vapour seal jacket of vinyl coated foil Kraft laminate with reinforcing of open mesh glass fibre.

4. Rigid Duct Insulation (RDI):
   1. Rigid board: 72kg/m³ (4.5 lbs/ft³) density ULC listed glass fibre board with glass fibre reinforced aluminum foil vapour seal facing and minimum thermal conductivity of 0.035 W/m deg C at 24 deg C mean temperature.

5. Non-Pre-molded Pipe Insulation (FPI):
   1. 12g/M² (0.75 lb/ft²) 20mm (¾") thick ULC listed fiberglass flexible blanket with glass fibre reinforced aluminum foil vapour seal facing with thermal conductivity of 0.036 W/m deg C.

6. Finishes & Protective Coverings:
   C Canvas: 170 g/m² with lagging adhesive, ULC labeled.
   P 20 mil PVC, high impact, UV resistant, solvent welded, rated for 0-150°F (-17 to 65°C).

APPLICATION SCHEDULE

Ductwork	Thickness	Type	Finish
1. Supply ductwork concealed	25mm (1")	All FDI	None
2. Supply ductwork exposed	25mm (1")	All RDI	C
3. Outside air intake ducts	50mm (2")	All FDI	None
4. Rectangular ducts penetrating an exterior building surface	38mm (1½") for the last 3m (10')	All RDI	None
5. Exhaust ducts	38mm (1½") for last 3m (10')	All FDI	None

**** All exposed insulated ducts in mechanical room service rooms or in occupied spaces are to be type 'C' finish.**

Piping (Provide canvas finish where exposed):	Thickness	Type	Finish
1. Domestic cold water	38mm (1½")	All PPI	
2. Domestic hot	25mm (1")	All PPI	
3. Plumbing vents	12mm (½") last 3m (10')	All PPI	
4. Equipment: ▪ Water meter	25mm (1")	All FPI	C

**** All exposed insulated piping in mechanical rooms, service rooms or visible in occupied spaces are to be Type 'C' or 'P' Finish.**

5. CHEMICAL TREATMENT 22 31 20

1. Work Performed by this Section:
   1. Supervision of all degreasing procedures.

   2. Submission of a report for the following:
      ▪ Results of degreasing.

2. Sanitizing – Domestic Water:
   1. Potable water supply systems:
      1. Thoroughly flush and disinfect (chlorinate) water supply systems in accordance with municipal requirements and AWWA C601-68. The rates of chlorine application to be proportional to the rate of water entering the pipe.
      2. Flush domestic water piping prior to introducing chlorine with a sufficient flow to produce a velocity of 1 meter per second for ten minutes, or until all foreign materials have been removed and the flushed water is clear. Provide connections and pumps as required.
      3. Arrange and pay for water quality tests to be performed by an independent testing laboratory acceptable to the Contract Administrator.
   2. Clearup:
      1. Leave systems operating with work areas clean to acceptance of the City and Contract Administrator.

6. TESTING AND BALANCING (TAB) 22 08 10

1. Contractor shall be members of AABC.
2. Balance all supply air outlets and main ducts conveying 25% or more of system volume to ±5% of design. Allow to replace belts and sheaves on new and existing equipment to meet air balance volumes.
3. Balance all air moving equipment to ±5%.
4. Balance all branch ductwork to ±10%.
5. Test all fire dampers to industry standards. Tag each device listing company information and testing information.
6. The reports to contain recorded data and schematics and be formatted as per AABC.
7. Advise ventilation contractor where balancing dampers are required to facilitate balancing of ventilation system.
8. Arrange with Mechanical Subcontractor to have any necessary modifications to achieve the design and flow rates at no extra cost to the City.
9. Three (3) copies of the TAB report, including certification of fire dampers, stops and flanges shall be provided directly to the Contract Administrator prior to certification for occupancy. Include drawings, room numbers and identification numbers of fire dampers, types, and flaps on the schematics.
10. TAB report shall include schematic drawings identifying all fire dampers and circuit balancing valve locations.
11. Allow for an additional Site review and adjustments at the request of the Contract Administrator after submission of final report.

7. PLUMBING 22 10 05

1. Supply and install fixtures indicated under contract documents to provide a complete and functional plumbing system.
2. Use only lead free solders when joining piping components.

