1 General

1.1 REFERENCES

.1 American National Standards Institute (ANSI)
- .1 ANSI/AMCA 210, Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.
- .2 ANSI/NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems.

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

.3 International Organization of Standardization (ISO)
- .1 ISO 3741, Acoustics-Determination of Sound Power Levels of Noise Sources Using Sound Pressure - Precision Methods for Reverberation Rooms.

.4 Underwriter's Laboratories (UL)
- .1 UL 181, Factory-Made Air Ducts and Air Connectors.

1.2 SYSTEM DESCRIPTION

.1 Performance Requirements:
- .1 Catalogued or published ratings for manufactured items: obtained from tests carried out by manufacturer or those ordered by manufacturer from certified ADC (Air Diffusion Council) testing agency signifying adherence to codes and standards.

1.3 SUBMITTALS

.1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. 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 33 00 - Submittal Procedures.
- .2 Test data: to ANSI/AMCA 210.
  - .1 Submit published test data on DIN (Direct Internal Noise), in accordance with ISO 3741 made by independent testing agency for 0, 2.5 and 6 m/s branch velocity or inlet velocity.
  - .2 Sound power level with minimum inlet pressure of 0.25 kPa in accordance with ISO 3741 for 2nd through 7th octave band, also made by independent testing agency.
  - .3 Pressure loss through silencer shall not exceed 60% of inlet velocity pressure maximum.

.2 Shop Drawings:
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate the following:
  - .1 Capacity.
  - .2 Pressure drop.
  - .3 Noise rating.
  - .4 Leakage.
  - .5 Dimensions.

.3 Quality Assurance Submittals:
- .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.

.4 Closeout Submittals:

.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

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

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Waste Management and Disposal:

.1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse in accordance Section 01 74 19 - Waste Management and Disposal.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Furnish list of individual manufacturer's recommended spare parts for equipment include:

.1 Bearings and seals.

.2 Addresses of suppliers.

.3 List of specialized tools necessary for adjusting, repairing or replacing.

2 Products

2.1 HEATING AND COOLING COILS

.1 Conform to ASTM B75 and AHRI 410.

.2 Tubes: Minimum 16mm tube diameter; seamless copper tubing.

.3 Fins: 0.1397 mm Aluminum or 0.1143 mm copper mechanically bonded or soldered, or helically wound around tubing.

.4 Headers: Copper, welded steel, or cast iron. Provide seamless copper tubing or resistance welded steel tube for volatile refrigerant coils.

.5 "U" bends; Where used: machine die-formed, silver brazed to tube ends.

.6 Coil casing: 1.6mm galvanized steel with tube supports at 1200mm maximum spacing. Construct casing to eliminate air bypass and moisture carry-over. Provide duct connection flanges.

.7 Pressure kPa (PSIG):

Pressure	Water Coil	Refrigerant Coil
Test	2070 (300)	2070 (300)

.8 Protection: Unless protected by the coil casing, provide cardboard, plywood or plastic material at the factory to protect tube and filled surfaces during shipping and

construction activities.

.9 Vents and Drains: Coils that are not vented or drainable by the piping systems shall have capped vent/drain connections extended through the coil casing.

.10 Cooling Coil Condensate Drain Pan: Drain pan shall be designed to extend along the entire length of the cooling coils including headers and return bends. Depth of drain pan shall be at least 43mm and shall handle all condensate without overflowing. Drain pan shall be single-wall, sloping type and fabricated from stainless steel (304). Drain pan shall be continuous metal or welded watertight. No mastic sealing of joints exposed to water will be permitted. drain pan shall be integrated into duct assembly. Drain pan shall be pitched in all directions to the drain line.

.1 Drain pan shall be piped to the exterior of the unit. Drain pan shall be readily cleanable.

.2 Installation, including frame, shall be designed and sealed to prevent blow-by.

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 Install in accordance with manufacturers recommendations.

.2 Support independently of ductwork.

.3 Install with at least 1000 mm of flexible inlet ducting and minimum of four duct diameters of straight inlet duct, same size as inlet.

.4 Locate controls, dampers and access panels for easy access.

3.3 CLEANING

.1 Proceed in accordance with Section 01 74 00 - Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION