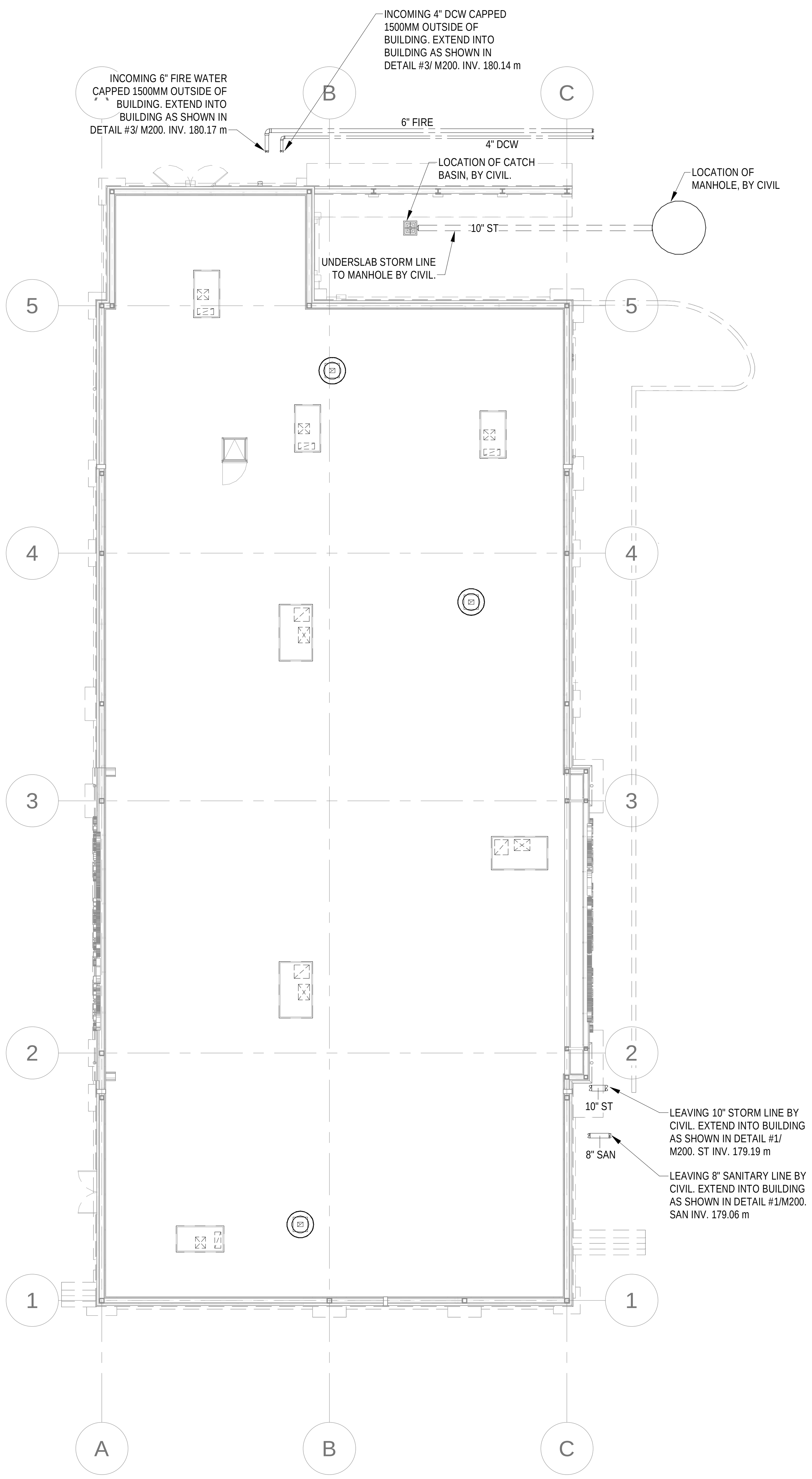


1 / M000 SITE PLAN
1 : 150

MECHANICAL SHEET INDEX

M000	MECHANICAL TITLE SHEET
M001	DETAILS
M002A	SCHEDULES
M002B	SCHEDULES
M004	SPECIFICATIONS-1
M005	SPECIFICATIONS-2
M100	GROUND FLOOR HVAC + MECHANICAL ROOF PLAN
M200	GROUND FLOOR PD + DRAINAGE

GENERAL MECHANICAL SYMBOLS

- REVISION NUMBER - SHOWN ON PLANS
- POINT WHERE NEW CONNECTS TO EXISTING (CTE)
- NUMBER OF DETAIL ON SHEET
- NUMBER OF SHEET WHERE DETAIL APPEARS
- KEYNOTE
- CONTINUATION SYMBOL
- ROOM NAME AND NUMBER (Room 8)
- ITEM TO BE DEMOLISHED
- AREA NOT IN CONTRACT

ABBREVIATIONS

ø	DIAMETER	MFR	MANUFACTURER
AD	AREA DRAIN	MIN	MINIMUM
ADD	ADDENDUM	MISC	MISCELLANEOUS
AFF	ABOVE FINISHED FLOOR	MTR	MOTOR
AP	ACCESS PANEL	MU/A	MAKE-UP/AIR
BFF	BELOW FINISHED FLOOR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CLG	CEILING	NO, #	NUMBER
CO	CLEAN OUT	NO	NORMALLY OPEN
CW	COLD WATER	NTS	NOT TO SCALE
DB	DRY BULB	O	OXYGEN
DIA	DIAMETER	O/A	OUTSIDE AIR
DN	DOWN	OBV	OBVERT (BOTTOM OF DUCT/PIPE)
EAT	ENTERING AIR TEMPERATURE	ORD	OVERFLOW ROOF DRAIN
ELEC	ELECTRICAL	PD	PRESSURE DROP
EQUIP	EQUIPMENT	PRV	PRESSURE REDUCING VALVE
EWT	ENTERING WATER TEMPERATURE	PWR	POWER
E/A	EXHAUST AIR	R	DUCT RISER
EX.	EXISTING	R/A	RETURN AIR
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEAN OUT	REC	RECESSED
FD	FLOOR DRAIN	RH	RELATIVE HUMIDITY
FDC	FIRE DEPARTMENT CONNECTION	RL/A	RELIEF AIR
FL	FLOOR	RM	ROOM
FO	FUEL OIL	RPM	REVOLUTIONS PER MINUTE
FOV	FUEL OIL VENT	RW	RAIN WATER
FOR	FUEL OIL RETURN	RWL	RAIN WATER LEADER
FOS	FUEL OIL SUPPLY	S/A	SUPPLY AIR
FPM	FEET PER MINUTE	SAN	SANITARY
FS	FLOOR SINK	SD	SMOKE DAMPER
FTR	FIN TUBE RADIATION	SP	STANDPIPE
GAL	GALLON	SP	STATIC PRESSURE
GC	GENERAL CONTRACTOR	STM	STEAM
GPM	GALLONS PER MINUTE	T	THERMOSTAT
GW	GREASE WASTE	ΔT	TEMPERATURE DIFERENCE/DELTA
HB	HOSE BIB	TEMP	TEMPERATURE
HP	HORSE POWER	TYP	TYPICAL
HTG	HEATING	UG	UNDERGROUND
HTR	HEATER	UH	UNIT HEATER
HW	HOT WATER	VAC	VACUUM
HYD	HYDRANT	V	VENT
INV	INVERT	VAV	VARIABLE AIR VOLUME
LAT	LEAVING AIR TEMPERATURE	VTR	VENT THROUGH ROOF
LP	LOW PRESSURE	W	WASTE
LVR	LOUVER	WB	WET BULB
LWT	LEAVING WATER TEMPERATURE	WCO	WALL CLEAN OUT
M/A	MIXED AIR	WH	WALL HYDRANT
MAX	MAXIMUM		
MD	MOTORIZED DAMPER		

* NOTE *
ALL OF GENERAL NOTES ON THIS SHEET ARE TO BE APPLIED TO ALL OTHER DRAWINGS IN THIS SET.THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

GENERAL PROJECTS NOTES

1. REFER TO ARCHITECTURAL, STRUCTURAL AND ELECTRICAL DRAWINGS FOR FURTHER PROJECT SCOPE NOTES.
2. COORDINATE MECHANICAL SCOPE OF WORK WITH ALL OTHER TRADES.
3. THESE DRAWINGS ARE NOT INTENDED TO DEPICT ALL EXISTING CONDITIONS. SITE VERIFY EXISTING CONDITIONS PRIOR TO SUBMITTING BIDS AND INCLUDE IN BID ALL MATERIAL AND LABOR TO SUIT EXISTING CONDITIONS.
4. HIRE BASE BUILDING ROOFING CONTRACTOR TO PERFORM ALL ROOFING WORK. INCLUDE THEIR COST IN MECHANICAL BID.
5. HIRE BASE BUILDING CONTROLS CONTRACTOR TO PERFORM ALL CONTROLS WORK ASSOCIATED WITH BAS IF APPLICABLE. INCLUDE THEIR COST IN MECHANICAL BID.
6. ON AWARD OF CONTRACT PROVIDE SCOPE OF EXISTING SAN/STORM PIPING WITHIN SCOPE OF AREA. RECORD EXACT LOCATIONS AND DEPTHS OF PIPE ON AS-BUILT DRAWINGS. AT THE COMPLETION OF THE PROJECT PERFORM FLUSH OF SANITARY LINE AND RE-SCOPE IT TO CONFIRM IT IS FREE OF DEBRIS. PROVIDE LETTER STATING SYSTEM IS FREE OF DEBRIS.
7. HIRE LOCAL GAS UTILITY TO PROVIDE NEW GAS METER TO SERVE PETSMART SPACE.
8. REFER TO LANDLORD/TENANT AGREEMENT PRIOR TO SUBMITTING BID. INCLUDE ALL REQUIREMENTS OF LANDLORD/TENANT AGREEMENT IN TENDER AMOUNT.
9. ADHERE TO ALL REQUIREMENTS OF THE LANDLORD/TENANT LEASE REQUIREMENTS REFERENCED IN THE LEASE DOCUMENTS.
10. AT THE COMPLETION OF PROJECT, PERFORM FLUSH OF ALL BURIED SANITARY AND STORM PIPING. PROVIDE VIDEO SCOPE SHOWING SYSTEMS ARE FREE OF DEBRIS.
11. ALL INSULATION SHALL COMPLY WITH PETSMART APPROVED SPECIFICATIONS. FLUSH SHALL OCCUR AFTER HOUR.
12. ALL GROUND FLOOR SANITARY ROUGH IN PROVISIONS SHALL BE INSTALLED IN ACCORDANCE WITH PETSMART REQUIREMENTS. OBTAIN TENANT LAYOUT DRAWINGS FOR EXACT LOCATIONS OF ROUGH INS.
13. COORDINATE INSTALLATION OF ALL DRAINAGE SYSTEM CLEANOUTS WITH PETSMART DRAWINGS.

PIPING AND DUCTWORK SYSTEMS

Symbol	Description
S/18"x18" S/AIR	SUPPLY AIR
O/A OUTSIDE 18"x18" O/A	OUTSIDE AIR
R/#18"x18" R/AIR	RETURN AIR
T/A TRANSFER 18"x18" T/A	TRANSFER AIR
E/A EXHAUST 18"x18" E/A	EXHAUST AIR
18"x18" S/E	SANITARY EXHAUST AIR
K/E KITCHEN 18"x18" K/E EXHAUST AIR	KITCHEN EXHAUST AIR
SE/A SMOKE 18"x18" SE/A EXHAUST AIR	SMOKE EXHAUST AIR
FLUE EXHAUST 6"ø FLUE GAS FLUE	EXHAUST GAS FLUE
CB/A CO6"ø CB/AIN AIR	COMBUSTION AIR
18"x12"	DUCT C/W THERMAL INSULATION
18"x12"	DUCT C/W 2 HR FIRE
18"x12"	DUCT C/W ACCOUSTIC LINING
DCW	DOMESTIC COLD WATER
DHW	DOMESTIC HOT WATER
DHW-R	HOT WATER RECIRCULATION
G	NATURAL GAS - LOW PRESSURE
G (xPSI)	NATURAL GAS - x PSI
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
CD	CONDENSATE DRAINAGE
CHGS	CHILLED GLYCOL SUPPLY
CHGR	CHILLED GLYCOL RETURN
HGS	HEATING GLYCOL SUPPLY
HGR	HEATING GLYCOL RETURN
REF-S	REFRIGERANT - SUPPLY
REF-R	REFRIGERANT - RETURN
REF-HG	REFRIGERANT - HOT GAS
CWS	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
SAN	SANITARY SEWER
SAN-P	PUMPED SANITARY SEWER
SAN(G)	GREASE WASTE
ST	STORM DRAINAGE
ST-P	PUMPED STORM DRAINAGE
OST	OVERFLOW STORM DRAINAGE
V	SANITARY VENT
WT	WEEPING TILE
GW	GROUND WATER DRAINAGE
GW-P	PUMPED GROUND WATER
STM (xPSI)	STEAM - x PSI
CDR	CONDENSATE RETURN
STM-HP	STEAM - HIGH PRESSURE
CA	COMPRESSED AIR

PIPING & PLUMBING SYMBOLS

- SIZE & SYSTEM (2" DCW)
- SIZE & SYSTEM & ARROW (4" DHW)
- SIZE & SYSTEM & SLOPE & ARROW (4" SAN (1% SLOPE))
- PIPE SPOT INVERT (SAN INV. 151.85 m)
- CAP (DHW)
- PIPE BREAK (DHW)
- PLUMBING TRAP (4" SAN (1% SLOPE))
- CLEANOUT (4" SAN (1% SLOPE))
- FLOOR CLEANOUT (4" SAN (1% SLOPE))
- SHUT-OFF VALVE (DCW)
- BALANCING VALVE (DCW)
- CHECK VALVE (2" DCW)
- BUTTERFLY VALVE (DCW)
- CIRCUIT SETTER (2" DCW)
- 2-WAY CONTROL VALVE (DCW)
- GATE VALVE (DCW)
- GLOBE VALVE (DCW)
- PRESSURE REDUCING (2" DCW)
- STRAINER (2" DCW)
- VIBRATION ISOLATION (DCW)
- BACKFLOW PREVENTER DOUBLE CHECK VALVE (2" DCW, RPZ)
- BACKFLOW PREVENTER REDUCED PRESSURE C/W DRAIN (2 1/2" DCW)
- TRAP PRIMER (DCW, TP)
- HEAT TRACING (4" SAN, DCW)
- 3 WAY MOTORIZED CONTROL VALVE (2" DCW)
- THERMOSTATIC MIXING VALVE (1 1/4" DCW, 1 1/4" DHW)
- DOMESTIC WATER METER (DCW, WM)
- METER (HWS, M)
- GAS METER ASSEMBLY (2 1/2" G (xPSI), GM, 2 1/2" G)
- VERTICAL INLINE PUMP (6" HWR, 6" HWS)
- FLOOR DRAIN (FD)
- FUNNEL FLOOR DRAIN (CFFD)
- HUB DRAIN (HD-1)
- SCUPPER DRAIN (SD-X)
- AREA DRAIN (AD-1)
- AREA DRAIN - STORM (AD-1)
- TRENCH DRAIN (TD-2)
- CATCH BASIN (CB-x)
- HOSE BIBB (HB)
- ROOF HYDRANT (RHB)
- NON-FREEZE EXTERIOR WALL HYDRANT (NFHB)
- INCOMING DOMESTIC WATER ASSEMBLY - 6"ø (WM)

HVAC SYMBOLS

- SIZE & SYSTEM (12"x12" S/A)
- LOUVERED DOUBLE DEFLECTION GRILLE ('A' - 12"x8" 40 L/s)
- LINEAR BAR GRILLE ('A' - 24"x2" 40 L/s)
- 3-CONE DIFFUSER ('A' - 4"ø 25 L/s / 600x600)
- PLAQUE FACE DIFFUSER ('B' - 4"ø 25 L/s / 600x600)
- LINEAR SLOT DIFFUSER WITH PLENUM BOX ('A' - 4"ø 25 L/s / 900)
- EGGCRATE RETURN GRILLE ('B' - 12"x8" 40 L/s)
- LINEAR BAR GRILLE ('B' - 24"x2" 40 L/s)
- LOUVERED GRILLE ('B' - 12"x8" 40 L/s)
- AIR INTAKE LOUVER ('C' - 28"x16" 250 L/s)
- EXHAUST AIR LOUVER ('C' - 28"x16" 250 L/s)
- EXHAUST BOX ('D' - 5"ø 25 L/s / 250x250)
- WALL BOX
- SMOKE DAMPER (S/A, SD)
- FIRE DAMPER (S/A, FD)
- COMB. FIRE/SMOKE DAMPER (S/A, FSD)
- MANUAL BALANCING DAMPER (S/A, BD)
- BACKDRAFT DAMPER (S/A, BDD)
- MOTORIZED DAMPER (S/A, MD)
- CO2 DETECTOR (CO2)
- CO DETECTOR (CO)
- NO2 DETECTOR (NO2)
- O2 DETECTOR (O2)
- HUMIDISTAT (H)
- HUMIDITY SENSOR (HS)
- INDOOR ENVIRONMENT QUALITY SENSOR (IEQ)
- TEMPERATURE SENSOR (TS)
- SWITCH
- STARTER
- INLINE FAN (SF-XX, 755 L/s — EQUIP. ID., AIRFLOW)
- WALL FAN (EF-XX, 1652 L/s — EQUIP. ID., AIRFLOW)
- VAV BOX (NECK SIZE 6, 60 L/s MAX FLOW, 19 L/s MIN FLOW)
- BASEBOARD HEATER (BBH-1, 0.5 kW — EQUIP. ID., HEAT CAPACITY)
- ROOFTOP UNIT (RTU-XX — EQUIP. ID.; 4 ton — COOLING CAPACITY; 866 CFH — FUEL FLOW; 949 lb — WEIGHT)

FIRE PROTECTION SYMBOLS

- FIRE HOSE CABINET (FHC)
- FIRE EXTINGUISHER IN CABINET (FE)
- FIRE EXTINGUISHER (FE)
- FP-DOM-W — COMBINED FIRE & DOMESTIC
- FP-D — DRY SPRINKLER
- FP-O — FIRE PROTECTION OTHER
- FP-PA — PRE-ACTION SPRINKLER
- FP — WET SPRINKLER

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

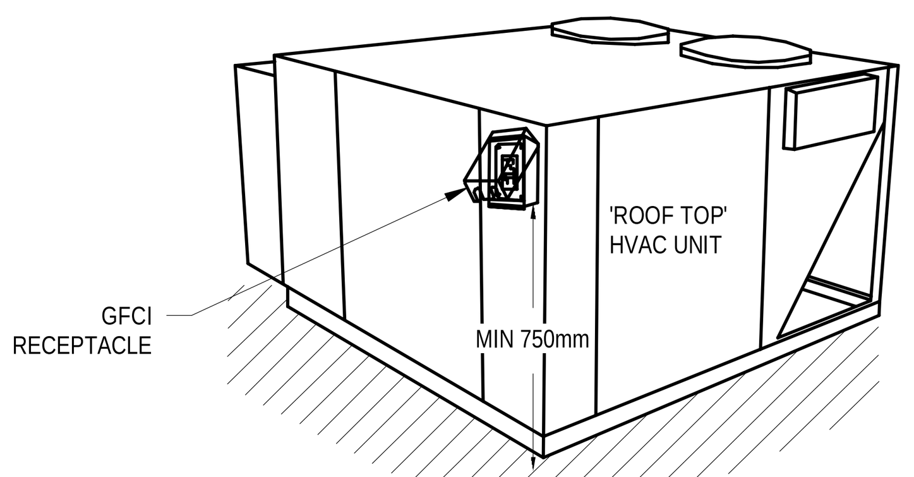
#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING
MECHANICAL TITLE SHEET

