMOVED
	PIPING RISER UP
	PIPING DROP
	PIPING RISER UP & DOWN
	TEE
	ELBOW - 90°
	ELBOW - 45°
	WYE
	REDUCER
	UNION
	FLANGE
	PUMP
	STRAINER
	3-WAY CONTROL VALVE
	2-WAY CONTROL VALVE
	ISOLATING (SHUT-OFF) VALVE
	THROTTLING (BALANCING) VALVE
	CIRCUIT BALANCING VALVE
	CHECK VALVE
	REFRIGERANT SUCTION
	REFRIGERANT LIQUID

LEGEND - POWER SYSTEM

THIS LEGEND OF SYMBOLS REPRESENTS MANTECON PARTNERS INC. STANDARD LEGEND. ALL SYMBOLS MAY NOT APPEAR ON DRAWINGS.	
SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE
	GFCI RECEPTACLE
	20A T-SLOT RECEPTACLE
	ISOLATED GROUND RECEPTACLE
	SINGLE RECEPTACLE
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE - FLOOR MOUNTED
	QUAD RECEPTACLE - FLOOR MOUNTED
	DUPLEX RECEPTACLE - CEILING MOUNTED
	SPLIT RECEPTACLE
	DIRECT CONNECTION
	NON FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	NON-FUSED DIRECT CONNECTION
	MOTOR NON FUSED DISCONNECT
	MOTOR
	JIFFY/PAC POLE
	JUNCTION BOX
	CONTROL SWITCH
	RELAY
	ELECTRICAL PANEL



TRUE NORTH



CONSTRUCTION NORTH



STRUCTURAL MECHANICAL ELECTRICAL CIVIL
ENGINEERS

15 Foundry Street, Dundas, ON, L9H 2V6
Phone: (905)648-0373 www.manteconpartners.com

SEA

REVIEW ALL DRAWINGS AND VERIFY ALL DIMENSIONS AT THE SITE. DO NOT SCALE THE DRAWINGS. REPORT ALL DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH ANY CONSTRUCTION OR SHOP FABRICATION. ALL DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF 'MANTECON PARTNERS' AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTS IN PART OR WHOLE IS FORBIDDEN WITHOUT THE ENGINEER'S WRITTEN PERMISSION.

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2	ISSUED FOR TENDER	2025/08/06	J.C	
1	ISSUED FOR 75% DESIGN	2025/03/21	J.C	
NO.	ISSUED	DATE	BY	



CLIENT

CENTENNIAL COLLEGE
65 Carl Hall Rd, Toronto, ON

PROJECT:

CENTENNIAL COLLEGE
DOWNSVIEW
CAMPUS IT ROOM UPGRADES

DRAWING TITLE:

LEAD SHEET
GENERAL NOTES AND
LEGENDS

DRAWN BY:

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CHECKED BY _____

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DATE: MAR. 2025

PROJECT NUMBER
25-007

SCALE:

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HVAC SPECIFICATIONS

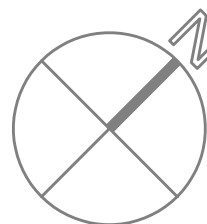
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1. CERTAIN ITEMS SUCH AS RISERS AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC. ARE INDICATED FOR CLARITY FOR A SPECIFIC LOCATION REQUIREMENT. DO NOT INTERPRET AS THE COMPLETE EXISTENCE OF THE REQUIREMENTS FOR THESE ITEMS.
2. CO-ORDINATE DIFFUSERS, REGISTERS, AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS, LIGHTING AND OTHER CEILING ITEMS. NAME MINOR DUCT MODIFICATIONS TO SUIT.
3. ADJUST AND ASSEMBLE FIELD-ERECTED AND FACTORY ASSEMBLED AIR HANDLING UNIT COILS FOR REMOVAL FROM UPSTREAM SIDE WITHOUT DISMANTLING SUPPORTS. PROVIDE GALVANIZED STEEL SUPPORTS FOR COILS IN BAYS OVER 20' HIGH TO PERMIT INDEPENDENT REMOVAL OF INDIVIDUAL COILS.
4. LOCATE MECHANICAL EQUIPMENT SUCH AS SINGLE-DUCT, DUAL-DUCT, VARIABLE VOLUME, CONSTANT VOLUME AND FAN-POWERED BOXES, FAN COILS, CABINET HEATERS, UNIT HEATERS, UNIT VENTILATORS, COILS, HUMIDIFIERS, ETC. FOR UNOBSTRUCTED ACCESS TO ACCESS PANELS, CONTROLS AND VALVING.
2. EQUIPMENT DRAINS AND OVERFLOWS
1. COPPER TUBING: ASTM B88, TYPE M AND DWV, HARD DRAWN.
2. FITTINGS: ASME B16.18, CAST BRASS, OR ASME B16.22 SOLDERED WROUGHT COPPER.
3. JOINTS: SOLDER, LEAD FREE, ASTM B32, 95% TIN-ANTIMONY, OR TIN AND SILVER, WITH MELTING RANGE 442B°F TO 536°F (220°C TO 280°C).
3. REFRIGERATION PIPING & SPECIALTIES
- 3.1 PROVIDE REFRIGERANT COMPONENTS, FITTINGS AND SPECIALTIES RATED FOR THE SPECIFIC REFRIGERANT BEING USED.
- 3.2 SLOPE REFRIGERANT PIPING 1 PERCENT IN THE DIRECTION OF OIL RETURN. LIQUID LINES MAY BE INSTALLED LEVEL.
- 3.3 INSTALL HORIZONTAL HOT GAS DISCHARGE PIPING 3/4" DOWNWARD SLOPE AWAY FROM COMPRESSOR.
- 3.4 INSTALL HORIZONTAL SUCTION LINES 3/4" PER 10' DOWNWARD SLOPE TO THE COMPRESSOR WITH NO LONG TRAPS OR DEAD ENDS THAT MAY CAUSE OIL SEPARATION FROM SUCTION GAS.
- 3.5 PROVIDE LINE SIZE LIQUID INDICATORS IN MAIN LIQUID LINE LEAVING THE CONDENSER OR RECEIVER. INSTALL MOISTURE-LIQUID INDICATORS IN LIQUID LINES BETWEEN FILTER-DRYERS AND THERMOSTATIC EXPANSION VALVES, AND IN LIQUID LINES TO RECEIVER.
- 3.6 PROVIDE LINE SIZED STRAINER UPSTREAM OF EACH AUTOMATIC VALVE. PROVIDE SHUTOFF VALVE ON EACH SIDE OF THE STRAINER.
- 3.7 PROVIDE PERMANENT FILTER DRYERS IN LOW TEMPERATURE SYSTEMS AND SYSTEMS USING HERMETIC COMPRESSORS.
- 3.8 PROVIDE REPLACEABLE CARTRIDGE FILTER-DRYERS WITH A THREE-VALVE BYPASS ASSEMBLY FOR SOLENOID VALVES ADJACENT TO RECEIVERS.
- 3.9 PROVIDE REFRIGERANT CHANGING VALVE CONNECTIONS TO THE LIQUID LINE BETWEEN THE RECEIVER SHUTOFF VALVE AND THE EXPANSION VALVE.
- 3.10 PIPING
1. COPPER TUBING: ASTM B280, TYPE ACR HARD DRAWN OR ANNEALED. FITTINGS: ASME B16.22 WROUGHT COPPER. JOINTS: BRAZE, AWS A5.8 BCUP SILVER/PHOSPHORUS/COPPER ALLOY WITH MELTING RANGE 640 TO 805 DEGREES C.
2. COPPER TUBING TO 22 MM OD: ASTM B88, TYPE K, ANNEALED. FITTINGS: ASME B16.26 CAST COPPER. JOINTS: FLARED.
- 3.11 REFRIGERANT PIPING INSULATION: CLOSED-CELL ELASTOMERIC
1. MANUFACTURER: ARMAFLEX AP-S10X
2. COMPLIANCE: ASTM C594, CAN/ULC-A150X, ASTM E84, ULC-S102, NFPA 90A, ASTM D1056
3. THERMAL CONDUCTIVITY: 0.235 BTU-in/Hr-Sq. Ft. F AT 50 F
4. PERMEABILITY: 0.05 PERM-IN
5. MAXIMUM FLAME SPREAD INDEX: 25. MAXIMUM SMOKE DEVELOPMENT INDEX: 50
6. WATER ABSORPTION: 0.2% BY VOLUME
7. MAXIMUM SERVICE TEMPERATURE: 220 F (105 C)
8. MINIMUM SERVICE TEMPERATURE: -297 F (-183 C)
9. ON OUTDOOR REFRIGERANT PIPING PROVIDE VAPOUR BARRIER LOCATED OUTSIDE THE INSULATION. SEAL JOINTS AND PENETRATIONS.
10. PROTECT INSULATION EXPOSED TO WEATHER WITH ALUMINUM, OR PLASTIC JACKETING.
11. INSULATE REFRIGERANT SUCTION AND HOT GAS PIPING AND FITTINGS. INSULATE LIQUID LINES WHERE EXPOSED TO EXTERIOR CONDITIONS AND IN MECHANICAL ROOMS.
12. PROVIDE THICKNESS AS FOLLOWS: 1/2" (13 MM) THICK FOR PIPE 1" (25 MM) DI. AND SMALLER; 3/4" (19 MM) THICK FOR PIPE 1 1/8" (28 MM) TO 2" (50 MM) DI.; 1" (25 MM) THICK FOR PIPE 2 1/8" (54 MM) O.D. AND LARGER.
13. SLP INSULATION ON TO TUBING BEFORE TUBING SECTIONS AND FITTINGS ARE ASSEMBLED. KEEP SLITTING OF INSULATION TO A VERY MINIMUM. SEAL ALL JOINTS IN THE INSULATION WITH ARMAFLEX 520S GEL.
