EQUIPMENT SCHEDULE:

The design is based on the equipment listed here and noted in the Equipment Schedule Tables. Refer to Section 21 05 01 Article 1.24 ALTERNATE MATERIALS & EQUIPMENT for responsibilities when utilizing equipment that differs from the basis of design but still meets the design intent and the process to apply to use equipment that alters the design intent.

OUTDOOR GAS STORAGE AND DISPENSING TANK: Westeel Model HFV-8550 horizontal fuel vault ULC S601 rated for above ground horizontal steel contained single compartment tank assembly. Capacity: 8,550 liter total capacity, 1625mm dia. X 4320mm long. Steel primary tank with a 100% containment tank. Unit to be complete with top connections complete with vent assembly, secondary vent, fill box with spill containment sleeve, water-tight lockable cover and overfill protection valve, internal wear plates for corrosion protection, access ladder, anti-siphon device on outlet, leak detection monitor, and fuel dispensing system. Fuel dispensing system to be complete with fuel pump, lockable fuel dispensing cabinet, retracting hose reel, hose and auto shut-off nozzle. Leak detection monitor to be wired to remote alarm, wiring and alarm by electrical, refer to electrical drawings. Unit to have single point power connection with switch in dispensing cabinet. Unit to be installed on concrete pad, refer to structural. Installation to be done in strict accordance with CSA B139 and manufacturer's recommendations. Provide all necessary fittings, extensions, inspection ports, etc. as required by all codes and as required for proper operation. Unit to be completely factory assembled and shipped (including the fuel dispensing system and all fuel oil piping) with the only required on site connections to be single point power and remote leak detection alarm.

FUEL OIL STORAGE TANK: Westeel Model FV-25V vertical fuel vault ULC S630 rated for above ground vertical steel contained tank assemblies. Capacity: 2,500 liter total capacity, 1567mm dia. X 1875mm long. Steel primary tank enclosed in a 110% containment tank. Unit to be complete with top connections complete with vent assembly, fill box with spill containment sleeve, water-tight lockable cover and overfill protection valve, internal wear plates for corrosion protection, access ladder, anti-siphon device on outlet, leak detection monitor. Leak detection monitor to be wired to remote alarm, wiring and alarm by electrical, refer to electrical drawings. Unit to be installed on concrete pad, refer to structural. Installation to be done in strict accordance with CSA B139 and manufacturer's recommendations. Provide all necessary fittings, extensions, inspection ports, etc. as required by all codes and as required for proper operation.

WATER METER: New water meter to approval of Black Lake Municipal Authority complete with bypass valve.

DOMESTIC WATER SERVICE DOUBLE CHECK VALVE ASSEMBLY: Watts Series 957 lead free line size reduced pressure testable double check valve assembly complete with quarter turn shut-off valves and bronze wye strainer.

FIRE PROTECTION DOUBLE CHECK VALVE ASSEMBLY : Watts Model 757 line size testable double check valve assemble complete with OSY shut-off valves.

DOMESTIC HOT WATER HEATER (WH-1): Bradford White KwickShot Model ES-3000-1-S-10, electric tankless water heater. Unit to be 3,000 Watt rating, 120V/60/1 phase, 25.0 Amps, Temperature Rise: 22.8 deg.C (41 deg.F) at 0.03 l/s (0.5 GPM). Unit dimensions: 273mm H x 133mm W x 73mm D (10-3/4" H x 5-1/4" W x2-7/8" D). Materials: Cover: ABS UL rated 94Vo glass reinforced Fortron heater body and Ni chrome element. Color: white. Element: replaceable cartridge type. Pipe fitting: 9.5mm (3/8") compression at top of unit. One complete spare unit to be supplied and turned over to Owner at completion of project.

DOMESTIC HOT WATER HEATER (WH-2): Bradford White, Model LD-WH6U3-1, light duty commercial wall hung electric water heater. Unit to be 120V/60/1 phase, with one 1,500 Watt element. Storage Capacity to be 22.7 L (6 U.S. gallons). Recovery to be 55.5 deg. C (100 deg.F) Rise: 22.7 L (6 U.S. gallon). Unit Dimensions: 356mm diameter x 400 mm height (14" diameter x 15-3/4" height). Unit to be complete with: Fully Automatic Controls: surface-mount thermostat for automatic temperature control, factory installed sensitive manual reset energy cut-off for safety to prevent overheating. Direct heat transfer with a single immersed element. Vitraglas Lining. 25mm (1") Non-CFC foam insulation. Factory installed heavy duty wall mounting bracket. 19mm (3/4") water connections. Protective magnesium anode rod. Steel tank: heavy gauge steel automatically formed, rolled, and welded. T&P Relief valve. One complete spare unit to be supplied and turned over to Owner at completion of project.

DOMESTIC HOT WATER HEATER (WH-3): Bradford White: Model LE240S3-3, commercial electric water heater. Unit to be 208V/60/1 phase, with two 4,500 Watt element, non-simultaneous operation. Storage Capacity to be 151 liters (40 U.S. gallon). Recovery to be 68 liters (18 U.S. gallon) first hour delivery at 55 deg.C (100 deg.F) temperature rise. Unit to be supplied with factory installed temperature and pressure relief valve and automatic thermostat. Unit to be installed with drain pan piped to floor drain. One complete spare unit to be supplied and turned over to Owner at completion of project.

DOMESTIC HOT WATER HEATER (WH-4): Bradford White: Model LE240S3-3, commercial electric water heater. Unit to be 240V/60/1 phase, with two 4,500 Watt element, non-simultaneous operation. Storage Capacity to be 151 liters (40 U.S. gallon). Recovery to be 68 liters (18 U.S. gallon) first hour delivery at 55 deg.C (100 deg.F) temperature rise. Unit to be supplied with factory installed temperature and pressure relief valve and automatic thermostat. Unit to be installed with drain pan piped to floor drain. One complete spare unit to be supplied and turned over to Owner at completion of project.

DOMESTIC HOT WATER EXPANSION TANK (ET-1): Taco Model PAX30, suitable for domestic hot water, 30 litre (8 gallon) total volume, 19 litre (5.0 gallon) acceptance volume, 356 mm (14") diameter x 648 mm (25-1/2") height. Unit to be mounted suspended from structure. Installation to be complete with isolation valve and drain valve piped to floor drain.

DOMESTIC HOT WATER RECIRC PUMP (P-1): Taco, Model 005-SF2-IFC, cartridge circulator pump, 0.1 l/s flow at 14.9 kPa (1.5 GPM flow at 5.0' head), stainless steel construction, Motor: 21 Watts (1/35 H.P.), 3,250 RPM, 115V/60/1 phase. Disconnect switch to be provided by Electrical.

FLOW RESTRICTOR: Griswold Flowcon, automatic flow control valve complete with isolation valve, strainer and gauge ports. Units to be sized based on flow requirements and installed as per manufacturer's recommendations.

ELECTRIC BASEBOARD: Dimplex commercial, architectural slope top heater, front and top are constructed of extruded aluminum equivalent in strength to 14 gauge steel with punched air intake and exhaust vents, cabinet back and bottom are fabricated from satin coat steel with multiple knockouts for power connection, field removable endcaps, stainless steel sheath encloses a nickel chromium element compacted in a mineral insulation, aluminum fins are brazed to the surface, white painted finish is hybrid polyester epoxy powder coat process. Unit to be complete with factory wired and installed 24V transformer for remote low voltage thermostat control; provide wall mounted thermostat matched to unit. Units sized on Standard Average Density - 750W/ft.

BB-1: Model AS12F215, 1,500 Watts (5,118 BTU), 617mm (24-5/16") length, 600V/60/3 phase. BB-2: Model AS12F430, 3,000 Watts (10,236 BTU), 1,227mm (48-5/16") length, 600V/60/3 phase. BB-3: Model AS12F645, 4,500 Watts (15,354 BTU), 1,836mm (72-5/16") length, 600V/60/3 phase.

ELECTRIC CABINET CONSOLE HEATER: Dimplex commercial, cabinet console heater, Color: white epoxy/polyester powder coat finish, Construction: all panels are fabricated with 16 gauge steel, Heating Element: spiral fins, overheat protection provided by a linear type thermal limit switch, Control: built in relay for use with remote control, Fan & Motor: all motors are resilient mounted and have built in automatic reset thermal overload protection, motors have plug-in electric connection, motors and blowers are mounted as a single assembly with direct-drive connection on a rigid heavy gauge frame, blow-through design. Unit to be complete with factory wired and installed 24V transformer for remote low voltage thermostat control; provide wall mounted thermostat matched to unit. Bottom of unit to be installed tight to baseboard.

CC-1 THRU CC-4: Model CH3D06, 6,000 Watts (20,500 BTU), 118 / 94 I/s (250 / 200 CFM), 600V/60/3 phase.

ELECTRIC FAN FORCED HEATER: Dimplex commercial, wall/ceiling recessed fan forced heater, front panel constructed of 20 gauge steel, white polyester epoxy powder coat painted finish, nickel chromium resistant wire heating element within a steel sheath and spiral steel fins, totally enclosed and factory lubricated motor with a black anodized 5 blade mixed flow aluminum fan. Unit to be complete with factory wired and installed 24V transformer for remote low voltage thermostat control; provide wall mounted thermostat matched to unit... FF-1 and FF-2: Model RFI840D21-W, 4,000 Watts (13,648 BTU), 75 l/s (160 CFM), 240V/60/1 phase.

ELECTRIC UNIT HEATER: Dimplex commercial, ceiling mount industrial electric unit heater, polyester/epoxy powder coat finish almond color, 18 gauge die formed steel cabinet, five-way individual adjustable 20 gauge convex profile air directing louvers, metal tubular sheath fused with spiral steel fins, nickel chromium wire encased in solidly packed magnesium oxide insulation, heavy duty motor continuous operation totally enclosed thermally protected with permanently lubricated ball bearings, ceiling hanging bracket included. Unit to be complete with factory wired and installed 24V transformer for remote low voltage thermostat control; provide wall mounted thermostat matched to unit. UH-1 and UH-3 thru UH-6: Model EUH10B84CT, 10,000 Watts (34,120 BTU), 283 I/s (600 CFM), 600V/60/3 phase. UH-2: Model EUH5B24CT, 5,000 Watts (17,060 BTU), 165 l/s (350 CFM), 600V/60/3 phase.

ELECTRIC FAN COIL UNIT (FC-1): Johnson Control, Model FHP50, horizontal low profile electric heat only fan coil unit with 25mm (1") MERV 8 pleated filter, 3-speed fan relay package & transformer, foil faced insulation, galvanized drain pan, non-fused door interlocking disconnect switch - 40 Amps, and electric coil silent relay. Electric Heater: 6.0 kW (20.46 MBH), 208V/60/1 phase. Fan to deliver 353 L/s (748 cfm) @ 62 pa (0.25") external static pressure. Unit Electrical Data: Total Full Load Amps = 30.55, MCA/MSCP = 38.19/40.00, Fan Power Input = 449 Watts.

ELECTRIC HEATING COIL (HC-01): Thermolec, Model C2CACNT0P6B1AAX1SC, slip-in type electric heating coil, Electrical Data: 25.0 kW (85.25 MBH), 600V/60/3 phase, 24.0 Amps, 424 l/s (900 CFM), complete with Magnetic Contactor, Auto Cut-out, Manual Cut-out, Factory Mounted S.C.R. Modulating Controls, Duct Mounted 0-10V Thermostat, Duct Sensor, Disconnect Switch. Size: 508mmW x 305mmH x 254mmD (20"W x 12"H x 10" D).

AIR CONDITIONING UNIT (AC-1) x 2: Mitsubishi Electric Twin System Model PKA-A12HA, wall mounted room air conditioner. SEER: 15.2. EER: 10.1. Unit shall provide 1.76-3.52 Kw (6.0-12.0 MBH) of cooling. Power shall be 208V/60/1 phase. Power to A/C unit is supplied from the outdoor condensing unit on terminals S1 & S2. Power Input 1,190 Watts, Maximum Fuse: 15 Amps, MCA: 1.0 Unit fan shall supply 151 L/s (320 CFM) on low speed, 175 L/s (370 CFM) on medium speed, and 200 L/s (425 CFM) on high speed. Unit shall be complete with R-410A refrigerant, all mounting hardware, auto vane and swing mode, super quiet operation, filter, pre-charged refrigerant line set and microprocessor controls including Slim Smart Remote. Unit shall be complete with Mini Aqua condensate pump mounted within drain pan of unit. Pump to be wired with unit.

OUTDOOR CONDENSING UNIT (CU-1): Mitsubishi Electric Twin System Model PUY-A24NHA4. Power shall be 208V/60/1 phase. MCOP: 30 Amps. MCA: 18. Unit shall carry a 6-year compressor warranty. Compressor shall be variable speed scroll. Unit shall be complete with optional controls and equipment for low ambient operation to -40 deg. C (-40 deg. F) including wind guards. Mount unit on rubber isolating pads on concrete pad, see structural.

R-3: E.H. Price, Model 80/F/A/B12, eggcrate face return, surface mounted, countersunk screwholes, white powder coat FURNACE (F-1): Broan Nortron Model 21ECM18, ECM series electric up-flow furnace, unit housing shall be 1,016mm H finish. x 510mm W x 510mm D (40"H x 20"W x 20"D), blower assembly shall have a centrifugal-type blower wheel and a permanently lubricated motor, CSA certified. Unit shall be rated at 18 kW (61,473 BTU) heating capacity, 26 deg.C. (47 deg.F.) temperature rise. Furnace to provide 479 l/s at 5.1mm W.G. (1,016 CFM at 0.5" W.G.) maximum heating airflow, R-4: E.H. Price, Model 530/F/L/A/B12, deflection louvered return grille, surface mounted, front blades parallel to long 538 I/s at 12.7mm W.G. (1,139 CFM at 0.5" W.G.) maximum cooling airflow. Furnace installation to be complete with dimension, countersunk screwholes, white powder coat finish. external filter rack complete with 25mm (1") pleated filter. Unit to be complete with modulating 7 day programmable furnace thermostat. Electrical: 240V/60/1 phase, ECM motor 249 Watts (1/3 HP), Amps including motor: 76.

HEAT RECOVERY VENTILATOR (HRV-1): Lifebreath Model RNC5-ES, Core: cross-flow heat recovery aluminum. mitered corners, countersunk screwholes, brushed aluminum with clear coat finish Motors and Blowers: each airstream has an independent motorized impeller with multiple fan speed operations 59 l/s at 100 Pa (125 CFM at 0.4"). Filters: washable air filters in exhaust and supply air streams. Mounting: threaded insert at corners of the cabinet designed to accepts "S" hooks and hanging straps supplied with unit. Defrost: recirculating FIRE DAMPERS: ULC listed types as noted on drawings. Dampers to be installed in strict accordance with damper defrost system. Case: 20 gauge prepainted galvanized steel for corrosion resistance, insulated to prevent manufacturer's recommendations and authority having jurisdiction exterior condensation. Drain connections: two 12mm (1/2") OD to be piped to floor drain. Balancing ports located on unit. Installer Selectable High Speed Settings: adjustable DIP switches located on circuit board. Connection Duct sizes: four SMOKE DAMPERS: ULC listed types as noted on drawings. Dampers to be installed in strict accordance with 125mm (5") oval collars, balancing dampers are located on all collars. Weight: 23kg (51 lbs). Controls: Model 99-DX-1 manufacturer's recommendations and authority having jurisdiction. Damper to be complete with motorized low voltage lifestyle RNC Digital Control, and two (2) 99-DET01 Lifestyle 20/40/60 minute Timer located in washrooms. Electrical: actuator and smoke detection system, supplied with damper. Actuator and detector to be factory wired complete with 120V/60/1 phase, Watts at low speed = 48, Watts at high speed = 110. Amp Rating = 1.25. Sensible Efficiency at 0 alarm contact for connection to fire alarm. Deg.C. (32 Deg.F) is 65%.

