SECTION 11200

OVERHEAD CRANE SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions and Division-1 Specification sections, apply to work of this section.

1.01 WORK INCLUDED

A. Furnish all labor and material for installation of one (1) manual crane bridge with manual push type chain hoists, along with all required appurtenances, in location shown on drawings, and as herein specified, and as necessary for the proper performance of this work.

B. Sequencing and coordination of this installation with other work shall be the performed by the General Contractor.

1.02 SYSTEM DESCRIPTION

A. Road Department Garage: (1) crane bridge system w/ (1) hoist Req'd.

1. Furnish and install one (1), underhung, single girder crane bridge systems, two (2) ton capacity,with manual operation push type crane bridge, running the full length of the garage bays, at heights and spans as indicated on the contract drawings.
Cranes to be designed and built per the standards of the Crane Manufacturer's Association of America (CMAA).

2. Furnish and install one (1), manual operation chain hoist, two (2) ton capacity, with 16 feet of lift, where indicated on contract drawings.

3. Runway beams to be designed, furnished by Pre-engineered Metal Building Manufacturer, and installed by the Pre-engineered Metal Building Erector.

1.03 RELATED WORK

A. Runway Beams - Section 13120 Pre-Engineered Metal Buildings.

1.03 Submittals

A. General

1. In accordance with the procedures and requirements set forth in Section 1090, Project Submittal Requirements, the Contractor shall obtain from the equipment manufacturer and submit the following:
    a. Product Data
    b. Operation and Maintenance Manuals
    c. Manufacturer's Instructions
    d. List of Manufacturers and Model Numbers
    e. Spare Parts List
    f. Special Tools List
    g. Reports of Certified Shop Tests
    h. Performance Warranty
    i. List of requested exceptions to the Contract Drawings
2. Each submittal shall be identified by the applicable Equipment Identification Number and Section, as detailed in Section 01090, Project Submittal Requirements.

B. Shop Drawings

1. Each submittal shall be complete in all respects, incorporating all information and data listed herein and all additional information required for evaluation of the proposed equipment's compliance with the Contract Documents.
2. Partial, incomplete or illegible submissions will be returned to the Contractor without review for resubmission.
3. Shop drawings shall include but not be limited to:
    a. Equipment specifications and data sheets identifying all materials used and methods of fabrication.
    b. Complete assembly, layout and installation drawings with clearly marked dimensions.
    c. Installation and start-up instructions.
    d. Weights of all component parts, assembled weight of units and approximate total shipping weight.
    e. Example equipment nameplate data sheet.
    f. List of recommended spare parts.

C. Operations and Maintenance Manuals

1. The Contractor shall submit operation and maintenance manuals in accordance with the procedures and requirements set forth in Section 1090, Operating and Maintenance Manual.

D. Tools, Supplies and Spare Parts

1. Furnish all special tools necessary to disassemble, service, repair and adjust the equipment.
2. Spare parts shall be furnished as recommended by the equipment manufacturers.
3. See Section 1090, Spare Parts, Maintenance Items and Tools.
4. Parts shall be completely identified with a numerical system to facilitate parts inventory control and stocking. A separate number shall identify each part.
5. Spare parts shall be delivered at the same time as the equipment to which they pertain.

The Contractor shall properly store and safeguard such spare parts until completion of the work, at which time the spare parts, supplies and special tools shall be delivered to the Owner as directed by the Engineer. See Section 1090, Spare Parts, Maintenance Items and Tools.

1.04 Quality Assurance

A. All equipment and appurtenances furnished under this section shall be equal to the named products and shall conform to the applicable requirements of the following:

1. CMAA No. 74 - Crane Manufacturers Association of America

B. All structural steel members of the handling system shall be designed in accordance with the specifications of the American Institute of Steel Construction, current edition and any welded construction shall be in accordance with the standard of the American Welding Society.

1.05 Services of Manufacturer's Representative

A. The Contractor shall furnish qualified technical representatives from the manufacturer(s) supplying equipment under this specification. Manufacturer(s) services shall include:

1. Furnishing the services of a technical representative during the installation phase of the equipment. The factory representative shall have full knowledge and experience in the installation of the type of equipment being installed. If more time is required because of Contractor's activities or problems with equipment, additional time is at Contractor's expense.

2. Furnishing the services of a technical representative who has complete knowledge of the operational and maintenance requirements of the system. At a time determined by the Owner, the factory representative shall instruct the Owner's personnel in the proper operation of the equipment. If more time is required because of Contractor's activities or problems with equipment, additional time is at Contractor's expense.

1.06 Lubricants

A. The manufacturer shall submit a list with a minimum of four manufacturers standard lubricants, which may be used interchangeably for each type of lubricant required in Operating and Maintenance Manual.

1.07 Transportation, Delivery, Handling, Storage and Protection

A. Transportation, delivery, handling, storage and protection shall be in accordance with the requirements of Section 1120, Material and Equipment.

1.08 Recommended Manufacturers

A. Sissco Material Handling, Hillsborough, NJ 800-392-0146

B. Lift Tech International, Muskegon, MI 800-742-9270

C. Or approved equal

Part 2 - Products

2.01 Design Stresses

A. Materials shall be properly selected for the stresses to which they will be subjected. Load

carrying parts, except girders shall be designed so that the calculated static stress in the material, based on rated load, shall not exceed 20 percent of the published average ultimate strength of the material. This limitation of stress provides a margin of strength to allow for variations in the properties of materials and under no condition should imply authorization or protection for user to load the crane beyond capacity. Girders shall be designed in accordance with CMAA Specifications.