- 3.12 MOISTURE AND LIQUID INDICATORS: SINGLE PORT 1/2" LIQ. LISTED, WITH COPPER OR BRASS BODY, FLARED OR SOLDER ENDS, SIGHT GLASS, COLOUR CODED PAPER MOISTURE INDICATOR WITH REMOVABLE ELEMENT CARTRIDGE AND PLASTIC CAP; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA, AND MAXIMUM TEMPERATURE OF 93 DEGREES C.
- 3.13 VALVES
1. BALL VALVES: TWO BODY BOLTED FORGED BRASS BODY WITH TEFLON BALL SEALS AND COPPER TUBE EXTENSIONS, BRASS BONNET AND SEAL CAP. CHROME PLATED BALL SEALS WITH NITROGEN RING STEM SEALS; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA AND MAXIMUM TEMPERATURE OF 149 DEGREES C.
2. SERVICE VALVES: FORGED BRASS BODY WITH COPPER TUBES, BRASS CAPS, REMOVABLE VALVE CORE, INTEGRAL BALL CHECK VALVE, FLARED OR SOLDER ENDS, FOR MAXIMUM PRESSURE OF 3450 KPA.
- 3.14 STRAINERS
1. STRAIGHT LINE OR ANGLE LINE TYPE: BRASS OR STEEL, SHELL, STEEL, CAP AND FLANGE, AND REPLACEABLE CARTRIDGE, WITH SCREEN OF STAINLESS-STEEL WIRE OR MONEL REINFORCED WITH BRASS; FOR MAXIMUM WORKING PRESSURE OF 2980 KPA.
2. STRAIGHT LINE, NON-CLEANABLE TYPE: STEEL SHELL, COPPER PLATED FITTINGS, STAINLESS STEEL WIRE SCREEN; FOR MAXIMUM WORKING PRESSURE TO SUIT APPLICATION.
- 3.15 CHECK VALVES
1. GLOBE TYPE: CAST BRONZE OR FORGED BRASS BODY. FORGED BRASS CAP WITH NITROGEN SEAL, BRASS GUIDE AND DISC HOLDER, PHOSPHOR-BRONZE OR STAINLESS-STEEL SPRING, TEFLON SEAT DISC; FOR MAXIMUM WORKING PRESSURE OF 2930 KPA AND MAXIMUM TEMPERATURE OF 149 DEGREES C.
2. STRAIGHT THROUGH TYPE: BRASS BODY AND DISC, PHOSPHOR-BRONZE OR STAINLESS-STEEL SPRING, TEFLON SEAT; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA AND MAXIMUM TEMPERATURE OF 93 DEGREES C.
- 3.16 PRESSURE REGULATORS: BRASS BODY, STAINLESS STEEL DIAPHRAGM, DIRECT ACTION, ADJUSTABLE OVER TO 550 KPA RANGE, FOR MAXIMUM WORKING PRESSURE OF 3500 KPA.
- 3.17 PRESSURE RELIEF VALVES: STRAIGHT THROUGH OR ANGLE TYPE: BRASS BODY AND DISC, NITROGEN SEAL, FACTORY SEALED AND STAMPED WITH ASME UVI AND NATIONAL BOARD CERTIFICATION NO. FOR STANDARD 3500 KPA SETTING; SELECTED TO ASHRAE 15.
- 3.18 FILTER-DRYERS
1. REPLACEABLE CARTRIDGE ANGLE TYPE:
1. SHELL: API 710, LIQ. LISTED, BRASS, REMOVABLE CAP, FOR MAXIMUM WORKING PRESSURE OF 2410 KPA.
2. FILTER CARTRIDGE: PLEATED MEDIA WITH INTEGRAL END RINGS, STAINLESS STEEL SUPPORT.
3. FILTER/DRYER CARTRIDGE: PLEATED MEDIA WITH SOLID CORE SIEVE WITH ACTIVATED ALUMINA.
4. WAX REMOVAL CARTRIDGE: MOULDED BONDED CORE OF ACTIVATED CHARCOAL WITH INTEGRAL GASKETS.
2. PERMANENT STRAIGHT THROUGH TYPE:
1. API 710, LIQ. LISTED, STEEL SHELL WITH MOULDED DESSICANT FILTER CORE, FOR MAXIMUM WORKING PRESSURE OF 2410 KPA.
- 3.19 SOLENOID VALVES
1. VALVE: API 760, PILOT OPERATED, COPPER OR BRASS OR STEEL BODY AND INTERNAL PARTS, SYNTHETIC SEAT AND FLANGES PROTECT FROM SHOCK AND PUNGER ASSEMBLY, INTEGRAL STRAINER, WITH FLARED, SOLDER, OR THREADED ENDS; FOR MAXIMUM WORKING PRESSURE OF 3450 KPA. STEM TO PERMIT MANUAL OPERATION IN CASE OF COIL FAILURE.
2. COIL ASSEMBLY: API 429, LIQ. LISTED, REPLACEABLE WITH MOULDED ELECTROMAGNETIC COIL, MOISTURE AND FLAMMABLE PROOF WITH SURGE PROTECTOR AND COLOUR CODED LEAD WIRES, INTEGRAL JUNCTION BOX WITH PILOT LIGHT.
3. ELECTRICAL CHARACTERISTICS: 120 VOLTS, SINGLE PHASE, 60 HZ.
- 3.20 EXPANSION VALVES
1. ANGLE OR STRAIGHT THROUGH TYPE: API 750; DESIGN SUITABLE FOR REFRIGERANT, BRASS BODY, INTERNAL OR EXTERNAL EXHAUSTING, BLEED HOLE, SUPERHEAT SETTING, REPLACEABLE LIQUID STRAINER, WITH NON-REPLACEABLE CAPILLARY TUBE AND REMOTE SENSING BUBBLES AND REMOTE BUILT WELL.
2. SELECTION: EVALUATE REFRIGERANT PRESSURE DROP THROUGH SYSTEM TO DETERMINE AVAILABLE PRESSURE DROP ACROSS VALVE. SELECT VALVE FOR MAXIMUM LOAD AT DESIGN OPERATING PRESSURE AND MINIMUM 6 DEGREES C SUPERHEAT. SELECT TO AVOID BEING UNDERSIZED AT FULL LOAD AND EXCESSIVELY OVERSIZED AT PART LOAD.
- 3.21 RECEIVERS
1. INTERNAL DIAMETER 150 MM AND SMALLER: API 495, LIQ. LISTED, STEEL, BRAZED; 2760 KPA MAXIMUM PRESSURE RATING, WITH TAPPINGS FOR INLET, OUTLET, AND PRESSURE RELIEF VALVE.
2. INTERNAL DIAMETER OVER 150 MM: API 495, WELDED STEEL, TESTED AND STAMPED TO ASME SEC 8D; 2760 KPA WITH TAPPINGS FOR LIQUID INLET AND OUTLET VALVES, PRESSURE RELIEF VALVE, AND MAGNETIC LIQUID LEVEL INDICATOR.
- 3.22 FLEXIBLE CONNECTORS
1. CORRUGATED STAINLESS STEEL WITH SINGLE LAYER OF STAINLESS-STEEL EXTERIOR BRAIDING.

