

1 **2.15 AIR LEAKAGE TESTING**

- 2 A. Unit manufacturer shall factory pressure test each air handling unit to ensure the leakage rate of
3 the casing does not exceed 1.0% of the unit air flow at 1.5 times the rated static pressure.
4 Leakage test shall be performed with all VFD and all electrical gear installed, and all coil
5 penetrations made.
- 6 B. Test shall be conducted in accordance with SMACNA duct construction manual. All external
7 openings shall be blocked off with temporary plates. The unit shall be pressurized to the test
8 pressure using an external blower. A calibrated orifice shall be used to measure leakage airflow
9 into or out of the unit.
- 10 C. Positive pressure plenums shall be tested positively and negative pressure plenums shall be
11 tested negatively.
- 12 D. Air Handling units 2,000 CFM and greater shall be air leakage tested.

13 **2.16 VIBRATION TESTING AND BALANCING**

- 14 A. Fans and motors shall be dynamically balanced to exceed a BV-5 criterion as per AMCA 204-
15 96. Fan balancing shall be provided on site as part of factory start up.
- 16 B. Vibration measurement locations shall be as close as possible to the bearing or shaft
17 centerlines. Measurements shall be taken from the bearing housings, bearing pedestals, or
18 motor casings.
- 19 C. Fans and motors shall be tested at the design RPM and the maximum overall filter-in vibration
20 levels at each measurement point shall be less than or equal to 0.15 in/second peak velocity at
21 the operating speed. If any measurements exceed the above criterion, the assembly shall be
22 rebalanced and re-tested until the criterion is achieved.
- 23 D. Certified measurements shall be provided to the consultant.

24 **2.17 ELECTRICAL**

- 25 A. Factory wire and test all air handling units. Have units approved by CSA, ETL or UL.
- 26 B. Supply one (1) single point 460 V/60 Hz/3 Ph power connection for each unit.
- 27 C. Label and number code all wiring and electrical devices in accordance with the unit electrical
28 diagram. Mount the devices in a control panel inside the unit's service enclosure or on the
29 outside. Ensure the control panel meets the CSA, ETL or UL.
- 30 D. Provide a system of motor control including all necessary terminal blocks, motor contactors,
31 motor overload protection, grounding lugs, auxiliary contactors and terminals for the connection
32 of external control devices or relays. Individually fuse all fan and branch circuits. On fans
33 designated to be operated by Variable Frequency Drives, provide VFDs rather than contactors.
- 34 1. Wire from the motors to the motor control in accordance with CSA, ETL or UL and
35 contained by EMT conduit with liquid tight connections. Seal the casing penetrations in a
36 manner that eliminates air leaks.

37 **2.18 APPROVED MANUFACTURERS**

- 38 A. **MAFNA**
- 39 B. Haakon
- 40 C. Hunt Air
- 41 D. Energy Labs
- 42 E. Petra