2.02 Equipment and Materials

1. Manually Operated Push Type Crane Bridge System (One (1) required.) Road Department

A. Furnish and install: One (1), complete single girder, under running two (2) ton capacity manually operated, hand geared push type crane bridge structure comprised of the girder, end trucks, cross shaft and supports. as described in section 1.02 above, together with beams, supports, hangers and accessories necessary for a complete functional installation.

Runway beams to be designed and provided by Pre-engineered Metal Building Manufacturer, and installed by the Pre-engineered Metal Building Erector.

B. Crane Bridge – (Manual Push Type)

1. General

a. Design calculations for bridge girder stresses shall include all live and dead loads and live and dead load impacts and shall follow the method of calculation as prescribed by the Crane Manufacturer's Association of America (CMAA).

b. A safety factor of 5:1 shall be applied to the design of all load-bearing parts of the crane bridge, hoist and trolley.

c. The crane will be assembled and tested at the point of manufacture prior to shipment and disassembled only to the extent required to facilitate shipment and installation.

d. The rated capacity of the crane shall be the load that the crane is designed to carry as specified by the manufacturer and shown in tons on large capacity plates located on each side of the crane bridge. The crane bridge will be designed and built to handle this rated load plus the weight of the hoist, trolley and all handling accessories such as buckets, magnets, grabs, etc., shall be included as part of the load to be handled.

e. Materials shall be specified herein and shall be free from all defects and imperfections that may affect the finished product. All parts shall be new and unused.

Structural steel shall be of good commercial quality conforming to ASTM specification A36.

End trucks shall be fabricated from structural steel shapes and plates welded into an integral unit and in-line bored to receive the wheel axles.

Bearings shall be anti-friction ball or roller type, oil splash lubricated or equipped with easily lubrication fittings.

f. The bridge shall be a single girder, under-running, structure comprised of the

girder, end trucks. The bridge shall be designed and fabricated as a complete integral structure with only such parts removable as required to facilitate the erection and maintenance of equipment.

g. The bridge girder shall be constructed of standard structural shapes or boxed sections, reinforced and welded as required. Connections between the girder and end trucks can be either welded or bolted after installation and squaring.

h. The end trucks will have a minimum wheelbase of 1/8 of the crane's span. Each end truck will be carried on four (4) wheels running on anti-friction bearings. Wheels will be of machined steel, hardened to 300 –320 BHN, single flanged compound tread wheels capable of running on either wide flange or S-beam runway beams. The end trucks will be provided with rubber bumpers at each end to engage end stops on the crane runway.

3. Crane Runway Beams

a. Runway beams to be designed and provided by Pre-engineered Metal Building Manufacturer, and installed by the Pre-engineered Metal Building Erector.

C. Manual Hand Chain Hoists (1) required

1. Trolley and Hoist Specifications

a. The manually operated hand chain hoist and trolley shall be designed to meet the following operating requirements:

(1) Hoist capacity, two (2) tons

(2) Lift, sixteen (16) feet

b. Headroom required shall not exceed 16" inches from the bottom of the bridge beam to the throat of the load hook.

c. Chain hoist shall meet the requirements of ASME HST-2 Performance Standards OF Hand Chain Manually Operated Chain Hoists**". Manufacturer shall be Budgit Hand Geared Model No. 8324 (2) ton, or approved equal,** complete with optional Chain Container.

d. 5 pocket load chain wheel.

e. Trolleys are to have heavy section rolled steel side frames. The wheels are steel with heat-treated universal tread. Spacer washers shall be provided for trolley adjustments to various beam sizes.

2.04 Acceptable Manufacturer

A. The underhung crane units shall be manufactured by a member in good standing of CMAA

(312-331-4000) verification will be made.

Part 3 - Execution

3.01 **Contractor's Verification**

A. The Contractor shall verify all field dimensions for the underhung crane to be installed and correct conditions detrimental to the proper and timely completion of work. The Contractor shall not proceed with installation of the crane until unsatisfactory conditions have been corrected.

B. Contractor to coordinate with Pre-engineered Metal Building Manufacturer to ensure compatibility with runway beam being installed.

C. Contractor to provide all required end trucks and other miscellaneous steel items to provide a complete operational system.

3.02 Painting

A. Except for touch up, all painting shall be done in the shop. The underhung cranes shall be primed and finish coated in accordance manufacturer's standard paint.

3.03 Installation

A. The Contractor shall arrange to have the manufacturer or supplier of the equipment furnished under this section furnish the services of competent factory-trained and properly certified personnel to supervise the installation and initial operation. Installation and erection of all assemblies and components shall be in accordance with the details indicated on the approved shop drawings and the printed instructions of the manufacturer.

3.04 Use During Construction

A.Use of system is not permitted during construction.

3.05 Testing

A.Field Testing: After approved equipment is installed, it shall be given a running test where it shall demonstrate the ability to lift and continuously transport the rated capacity two (2) tons, throughout the entire length of the building.

3.06 Warranties

A.Warranties shall be provided as per the Warranties and Maintenance articles of the Contract.

3.07 Cleaning

A. Prior to acceptance of the work of this Section, the Contractor will thoroughly clean all installed materials, equipment, and related areas.

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