

DIVISION 11
EQUIPMENT

SECTION 11 24 23

EXTERIOR BUILDING MAINTENANCE SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplemental Conditions, as well as other Division I Specification Sections, which apply to the work of this Section.

1.02 DESCRIPTION OF WORK

- A. General: Provide all labor and materials to install a complete exterior building maintenance system as required to access all faces of the building including the windows, per contract documents.
- B. Description of System:
 - 1. Provide components of an EBM system conforming to all relevant provisions of Cal-OSHA General Industrial Safety Orders, ANSI A120, ANSI A39, Fed-OSHA, and ANSI IWCA I-14 Window Cleaning Standard.
 - 2. The System shall include:
 - a. Fixed Davit Bases
 - b. Portable High Profile Portable Davit Arms
 - c. Permanent Long Reach High Profile Davit Arms
 - d. Permanent Long Reach High Profile Davit Arms with Powered Trolley
 - e. Continuous Monorail Track with Manual Trolley
 - f. Maintenance and Operation Instructions for all Equipment
- C. Description of Operation:
 - 1. The following types of suspension are to be utilized:
 - a. Powered platform/basket in ground-rigged configuration
 - b. Powered platform/basket used in roof-rigged configuration
 - 2. The following methods of suspension are to be utilized.
 - a. High Profile Davit System for Roof Rigging
 - b. Monorail Track for Roof Rigging
 - 3. Please note attached drawing for equipment locations and special conditions.
- D. Related Work by Others:
 - 1. 220V-single phase electrical power outlet locations at each roof level where powered equipment is utilized (See Plan for Locations).
 - 2. Water hose bib locations (1ea.) on the Main Roof Level.
 - 3. Structural modifications to support new EBM equipment.

1.03 QUALITY ASSURANCE

A. Installer Qualifications:

1. All work, with the exception of the installation of any structural steel items permanently fastened to the building, shall be by the equipment supplier or their authorized representative.

B. Design Standards: The system and components shall comply with the following;

1. ANSI A120.1 1993 Safety Requirements for Powered Platforms for Exterior Building Maintenance.
2. Applicable provisions of NEMA and the National Electric Safety Code.
3. All structural components shall be designed with a safety factor of at least 4:1 against yield. Concrete inserts shall be designed with a safety factor of 5:1.
4. California Department of Labor, General Industrial Safety Order, Title 8.
5. ANSI A39.1 1993 Safety Requirements for Window Cleaning.
6. Federal OSHA part 1910, paragraph 1910.66.
7. ANSI A10.14 Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use.
8. ANSI IWCA I-14 Window Cleaning Safety Standard

1.04 SUBMITTALS

- A. General: Submit the following in accordance with the requirements of the conditions of the contract and the Division I Specification Section, as well as any relevant orders of the California and Federal OSHA Regulatory Code.
- B. Product Data: The contractor shall submit the following items within 30 days of notification to proceed on this project:
 1. Manufacturer's specifications, calculations, and other data necessary to show compliance with these specifications.
 2. Engineering drawings, which show clear details of the fabrication and installation of the manufacturer's equipment, and its connection to the building.
 3. Manufacturer's installation method and procedures.
- C. The design drawings and calculations shall be done by or under the direction of a Professional Engineer licensed and registered in the State of California with thorough experience of the functionality of typical façade maintenance systems. All submittals shall bear the signature and stamp of the Professional Engineer.
- D. The contractor shall provide the building owner with written assurance that all of the proposed safety devices and equipment meet or exceed all relevant provisions of the California General Industrial Safety Order (GISO).
- E. Contractor shall provide adequate proof of insurance coverage equal to two million dollars, which must be in effect for the product's life of the building

1.05 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. Delivery: Schedule delivery to minimize on-site storage.
- B. Storage: The GC will assign the primary on-site storage, which shall protect the equipment from potential damage and adverse weather conditions.

1.06 SITE CONDITIONS

- A. Ensure that the supporting structure, attachments, and electrical connections are in satisfactory condition and compatible with the system being supplied. All field measurements shall be performed prior to preparation of shop drawings to ensure proper fit of all components.

1.07 WARRANTY & CERTIFICATE OF COMPLIANCE

- A. The system shall be warranted for material and workmanship for a period of two years from the date of acceptance. The warrantee shall cover all defective conditions not due to ordinary wear and tear, or improper use.
- B. The system supplier will certify in writing that the system meets all of the provisions of the specification documents.

