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Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The CSI Construction Specifications Practice Guide.*

This section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all "Specifier Notes" after editing this section.

Section numbers and titles are from *MasterFormat 2023 Update*.

SECTION 23 72 13

AIR HANDLING UNIT

Specifier Notes: This section covers Systemair Inc. "Geniox Series" air handling units. Consult Systemair Inc. for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Air handling unit.

1.2 RELATED REQUIREMENTS

Specifier Notes: Edit the following list of related sections as necessary. Limit the list to sections with specific information that the reader might expect to find in this section, but is specified elsewhere. Include section number and title.

A. Section 23 08 00 – Commissioning of HVAC.

8 Rouse Street Systemair Geniox Series Air Handling Unit

1.3 REFERENCE STANDARDS

Specifier Notes: List standards referenced in this section, complete with designations and titles. Delete standards not included in the edited section. Including a standard in this list does not require compliance with that standard.

- A. AHRI 410 Forced-Circulation Air-Cooling and Air-Heating Coils
- B. AHRI 1060 Performance Rating of Air-to-Air Heat Exchangers for Energy Recovery Ventilation Equipment.
- C. AMCA 300 Test Code for Sound Rating Air Moving
- D. AMCA 500 Test Methods for Louver, Dampers and Shutters
- E. ASHRAE 84 Method of Testing Air-to-Air Heat Exchangers.
- F. CSA C22.2, No. 236 Heating and Cooling Equipment.
- G. NFPA 70 National Electrical Code (NEC).
- H. UL 723 Standard for Test for Surface Burning Characteristics of Building Materials.
- I. UL 900 Standard for Air Filter Units.
- J. UL 1995 Standard for Heating and Cooling Equipment.
- K. UL 94 Test for Flammability of Plastic Materials for Parts in Devices and Appliances.
- L. NFPA 90A Standard for the installation of Air Conditioning and Ventilation Systems
- M. ASHRAE 62 Ventilation for Acceptable Indoor Air Quality
- N. ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- O. ASHRAE 111 Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems
- P. SMACNA Leakage Class Rating System

1.4 PREINSTALLATION MEETINGS

Specifier Notes: Edit pre installation meetings as necessary. Delete if not required.

- A. Convene pre installation meeting [1 week] [2 weeks] before start of installation of air handling units.
- B. Require attendance of parties directly affecting work of this section, including Contractor, Architect, Engineer, installer, and manufacturer's representative.
- C. Review materials, preparation, installation, adjusting, demonstration, protection, and coordination with other work.

1.5 SUBMITTALS

Specifier Notes: Edit submittal requirements as necessary. Delete submittals not required.

- A. Comply with Section 01 33 00 Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including preparation and installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details.
 - 1. Wiring Diagrams: Indicate wiring for each item of equipment and interconnections between items of equipment.
 - 2. Include manufacturer's names, model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
- D. Manufacturer's Certification: Submit manufacturer's certification that air handling units comply with specified requirements and are suitable for intended application.
- E. Manufacturer's Project References: Submit manufacturer's list of successfully completed air handling unit projects, including project name and location, name of architect and engineer, and type and quantity of air handling units furnished.
- F. Installer's Project References: Submit installer's list of successfully completed air handling unit projects, including project name and location, name of architect and engineer, and type and quantity of air handling units installed.
- G. Operation and Maintenance Data:
 - 1. Submit manufacturer's operation and maintenance manual; including the following:
 - a. Operation, maintenance, adjustment, and cleaning instructions.
 - b. Troubleshooting guide.
 - c. Parts list.
 - d. Electrical wiring diagrams.
 - 2. Provide detailed information required for Owner to properly operate and maintain equipment.

Systemair Geniox Series **Modular – Semi Custom AHU** Air Handling Unit H. Warranty Documentation: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacturer regularly engaged, for past 25 years, in manufacture of air handling units of similar type to that specified.
 - 2. (VRF if applicable) Manufacturer shall have minimum 7 years of experience working with VRF components and units.
- B. Installer's Qualifications:
 - 1. Installer regularly engaged, for past 25 years, in installation of air handling units of similar type to that specified.
 - 2. Employ persons trained for installation of air handling units.

1.7 SAFETY AGENCY LISTED & CERTIFICATION

- A. Air handling units shall conform to UL Standard 1995 and CAN/CSA Standard C22.2 No. 236 requirements and shall be listed with pertinent certifying body.
- B. Air handling unit water heating and cooling coils shall be certified in accordance with the forced circulation air cooling and air heating certification program, which is based on AHRI Standard 410.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, stretch wrapped, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials in accordance with manufacturer's instructions.
 - 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 - 3. Store materials in clean, dry area indoors.
 - 4. Protect materials during storage, handling, and installation to prevent damage.

1.9 WARRANTY

A. Geniox Limited Warranty Systemair warrants the Equipment manufactured by Systemair for a period of the lesser of 12 months from initial start-up or 18 months from date of shipment, whichever is less, against failure due to defects in material and manufacture and that it has the capacities and ratings set forth in Company's catalogs and bulletins ("Warranty"). Should any failure to conform to the above appear within the lesser of 12 months from initial start-up or 18 months from date of shipment, whichever is less, the unit manufacturer shall upon prompt notification thereof during the Warranty Period and confirmation to the unit manufacturer's satisfaction that the goods have been stored, installed, operated and maintained properly and in accordance with standard industry practice, correct the non-conformity at the unit manufacturer's option either by repairing any defective part or parts or by making available at the unit manufacturer's plant a repaired or replacement part.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Systemair Inc., 8 Rouse Street, Tillsonburg, Ontario N4G 5W8, Canada. Toll Free 877-797-2471. Phone 519-688-6363. Website www.systemair.net. E-mail sales@systemair.net.

2.2 AIR HANDLING UNITS

A. Air Handling Units: "Geniox Series".

Specifier Notes: Specify required model. Consult Systemair Inc. for assistance in determining air handling unit model for the specific application.

[Select one model only]

- 1. Model: Geniox 10, 11, 12, 14, 16, 18, 20, 22, 24, 27, 29, 31, 35, 38, 41 & 44
- 2. Indoor, outdoor, air handling unit(s).
- 3. Airflow Control: [Variable air volume, Constant air volume].
- B. General
 - 1. Each Unit or Group of Units: Capable of operating in any mode independently or dependently of other systems.
 - 2. Capable of changing modes with no interruption to system operation.
 - 3. Listed under CSA C22.2, No. 60335-2-40 / UL 60335-2-40.
 - 4. Wiring: NFPA 70.
 - 5. Performance: As scheduled on the Drawing.
 - 6. Equip with control systems from the manufacturer or third party, see controls.
 - 7. Perform all functions necessary for operation.
 - 8. Ventilation to Building: Not to cease in any mode based solely on operational temperature of -30 to 104 degrees F (-34 to 40 degrees C).
 - 9. Capable of operating in winter and summer conditions without imbalance or loss of ventilation capacity greater than specified in design.
- C. Unit Cabinet
 - 1. Panels and access doors shall be constructed as minimum 2.4-inch (60-mm) nominal thickness with mineral wool insulation with an R-value of no less than R-8.4. The outer panels shall be constructed of G90 ZM310 22-gauge steel (0.86mm). The inner liner shall be constructed of G90 ZM310 22-gauge (0.86mm) steel.
 - 2. The casing and frame design shall be thermally broken so to have a thermal bridging factor of Class TB2 between the interior and exterior of the unit.
 - 3. Panel deflection shall not exceed L/240 ratio at maximum positive or negative 8 inches of static pressure. Deflection shall be measured at the midpoint of the panel height.
 - 4. The casing leakage shall not exceed 1% of supply air volume at maximum positive or negative 8 inches of static pressure. Measured as per ASHRAE 111 to meet SMACNA Class 6 leakage (Class L1 M).
 - 5. Unit panels and doors shall be painted on the exterior and interior with medium that has been tested for 1000 hour salt spray in accordance to ASTM B117
 - Access door shall be of the same construction as panels. The doors shall have gasketing to ensure SMACNA Class 6 (Class L1 – M) is maintained under negative and positive 8 inches of static pressure. Gasketing shall be fixed to the door and not the door

frame.

- 7. All handles and hinges shall be UV resistant plastic with locks, Door handles shall be designed such that they cannot be used to climb the air handling unit. All handles and hinges shall be corrosion resistant, no metallic handles/hinges shall be accepted.
- 8. Optional Clear windows shall not adversely affect ASHRAE 111 CLASS 6 rating for leakage
- 9. Floor construction shall be of sufficient strength to support service personnel.
- 10. Entire unit shall have a [118mm (4.5")] [218mm (8.6")] [full or sectional] 11Ga (3.13mm) ZM310 Steel perimeter base rail for structural rigidity and condensate trapping for coils.
- 11. Prefabricated roof curb (**if applicable**) to be fabricated, supplied, and installed by the site contractor.
- 12. Outdoor units shall be supplied with 18 Ga (1.31mm) sloped roof installed by the factory.

D. Fans

- 1. All units shall be equipped with direct-drive plenum fans, with backward-curved impellers with 7 blades made of a polymer composite material, the impellers are installed directly on the motor shafts.
- 2. All power and sound ratings have been tested and rated according to applicable AMCA Standards and Publications
- 3. Fans with EC Motors
 - a. Maintenance-free, permanently lubricated, sealed ball bearings.
 - b. Electronically commutated (EC) external rotor motor with integrated EC controller
 - c. Thermal overload protected (TOP).
 - c. UL listed
 - d. IP Protection: Class 54
 - e. Satisfies IE4 (IEC60034-31)
 - f. Mounted for quiet operation.
- 4. Fans with AC Motors
 - a. Meet NEMA & IEC premium efficiency requirements with Class F insulation.
 - b. Meet ASHRAE 90.1 power consumption and fan motor efficiency requirements.
 - c. Direct drive plenum fans coupled to motors at rated speed.
 - d. Open Drip Proof (ODP) or Totally Enclosed Fan Cooled (TEFC)
 - e. Meets the requirements of NEMA MG1 for VFD application and considered as Inverter Duty motor.
 - f. Shall be tested to AMCA 300 Sound performance.
 - g. Shall be dynamically balanced from the fan manufacturer.
 - h. Vibration Isolation –Steel Spring Isolators
- 5. Variable Frequency Drives (VFD)
 - a. All AC fans shall have a VFD to control a variable or constant speed settings.
 - b. VFD shall be supplied by the Air Handling unit manufacturer.
 - c. Properly sized non fused disconnect and line fuses shall be provided by the manufacturer.
 - d. When mounted VFD's are supplied the below options are available.
 - e. Supply or Exhaust Fans will be wired to the VFD and the VFD control wired to terminals for DDC Ready panel.
 - f. When factory controls are supplied the VFD is supplied by factory all wiring to motors and will be complete and ready for operations when air handling unit is installed
 - g. Shall be UL508C & CSA certified and conform to applicable NEMA, ICS, NFPA & IEC Standards.

- 6. Separate fans for exhaust and supply blowers.
- 7. Differential pressure transducer (DDC Ready or Factory Supplied Controls) shall be mounted across involute of fan to allow constant and variable airflow control.
- E. Energy/Sensible Recovery Wheel
 - 1. Rotor Matrix: Corrosion-resistant aluminum alloy, composed of alternating corrugated and flat, continuously wound layers of uniform width that guarantee laminar air flow and low static pressure loss.
 - 2. Counter-flow construction type.
 - 3. Free cooling capacity accomplished by stopping the wheel. Wheel shall not exceed .5 inches of pressure when stopped.
 - 4. Performance: Certified and listed by AHRI 1060.
 - 5. Rotor Wheel: 11-20 inch-thick wheel reinforced with spokes, welded at hub and perimeter to prevent uneven run-out during normal operations.
 - 6. All ERW's available with an adjustable Purging section
 - 7. Sorption (Enthalpy) energy wheels are sensible and latent of aluminum of molecular sieve 3A high performance. Coated with thin, non-migrating, adsorbent, Zeolite particles with an A (High Efficiency), B (Good heat recovery balanced with medium pressure drop), C(Medium heat recovery with low pressure drop) and D(Lowest) Pressure Drop)
 - 8. Hybrid wheels are sensible and latent of aluminum of hygroscopic matrix molecular sieve 3A high performing: Coated with thin, non-migrating, adsorbent, Zeolite particles with an A (High Efficiency), B (Good heat recovery balanced with medium pressure drop), and D(Lowest) Pressure Drop)
 - Condensate (Sensible) energy wheels shall be aluminum corrugated surfaces with an an A (High Efficiency), B (Good heat recovery balanced with medium pressure drop), C(Medium heat recovery with low pressure drop) and D(Lowest) Pressure Drop)
 - 10. Effectiveness of Wheel: Documented in accordance with ASHRAE 84 and AHRI 1060.
 - 11. EATR % shall be 5% or less.
 - 12. Frost Control Methodologies
 - a. Timed defrost is standard on all units with ERW electronic control unit and a slow rotating motor drive.
 - b. Pre-heat with [Electric, HW Coil] available
- F. Sensible Recovery Core
 - 1. Sensible Core: Corrosion-resistant aluminum alloy, composed of alternating corrugated and flat, continuously wound layers of uniform width that guarantee laminar air flow and low static pressure loss.
 - a. Cross Flow Available for unit sizes 10 to 31.
 - b. Available in type A, B, C, and D with A being the most heat recovering efficiency.
 - 2. Counter Flow Available for unit sizes 10 to 20
 - a. Available in type A and B with A being the most heat recovering efficiency.
 - 3. Type A is the most Heat Recovery Efficient
 - 4. Construction type with EATR of 0.5% or lower.
 - 5. Performance: Certified and listed by AHRI 1060.
 - 6. The heat exchanger is supplied with a built-in by-pass that can regulate the heat recovery from 0-100%. The by-pass function is comprised of a damper for the heat exchanger and a damper for the by-pass airway. The by-pass function is located in the middle of the plate heat exchanger. Consequently, the heat exchanger is divided.
 - Optional Corrosion protection is available. Frost Control Methodologies

 a. Timed defrost is standard on all units with Factory Controls

- b. Bypass damper frost control
- c. Pre-heat with [Electric, HW Coil] available
- G. Heating and Cooling Coils
 - 1. All hydronic and direct expansion (DX) refrigerant coils shall meet the scheduled performance.
 - 2. All coil performance shall be certified in accordance with AHRI 410, if applicable.
 - 3. All hydronic and direct expansion coils shall be tested at 450 psig air pressure.
 - 4. Coil headers shall be constructed of steel with MPT connections. Headers shall have drain and vent connections accessible from the exterior of the unit.
 - 5. Hydronic coils should have minimum $\frac{1}{2}$ inches OD copper tubes with minimum 0.017 inches tube wall thickness.
 - 6. DX coils shall be provided with seamless 3/8, 1/2 or 5/8 inch OD copper tube and all joints shall be brazed.
 - 7. Fins shall have a minimum thickness of 0.004 inches (0.11mm) aluminum plate construction.
 - 8. Provide a drain pan under each cooling coil. Drain pan shall be standard zinc magnesium (Optional stainless steel) construction and double sloped towards the drain connection. Drain connection shall be minimum 1" MPT and on the service side of the unit. Drain pan shall comply with ASHRAE 62.1 requirements and shall allow no standing water.
 - 9. Drain pan shall allow visual inspection and physical cleaning to entire surface of the pan without removal of the coil.
 - 10. Hydronic Coil Control Valves
 - a.An option for Coil Control Valves shall be provided by the AHU manufacturer, [Shipped loose and Field installed by the Contractor.
 - b. Terminals shall be provided in the AHU control panel for field hookup by the control contractor [All external wiring and installation shall be provided by the Controls Contractor.

H. Electric Heater

- 1. Electric heater shall be factory installed ETL listed with a separated power connection for the Electric Heater at the Electric Heater Control
- 2. Enables unit to perform in extremely cold climates to preserve performance and ensure continuous supply of air or provides temperature control of supply air.
- Electric heater shall be constructed of high nickel-chromium alloy resistance wire (80% Ni/20%Cr) (Optional Tubular Incoloy 840)
- 4. Electric heater safeties shall be airflow switch, thermal cutouts with automatic and manual reset.
- 5. Units with electric heater function shall be listed under UL-1996 Electric Duct Heater Standard for safety.
- 6. The Electric Heater safeties will alarm and shut down the Electric Heater as required.
- I. Dampers
 - 1. Provide dampers tested in accordance with AMCA 500.
 - 2. Provide factory-installed dampers, as shown in the drawings.
 - 3. Dampers shall have aluminum airfoil blades, extruded EPDM seals.
 - 4. Dampers shall have a maximum leakage rate of 4 CFM/square foot at 1" w.g (CLASS 1).

and shall comply with ASHRAE 90.1.

- 5. For DDC ready and full controls actuators are factory mounted with on-off or modulating dampers as required for control sequence.
- 6. An optional mixing section for the purpose of recirculation.
- J. Indoor Economizer Module
 - 1. Provide dampers tested in accordance with AMCA 500.
 - 2. Provide factory-installed dampers, as shown on drawings.
 - 3. Dampers shall have aluminum airfoil blades, extruded EPDM seals.
 - 4. Dampers shall have a maximum leakage rate of 4 CFM/square foot at 1" w.g. (CLASS 1) and shall comply with ASHRAE 90.1.
 - 5. Dampers shall be sized to enable proper mixing of air streams.
 - 6. Provide factory-mounted [modulating] actuators for all the dampers.
 - 7. Dampers for treatment of Outside Air and Exhaust air shall be insulated type with thermally broken frame design.
- K. Air Filters
 - 1. Filter media shall be UL 900 listed, Class I or Class II.
 - 2. Filters tested in accordance with ISO16890, ANSI/ASHRAE Standard 52.2
 - 3. Panel Filter 2" deep options:
 - I. Merv 4, G4 Coarse 65%
 - II. Merv 8, M5 ePM10 60%
 - III. Merv 11, M6 ePM10 70%
 - IV. Metal Mesh Filter
 - 4. Panel Filter 4" deep options:
 - I. Merv 10, M5 ePM10 60%
 - II. Merv 11, M6 ePM10 70%
 - III. Merv 13, F7 ePM10 55%
 - IV. Merv 14, F8 ePM10 70%
 - V. Merv 15, F9 ePM10 80%
 - 5. Compact Filter 4" deep options:
 - I. Merv 11, M6 ePM10 70%
 - II. Merv 13, F7 ePM10 60%
 - III. Merv 14, F8 ePM10 70%
 - IV. Merv 15, F9 ePM10 80%
 - 6. Bag Filter 520mm (14") deep bag type arrangement
 - I. Merv 13, F7 ePM10 60%
 - II. Merv 13, F7 ePM10 60% City Flo
 - III. Merv 14, F8 ePM10 70%
 - IV. Merv 15, F9 ePM10 85%
 - 7. Bag Filter 640mm (25") deep bag type arrangement
 - I. Merv 13, F7 ePM10 60%
 - II. Merv 13, F7 ePM10 60% City Flo
 - III. Merv 14, F8 ePM10 70%
 - IV. Merv 15, F9 ePM10 85%
 - 8. Deltrain DELTRI+ Merv 16 (Filter F9 ePM10 90%) 520mm (14") deep bag type arrangement
 - 9. Carbon Filter Class CG2600-CEX003 ePM1 60% (F7) 18" (450mm) Deep
 - 10. Individual Pockets: Assembled into galvanized steel header providing rigid support to filter.
 - 11. Filter Element: Fully 100% synthetic fiber, not shedding or affected by humidity.
 - 12. Filters are side access removable.
 - 13. Dirty filter switch Adjustable Monitoring System: Activates alarm through main

controller when pressure drop increase through supply or exhaust filters. If Pressure drop is excessive the fans will shut down.

- L. Temperature Sensors: Supplied by others field installed.
- M. Electrical
 - 1. Units shall conform to bi-national standard ANSI/UL Standard UL-60335-1/CSA Standard C22.2 No236.
 - 2. Electrical Power: 120V/1Ph/60Hz, 208-230V/1Ph/60Hz, 208-230V/3Ph/60Hz, 460V/3Ph/60Hz or 575V/3Ph/60Hz.
 - 3. Internal Electrical Components: Factory wired for single-point power connection.
 - 4. Standard Short Circuit Rating 6kA
 - 5. Electrical Box Components: Accessible without stopping unit or opening unit doors.
 - 6. Electrical Box:
 - a. Isolated from airflow paths.
 - b. Protect integral wires and connections.
 - 7. Controlled by integral microprocessor controller.

2.3 AIR HANDLING UNIT CONTROLS

- A. General
 - 1. All air handling units will be equipped with a factory installed and configured DDC controller.
 - a. The controller shall be pre-programmed for ventilation with energy recovery with heating and/or cooling applications; no further programming will be required.
 - b. All controller settings, I/O points, configurations, functions, set-points, time schedules, and control modes shall be modifiable via PC software or network.
 - c. Access rights: there shall be three different program access levels: Admin, Service, Operator and Normal. Each level with have a password and grant the following level of access:
 - d. Network level (BAS System): full read/write access to all settings and parameters in all menus.
 - e. Service level: access to all menus except the submenus under Configuration: Inputs, Outputs for the System.
 - f. Normal level: only permits changes in "Running mode" and read-only access to a limited number of menus.
 - g. The controller must be capable of supporting schedule timers and system integration to Building Management Systems via BACnet MS/TP
 - h. Controller Communications: Via BACnet MS/TP communications bus.
 - i. Control Wiring: Installed in system daisy-chain configuration from unit to BAS controller and to other units, if applicable.
 - j. Network Wiring: Two wire RS-485.
 - 2. No electrical by AHU manufacturer: Electrical panel, disconnects, controls and all wiring field installed.
- B. Sensors
 - 1. The following sensors shall also be installed and pre-configured with the controller by the manufacturer: temperature sensors (supply, return, exhaust, outdoor & entering), wheel rotation sensor, dirty filters sensor, defrost sensor, hydronic coil frost protection sensor and electric heating high temperature limit sensor.

- 2. In constant air volume applications, independent pressure sensors shall monitor both supply and exhaust fans for constant airflow.
- 3. In variable air volume applications, independent pressure sensors shall monitor both supply and exhaust fans to maintain constant duct pressure.

PART 3 EXECUTION

3.1 SOURCE QUALITY CONTROL

A. Run test at factory.

3.2 EXAMINATION

- A. Examine areas and supporting structure to receive air handling units.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.3 PREPARATION

- A. Prepare surfaces where air handling units are to be mounted.
- B. Ensure surfaces are flat, level, plumb, and can support weight of energy recovery ventilators.

3.4 INSTALLATION

- A. Install air handling units in accordance with industry standards, local codes, and manufacturer's instructions at locations indicated on the Drawings.
- B. Install air handling units in accordance with NFPA 70.
- C. Install air handling unit level, plumb, and secure.
- D. Do not expose electronic components to temperatures below 32 degrees F (0 degrees C) or above 122 degrees F (50 degrees C).

3.5 ADJUSTING

A. Adjust air handling units for proper operation in accordance with manufacturer's instructions.

3.6 **DEMONSTRATION**

- A. Demonstration:
 - 1. Demonstrate that air handling units function properly in every respect.
 - 2. Perform demonstration at final system inspection by factory-trained and certified representative of manufacturer.
- B. Instruction and Training:
 - 1. Provide instruction and training of Owner's personnel as required for operation and maintenance of air handling units.
 - 2. Provide hands-on demonstrations of operation of system components and complete system, including user-level program changes and functions.
 - 3. Provide instruction and training by factory-trained and certified representative of manufacturer.

3.7 PROTECTION

- ASHRAE 62.1 Air Handling units shall be stretch wrapped to protect unit during shipping from manufacturer to customer mounting location Protect installed air handling units from damage during construction. Α.
- Β.

END OF SECTION