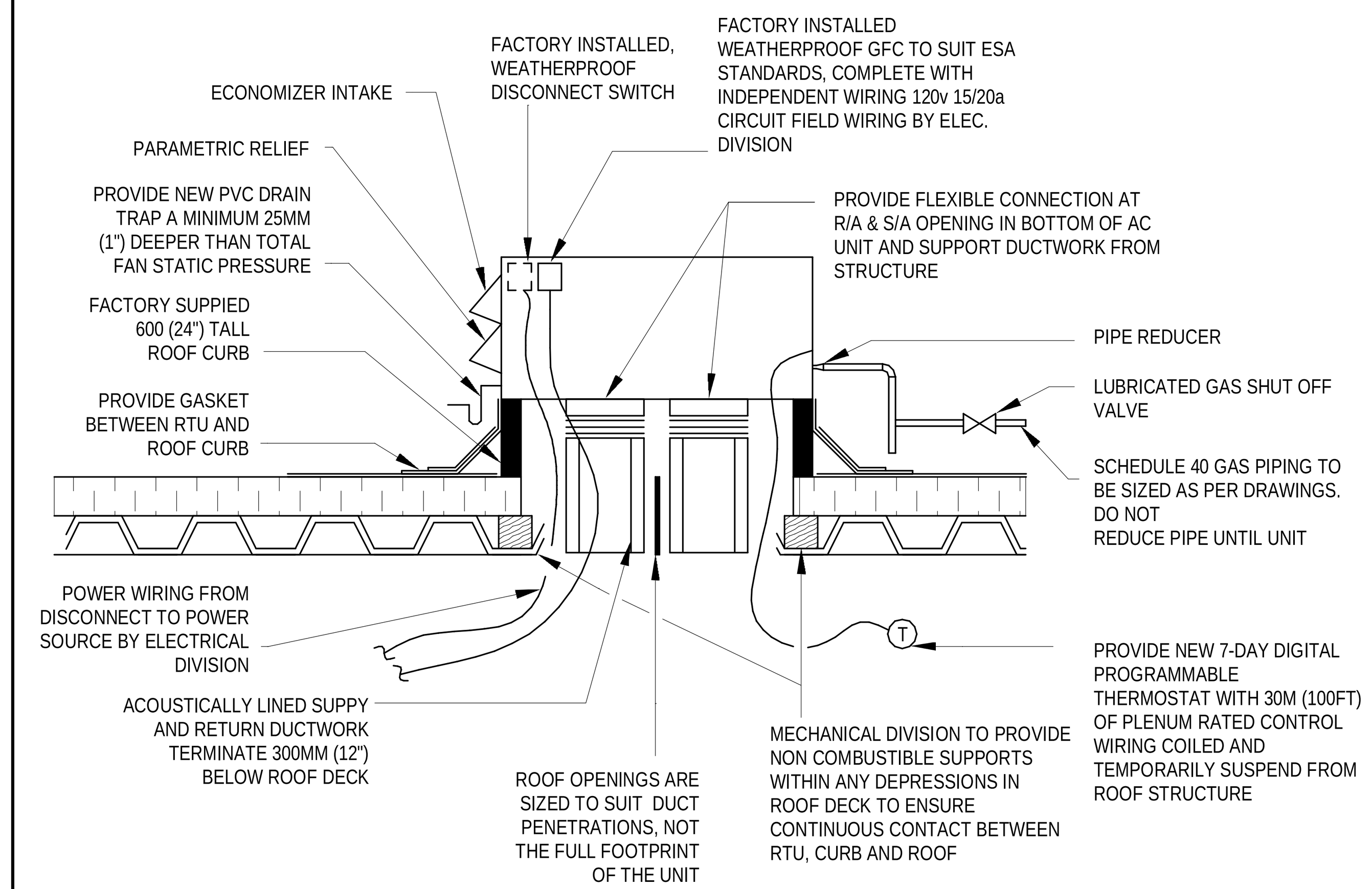
PROJECT NO. 22-000-032
PROJECT DATE Issue Date
DRAWN BY SK
CHECKED BY DJ
SCALE As indicated
DRAWING NO. M000



NOTES:

1. PROVIDE AT LEAST ONE (1) NEW GFCI RECEPTACLE PER PIECE OF EQUIPMENT WITH WEATHER PROOF COVER FACTORY SUPPLIED AND FIELD INSTALLED ON EXTERIOR UNIT.
2. RECEPTACLE SHALL BE INSTALLED MINIMUM 750mm ABOVE GRADE.
3. RECEPTACLE SHALL BE FIELD WITHIN BY ELECTRICAL DIVISION FROM INDEPENDENT POWER SOURCE WIRED.
4. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION.
5. ROOF PENETRATIONS SHALL BE RAIN TIGHT AND CONDUITS PROPERLY SUPPORTED.

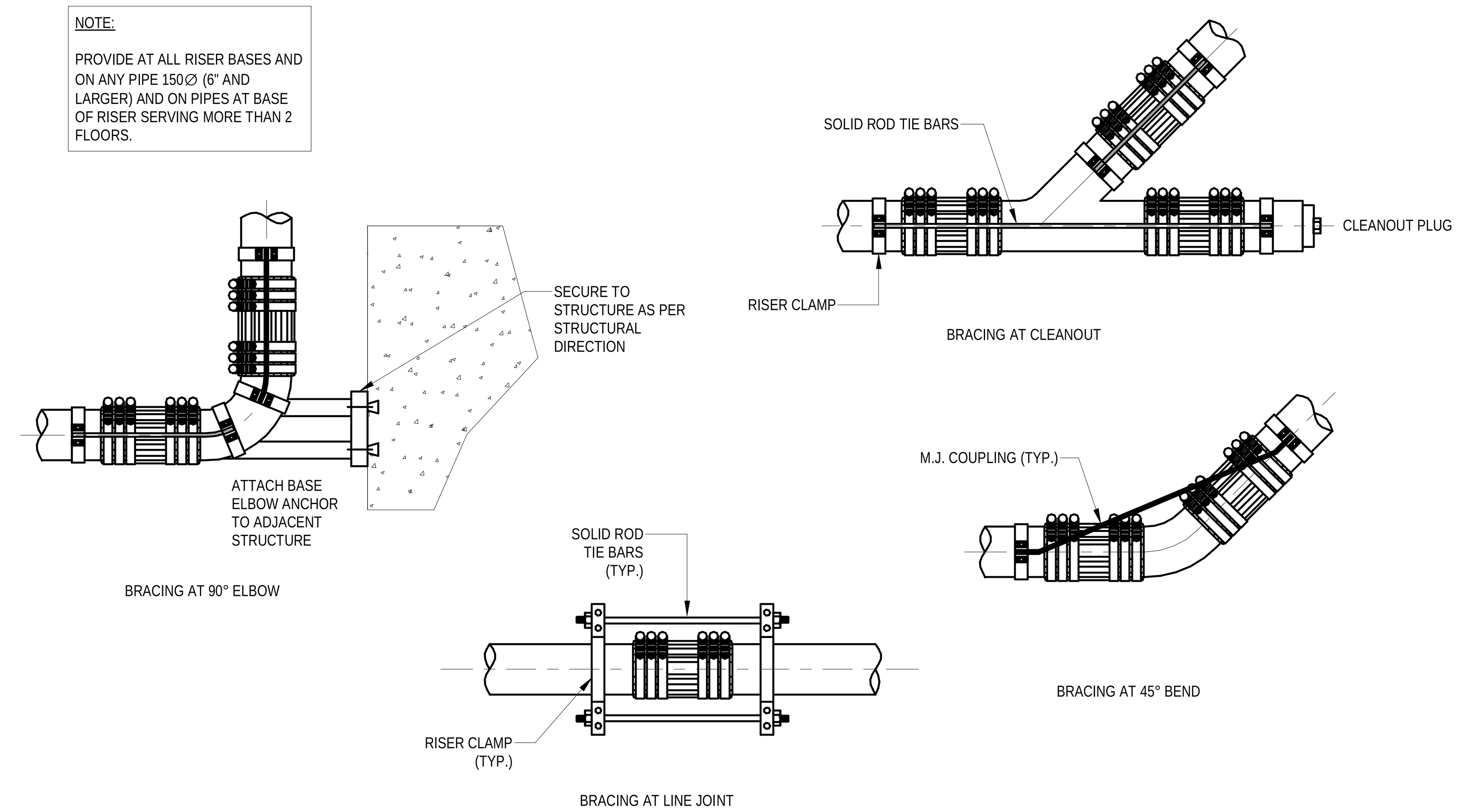
7 M001 ROOFTOP EQUIPMENT GFCI DETAIL
NTS



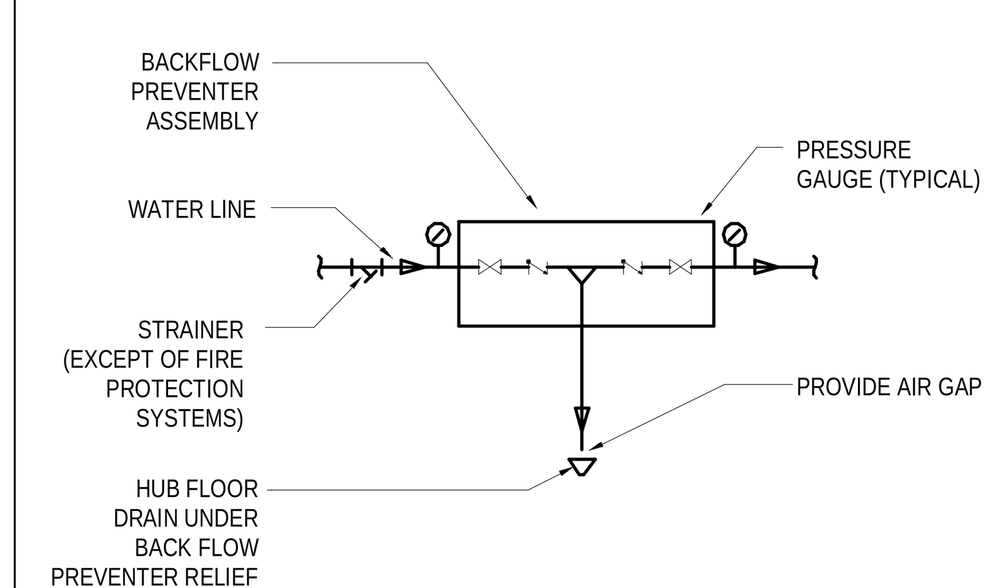
4 M001 ROOF TOP UNIT INSTALLATION
1/4" = 1'-0"

NOTE:

PROVIDE AT ALL RISER BASES AND ON ANY PIPE 150∅ (6" AND LARGER) AND ON PIPES AT BASE OF RISER SERVING MORE THAN 2 FLOORS.



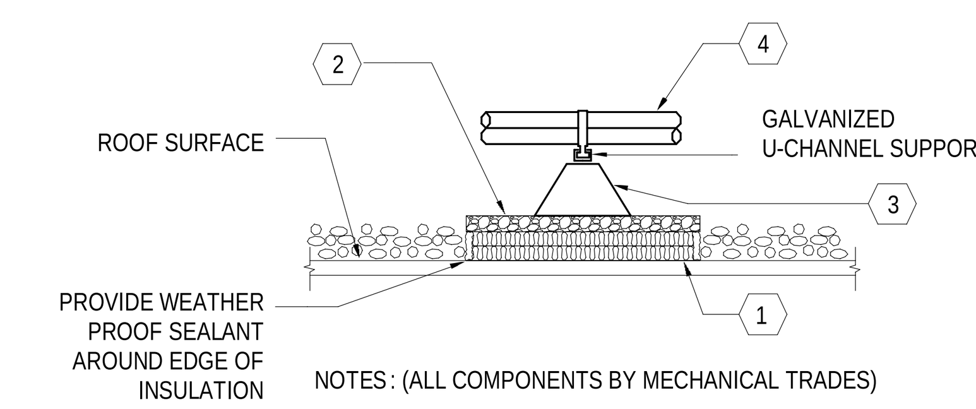
1 M001 DRAINAGE PIPE JOINT THRUST RESTRAINTS
NTS



NOTE:

- DRAIN TO NEAREST SUITABLE SIZE HUB DRAIN TO SUIT FULL RELIEF FLOW
- PROVIDE AIR GAP BETWEEN RELIEF AND DRAIN
- INSTALL BFP TO ALLOW FOR TESTING / INSPECTION
- ALL ISOLATION VALVES SERVING FIRE PROTECTION SYSTEMS TO BE SUPERVISED
- BFP AND INSTALLATION TO BE IN ACCORDANCEWITH LATEST VERSION OF CSA.B64.10

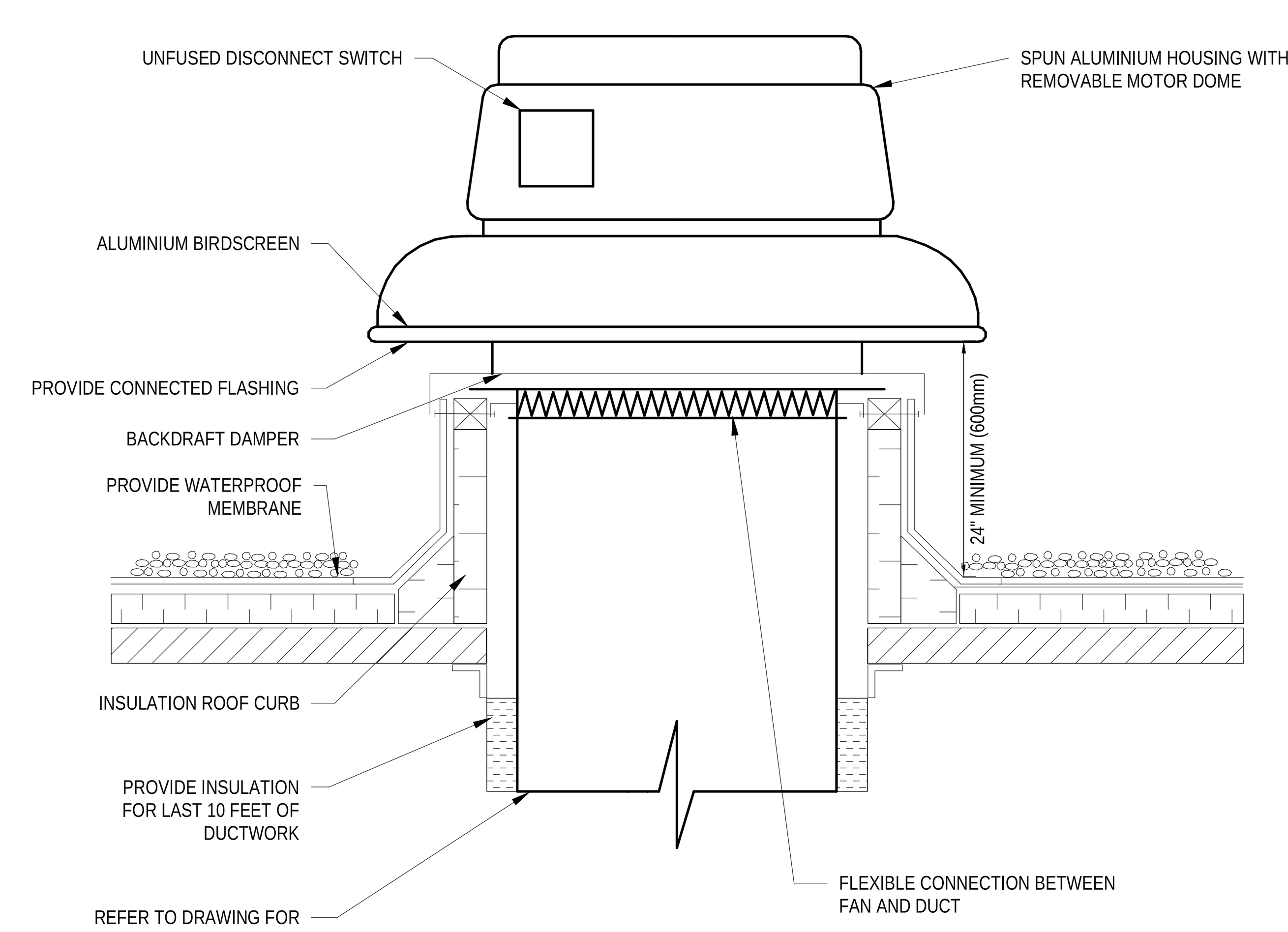
5 M001 RPZ BACKFLOW PREVENTOR
1/8" = 1'-0"



NOTES : (ALL COMPONENTS BY MECHANICAL TRADES)

1. 500MM/500MM/50MM (20"/20"/2") ROOFMATE INSULATION PLACED ON FINISHED ROOF
2. 600MM/600MM/50MM (24"/24"/2") PATIO PAVER
3. MANUFACTURED, SINGLE PIECE VOLCANIZED RUBBER PIPE SUPPORT (4"X6"X9" LONG) COMPLETE WITH STAINLESS STEEL STRUTS. SUPPORTS SHALL WEIGH NO LESS THAN 9LBS PER 9" WIDE SUPPORT
4. SCHEDULE 40 STEEL PIPE PAINTED YELLOW
5. GALVANIZED STEEL SUPPORT STRAPS WITH INTERIOR WEAR SURFACE TO ALLOW PIPES TO MOVE

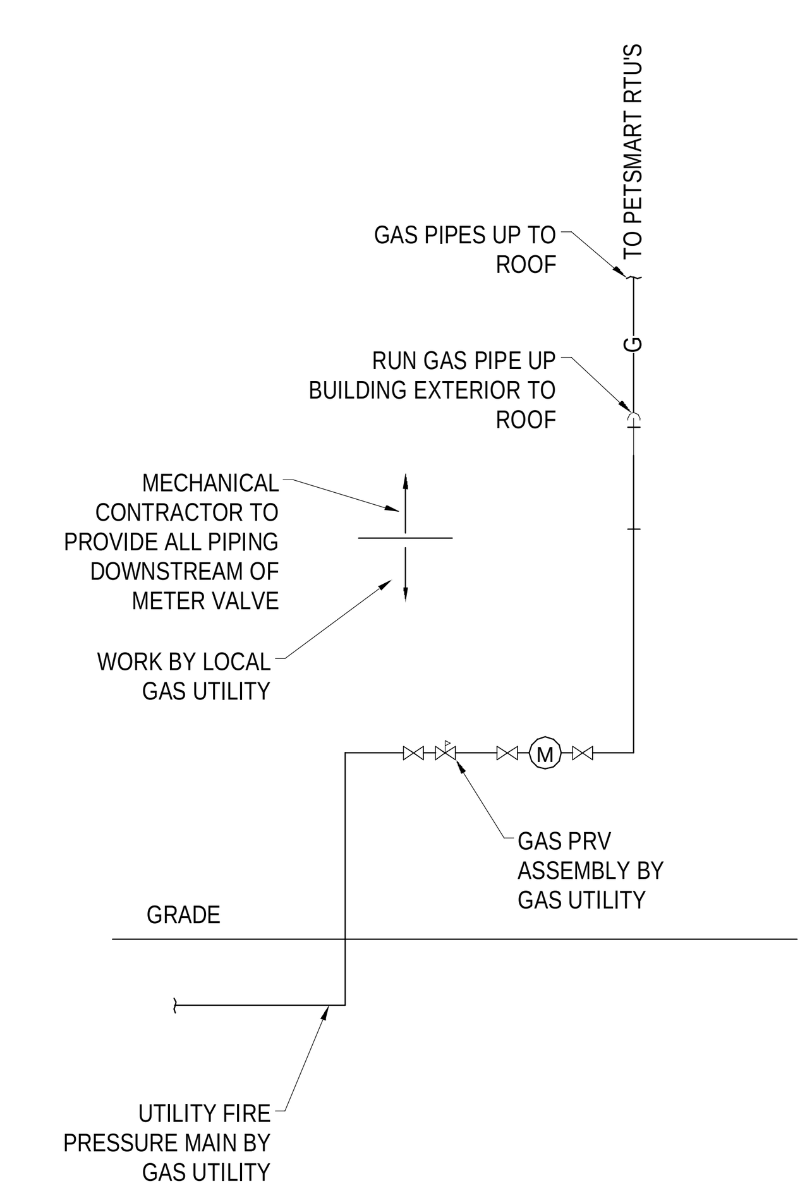
2 M001 SUPPORTS FOR GAS PIPING ON ROOF
N.T.S.



NOTES:

1. FANS AND CURBS SHALL BE BY THE SAME MANUFACTURER. COORDINATE CURB LOCATION AND ROOF OPENING WITH GC ROOFING CONTRACTOR AND STRUCTURAL TRADE.
2. HIRE BASE BUILDING ROOFING CONTRACTOR TO PERFORM ALL ROOFING WORK.
3. REFER TO ARCH AND STRUCTURAL PLANS FOR DETAILS - MAY NOT BE AS SHOWN. ROOFING MAY NOT BE AS SHOWN.