RANGE HOOD (RHD): Broan QS2 Series, Model QS230WWN, under cabinet hood, 762mm (30") wide, vertical ducted discharge, complete with micromesh grease filter, dual halogen bulbs (PAR20) to be supplied by Mechanical Contractor, back draft damper and three-speed electronic control. Air flow 142 l/s (300 cfm), 0.9 sones (norm) 4.5 sones (high), 115V/60/1 phase. Finish: white.

MOTORIZED DAMPERS: Tamco Series 9000 BF, thermally broken extruded aluminum dampers. Damper frame shall be no less than 4" deep and insulated with polystyrene on all four sides. Entire frame shall be thermally broken. Blades shall be extruded aluminum less than 8" width, internally insulated with expanded polyurethane foam, thermally broken, and mounted in opposed blade action. Blade and frame seals to be extruded silicone secured in an integral slot. Dampers to be rated to operate in temperatures between -72 deg.F and 185 deg.F. Pressure drop of dampers, when fully open, to not exceed 0.03" at 1000 fpm. Dampers to be flanged to duct and installed in strict accordance with manufacturer's installation guidelines. Intermediate or tubular steel structural support is required for all dampers that consist of two or more sections in either height or width or both. Actuators to be supplied by Mechanical Contractor and installed by Electrical.

selected by Architect.

LOUVRE (TYPE 2): Price Model NJE2, stationary extruded 51mm (2") deep aluminum J-style blades positioned at 30 degrees, extruded aluminum frame and supports, all welded construction, integral perimeter caulking stop, 12mm x 12mm (1/2" x 1/2") 16 gauge expanded aluminum bird screen without frame, finish to be baked enamel with colour as selected by Architect.

DIFFUSERS AND GRILLES:

S-1: Register to be laminate face assembly consisting of 3mm steel sheet for the body and 3.2mm steel sheet for the face. Face complete with 3mm staggered round holes and reinforced with solid steel at 150mm o.c. Face sheet shall be spot welded to the reinforcing bars at 3 locations for each bar. Cover to overlap opening by 50mm on all sides. Grille face frame and compressed frames to be manufactured from steel angle, 32mm x 32mmx 6mm, welded to plenum body. Edge of face frame to be beveled 2mm and all exposed welds and joints to be dresses invisible. Finish to be factory powder coat, off-white colour. Grilles to be fastened to construction with minimum 4-10mm diameter X 50mm long stainless steel bolts with tamperproof heads. Acceptable product: Simpson Installations Ltd. Model V2, Chubb OP-20V, Eneround or Virtucom.

LOUVRE (TYPE 1): Price Model DE635, stationary extruded 152mm (6") deep aluminum drainable blades positioned at 35 degrees, extruded aluminum frame and supports, all welded construction, integral perimeter caulking stop, 12mm x 12mm (1/2" x 1/2") 16 gauge expanded aluminum bird screen without frame, finish to be baked enamel with colour as

S-2: E.H. Price, Model LBPH25C/1000/60, heavy duty linear bar grille, extruded aluminum construction, pencil proof bar spacing with 0° deflection, 25mm heavy duty extruded aluminum frame with with reinforcing support bars and mitered corners, brushed aluminum with clear coat finish

S-3: E.H. Price, Model LBMH25C/1000/60, extra heavy duty linear bar grille, extruded aluminum mandrel construction, pencil proof bar spacing with 0° deflection, 25mm heavy duty extruded aluminum frame with reinforcing support bars and mitered corners, brushed aluminum with clear coat finish

S-4: E.H. Price, Model 520D/F/L/A/B12, louvered supply grille c/w steel damper, surface mounted, front blades parallel to long dimension, countersunk screwholes, white powder coat finish.

E-1: Register to be laminate face assembly consisting of 3mm steel sheet for the body and 3.2mm steel sheet for the face. Face complete with 3mm staggered round holes and reinforced with solid steel at 150mm o.c. Face sheet shall be spot welded to the reinforcing bars at 3 locations for each bar. Cover to overlap opening by 50mm on all sides. Grille face frame and compressed frames to be manufactured from steel angle, 32mm x 32mmx 6mm, welded to plenum body. Edge of face frame to be beveled 2mm and all exposed welds and joints to be dresses invisible. Finish to be factory powder coat, off-white colour. Grilles to be fastened to construction with minimum 4-10mm diameter X 50mm long stainless steel bolts with tamperproof heads. Acceptable product: Simpson Installations Ltd. Model V2, Chubb OP-20V, Eneround or Virtucom.

E-2: E.H. Price, Model 530D/F/L/A/B12, louvered exhaust grille c/w steel damper, surface mounted, front blades parallel to long dimension, countersunk screwholes, white powder coat finish.

E-3: E.H. Price, Model 510D/F/L/A/B12, louvered exhaust grille complete with steel damper, duct mounted, front blades parallel to long dimension, countersunk screwholes, white powder coat finish.

E-4: E.H. Price, Model 90/L/A/B12, heavy gauge steel grille, duct mounted, front blades parallel to long dimension, countersunk screwholes, white powder coat finish.

R-1: Register to be laminate face assembly consisting of 3mm steel sheet for the body and 3.2mm steel sheet for the face. Face complete with 3mm staggered round holes and reinforced with solid steel at 150mm o.c. Face sheet shall be spot welded to the reinforcing bars at 3 locations for each bar. Cover to overlap opening by 50mm on all sides. Grille face frame and compressed frames to be manufactured from steel angle, 32mm x 32mmx 6mm, welded to plenum body. Edge of face frame to be beveled 2mm and all exposed welds and joints to be dresses invisible. Finish to be factory powder coat, off-white colour. Grilles to be fastened to construction with minimum 4-10mm diameter X 50mm long stainless steel bolts with tamperproof heads. Acceptable product: Simpson Installations Ltd. Model V2, Chubb OP-20V, Eneround or Virtucom.

R-2: E.H. Price, Model 80/TB/B12, eggcrate face return, t-bar lay-in, white powder coat finish.

R-5: E.H. Price, Model LBMH25C/1000/60, extra heavy duty linear bar grille, extruded aluminum mandrel construction, pencil proof bar spacing with 0° deflection, 25mm heavy duty extruded aluminum frame with reinforcing support bars and

FIRE/SMOKE DAMPERS: ULC listed types as noted on drawings. Dampers to be installed in strict accordance with manufacturer's recommendations and authority having jurisdiction. Damper to be complete with motorized low voltage actuator and smoke detection system, supplied with damper. Actuator and detector to be factory wired complete with alarm contact for connection to fire alarm.

FIRE EXTINGUISHER CABINET FEC-1: National Fire Equipment Ltd. Model 102RS-SS semi-recessed stainless steel cabinet with glass in door, complete with 2.3 Kg (5lb) ABC dry chemical fire extinguisher with 3A10BC rating.

FIRE EXTINGUISHER CABINET FEC-2: National Fire Equipment Ltd. Model CE-950-3-2-SS semi-recessed stainless steel cabinet with glass in door, complete with 4.5 kG (10 lb) ABC dry chemical fire extinguisher with 6A80BC rating.

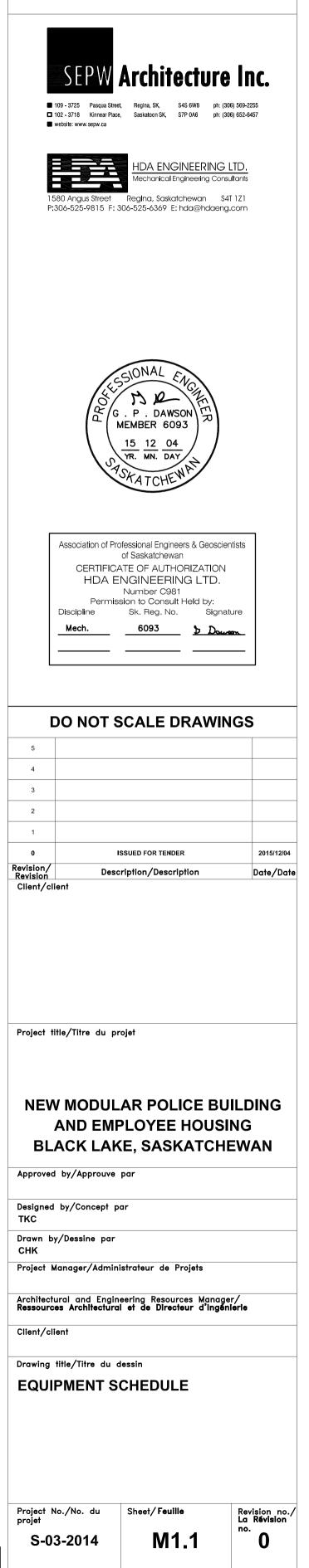
FIRE EXTINGUISHER CABINET FEC-3: National Fire Equipment Ltd. Model CE-950-5-SS semi-recessed stainless steel cabinet with glass in door, complete with 4.5 kG (10 lb) Carbon dioxide fire extinguisher with 60BC rating.

WALL HUNG FIRE EXTINGUISHER: 4.5 kg (10 lb) ABC dry chemical fire extinguisher with 6A80BC rating c/w wall bracket.

FIRE DEPARTMENT CONNECTION: National Fire Equipment Ltd., Model 229 flush mounted, siamese double clapper, bronze finish with caps, chains, and bronze base plate. Installation to be complete with ball drip check valve piped to drain.

SPRINKLER JOCKEY PUMP: As part of the main sprinkler tree located in the Service Space 201. Motor: 250 Watt, 115V/60/1 phase, complete with auto and manual control.

GAS DETECTORS: Armstrong, AMC-1AD1 single zone gas monitor complete with one AMC-1222 Series combination carbon monoxide sensors and nitrogen dioxide sensors. Monitor to have a minimum coverage area of 50' radius and to be complete with low, high, and fail indicators, two 10 Amp relays, selectable time delay, audible alarm with silencer. Electrical: 120V/60/1 phase.





Exhaust Fan Schedule

Inline Cabinet: Design based on Greenheck CSP Models. Housings to be lined with 12 mm thick acoustic insulation. Motor to be mounted on resilient ela curved centrifugal wheel AMCA rated for air and sound performance. Units shall be complete with canvas duct connections, backdraft dampers, and flat i Suspend fan from structure with spring isolation hangers. Unit to be complete with factory mounted and wired solid state speed control for air flow balance

General Information						Airflow				Motor				
Тод	Coming	Wheel	Madal	Wheel	Sound	FI	ow	S	.P.	Control	Drive Loss	H	I.P.	V/Hz/P
Tag	Serving	VVIIeei	Model	RPM	Sones	L/S	(CFM)	Pa	in. w.c.	Control	%	kW	hp	V/HZ/P
EF-01	141 / 142	Centrifugal	CSP-A250	1,000	3.0	47	(100)	187	(0.75)	LS - T	Direct	0.080	(1/8)	120/60/1
EF-02	138 / 139	Centrifugal	CSP-A250	1,000	3.0	47	(100)	187	(0.75)	LS - T	Direct	0.080	(1/8)	120/60/1
EF-03	136 / 137	Centrifugal	CSP-A250	1,000	3.0	47	(100)	187	(0.75)	LS - T	Direct	0.080	(1/8)	120/60/1
EF-04	159 / 160	Centrifugal	CSP-A250	1,000	3.0	47	(100)	187	(0.75)	LS - T	Direct	0.080	(1/8)	120/60/1
EF-05	151	Centrifugal	CSP-A710	1,080	2.5	212	(450)	125	(0.50)	24/7	Direct	0.325	(1/2)	120/60/1
EF-06	151	Centrifugal	CSP-A710	1,080	2.5	212	(450)	125	(0.50)	CO Monitor	Direct	0.325	(1/2)	120/60/1
EF-07	157	Centrifugal	CSP-A700	1,100	2.6	283	(600)	125	(0.50)	CO Monitor	Direct	0.350	(1/2)	120/60/1
Roof Exh	aust: Design bas	sed on Greenheck	G Models, Cent	rifugal direct	t drive roof e	exhaust fan.	backward ir	nclined fan.	aluminum d	onstruction, stat	ically and dy	namically b	alanced. AM	/CA rated

Roof Exhaust: Design based on Greenneck G Models. Centrifugal direct drive roof exhaust fan, backward inclined fan, aluminum construction, statically and dynamically balanced, AWCA rated for air and sound performance, complete with disconnect switch, backdraft damper, birdscreen, roof curbs and vibration isolators. Motor: ECM with potentiometer dial pre-mounted and wired on motor for speed control with 80% usable turndown, balancer to use speed control for balancing.

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EF-08	147	Centrifugal	G-070	1,300	2.6	71	(150)	62	(0.250)	LS - LV	Direct	0.01	(1/60)	120/60/1
EF-09	146.1	Centrifugal	G-065	1,550	3.7	47	(100)	62	(0.250)	24/7	Direct	0.01	(1/60)	120/60/1
EF-10	146.2	Centrifugal	G-065	1,550	3.7	47	(100)	62	(0.250)	24/7	Direct	0.01	(1/60)	120/60/1
EF-11	148	Centrifugal	G-085	1,550	7.4	189	(400)	125	(0.500)	LS - LV	Direct	0.04	(1/20)	120/60/1
EF-12	102	Centrifugal	G-075	1,300	2.8	94	(200)	62	(0.250)	24/7	Direct	0.01	(1/50)	120/60/1
EF-13	110	Centrifugal	G-075	1,300	2.8	94	(200)	62	(0.250)	24/7	Direct	0.01	(1/50)	120/60/1
EF-14	113	Centrifugal	G-065	1,300	3.7	47	(100)	62	(0.250)	24/7	Direct	0.01	(1/60)	120/60/1

Control

LS-LV Local Switch - Line Voltage LS-T Local Switch - Timer

CO Monitor- Fan to run from CO Monitor 24/7- Fan to operate 24 hours a day, 7 days a week

PACKAGED ROOF TOP UNIT WITH ENERGY RECOVERY (RTU-1 AND RTU-5): Design is based on AAON Model RN Roof Top unit with electric heat and electric cool. Unit to be complete with down discharge and custom roof curb duct transition to side discharge. Unit to be 100% fresh air and 100% Exhaust. Unit to have the following: filters, starters, crank case heaters, packaged integral controls and wiring, low ambient compressor lockouts and discharge and intake dampers. Fans and drives to be internally spring isolated, complete with flexible duct connections, 50 mm deflection spring isolators. Double wall construction with minimum R value of R-13. Access to be hinged doors complete with 1/4 turn fasteners, all access door handles to have means to lock. Electric heat to be modulating with SCR control. Electric cooling to be from modulating compressor with integral controls. Control to be stand alone, packaged with unit, to meet sequences of operation as specified in Section 23 74 00 Packaged Outdoor HVAC Equipment. Unit to have drain pans under cooling coil. Unit to have packaged energy recovery complete with means to defrost under design conditions. Fan Performance shall be based on a dirty filter. Filters to be: 50mm (2") Merv 8 Pre-filter and 100mm (4") Merv 14 final filter. Units to have single point connection and be complete with factory wired GFI service receptacles. Fans to be belt drive with automatic belt tensioner. Refer to drawings for duct connections. Unit to be complete with Hail Guards.

