SECTION 14900

MONORAIL AND HOIST SYSTEMS

1. GENERAL
   1. SCOPE OF WORK
      1. Provide all labor, materials, equipment, and incidentals needed for the design, fabrication, installation, testing, final painting, and satisfactory operation of monorail systems, monorail trolley, and hoist, as outlined in the Drawings and specified here.
      2. The systems should be fully equipped with track, trolleys, hoists, hangers, clips, stops, fittings, bracing, support steel (excluding the main structural system), electrification, and all other necessary components for a complete installation. A 120 Volt, single phase electric power source will be provided and installed beside each system using an electrically operated hoist or trolley, as depicted in Division 16 and the Drawings. All remaining conduit and wire needed for a complete system should also be provided and installed under this Section and in accordance with Division 16.
      3. The Engineer has supplied the monorail track design, which can be found in the Structural Drawings. The Contractor should coordinate with the monorail equipment manufacturer to determine design aspects of the trolley and hoist, should they differ from the provided design.
      4. The Contractor must confirm the monorail, trolley, and hoist locations to ensure alignment with the proposed pumps and motor centerline. Coordinate all related shop drawings that might affect the location of the progressing cavity pumps, including the piping shop drawings, pump and motor shop drawings, etc.
   2. MEASUREMENT AND PAYMENT
      1. Separate payment for monorail and hoist systems will not be provided. Include this work's cost in the lump sum base bid.
   3. RELATED WORK
      1. Section 05500 includes miscellaneous metal work.
      2. Section 09901 covers field painting.
      3. Pre-Engineered Metal Building is incorporated in Section 13341.
      4. Except as otherwise specified here, Division 16 includes all electrical work.
   4. SUBMITTALS
      1. Submit to the Engineer, in line with Section 01300, shop drawings detailing erection methods.
2. Supply Certified AutoCAD dimensional fabrication drawings.
3. Present manufacturer’s cut sheets and catalogs for the trolley, hoist, rail, and all provided items.
4. Provide the total weight of the equipment as well as the weights of individual components.
5. You should also include wiring schematics.
   * 1. You must submit copies of an OSHA compliance certificate, Part 1910, Subpart N, Section 1910.179 - Overhead and Gantry Cranes, at the time of submitting the shop drawings.
6. Design Responsibility
   * + - 1. Complete the Certificate of Design form at the end of this Section and submit to the Engineer before crane manufacturing.
         2. Submit the following with the Certificate of Design:
7. Certification, signed by a Texas-registered professional engineer, confirming that all members, elements, and connections are designed to withstand the required loads and forces.
8. Specific codes and standards that the structural design complies with.
   * 1. Operating and Maintenance Data
9. Provide operating and maintenance instructions to the Engineer as outlined in Section 01730.
10. Supply a factory representative with extensive knowledge of appropriate operation and maintenance for a day to train representatives of the Owner and Engineer on proper operation and maintenance. This training may be conducted along with the installation inspection and test run as specified under Paragraph 3.02 below.
    1. REFERENCE STANDARDS
       1. American Bearing Manufacturers Association (ABMA)
       2. American Society of Mechanical Engineers (ASME)
11. ASME B30.9-2018 – Slings
12. ASME B30.11-10, Monorails and Underhung Cranes -Safety Standard for Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings.
13. ASME B30.17-2015 – Cranes and Monorails (With Underhung Trolley or Bridge)
14. ASME B30.26-2015 – Rigging Hardware
15. ASME B30.30-2019 – Ropes
    * 1. American Welding Society (AWS)
      2. Occupational Safety and Health Administration (OSHA)
      3. Monorail Manufacturers Association (MMA)
      4. American Institute of Steel Construction (AISC)
      5. Hoist Manufacturers Institute (HMI)
      6. The revision of the referenced standards in effect at the time of bid opening should be used.
    1. QUALITY ASSURANCE
       1. All monorail track and carrier equipment should be the products of a single, experienced, reputable, and qualified manufacturer who is a member of the MMA. All supplies should be made in the USA.
       2. The hoist manufacturer should provide carrier equipment for hoists on I beam track.
       3. All hoisting equipment should be the product of a single, experienced, reputable, and qualified manufacturer who is a member of the Hoist Manufacturers Institute.
       4. The Contractor is responsible for ensuring that the monorail and hoisting equipment operate fully in all locations. The Contractor should coordinate all crane loads with the Pre-Engineered Metal Building Manufacturer.
       5. Unless specified otherwise, this Section includes the current issue of the Specifications for Underhung Cranes and Monorail Systems by the MMA and the standard specifications of the Hoist Manufacturers Institute.
       6. All structural steel members of the handling system must be designed in accordance with the current edition of AISC, and any welded construction must comply with the standards of AWS and Section 05500 as applicable. A qualified Professional Engineer registered in the State of Texas must perform the structural design.
       7. Castings, forgings, stampings, and other structural elements should have a safety factor of 5.0.
       8. All equipment must satisfy or exceed the OSHA requirements.