6 M001 ROOF MOUNTED DOWNBLAST EXHAUST FAN
NTS



GAS LOAD SUMMARY

SERVICE	PRESSURE	GAS LOAD	PIPE SIZE
RTU'S	2 PSIG	1116	1-1/2"∅

3 M001 GAS METER SCHEMATIC
1/8" = 1'-0"

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING
DETAILS

PROJECT NO. 22-000-032
PROJECT DATE Issue Date
DRAWN BY SK
CHECKED BY DJ
SCALE As indicated
DRAWING NO. M001

7/9/2024 2:59:03 PM

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

MATERIAL & PRODUCT & NATIONAL VENDOR SCHEDULE

SPEC. SECTION & TITLE	MATERIAL	PRODUCT(S)	MANUFACTURER(S) OR REQUIRED VENDOR (NO...
FIRE RESISTIVE JOINT	FIRE RETARDANT SEALANT	FIRE BARRIER PENETRATING SEALING SYSTEM	3M (LOCAL DISTRIBUTOR IS CRB SUPPLY, INC., PHOENIX, AZ P. (602) 271-0180
JOINTS SEALANTS	RESTROOM SEALANT WET AREAS (BATHING, DRYING, RECEIVING)	SILICONE BASE, TYPE II, CLASS A PREMIUM GRADE HIGH PERFORMANCE POLYURETHANE BASED SEALANT - SIKAFLEX 1A	DOW CORNING OR GE SIKA
PLUMBING	PLUMBING FIXTURES & EQUIPMENT	PER SPECIFICATIONS & PLUMBING SHEETS	HAINES, JONES & CADBURY CANADA (HJC) 4500 BLAKIE RD., UNIT 130 LONDON, ON N6L 1G5
HEATING, VENTILATION, AIR CONDITIONING	MECHANICAL EQUIPMENT	PER SPECIFICATIONS & MECHANICAL SHEETS	LENNOX INTERNATIONAL 2140 LAKE PARK BLVD. RICHARDSON, TX 75080-2254 PRIMARY CONTACT: JANE GUNTER P. (972) 497-6869 JANE.GUNTER@LENNOXIND.COM PETSMART@LENNOXIND.COM SECONDARY CONTACT: ADRIAN SOSA P. (949) 439-7847 ADRIAN.SOSA@LENNOXIND.COM TECHNICAL SUPPORT: (800) 367-6285 APPLICATION SUPPORT: (888) 595-4962
	HVAC TEST & BALANCE	PER SPECIFICATIONS & MECHANICAL SHEETS	DYNAMIC FLOW BALANCING 1200 SPEERS ROAD, UNIT 36 OAKVILLE, ON L6L 2X4 PRIMARY CONTACT: STEVEN MOLNAR P. (905) 338-0808 C. (905) 510-9875 STEVEN@DYNAMICFLOWBALANCING.COM QUOTES@DYNAMICFLOWBALANCING.COM
BUILDING AUTOMATION & AUTOMATIC TEMPERATURE CONTROL SYSTEMS	AUTOMATION AND TEMPERATURE CONTROL SYSTEMS EQUIPMENT	PER SPECIFICATIONS & ELECTRICAL SHEETS	NEXREV 601 DEVELOPMENT DRIVE PLANO, TX 75074 PRIMARY CONTACT: KEITH SVONOVEC P. (972) 303-8517 C. (216) 867-8131 KEITHSVONOVEC@NEXREV.COM PETSMART@NEXREV.COM SECONDARY CONTACT: BARB RYAN P. (972) 303-8530 C. (214) 218-0561 BARBRYAN@NEXREV.COM TECHNICAL SUPPORT P. (866) 601-5520

FAN SCHEDULE

ITEM	SERVICE	LOCATION	MANUFACTURER	MODEL	TYPE	CAPACITY		EXTERNAL STATIC PRESSURE		MOTOR POWER		FAN	VARIABLE FLOW	ELECTRICAL	WEIGHT		CONTROLS	COMMENTS
						(CFM)	(L/S)	(IN.H2O)	(PA)	(HP)	(KW)	(RPM)	(Y/N)	(V/PH/HZ)	(LBS)	(KG)		
EF-1	COPY/EQUIPMENT/STAFF	ROOF	CAPTIVE AIR	DR12HFA	DOWNBLAST	450	212	0.38	93.32	0.06	0.04	--	N	120/1/60	35	16	MANUAL STARTER	CONTINUOUS OPERATION
EF-2	BATHING/DRYING/MOP SINK	ROOF	CAPTIVE AIR	DR50HFA	DOWNBLAST	1,445	682	0.50	124.42	0.30	0.22	--	N	120/1/60	50	23	MANUAL STARTER	CONTROLLED BY EMS
EF-3	HOLDING/FISH/WASHROOMS	ROOF	CAPTIVE AIR	DR50HFA	DOWNBLAST	1,220	575	0.50	124.42	0.30	0.22	--	N	120/1/60	50	23	MANUAL STARTER	CONTINUOUS OPERATION

NOTES:
- PROVIDE GRAVITY BACKDRAFT DAMPER (SLEEVE TYPE), BIRD SCREEN, CURB, UNIT MOUNTED DISCONNECT SWITCH AND STARTERS FOR ALL FANS.
- ALL ROOF-MOUNTED FANS COMPLETE WITH MIN 24" (600MM) INSULATED ROOF CUBRS.
- ALL EXHAUST FANS ARE TO BE OBTAINED FROM LENNOX NATIONAL VENDOR, NO SUBSTITUTES. UNITS TO BE SUPPLIED AND INSTALLED BY THE LANDLORDS MECHANICAL CONTRACTOR.
- FAN PLACEMENT MUST BE AT LEAST 10'-0" FROM RTU OUTSIDE AIR HOOD, 5'-0" MINIMUM FROM PARAPET WALL TALLER THAN 43" ABOVE ROOF AND 10'-0" MIN. FROM ROOF EDGE OR PARAPET SHORTER THAN 43" ABOVE ROOF.

ROOF TOP UNIT SCHEDULE

MARK	MODEL NO.	NOMINAL TONS	FAN DATA					COOLING DATA				HEATING DATA		ELECTRICAL DATA			EER/IEER/SEER	HUMIDITROL	WEIGHT (LBS)	AREA SERVED
			S.A. CFM	MIN. O.A. CFM	TOTAL SP	H.P.	DRIVE KIT	GROOS COOLING (MBH)	SENSIBLE COOLING (MBH)	ENTERING TEMP. DB/WB 'F'	AMBIENT TEMP.	GAS HTG. INPUT (MBH)	GAS HTG. OUTPUT (MBH)	VOLTAGE/ PHASE/Hz	MCA	MOCP				
RTU-1	LGT092H4EH1J	7.5	3000	690	-	3.75	ECM DIRECT DRIVE (MSAV)	92.80	66.80	80/67	95.00	240/156	194	575/3/60	17	20	12.3/15.7/---	NO	1388	VESTIBULE/CASH/STAFF/OFFICES/SALES
RTU-2	LGT048H4EX1J	4	1600	355	-	1	ECM DIRECT DRIVE (MSAV)	48.70	35.60	80/67	95.00	150/113	121/92	575/3/610	11	15	12.8/---/17.0	YES	886	SALON
RTU-3	LGT036H4EQ1J	3	1200	270	-	1.5	ECM DIRECT DRIVE (MSAV)	48.70	35.60	80/67	95.00	108/81	87/66	575/3/60	8	15	13.3/---/17.0	YES	827	BATHING/DRYING
RTU-4	LGT092H4EM1J	7.5	3000	685	-	3.75	ECM DIRECT DRIVE (MSAV)	92.80	66.80	80/67	95.00	180/117	144/93.6	575/3/60	17	20	12.3/15.7/---	YES	1388	SALES
RTU-5	LGT036H4EQ1J	3	1200	270	-	1.5	ECM DIRECT DRIVE (MSAV)	48.70	35.60	80/67	95.00	108/81	87/66	575/3/60	8	15	13.3/---/17.0	NO	859	FISH/ADOPTIONS/WASHROOMS
RTU-6	LGT092H4EM1J	7.5	3000	685	-	3.75	ECM DIRECT DRIVE (MSAV)	92.80	92.80	80/67	95.00	180/117	144/93.5	575/3/60	17	20	12.3/157.7/---	NO	1388	SALES
RTU-7	LGT048H4EX1J	4	1600	355	-	1	ECM DIRECT DRIVE (MSAV)	48.70	35.60	80/67	95.00	150/113	121/92	575/3/60	11	15	12.8/---/17.0	NO	886	RECEIVING
TOTAL				3,310	-3,115 EXHAUST AIR = +195															

NOTES:
- EQUIPMENT PROVIDED BY LENNOX NATIONAL ACCOUNTS, NO SUBSTITUTES ALLOWED. CONTRACT LENNOX NATIONAL ACCOUNTS: JANE GUNTER, PHONE: 1+-972-497-6869 OR CONTRACT ADRIAN SOSA, PHONE;1-949-439-7847, TECHNICAL SUPPORT: 1-800-367-6285, APPLICATION SUPPORT; 1-888-595-4962. SEE SHEET F2.0 FOR FURTHER INFORMATION
- ALL ROOFTOP UNITS ARE TO BE INSTALLED WITH NEW STANDARD 18" HIGH CURBS.
- ALL RTU'S ARE TO BE FURNISHED WITH FACTORY INSTALLED SMOKE DETECTORS IN THE MAIN SUPPLY AIR DUCT.

- FIELD ADJUST FAN RPM TO PROVIDE AIR QUANTITIES AS SCHEDULED ABOVE.
- ALL RTU'S TO BE FURNISHED WITH FACTORY INSTALLED NON-FUSED DISCONNECT SWITCH.
- ALL RTU'S TO BE FURNISHED WITH FACTORY INSTALLED 120V GFCI CONVENIENCE OUTLET, FIELD WIRED.
- ALL RTU'A ARE TO BE FURNISHED WITH FACTORRY INSTALLED SMOKE DETECTORS IN THE MAIN SUPPLY AIR DUCT.
- COORDINATE RTU PLACEMENT WITH STRUCTURAL FRAMING.
- ALL RTU'S TO BE INSTALLED WITH FULL SIZE SUPPLY AND RETURN DROPS.
- ALL RTU'S SHALL BE FURNISHED WITH FACTORY INSTALLED GLOBAL ECONOMIZERS AND BAROMETRIC RELIEF.
- LENNOX TO PROVIDE HAIL GUARDS ON ALL RTU'S. CONTRACTOR SHALL FIELD INSTALL.
- RTU-2, 3 & 4 SHALL BE PROVIDED WITH HUMIDITROL OPTION. UNITS TO BE SUPPLIED WITH DUAL HUMIDITY/TEMPERATURE SENSOR LENNOX PART NUMBER (21WO6).
- RTU-1, 5, 6 & 7 FURNISHED WITHOUT HUMIDITROL OPTION SHALL BE PROVODED WITH TEMPERATURE SENSOR LENNOX PART NUMBER (94L60).
- RTU-3, 4, 5 & 6 ARE TO BE 2 STAGE MEDIUM HEAT.
- RTU-1, 2 & 7 ARE TO BE 2 STAGE HIGH HEAT.
- ALL RTU'S TO INCLUDE LOOSE C02 SENSOR FOR DEMAND CONTROL VENTILATION OPERATION.

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT

BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING

SCHEDULES

PROJECT NO.
22-000-032
PROJECT DATE
Issue Date
DRAWN BY
SK
CHECKED BY
DJ
SCALE

DRAWING NO.
M002A

PLUMBING FIXTURE SCHEDULE

FIXTURE DATA											PLUMBING FIXTURE SPECIFICATION
MARK	DESCRIPTION	LOCATION	MANUFACTURER	MODEL	CONNECTION						
					CW	HW	TRAP	WASTE	VENT	GALLONS	
FCO-1	FLOOR CLEANOUT	SEE LOCATIONS ON DRAWINGS	ZURN	ZN1400-4NH-HD	--	--	--	--	--	--	FLOOR CLEANOUT
CFFD-1	FUNNEL FLOOR DRAIN	RECEIVING	--	--	--	--	4"	4"	2"	--	FUNNEL FLOOR DRAIN
FD	FLOOR DRAIN	RECEIVING	ZURN	Z505-4NH-HP-VP	--	--	4"	4"	2"	--	4" CAST IRON BODY FLOOR DRAIN W/ 12" POLISHED NICKEL BRONZE TOP, HEEL-PROOF GRATE & VANDAL-PROOF SECURED TOP, 1/2" TRAP PRIMER 3"
TP	TRAP PRIMER	SEE LOCATIONS ON DRAWINGS	PRECISION PLUMBING PRODUCTS (PPP)	P1-500 WITH TAPPED P-TRAP ADAPTER	1/2"	--	--	--	--	--	TRAP PRIMER VALVE WITH INTEGRAL BACKFLOW PREVENTER & VACUUM BREAKER PORT PROVIDE DISTRIBUTION UNIT AS REQUIRED. ROUTE 1/2" PEX POLYETHYLENE TUBING DOWN IN WALL AND BELOW SLAB TO P-TRAP, INLCUDE TAPPED P-TRAP ADAPTER. PLUG UNUSED DISTRIBUTION PORTS.
TPD-1	TRAP PRIMER DISTRIBUTION	SEE LOCATIONS ON DRAWINGS	PRECISION PLUMBING PRODUCTS (PPP)	DU-U	--	--	--	--	--	--	DISTRIBUTION UNIT
RD-1	ROOF DRAIN (FOR MEMBRANE ON INSULATION)	ROOF	ZURN	Z121-E-DP	--	--	--	8"	--	--	CAST IRON ROOF DRAIN WITH 305MM (12") DIA. BODY INCLUDING 241MM (9-1/2") DIA. BOWL, COMBINATION FLASHING CLAMP COLLAR / GRAVEL GUARD WITH 4 ANCHOR SCREWS, PROLONGED RIM PROVIDING ADDITIONAL SUPPORT, DECK PLATE, SOLID EXTENSION IF REQUIRED AND NEOPRENE GASKET.
CO (8 INCH)	COLUMN CLEANOUT	SALES AREA	ZURN	Z1445 8"	--	--	--	8"	--	--	COLUMN CLEANOUT WITH 8" CAST IRON BODY WITH GAZ AND WATER PROOF ABS CAP
BFP	BACKFLOW PREVENTER	RECEIVING	ZURN	350XL 2	2"	--	--	--	--	--	MODERATE HAZARD BACKFLOW PREVENETER (DCVA), LOW LEAD, TO BE INSTALLED ON POTABLE WALER LINES TO PROTECT AGAINST BOTH BACKSIPHONAGE AND BACKPRESSURE OF POLLUTED WATER INTO THE WATER SUPPLY, CAST BRONZE BODY, REINFORCED NYLON HOUSING, STAINLESS STEAL FASTENERS AND SPRINGS, SILICONE AND BUNA NITRILE (FDA APPROVED) ELASTOMERS, DELRIN (NSF LISTED) INTERNAL COMPONENTS, FULL PORT QUARTER TURN BALL VALVES, FORGED BRASS STRUTS, MAXIMUM WORKING PRESSURE 175 PSI, MAXIMUM WORKING WATER TEMPERATURE 180F (82C), HYDRAULIC TEST PRESSURE 350 PSI, HORIZONTAL OR VERTICAL INSTALLATION, 51MM (2") THREADED CONNECTION.
BFP	STRAINER	RECEIVING	ZURN	SXL 2	2"	--	--	--	--	--	CAST IRON Y STRAINER, LOW LEAD, 300 PSI AT 82C (180F) WOG, BODY AND COVER CAST IRON (ASTM B 584), INTEGRAL STRAINER SCREEN ACCESSIBLE WITHOUT RTEMOVING DEVICE FROM LINE. 51MM (2") DIAMETER)
TPD-1	TRAP PRIMER DISTRIBUTION	SEE LOCATIONS ON DRAWINGS	PRECISION PLUMBING PRODUCTS (PPP)	DU-U	--	--	--	--	--	--	DISTRIBUTION UNIT

7/9/2024 2:59:04 PM

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA

RIO CAN

PROJECT

BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING

SCHEDULES

PROJECT NO.
22-000-032
PROJECT DATE
Issue Date
DRAWN BY
SK
CHECKED BY
DJ
SCALE

DRAWING NO.
M002B

MECHANICAL SPECIFICATION

1. GENERAL

1.1. COMPLY WITH ALL REQUIREMENTS OF DIVISION 1, OWNER, PROJECT MANAGER AND/OR CONSTRUCTION MANAGER.

1.2. PERFORM ALL MECHANICAL WORK DETAILED ON THESE DRAWINGS IN ACCORDANCE WITH THE MOST STRINGENT INDUSTRY STANDARDS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL SYSTEM TO THE SATISFACTION OF THE OWNER AND/OR MECHANICAL CONSULTANT.

1.3. WORK SPECIFIED ON THESE DRAWINGS IS INTENDED TO SHOW OVERALL MECHANICAL SCOPE. DIVISION OF RESPONSIBILITY BETWEEN MECHANICAL CONTRACTOR AND THEIR SUB-TRADES IS THE RESPONSIBILITY OF THE PRIME MECHANICAL CONTRACTOR.

1.4. NO SYSTEM SHALL BE CONCEALED/BURIED/COVERED PRIOR TO INSPECTION BY MECHANICAL CONSULTANT AND LOCAL AUTHORITIES HAVING JURISDICTIONS. THIS CONTRACTOR SHALL CONTACT HAMMERSCHLAG & JOFFE INC. (416-444-9263) A MINIMUM OF 5 BUSINESS PRIOR TO REQUIRED INSPECTION DATE. WHEN SYSTEMS HAVE BEEN CONCEALED/BURIED/COVERED PRIOR TO THIS INSPECTION WITHOUT WRITTEN CONSENT BY THE MECHANICAL CONSULTANT, THE MECHANICAL CONTRACTOR SHALL UNCOVER/EXPOSE ALL SUCH SYSTEMS AT NO ADDITIONAL COST.

1.5. THE MOST RIGOROUS OF THIS SPECIFICATION AND BASE BUILDING STANDARDS SHALL FORM THE BASIS FOR THIS CONSTRUCTION. COMPLY WITH BUILDING OWNER'S OR LANDLORD'S REQUIREMENTS FOR MECHANICAL SYSTEM INSTALLATIONS AND EXISTING SYSTEM SHUTDOWN AND CONNECTION.

1.6. OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES TO PERFORM THE WORK WITHIN THESE DOCUMENTS. ADHERE TO ALL CODES, STANDARDS AND BYLAWS. ARRANGE AND PAY FOR ALL REQUIRED INSPECTIONS FROM LOCAL AUTHORITY'S HAVING JURISDICTION. INCLUDE ALL COSTS ASSOCIATED TO THIS IN TENDER AMOUNT. ANY DEFICIENCIES NOTES BY AUTHORITY'S HAVING JURISDICTION SHALL BE IMMEDIATELY REPORTED TO THE MECHANICAL CONSULTANT INCLUDING REQUIRED CORRECTIVE MEASURES.

1.7. THIS CONTRACTOR SHALL VISIT THE SITE TO REVIEW EXISTING CONDITIONS PRIOR TO SUBMITTING TENDER PRICING. INCLUDE IN THE TENDER AMOUNT ALL REQUIRED LABOUR AND MATERIALS TO SUIT EXISTING CONDITIONS. NO EXTRAS WILL BE AWARDED TO SUIT EXISTING CONDITIONS.

1.8. CUTTING, PATCHING AND CORE DRILLING REQUIRED BY THIS TRADE SHALL BE PAID FOR BY THIS CONTRACTOR. ARRANGE AND PAY TO X-RAY AND SCAN EXISTING CONCRETE STRUCTURES IN ACCORDANCE WITH OWNER/LANDLORD STRUCTURAL ENGINEER'S REQUIREMENTS. PROVIDE DETAILS OF NEW OPENINGS THROUGH STRUCTURAL COMPONENTS FOR BASE BUILDING STRUCTURAL ENGINEER'S APPROVAL AT MECHANICAL CONTRACTORS COST.

1.9. PROVIDE ALL REQUIRED FIRE STOPPING FOR MECHANICAL SYSTEMS THROUGH RATED PARTITIONS (INCLUDING 0-HOUR RATED PARTITIONS.) FIRE STOP SHALL BE ULC LISTED FOR THE REQUIRED SEPARATION AND BE INSTALLED INC ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTION. ALL FIRE STOPPING SHALL BE REVIEWED BY MANUFACTURER'S REP. ACCEPTABLE MANUFACTURERS: 3M, HILTI

1.10. MEET CONSTRUCTION SPECIFICATION AS PREPARED BY ARCHITECT/GENERAL CONTRACTOR/OWNER INCLUDING ALL PHASING.

1.10.1. INCLUDE ALL PREMIUM LABOUR TO SUIT REQUIREMENTS AS LISTED WITHIN THESE DOCUMENTS, AND TO MEET PROJECT SCHEDULING. CONFIRM WITH OWNER/LANDLORD FOR SUITABLE AFTER-HOURS WORK SCHEDULE.

1.11. FLASHING AND COUNTER FLASHING FOR EXTERIOR PENETRATIONS OR WATER-PROOFED FLOORS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR'S SUB-CONTRACTOR AND INCLUDED IN MECHANICAL TENDER PRICE. USE PREFABRICATED ALUMINUM OR PVC FLASHINGS FOR ROOF, AND MEMBRANE OR COPPER FOR WALLS AND FLOORS. ENSURE ALL OPENINGS THROUGH VERITCAL AND HORIZONTAL BUILDING SURFACES ARE WEATHER PROOF AND WATER PROOF, USING AN APPROVED FLEXIBLE SEALANT.

1.12. PROVIDE SHOP DRAWING FOR ALL MECHANICAL EQUIPMENT. SHOP DRAWINGS SHALL BE COMPLETE WITH CONTRACTORS REVIEWED STAMP. SUBMIT SHOP DRAWINGS IN PDF FORMAT. ALLOW ONE (1) WEEK FOR ENGINEERS REVIEW.