RTU-1: Model RN-009-4-0-FA09-14A:GAKD-D0A-DHE-AHB-CADB0LE-EN-0000H00AB

Electrical: 600 V / 60 Hz / 3 phase, single point connection. Unit FLA = 105. MCA = 107. MOP = 110. (factory installed circuit breaker not available in this model)

Supply Fan: 1,038 L/s (2,200 CFM) at 374 Pa (1.5") ESP and 810 Pa (3.25") TSP. Motor = 3 Hp. 1760 RPM. Exhaust Fan: 1.038 L/s (2.200 CFM) at 374 Pa (1.5") ESP and 663 Pa (2.66") TSP. Motor = 2 Hp. 1760 RPM.

Electric Pre-Heating Coil: 60 kW (204.6 MBH) to raise air from -41.7 Deg.C. (-43.0 Deg.F.) DB and -41.7 Deg.C. (-43.0 Deg.F.) WB to discharge of 7.2 Deg.C (45.0 Deg.F.) DB and 1.3 Deg.C. (-29.6 Deg.F.) WB with SCR modulating control.

Electric Heating Coil: 40kW (136.4 MBH) to raise air from 5.1 Deg.C. (41.2 Deg.F.) DB and -2.5 Deg.C. (27.5 Deg.F.) WB to discharge of 38.2 Deg.C (100.7 Deg.F.) DB and 13.6 Deg.C. (56.5 Deg.F.) WB with SCR modulating control.

Cooling Coil: Capacity at AHRI Rated Flow of 1,038 L/s (2,200 CFM) to be: Equivalent Total Capacity 25.8 kW (88.0 MBH) Gross and 24.3 kW (82.8 MBH) Net, Total Capacity 25.8 kW (88.0 MBH) Gross and 24.3 kW (82.8 MBH) Net, Sensible Capacity: 23.1 kW (78.8 MBH) Gross and 21.6 kW (73.6 MBH) Net, Latent Capacity 2.7 kW (9.23 MBH) Gross. Coil shall lower air temperature from 27.8 Deg.C. (82.0 Deg.F.) DB and 17.0 Deg.C. (62.4 Deg.F.) WB to a unit discharge of 9.6 Deg.C (49.3 Deg.F.) DB and 8.9 Deg.C. (48.0 Deg.F.) WB.

Refrigerant: R-410A

Compressor: Variable Speed scroll compressor.

Cooling Performance: 9.4 EER, 14.9 IEER

RTU-5: Model RN-006-4-0-FA09-13A:GABD-D0A-DBE-AHB-C0DA0LE-EK-0000H00AB

Electrical: 600 V / 60 Hz / 3 phase, single point connection. Unit FLA = 66. MCA = 68. MOP = 80. (factory installed circuit breaker not available in this model)

Supply Fan: 731 L/s (1,550 CFM) at 249 Pa (1.0") ESP and 665 Pa (2.67") TSP. Motor = 3 Hp 1760 RPM. Exhaust Fan: 731 L/s (1,550 CFM) at 249 Pa (1.0") ESP and 516 Pa (2.07") TSP. Motor = 2 Hp 1760 RPM.

Electric Pre-Heating Coil: 30 kW (102.3 MBH) to raise air from -41.7 Deg.C. (-43.0 Deg.F.) DB and -41.7 Deg.C. (-43.0 Deg.F.) WB to discharge of -9.4 Deg.C (15.0 Deg.F.) DB and -12.6 Deg.C. (9.3 Deg.F.) WB with SCR modulating control.

Electric Heating Coil: 30kW (102.3 MBH) to raise air from -9.4 Deg.C (15.0 Deg.F.) DB and -10.5 Deg.C. (13.0 Deg.F.) WB to discharge of 25.7 Deg.C (78.2 Deg.F.) DB and 9.6 Deg.C. (49.2 Deg.F.) WB with SCR modulating control.

Cooling Coil: Capacity at AHRI Rated Flow of 731 L/s (1,550 CFM) to be: Equivalent Total Capacity 16.3 kW (55.6 MBH) Gross and 15.0 kW (51.3 MBH) Net, Total Capacity 16.3 kW (55.6 MBH) Gross and 15.0 kW (51.3 MBH) Net, Sensible Capacity: 15.3 kW (52.3 MBH) Gross and 14.1 kW (48.1 MBH) Net, Latent Capacity 1.0 kW (3.3 MBH) Gross. Coil shall lower air temperature from 27.8 Deg.C. (82.0 Deg.F.) DB and 17.0 Deg.C. (62.4 Deg.F.) WB to a unit discharge of 10.9 Deg.C (51.6 Deg.F.) DB and 14.6 Deg.C. (49.9 Deg.F.) WB.

Refrigerant: R-410A

Compressor: Variable Speed scroll compressor.

Cooling Performance: 13.2 SEER, 8.5 EER

PACKAGED ROOF TOP UNIT WITH RETURN AIR (RTU-2 AND RTU-3): Design is based on Lennox Model LCH Energence Roof Top unit with electric heat and electric cool. Unit to be complete with factory roof curb, fully modulating economizer with barometric relief, filters, starters, crank case heaters, and all integral controls and wiring, low ambient compressor lockouts and minimum damper position switches. Fans and drives to be internally spring isolated, complete with flexible duct connections, 50 mm deflection spring isolators. Access to be hinged doors complete with 1/4 turn fasteners, all access door handles to have means to lock. Electric heat to be modulating with SCR control. Electric cooling to be from two-stage compressor with staged controls. Control to be stand alone, packaged with unit, to meet sequences of operation as specified in Section 23 74 00 Packaged Outdoor HVAC Equipment. Unit to have drain pans under cooling coil. Fan Performance shall be based on a dirty filter. Filters to be: 50mm (2") Merv 13. Units to have single point connection and be complete with factory wired GFI service receptacles. Fans to be belt drive. Refer to drawings for duct connections. Compressors to be two-stage. Unit to be complete with Hail Guards. ESP is the external static pressure for the ductwork external to the unit. SP is the estimated static pressure excluding the base unit, dry indoor coil and base filters and therefore includes the following pressure drops: added pressure for wet coil, heating coil, economizer, added pressure for MERV 13 filters, and the ESP.

RTU-2: Model LCH048S4 breaker not available in this model) Deg.F.) with SCR modulating control. Refrigerant: R-410A with 5lbs 8 oz charge Compressor: One - two stage scroll compressor. Cooling Performance: 17.6 SEER, 12.8 EER Sound Rating - 75 dBa

RTU-3: Model LCH036S4 breaker not available in this model) Deg.F.) with SCR modulating control. Refrigerant: R-410A with 5lbs charge. Compressor: One - two stage scroll compressor. Cooling Performance: 18 SEER, 12.7 EER Sound Rating - 75 dBa

lastic grommets. Fan shall have forward roof discharge caps with birdscreen.
се.

	Silencer Schedule																	
	General Information				Airflow				Minimum Required Attenuation									
Tag	Location	Width Height		Silencer	Silencer Length	n Airflow		Face Velocity	/ Pressure Drop		Octave Band							
Tag	Location	mm	mm	Туре	mm	L/S	(CFM)	m/s	Ра	in. w.c.	63	125	250	500	1k	2k	4k	8k
SIL-1	107.1 to 107	300	150	Rectangular	2000	64	(136)	1	8	0.03	12	24	43	52	54	55	48	32
SIL-2	156 to 107	500	200	Rectangular	3600	213	(452)	2	8	0.03	10	26	36	52	54	51	42	28
SIL-3	103 to 105	450	150	Rectangular	2300	106	(225)	2	7	0.03	7	16	26	37	44	42	34	27
SIL-4	104 to 105	400	150	Rectangular	3200	94	(199)	2	8	0.03	8	21	33	50	48	49	41	30
SIL-5	111 to 108	500	200	Rectangular	3600	216	(458)	2	8	0.03	10	26	36	52	54	51	42	28
SIL-6	144 to 128	350	150	Rectangular	2050	83	(176)	2	12	0.05	8	17	28	40	48	45	39	24

Pressure Drop listed includes system effect for duct arrangements indicated on drawings. Supplier to ensure Pressure Drop including system affect is not greater than number indicated.

Design is based on: SIL-1 thru SIL-5 VAW Model REA-Z (Z configuration), SIL-6 VAW Model REA (L configuration) Casing: 22 Ga. Galvanized

Perf: 22 Ga. Galvanized

Media: Fibreglass

- Electrical: 600 V / 60 Hz / 3 phase, single point connection. MCA 22. MOP 25. (factory installed circuit
- Fan: 906 L/s (1920 CFM) at 249 Pa (1") ESP or 374 Pa (1.4") SP. Motor 2 Hp.
- Electric Heating Coil: 15 kW (51 MBH) to raise air from 9.4 Deg.C. (49 Deg.F.) to discharge of 23.3 Deg.C (74
- Cooling Coil: Capacity at AHRI Rated Flow of 755 L/s (1600 CFM) to be 14.7 kW (50.1 MBH) nominal and 14.4 kW (49 MBH) Net. Coil shall lower air temperature from 24.7 Deg.C. (76 Deg.F.) DB and 17 Deg.C. (62.5 Deg.F.) WB to a discharge of 12.8 Deg.C (55 Deg.F.).

- Electrical: 600 V / 60 Hz / 3 phase, single point connection. MCA 21. MOP 25. (factory installed circuit
- Fan: 679 L/s (1440 CFM) at 274 Pa (1.1") ESP or 374 Pa (1.4") SP. Motor 1.0 Hp.
- Electric Heating Coil: 15 kW (51 MBH) to raise air from 9.4 Deg.C. (49 Deg.F.) to discharge of 26.7 Deg.C (80
- Cooling Coil: Capacity at AHRI Rated Flow of 566 L/s (1200 CFM) to be 10.5 kW (35.8 MBH) nominal and 10.3 kW (35.2 MBH) Net. Coil shall lower air temperature from 24.7 Deg.C. (76 Deg.F.) DB and 17 Deg.C. (62.5 Deg.F.) WB to a discharge of 12.8 Deg.C (55 Deg.F.).

PACKAGED ROOF TOP UNIT WITH RETURN AIR RTU-4:

Design is based on Lennox Model KC Landmark Roof Top unit with electric heat and electric cool. Unit to be complete with factory roof curb, fully modulating economizer with barometric relief, filters, starters, crank case heaters, and all integral controls and wiring, low ambient compressor lockouts and minimum damper position switches. Fans and drives to be internally spring isolated, complete with flexible duct connections. Access to be hinged doors complete with 1/4 turn fasteners, all access door handles to have means to lock. Electric heat to be modulating with SCR control. Electric cooling to be from single stage compressor. Control to be stand alone, packaged with unit, to meet sequences of operation as specified in Section 23 74 00 Packaged Outdoor HVAC Equipment. Unit to have drain pans under cooling coil. Fan Performance shall be based on a dirty filter. Filters to be: 50mm (2") Merv 13. Units to have single point connection and be complete with factory wired GFI service receptacles. Fans to be direct drive with ECM motor. Refer to drawings for duct connections. Unit to be complete with Hail Guards. ESP is the external static pressure for the ductwork external to the unit. SP is the estimated static pressure excluding the base unit, dry indoor coil and base filters and therefore includes the following pressure drops: added pressure for wet coil, heating coil, economizer, added pressure for MERV 13 filters, and the ESP.

RTU-4 Model KCA024S4D:

Electrical: 208 V / 60 Hz / 1 phase, single point connection. MCA - 37. MOP - 40. Fan: 450 L/s (953 CFM) at 174 Pa (0.7") ESP or 224 Pa (0.9") SP. Motor - 0.25 Hp. Electric Heating Coil: 7.5 kW (26.8 MBH) to raise air from 9.4 Deg.C. (49 Deg.F.) to discharge of 23.3 Deg.C (74 Deg.F.) with SCR modulating control.

Cooling Coil: Capacity at AHRI Rated Flow of 396 L/s (840 CFM) to be 7.2 kW (24.4 MBH) nominal and 6.9 kW (23.6 MBH) Net. Coil shall lower air temperature from 24.7 Deg.C. (76 Deg.F.) DB and 17 Deg.C. (62.5 Deg.F.) WB to a discharge of 12.8 Deg.C (55 Deg.F.).

Refrigerant: R-410A with 7lbs charge.

Compressor: One - single stage scroll compressor.

Cooling Performance: 13 SEER, 11.4 EER

Sound Rating - 75 dBa

<u>LEGEND</u>

СНW CSW ННW	DOMESTIC COLD HARD WATER DOMESTIC COLD SOFT WATER DOMESTIC HOT HARD WATER		MOTORIZED I
HSW RECIRC TS TR	DOMESTIC HOT SOFT WATER DOMESTIC HOT WATER RECIRC. DOMESTIC TEMPERED WATER SUPPLY DOMESTIC TEMPERED WATER RECIRC.		FIRE DAMPER
	LOW PRESSURE STEAM		TURNING VAI
	LOW TEMP. HEATING WATER SUPPLY LOW TEMP. HEATING WATER RETURN HEATING WATER SUPPLY HEATING WATER RETURN		MANUAL BAL
D P CHWS	DRAIN LINE PUMPED DRAIN LINE CHILLED WATER SUPPLY	 	INTERNALLY
	CHILLED WATER RETURN COMPRESSED AIR NATURAL GAS FUEL OIL SUPPLY		EXTERNALLY
			EXISTING DU
	SANITARY WASTE BELOW GRADE SANITARY VENT STORM ABOVE GRADE STORM BELOW GRADE	} }	EXISTING DU REMOVED OF
	RAIN WATER LEADER REVERSE OSMOSIS WATER LINE GATE VALVE (UNLESS OTHERWISE NOTED)	\boxtimes	SUPPLY DUC
	BALL VALVE BUTTERFLY VALVE GLOBE VALVE		RETURN DUC
	CHECK VALVE TWO WAY CONTROL VALVE THREE WAY CONTROL VALVE		EXHAUST DU
	HOSE BIBB STRAINER	FEC	FIRE EXTING
	CIRCUIT BALANCE VALVE		FIRE EXTING
■	FLOW LIMITING VALVE UNION	Ū	TEMPERATUR
	CLEAN OUT FLOOR DRAIN	\oplus	HUMIDISTAT
	ROOF DRAIN	Ē	EXHAUST FA
	ELBOW DOWN	Ô	HRV CONTRO
+0 -@ -@	ELBOW UP PRESSURE GAUGE THERMOMETER	WC-1	PLUMBING F

ZED DAMPER

IPER

VANES

BALANCE DAMPER

ALLY INSULATED DUCT

ALLY INSULATED DUCT

DUCT TO REMAIN

DUCT TO BE MOVED, OR RELOCATED AS NOTED

DUCT SECTION

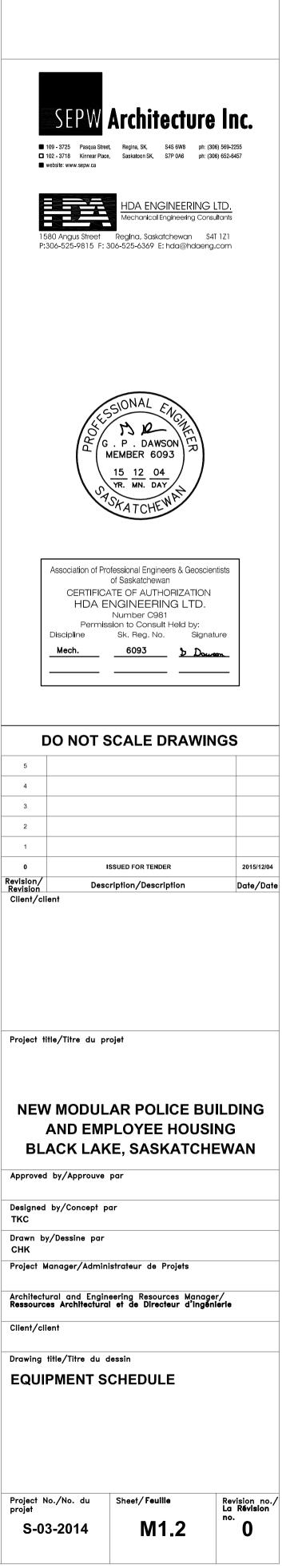
DUCT SECTION

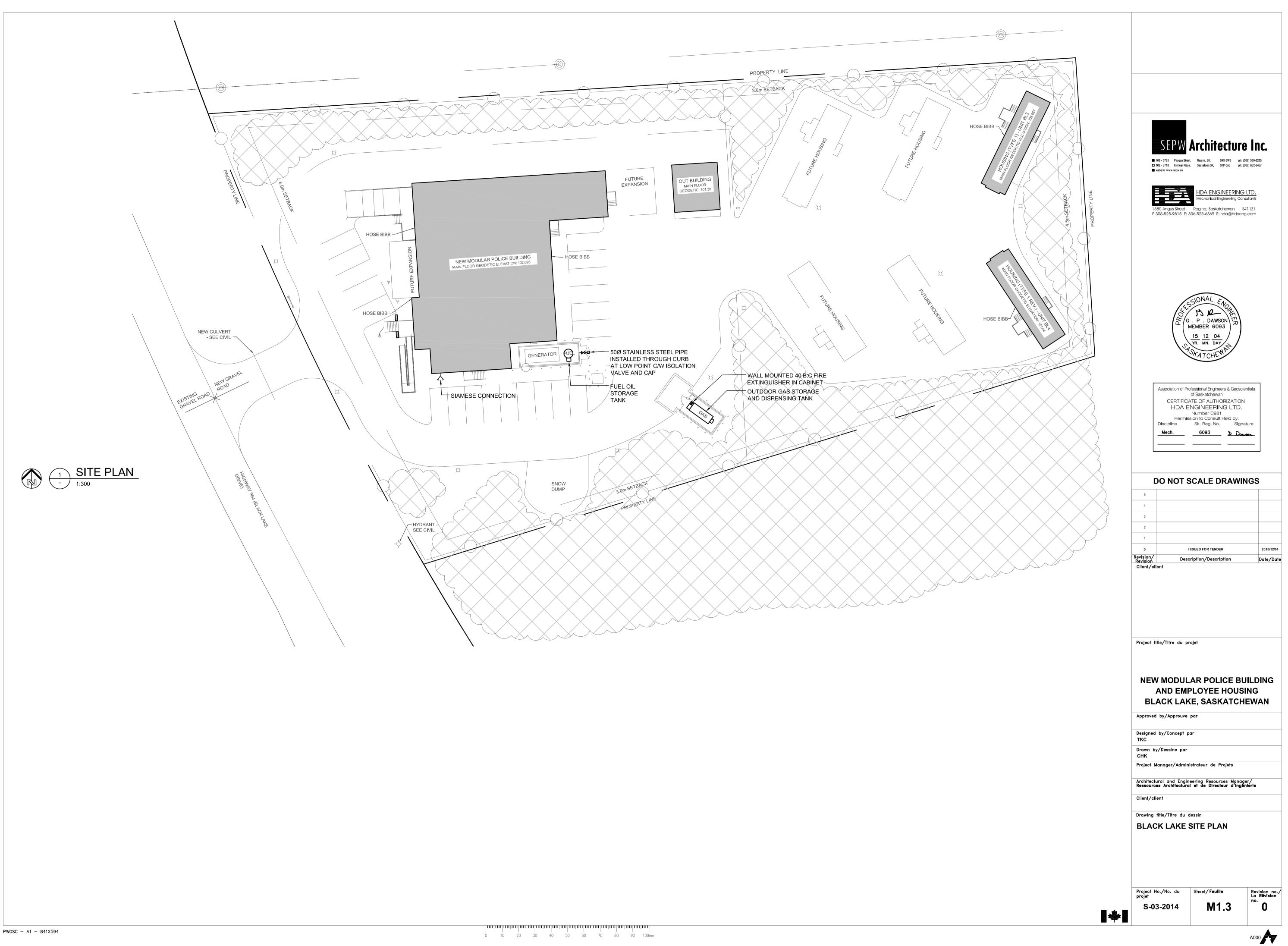
DUCT SECTION

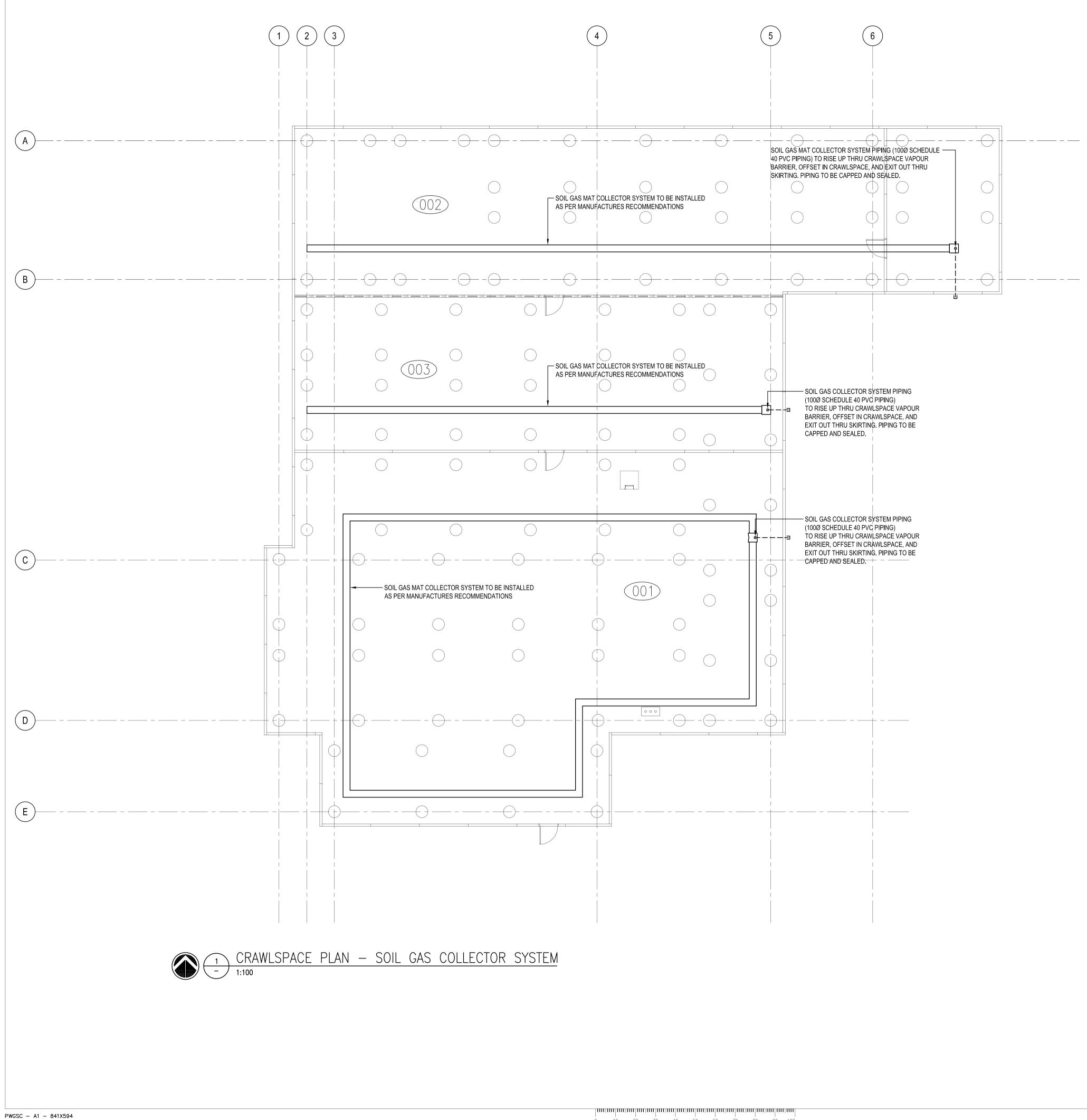
FINGUISHER IN WALL CABINET FINGUISHER C/W WALL BRACKET ATURE SENSOR/THERMOSTAT

FAN LOCAL SWITCH TIMER NTROLLER

NG FIXTURE TYPE SHOWN (TYP)









2	KEY	PLAN	
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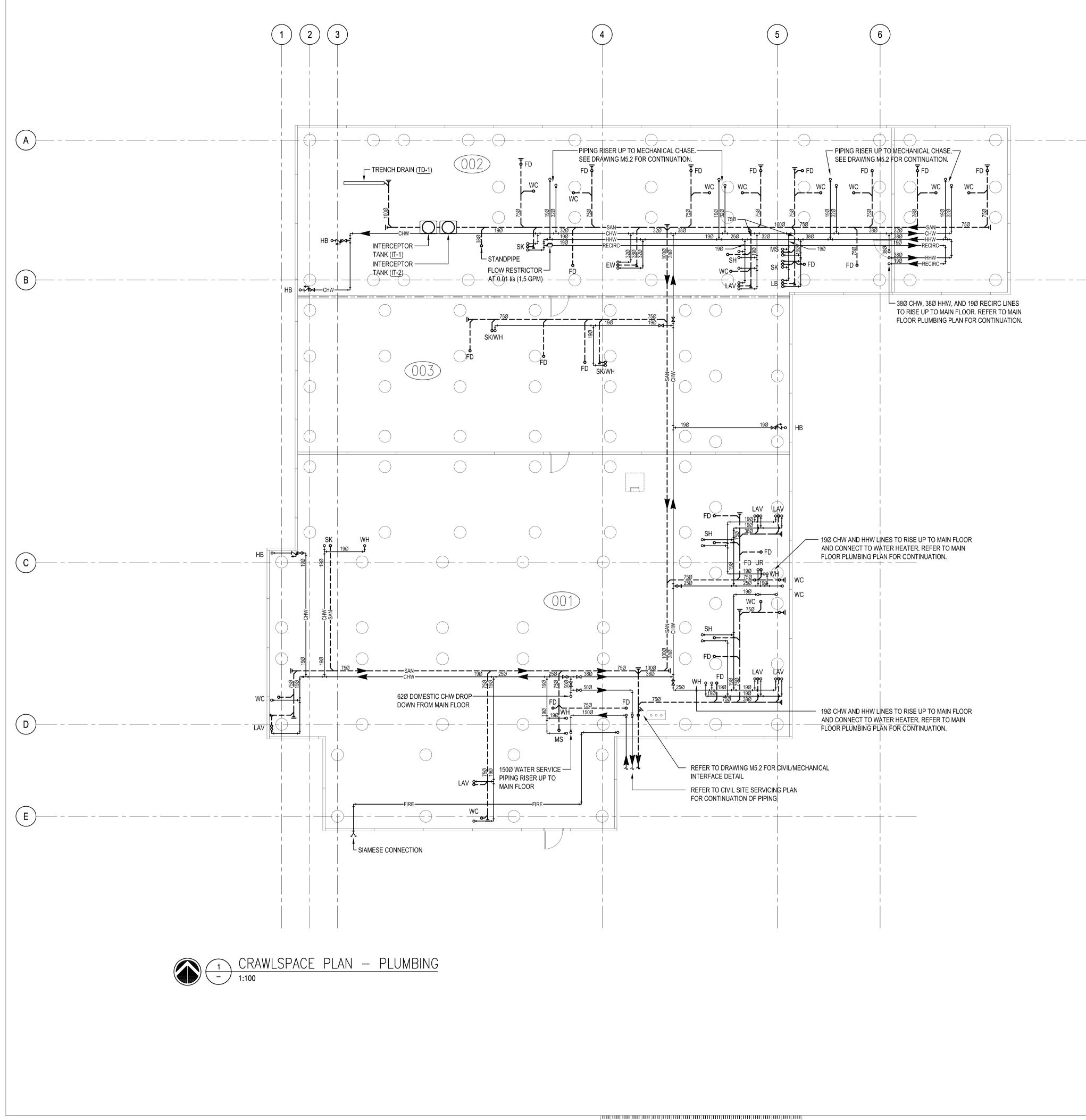
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Project Manager/Administrateur de Projets						
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PWGSC - A1 - 841X594

PLUMBING GENERAL NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

CONDITIONS.

- RUN WATER PIPING AS HIGH AS POSSIBLE TO PROVIDE MAXIMUM CLEARANCE IN ALL AREAS.

- ALL PLUMBING BRANCH LINES ARE 12Ø UNLESS NOTED OTHERWISE.

BE CAST IRON.

- ALL SHOWER DRAINS AND FLOOR DRAINS TO BE 75Ø.

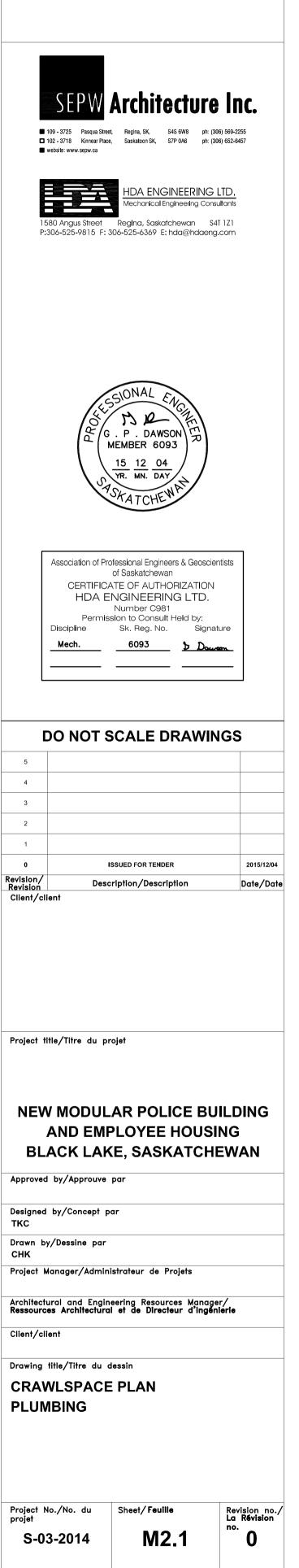
- VENTING AS PER LOCAL CODES AND REQUIREMENTS.

- MAKE ALL CONNECTIONS FOR EQUIPMENT SUPPLIED BY OTHERS. REFER TO DETAILS FOR CONNECTIONS.



