Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Variable volume boxes, constant volume bypass, and fan powered and electronic variable air volume boxes.

.2 Related Sections:

.1 01 33 00 - Submittal Procedures.
.2 01 78 00 - Closeout Submittals.
.3 23 05 93 – TAB
.4 23 09 33 - Direct Digital Control (DDC) system for HVAC.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI/AMCA 210-[1999], Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.
.2 ANSI/NFPA 90A-[2002], 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-[2001], 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-[2003], Factory-Made Air Ducts and Air Connectors.

1.3 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.

1.4 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.

.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.

.3 Closeout Submittals:

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

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

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

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.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Terminal units of the same type to be product of one manufacturer.

2.2 VARIABLE AIR VOLUME (VAV) BOXES

.1 The VAV assemblies shall be pressure independent and shall reset to any air flow between zero and the maximum cataloged air volume.

.2 At an inlet velocity of 10.2 m/s (2,000 fpm), the differential static pressure for any unit with attenuator section, sizes 4 through 16, shall not exceed 25 Pa (0.11" w.g.)

.3 Sound ratings of air distribution assemblies, shall not exceed 17 NC at 100 Pa static pressure.

Performance shall be ARI Certified.

.4 The air flow sensor shall be of a cross configuration located at the inlet of the assembly. The sensor shall have twelve total pressure sensing ports and a center averaging chamber designed to accurately average the flow across the inlet of the assembly. Sensor shall provide accuracy within 5% with a 90° sheet metal elbow directly at the inlet of the assembly. The air flow sensor shall amplify the sensed air flow signal.

.5 The assembly casing shall be constructed of 22 gauge zinc coated steel, internally lined with 1/2 inch thick, dual density fiberglass insulation which complies with UL-181 and NFPA-90A. Any cut edges of fiberglass exposed to the airstream shall be coated with NFPA-90A approved sealant.

.6 Actuator: By section 230933

.7 Acceptable Product: “EH Price” Model: SDV-5000 c/w SPV300 Multi-port sensor and ATT Attenuator Section per schedule below:

Tag	Design Air Flow to Zone		VAV Capacity		Model
	min. l/s	max. l/s	min. l/s	max. l/s	
VAV 3-1	340	680	0	991	SDV-5000 - 12 -FF
VAV 3-2	118	236	0	307	SDV-5000 - 7 -FF
VAV 3-3	283	566	0	991	SDV-5000 - 12 -FF
VAV 3-4	189	378	0	496	SDV-5000 - 9 -FF
VAV 3-5	189	378	0	496	SDV-5000 - 9 -FF
VAV 3-6	85	170	0	212	SDV-5000 - 6 -FF
VAV 3-7	260	519	0	637	SDV-5000 - 10 -FF
VAV 3-8	160	321	0	307	SDV-5000 - 7 -FF
VAV 4-1	245	491	0	637	SDV-5000 - 10 -FF
VAV 4-2	123	245	0	307	SDV-5000 - 7 -FF
VAV 4-3	472	944	0	1416	SDV-5000 - 14 -FF
VAV 4-4	189	378	0	496	SDV-5000 - 9 -FF
VAV 4-5	47	94	0	165	SDV-5000 - 5 -FF

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

END OF SECTION