1.13. ALL EQUIPMENT SHALL FROM A MANUFACTURER LISTED WITHIN THESE DOCUMENTS AS BEING BASIS OF DESIGN OR APPROVED. WHERE A LIST OF APPROVED MANUFACTURERS IS NOT PROVIDED, PROVIDE EQUIPMENT FROM MANUFACTURER LISTED ON THE DOCUMENTS. REQUESTS FOR EQUIPMENT SUBSTITUTION SHALL BE PROVIDED IN WRITING INCLUDING PROPOSED COST SAVINGS FOR SAID EQUIPMENT. THE QUALITY AND PERFORMANCE CHARACTERISTICS OF SUBSTITUTED PRODUCT SHALL BE EQUIVALENT TO THE SPECIFIED PRODUCT. ALL SUBSTITUTE PRODUCTS SHALL BE APPROVED BY CONSULTANTS. ANY ADDITIONAL COSTS INCURRED BY ANY TRADE (ARCHITECTURAL, STRUCTURAL, ELECTRICAL) FOR SUBSTITUTED EQUIPMENT INSTALLATION MUST BE INCURRED BY THE MECHANICAL CONTRACTOR.

1.14. ALL CONTROLS WORK SHALL BE PERFORMED BY OWNER'S/LANDLORD'S APPROVED CONTRACTOR AND INCLUDED IN MECHANICAL TENDER PRICE. ENSURE CONTROLS CONTRACTOR INCLUDES ALL LABOUR AND MATERIAL REQUIRED TO COMPLETE THE CONTROLS SCOPE OF WORK DETAILED ON THESE DRAWINGS. PROVIDE ALL CONTROLS WIRING AND CONDUIT TO PERFORM SAID WORK. INCLUDE ALL HIGH VOLTAGE POWER WIRING AND TRANSFORMERS AS REQUIRED TO COMPLETE THIS WORK, WHICH IS NOT EXPRESSLY CALLED FOR ON ELECTRICAL DRAWINGS.

1.15. ACCESS DOORS SHALL BE PROVIDED IN ALL HARD SURFACES TO ALLOW FOR INSPECTION/MAINTENANCE OF MECHANICAL SYSTEMS. ACCESS DOOR FINISHES SHALL BE AS PER ARCHITECT'S/DESIGNER'S/ENGINEER'S REQUIREMENTS. PROVIDE ACCESS DOORS WITH SUITABLE RECESS TO ACCEPT WALL FINISHES (TILE, CARPET, ETC.) PROVIDE FIRE RATED ACCESS DOORS IN FIRE RATED PARTITIONS.

1.16. PROVIDE ONE YEAR LABOUR AND MATERIAL WARRANTY FOR THE COMPLETE MECHANICAL INSTALLATION FROM DATE OF SUBSTANTIAL COMPLETION.

1.17. SUBMIT OPERATING AND MAINTENANCE MANUALS IN PDF FORMAT FOR REVIEW. ONCE APPROVED SUBMIT FINAL PDF COPY AND THREE (3) HARD COPIES OF DOCUMENTS TO OWNER. INCLUDE ALL APPROVED SHOP DRAWINGS, WARRANTY LETTERS, AIR AND WATER BALANCING REPORTS, OPERATING INSTRUCTIONS, MAINTENANCE PROCEDURES, CONTRACTOR AND SUB-CONTRACTOR CONTACT INFORMATION, INSPECTION REPORTS FROM THIRD PARTY INSPECTION AGENCIES AND AUTHORITIES HAVING JURISDICTION AND ALL OTHER PERTANANT INFORMATION. FINAL HARD-COPY SHOP DRAWINGS SHALL BE SEPARATED WITH DIVIDERS IN A NEAT AND ORDERLY FASHION COMPLETE WITH TABLE OF CONTENTS. ALLOW A MINIMUM OF 5% OF CONTRACT VALUE TO BE HELD UNTIL SUCH TIME THAT OPERATING AND MAINTENANCE MANUALS ARE ACCEPTED AND RECEIVED BY OWNER IN HARD COPY.

1.18. AS-BUILT DRAWINGS SHALL BE COMPLETED USING AUTOCAD/REVIT. RECORD ACCURATELY INSTALLED WORK ON SITE AND TRANSFER INFORMATION TO AUTOCAD/REVIT. SUBMIT BOTH PDF AND AUTOCAD/REVIT COPIES OF AS-BUILTS. ALLOW A MINIMUM OF 5% OF CONTRACT VALUE TO BE HELD UNTIL SUCH TIME THAT AS-BUILT DRAWINGS ARE APPROVED.

1.19. CHANGE NOTICE QUOTATIONS SHALL BE SUBMITTED COMPLETE WITH DETAILED COST BREAKDOWN OF LABOUR AND MATERIALS. FAILURE TO PROVIDE DETAILED BREAKDOWNS WILL RESULT IN REJECTION. ALL MECHANICAL CHANGE NOTICES SHALL BE PRICED IN ACCORDANCE WITH "MECHANICAL CONTRACTORS ASSOCIATION" (MCA) LABOUR UNITS AND MARK UPS (NOT TO EXCEED 20%). ALL MATERIAL SHALL BE IDENTIFIED INCLUDING ALLPRISER LIST PRICE, AND A MINIMUM OF 25% DISCOUNT.

1.20. TEMPORARY FILTERS 25MM (1 IN.) SHALL BE PROVIDED AT ALL BASE BUILDING RETURN AIR OPENINGS WHICH REMAIN OPERATIONAL DURING CONSTRUCTION. FILTERS TO BE REPLACED WHEN 50% USABLE LIFT REMAINS OR WEEKLY (WHICHEVER COMES FIRST). REMOVE UPON CONSTRUCTION COMPLETION.

1.21. RETURN ALL BASE BUILDING MECHANICAL COMPONENTS TO LANDLORD/OWNER AS DIRECTED. COORDINATE REQUIREMENTS WITH OWNER/LANDLORD PRIOR TO COMMENCEMENT OF DEMOLITION. RELOCATE ALL COMPONENTS ANYWHERE WITHIN THE PROPERTY AS PER LANDLORD/OWNER'S DIRECTION.

1.22. THE MECHANICAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO KEEP ALL AREAS PERTAINING TO HIS WORK, INCLUDING CONSTRUCTION AREA, STORAGE AND STAGING CLEAN AND TIDY. ALL AREAS SHALL BE FREE OF SURPLUS DEBRIS AND RUBBISH.

1.23. DO NOT ALLOW MATERIAL/EQUIPMENT TO BE STORED IN EXCESS OF BUILDING STRUCTURE LIMITATION.

1.24. MECHANICAL CONTRACTOR SHALL PROTECT ALL EXISTING PROPERTY AND ADJACENT PROPERTIES FROM DAMAGE, INCLUDING WORK COMPLETED BY OTHER TRADES WITHIN THE PROJECT SCOPE OF WORK. MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PAY FOR CORRECTIVE MEASURES TO ALL DAMAGE CAUSED BY THEM, THEIR PERSONNEL OR THEIR SUB-TRADES.

1.25. DIVISION 15 CONTRACTORS ARE RESPONSIBLE TO ENSURE THAT THEIR EMPLOYEES AND SUB-TRADES OBSERVE ALL SAFETY REGULATIONS, SECURITY REGULATIONS AND FIRE SAFETY RULES, INCLUDING CONDUCT THEIR WORK WITHIN ACCORDANCE WITH LOCAL WORKPLACE HEALTH AND SAFETY REGULATIONS.

1.26. ALL MATERIALS SHALL BE NEW, (UNLESS SPECIFICALLY STATED AS BEING REUSED) AND FREE OF DEFECT. ALL MATERIALS AND EQUIPMENT SHALL BARE THE APPROVAL OF LOCAL AUTHORITIES (INCLUDING CSA, ULC ETC.) AND BE ACCEPTABLE FOR USE IN CANADA.

1.27. ALL EQUIPMENT SHALL MEET THE MINIMUM PERFORMANCE REQUIREMENTS SPECIFIED IN THESE DOCUMENTS INCLUDING SPATIAL PROPERTIES. SUPPLY EQUIPMENT FROM THE BASIS OF DESIGN, OR APPROVED ALTERNATE MANUFACTURERS AS LISTED ON THESE DOCUMENTS. BASE BID PRICE SHALL INCLUDE EQUIPMENT AS SPECIFIED ON THESE DRAWINGS WITH OPTIONAL EQUIPMENT SUBSTITUTIONS LISTED AS COST SAVINGS.

1.28. REQUESTS FOR ALTERNATE EQUIPMENT MANUFACTURERS SHALL BE PROVIDED IN WRITING AND INCLUDE ALL RELEVANT PERFORMANCE AND CONSTRUCTION INFORMATION. INCLUDE IN REQUEST COST SAVINGS TO OWNER OFFERED TO USE ALTERNATE EQUIPMENT. DO NOT PROCEED WITH AN ALTERNATE MANUFACTURER WITHOUT WRITTEN APPROVAL FROM CONSULTANT/OWNER.

1.29. ADHERE TO ALL BASE BUILDING STANDARDS FOR NEW EQUIPMENT. OBTAIN OWNER/LANDLORD APPROVAL FOR ALL NEW EQUIPMENT.

1.30. PROVIDE ALL REQUIRED SUPPORTS, HANGERS, RODS, FRAMES, MISCELLANEOUS METALS AND OTHER MATERIAL REQUIRED TO ADEQUATELY SUPPORT AND INSTALL NEW EQUIPMENT. ALL SUPPORTS SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEERING LICENSED IN THE PROVIDE OF THE PROJECT. SUBMIT ALL STAMPED SUPPORT SHOP DRAWINGS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
1.31. INSTALL SUPPORTS TO MEET REQUIREMENTS OF APPLICABLE CODES, AND TO SUITABLE SUPPORT THE EQUIPMENT WITHOUT UNDER STRESS/STRAIN TO THE EQUIPMENT AND ASSOCIATED SYSTEMS.
1.32. ALL EQUIPMENT SHALL BE SUPPORTING FROM BUILDING STRUCTURES. DO NOT SUPPORT EQUIPMENT FROM OTHER EQUIPMENT/PIPES/DUCTS OR THEIR SUPPORT SYSTEMS.

1.33. PROVIDE LAMACOID NAME PLATES ON ALL NEW AND EXISTING MECHANICAL EQUIPMENT SHOWING VOLTAGE, DESIGNATION, CRU# AND USE. NUMBERS AND LETTERS TO BE 3/8" (10MM) HIGH. NAME PLATES SHALL BE PERMANENT AND NOT FADE OVER TIME.

1.34. IDENTIFY ALL VALVES WITH TAGS. PROVIDE A FRAMED LIST OF VALVES, INDICATING THEIR LOCATION AND USE, SUPPLY TO OWNER/TENANT. PROVIDE NEW (OR UPDATED) VALVE TAG LOCATION MAP ON FRAMES 11X17 PRINTS. PROVIDE PDF COPIES TO OWNER.

1.35. THIS MECHANICAL CONTRACTOR SHALL BARE THE RESPONSIBILITY TO COORDINATE ALL NEW MECHANICAL EQUIPMENT AND SYSTEMS WITH OTHER CONTRACTORS INCLUDING, BUT NOT LIMITED TO, ARCHITECTURAL, STRUCTURAL, LEED, ELECTRICAL, AND CIVIL DISCIPLINES.

1.36. MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE AND TAKE THE LEAD ROLE IN PROVIDING INTERFERENCE DRAWINGS FOR ALL TRADES. OBTAIN ALL INFORMATION FROM OTHER TRADES AND PREPARE ONE COMBINED SET OF INTERFERENCE DRAWINGS. SITE VERIFY ALL EXISTING INFORMATION INCLUDING ALL DIMENSIONS OF EXISTING STRUCTURE AND EQUIPMENT AND INCLUDE IN INTERFERENCE DRAWINGS.

1.37. MECHANICAL CONTRACTOR SHALL REVIEW AVAILABLE POWER ON SITE AND WITH ELECTRICAL CONTRACTOR/DRAWINGS PRIOR TO ORDERING ANY NEW MECHANICAL EQUIPMENT. ORDER AND SUPPLY EQUIPMENT TO SUIT AVAILABLE SITE POWER, AND IN COORDINATION WITH THE MECHANICAL DRAWINGS.

1.38. ALL MECHANICAL FINISHES AND LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECTURAL DIVISION AND/OR OWNER INCLUDING, BUT NOT LIMITED TO, AIR TERMINALS, THERMOSTATS/CONTROLS, EXPOSED INSULATION/DUCTWORK. WHERE A DISCREPANCY EXISTS BETWEEN MECHANICAL AND ARCHITECTURAL DRAWINGS AS TO THE LEVEL OF FINISHED REQUIRED, THE MOST STRINGENT/COSTLY REQUIREMENTS SHALL BE CARRIED IN THE TENDER AMOUNT. OBTAIN CLARIFICATION FOR FINAL FINISH PRIOR TO ORDERING.

1.39. ALL MECHANICAL EQUIPMENT WEIGHTS, SUPPORTS, AND OPENING SHALL BE REVIEWED AND APPROVED BY A STRUCTURAL ENGINEER. WHEN APPLICABLE, HIRE BASE BUILDING STRUCTURAL ENGINEER TO PERFORM ALL SUCH REVIEWS. MECHANICAL CONTRACTOR SHALL PAY FOR ALL SUCH REVIEWS AND INCLUDE COST IN TENDER AMOUNTS.

2. EQUIPMENT START-UP AND BALANCING

2.1. PROVIDE START UP REPORTS FOR ALL NEW MECHANICAL EQUIPMENT. START UP REPORT SHALL BE PREPARED BY A FACTORY TRAINED REPRESENTATIVE AND SHOW THAT THE EQUIPMENT IS IN GOOD CONDITION.

2.2. PROVIDE ALL TEMPORARY POWER, GAS, AND OTHER UTILITIES AS REQUIRED TO PERFORM START UP OF EQUIPMENT.

2.3. PERFORM BALANCING OF MECHANICAL SYSTEMS ONCE ALL COMPONENTS ARE INSTALLED AND PRESSURE TESTED.

2.4. PERFORM BALANCING TO SUIT PROJECT SCHEDULE. IF REQUIRED PAY AND PROVIDE ALL TEMPORARY POWER AND UTILITIES IF EQUIPMENT IS REQUIRED TO BE BALANCED PRIOR TO SAID SERVICES BEING IN PLACE TO SUIT PROJECT SCHEDULE.

2.5. WHERE START UP OF EQUIPMENT OCCURS WHILE THE BUILDING IS STILL IN CONSTRUCTION, REPLACE ALL FILTERS AND STRAINERS AFTER START UP.

2.6. GENERALLY SPEAKING ALL CEILINGS, WALLS, DOORS, WINDOWS, PLENUMS, SHEET METAL, AND OTHER BUILDING COMPONENTS AFFECTING THE PERFORMANCE OF A UNIT SHALL BE FULLY COMPLETE PRIOR TO THE BALANCING.

2.7. ALL BALANCING SHALL BE COMPLETED BY A SINGLE FIRM INCLUDING BOTH AIR AND WATER SYSTEMS. THE FOLLOWING SYSTEMS SHALL BE BALANCED:

2.8. AIR SYSTEMS SHALL BE TESTED ONCE THE DUCTWORK SYSTEMS ARE COMPLETE AND SEALED, FILTERS ARE CLEAN, FAN ROTATION HAS BEEN VERIFIED TO BE IN THE CORRECT DIRECTION, ALL CONTROL ELEMENTS INCLUDING THERMOSTATS, SMOKE DETECTORS, AND DUCT MOUNTED SENSORS ARE INSTALLED, COILS ARE CLEAN, DUCT ACCESS DOORS ARE CLOSED, ALL FIRE/SMOKE/CONTROL DAMPERS ARE INSTALLED AND FUNCTIONAL,

2.8.1. TEST ALL AIR SYSTEMS TO BE +/- 5% OF THE DESIGN VALUES.
2.8.2. PERFORM REBALANCING OF SYSTEMS AS MANY TIMES AS REQUIRED TO OBTAIN SUITABLE READINGS.
2.8.3. BALANCING DAMPERS WHICH EXHIBIT VIBRATION AND OR NOISE SHALL BE REPLACED AND THE SYSTEM SHALL BE REBALANCED.

2.9. ONCE AIR SYSTEMS ARE BALANCED, ALLOW SYSTEMS TO CONTINUE TO RUN FOR FIVE DAYS. AFTER RUNNING, REPLACE ALL FILTERS, INSPECT ALL MOVING COMPONENTS AND CONFIRM SYSTEM OPERATION. PRODUCE ALL ADDITIONAL NOISE/VIBRATION CONTROL ELEMENTS TO ELIMINATE EXCESS NOISE/VIBRATION. LUBRICATE ALL MOVING PART AND REPAIR ANY NOTICEABLE DEFECTS IN THE SYSTEM.

2.10. WATER SYSTEMS SHALL BE TESTED ONCE ALL PIPE WORK IS COMPLETE, FILLED, PRESSURE TESTED, VENTED AND VOID OF AIR, PUMPS PROVEN TO OPERATE IN CORRECT DIRECTION, STRAINERS IN PLACE AND CLEANED, ALL VALVES AND CIRCUIT BALANCING VALVES ARE INSTALLED AND SYSTEMS ARE COMPLETE.

2.10.1. TEST ALL WATER SYSTEMS TO BE +/- 5% OF THE DESIGN VALUES
2.10.2. PERFORM REBALANCING OF SYSTEMS AS MANY TIMES AS REQUIRED TO OBTAIN SUITABLE READINGS.

2.11. SUBMIT PDF COPIES OF BALANCING REPORTS ONCE SYSTEMS MEET THRESHOLDS NOTED ABOVE. INCLUDE APPROVED BALANCING REPORTS IN CLOSEOUT DOCUMENTS.

2.12. TEST ALL CONTROL SYSTEMS INCLUDING FUNCTION OF THERMOSTATS AND READINGS OF CONTROLS POINTS.

3. COMPLETION OF CONTRACT

3.1. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL LABOUR AND MATERIAL TO INSTALL ALL SYSTEMS SHOWN AND/OR IMPLIED ON THESE DRAWINGS IN GOOD WORKING ORDER. THESE SYSTEMS SHALL BE FULLY OPERATIONAL, TESTED, BALANCED, VERIFIED, CLEAN AND FREE OF DEBRIS AT COMPLETION OF CONTRACT.

3.2. PROGRESS BILLING

3.2.1 PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOUR AND GENERAL COSTS WHEN SUBMITTING PROGRESS DRAW REQUESTS.

3.2.2 PROVIDE SEPARATE BILLING SECTION FOR EACH SYSTEM INSTALLED AS PART OF THE PROJECT. SEPARATE SECTIONS SHALL INCLUDE, HOWEVER NOT BE LIMITED TO THE FOLLOWING: HVAC, GAS, PLUMBING, DRAWINGS, FIRE PROTECTION, COMPRESSED AIR, PROJECT CLOSEOUT.

3.2.3 INCLUDE A LINE ITEM AS PART OF BILLING STRUCTURE FOR 'PROJECT CLOSEOUT' TO BE BILLED ONLY ONCE ALL PROJECT CLOSE OUT DOCUMENTS ARE PROVIDED AND ACCEPTED (INCLUDING AS BUILT DRAWINGS) AS PER THE FOLLOWING PRICING STRUCTURE:
UP TO $100,000 -> $5,000
UP TO $500,000 -> $7,500
UP TO $1,000,000 -> $10,000
GREATER THAN $1,000,000 -> 1%

3.3. AT THE COMPLETION OF THE PROJECT PROVIDE THE FOLLOWING INFORMATION TO THE CONSULTANT FOR REVIEW:

3.3.1. WARRANTY LETTERS
3.3.2. AS BUILT DRAWINGS IN AUTOCAD AND PDF FORMAT
3.3.3. CLOSE OUT DOCUMENTS INCLUDING A BINDER OF APPROVED SHOP DRAWINGS, TAB REPORTS, AND O&M MANUALS.
3.3.4. NFPA 13 SIGN OFF LETTER IF APPLICABLE

3.4. SCHEDULE WORK TO MEET PROJECT SCHEDULE. ARRANGE TO PROVIDE CLOSE OUT DOCUMENTS PRIOR TO SCHEDULE COMPLETION TO ENSURE NO DELAY IN PROJECT CLOSE.

3.5. ALL SYSTEMS SHALL BE COMPLETED AND FULLY FUNCTIONAL AT PROJECT COMPLETION. REPLACE ALL FILTERS AND STRAINERS AT PROJECT COMPLETION. ENSURE ALL TEMPORARY CONSTRUCTION AIDS, AND OR CONSTRUCTION DEBRIS IS REMOVED FROM SITE. WHERE WORKING IN EXISTING BUILDING, ALL EXISTING FINISHES TO REMAIN SHALL BE IN AS NEW CONDITION.