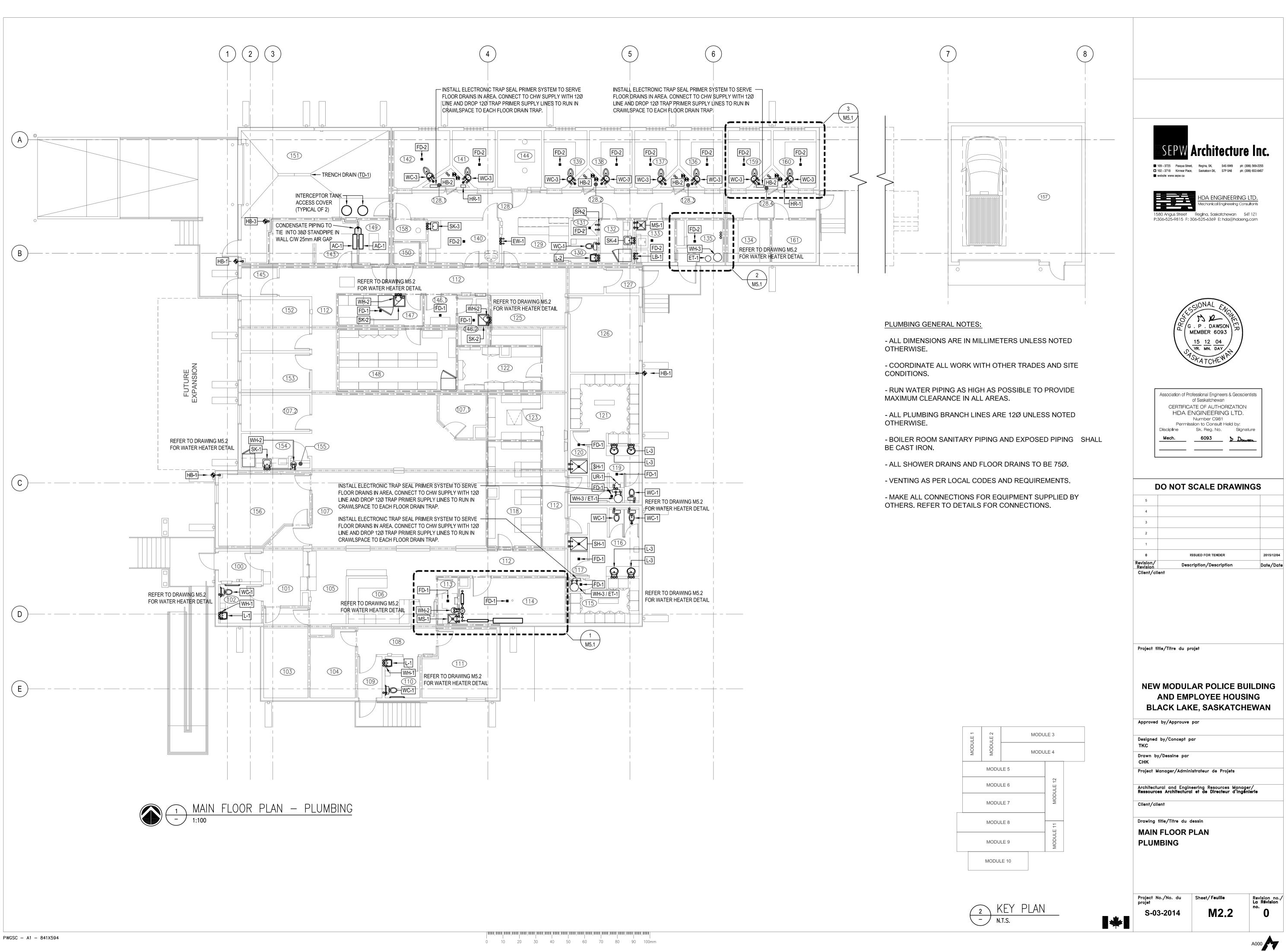
- COORDINATE ALL WORK WITH OTHER TRADES AND SITE

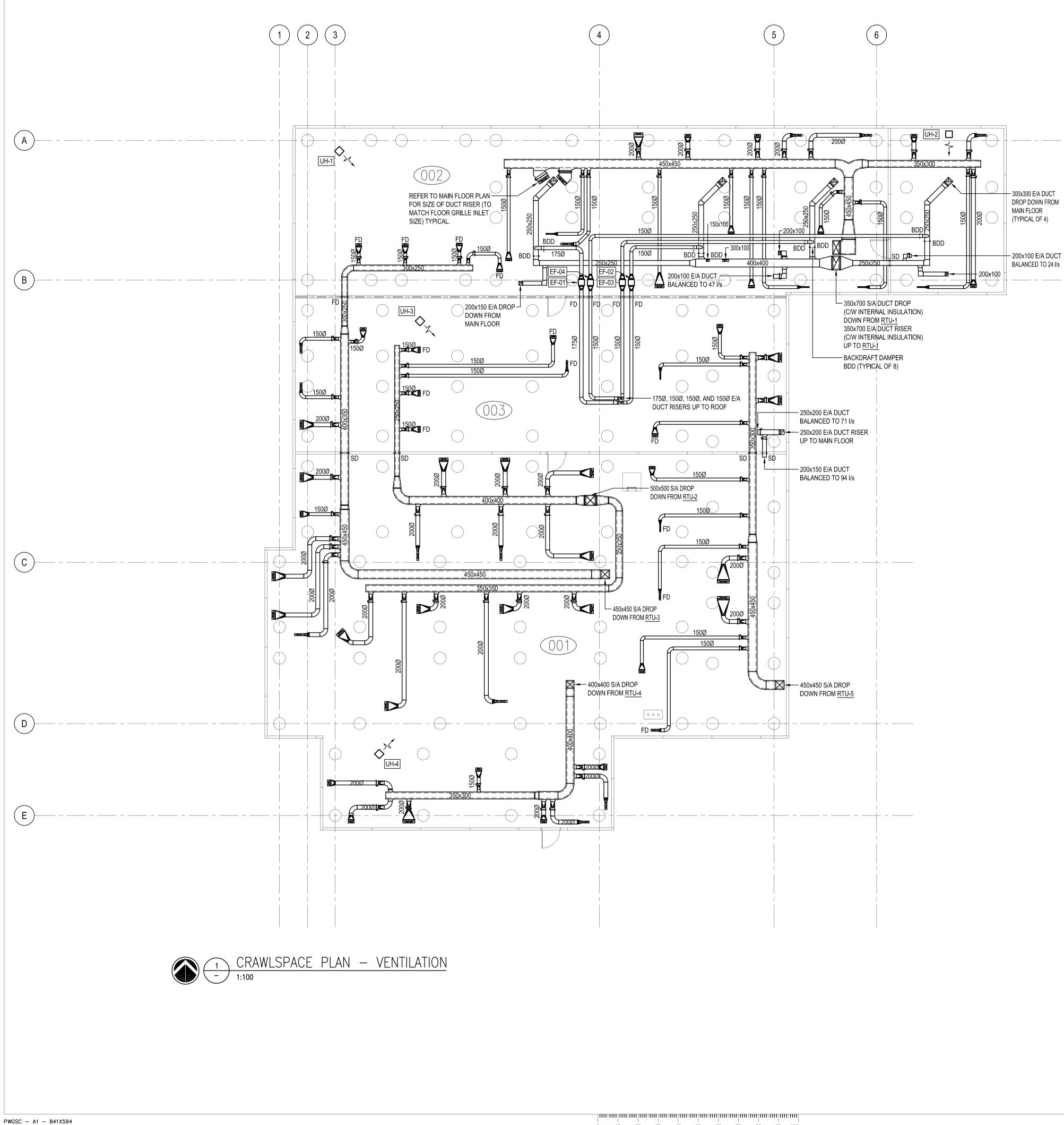
- BOILER ROOM SANITARY PIPING AND EXPOSED PIPING SHALL



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MODULE 7				MOD				
	MODU	LE 8		E 11				
	MODU	LE 9		MODULE 11				
	MODUL	-E 10						







VENTILATION GENERAL NOTES

- ALL DUCTWORK SHOWN DOUBLE LINE INSIDE PERIMETER OF DUCT IS TO BE COMPLETE WITH 25mm INTERNAL INSULATION. ALL OTHER DUCTWORK IS TO BE C/W 25mm EXTERNAL INSULATION. SIZES INCLUDE INTERNAL INSULATION WHERE APPLICABLE.

- ALL FITTINGS ON INTERNALLY INSULATED DUCTWORK ARE TO BE C/W INTERNAL INSULATION. ALL OTHERS ARE TO BE EXTERNALLY INSULATED.

- ALL SUPPLY AIR AND EXHAUST AIR BRANCH DUCTS TO GRILLES AND DIFFUSERS ARE TO BE C/W BALANCE DAMPERS IN BRANCH DUCT NEAR MAIN, UNLESS BALANCE DAMPERS ARE PROVIDED IN GRILLE OR DIFFUSER.

- ALL EXHAUST FANS ARE TO BE SUSPENDED FROM STRUCTURE ON THREADED ROD C/W SPRING ISOLATORS.

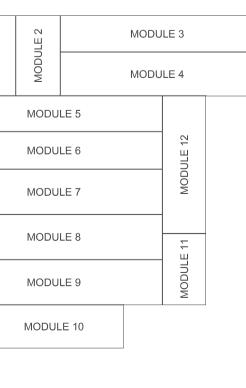
- ALL RADIUSED ELBOWS TO BE WITH CENTERLINE RADIUS OF 1.5 TIMES DUCT DIAMETER (ROUND DUCTS) OR DUCT WIDTH (RECTANGULAR). ALL MITERED ELBOWS TO BE COMPLETE WITH AIRFOIL TURNING VANES. ALL RECTANGULAR BRANCHES TO BE WITH RADIUS ON BRANCH 1.5 TIMES WIDTH OF DUCT. ALL ROUND BRANCHES TO ENTER MAIN DUCT AT 45 DEGREES WITH CONICAL CONNECTION.

- PROVIDE ACCESS DOORS FOR ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, AND CONTROL DEVICES, AND TO FACILITATE DUCT CLEANING.

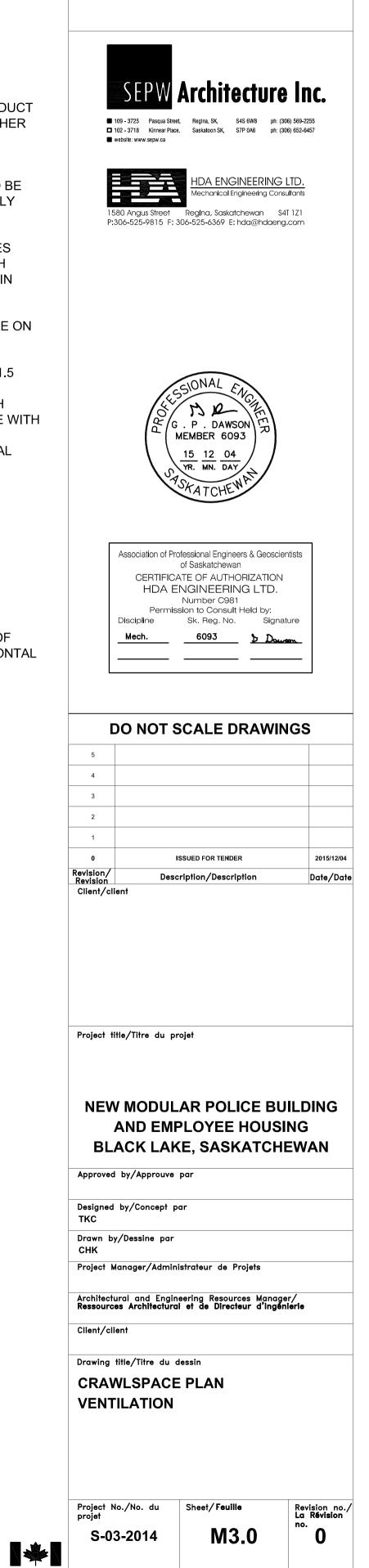
- COORDINATE ALL WORK WITH OTHER TRADES.

- RUN DUCTS AS HIGH AS POSSIBLE TO PROVIDE MAXIMUM CLEARANCE.

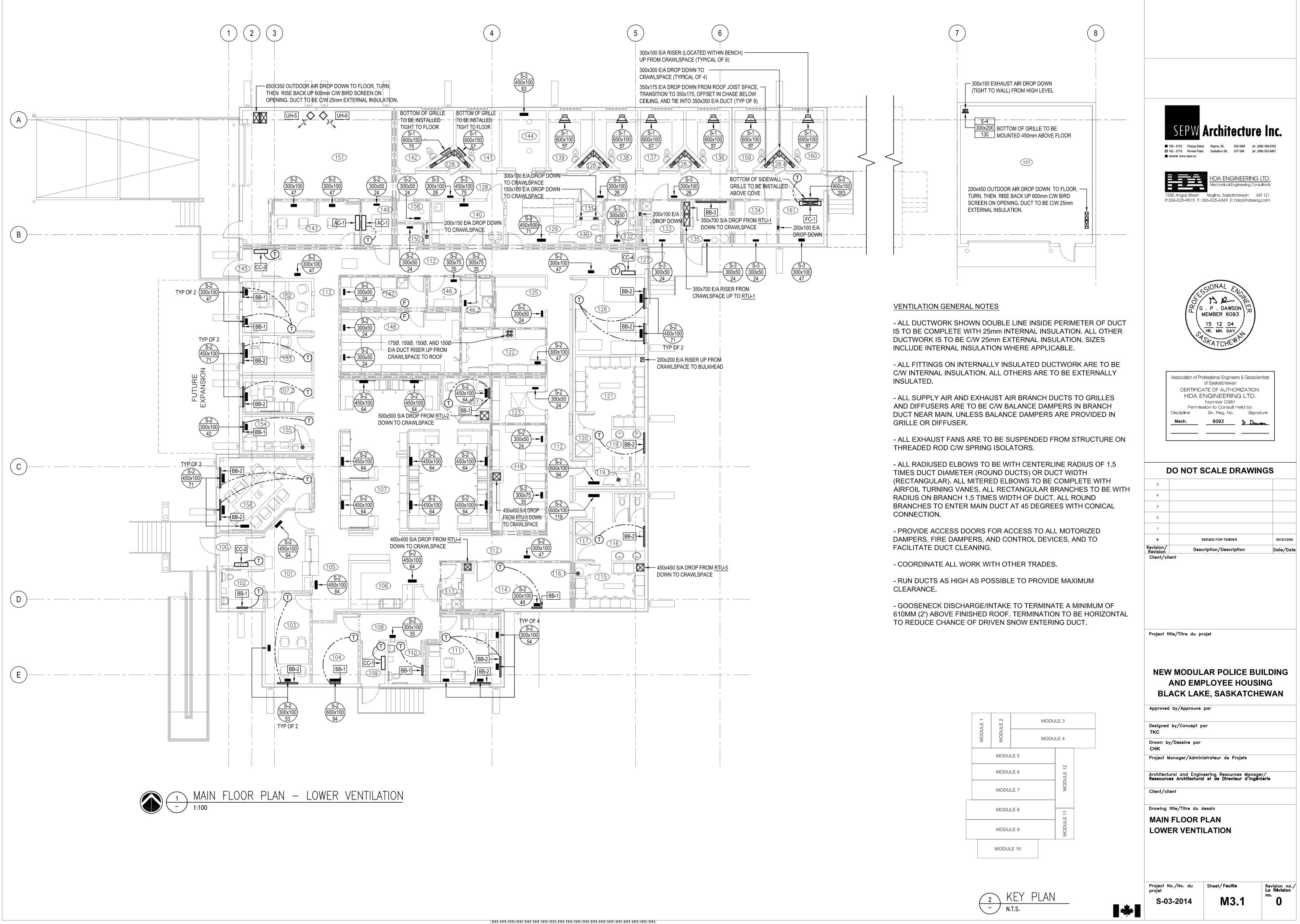
- GOOSENECK DISCHARGE/INTAKE TO TERMINATE A MINIMUM OF 610MM (2') ABOVE FINISHED ROOF. TERMINATION TO BE HORIZONTAL TO REDUCE CHANCE OF DRIVEN SNOW ENTERING DUCT.