HVAC SPECIFICATIONS

25-007

- MINIMUM 230 MM LONG WITH COPPER TUBE ENDS; FOR MAXIMUM WORKING PRESSURE 3450 KPA.
4. MULTI-SPLIT COOLING SYSTEM
- 4.1 PROVIDE ETL LISTED SYSTEMS WITH WIRING CONFORMING TO THE ELECTRICAL CODE.
- 4.2 PROVIDE SYSTEMS PRODUCED IN ISO 9001/14001 FACILITY AND THAT ARE FACTORY TESTED FOR FUNCTION AND SAFETY.
- 4.3 PROVIDE VARIABLE CAPACITY AIR CONDITIONING SYSTEM INVERTER DRIVEN (HEAT / COOL) MULTI-SPLIT SYSTEM AS SPECIFIED CONSISTING OF 2 TO 4 INDOOR EVAPORATORS MATCHED TO AN OUTDOOR VARIABLE SPEED ROTARY COMPRESSOR CONDENSING UNIT.
- 4.4 OUTDOOR UNIT: CONFIGURED FOR HORIZONTAL DISCHARGE AIRFLOW AND COMPLETE WITH A VARIABLE SPEED CONDENSER FAN USING A SINGLE-PHASE POWER SUPPLY.
- 4.5 TYPICAL COOLING MODE OPERATING RANGE: 14°F TO 115°F DB. HEATING MODE OPERATING RANGE: 5°F TO 60°F DB.
- 4.6 PROVIDE AN ULTRA-LOW AMBIENT KIT AND WIND BAFFLE TO PERMIT UNIT OPERATION DOWN TO -40°F
- 4.7 PROVIDE SYSTEM DESIGNED TO OPERATE WITH A MAXIMUM REFRIGERANT PIPE LENGTH BETWEEN THE CONDENSING UNIT AND EACH INDOOR UNIT OF 82 FEET, WITH 49.2 FEET MAXIMUM VERTICAL DIFFERENCE, AND WITHOUT ANY OIL TRAPS OR ADDITIONAL EQUIPMENT. THE TOTAL REFRIGERANT PIPE LENGTH OF ALL PIPING TO ALL INDOOR UNITS COMBINED SHALL NOT EXCEED 230 FT.
- 4.8 REFRIGERANT: AS PER DRAWING SCHEDULE.
- 4.9 FAN COLLS
1. THE INDOOR UNIT: CEILING CASSETTE FAN COIL UNIT WITH A VARIABLE SPEED DIRECT DRIVE DC TYPE FAN FOR INSTALLATION INTO THE CEILING CAVITY, EQUIPPED WITH AN AIR PANEL GRILL. FOUR-WAY AIR DISTRIBUTION TYPE WITH FRESH WHITE OR SILVER, IMPACT RESISTANT WASHABLE DECORATION PANEL. SUPPLY AIR DISTRIBUTED VIA MOTORIZED LOUVERS WHICH CAN BE HORIZONTALLY AND VERTICALLY ADJUSTED FROM 0° TO 90°.
2. INDOOR UNIT SOUND PRESSURE: 25.5 DB(A) TO 33 DB(A) AT LOW SPEED MEASURED AT 5 FEET BELOW THE UNIT.
3. FOUR-WAY SUPPLY AIR FLOW CAPABLE OF FIELD MODIFICATION TO 2-WAY OR 3-WAY AIRFLOW TO ACCOMMODATE VARIOUS INSTALLATION CONFIGURATIONS INCLUDING CORNER INSTALLATIONS.
4. THE DECORATION PANEL: LOW-PROFILE DESIGN, EXTENDING ONLY 5/16" BELOW THE CEILING WITHOUT ANY OVERLAP WITH NEIGHBORING CEILING TILES, ALLOWING FOR INSTALLATION DIRECTLY ADJACENT TO OTHER CEILING COMPONENTS SUCH AS LIGHTS, DIFFUSERS, AND SPRINKLERS, ETC.
5. RETURN AIR: THROUGH THE CONCENTRIC PANEL, WHICH INCLUDES A RESIN NET MOLD RESISTANT FILTER. EQUIPPED WITH A CONDENSATE PAN AND A FACTORY-MOUNTED CONDENSATE PUMP WITH UP TO 21" OF LIFT AND HAVE A BUILT-IN SAFETY SHUTOFF AND ALARM.
6. THREE AUTO-SWING POSITIONS: STANDARD, DRAFT PREVENTION AND CEILING STAIN PREVENTION.
7. FAN: VARIABLE SPEED DIRECT DRIVE DC MOTOR WITH A STATICALLY AND DYNAMICALLY BALANCED IMPELLER WITH 3 USER-SELECTABLE FAN SPEEDS. AUTOMATIC FAN SPEED MODE ALLOWS THE FAN TO VARY BETWEEN 5 SPEEDS BASED ON SPACE LOAD.
- 4.10 CONDENSING UNIT
1. OUTDOOR UNIT: COMPLETELY WEATHERPROOF AND CORROSION RESISTANT. CONSTRUCTED FROM RUST-PROOFED MILD STEEL PANELS COATED WITH A BAKED ENAMEL FINISH.
2. FAN: DIRECT DRIVE, PROPELLER TYPE FAN WITH INVERTER DRIVEN MOTOR WITH PERMANENTLY LUBRICATED BEARINGS
3. FAN GUARD: TO PREVENT CONTACT WITH FAN OPERATION.
4. OUTDOOR COIL: NONFERROUS CONSTRUCTION WITH A CORRUGATED FIN TUBE.
5. COMPRESSOR: ROTARY SWING INVERTER-DRIVEN COMPRESSOR. COMPRESSOR SAFETIES SHALL INCLUDE INTERNAL THERMAL OVERLOAD PROTECTION. REFRIGERATION SPECIALTIES SHALL INCLUDE AN ACCUMULATOR, REFRIGERANT METERING DEVICE AND A FOUR-WAY REVERSING VALVE.
6. PROVIDE OUTDOOR UNIT WITH 2 TO 4 REFRIGERANT PORTS, EACH CONSISTING OF A LIQUID AND SUCTION LINE FOR EACH INDOOR UNIT. EACH PORT SHALL BE LABELED AND ASSOCIATED WITH A 4-WIRE ELECTRICAL AND CONTROL POWER FEED FOR EACH INDOOR UNIT.
- 4.11 CONTROLS
1. FAN COIL UNITS SHALL BE SUPPLIED WITH INDIVIDUAL ZONE CONTROLLERS.
2. ZONE CONTROLLERS SHALL BE HARD WIRED BY INSTALLING CONTRACTOR.
3. SINGLE AND DUAL SETPOINTS FOR OCCUPIED PERIODS, AND INDEPENDENT SETBACK SETPOINTS FOR UNOCCUPIED PERIODS.
4. ABILITY TO DIGITALLY PROHIBIT INDIVIDUAL BUTTONS AND FUNCTIONS, INCLUDING CUSTOM MODE SELECTION.
5. SELF DIAGNOSIS FUNCTION THAT CONSTANTLY MONITORS THE SYSTEM FOR MALFUNCTIONS.
6. CONTROLLER EQUIPPED WITH A THERMOSTAT SENSOR.
7. BUILT-IN 7 DAY, WEEKDAY PLUS SATURDAY SUNDAY (5+1+1), WEEKDAY PLUS WEEKEND (5+2) AND EVERYDAY (1) SCHEDULE.
8. FAN COIL UNITS SUPPLIED WITH WIRING ADAPTERS AND ASSOCIATED ADAPTER INSTALLATION BOXES TO PROVIDE BAS INTEGRATION.
- 4.12 STARTUP AND WARRANTY
1. SYSTEM INSTALLED BY AN AUTHORIZED CONTRACTOR/DEALER.
2. THE WARRANTY PERIOD SHALL COMMENCE ON THE DATE OF INITIAL START-UP AND SHALL CONTINUE FOR A PERIOD OF ONE (10) YEARS NOT TO EXCEED EIGHTEEN (126) MONTHS FROM DATE OF SHIPMENT.
- 4.13 INSTALLATION
1. INSTALL CONDENSING UNITS ON A FLAT SURFACE LEVEL WITHIN 1/8 INCH AND PROVIDE CONDENSING UNIT SUPPORT STANDS FOR A MINIMUM ELEVATION OF 18" FROM GROUND OR ROOF SURFACE.
2. FOR CEILING HUNG INSTALLATIONS, PROVIDE A REINFORCED STEEL FRAMEWORK TO ADEQUATELY SUPPORT ALL UNIT SECTIONS.
3. PROVIDE CERTIFIED WIRING SCHEMATICS TO THE ELECTRICAL DIVISION FOR ASSOCIATED EQUIPMENT AND CONTROLS.
4. PROVIDE ALL NECESSARY CONTROL WIRING AS RECOMMENDED BY THE MANUFACTURER.
5. HIGH/LOW PRESSURE GAS LINE, LIQUID AND SUCTION LINES MUST BE INDIVIDUALLY INSULATED BETWEEN THE OUTDOOR AND INDOOR UNITS.



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STRUCTURAL MECHANICAL ELECTRICAL CIVI
ENGINEERS

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2	ISSUED FOR TENDER	2025/08/06	J C
1	ISSUED FOR 75% DESIGN	2025/03/21	J C
NO.	ISSUED	DATE	BY



CLIENT

CENTENNIAL COLLEGE
65 Carl Hall Rd, Toronto, ON

PROJECT:

CENTENNIAL COLLEGE
DOWNSVIEW
CAMPUS IT ROOM UPGRADES

DRAWING TITLE:

HVAC SPECIFICATIONS

DRAWN BY:

