

**SECTION 110140**  
**BUILDING MAINTENANCE EQUIPMENT**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This section is intended to cover the performance requirements of the Building Maintenance Equipment (BME). All work and material necessary to accomplish this complete installation shall be included, including shipping, hoisting, installation, and customs, except that specifically excluded.
- B. Any and all of the BME which must be installed in related work executed by others shall be identified and listed.
- C. Notwithstanding any reference in this performance specification to any article, device, product, material, fixture, form or type of construction by name, make or catalogue number, such references shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition and the BME Contractor, in such cases, may at their option use any article, device, product, material, fixture, form or type of construction which, in the judgment of the Owner and Architect, expressed in writing, is equal to that specified.

**1.2 QUALITY ASSURANCE**

- A. An approved equivalent contractor (manufacturer) shall be firm whose main concern and business is solely involved in the engineering design, manufacture and installation of power operated window washing units, and who has been actively engaged in this business for no less than ten (10) years.
- B. BME Systems Manufacturer: Provide BME Systems designed, engineered, manufactured and installed by:
  - 1. Pro-Bel Group or other Architect approved building maintenance equipment manufacturers.

**1.3 CODES AND ORDINANCES, REQUIREMENTS OF REGULATORY AGENCIES**

- A. All work and equipment, its performance, use, inspection testing and maintenance shall comply with the most stringent requirements of all applicable codes and jurisdictions, included, but not limited to the most recent amendment of the following:
  - 1. Occupational Safety and Health Act (OSHA): OSHA Part 1910, paragraph 1910.66 Power Platforms for Exterior Building Maintenance.□
  - 2. Aluminum Association (AA): AA Specifications for Aluminum Structures.

3. American Institute of Steel Construction (AISC).
  4. AISC "Load and Resistance Factor Design Specification for Structural Steel Buildings," including the "Commentary" thereto.
  5. AISC "Code of Standard Practice for Steel Buildings and Bridges," including the "Commentary" thereto.
  6. American Welding Society (AWS): AWS D1.1 "Structural Welding Code, Steel," and AWS D1.2 "Structural Welding Code, Aluminum."
  7. Comply with the National Electric Code, Electrical components shall be UL listed.
- B. The BME Contractor shall obtain any and all necessary approvals or permits as required by governing regulatory agencies.
- C. The work of this Section shall include obtaining and paying for any necessary inspection permits as required by the local inspection authority and making such tests as are called for by the regulations of such authorities.
- D. Required tests shall be made in the presence of the authorized representative of such local authorities. A certificate of adequacy of the whole installation and of the testing performed shall be issued by the BME Contractor.

#### **1.4 COORDINATION OF CONDITIONS**

- A. The BME Contractor shall coordinate related work and surfaces to ensure successful completion of work specified in this section.
- B. Submit the following to the Architect for review:
1. Complete layout and configuration of suspended maintenance system, including components and accessories.
  2. Indicate design and fabrication details, hardware and installation details.
  3. Include installation and rigging instructions and:
    - a. Required restrictive working usage and general safety notes.
    - b. Non-restrictive working usage and general safety notes.
  4. Load Requirements: All loads imposed on the building structure and building exterior wall shall be shown. These loads shall be submitted to the Architect for review.
  5. Ensure shop drawings are review by an engineer licensed in the State of Iowa and submit calculations and test reports to the Architect.
- C. Parts Catalogue: Listing replacement parts, including identifying numbers and ordering instructions.

D. Operating and Maintenance Instruction Manuals:

1. Obtain and hand over three complete sets of operating and maintenance instructions, after acceptance of instructions by the Owner's Representative and Architect, for items incorporated in the works. The English language instruction manuals shall be bound, neatly labeled and indexed.

E. Instruction Plates: Drawings and illustration metallic plates which are to be printed or etched, in English, of a non-corrosive material, to be supplied and installed, shall be submitted to the Architect for review. The platform shall also be provided with a name plate which includes the following ANSI/OSHA data:

1. Name of Manufacturer.
2. Name or Number of Model.
3. Serial Number.
4. Maximum load which may be so suspended in pounds.
5. Year of Manufacture.

**1.5 WARRANTY**

- A. Warranty: Provide a one (1) year warranty against defects in material, workmanship, or installation for all components, providing for repair or replacement for a minimum period of one year, including material and labor.

**1.6 DESIGN REQUIREMENTS**

- A. Wind Pressure: The installations shall be designed to withstand 25 miles per hour wind velocities while being used for normal operations and shall be fully operational at wind velocities up to 50 miles per hour. They also shall be designed to withstand 100 miles per hour wind velocity when in their secured stored positions.
- B. The exposed areas subjected to wind pressure shall be the total areas of all portions of the exposed parts with no shielding effect of one element by another where the distance between elements is four times or more than the smaller projected area of the windward element.
- C. All structure assemblies and components shall be designed with a safety factor of 4 to 1 against failure as a minimum and to be so certified.
- D. Design system fall arrest safety anchors and equipment supports to AISC S342L (including supplement No.1 and ANSI/IWCA I-14.1, and as follows:
1. Comply with OSHA 1910, Subpart F, Appendix C.
  2. Fall Arrest Safety Anchors:

- a. Fall arresting force safety factor of 2 to 1 without permanent deformation: 1800 lbs minimum.
- 3. Fall arrest force against fracture or detachment: 5,000 lbs minimum.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Anchors by Pro-Bel Group or comparable product approved by the Architect.

### **2.2 GENERAL REQUIREMENTS**

- A. All components shall be constructed of heat treated aluminum alloy, stainless steel, or hot-dipped galvanized structural steel. Dissimilar metals, when used, shall be protected against electrolytic actions.
- B. All connectors shall be stainless steel unless otherwise noted. All welds shall be made by certified welders and shall be examined by non-destructive testing.
- C. Components in contact with the façade and platform casters shall be on a non-marking and scuff resistant material.
- D. The exterior finish of all painted assemblies shall be of a color as directed by the Owner's Representative. All aluminum assemblies shall be of natural color. All carbon steel components shall be hot-dipped galvanized.
- E. The material sizes and thickness shown on the drawings are for conceptual design purposes. The manufacturer shall provide the final design and detailing of the equipment.

### **2.3 ANCHORS**

- A. Safety Anchor Eye Plate: Mild steel, Type 300W with 44 Ksi minimum yield strength, hot-dip galvanized to ASTM A123/A123M.
  - 1. Plate: Minimum 0.875 inches diameter material with 2 inches eye opening.
- B. Hollow Steel Section (HSS) Piers: Mild steel, Type 300W with 50 Ksi minimum yield strength, hot dipped galvanized to ASTM A123/A123M.
  - 1. Wall thickness to suit application.
- C. Plate and other sections: Mild steel, Type 300W with 44 Ksi minimum yield strength, hot dipped galvanized to ASTM A123/A123M.
  - 1. Wall thickness to suit application.
- D. Seamless Spun Aluminum Flashing (for Roof Anchors): To AA ADM-1 Type 6061-T6 alloy and to ASTM B221.

1. Deck flange flashing: In accordance with Division 07 Section "Sheet Metal Flashing and Trim".

E. Miscellaneous Bolts, Nuts and Washers: Mild steel, Type 300W with 44 Ksi minimum yield strength, hot-dip galvanized to ASTM A123/A123M.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

A. Verify that substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of anchors.

#### **3.2 INSTALLATION**

A. Furnish, hoist and install all BME and components in strict accordance with the approved shop drawings and at such time as approved when construction and finish of adjoining work will permit and in sufficient time to avoid delays to the construction process. All BME shall be secured in place as shown on drawings and/or as herein specified by rigid approved methods.

#### **3.3 FINISHES**

A. Galvanized surface damage shall be wire brushed and touched up with cold galvanized.

#### **3.4 FIELD QUALITY CONTROL**

A. Repair or replace any components and correct all deficiencies observed during testing or demonstrations, and retest as required by the Owner to assure compliance with the Contract Documents.

#### **3.5 ADJUSTMENT AND FINAL CLEANING**

A. Complete "Initial Inspection - Certification for Use" form included in Equipment Manual and Inspection Log Book provided by manufacturer.

B. Upon completion, remove surplus and excess materials, rubbish, tools and equipment.

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