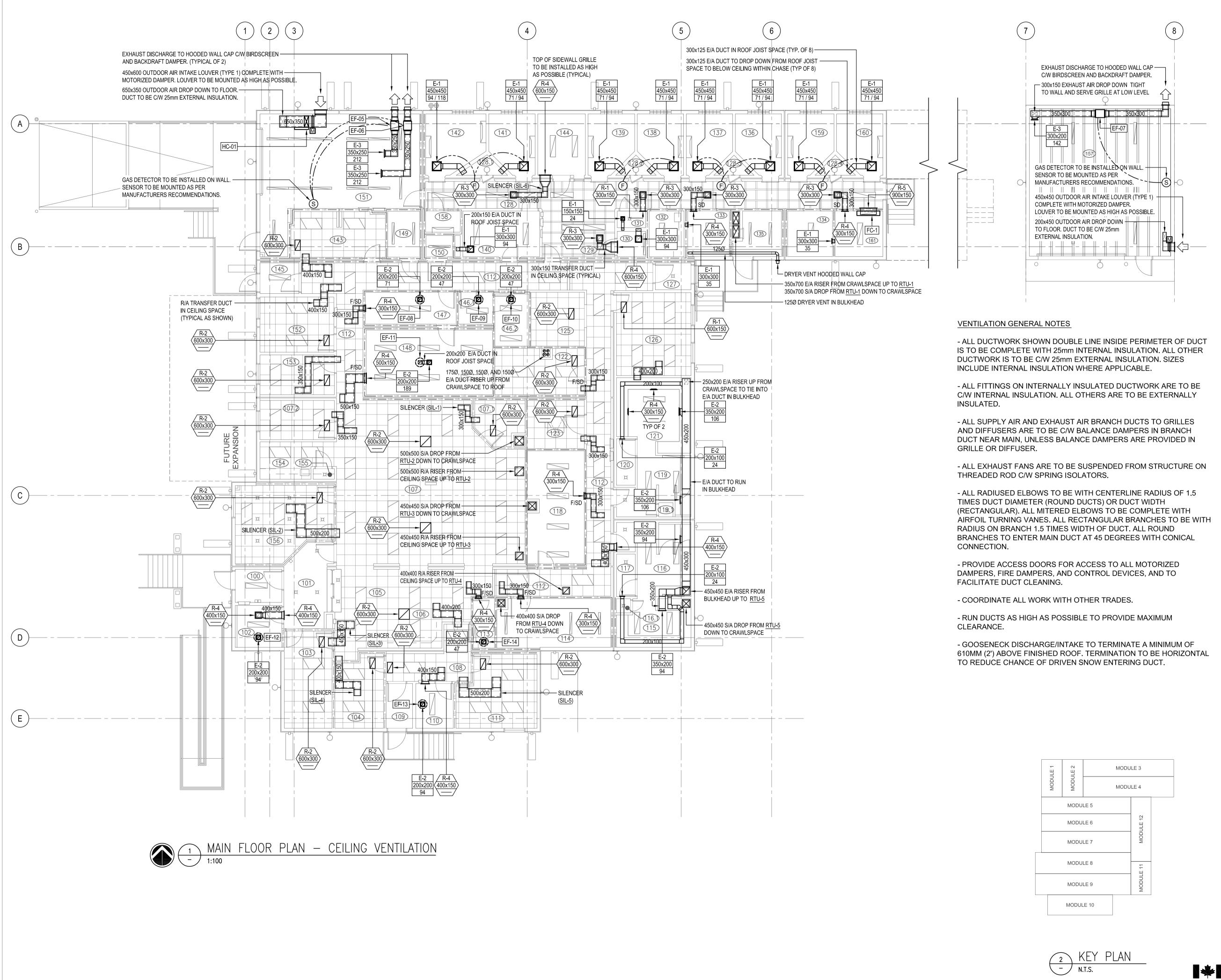




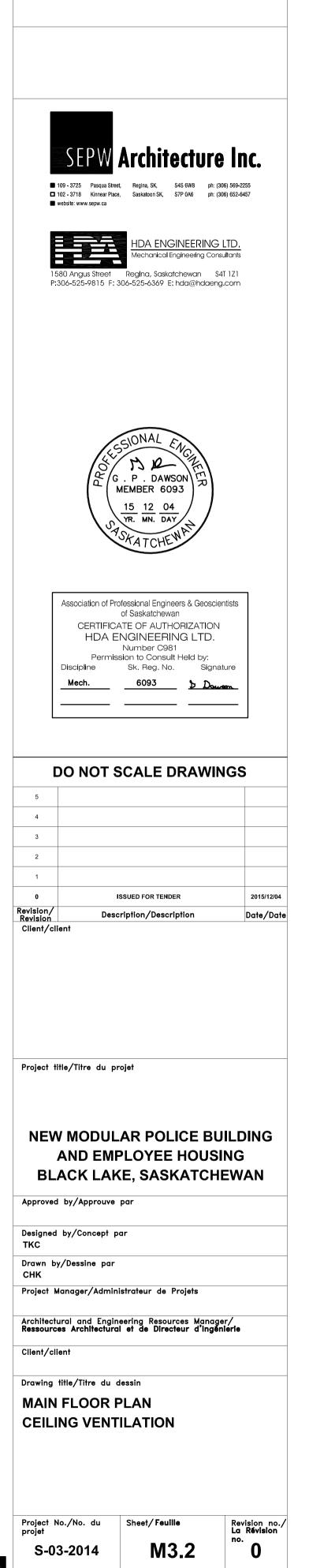


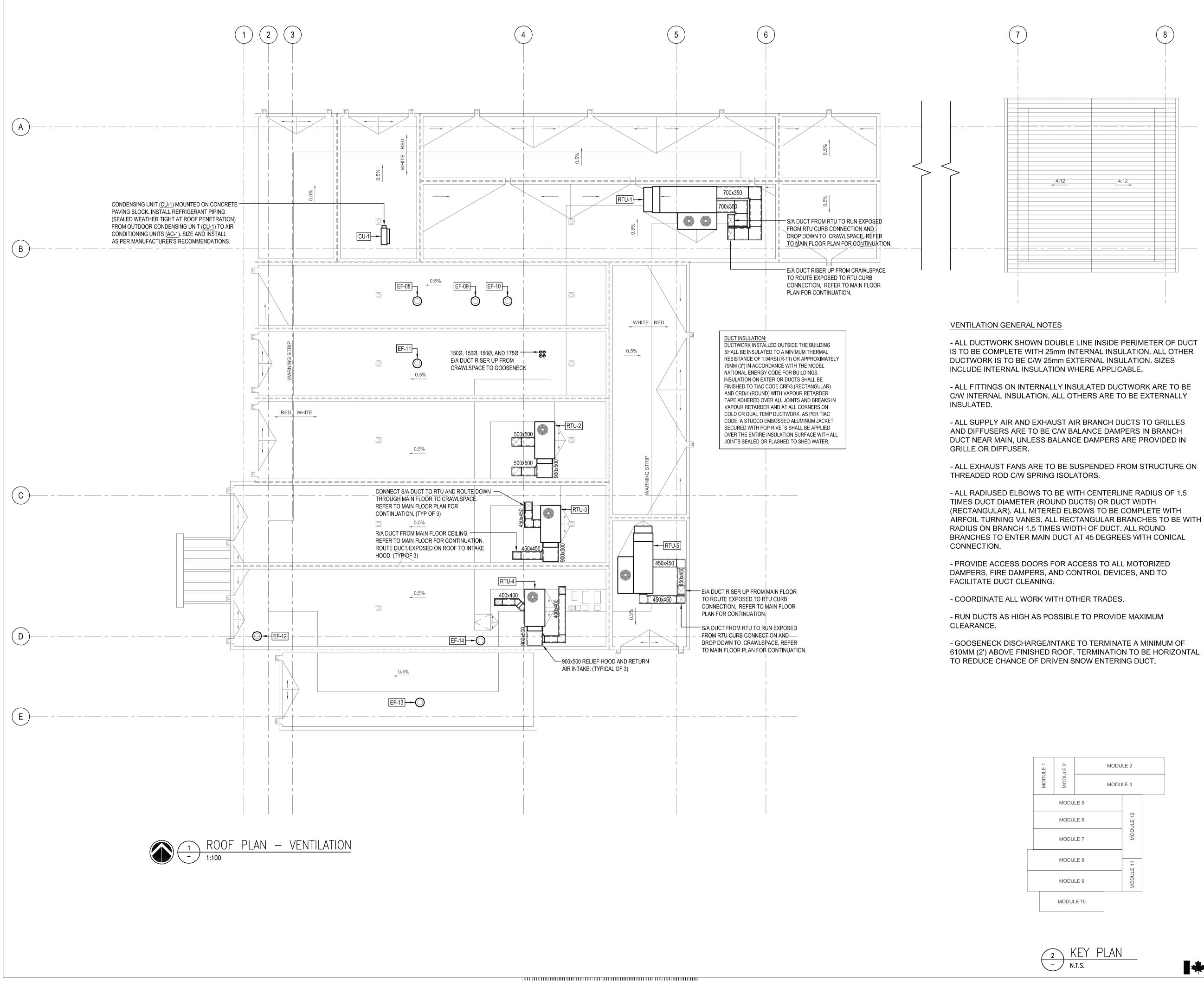
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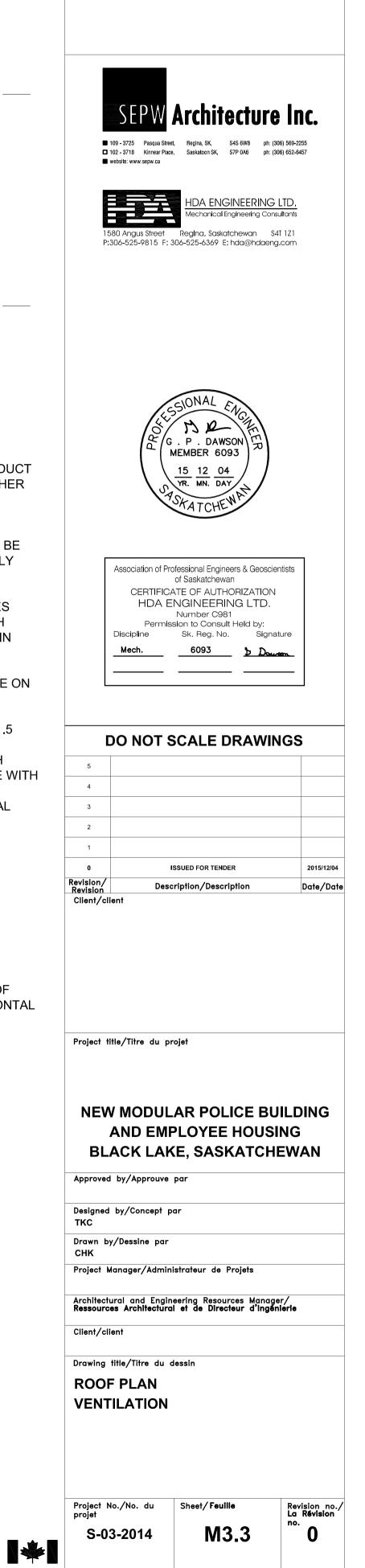




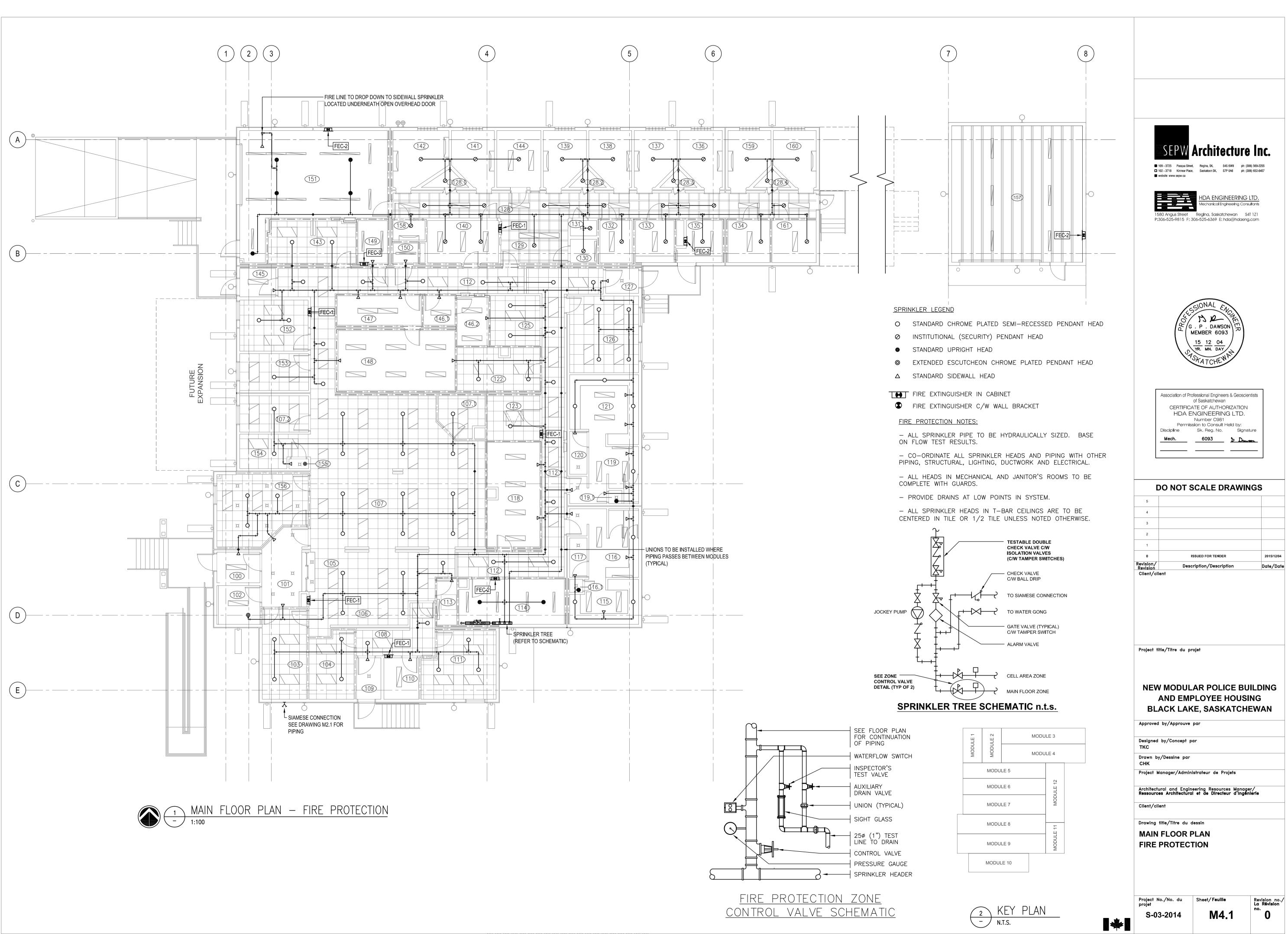
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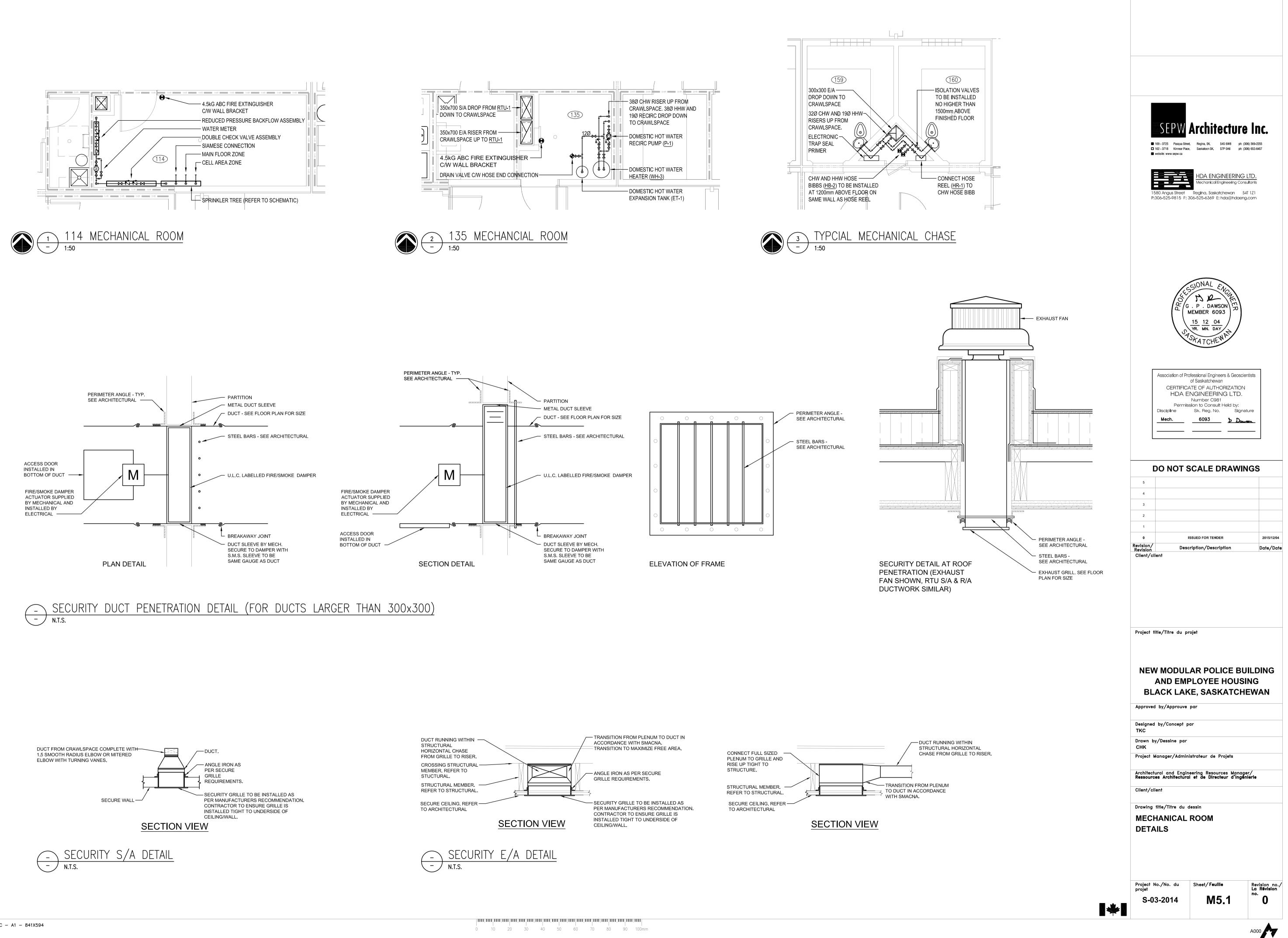


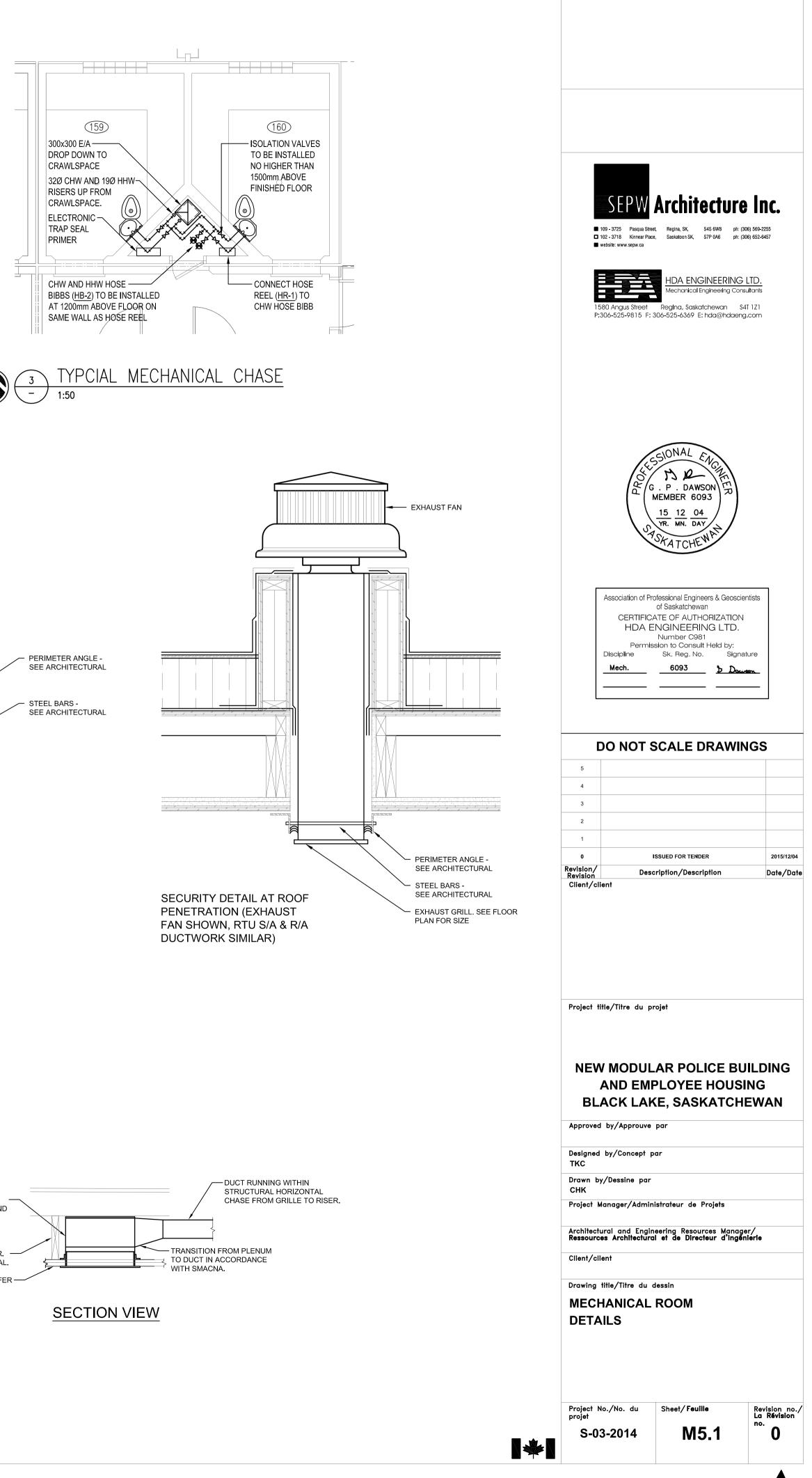




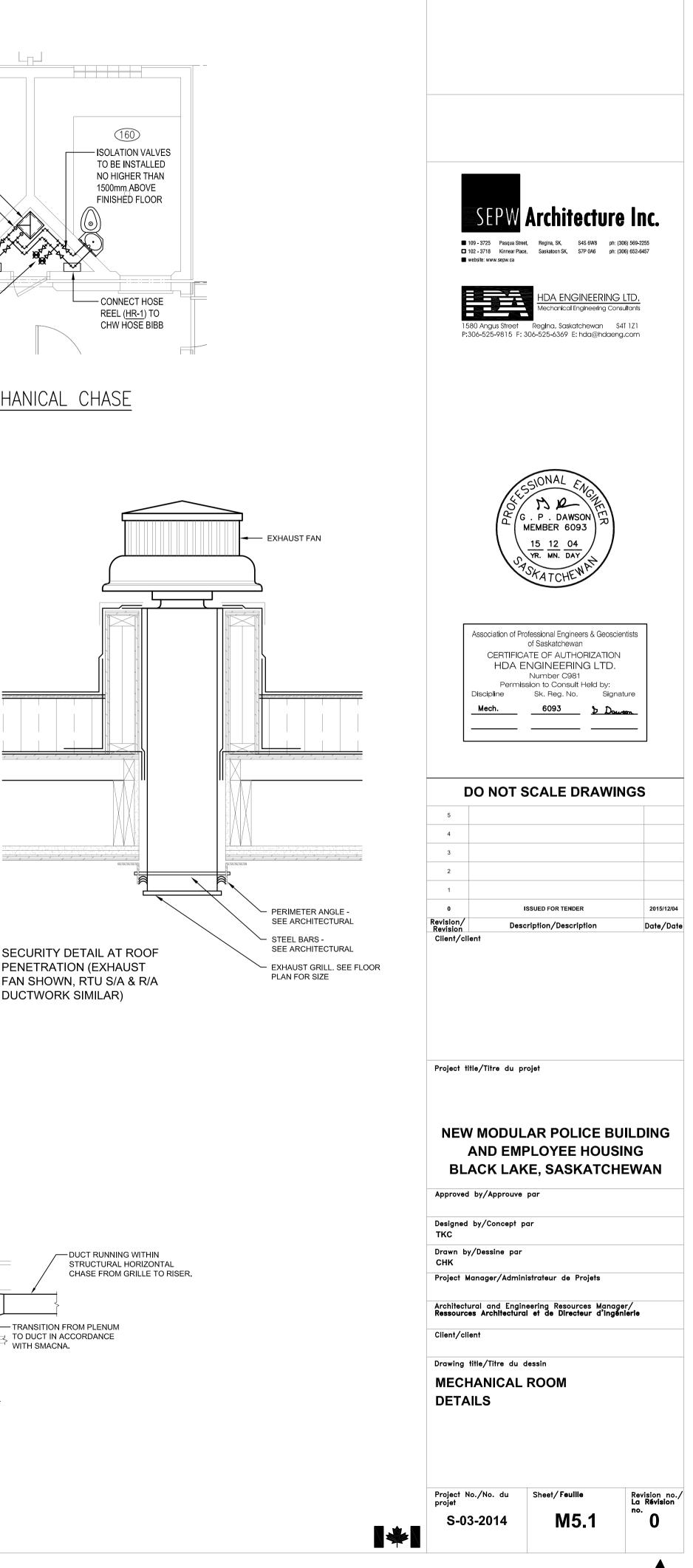
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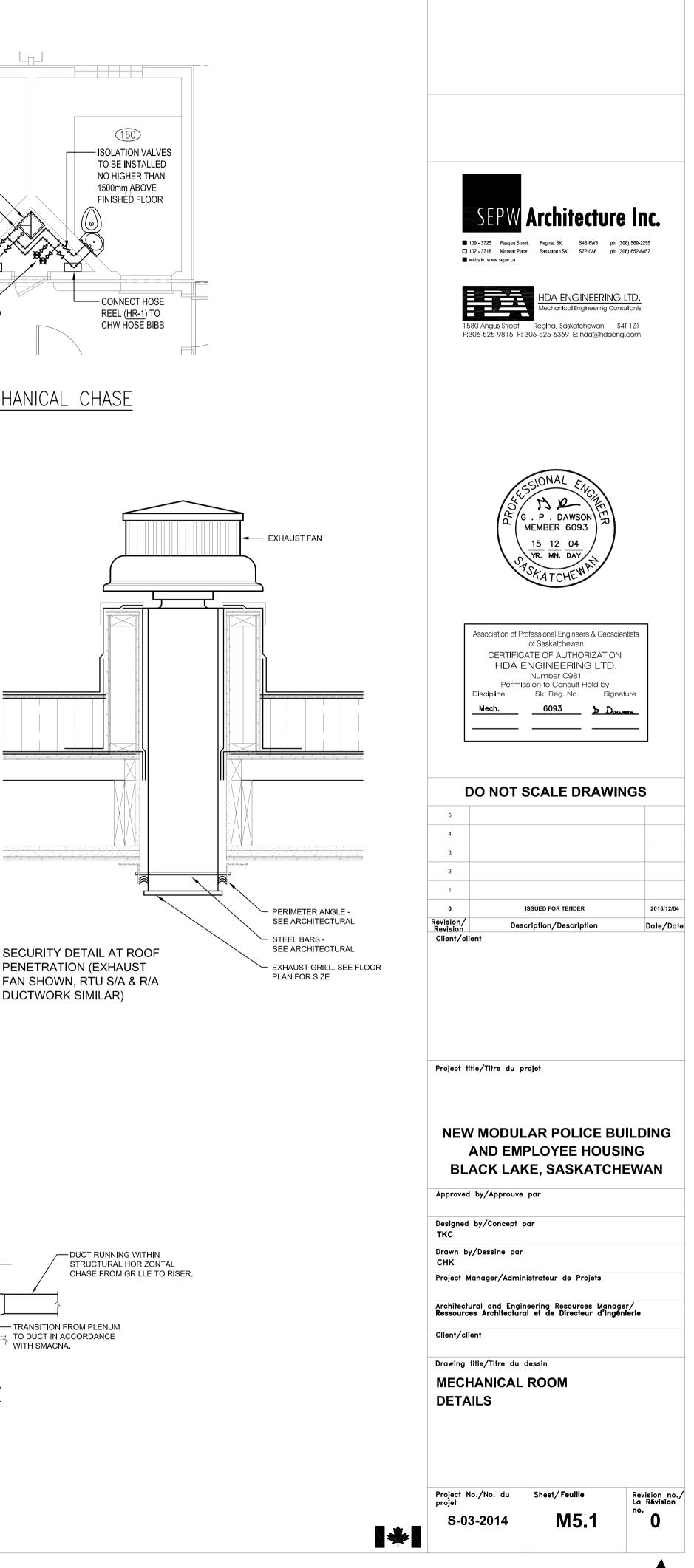
0 10 20 30 40 50 60 70 80 90 100mm