16

CHECKED BY _____

 $\Delta \Delta Y$

DATE _____

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8	8	0	5	1	0

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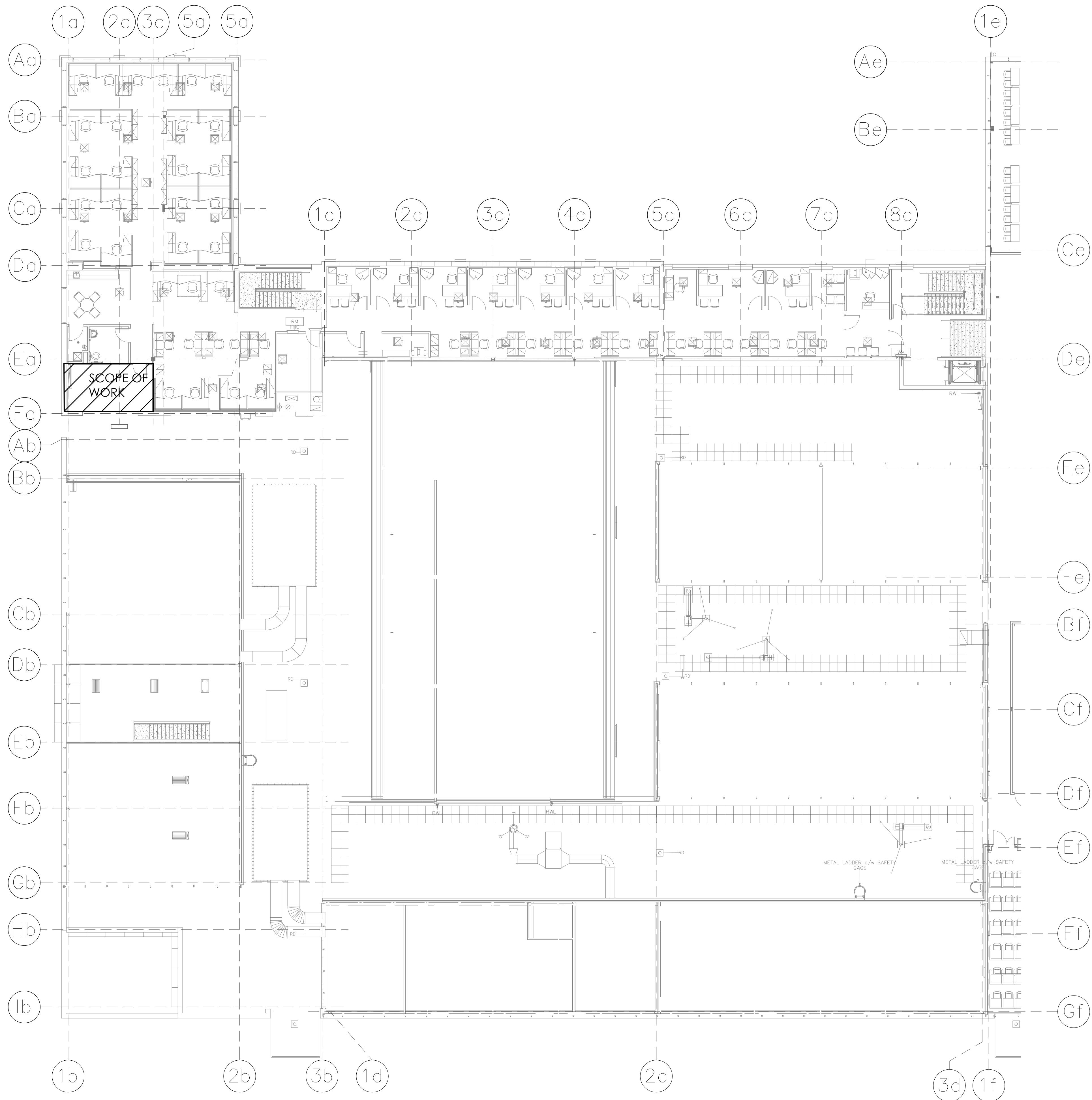
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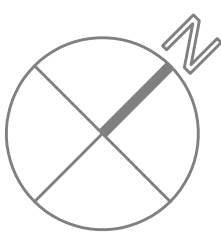
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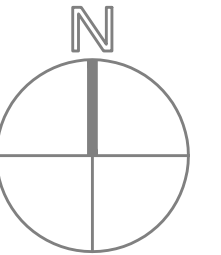
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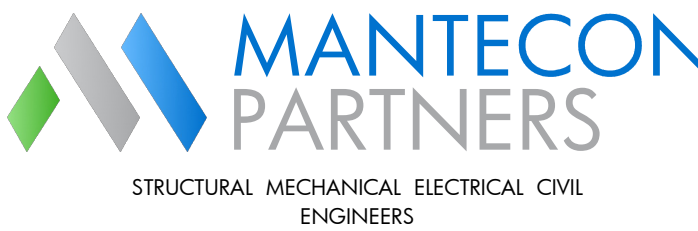
1 KEY PLAN
SCALE: 1:150



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2	ISSUED FOR TENDER	2025/08/06	J.C.
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65 Carl Hall Rd, Toronto, ON

PROJECT:
**CENTENNIAL COLLEGE
DOWNSVIEW
CAMPUS IT ROOM UPGRADES**

DRAWING TITLE:
KEY PLAN

DRAWN BY:
J.C.
CHECKED BY:
M.V.
DATE:
MAR. 2025
PROJECT NUMBER:
25-007

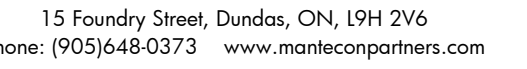
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1:150

DRAWING NUMBER:

M100

CONDENSATE LINE TO RUN ABOVE THE CEILING. FAN COIL CONDENSATE TO COME WITH CONDENSATE PUMPS.

- ① EXISTING FAN COIL + ASSOCIATED DRAINAGE PIPING TO REMAIN.
- ② PROVIDE INDIRECT CONNECTION FOR FAN COIL CONDENSATE TO EXISTING JANITORS SINK.



EAL

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1	ISSUED FOR 75% DESIGN	2025/03/21	J/C
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65 Carl Hall Rd, Toronto, ON

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CENTENNIAL COLLEGE
DOWNSVIEW
CAMPUS IT ROOM UPGRADES

RAWING TITLE:

T ROOM PROPOSED DRAINAGE PLAN

RAW/N BY:

1.C

CHECKED BY:

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DATE: _____
PAGE: _____

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SALE:

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DRAWING NUMBER:

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September 08, 2025 - 04:03pm Plotted by: jcrowe

IT ROOM PROPOSED DRAINAGE PLAN

ORIGINAL SHEET - ARCH D

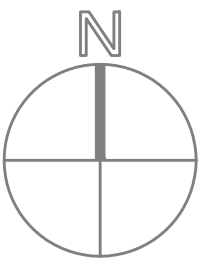
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DRAWING NOTES

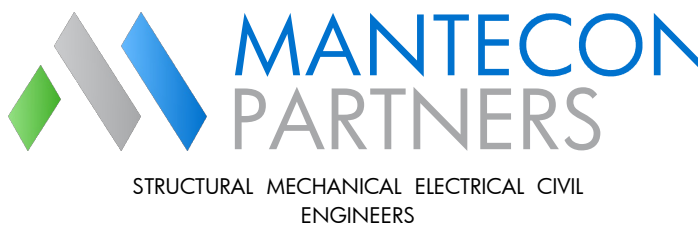
- ① EXISTING FAN COIL + ASSOCIATED WIRING & PIPING TO REMAIN.
- ② NEW REFRIGERANT LINES TO BE SIZED AND ROUTED PER MANUFACTURERS INSTRUCTIONS. REFER TO M600 FOR PIPING DIAGRAM.