PART 2 - PRODUCTS

2.01 SUGGESTED MANUFACTURERS

- A. Available Manufacturers: The following list is not intended to prevent other manufacturers from submitting bids. Alternate bidders must be experienced in the completion of exterior building maintenance systems, and must show documentation of successful prior installations. Similar systems submitted by manufacturers will be considered for substitution subject to compliance with the requirements of this section and section "Substitution".
 - 1. Sky Rider, Inc.
 - 2. Skymaster, Inc.
 - 3. Spider Staging Corp.
 - 4. Pro-Bel Enterprises
 - 5. Tractel Ltd. Swingstage Division
- B. Each manufacturer shall submit pricing for the BMU option shown on the design drawings. Manufacturers shall assume that the concrete runway is to be provided by the General Contractor.

2.02 MATERIALS

- A. All materials shall be resistant to corrosion due to atmospheric exposure. All steel components shall be hot dip galvanized or have an equivalent protective surface to prevent corrosion. Aluminum parts shall be of an appropriate alloy that will not corrode under normal outdoor conditions. All stainless steel will conform to A6xx, type 303, 304, 306, or 316.
- B. Fasteners shall be stainless steel of adequate size to support the design load with the appropriate safety factor. Do not use galvanized fasteners.

2.03 DESIGN

- A. General:
 - 1. Provide complete engineering design of all the unique components of the system as well as the system as a whole.
 - 2. Engineering drawings shall be produced in a legible format that clearly show in sufficient detail the components and assembly of the proposed system.
 - 3. Provide literature, which includes specifications for any components that are standard components not designed specifically for this project.
 - 4. All drawings and literature with specifications will bear the stamp and signature of a California Licensed Professional Engineer with thorough experience of the functionality of typical façade maintenance systems.

2.04 FIXED DAVIT BASES

- A. The standard fixed davit sockets shall be permanently attached to the structure, as indicated on the architectural and structural plans.
- B. There shall be a method devised in conjunction with the davit receiver design, to mechanically attach the davit assembly to the fixed socket assembly.
- C. The fixed socket shall be equipped with a support to raise the davit into its working position.

2.05 HIGH PROFILE DAVITS

- A. The davit shall be for roof-rigged use, therefore must be tall enough to clear the platform over the parapet wall in all locations.
- B. The davit shall be constructed of aluminum and consist of two separate pieces (vertical mast and horizontal thrust beam). The davit shall be made permanent if the total assembled weight exceeds 300 pounds.
- C. The davit shall fold down for storage with the removal of pins.

- D. Manual trolleys shall be capable of supporting 2 suspension lines and include means to mechanically lock to the davit arm while in use.
- E. The davit shall be designed to rotate under load with no more than 50 pounds of applied force.
- F. The davit shall have a lower turning handle to assist in the rotation of the davit.
- G. Davit rotation locks must be capable of engaging while the davit is in its raised position.
- H. The davit load rating and manufacturer name shall be clearly marked on the davit.
- I. The system shall include a method to mechanically raise and lower the davits into position.
- J. The system shall include wheels or other method to move the davits between roof drop locations.

2.06 PERMANENT LONG REACH HIGH PROFILE DAVIT ARMS

- A. The davit shall be for roof-rigged use, therefore must be tall enough to clear the platform over the parapet wall in all locations.
- B. The davit shall be constructed of aluminum and consist of two separate pieces (vertical mast and horizontal thrust beam). The davit shall be made permanent if the total assembled weight exceeds 300 pounds.
- C. Powered trolleys shall be capable of supporting 2 suspension lines and include means to mechanically lock to the davit arm while in use.
- D. Provisions shall be made for the power cable to slide along the davit arm while the trolley is driven back and forth.
- E. Provisions for emergency retrieval of the davit trolley shall be made in the event of power loss.
- F. The davit shall be designed to rotate under load with no more than 50 pounds of applied force.
- G. The davit shall have a lower turning handle to assist in the rotation of the davit.
- H. Davit rotation locks must be capable of engaging while the davit is in its raised position.
- I. The davit load rating and manufacturer name shall be clearly marked on the davit.
- J. The system shall include a method to mechanically raise and lower the davits into position.