HVAC

1. GENERAL

1.1. COMPLY WITH ALL REQUIREMENTS OF DIVISION 1, OWNER, PROJECT MANAGER AND/OR CONSTRUCTION MANAGER.

1.2. COORDINATE THE WORK OF THIS TRADE WITH ALL OTHER TRADES. INCLUDE FOR ALL MATERIAL AND LABOUR TO INSTALL THESE SYSTEMS TO SUIT THE EXISTING AND NEW SYSTEMS OF OTHER TRADES.

2. DUCTWORK

2.1. UNLESS OTHERWISE SPECIFIED, CONSTRUCT AND INSTALL ALL DUCTWORK IN ACCORDANCE WITH ANSI/SMACNA HVAC DUCT CONSTRUCTION STANDARDS USING A MINIMUM PRESSURE CLASSIFICATION OF POSITIVE OR NEGATIVE 500 PA (2" W.C) AND A MINIMUM VELOCITY OF 10 M/S (2000 FPM) SUCH THAT THE DUCTWORK DOES NOT DRUM.

2.2. FOR DUCTWORK SUBJECTED TO MORE THAN 500 PA (2" W.C.) POSITIVE/NEGATIVE PRESSURE, CONSTRUCT DUCTWORK TO MEET ANSI/SMACNA DUCT STANDARD TO SUIT APPLICABLE PRESSURE CLASSIFICATION PLUS 10% FACTOR OF SAFETY.

2.3. STANDARD DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED STEEL SHEETS, HOT DIPPED IN ACCORDANCE WITH ASTM A653. GALVANIZING FOR BARE UNCOVERED DUCTS TO BE FINISH PAINTED TO BE G60. ALL OTHER GALVANIZING TO BE G90.

2.4. FABRICATE AND INSTALL DUCTWORK TO ENSURE INTERIOR SURFACE IS SMOOTH AND FREE OF OBSTRUCTIONS, AND THAT DUCTWORK DOES NOT VIBRATE OR CREATE NOISE ONCE SYSTEMS ARE IN OPERATION.

2.5. DUCTWORK HANGERS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS AS A MINIMUM. INCLUDE ALL ADDITIONAL SUPPORTS AS REQUIRED TO SUIT SYSTEMS SPECIFICS AND ENSURE A FULLY OPERATIONAL AND VIBRATION FREE DUCTWORK SYSTEM.

2.6. FLEXIBLE DUCTWORK SHALL BE SPIRALLY WOUND, SEMI-RIGID, SELF SUPPORTING CORRUGATED ALUMINUM DUCT WITH CONTINUOUS TRIPLE LOCK SEAMS, ULC-S110 LISTED AND LABELED AS A CLASS 1 AIR DUCT, CONSTRUCTED OF DEAD SOFT ALUMINIUM STRIP FACTORY COVERED WITH 40 MM (1-1/2"), 12 KG/M^3 (0.75 LB/FT^3) DENSITY FIBERGLASS INSULATION WITH VINYL JACKET MEETING FLAME AND SMOKE DEVELOPMENT REQUIREMENTS OF CAN/ULC S-102. BASIS OF DESIGN SHALL BE NOVAFLEX GROUND T/L-A TRIPLE LOCK ACOUSTIC DUCT.

2.7. ALL FLEXIBLE DUCTWORK SHALL BE INSTALLED WITHOUT EXCESS LENGTH AND SUPPORTED IN ACCORDANCE WITH ANSI/SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

2.8. FIRE DAMPERS SHALL BE INSTALLED IN ALL DUCTWORK PASSING FIRE RATED PARTITIONS. DAMPERS SHALL BE CURTAIN BLADE TYPE, DYNAMIC, GALVANIZED STEEL FUSIBLE LINK DAMPERS, ULC CLASSIFIED TO STANDARD CAN/ULC-S112 AND IN ACCORDANCE WITH NFPA 90A.

2.9. DAMPERS SHALL BE OUT OF STREAM TYPE UNLESS SIZE OR LOCATIONS DICTATES THE USE OF IN STREAM DAMPERS.

2.10. FIRE DAMPERS SHALL BE SELECTED IN ACCORDANCE WITH THE RATING OF THE PARTITION AND LOCAL CODES (OBC). MINIMUM DAMPER RATING SHALL 1.5 HOURS WITH 74C (165F) FUSIBLE LINK (UNLESS APPLICATION REQUIRED HIGHER TEMPERATURE RATING.

2.11. PROVIDE ACCESS DOORS IN DUCTS AND HARD SURFACES AS REQUIRED TO ACCESS AND MAINTAIN FIRE DAMPERS.

2.12. PROVIDE CURTAIN OR PARALLEL BLADE TYPE DAMPERS TO MAINTAIN FIRE RATING INTEGRITY OF MEMBRANE BEING PIERCED. MINIMUM RATING TO BE 1-1/2 HOURS WITH {100OC} [212OF] FUSIBLE LINK. PROVIDE MULTIPLE DAMPERS WHERE SIZES EXCEED CODE LIMITATION.

2.13. FIRE DAMPERS SHALL BE MANUFACTURED BY NAILOR INDUSTRIES INC, GREENHECK FAN CORP, NCA MANUFACTURING OR RUSKIN CO. SELECT DAMPERS TO SUIT ORIENTATION, SIZE, REQUIRED RATING, AND ALL OTHER FACTORS REQUIRED.

2.14. ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS. WHERE ACOUSTIC INSULATION IS ADDED, INCREASE DUCT FABRICATION DIMENSIONS AS REQUIRED TO SUIT.

3. RTUS

3.1. PROVIDE ROOF TOP UNITS COMPLETE WITH CURBS AND ALL ACCESSORIES AS OUTLINED IN THESE DOCUMENTS IN ACCORDANCE WITH THE RTU SCHEDULE AND DRAWING NOTES. WHERE DISCREPENCIES EXIST BETWEEN THIS SPECIFICATION AND NOTES WITHIN THE DRAWINGS, THE MORE STRINGENT SYSTEM SHALL BE INSTALLED.

3.2. ACCEPTABLE ROOF TOP UNIT MANUFACTURERS: LENNOX, CARRIER, YORK

3.3. SUBMIT SHOP DRAWINGS FOR RTUS INCLUDING ALL ACCESSORIES AND PERFORMANCE VALUES.

3.4. ALL RTUS SHALL BE IN CONFORMANCE WITH THE LATEST VERSIONS OF ARI 210/240, ARI 340/360, CSA B52, ASHRAE 90.1, CSA B149 AND BE CSA OR ETL CERTIFIED.

3.5. MECHANICAL CONTRACTORS SHALL VERIFY WITH ELECTRICAL DRAWINGS, AND SITE CONDITIONS THE AVAILABLE VOLTAGE FOR NEW MECHANICAL EQUIPMENT AND ORDER RTU TO SUIT.

3.6. CABINET SHALL BE CONSTRUCTION OF A MINIMUM OF #18 GUAGE GALVANIZED STEEL FINISHED WITH TWO COATS OF BAKED EXTERIOR ENAMEL PAINT AND BE COMPLETE WITH 50MM (2") FIBERGLASS INSULATION INSULATED BASE, WALLS AND ROOF. INSULATION SHALL MEET FLAME AND SMOKE REGULATION AND SHALL BE SUITABLE FOR PROXIMITY TO GAS HEAT EXCHANGER AND HIGH HUMIDITY APPLICATIONS.

3.7. PROVIDE WATER AND AIR SEALED HINGED ACCESS PANELS TO BE INSULATED TO THE SAME STANDARDS AS THE RTU CASING.

3.8. PROVIDE AIR DISCHARGE PATH (VERTICAL OR HORIZONTAL) AS INDICATED ON DRAWINGS. WHERE HORIZONTAL DISCHARGE IS REQUIRED, PROVIDE UNIT COMPLETE WITH HORIZONTAL DISCHARGE OR PROVIDE DOWN TO VERTICAL DISCHARGE DIRECTION CURB ADPATOR.

3.9. COMPRESSORS SHALL BE HERMETICALLY SEALED SCROLL TYPE COMPLETE WITH VIBRATION ISOLATIONS WITH DIRECT DRIVE CONDENSER FANS AND COPPER TUBE/ALUMINUM FIN FACTORY LEAK AND PRESSURE TESTED CONDENSER COILS.

3.10. CONDENSER FAN SHALL BE PERMANENTLY LUBRICATED, TOTALLY ENCLOSURE, RESLIENTLY MOUNTED AND OVERLOAD PROTECTED AND COME COMPLETE WITH PVC COATED FAN GUARD.

3.11. REFRIGERATION SYSTEM SHALL BE R410-A AND BE CAPABLE OF OPERATING DOWN TO -17C (0F) AND BE COMPLETE WITH ALL SUCTION AND LIQUID PIPING, SERVICE GAUGE PORTS, FREEZE-STATS, EXPANSION VALVES, LIQUID LINE FILTER DRYER AND AUTOMATIC RESET HIGH AND LOW PRESSURE COMPRESSOR CIRCUIT CONTROLS.

3.12. PROVIDE ALL CONTROLS AS LISTED WITHIN THESE DOCUMENTS AND AS REQUIRED TO PROVIDE A FULLY OPERATIONAL SYSTEM. PROVIDE A 7-DAY DIGITAL PROGRAMMABLE THERMOSTAT WITH EACH RTU AND ALL OTHER CONTROLS AS REQUIRED.

3.13. PROVIDE 50MM (2") THICK ROLL DISPOSSIBLE MERV 8 RATED, METAL FRAMED FILTERS. AT THE END OF CONSTRUCTION REPLACE FILTERS USED FOR INITIAL START UP, TESTING AND BALANCING, AND PROVIDE A SECONDARY SET OF FILTERS PER RTU TO OWNER.

3.14. PROVIDE CSA 149 APPROVED MULTIPLE PASS DIRECT SPARK IGNITIATION REMOVABLE GAS HEAT EXCHANGER AND BURNER ASSEMBLY SUITABLE FOR NATURAL GAS SUPPLY PRESSURE OF 7" W.C. WITH STAINLESS STEEL PRIMARY AND SECONDARY HEATING SURFACES COMPLETE WITH 100% SAFETY SHUTDOWN FLAME SENSOR CONTROLS, FLAME ROLLOUT SWITCH, LIMIT CONTROLS, REDUNDANT DIAL GAS VALVES WITH STAGING CONTROL AND COMBUSTION AIR PROVIDING SWITCH.

3.15. PROVIDE FACTORY INSTALLED INTERNALLY SLOPPED NON-CORROSIVE CONDENSATE DRAIN PAN COMPLETE WITH FACTORY SUPPLIED, FIELD INSTALLED, PVC TRAP. TRAP SHALL BE A MINIMUM OF 25 MM (1") DEEPER THAN MAXIMUM STATIC PRESSURE OF FAN.

3.16. RTU SHALL BE COMPLETE WITH FACTORY INSTALLED HEATING CONTROLS AS REQUIRED TO PROVIDE A FAIL-SAFE HEATING SYSTEMS INCLUDING ALL SAFETIES AND CONTROLS NECESSARY. UNIT SHALL SHUT DOWN IN EVENT WHERE ITS OPERATION IS CONSIDERED UNSAFE AND RECORD ALL ERRORS.

3.17. SUPPLY AIR BLOWER SHALL BE BELT DRIVEN FORWARD CURVED DOUBLE INLET CENTRIFUGAL TYPE FAN, STATICALLY AND DYNAMICALLY BALANCED WITHIN REMOVABLE BLOWER ASSEMBLY. ALL COMPONENTS SHALL BE STEEL WITH CORROSION RESISTANCE FINISHED FACTORY APPLIED. BLOWER ASSEMBLY SHALL BE MOUNTED ON VIBRATION ISOLATION SPRING ISOLATORS.

3.18. ALL CONTROLS SHALL BE FACTORY INSTALLED AND CALIBRATED INCLUDING INTEGRAL CONTROL PANEL, CONTROL SENSORS AND WIRING. WHERE SPECIFIC NON STANDARD CONTROLS ARE REQUIRED AS PER THESE DOCUMENTS THEY SHALL BE FACTORY INSTALLED AND TESTED. UNIT SHALL BE COMPLETE WITH ALL TRANSFORMERS TO CREATE CONTROLS VOLTAGES REQUIRED.

3.19. PROVIDE NEW 600MM (24") HIGH PREFABRICATED AND INSULATED ROOF CURB CONFORMING TO THE REQUIREMENTS OF THE NATIONAL ROOFING CONTRACTORS ASSOCIATION. ROOF CURB SHALL BE PROVIDED BY THE RTU MANUFACTURER.

3.20. WHERE REQUIRED, PROVIDE NEW CUSTOM FABRICATED ROOF CURB ADAPTER COMPLYING TO THE NATIONAL ROOFING CONTRACTORS ASSOCIATION. ALL EXISTING CURB DIMENSIONS SHALL BE FIELD FABRICATED. CUSTOM ROOF CURB ADAPTER SHALL BE FULLY INSULATED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE PROVINCE OF INSTALLATION.

3.21. WHERE REQUIRED PROVIDE FACTORY SECURED SEISMIC RESTRAINT CONNECTION HARDWARE.

3.22. UNLESS OTHERWISE STATES, ROOF CURBS SHALL BE PURCHASED BY MECHANICAL CONTRACTOR AND INSTALLED BY ROOFING CONTRACTOR. ORDER AND HAND OVER ROOF CURBS IN A TIMELY MANNER TO SUIT THE CONSTRUCTION SCHEDULE.

3.23. PROVIDE ALL RTU OPTIONS AS LISTED ON THE DRAWINGS AND AS NOTED BELOW:

-DUAL ENTHALPY ECONOMIZER COMPLETE WITH HOOD AND ALL REQUIRED CONTROLS.
-BAROMETRIC RELIEF DAMPERS COMPLETE WITH HOOD.
-FACTORY INSTALLED, FIELD WIRED, 120V 20A/15A GFCI COMPLETE WIT WEATHERPROOF COVER COMPLYING WITH LATEST ESA STANDARDS. GFCI SHALL BE WIRED FROM INDEPENDENT POWER SOURCE TO REMAIN OPERATIONAL WITH RTU POWER SHUT DOWN.

3.24. INSTALL ALL ROOF TOP UNITS LEVEL WITH THE FLOOR LEVEL BELOW. INCLUDE FOR ALL BEVELLED CURBS AS REQUIRED TO ACHIEVE THIS REQUIREMENT. INSTALL UNITS TO ENSURE SERVICE CLEARANCES AND CLEARANCES FROM EDGE OF ROOF ARE MAINTAINED.

3.25. INSTALL ALL COMPONENTS SHIPPED LOOSE WITH RTU ON SITE. PAY FOR FACTORY TRAINED TECHNICIAN TO PERFORM RTU START UP AND CONFIRM CORRECT INSTALLATION OF INSTALLATION.

3.26. AFTER SUCCESSFUL START UP OF RTU, PERFORM ALL COMMISSIONING AND TESTING AND BALANCING OF THE RTU. SUBMIT ALL START UP, AND TESTING AND BALANCING REPORTS FOR RTU TO CONSULTANT FOR REVIEW. PROVIDE ALL DEMONSTRATION AND TRAINING OF CORRECT OPERATION AND MAINTENANCE OF THE UNIT TO THE OWNER AND PROVIDE PROOF DEMONSTRATION AS PART OF CLOSE OUT DOCUMENTS.

3.27. PROVIDE UNIT WITH LIMITED 5 YEAR WARRANTY ON COMPRESSOR, 3 YEAR WARRANTY ON UNIT CONTROLS, 5 YEAR WARRANTY ON GAS HEAT EXCHANGER, AND 1 YEAR WARRANTY ON ALL OTHER COMPONENTS.

3.28. STORE AND HANDLE ALL UNITS AS PER THE MANFUACTURER'S WRITTEN RECOMMENDATIONS. DO NOT MOVE, HANDLE, OPERATE OR OTHERWISE ACT IN ANY WAY TO WAIVE UNIT WARRANTIES.

4. PIPING

4.1. PROVIDE ALL HVAC PIPING INCLUDING OFFSETS, HANGERS, SUPPORTS, INSULATION, VALVES AND ACCESSORIES AS REQUIRED TO INSTALL A FULLY FUNCTIONAL AND COMPLETE HVAC SYSTEM.

4.2. INSTALL ALL NEW SYSTEMS TO BE ABLE HANDLE THE WORKING PRESSURES THEY WILL BE SUBJECTED TO (PLUS 20% FACTOR OF SAFETY) OR AS SPECIFIED WITHIN THESE DOCUMENTS. WHEREVER A DISCREPANCY IN PRESSURE REQUIREMENTS OCCURS, THE HIGH PRESSURE REQUIREMENTS WILL GOVERN.

4.3. ALL NEW PIPING MATERIAL SHALL BE ASTM A53 BLACK STEEL SCHEDULE 40, ELECTRIC RESISTANCE WELDED UNLESS STATED OTHERWISE.

4.4. PIPING 50MM (2") AND SMALL SMALLER SHALL BE THREADED FOR 1035 KPI (150 PSI) MALLEABLE IRON.

4.5. PIPING 65MM (2-1/2") AND LARGER SHALL BE BEVELED FOR WELDING AND BE COMPLETE WITH WELDED LINES JOINTS.

7/9/2024 2:59:04 PM

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING
SPECIFICATIONS-1

PROJECT NO.
22-000-032
PROJECT DATE
Issue Date
DRAWN BY
SK
CHECKED BY
DJ
SCALE

DRAWING NO.
M004

C:\Revit Local\MECH_032 Windfields Farm, Blocks B2 - BLDG 5 (v.22)_shilpa.kaushikJXJJG.rvt

MECHANICAL SPECIFICATION

1. EXHAUST FANS

GENERAL

1.1. SUBMIT SHOP DRAWINGS FOR ALL FANS LISTED ON THESE DRAWINGS INCLUDING ALL DIMENSIONS, FAN CURVES, ELECTRICAL PERFORMANCE, AND OPTIONS.

1.2. BASIS OF DESIGN SHALL BE AS SPECIFIED ON DRAWINGS AND FAN SCHEDULE. ACCEPTABLE MANUFACTURERS: LOREN COOK, CARNES, GREENHECK, PENNBARRY, AND TWIN CITY.

1.3. PROVIDE ENGRAVED ALUMINUM NAME PLATE ON EACH FAN SHOWING DESIGN CFM, STATIC PRESSURE AND FAN RPM.

1.4. PROVIDE ALL STARTERS AND CONTROLS FOR EXHAUST FANS. ALL FANS TO BE COMPLETE WITH BACKDRAFT DAMPERS, UNLESS MOTORIZED DAMPER IS SPECIFIED ON THE DRAWINGS. PROVIDE FAN MOUNTED FACTORY WIRED NEMA 3 DISCONNECTS. ALL FANS SHALL BE SUPPLIED WITH ELECTRONICALLY COMMUTATED MOTORS RATED FOR CONTINUOUS DUTY.

1.5. PROVIDE ROOF CURBS FOR ALL ROOF MOUNTED FANS. COORDINATE SCHEDULE OF INSTALLATION WITH GENERAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL INSTALL CURB TO SUIT ROOFING CONTRACTOR'S SCHEDULE. CURB SHALL BE 18 GAUGE GALVANIZED STEEL WITH CONTINUOUSLY WELDED CORNERS, AND COMPLETE WITH 1-1/2" 3 LBS DENSITY INSULATION. PROVIDE WOOD NAILER ON TOP OF ROOF CURB. CURBS SHALL BE MINIMUM OF 18" TALL.

2. ROOF MOUNTED DOWNBLAST

2.1. FAN SHALL BE SPIN ALUMINUM ROOF MOUNTED DIRECT OR BELT DRIVEN CENTRIFUGAL EXHAUST FAN AS SCHEDULED.

2.2. WHEEL SHALL BE CENTRIFUGAL BACKWARD INCLINED. AN AERODYNAMIC INLET CONE SHALL BE PROVIDED FOR MAXIMUM PERFORMANCE AND EFFICIENCY.

2.3. STRUCTURAL COMPONENTS SHALL BE CONSTRUCTED OF MINIMUM 16 GAUGE MARINE ALLOY ALUMINUM, BOLTED TO A RIGID ALUMINUM SUPPORT STRUCTURE. THE ALUMINUM BASE SHALL HAVE CONTINUOUSLY WELDED CURB CAP CORNERS FOR MAXIMUM LEAK PROTECTION.

2.4. AN INTEGRAL CONDUIT CHASE SHALL BE PROVIDED THROUGH THE CURB CAP AND INTO THE MOTOR COMPARTMENT TO FACILITATE WIRING CONNECTIONS. THE MOTOR SHALL BE ENCLOSED IN A WEATHER-TIGHT COMPARTMENT, SEPARATED FROM THE EXHAUST AIRSTREAM. MOTOR SHALL BE NEMA DESIGN B WITH CLASS B INSULATION. MOTOR MOUNTING PLATE SHALL BE MANUFACTURER FROM 10 GAUGE STEEL.

2.5. ALL FANS MUST BE PROVIDED WITH LIFTING LUGS, AS WELL AS STAINLESS STEEL LATCHES ON THE TOP CAP OF THE FAN TO FACILITATE INSTALLATION AND SERVICE.