3. Provide access doors at all concealed cleanouts, valves and water hammer arrestors.
4. Install water hammer arrestors at each group of fixtures.
5. Install trap primers as indicated on the contract documents and as required by local code authorities.
6. Fixtures shall be white and complete with chrome trim, fixture stops shall be screwdriver type where exposed, wheel handle where concealed.
7. Water closet MAP test minimum: 800 grams.
8. Water closets ball pass test: 2¼" (54mm) glazed, minimum.

8. VENTILATION 22 30 10

1. Supply and install a complete ventilation system as indicated on the Drawings and as required by local Codes and authorities. Do all work to latest SMACNA Standards for applicable duct velocity.
2. On exposed ducts in occupied areas use stainless steel aircraft wire to support ducts.
3. System shall include all ducts, fire dampers, transfer air openings, fans, balance dampers, grilles, diffusers and hoods indicated on Drawings and as required by Code.
4. Install all control dampers.
5. Provide access doors to comply with Code on both sides of fire dampers, control dampers and all coils. Access doors shall be constructed of 22-gauge material with flat iron framing complete with sash lock latching and seal.
6. Provide 1" thick acoustic insulation where indicated on Drawings. Minimum 3-5 lbs per cubic foot density with Neoprene coating. Seal all joints and seams.
7. Provide ULC labelled fire dampers where indicated on Drawings and at all rated separations. Protect ceiling diffusers with CK 2000 thermal blanket.
8. Provide locking splitter and quadrant dampers as indicated on Drawings or as necessary to balance system and reduce objectionable noise.
9. Supply and install flexible duct connections at all air-handling equipment.
10. All open belt drives shall be complete with factory manufactured belt guards.
11. Protect and keep closed open ends of duct systems while under construction to prevent dust and debris penetration.
12. Provide baffles to reduce objectionable noise as directed by the Contract Administrator at no additional cost.
13. Seal all joints in supply, outside and exhaust duct systems with approved water based sealant, including all longitudinal and vertical seams. On exposed ducts, tape both sides of each seam prior to sealing and remove tape after sealant dries for an even, uniform sealant line.
14. Ceiling mounted components shall be installed in accordance with reflected ceiling plan. Coordinate with all ceiling mounted equipment.

9. CONTROLS 22 09 10

1. All controls shall be supplied by this section. Provide all wiring diagrams for line voltage wiring by Division 26. Coordinate all requirements of Division 26 with Electrical Subcontractor prior to submitting bid.
2. All thermostats in exposed areas shall be complete with lockable Lexan vandal resistant guards. Thermostats shall be 7-day programmable with night set back functions and 3-hour override function.
3. Provide all control dampers for installation by Ventilation Subcontractor. Intake and exhaust dampers to be insulated low leak type equivalent to Tamco 9000. Return air dampers to be Tamco 1000 or an approved equal in accordance with B7.
4. System shall be complete with all necessary wiring, interlocks, devices and software necessary to ensure a complete and operational system.
5. Set, operate and co-ordinate all devices for fully functional system.
6. Sequence of operations:
   1. Supply Fan/Heating coil with HRV Interlock and Pre-heat coil (F-1, HRV-1, HC-1, PHC-1)
      1. The supply fan shall run continuously. The heating coil shall be controlled from a 7 day digital programmable thermostat and modulate to maintain thermostat set point. The HRV fan shall start/stop based on the occupied/unoccupied schedule.
      Occupied Mode:
      a. During occupied mode the HRV outdoor air and exhaust air dampers shall open and the HRV fans enabled. Heating coil shall energize as required to maintain space temperature at set point. The Pre heat coil shall energize as required to maintain a minimum of 17°F air entering HRV.
      Unoccupied Mode:
      b. During unoccupied mode the supply fan shall remain running continuously. The HRV outdoor air and exhaust air dampers shall be closed and the HRV fans disabled. Should the space temperature fall below the night set-back set point the supply fan shall cycle on and the heating coil stage to maintain space temperature at the night setback set point. The HRV shall remain disabled.
   2. HRV with Pre-heat coil (HRV-2, PHC-2)
      1. The HRV shall run continuously. The Pre heat coil shall energize as required to maintain a minimum of 45.5°F air entering HRV.

END OF SECTION

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0	2018/07/27	Issued for Construction

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PROVINCE OF MANITOBA
G.S. REABURN
Member
8354
2018-07-27
REGISTERED PROFESSIONAL ENGINEER

Project
Crescent Drive Park Pavilion

Drawing
MECHANICAL SPECIFICATION

Drawn By: KL
Reviewed By: CD
Scale: As Noted
Drawing No.: M3.2
Date: July 2018
Project No.:
Revision No.: