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**PART 1 GENERAL**

**1.1 REFERENCE STANDARDS**

- .1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
  - .1 ASHRAE 84 (Latest Edition), Method of Testing Air-to-Air Heat/Energy Exchangers (ANSI approved).

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for energy recovery equipment and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Fans, motor drives & bearings, filters, drawings, coil.
  - .2 Indicate following: Capacity, efficiency, air flow, speed, HP, Pa, Fan curves.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Test Reports:
  - .1 Catalogued or published ratings: obtained from tests carried out by manufacturer or those ordered from independent testing agency signifying adherence to codes and standards in force.
  - .2 Provide confirmation of testing.
- .6 Manufacturers' Instructions: submit manufacturer's installation instructions.

**1.3 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Extra Materials:
  - .1 Filters.
  - .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.

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**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect energy recovery equipment from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**PART 2 PRODUCTS**

**2.1 GENERAL**

- .1 Comply with ASHRAE 84.

**2.2 AIR TO AIR FIXED PLATE EXCHANGER**

- .1 Casing: 0.71 mm thick galvanized steel.
- .2 Heat transfer surfaces: aluminum, edge sealed and bonded to casing.
- .3 Cross contamination: not permitted.
- .4 Condensate drain.
- .5 Removable access panels.
- .6 Performance characteristics: 52 L/s @ 125 Pa, 120/1/60, three speed.
- .7 Defrost: Supply Fan off, Exhaust Fan high speed.
- .8 Controls: Three speed fan controller, continuous operation, low continuous, intermittent, high continuous.
- .9 Washable Electrostatic Filters.
- .10 Efficiency sensible Recovery, 58% @ -25°C, 40 L/s.

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**PART 3 EXECUTION**

**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for energy recovery equipment installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

**3.2 INSTALLATION**

- .1 Install in accordance with manufacturers recommendations.
- .2 Support independently of adjacent ductwork with flexible connections.
- .3 Install access doors in accordance with Section 23 33 00 - Air Duct Accessories for access to coils, dampers.

**3.3 FIELD QUALITY CONTROL**

- .1 Tests:
  - .1 Test to demonstrate defrost control.

**3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**