2.6. PROVIDE HINGED FAN BASE TO ALLOW FOR EASY ACCESS TO INLET OF THE FAN FOR ANY FAN OVER 500 CFM.

3. INSTALLATION

3.1. INSTALL FANS AS SHOWN. COORDINATE ROOF OPENING WITH GENERAL CONTRACTOR AND STRUCTURAL CONTRACTOR.

3.2. PROVIDE ALL VIBRATION ISOLATION MEASURES TO PREVENT VIBRATION FROM BEING TRANSFERRED TO THE STRUCTURE, AND TO PREVENT NOISE.

3.3. PROVIDE FLEXIBLE DUCT CONNECTIONS FROM DUCTWORK TO FAN.

3.4. PROTECT MOTORS AND FANS SURGING CONSTRUCTION AND ROTATE FANS, BY HAND, EVERY 2 WEEKS BETWEEN DELIVERY AND SUBSTANTIAL PERFORMANCE.

3.5. PROVIDE ALL CONTROLS AS SHOWN ON DRAWINGS TO PROVIDE FULLY FUNCTIONAL FAN SYSTEMS.

3.6. PROVIDE AIR BALANCING REPORT FOR EACH FAN INSTALLED ON SITE WITHIN +/- 3% DEVIATION FROM SCHEDULED PERFORMANCE.

PLUMBING AND DRAINAGE

1. GENERAL

1.1. PROVIDE ALL PLUMBING AND DRAINAGE SYSTEMS COMPLETE WITH ALL EQUIPMENT, PIPING, CONNECTIONS, SUPPORTS, HANGERS AND ACCESSORIES TO PROVIDE A FULLY COMPLETE AND FUNCTIONAL SYSTEM. PROVIDE ALL SYSTEMS BETWEEN UTILITY CONNECTIONS (WATER AND DRAINAGE) AND EQUIPMENT AND/OR CAPPED PROVISIONS.

1.2. ROUGH-IN AND PROVIDE FINAL CONNECTION TO ALL EQUIPMENT.

1.3. PROVIDE ALL REQUIRED FIRE EXTINGUISHERS IN ACCORDANCE WITH OBC, OFC AND NFPA STANDARDS.

1.4. PRESSURE TEST ALL PIPING SYSTEMS IN ACCORDANCE WITH LOCAL & PROVINCIAL CODES FOR LEAKS, BEFORE INSULATION IS ADDED. SUBMIT REPORT TO THE OWNER AND A COPY TO THE ENGINEER.

1.5. PROVIDE ALL TRENCHING AND BACKFILLING REQUIRED FOR DIVISION 15 WORK.

1.6. ALL PLUMBING FIXTURES SHALL BE VENTED IN ACCORDANCE WITH LOCAL PLUMBING CODES. CONNECT NEW VENTING TO EXISTING SYSTEMS OR PROVIDE NEW VENTING SYSTEMS WHERE EXISTING ARE NOT SUFFICIENT.

1.7. PRIME ALL TRAPS AS REQUIRED TO MEET CODE REQUIREMENTS AND REQUIREMENTS OF LOCAL AUTHORITIES. PROVIDE NEW TRAP SEAL PRIMERS AS NECESSARY.

1.8. FOR UNDERGROUND INSTALLATIONS, PROVIDE SUITABLE BEDDING, COVERAGE AND SLOPE TO EASE DRAINAGE.

1.9. PROVIDE TEMPORARY CAPS AND/OR SCREN ON ALL SYSTEMS DURING CONSTRUCTION TO PREVENT DEBRIS FROM ENTERING. AT THE COMPLETION OF CONSTRUCTION, FLUSH ALL SYSTEMS TO REMOVE DEBRIS.

1.10. SEPARATE DISSIMILAR METALS BY MEANS OF GASKETS, DI-ELECTRIC UNIONS OR COUPLINGS THAT PREVENT ELECTROLYTIC ACTION. (E.G. BRASS BETWEEN COPPER AND STEEL).

1.11. COORDINATE THE INSTALLATION OF ALL PLUMBING AND DRAINAGE SYSTEMS WITH OTHER TRADES. INSTALL SYSTEMS AS HIGH AS POSSIBLE. SUPPORT ALL SYSTEMS FROM BUILDING STRUCTURE.

1.12. PROVIDE SUITABLE DRAIN DOWN LOCATIONS FOR ALL SYSTEMS. INSTALL SYSTEMS TO ALLOW THEM TO BE DRAINAGE TO BUILDING DRAINAGE.

1.13. PROVIDE ALL POINT OF USE CSA APPROVED BACKFLOW PREVENTERS AT EQUIPMENT AS REQUIRED BY CODE AND AS SHOWN ON THESE DRAWINGS. ALL BACKFLOW PREVENTER SHALL DRAIN TO SUITABLE HUB DRAIN AND BE INSTALLED TO ALLOW FOR INSPECTION.

1.14. PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH WALLS, FLOORS AND CEILINGS. SLEEVES SHALL BE SCHEDULE 40 BLACK STEEL AND PACKED TO ENSURE A WATER TIGHT INSTALLATION. PROVIDE 3M OR EQUAL FIRE SEAL.

1.15. ALL SYSTEMS SHALL BE SUPPORTED FROM BUILDING STRUCTURE (SUPPORTS FROM OTHER EQUIPMENT OR DAISY-CHAINED SUPPORTS WILL NOT BE ACCEPTED.) SUPPORTS AND HANGERS SHALL BE INSTALLED ON THE EXTERIOR OF INSULATION COMPLETE WITH SADDLES.

1.16. EXISTING SANITARY DRAIN LOCATIONS AND INVERT ELEVATIONS SHALL BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORK.

2. PIPING MATERIALS:

2.1. SANITARY DRAINAGE AND VENT PIPE ABOVE GROUND:

2.1.1. 2-1/2" AND SMALLER TO BE DWV COPPER WITH DWV DRAINAGE FITTINGS WITH 95/5 TIN/ANTIMONY SOLDER JOINTS..
2.1.2. 3" AND LARGER TO BE CSA CLASS 400 CAST IRON PIPE AND FITTINGS WITH MECHANICAL JOINTS.

2.2. SANITARY DRAINAGE AND VENT PIPE BELOW GROUND:

2.2.1. 2-1/2" AND SMALLER TO BE PVC SEWER PIPE AND FITTINGS WITH SOLVENT WELDED FITTINGS.
2.2.2. 3" AND LARGER TO BE IPEX RING-TITE SDR35 CSA CERTIFIED TO B182.2 PVC GASKETTED SEWER PIPE.

2.3. DOMESTIC HOT COLD AND RECIRCULATION PIPING TO BE TYPE L HARD COPPER WITH WROUGHT IRON COPPER FITTING WITH 95/5 TIN/ANTIMONY SOLDER JOINTS.

2.4. BURIED DOMESTIC COLD AND HOT WATER PIPING TO BE TYP. 'K' SOFT COOPER FREE OF ANY BURIED FITTING WITHIN PVC CONDUIT. PROVIDE TRANSITION/FITTING ABOVE GROUND COMPLETE WITH UNIONS.

2.5. PROVIDE NEW KITZ FIG 44 200 PSI SOLDERED GATE VALVES.

2.6. PUMPED SANITARY PIPING TO BE :

2.6.1. 2" AND SMALLER TO BE TYPE 'L' COPPER WITH 50/50 LEAD/TIN SOLDER JOINTS.
2.6.2. 2.5" AND LARGER TO BE SCHEDULE 40 GALVANIZED STEEL WITH THREADED 150 LBS GALVANIZED MALLEABLE IRON FITTINGS.
2.6.3. ALL PUMPED SANITARY SYSTEMS SHALL BE SUITABLE OF HANDLING THE MAX SYSTEM PRESSURE WITH 25% FACTOR OF SAFETY

3. GAS PIPING

3.1. PROVIDE ALL LABOUR, MATERIALS, PRODUCTS AND ACCESSORIES TO SUPPLY AND INSTALL A FULLY OPERATIONAL NATURAL GAS DISTRIBUTION SYSTEM IN ACCORDANCE WITH THE LATEST VERSION OF CSA B149, TSSA REGULATIONS AND THE CANADIAN GAS ASSOCIATED'S REQUIREMENTS.

3.2. ALL SYSTEMS SHALL BE INSTALLED BY PERSONNEL LICENSED BY TSSA TO PERFORM SUCH WORK.

3.3. PROVIDE ALL SEISMIC CONTROL AND RESTRAINT DEVICES AS REQUIRED TO SUIT LOCAL CODES.

3.4. TAG ALL SYSTEMS WITH INSTALLATION TAG INCLUDING DATE OF INSTALLATION, COMPLIANCE CODE FOLLOWED, INSTALLING CONTRACTOR, INSTALLATION SUPERVISORS, AND DATE OF AHJ INSPECTION. TAGS SHALL NOT FADE OR BE DAMAGED OVER TIME AND BE FULLY LEGIBLE FOR THE LIFE OF THE GAS SYSTEM.

3.5. ARRANGE AND PAY FOR GAS SERVICE AND METER INSTALLATION TO BE PROVIDED BY LOCAL GAS UTILITY. SCHEDULE WORK WITH GAS UTILITY TO MEET ALL CONSTRUCTION SCHEDULES. PROVIDE ALL APPLICATION DOCUMENTS TO UTILITY AS REQUIRED.

3.6. ALL GAS PIPE SHALL BE SCHEDULE 40 MILD BLACK CARBON STEEL, ASTM A53 GRADE B COMPLETE WITH MALLEABLE CAST IRON SCREWED FITTING AND JOINTS FOR PIPES 50MM (2") AND SMALLER, OR BEVELLED AND COMPLETE WITH BUTT WELDED FITTINGS AND JOINTS FOR PIPES 65MM (2-1/2") AND LARGER.

3.7. SCREWED BALL VALVES SHALL BE CSA CERTIFIED MINIMUM 3100 KPA (450 PSI) WOG RATED ¼ TURN FULL PORT NON-LUBRICATED BRASS BALL VALVES WITH TEFLON PTFE SEAT, CHROME PLATED SOLID BALL AND REMOVABLE LEVEL HANDLE AS MANUFACTURED BY NEO VALVES, KITZ, OR TOYO VALVE COMPANY.

3.8. PROVIDE ISOLATION VALVES AT ALL EQUIPMENT AND AS REQUIRED BY CSA B149 AND LOCAL CODES AND STANDARDS.

3.9. PROVIDE AND INSTALL ALL PRESSURE REGULATING STATIONS INCLUDING PRESSURE REDUCING AND PRESSURE RELIEF COMPONENTS AS SHOWN ON DRAWINGS AND AS REQUIRED TO REDUCE BUILDING GAS PRESSURE SYSTEMS TO SUIT EQUIPMENT REQUIREMENTS. PROVIDE GAS PRESSURE RELIEF STATIONS DOWNSTREAM OF ALL PRESSURE REDUCING STATIONS.

3.10. ALL PRESSURE REGULATING STATION SHALL BE VENTED TO ATMOSPHERE IN ACCORDANCE WITH LOCAL CSA B149 AND LOCAL CODES AND BY LAWS. WHERE VENTING REGULATORS TO ATMOSPHERE IS NOT POSSIBLE, AND WHERE APPROVED BY CONSULTANT PROVIDE VENTLESS REGULATORS. ALL RELIEF VENTS SHALL BE PIPED INDIVIDUALLY TO ATMOSPHERE AND SIZED FOR A MAXIMUM PRESSURE DROP OF 10% OF THE PRESSURE REDUCING VALVE SETPOINT WITH A 25% SAFETY FACTOR.

3.11. VENTED PRESSURE REGULATORS SHALL BE SPRING-LOADED SELF OPERATED, TIGHT CLOSING, SELECTED FOR THE FACILITY GAS PRESSURE AND PIPING PRESSURE LOSS, AND CONNECTED EQUIPMENT LOAD AT FULL FIRING RATE PLUS 20% SPARE CAPACITY COMPLETE WITH 1035 KPA (150 PSI) RATED CAST IRON BODY WITH CORROSIVE RESISTANT EPOXY ENAMEL, ALUMINUM DIAPHRAGM WITH SPRING CASE WITH NITRILE DIAPHRAGM, DISC, AND BODY O-RING, THROTTLING TYPE HIGH FLOW RATE TIGHT SHUT-OFF RELIEF VALVE SELECTED TO PROTECT EQUIPMENT DOWNSTREAM OF REGULATOR.

3.12. NON VENTED REGULATORS SHALL BE LEVER ACTION, DEAD END LOCKUP TYPE COMPLETE WITH A VENT LIMITER, SELF ALIGNING VALVE, DIS-CAST ALUMINUM HOUSING, AND SYNTHETIC RUBBER COMPOUND DIAPHRAGM. THESE VALVES SHALL ONLY BE USED WHERE THE BUILDING PERFORMANCE IS IN CONFORMANCE WITH THEIR LISTINGS INCLUDING VENTILATION AIR REQUIREMENTS.

3.13. CLEARLY IDENTIFY ALL SYSTEM PRESSURES UPSTREAM AND DOWNSTREAM OF PRESSURE REGULATORS WITH STENCILLED MARKING ON DRAIWNGS, AND LAMACOID PRESSURE TAGS.

3.14. ACCEPTABLE PRESSURE REGULATOR MANUFACTURERS ARE MAXITROL, JORDAN VALVE, FISHER CONTROLS, AND LESLIE CONTROLS.

3.15. PROVIDE 6 MM (1/4") DIAMETER TEST PORTS UPSTREAM AND DOWNSTREAM OF EACH REGULATOR ASSEMBLY.

3.16. ALL REGULATOR STATIONS SHALL BE ACCESSIBLE WITHOUT THE USE OF LADDERS OR LIFTS.

3.17. SLOPE GAS PIPING IN THE DIRECTION OF FLOW TO LOW POINTS. PROVIDE FULL PIPE DIAMETER 150 MM (6") LONG DRIP POCKETS AT THE BOTTOM OF ALL VERTICAL RISERS, AT ALL PIPING LOW POINTS, AND WHEREVER SHOWN ON DRAWINGS OR AS REQUIRED BY CODE.

3.18. PAINT ALL NATURAL GAS PIPING INSIDE AND OUTSIDE OF BUILDING WITH TWO COATS OF YELLOW ENAMEL APPLIED OVER PRIMER. PIPE SHALL PAINTED IN ITS ENTIRETY INCLUDING BELOW SUPPORTS. PROVIDE SMS LTD. (OR STENCIL PAINTED) LABELS SHOWING GAS PRESSURE, DIRECTION OF FLOW AND 'NAT. GAS'.

3.19. PROVIDE GAS CONNECTIONS TO ALL EQUIPMENT INCLUDING KITCHEN EQUIPMENT IN ACCORDANCE WITH DRAWINGS, PLANS, SCHEDULES, AND MANUFACTURERS RECOMMENDATIONS.

3.20. PROVIDE CSA APPROVED FLEXIBLE GAS CONNECTION TO ALL EQUIPMENT EQUAL TO BRASS CRAFT PROCOAT LARGE DIAMETER GAS CONNECTIONS OR DORMONT BLUE HOSE. HIGH TENSILE STRENGTH STEEL CORRUGATED HOSE WITH BAKED ANTI-CORROSION COATING. SUPPLY FITTING AND CONNECTIONS TO SUIT APPLICATIONS.

3.21. GAS SUPPORTS ON ROOF SHALL BE COMPRISED OF SINGLE PIECE VULCANIZED RUBBER COMPLETE WITH GALVANIZED STEEL U CHANNEL SUPPORTS AND STRUTS. SUPPORTS SHALL WEIGHT NO LESS THAN 1 LBS PER 1" IN LENGTH. INSTALL SUPPORTS ON 600MM X 600MM (24" X 24") PATIO PAVER ON TOP OF 500MM X 500MM (20" X 20") 25 MM (1") THICK RIGID ROOF DECK INSULATION. PROVIDE WEATHER PROOF COATING ON EXTERIOR EDGE OF ROOF INSULATION TO PREVENT DETERIORATION OVER TIME.

4. TESTING

4.1. CARRY OUT NOT LESS THAN THE FOLLOWING TESTS:

4.2. BALL TEST ALL SANITARY DRAINS.

4.3. PERFORM WATER PRESSURE TESTS ON ALL DRAINAGE AND VENT SYSTEMS WHEN ROUGH-IN OF THE SYSTEM COMPLETED. SYSTEM SHALL BE FILLED WITH WATER FOR 2 HOURS WITHOUT NOTICEABLE LEAKS.

4.4. PRESSURE TEST ALL PUMPED SANITARY SYSTEM AT 150% OF SYSTEM PRESSURE FOR A MINIMUM OF 6HRS WITHOUT PRESSURE LOSS

4.5. PROVIDE ALL TESTING AND BALANCING OF EXISTING AND NEW HVAC SYSTEMS AND PROVIDE BALANCING REPORTS AND START UP REPORTS OF EQUIPMENT TO CONSULTANT.

4.6. PROVIDE ALL ADDITIONAL TESTING AS REQUIRED BY LOCAL AUTHORITIES IN THEIR PRESENCE.

4.7. PERFORM TESTS PRIOR TO CONCEALING SYSTEMS.

4.8. REMOVE ALL COMPONENTS WHICH WILL NOT WITHSTAND TEST PRESSURE, AND REPLACE AFTER TESTS.

4.9. FAILURE OF TEST WILL REQUIRE SYSTEMS TO BE REINSTALLED UNTIL SUCH TIME AS THE TEST IS PASSED. REPEAT TESTS AS MANY TIMES AS REQUIRED UNTIL SYSTEM PASSES. DO NOT CAULK OR COVER LEAKS. REMOVE AND REPLACED SYSTEMS AS NECESSARY.

5. INSTALLATION

5.1. CLEANING AND DISINFECT ALL DOMESTIC WATER SYSTEMS TO ACCEPTABLE LOCAL AUTHORITY STANDARDS. PROVIDE ALL TESTING OF DOMESTIC WATER SYSTEMS IN ACCORDANCE WITH AWWA STANDARD C651.86. PROVIDE TEST RECORDS TO OWNER. ARRANGE AND PAY FOR ALL WATER QUALITY TESTS BY INDEPENDENT TESTING LABORATORY.

5.2. FLUSH ALL DRAINAGE SYSTEMS AFTER SYSTEM HAS BEEN INSTALLED. REMOVE ALL DEBRIS AND PROVIDE CAMERA SCOPE OF LINES TO VERIFY CONDITIONS.

5.3. PROVIDE FINAL CONNECTION TO ALL KITCHEN EQUIPMENT INCLUDING ALL ISOLATION VALVES, HOSES, AND FLEXIBLE PIPES. ADHERE TO MANUFACTURER'S RECOMMENDED INSTALLATION REQUIREMENTS FOR SPECIFIC INSTALLATION REQUIREMENTS.

5.4. PROVIDE ALL BACKFLOW PREVENTERS FOR KITCHEN EQUIPMENT IN ACCORDANCE WITH CSA STANDARDS.

5.5. PROVIDE ALL TRAP SEAL PRIMERS TO SUIT NEW DRAINS IN ACCORDANCE WITH LOCAL PLUMBING CODE.

1. INSULATION

1.1. PROVIDE ALL LABOUR AND MATERIAL REQUIRED TO INSULATE ALL MECHANICAL SYSTEMS AS SPECIFIED WITHIN THIS SECTION AND AS NOTED ON DRAWINGS.

1.2. UNLESS OTHERWISE SPECIFIED, INSULATION THERMAL PERFORMANCE IS TO MEET OR EXCEED THE MORE STRINGENT REQUIREMENTS OF THE LATEST EDITIONS OF THE NATIONAL ENERGY CODE OF CANADA FOR BUILDINGS AND ASHRAE 90.1.

1.3. ALL SYSTEM SUBJECT TO CONDENSATION (INCLUDING COLD AND DUAL TEMPERATURE) SHALL BE INSULATED COMPLETE WITH VAPOUR BARRIER. VAPOUR BARRIER SHALL BE INSTALLED OVER ALL SYSTEM COMPONENTS INCLUDING VALVES. VAPOUR BARRIER SHALL BE COMPLETE AND CONTINUOUS IN ITS ENTIRETY. ANY DAMAGE TO VAPOUR BARRIER SHALL REQUIRE FULL REMOVAL AND REPLACEMENT. DO NOT PATCH NEW VAPOUR BARRIERS INSTALLED AS PART OF THIS CONTRACT.

1.4. INSULATION SHALL ONLY BE APPLIED ONCE SYSTEMS HAVE BEEN TESTED AND REVIEWED BY ENGINEER AND AUTHORITY HAVING JURISDICTION.

1.5. INSTALL INSULATION ON PIPES AND DUCTS WHICH ARE CLEAN AND DRY, AND WITH ENVIRONMENTAL CONDITIONS AS REQUIRED BY THE INSULATION MANUFACTURER.

1.6. STORE ALL INSULATION MATERIAL ON SITE IN A DRY STORAGE AREA AND ENVIRONMENTAL CONDITIONS AS REQUIRED BY THE INSULATION MANUFACTURER.

