SECTION 15500

wall fans

# GENERAL

## DESCRIPTION

### **Scope:** Contractor shall provide all labor, materials, equipment, appurtenances, specialty items, and services required to furnish and install aluminum wall exhaust fans as shown and specified in the Contract Documents.

### **Coordination:** Review installation procedures under other Sections and coordinate the Work that shall be installed with the materials specified herein and which is related to this Section and other related Sections.

## Related Work Specified Elsewhere:

#### Section 13000 – Shop Drawings and Submittals

#### Section 15000 – General Piping

## references

### Air Movement and Control Association Inc. (AMCA):

#### 99 – Standards Handbook

#### 200 – Publication, Air Systems

#### 201-90 – Publication, Fans and Systems

#### 202-88 – Publication, Troubleshooting

#### 203-90 – Publication, Field Performance Measurement of Fan Systems

#### 211-05 – Publication, Certified Ratings Program – Product Rating Manual for Fan Air Performance

#### 300-96 – Standard Reverberant Room Method for Sound Testing of Fans

#### 311-05 – Publication Certified Ratings Program – Product Rating Manual for Fan Sound Performance

#### 99-0401-86 – Classification for Spark Resistant Construction

#### 99-2408-69 – Operating Limits for Centrifugal Fans

### Air Movement and Control Association Inc. (AMCA), American National Standards Institute (ANSI):

#### 204-05 – Standard Balance Quality and Vibration Levels for Fans

#### 210-99 – Standard Laboratory Methods of Testing Fans for Aerodynamic Performance Rating

### American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc. (ASHRAE):

#### Chapter 45 – 2003 Handbook, HVAC Applications

#### Chapter 7 – 2001 Fundamentals handbook, Sound-Vibration

#### Chapter 32 – 2001 Fundamentals handbook, Duct Design

#### Chapter 18 – 1992 HVAC System and Equipment handbook, Fans

## QUALITY ASSURANCE

### **Manufacturer’s Qualifications:** Manufacturer of the aluminum fans shall have experience in providing similar type equipment and shall show evidence with his submittal of at least five (5) installations where equipment of the same material and same application of the type specified herein have been in satisfactory operation for at least five (5) years.

### **Requirements of Regulatory Agencies:** Comply with applicable provisions of regulatory agencies below and others having jurisdiction:

#### National Fire Protection Association.

#### Underwriters Laboratories, Incorporated.

#### National Electric Code.

#### National Electric Manufacturers Association.

#### Local and State building codes and ordinances:

##### Uniform Building Code.

##### Model Energy Code.

##### California Administrative Code.

### **Reference Standards:** Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:

#### Air Moving and Conditioning Association (AMCA) Standard 211 and 311.

### **Source Quality Control:** Perform the following tests and inspections at the factory:

#### Fan wheels shall be statically and dynamically balanced.

#### Noise levels shall be tested in accordance with AMCA 300.

#### Fan shall be tested and rated in accordance with ASHRAE 51-2007 and AMCA 210-2007 test codes, and be guaranteed by manufacturer to deliver rated performance.

## SUBMITTALS

### **Shop Drawings:** Submit for approval the following:

#### Manufacturer’s literature, illustrations, specifications and engineering data shall include the following information:

##### Dimensions and weights.

##### Materials of construction.

##### Mounting details.

##### **Performance Data:** AMCA approved fan curves and noise data for each fan specified.

##### Vibration eliminator data.

##### Shaft seal detail.

##### Motor performance and details.

### **Operation and Maintenance Data:** Submit complete manuals including:

#### Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.

