PART 1 - GENERAL

ns from these guidelines must be justified through LCC
y for approval.

nits upon units tested according to ARI 880 and ASHRAE

connection

volume to within plus or minus 5% of air volume set
ature sensor demand with variations in inlet pressures from

ncluding hydronic heating coil, not to exceed 0.4" w.g. at

ps separate from the control pressure taps for airflow

d minimum 400 FPM inlet velocity with unit discharge and
ccupied space Noise Criteria does not exceed NC-30 per

n 22 gauge galvanized steel enclosures.

pe so constructed and sealed to limit air leakage to the
essure. If sealing is required to obtain the leakage
re ductwork Hard cast or FOIL-GRIP tape may be used to

seal lap joints and flat seams only. Leakage curves or tables will be required as part of the submittal data. The following is the maximum allowable casing leakage including all components:

Diameter	Maximum Allowed CFM (Area x 2000 fpm)	Maximum Allowable CFM Casing Leakage
4”-5”-6”	393	8.0
7”-8”	698	14.0
9”-10”	1091	22.0
11”-12”	1571	30.0
13’-14”	2138	40.0

G. The following is the maximum damper leakage allowable for the various size diameter inlets. The damper leakage shall not exceed the values listed in the table below at 6" w.g. differential pressure, following ARI 880 Testing Procedures.

Maximum Allowed CFM Diameter	Maximum Allowable (Area x 2000 fpm)	CFM Casing Leakage
4”-5”-6”	393	6.0
7”-8”	698	10.5
9”-10”	1091	16.5
11”-12”	1571	20.0
13’-14”	2138	30.0

H. Provide minimum 3/4” internal lining with all edges sealed against airflow erosion in accordance with NFPA 90A and UL 181.

I. Unit air volume shall be set at factory and provided such that special tools are not required for field adjustment.

J. Power to and within terminal unit shall be 24 volts.

2.02 Fan Powered Variable Air Volume Units:

A Units shall be capable of controlling air volume to within plus or minus 5% of air volume set point, as determined by the zone thermostat demand with variations in inlet pressures from 0.10” to 6” w.g. Fan powered Variable Air Volume Units allowed only with Owner’s approval. Units shall be constructed with minimum 20 gauge galvanized steel enclosures.

B. Damper (air valve) shall have a leakage rate of less than 2% of the box’s maximum scheduled CFM at two times primary supply air duct static pressure or 3” w.g. (whichever is smaller).

E. Fans in series terminal units shall be forward curved, centrifugal with direct-drive electronic commutated motors (ECM).

F. Fan and motor assembly shall be internally suspended and isolated from the casing on rubber in shear isolators. Fan and motor assembly shall be easily accessible through access panels without disassembling the entire unit. Fan assembly shall include an anti-backward rotation device.

G. All primary power to fan powered boxes shall be 120 volts.

H. Temperature sensors located after heating coils.

2.03 Terminal Heating Coils:

A. Not Used

B. Hot water reheat shall be fin and tube type constructed of seamless copper with aluminum fins mechanically bonded to the tubes and copper headers. Aluminum tubes and headers will not be allowed NO EXCEPTIONS.

C. Casing and tube supports shall be minimum 16 gauge galvanized steel.

D. Coils shall be drainable, suitable for 250 psig working pressure, with circulated tubes factory tested at not less than 300 psig air pressure. Vents must be factory installed on all heating and cooling coils.

2.04 Not Used:

2.05 Dual Duct Terminal Units (Manufactured):

A. Dual duct systems, either existing or justified through LCC, may utilize factory fabricated terminal units for zone temperature and air flow control.

B. Provide factory-assembled, externally powered, variable air volume control terminal. Unit shall be complete with a damper assembly, flow sensors, externally mounted volume controllers, collars for duct connection and all required features. Control box shall be clearly marked with an identification label that lists such information as nominal cfm, maximum and minimum airflow limits.

for flame spread and smoke generation and UL-181 requirements for anti-erosion, corrosion and fungus properties.

F. Units shall have pressure-independent electronic controls, as specified, capable of maintaining required airflow set points +/-5% of the unit's capacity at any inlet pressure up to 6-in. wg., when measured at either inlet duct. The unit shall be equipped with an amplified flow probe located in the cold deck inlet and the cabinet discharge. Air flow rate shall be determined with a factory supplied 12 point total pressure, center averaging cross flow sensor. Electric actuators shall be furnished by the BAS contractor and installed by the manufacturer at the factory. Actuator shall be sized for specific application with a minimum torque of 40 in-lb. and shall utilize brushless motor. Housing shall be designed for reversing rotation. Actuator shall be proportional control, 0-10V. All actuators installed throughout project shall be of the same manufacturer and model. Electric actuators shall be sized appropriately with specified control type and manufactured by Belimo or approved equal.

G. Unit supplied shall be rated in accordance with ARI 880 certification program at the rated flow rates and pressures. The unit manufacturer shall furnish octave band sound power data for both casing radiated and discharge sound levels with the selected lining and above flow sensor, as tested per ARI Industry Standard 880-98, at the required flow rates and inlet pressures.

H. Power to and within terminal unit shall be 24 volts.

PART 3 EXECUTION

3.01 Installation:

A. Maintain NEC and manufacturer's recommended clearances for control enclosures.

B. Provide manufacturer's minimum straight duct inlet & outlet requirements.

END OF STANDARD