1.7. ALL INSULATION OF MECHANICAL SYSTEMS SHALL BE INSTALLED BY A SINGLE INSULATION CONTRACTOR.

1.8. ALL INSULATION SHALL HAVE FLAME AND SMOKE SPREAD RATINGS OF 25/50 AND AS REQUIRED BY THE LOCAL BUILDING CODE AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND AS PER CAN/ULC-S114 AND CAN/ULC-S101.

1.9. ACCEPTABLE INSULATION MANUFACTURERS ARE JOHNS MANVILLE, OWENS CORNING, MANSON INSULATION, AND KNAUF OR AS LISTED BELOW.

1.10. ALL PIPE/DUCT LABELS SHALL BE APPLIED TO OUTSIDE OF INSULATION USING STENCILS OR WITH PIPE WRAP LABELS INSTALLED IN SUCH A WAY AS TO BE VISIBLE FROM THE FLOOR.

1.11. ALL INSULATION BUTT JOINTS SHALL BE FIRMLY CONNECTED JOINED AND INSTALLED IN SUCH A WAY AS TO NOT SEPARATE OVER TIME.

2. PIPING INSULATION

2.1. FOR SYSTEMS UP TO 250 F (121 C) PROVIDE BELFORM INSULATION LTD KOOLPHEN K-BLOCK INSULATED PIPE SUPPORT INSERTS, A MINIMUM OF 6" (150MM) LONG, PRE-MOLDED, RIGID, SECTIONAL PHENOLIC FOAM INSULATION (MATCHING THICKNESS OF ADJACENT INSULATION) WITH REINFORCED FOIL AND KRAFT PAPER VAPOUR JACKET AND A 180 DEGREE CAPTIVE GALVANIZED STEEL SADDLE.

2.2. FOR ABOVE GROUND PIPE PROVIDE PREFORMED MINERAL FIBRE RIGID, SECTIONAL, SLEEVE TYPE INSULATION TO ASTM STANDARD C 547, STANDARD SPECIFICATION FOR MINERAL FIBRE PIPE INSULATION, WITH A FACTORY APPLIED VAPOUR BARRIER JACKET EQUAL TO JOHN MANVILLE INC MICRO-LOK AP-T PLUS, KNAUF FIBER GLASS PIPE INSULATION WITH ASJ-SSL JACKET, MANSON INSULATION INC ALLEY K APT OR OWNES CORNING FIBERGLASS PIPE INSULATION.

2.3. FOR ALL VALVES AND ACCESSORIES IN PIPING SYSTEMS PROVIDE BLANKET MINERAL FIBRE TYPE ROLL INSULATION TO ASTM C553, STANDARD SPECIFICATION FOR MINERAL FIBRE BLANKET THERMAL INSULATION FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS, 24 KG/M^3 (1-1/2 LB./FT/^3) DENSITY WITH A FACTORY APPLIED VAPOUR BARRIER FACING.

2.4. PROVIDE THE FOLLOWING INSULATION THICKNESSES:

2.4.1. DOMESTIC COLD WATER PIPING UP TO AND INCLUDING 4" (100MM) - 1" (25MM) WITH VAPOUR BARRIER

2.4.2. DOMESTIC COLD WATER PIPING LARGER THAN 4" (100 MM) - 1-1/2" WITH VAPOUR BARRIER

2.4.3. STORM PIPING - 1" (25MM) WITH VAPOUR BARRIER

2.5. WRAP ALL EXPOSED INSULATION WITH WHITE SHEET PVC AND FITTING COVERS JACKET. INSTALL JACKET WITH OVERLAPPING LONGITUDINAL AND CIRCUMFERENTIAL JOINTS AND PROVIDE WATER TIGHT INSULATION. PROVIDE SLIP-TYPE JACKET EXPANSION JOINTS WHERE REQUIRED.

2.6. INSULATION SHALL BE APPLIED DIRECTLY TO THE PIPE AND NOT AROUND HANGERS AND SUPPORTS.

2.7. INSTALL ALL INSULATION IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

2.8. ALL INSULATION SHALL BE CONTINUOUS AND BE EXTENDED THROUGH WALL AND FLOOR OPENINGS. SUPPLY SOUND PROOF AND FIRE PROOF PENETRATIONS TO SUIT.

2.9. INSULATION APPLIED IN TWO LAYERS SHALL HAVE JOINTS STAGGERED.

2.10. INSULATE OVER FLANGES AND MECHANICAL COUPLINGS WITH INSULATION TO MATCH PIPE INSULATION THICKNESS AND OUTSIDE DIAMETER OF FLANGE/COUPLING. FILL THE VOID BETWEEN THE FLANGE/COUPLING INSULATION AND THE PIPE INSULATION WITH THE SAME MATERIAL. ENSURE A CONTINUOUS VAPOUR SEAL ACROSS FULL INSTALLATION.

2.11. DO NOT INSULATE TERMINAL UNIT CONTROL VALVES SO LONG AS THEY ARE SITUATION ABOVE CONDENSATE PAN.

2.12. WHERE INSULATING INLINE COMPONENTS WITH FLEXIBLE INSULATION, DO NOT COMPRESS PRODUCT MORE THAN 50% OF ORIGINAL FACTORY THICKNESS. APPLY LAYERS AS REQUIRED TO ACHIEVE MINIMUM THICKNESS VALUES.

3. SHEET METAL INSULATION

3.1. FOR EXPOSED RECTANGULAR DUCTS PROVIDE PREFORMED BOARD TYPE INSULATION TO ASTM C612, STANDARD SPECIFICATION FOR MINERAL FIBER BOCK AND BOARD THERMAL INSULATION WITH A FACTORY APPLIED REINFORCED ALUMINUM FOIL AND KRAFT PAPER FACING EQUAL TO KNAUF FIBER GLASS INSULATION BOARD WITH FSK FACING, MANSON INSULATION INC AK BOARD FSK, JOHNS MANVILLE INC TYPE 814 SPIN-GLAS OR OWENS CORNING 703, 704.

3.2. FOR EXPOSED ROUND OR OVAL DUCTS PROVIDE ROLL FORM INSULATION TO ASTM C1393 STANDARD SPECIFICATION FOR PERPENDICULARLY ORIENTED FIBER ROLL AND SHEET THERMAL INSULATION FOR PIPES AND TANKS WITH A FACTORY APPLIED VAPOUR BARRIER FACING CONSISTING OF CUT STRIPS OF RIGID MINERAL BOARD INSULATION GLUED TO AN ALUMINUM FOIL AND KRAFT PAPER FACING ACCEPTABLE TO MULTI-GLASS INSULATION LTD MULTI-FLEX MKF, GLASS-CELL FABRICATORS LTD. R-FLEX, OWNS CORNING PIPE AND TANK INSULATION, JOHNS MANVILLE INC PIPE AND TANK INSULATION.

3.3. FOR CONCEALED RECTANGULAR OR OVAL DUCTS PROVIDE BLANKET TYPE ROLL FORM INSULATION TO ASTM STANDARD C553 STANDARD SPECIFICATION FOR MINERAL FIBRE BLANKET THERMAL INSULATION 24 KG/M^3 (1-1/2 LB./FT^3) DENSITY WITH A FACTORY APPLIED VAPOUR BARRIER FACING EQUAL TO KNAUF FIBER GLASS BLANKET INSULATION AND MULTI-PURPOSE FSK FACING, MANSON INSULATION INC ALLEY WRAP FSK, JOHNS MANVILLE INC DUCT WRAP TYPE 150 MICROLITE OR ISOFAB FACED FLEXIBLE FSK INSULATION.

3.4. FOR DUCTS AND PIPES INSTALLED OUTSIDE OF THE BUILDING PROVIDE SHEET OR ROLL FORM CFC FREE CLOSED CELL SELF-ADHERING ELASTOMERIC EPDM RUBBER INSULATION IN ACCORDANCE WITH REQUIREMENTS ASTM C534, STANDARD SPECIFICATION FOR PERFORMED FLEXIBLE ELASTOMERIC CELLULAR THERMAL INSULATION IN SHEET AND TUBULAR FORM WITH ALL REQUIRED INSTALLATION ACCESSORIES EQUAL TO ARMACELL AP/ARMAFLEX SA AND WRAPPED IN ALUMINUM SHEETING WITH ALUMINUM BANDING WITH ALL JOINTS SEALED WITH WEATHERPROOF SEALANT.

3.5. PROVIDE THE FOLLOWING INSULATION THICKNESS:

3.5.1. OUTDOOR AIR INTAKE DUCTS, CASINGS, PLENUMS UP TO MIXING BOXES OR COILS - 1-1/2" (40MM)

3.5.2. PRE-TREATED OUTDOOR AIR DUCTS, CASINGS, PLENUMS - 1-1/2 (40MM)
3.5.3. SUPPLY AIR DUCTS - 1" (25MM)

3.5.4. FINAL 10 FEET OF EXHAUST DUCTS WORK BEFORE BUILDING EXTERIOR - 1" (25MM)

3.5.5. EXPOSED DUCTWORK IN AREAS WHICH IT IS NOT SERVING - 1" (25MM)

3.5.6. DUCTWORK OUTSIDE OF BUILDING - 2" (50MM) WITH ALUMINUM JACKETING.

3.13. DUCTWORK EXPOSED WITHIN THE SPACE IT SERVES DOES NOT REQUIRE EXTERNAL INSULATION.

3.14. DUCTWORK LINED WITH ACOUSTIC INSULATION CAN SUBTRACT THE THICKNESS OF ACOUSTIC INSULATION FROM THE REQUIRED EXTERNAL INSULATION TO DETERMINE FINAL EXTERNAL INSULATION.

3.15. INSULATION SHALL BE APPLIED DIRECTLY TO THE DUCT AND NOT AROUND HANGERS AND SUPPORTS. PROVIDE RIGID BOARD INSULATION BELOW HANGERS WITH ALUMINUM SADDLE WEAR PLATE BETWEEN INSULATION AND SUPPORTS.

3.16. INSTALL ALL INSULATION IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.

3.17. ALL INSULATION SHALL BE CONTINUOUS AND BE EXTENDED THROUGH WALL AND FLOOR OPENINGS. SUPPLY SOUND PROOF AND FIRE PROOF PENETRATIONS TO SUIT.

3.18. INSULATION APPLIED IN TWO LAYERS SHALL HAVE JOINTS STAGGERED.

3.19. INSULATE OVER FLANGES WITH INSULATION TO MATCH PIPE INSULATION THICKNESS AND OUTSIDE DIAMETER OF FLANGE/COUPLING. FILL THE VOID BETWEEN THE FLANGE/COUPLING INSULATION AND THE PIPE INSULATION WITH THE SAME MATERIAL. ENSURE A CONTINUOUS VAPOUR SEAL ACROSS FULL INSTALLATION.

3.20. INSULATION EXPOSED TO THE OUTDOORS SHALL BE WRAPPED IN ALUMINUM JACKET AND SEALED AT ALL ENDS.

3.21. PROVIDE FIRE-RATED DUCT WRAP WHERE SHOWN ON DRAWINGS AND WHERE REQUIRED TO MEET COSTS:

3.21.1. FOR FIRE RATED DUCTS PROVIDE FLEXIBLE NON-COMBUSTIBLE BLANKET TYPE MINERAL FIBRE DUCT WRAP COMPLETELY ENCAPSULATED IN REINFORCED FOIL 1-1/2" (40MM) THICK, SUITABLE FOR INSTALLATION WITH ZERO CLEARANCE TO COMBUSTIBLES, AND ULC TESTED AND LISTED (ULC DESIGNS FRD-3 & 5 FOR VENTILATION DUCTS, ULC DESIGN FRD-4 FOR KITCHEN EXHAUST DUCTS TO FACILITATE A 1 OR 2 HOUR FIRE RESISTANCE RATING EQUAL TO 3M FIRE PROTECTION PRODUCTS FIRE MASTER.

3.21.2. INSTALL FIRE RATED DUCT WRAP IN STRICT ACCORDANCE WITH MANUFACTURER'S AND ULC LISTING REQUIREMENTS FOR KITCHEN EXHAUST OR VENTILATION DUCTWORK AS NECESSARY. DO NOT COVER FIRE WRAP LABELS REGARDLESS OF FINISH. IDENTIFY DUCT SERVICE AND FLOW DIRECTION WITH STENCILED MARKINGS.

3.21.3. ARRANGE AND PAY FOR THE DUCT WRAP SUPPLIER TO EXAMINE THE COMPLETED DUCT WRAP SYSTEM ON SITE AND SUBMIT A LETTER FROM THE SUPPLIER TO CERTIFY THAT THE DUCT WRAP SYSTEM HAS BEEN PROPERLY INSTALLED.

3.21.4. FOR FIRE RATED DUCTS PROVIDE FLEXIBLE NON-COMBUSTIBLE BLANKET TYPE MINERAL FIBRE DUCT WRAP COMPLETELY ENCAPSULATED IN REINFORCED FOIL 1-1/2" (40MM) THICK, SUITABLE FOR INSTALLATION WITH ZERO CLEARANCE TO COMBUSTIBLES, AND ULC TESTED AND LISTED (ULC DESIGNS FRD-3 & 5 FOR VENTILATION DUCTS, ULC DESIGN FRD-4 FOR KITCHEN EXHAUST DUCTS TO FACILITATE A 1 OR 2 HOUR FIRE RESISTANCE RATING EQUAL TO 3M FIRE PROTECTION PRODUCTS FIRE MASTER.

3.21.5. INSTALL FIRE RATED DUCT WRAP IN STRICT ACCORDANCE WITH MANUFACTURER'S AND ULC LISTING REQUIREMENTS FOR KITCHEN EXHAUST OR VENTILATION DUCTWORK AS NECESSARY. DO NOT COVER FIRE WRAP LABELS REGARDLESS OF FINISH. IDENTIFY DUCT SERVICE AND FLOW DIRECTION WITH STENCILED MARKINGS.

3.21.6. ARRANGE AND PAY FOR THE DUCT WRAP SUPPLIER TO EXAMINE THE COMPLETED DUCT WRAP SYSTEM ON SITE AND SUBMIT A LETTER FROM THE SUPPLIER TO CERTIFY THAT THE DUCT WRAP SYSTEM HAS BEEN PROPERLY INSTALLED.

3.22. PROVIDE ACOUSTIC DUCT LINING WHERE NOTED ON DRAWINGS AND AS A MINIMUM THE FIRST 10 FEET ON BOTH SUPPLY AND RETURN DUCTS DOWNSTREAM OF FANS/TERMINAL UNITS PLUS AT LEAST TWO CHANGES OF DIRECTION.

3.23. ACOUSTIC DUCT LINING SHALL BE A MINIMUM OF 1" (25MM) THICK ACOUSTIC LINING MATERIAL MEETING NFPA 90A REQUIREMENTS AND FLAME AND SMOKE SPREAD DEVELOPMENT FIRE HAZARD RATINGS OF CAN/ULC-S102, FLEXIBLE FOR ROUND DUCT, BOARD TYPE FOR RECTANGULAR DUCTS, CONSISTING OF A BONDED FIBERGLASS MAT COATED ON THE INSIDE (AIRSIDE) FACE WITH A BLACK FIRE-RESISTANCE RATING. MATERIAL SHALL HAVE NOISE REDUCTION COEFFICIENT OF 70 OR HIGHER.

3.24. INSTALL LINING IN ACCORDANCE WITH ANSI/SMACNA HVAC DUCT CONSTRUCTION STANDARDS PLUS FOR ALL INSTALLATION REGARDLESS OF VELOCITY AT THE LEADING AND TRAILING EDGES OF DUCT LINER SECTION PROVIDE GALVANIZED STEEL NOSING CHANNEL AS PER ANSI/SMACNA STANDARDS.

1. CONTROLS

1.1. PROVIDE ALL CONTROLS AS SHOWN ON THESE DRAWINGS.

1.2. ALL CONTROLS WORK SHALL BE PROVIDED BY BASE BUILDING CONTROLS CONTRACTOR AND INCLUDED IN MECHANICAL SCOPE OF WORK AND TENDER.

1.3. ALL CONTROLS WIRING SHALL BE PLENUM RATED.

1.4. MECHANICAL CONTRACTOR SHALL PROVIDE ALL 120V AND LOW VOLTAGE WIRING AS REQUIRED TO COMPLETE CONTROLS SCOPE OF WORK. PROVIDE ALL TRANSFORMERS AS REQUIRED TO PROVIDE LOW VOLTAGE CONTROL WIRING. WHERE CONTROLS WORK REQUIRED 120V WIRING, HIRE ELECTRICAL CONTRACTOR TO PERFORM ALL SAID WORK.

1.5. PROVIDE ALL NEW THERMOSTATS TO SUIT BASE BUILDING STANDARDS WHERE APPLICABLE.

1.6. WHERE THERMOSTATS HAVE OCCUPANT INTERACTION, THEY SHALL BE INSTALLED 4'-0" ABOVE FINISHED FLOOR, WITH LOCKING PLEXI-GLASS COVER.

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING
SPECIFICATIONS-2

PROJECT NO.
22-000-032
PROJECT DATE
Issue Date
DRAWN BY
SK
CHECKED BY
DJ
SCALE

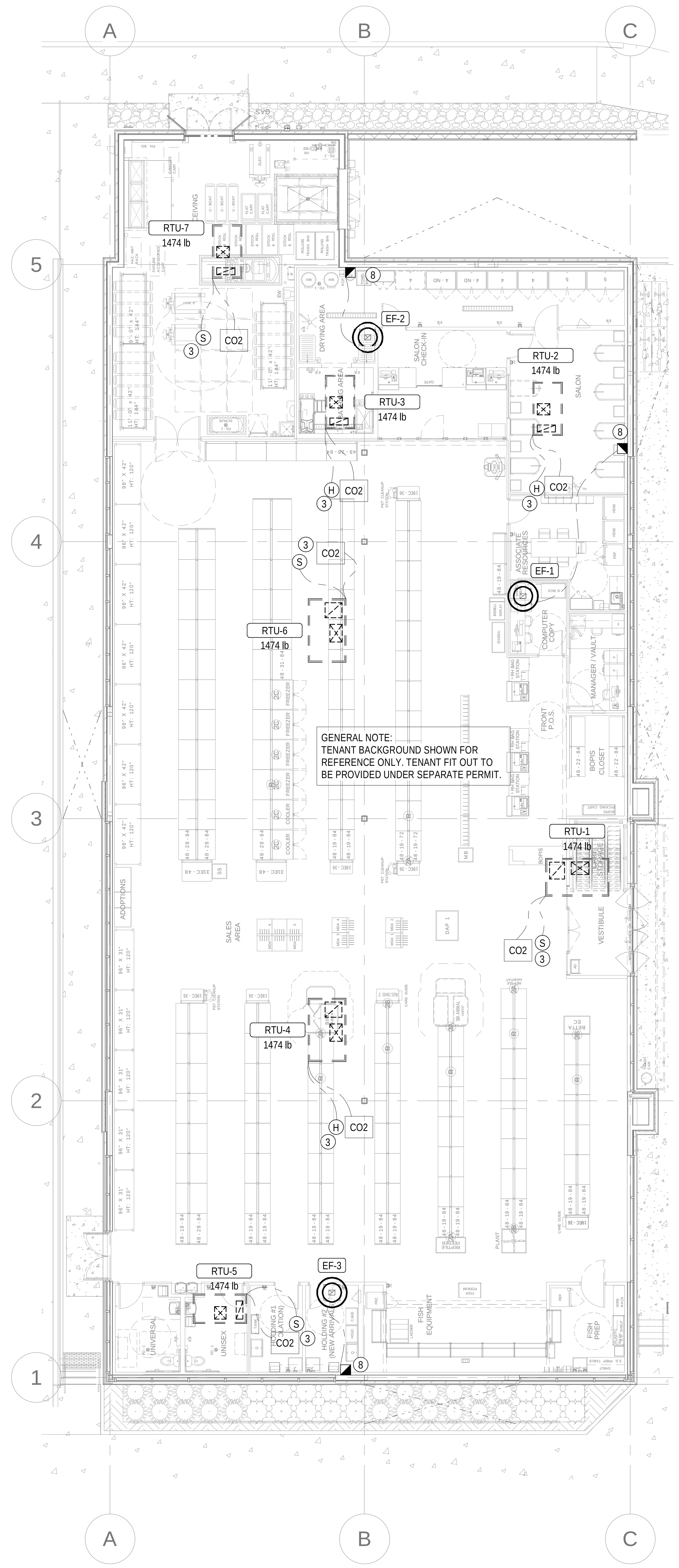
DRAWING NO.
M005

C:\Revit Local\MECH_032 Windfields Farm, Blocks B2 - BLDG 5 (v.22)_shilpa.kaushikJXJJG.rvt

7/9/2024 2:59:04 PM

EMS NOTES:

