1 **GENERAL**

1.1 **SUMMARY**

1.2 **REFERENCES**

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

1.3 **SUBMITTALS**

.1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 00 10 – General Instructions. Include product characteristics, performance criteria, and limitations.
  - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 00 10 – General Instructions.
  - .2 Product data to include:
    - .1 Filters, fan accessibility.
    - .2 Suspension of cabinet.
    - .3 Physical size.
    - .4 Controls where integral.
    - .5 kW rating, voltage, phase.

.2 Shop Drawings:
- .1 Submit shop drawings in accordance with Section 01 00 10 – General Instructions.

.3 Quality assurance submittals: submit following in accordance with Section 01 00 10 – General Instructions.
- .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .2 Instructions: submit manufacturer's installation instructions.

1.4 **QUALITY ASSURANCE**

.1 Health and Safety:
- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

2 **PRODUCTS**

2.1 **FAN COIL UNITS**

.1 Provide Horizontal Direct drive Fan Coil Units where indicated on the plans and in the specifications. Units shall be completely factory assembled, tested and shipped as one piece. All units shall be capable of meeting or exceeding the scheduled capacities for cooling, heating and air delivery. Units shall be ETL listed in compliance with the latest edition of ARI Standard 440.

.2 All unit chassis shall be fabricated of heavy gauge galvanized steel panels able to meet 125 hour salt spray test per ASTM B-117. All exterior panels shall be insulated with 12 mm thick fiber-glass insulation with a density of 54 kg/m³ and rated for a maximum air velocity of 25 m/s. Insulation must meet all requirements of ASTM C1071 (including C665), UL 181 for erosion, and carry a 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A.

.3 All concealed units shall have a minimum 30 mm duct collar on the discharge. Plenum units shall have a minimum 25 mm duct collar on the return.

.4 Unit mounting shall be by hanger holes provided at a minimum of four locations.

.5 Unit fan shall be a dynamically balanced forwardly curved; DWDI centrifugal type constructed of 1.2 mm zinc coated galvanized steel for corrosion resistance. Motors shall be ECM type with UL and CSA listed automatic reset thermal overload protection. Ratings as shown on drawings.

.6 Provide Manual Fan Speed control in rooms served by ECM motor driven fan coils. Mount in recessed electrical outlet box with cover plate and selector switch. Switch shall allow a minimum of 3 discrete fan speeds, or be fully variable over range. Coordinate with fan coil motor requirements

.7 The fan assembly shall be easily removable for servicing the motor and blower at, or away from the unit. Plenum unit fan assemblies shall be easily serviced through the filter opening or through the bottom panel.

.8 All cooling coils shall optimize rows and fins per inch to meet the specified capacity. Coils shall have seamless copper tubes and shall be mechanically expanded to provide an efficient, permanent bond between surface optimized for heat transfer, air pressure drop and carryover.

.9 All coils shall be hydrostatically tested at 3100 KPa air pressure under water, and rated for a maximum of 2070 KPa working pressure at 93˚C.

.10 All coils shall be provided with a manual air vent fitting to allow for coil venting.

.11 Water coils on concealed models shall be field reversible for right to left hand connections.

.12 Primary condensate drain pans shall be single wall; heavy gauge stainless steel for corrosion resistance, and extend under the entire cooling coil. Drain pans shall be of one-piece construction and be positively sloped for condensate removal. Drain pans shall be field reversible for right to left hand connections.

.13 The drain pan shall be externally insulated with a fire retardant, closed cell foam insulation. The insulation shall carry no more than a 25/50 Flame Spread and Smoke developed Rating per ASTM E-84 and UL 723 and an Antimicrobial Performance Rating of 0, no observed growth, per ASTM G-21.

.14 Provide a secondary drain connection on the primary drain pan condensate overflow.

.15 Units shall be furnished with a minimum 1“nominal glass fiber throwaway filter. Filters shall be tight fitting to prevent air bypass. Plenum and exposed unit filters shall be easily removable from the bottom or side of the unit without the need for tools. Coordinate with equipment clearances to ceilings, walls and adjacent equipment to ensure clear access to replace the filter.

.16 Units shall be furnished with a single point power connection. Provide an electrical junction box with terminal strip for motor and other electrical terminations. The factory mounted terminal wiring strip consists of a multiple position screw terminal block to facilitate wiring terminations.

.17 Furnish an electric resistance heating assembly, with the heating capacity, voltage and kilowatts scheduled. The heater assembly shall be designed and rated for ducted installation, or, for installation on the fan coil unit with-out the use of duct extensions or transitions, and be located in the unit as to not expose the fan assembly to excessive leaving air temperatures that could affect motor performance.

.18 The heater and unit assembly shall be listed for zero clearance and meet all NEC requirements, and be ETL listed with the unit as an assembly in compliance with UL/ANSI Standard 1995.

.19 All heating element shall be open coil type Ni-Chrome wire mounted in ceramic insulators and located in an insulated heavy gauge galvanized steel housing. All elements shall terminate in a machine staked stainless steel terminal secured with stainless steel hardware for corrosion resistance. The element support brackets shall be spaced no greater than 90 mm on center. All internal wiring shall be rated for 105˚C minimum.

.20 All heaters shall include over temperature protection consisting of an automatic reset primary thermal limit and back up secondary thermal limit.

.21 All heaters shall be SCR controlled, 0-10 V control signal input.

.22 All units with electrical heat shall be provided with an incoming line power distribution block, designated to accept single point power wiring capable of carrying 125 % of the calculated load current, or, be wired separately, with disconnect and interlocks to the fan coil to prevent operation when the fan is off.

.23 Maximum sound power level at the fan coil outlet at free discharge conditions, shall be NC-35.

2.2 **CONDENSATE PUMPS**

.1 For removal of condensate from an air conditioner.

- .1 1/50 hp high performance motor
- .2 ABS tank, motor cover, and volute
- .3 6.5 L tank capacity
- .4 Stainless steel shaft
- .5 Snap-action switch
- .6 Removable 9.5 mm barbed check valve
- .7 Inlet drain holes
- .8 Thermal overload protection
- .9 CSA listed
- .10 1.8 m power cord c/w plug

.11 9.5 mm discharge outlet

.12 Capacity as per drawing schedule

3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Hang units.

.2 Coordinate power connection with electrician.

.3 Coordinate controls connections with controls contractor.

.4 Coordinate fan speed setting with balancing contractor.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 – Common Work Results – Electrical.

3.4 CLEANING

.1 Proceed in accordance with Section 01 00 10 – General Instructions.