

SECTION 15860**AIR MOVING EQUIPMENT****PART 1 - GENERAL**

1.01 SECTION INCLUDES

- A. Ventilator Blower
- B. Exhauster
- C. Accessories
- D. Generator Building Supply Fan

1.02 REFERENCES

- A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.
- B. AFBMA 11 - Load Ratings and Fatigue Life for Roller Bearings.
- C. AMCA 99 - Standards Handbook.
- D. AMCA 210 - Laboratory Methods of Testing Fans for Rating Purposes
- E. AMCA 300 - Test Code for Sound Rating Air Moving Devices.
- F. AMCA 301 - Method of Calculating Fan Sound Ratings from Laboratory Test Data.
- G. NEMA MG1 - Motors and Generators.
- H. NFPA 70 - National Electrical Code.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate assembly of ventilator blower, exhauster, generator building supply fan and accessories including certified fan performance curves with specified operating point clearly plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- B. Product Data: Provide data on ventilator blower, exhauster, generator building supply fan and accessories including fan curves with specified operating point clearly plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements. Provide Miami-Dade County Product Control Notice of Acceptance.
- C. Manufacturer's Installation Instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01600.
- B. Protect motors, shafts, and bearings from weather and construction dust.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All fans shall bear the AMCA Certified Ratings Seal for sound and air performance.
- B. Each fan shall bear a permanently affixed manufacturer's nameplate containing the model number and individual serial number for future identification.
- C. Ventilation requirements for entry conditions shall meet OSHA standards.

2.02 VENTILATION BLOWER

- A. A wet well with personnel access shall be ventilated continuously at a rate of at least 12 air changes per hour.
- B. The wet well blower shall be a direct drive, pressure type aluminum bladed fan, with spring suspension and aluminum housing, mounted on a standard 8-inch high prefabricated aluminum curb supplied by the blower manufacturer. The blower shall supply approximately 700 CFM at ½-inch static pressure and shall be model 120 ARS with an explosion-proof 1/4 horsepower motor as manufactured by Jenn-Air Co., or approved equal.

2.03 EXHAUST FAN

- A. Dry wells shall be ventilated with an exhaust fan. The fan should be equipped with an intake duct from the floor. Exhaust fans shall be interlocked to operate when the light is engaged and sized to circulate a minimum of 20 changes of air per hour in the dry well.
- B. The dry well exhauster shall be a direct-connected centrifugal fan rated to produce a minimum of 340 cfm, at min. 3/8-inch water static pressure. The exhauster shall have cast iron housing with heat slinger (to reduce heat conduction to the motor bearings) or cast aluminum housing, inlet screen, aluminum or steel fan wheel, with clockwise rotation and supporting stands of an approved design. The motor shall be explosion proof, 1750 rpm nominal, for single phase, 60 cycle, 120 volt service and of sufficient nameplate horsepower to meet the exhauster requirements at any condition on its performance curve. The exhauster shall be a "Baby Vent Set",

manufactured by Howden Buffalo, Inc., Model LM Volume Blower, by Cincinnati Fan and Ventilator Co., or an approved equal.

2.04 AIR CONDITIONING

- A. Air Conditioning system shall be furnished and installed wherever variable frequency drive installations are approved by Miami-Dade Water & Sewer Department.
- B. Electrical control buildings shall be furnished with air conditioning systems, ventilation fans are not acceptable. The air conditioning system installed shall be the split type central unit variety, air cooled. An outdoor wall hung central package system, air cooled is also acceptable. It shall be designed to reject all heat loads from electrical equipment in the space wherein installed and all heat loads from the heat gain of the building structure. The air conditioning unit shall be factory assembled, electrically driven, air-cooled detached, ground/floor mounted package unit with externally mounted ductwork to station housing. Air conditioning system must be designed to provide 100% redundancy.
- C. Outdoor Variable Frequency Drive Enclosures:
 - 1. All panels shall be of stainless steel fabrication.
 - 2. Air Conditioning units furnished and installed shall be able of maintaining a maximum 85 degrees F when the outdoor temperature is 100 degrees F. Heat Load calculation shall determine equipment sizing.
 - 3. Air conditioning units shall be designed to reject all heat loads from the electrical equipment within the V.F.D. and all heat gain from the stainless steel enclosures.
 - 4. V.F.D. enclosures shall be designed and equipped with two air conditioning systems.
 - 5. Air conditioning must be designed to provide 100% redundancy.
 - 6. Air conditioning systems shall be fitted with an outdoor disconnect box/switch for emergency action and serviceability in accordance with the Florida Building Code.
 - 7. Air conditioning system must be accessible from an outdoor panel. Compressor, motors, fan, blower wheels, thermostats, contactors, electronics, etc. shall be serviceable from the outdoors.
 - 8. Air conditioning systems shall have a (1) one-year parts and labor warranty.
 - 9. Air conditioning systems shall have representatives within a 50 mile radius for in-warranty repairs, technical training/assistance and equipment/parts available for purchase by Miami-Dade Water and Sewer Department.
 - 10. No overhead installations shall be permitted. Only side panel.
 - 11. Recommended manufacturers are Kooltronic, McClean or approved equal. Shop drawings for all systems shall be submitted to Miami-Dade WASD-HVAC General Maintenance Division for approval.
- D. Electrical Control Buildings:

1. Air conditioners shall be the central cooling type, split system, air cooled or outdoor wall hung central package unit, meeting Florida Building Code requirements. Wall/Window type air conditioners or roof mounted units are not acceptable. Air handlers shall not be installed overhead from interior ceilings. Only vertical installations shall be allowed as per Florida Building Code.
2. Air conditioning system shall be able to maintain 76 degrees F when outdoor temperature is 95 degrees F with six (6) air changes per hour.
3. Air conditioning system shall be designed to reject all heat loads from the electrical equipment within, including VFD's and all heat gains from the building structure.
4. Control building shall be equipped with two (2) air conditioning systems, providing 100% redundancy.
5. Air conditioning system duct work, if any, shall be of sheet metal fabrication with exterior insulation.
6. Air conditioning systems shall have a (1) one-year parts and labor warranty.
7. Air conditioning systems shall have representatives within a 50 mile radius for in-warranty repairs, technical training/assistance and equipment/parts available for purchase by Miami-Dade Water and Sewer Department.
8. Recommended manufacturers are Kooltronic, McClean or approved equal. Shop drawings for all systems shall be submitted to Miami-Dade WASD-HVAC General Maintenance Division for approval.

E. Minimum AC System Requirements

1. Submittals:
 - a) Professional engineer certified drawing and calculations.
 - b) Coordinate drawing with end user maintenance division.
2. Quality Assurance: ASHRAE certified
3. Warranty:
 - a) Minimum one year - all parts and labor warranty from installed Contractor.
 - b) Compressor – 5 year warranty
4. Ductwork Component:
 - a) All ductwork must be stainless steel including flexible connector to package unit (316 stainless steel type)
 - b) Ductwork must be internally insulated with approved mechanical code product.
 - c) All ductwork seams to be welded and sealed.
 - d) All ductwork must be rectangular duct plenum.
5. Equipment Coating:

- a) Entire unit shall be coated with an anti-corrosive product.
 - b) 59: Bronze Glow
6. BTU Capacity: Unit to provide a minimum of six air change per hour and to provide a max indoor air temperature of 80 degree F when the outdoor temperature is 100 degree F.
 7. Field Quality Control: Factory authorized service representative and WASD HVAC Section personnel to inspect and approve installation.
 8. A/C Equipment Pad:
 - a) Pad shall be made of concrete
 - b) Pad height shall be a minimum of 24 inches above ground level.
 9. Vibration Isolator: Rubber mounted
 10. Commissioning:
 - a) Start-up services.
 - b) System functional and safety operation test.
 - c) System capacity verification test.
 - d) Demonstration and training of owner's personnel.
 11. Brand Requirement:
 - a) Trane, Rheem, Carrier, Lennox or approved equal.
 - b) Parts for AC system must be available from local distributors.

2.05 GENERATOR SUPPLY FAN

- A. Generator buildings shall be ventilated with a supply fan. The fan shall be equipped with a weather hood, motorized wall shutter, wall collar and OSHA internal wire guard.
- B. The generator building supply fan shall be a belt driven propeller fan rated to produce a minimum of 7,071cfm at 1/4-inch water static pressure. The supply fan shall have heavy duty motor with permanently lubricated bearings ; powder coated heavy duty tubular steel power assembly; re-greasable pillow block fan bearings with L-50 life in excess of 200,000 hours; powder coated minimum 14 gage steel wall panel with spun venturi; propeller shall be powder coated steel with hub fastened to shaft by two set screws; galvanized steel motorized wall shutter with minimum 20 gage blades; galvanized steel hood complete with bird screen; and powder coated OSHA wire guard. Motor shall be explosion proof, nominal 1800 rpm or less, 3/4 horsepower, 120volt, single phase. The supply fan shall be a Loren Cook Co. model XLW-30 or approved equal.

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions and in accordance with the Florida Building Codes.
- B. Install fans as indicated, with resilient mountings and flexible electrical leads.
- C. Provide safety screen where inlet or outlet is exposed.
- D. Roof mounted units shall be supported to withstand maximum wind speeds in accordance with the Florida Building Codes.

END OF SECTION