2.07 CONTINUOUS MONORAIL TRACK

- A. Maximum distance between support points shall not exceed 10 feet.
- B. Track bends shall be smooth and allow for the trolleys to pass through without bindings. If there are no track bends, turntables shall be provided at corner locations to allow workers to access the monorail continuously.
- C. Track splices shall be aligned adjacent to the anchor points and shall not affect the trolleys.
- D. End stops shall be provided to block the trolley from exiting the monorail track. End stops shall be removable to allow annual inspection of the trolleys.
- E. The anchor points shall be permanently affixed to the building as outlined on the drawings. Alternate anchor layout and/or type shall be reviewed and approved by the Consultant.
- F. Separate attachment shall be provided for transfer of work cage from davit system.
- G. All components shall be constructed of stainless steel or aluminum.
- H. Load rating shall be clearly marked on the monorail.
- I. The trolley shall be equipped with wheels to allow ease of lateral movement. The wheel bearings shall be sealed to prevent corrosion from the elements.
- J. Trolleys shall be equipped with locking device while the device is stationary.

PART 3 - EXECUTION

3.01 INSPECTION

- A. The manufacturer shall verify all blue print and field dimensions, as well as inspect job site conditions, which affect the installation of the façade maintenance system for unsuitable or incompatible conditions. The manufacturer shall bring any such unsatisfactory conditions to the attention of the owner's representative. Do not proceed with the work of this section until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install all items in accordance with approved shop drawings and manufacturer's specifications and instructions to provide sufficient scaffold means to allow all windows to be accessed in a safe and efficient manner.

- B. Install all anchors and fasteners in accordance with manufacturer's recommendations to obtain the allowable working loads published in the product literature, and in accordance to specification including spacing between anchors.
- C. Promptly resolve all matters and conditions described on the owners punch list.

3.03 DEMONSTRATION

- A. Demonstrate all equipment with relation to description of operation and the Operating Procedures Outline Sheet (OPOS) as required by CAL-OSHA to the satisfaction of the owner's representative.
- B. Provide the necessary training along with the operating instructions and OPOS to the maintenance personnel, to ensure proper use of the system.
- C. Provide the necessary training and instruction for the ongoing inspection and service of the system in accordance with Title 8 of the California Department of Labor General Industry Safety Order.

END OF SECTION

SECTION 11 52 13.26
ELECTRIC PROJECTION SCREENS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Projection Screen, electric operation.

1.2 RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry.
- B. Section 09 22 16 – Non-Structural Metal Framing.
- C. Section 09 29 00 – Gypsum Board.
- D. Division 26 – Electrical.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit shop drawings showing mounting details.
- C. Submit product data for screen and electric controls.
- D. Submit operation and maintenance instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Da-Lite, Product: Boardroom Electrol.
- B. Draper.
- C. Or equal.

2.2 EQUIPMENT

- A. Concealed mounting type projection screen electrically operated 120 volt (60 Hz.) 1.0 amp screen, 12'H x 12'W, shall have specially designed motor mounted inside the roller with a patented noise silencer to be three wire quick reversal type, oiled for life, with automatic thermal overload cutout, integral gears, capacitor and an electric brake to prevent coasting. Screen shall have preset but adjustable limit switches to automatically stop picture surface in the "up" and "down" positions. The roller shall be of rigid metal, 3" in diameter, mounted on two vibration and noise absorbing supports. Screen fabric shall be flame retardant and mildew resistant fiberglass with matte white surface and black masking borders standard. Bottom of fabric shall be formed into a pocket holding a 3/8" diameter metal rod. Case shall be 22 gauge embossed steel with baked enamel paint finish, hexagonal in shape, with flat back to prevent scraping fabric. Provide case end caps to allow no exposed roller pins. Powder coated caps shall form sturdy brackets for ceiling installation screen shall be complete with three position control switch in box with cover plate. Screen shall be listed by Underwriters' Laboratories and CSA.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that all trades whose work relates to screen installation is complete and placement of all necessary blocking and backing for support of screen.

3.2 INSTALLATION

- A. Install screens in strict accordance with manufacturer's instructions and as detailed on the drawings. Screens shall be securely anchored to the building, installed level, and shall operate smoothly without bind.
- B. Coordinate installation of screen with associated electrical work.

3.3 ADJUSTING

- A. Adjust work for smooth operation. Leave work in complete operating condition.

END OF SECTION