#### Furnish operation and maintenance manuals in conformance with the requirements of Division 1.

### **Test Reports:** Submit the following test certifications for approval.

#### Provide manufacturer's certification that exhaust fans are licensed to bear Air Movement and Control Association (AMCA), Certified Rating Seal for sound and air performance Installation, Operation, and Maintenance Manual (IOM): Provide manufacturer's installation, operations, and maintenance manual, including instructions on installation, operations, maintenance, pulley adjustment, receiving, handling, storage, safety information and cleaning. A troubleshooting guide, parts list, warranty and electrical wiring diagrams

## PRODUCT DELIVERY, STORAGE AND HANDLING

### **Delivery:** Deliver materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly indicating manufacturer, material, products included, and location of installation

### **Storage:** Store materials in a dry area indoor, protected from damage, and in accordance with manufacturer’s instructions. For long term storage follow manufacturer's Installation, Operations, and Maintenance Manual

### **Handling:** Handle and lift fans in accordance with the manufacturer’s instructions. Protect materials and finishes during handling and installation to prevent damage. Follow all safety warnings posted by the manufacturer

## JOB CONDITIONS

### Wall openings and penetrations shall be covered to prevent rain from entering building prior to installation of units.

## warranty

### **Manufacturer's Warranty:** Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents

#### The warranty of this equipment is to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove defective during the warranty period will be replaced at the Manufacturers option when returned to Manufacturer, transportation prepaid.

#### Motor Warranty is warranted by the motor manufacturer for a period of one year. Should motors furnished by us prove defective during this period, they should be returned to the nearest authorized motor service station.

# PRODUCTS

## MATERIALS AND CONSTRUCTION

### **General:** The fans with motors, drives, guards, vibration isolation and coatings, suitable for installations exposed to the weather.

### **Housing:** The fan shall be aluminum construction. Metal components to be coated with corrosion proof paint in accordance with Section 09800, Painting and Coating.

## DESIGN CONDITIONS

### **Manufacturer:** Provide fans as manufactured by one of the following:

#### Greenheck

#### Or Equal

### Generator Room

1. Wall mounted exhaust fan shall be Greenheck or equal, Model SBE-1H2O-4 galvanized exhaust fan. Side wall belt drive exhaust fan with WD-320 vertical mount exhaust damper. The fan shall be rated at *[650]* cfm with static pressure of *[0.25]* inch. Motor shall be *[¼]* Hp, *[115]* V, *[60]* Hz, single phase*, [1725]* rpm, TEFC motor. Fan shall be mounted on the wall of the generator room as shown on the contract plans.

### Odor Control Room

#### Wall mounted exhaust fan shall be Greenheck or equal, Model SBE-1H2O-4 galvanized exhaust fan. Side wall belt drive exhaust fan with WD-320 vertical mount exhaust damper. The fan shall be rated at *[450]* cfm with static pressure of *[0.25]* inch. Motor shall be *[¼]* Hp, *[115]* V*, [60]* Hz, single phase, *[1725]* rpm, TEFC motor. Fan shall be mounted on the wall of the odor control room as shown on the contract plans.

## FANS-GENERAL

### Fans shall be tested and rated in accordance with AMCA 301-90 Test Code, and be guaranteed by manufacturer to deliver rated performance.

### **Housing:** Fan housings shall be designed so that air leakage through joints and seals is negated.

### The distance between the fan propeller and an exhaust damper shall be 12-inches.

### Motors

#### Motors shall be TEFC corrosive duty, solid shaft, ball bearing, premium energy efficient type.

#### Motors shall have thermal overload protection operating on 115 volts, single phase power supply.

#### **Disconnect Switch:** Each fan shall be provided with a local disconnect switch located with 10 feet of the fan.

### **Capacity:** As shown above.

### **Drive:**

#### Belt drive shall be non-static, oil and heat resistant.

# EXECUTION

## INSTALLATION

### Install equipment as described in the Contract Documents, as shown on the approved Shop Drawings, and as directed by the manufacturer’s representative.

## TESTING, ADJUSTING, AND BALANCING

### **Preliminary Tests:** The exhaust system components and equipment shall be given an operational test for a period of not less than 2 hours.

### **Testing, adjusting and balancing work:** Perform all work in accordance with applicable and recommended procedures of SMACNA.

## MANUFACTURER’S SERVICES

### A factory-trained representative shall be provided for installation supervision and start-up services. The serviceman shall make one visit to the site. The visit shall be for checking the completed installation and start-up of the system.

### All cost, including travel, lodging, meals and incidentals shall be considered as included in the Contractor’s lump sum bid price.

**END OF SECTION**