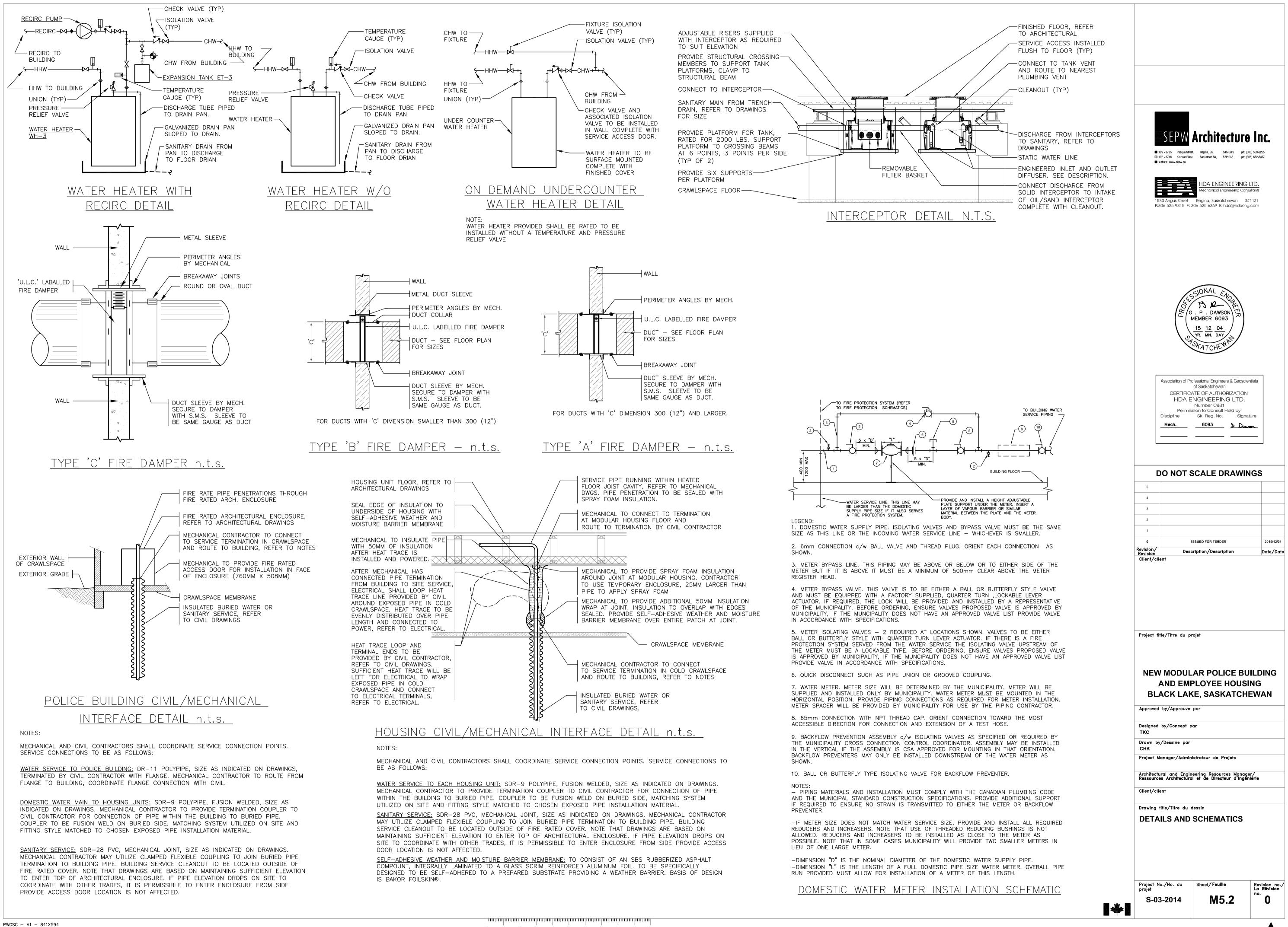


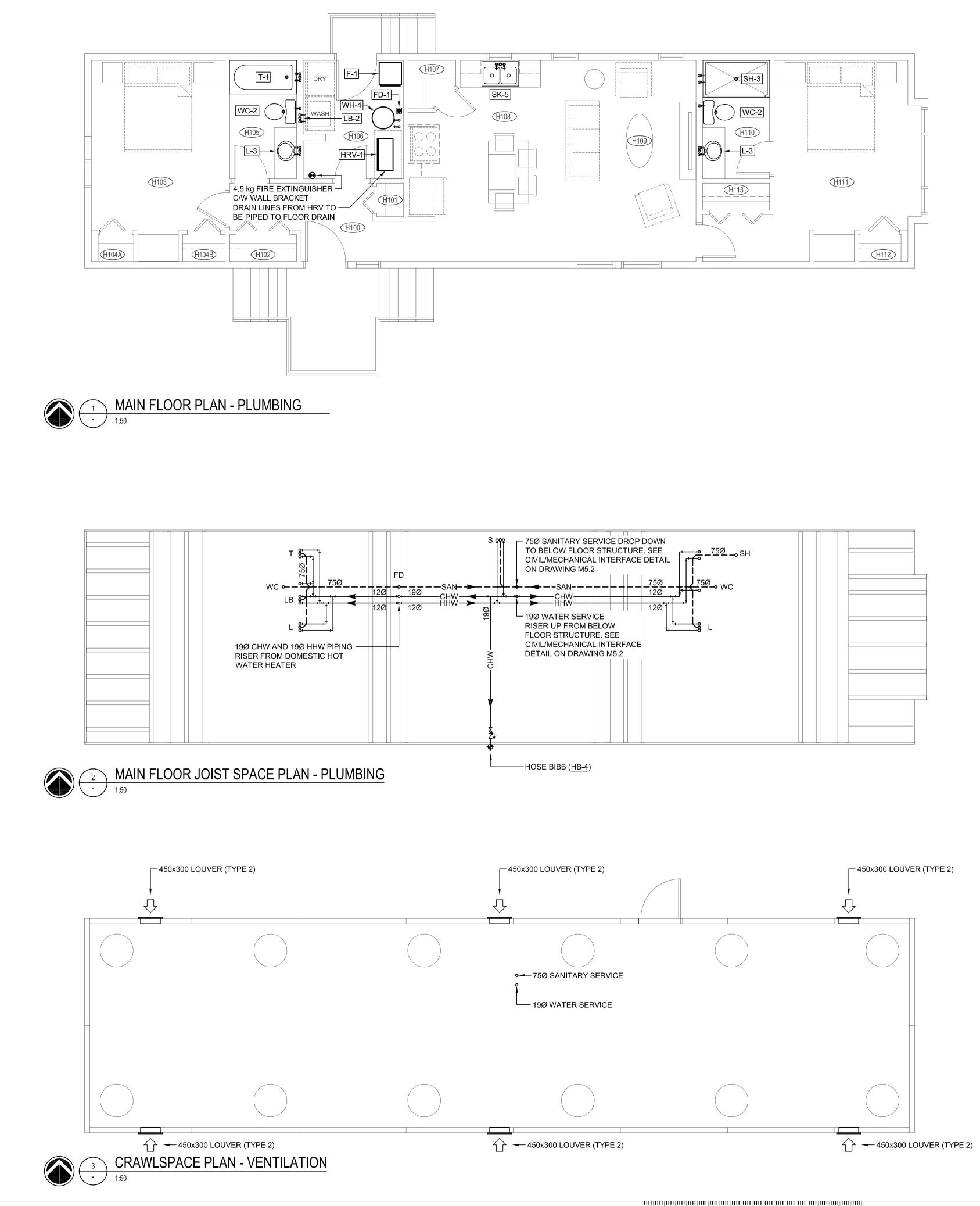












PLUMBING GENERAL NOTES:

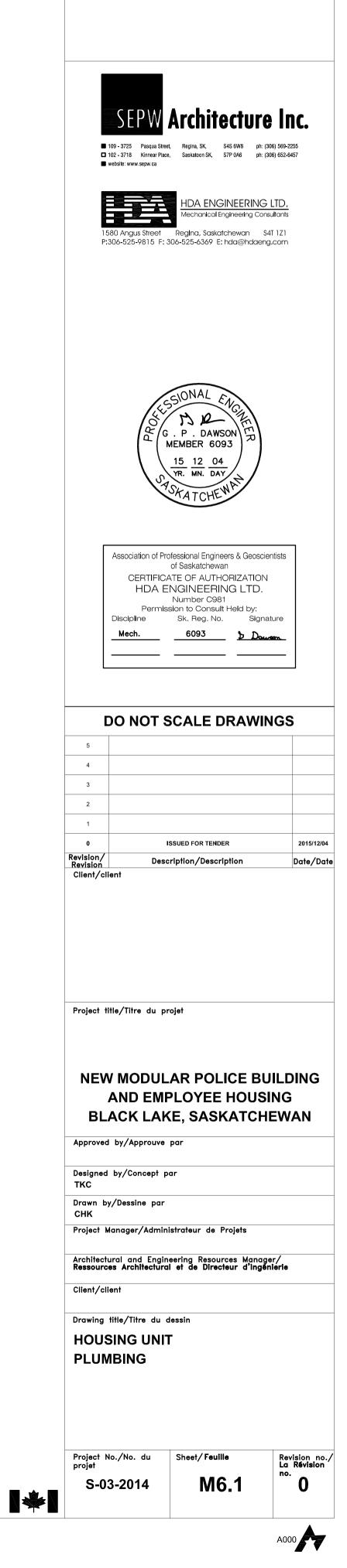
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- COORDINATE ALL WORK WITH OTHER TRADES AND SITE CONDITIONS.

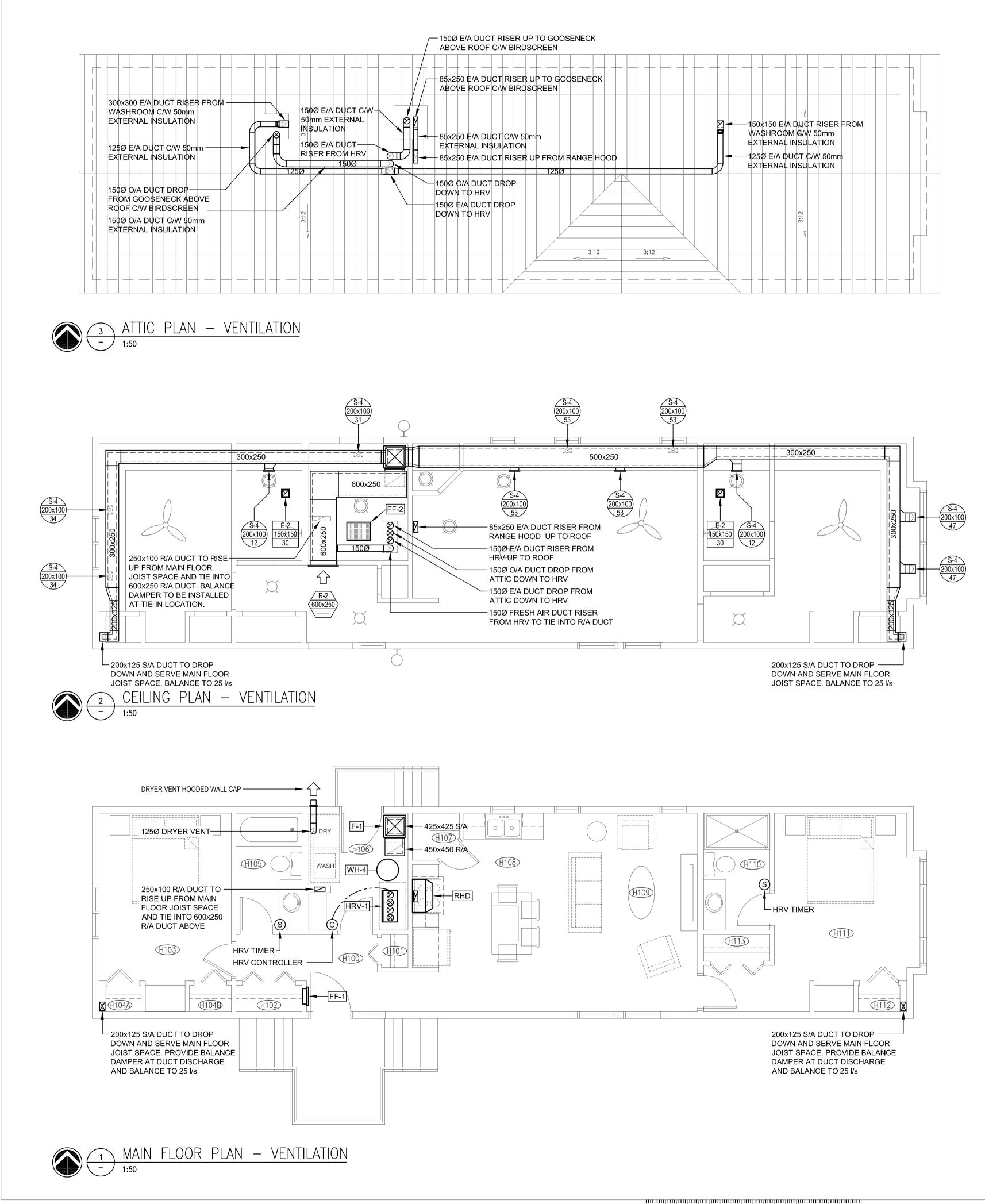
- RUN WATER PIPING AS HIGH AS POSSIBLE TO PROVIDE MAXIMUM CLEARANCE IN ALL AREAS.

- ALL PLUMBING BRANCH LINES ARE 12Ø UNLESS NOTED OTHERWISE.

- BOILER ROOM SANITARY PIPING AND EXPOSED PIPING SHALL BE CAST IRON.
- ALL SHOWER DRAINS AND FLOOR DRAINS TO BE 75Ø.
- VENTING AS PER LOCAL CODES AND REQUIREMENTS.

- MAKE ALL CONNECTIONS FOR EQUIPMENT SUPPLIED BY OTHERS. REFER TO DETAILS FOR CONNECTIONS.





SEPW Architecture Inc. 109 - 3725 Pasqua Street, Regina, SK, S4S 6W8 ph: (306) 569-2255 □ 102 - 3718 Kinnear Place, Saskatoon SK, S7P 0A6 ph: (306) 652-6457 🔳 website: www.sepw.ca da engineering LTD. nanical Engineering Consultants Reglna, Saskatchewan S4T 1Z1 80 Angus Street P:306-525-9815 F: 306-525-6369 E: hda@hdaeng.com JNAL MR G.P.DAWSON MEMBER 6093 15 12 04 Association of Professional Engineers & Geoscientists of Saskatchewan CERTIFICATE OF AUTHORIZATION HDA ENGINEERING LTD. Number C981 Permission to Consult Held by: Discipline Sk. Reg. No. Signature 6093 Mech ____ Down DO NOT SCALE DRAWINGS 3 2 1 ISSUED FOR TENDER 2015/12/04 0 Revision/ Revision Description/Description Date/Date Client/client Project title/Titre du projet **NEW MODULAR POLICE BUILDING** AND EMPLOYEE HOUSING **BLACK LAKE, SASKATCHEWAN** Approved by/Approuve par Designed by/Concept par TKC Drawn by/Dessine par СНК Project Manager/Administrateur de Projets Architectural and Engineering Resources Manager/ Ressources Architectural et de Directeur d'Ingénierie Client/client Drawing title/Titre du dessin **HOUSING UNIT -**MAIN FLOOR PLAN VENTILATION Project No./No. du projet Revision no. La Révision Sheet / Feuille M6.2 S-03-2014 0

VENTILATION GENERAL NOTES - ALL DUCTWORK SHOWN DOUBLE LINE INSIDE PERIMETER OF DUCT IS TO BE COMPLETE WITH 25mm INTERNAL INSULATION. ALL OTHER DUCTWORK IS TO BE C/W 25mm EXTERNAL INSULATION. SIZES INCLUDE INTERNAL INSULATION WHERE APPLICABLE. - ALL FITTINGS ON INTERNALLY INSULATED DUCTWORK ARE TO BE C/W INTERNAL INSULATION. ALL OTHERS ARE TO BE EXTERNALLY INSULATED. - ALL SUPPLY AIR AND EXHAUST AIR BRANCH DUCTS TO GRILLES AND DIFFUSERS ARE TO BE C/W BALANCE DAMPERS IN BRANCH DUCT NEAR MAIN, UNLESS BALANCE DAMPERS ARE PROVIDED IN GRILLE OR DIFFUSER. - ALL EXHAUST FANS ARE TO BE SUSPENDED FROM STRUCTURE ON THREADED ROD C/W SPRING ISOLATORS. - ALL RADIUSED ELBOWS TO BE WITH CENTERLINE RADIUS OF 1.5 TIMES DUCT DIAMETER (ROUND DUCTS) OR DUCT WIDTH (RECTANGULAR). ALL MITERED ELBOWS TO BE COMPLETE WITH AIRFOIL TURNING VANES. ALL RECTANGULAR BRANCHES TO BE WITH RADIUS ON BRANCH 1.5 TIMES WIDTH OF DUCT. ALL ROUND BRANCHES TO ENTER MAIN DUCT AT 45 DEGREES WITH CONICAL CONNECTION. - PROVIDE ACCESS DOORS FOR ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, AND CONTROL DEVICES, AND TO FACILITATE DUCT CLEANING. - COORDINATE ALL WORK WITH OTHER TRADES. - RUN DUCTS AS HIGH AS POSSIBLE TO PROVIDE MAXIMUM CLEARANCE. - GOOSENECK DISCHARGE/INTAKE TO TERMINATE A MINIMUM OF 610MM (2') ABOVE FINISHED ROOF. TERMINATION TO BE HORIZONTAL TO REDUCE CHANCE OF DRIVEN SNOW ENTERING DUCT.