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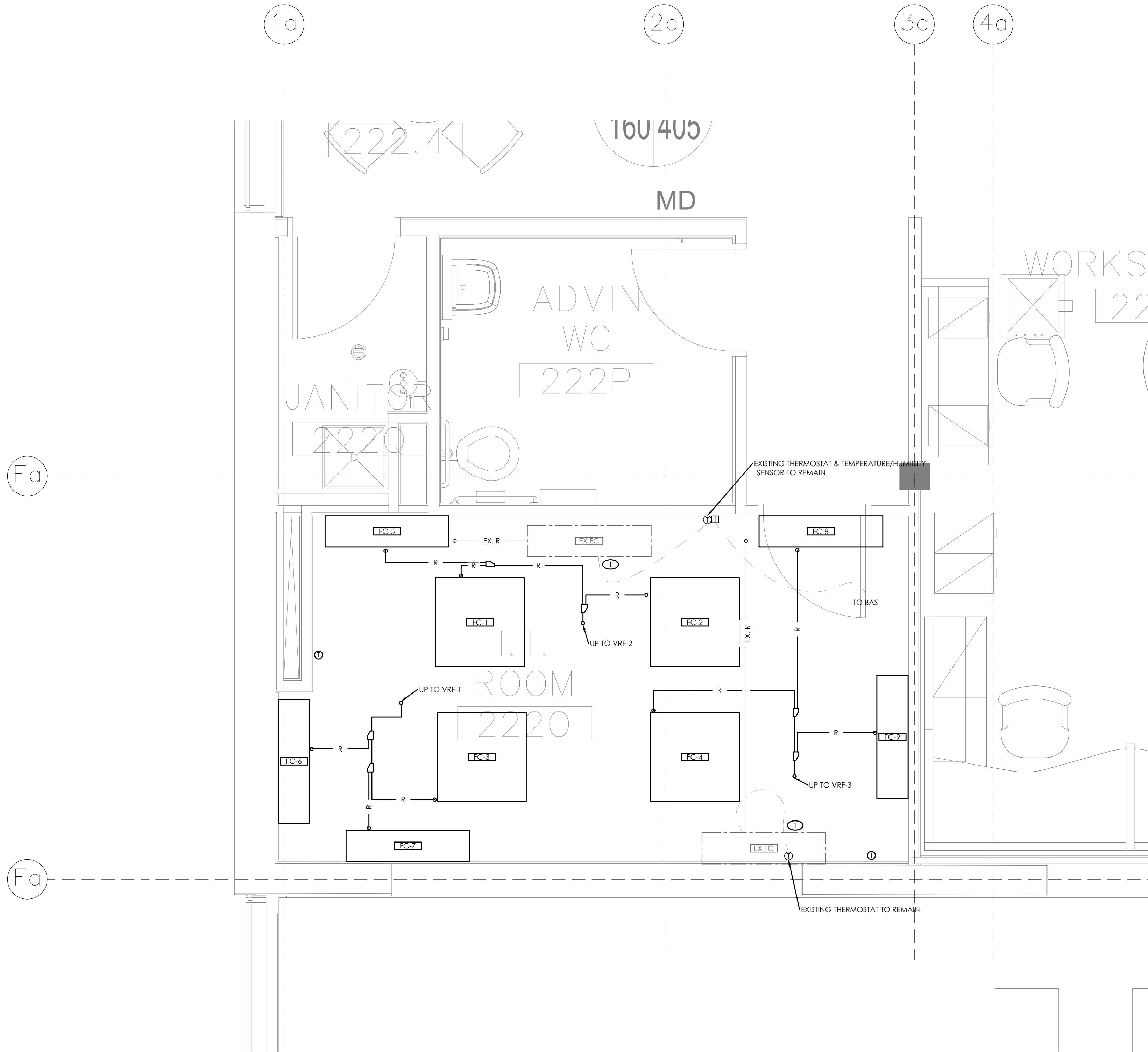
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CAMPUS IT ROOM UPGRADES

DRAWING TITLE:
IT ROOM PROPOSED HVAC
PLAN

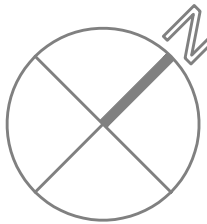
DRAWN BY: J.C.	SCALE: 1:25
CHECKED BY: M.V.	DRAWING NUMBER:
DATE: MAR. 2025	M300
PROJECT NUMBER: 25-007	

September 08, 2025 - 04:03pm Plotted by: jrowe

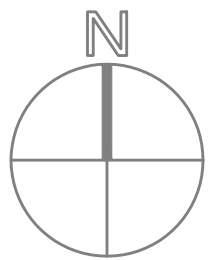


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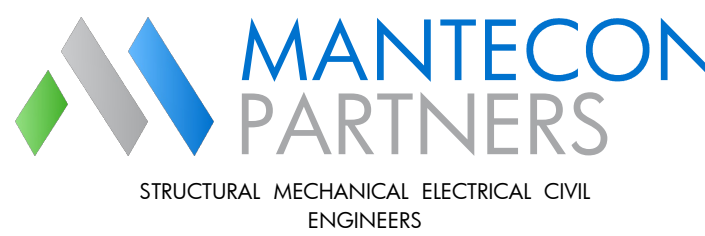
- 1 EXISTING CONDENSER+ ASSOCIATED REFRIGERANT PIPING TO REMAIN.
- 2 PROVIDE NEW VRF CONDENSING UNITS WITH ASSOCIATED REFRIGERANT PIPING C/W PIPE TRANSITIONS BOXES AND SUPPORTS.