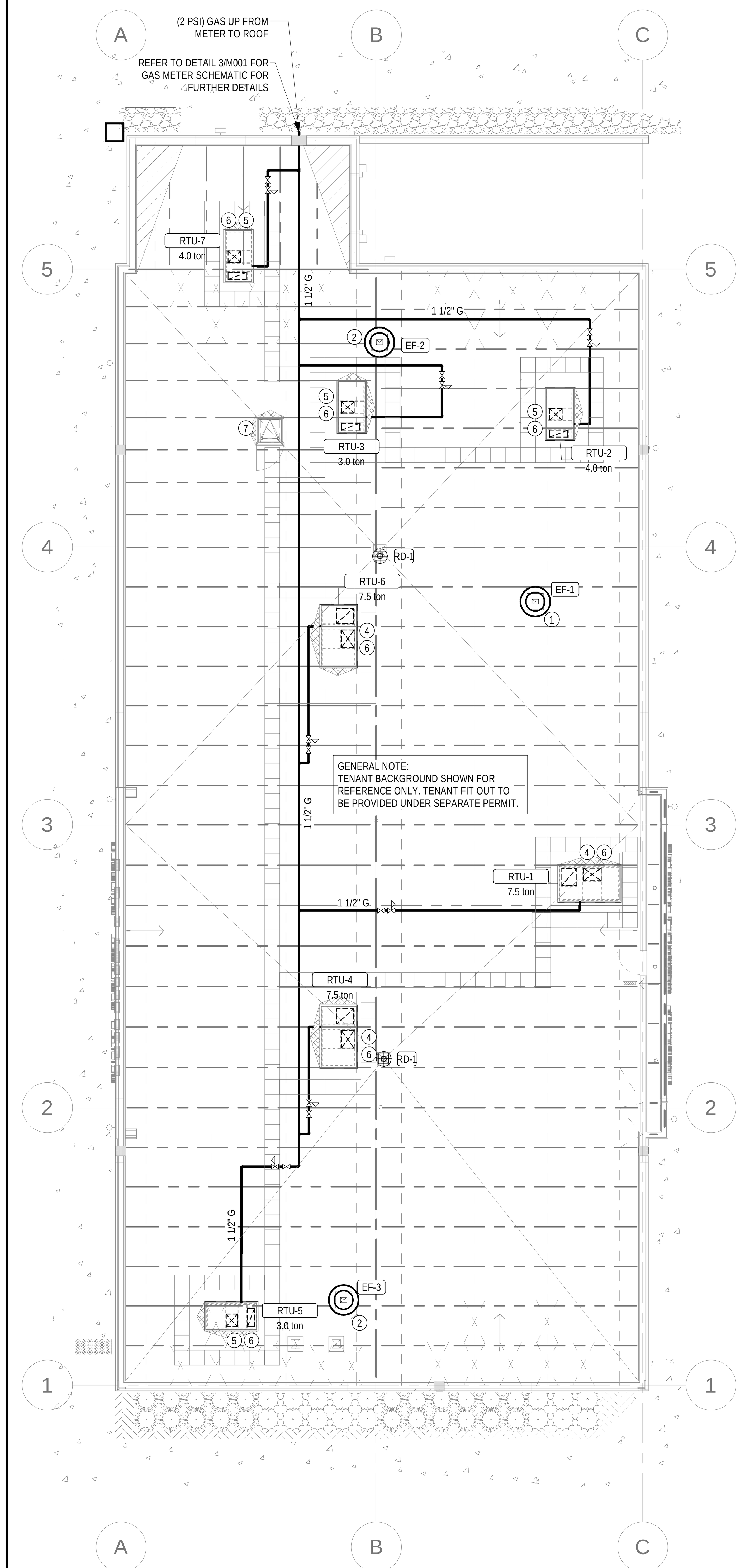
ALL RTUS SHALL BE CONTROLLED BY THE TENANT'S EMS SYSTEM. COORDINATE THE INSTALL OF THE EMS SYSTEM WITH THE TENANT TO ENSURE FULL COMPATIBILITY. PROVIDE ANY TEMPORARY THERMOSTATS AS REQUIRED TO ALLOW FOR THE RTUS TO BE STARTED UP IN ADVANCE OF THE EMS BEING READY.



1 M100 GROUND FLOOR - HVAC
3/32" = 1'-0"

DRAWING GENERAL NOTES:

REFER TO TENANT DRAWINGS FOR RTU/ FAN LOCATION COORDINATES.



2 M100 MECHANICAL ROOF PLAN
3/32" = 1'-0"

MECHANICAL NOTES

1. PROVIDE NEW 10" x 10" EXHAUST AIR DUCT CONNECTED TO EXHAUST FAN ON ROOF, TERMINATED 8" BELOW.
2. PROVIDE NEW 14" x 14" EXHAUST AIR DUCT CONNECTED TO EXHAUST FAN ON ROOF, TERMINATED 8" BELOW.
3. NEW HUMIDITY SENSOR (H) / TEMPERATURE SENSOR (S) / CO2 SENSOR (C) COILED AND HUNG FROM STRUCTURE, C/W 100' OF WIRING
4. PROVIDE AND INSTALL NEW ACOUSTICALLY LINED 24" X 28" RETURN & 28" X 20" SUPPLY DUCT & CAPPED 18" INTO TENANT SPACE C/W BIRD SCREEN.
5. PROVIDE AND INSTALL NEW ACOUSTICALLY LINED 30" X 12" RETURN & 20" X 18" SUPPLY DUCT & CAPPED 18" INTO TENANT SPACE C/W BIRD SCREEN.
6. ENSURE EXHAUST FANS AND PRESSURE REGULATING VALVES ARE 10'-0" AWAY FROM OUTDOOR AIR INTAKE AND BUILDING OPENINGS.
7. PROPOSED ROOF HATCH LOCATION BY LANDLORD.
8. LOCATION OF NEW MANUAL STARTER SERVING EXHAUST FAN COMPLETE WITH TEMPORARY SUPPORTS. FINAL INSTALLATION BY THE TENANT.

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIO CAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

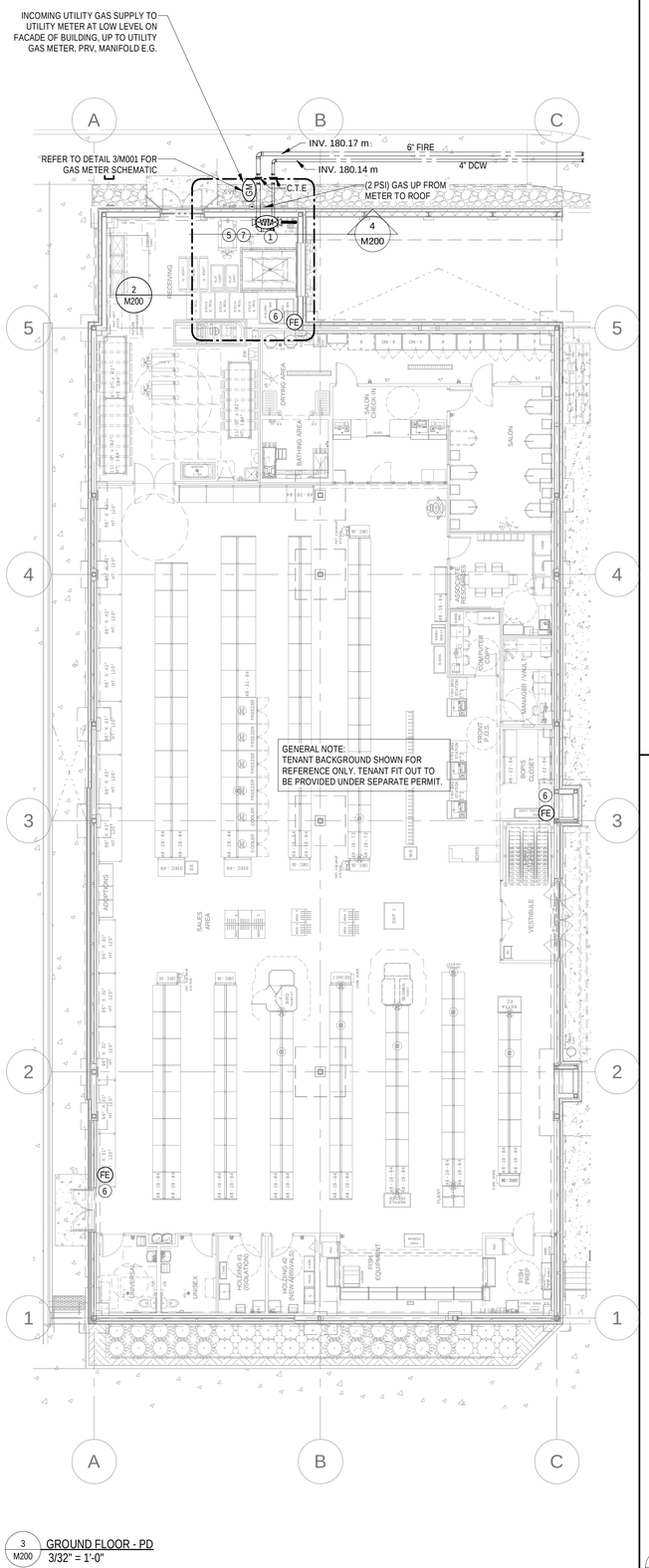
DRAWING
GROUND FLOOR HVAC + MECHANICAL ROOF PLAN

PROJECT NO. 22-000-032
PROJECT DATE Issue Date
DRAWN BY SK
CHECKED BY DJ
SCALE As indicated

DRAWING NO. M100

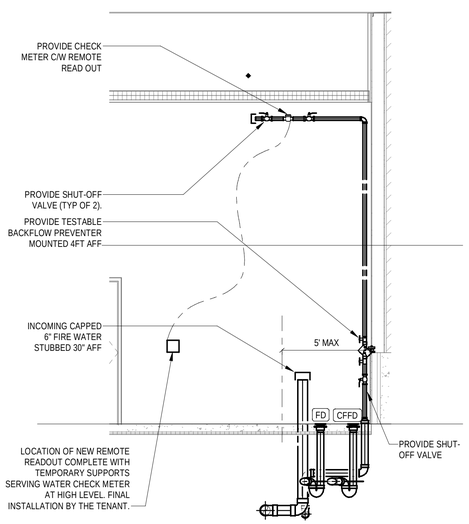
7/9/2024 2:59:06 PM

C:\Revit Local\MECH_032 Windfields Farm, Blocks B2 - BLDG 5 (v.22)_shilpa.kaushikJXJJG.rvt



3 M200 GROUND FLOOR - PD
3/32" = 1'-0"

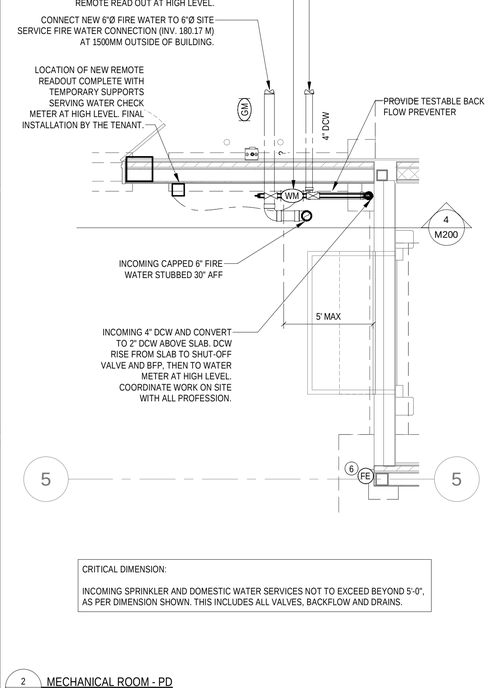
FFE:181.73



CRITICAL DIMENSION:

INCOMING SPRINKLER AND DOMESTIC WATER SERVICES NOT TO EXCEED BEYOND 5'-0", AS PER DIMENSION SHOWN. THIS INCLUDES ALL VALVES, BACKFLOW AND DRAINS.

4 M200 WATER METER AND SPRINKLER CONNNECTION ELEVATION
1/4" = 1'-0"



CRITICAL DIMENSION:

INCOMING SPRINKLER AND DOMESTIC WATER SERVICES NOT TO EXCEED BEYOND 5'-0", AS PER DIMENSION SHOWN. THIS INCLUDES ALL VALVES, BACKFLOW AND DRAINS.

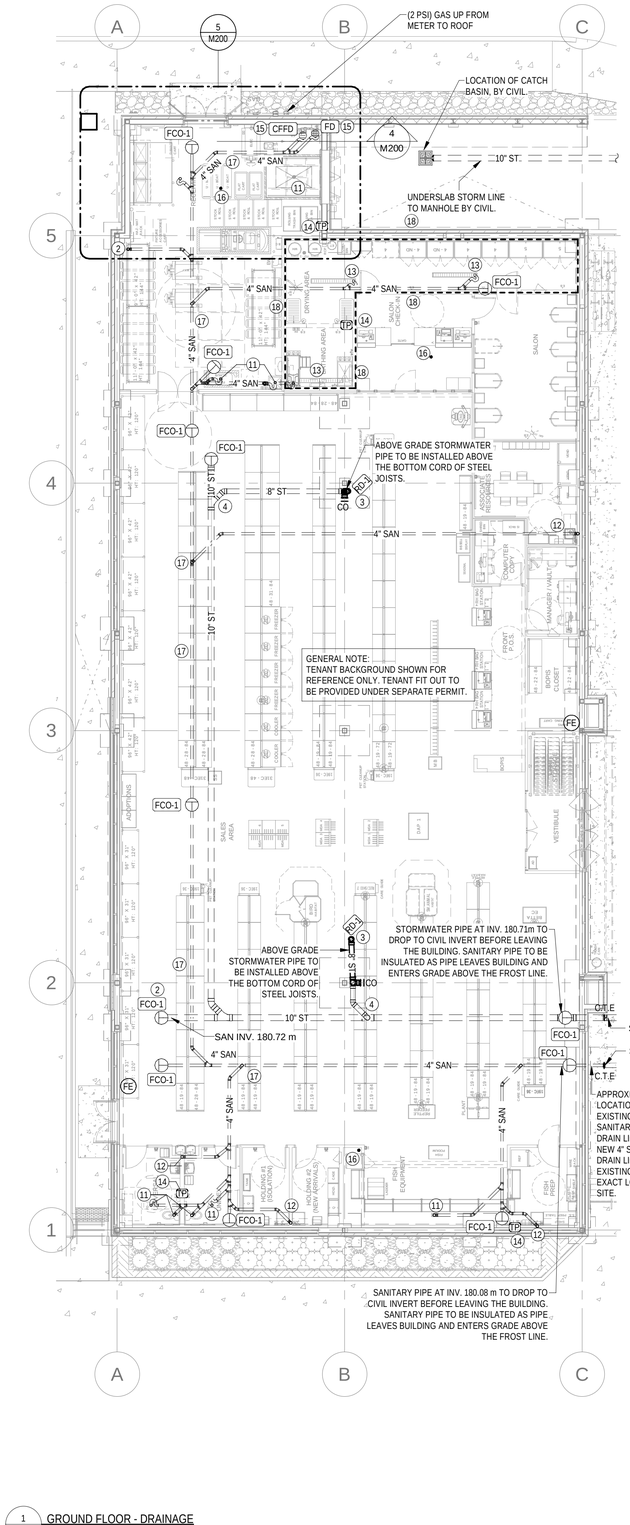
2 M200 MECHANICAL ROOM - PD
1/4" = 1'-0"

DRAWING GENERAL NOTES:

1. COST FOR UNDERSLAB WORK TO BE COORDINATED WITH PETSMART. ANY UNDERSLAB WORK RELATED TO THE FIT-UP TO BE PRICED SEPARATELY.

2. INSTALL ALL VENTING IN ACCORDANCE WITH CODE

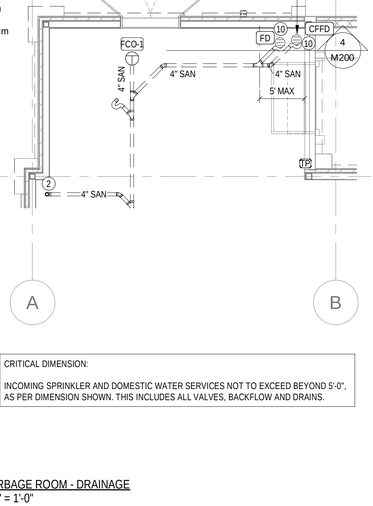
3. REFER TO TENANT DRAWINGS FOR COORDINATES.



1 M200 GROUND FLOOR - DRAINAGE
3/32" = 1'-0"

PLUMBING NOTES

1. INCOMING 4"Ø DCW WATER TO RISE FROM SLAB ONCE ENTERED BUILDING AND CONVERT TO 2" DCW. THEN RISE TO THE BFP AND WATER METER AT HIGH LEVEL.
2. PROVIDE AND INSTALL NEW CAPPED 4"Ø SANITARY WASTE DN INTO SLAB AND TO CONNECT TO SANITARY MAIN FOR FUTURE TENANT. PROVIDE VIDEO SCOPE SHOWING SYSTEMS ARE FREE OF DEBRIS.
3. NEW ROOF DRAIN FROM ABOVE CONNECT TO 6" RWL. RUN RWL DOWN ALONG COLUMN COMPLETE WITH CLEAN-OUT AT BASE (TYP.)
4. NEW 6" STORM WATER PIPE AT HIGH LEVEL DROP AND CONNECT ONTO NEW BELOW GROUND DRAINAGE.
5. PROVIDE AND INSTALL NEW CAPPED 2" DCW PIPE C/W WATER CHECK METER, TESTABLE BACK FLOW PREVENTER AND SHUT-OFF VALVE AT HIGH LEVEL. REMOTE READ OUT TO BE LOCATED IN THE RECEIVING AREA AS PER TENANT LAYOUT. COORDINATE EXACT LOCATION ON SITE.
6. PROVIDE NEW WALL MOUNTED FIRE EXTINGUISHER.
7. ALL DOMESTIC COLD / FIRE WATER TO BE INSULATED WITH 1" THICK INSULATION. COLD WATER PIPING TO BE COMPLETED WITH VAPOR BARRIER.
8. NOT USED.
9. NOT USED.
10. NOT USED.
11. 3" SANITARY PIPE STUBBED UP 6" AFF FOR FURTURE CONNECTION TO FIXTURE.
12. 2" SANITARY PIPE STUBBED UP 6" AFF FOR FURTURE CONNECTION TO FIXTURE.
13. 4" SANITARY PIPE STUBBED UP 6" AFF FOR FURTURE CONNECTION TO FIXTURE.
14. RUN TRAP PRIMER (TP-1) 1/2" PEX POLYETHYLENE PIPING BELOW TOP SLAB TO P-TRAPS WHERE SHOWN. STUB UP THROUGH PETSMART AND EXTEND 10' COILED CONNECTION ABOVE SLAB FOR FUTURE USE. TRAP SEAL PRIMER TO BE PROVIDED BY TENANT.
15. PROVIDE A 24" X 1/4" DEEP SUMP AROUND FLOOR DRAIN.
16. PROPOSED LOCATION OF NEW 3" VENT STACK FOR PETSMART SPACE.
17. INSTALL SANITARY PIPING WITH POSITIVE SLOPE MIN. 1% FOR 4" OR LARGER, MIN. 2% FOR 2" FOR 2' & 3". COORDINATE ROUTING WITH STRUCTURAL FOOTING AND ALL CONSTRUCTION TRADES PRIOR TO ROUGH IN INSTALLATION.
18. AREA OF FUTURE SLOPED FLOOR REFER TO TENANT DRAWINGS FOR SLAB IN THIS AREA.



CRITICAL DIMENSION:

INCOMING SPRINKLER AND DOMESTIC WATER SERVICES NOT TO EXCEED BEYOND 5'-0", AS PER DIMENSION SHOWN. THIS INCLUDES ALL VALVES, BACKFLOW AND DRAINS.

5 M200 GARBAGE ROOM - DRAINAGE
1/8" = 1'-0"

HAMMERSCHLAG & JOFFE INC.
43 Lesmill Road, Toronto, Ontario
Canada M3B 2T8
T: (416) 444.9263
F: (416) 444.1463
E: dwg@hamjof.com

STAMP

#	DATE	DESCRIPTION	BY
4	2024-07-09	ISSUED FOR TENDER	MA
3	2024-06-03	ISSUED FOR PERMIT AND PRE-TENDER	MA
2	2024-05-31	ISSUED FOR 100% REVIEW	MA
1	2024-05-17	ISSUED FOR 70% REVIEW	MA

RIOCAN

PROJECT
BLOCK B2.1 SPA
BUILDING 5
WINCHESTER ROAD & SIMCOE STREET OSHAWA, ONTARIO

DRAWING
GROUND FLOOR PD + DRAINAGE

PROJECT NO. 22-000-032
PROJECT DATE Issue Date
DRAWN BY SK
CHECKED BY DJ
SCALE As indicated

DRAWING NO. M200

7/9/2024 2:59:09 PM