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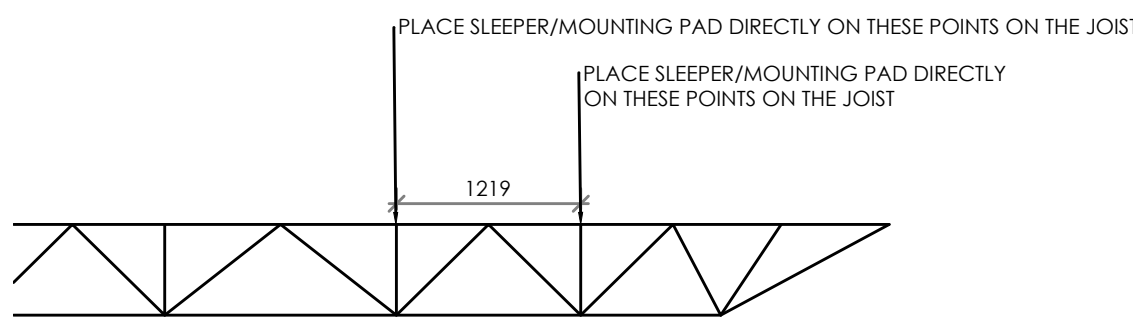
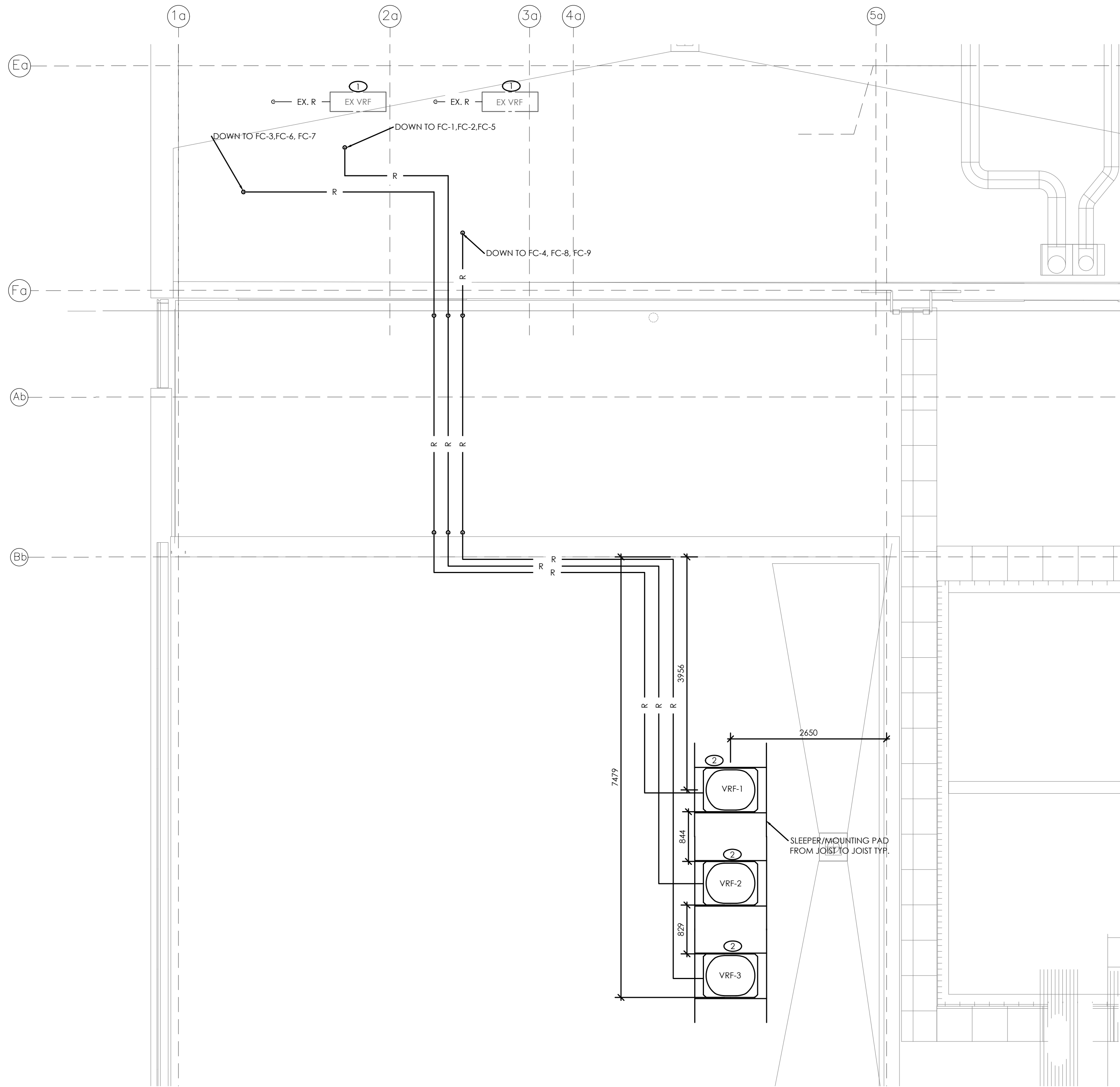
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65 Carl Hall Rd, Toronto, ON

PROJECT:
**CENTENNIAL COLLEGE
DOWNSVIEW
CAMPUS IT ROOM UPGRADES**

DRAWING TITLE:
**IT ROOM MECHANICAL
PROPOSED ROOF PLAN**

DRAWN BY: J.C.	SCALE: 1:50
CHECKED BY: M.V.	DRAWING NUMBER:
DATE: MAR. 2025	M301
PROJECT NUMBER: 25-007	

September 08, 2025 - 04:03pm Plotted by: jcrowe

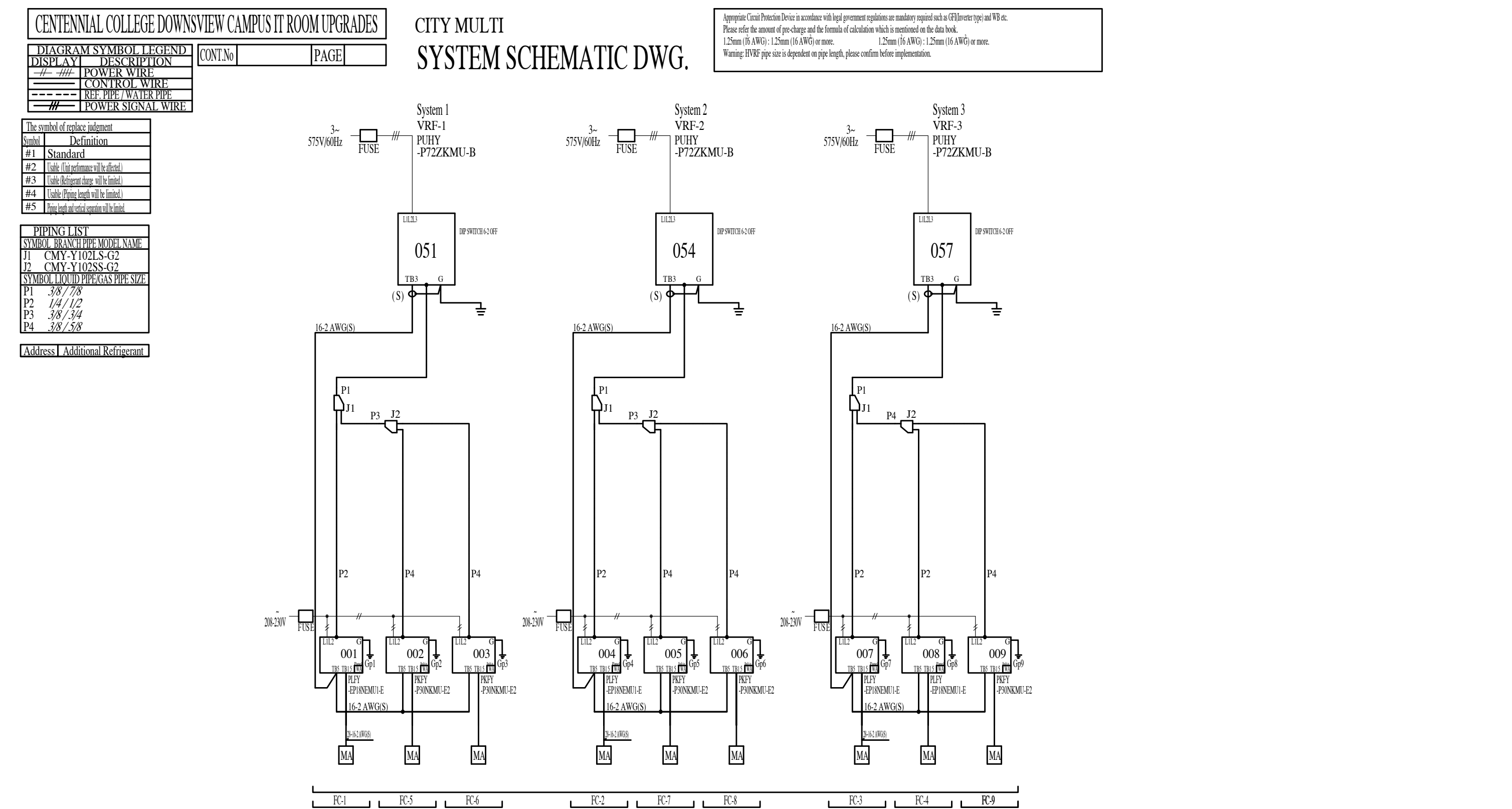


2 TYPICAL UNIT PLACEMENT ON JOIST
M301 SCALE: NTS

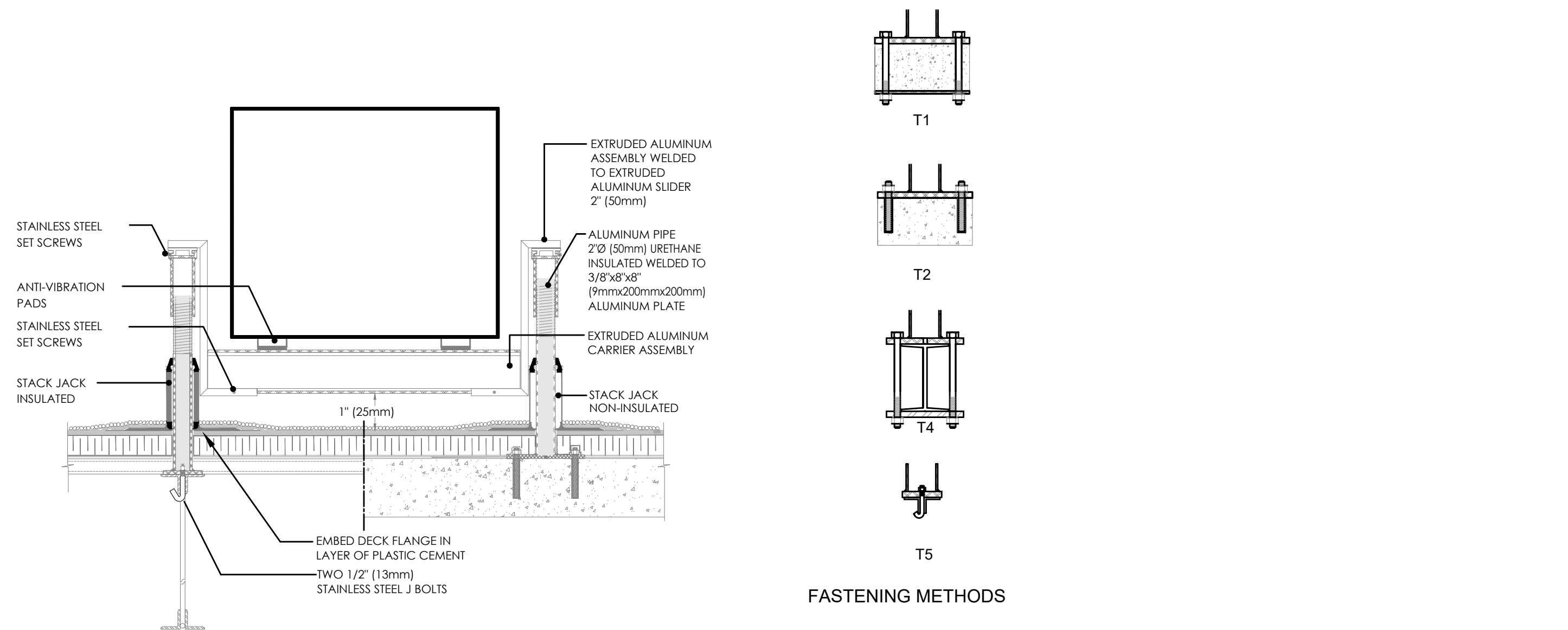
VRF FAN COIL UNIT SCHEDULE								
SYMBOL	LOCATION	MOUNTING	TOTAL COOLING (KW)	TOTAL HEATING (KW)	VOLTAGE/PH/HZ	MCA	WEIGHT (KG)	MANUFACTURER AND MODEL (BASIS OF DESIGN: MITSUBISHI AIR)
FC-1 TO FC-4	IT ROOM - 2220	CEILING	5.3	N/A	208, 1-Phase, 60 Hz	0.54	25	MITSUBISHI ELECTRIC: PLFY-EP18NEMU-E1R1-T C/W CONDENSATE PUMP, WIRED TO NEW COMMON THERMOSTAT
FC-5 TO FC-9	IT ROOM - 2220	WALL	8.8	N/A	208, 1-Phase, 60 Hz	0.63	21	MITSUBISHI ELECTRIC: PKFY-P30NKMU-E2-TH C/W CONDENSATE PUMP, WIRED TO NEW COMMON THERMOSTAT

VRF OUTDOOR UNIT SCHEDULE								
SYMBOL	LOCATION	TOTAL COOLING (KW)	TOTAL HEATING (KW)	VOLTAGE/PH/Hz	MCA	MCCP	WEIGHT (KG)	MANUFACTURER AND MODEL (BASIS OF DESIGN: MITSUBISHI AIR)
VRF-1	ROOF	21.1	N/A	575V, 3- Phase, 60 Hz	11	15	222	MITSUBISHI ELECTRIC: PUHY-P722KMJ-B [-8S] C/W LOW AMBIENT COOLING KIT: HOOD WITH CONTROL DAMPER ASSEMBLY & WIND DEFLECTORS.
IG								
VRF-3								

1 MECHANICAL SCHEDULES
M400 SCALE: N.T.S.



2 VRF PIPING SCHEMATIC
M4000 SCALE: N.T.S.



3 DETAIL OF EQUIPMENT SUPPORT
M600 SCALE: N.T.S.

DOGHOUSE FABRICATION

DOG HOUSE TO BE FRAMED BY MECHANICAL CONTRACTOR

TYPICAL PIPE PENETRATION REFER TO BELOW FOR SEALING

NEOPRENE SEALS BY MECHANICAL CONTRACTOR

24" (600mm) MINIMUM

WATERSHED DESIGN

WATERSHED DESIGN

2" OF CLOSED CELL ELASTOMERIC INSULATION INSIDE AND OUTSIDE FRAMING

DRIP EDGE TYP.

ALUMINUM CLADDING

NAILING STRIP

PRE-FABRICATED ROOF CURB ANCHORED TO ROOF

DRIP EDGE TYP. FLASHING BY GENERAL CONTRACTOR

PIPE PENETRATION

Labels in the diagram:

- BACKER ROD & SEALANT
- SEALANT
- PIPE
- INSULATION
- SHEET METAL SLEEVE
- WALL

Notes in the diagram:

- SEALANT, CONNECT TO STUD WITH "L" BRACKET IF NECESSARY (BOTH SIDES)
- ENSURE ALL VOIDS AROUND PENETRATION ARE FILLED AND SEALED

4
M600

DETAIL OF DOGHOUSE AND PIPING PENETRATIONS

SCALE: N.T.S.