

CHAPTER 14B

HOISTS AND CRANES

14B-01 GENERAL

a. Coordination of Work

(1) This chapter covers the installation and testing of Hoists and Cranes. See Chapter 16A and NEC70-Article-620, for Electrical; Chapter 5A for Structural Steel; and Chapter 5B for Welding.

(2) The contract drawings indicate general layout and components of the cranes and hoists. Approved shop drawings will provide necessary information for installation of the particular hoist or crane selected for the project.

(3) Hoists and crane installation is a specialty trade. Major assemblies of the crane shall be shop assembled as completely as possible. Welders, welding operators and welding procedures shall be qualified or prequalified in accordance with AWS D1.1. Close coordination is required between the contractor's QC representative, the crane and hoist contractor, and the manufacturer.

b. Verification of Dimensions

The contractor shall verify all dimensions in the field and shall advise the contracting officer of any discrepancy before performing any work.

14B-02 MATERIALS

a. Submittals

(1) Shop drawings shall consist of a complete list of equipment and materials, including manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions. Shop drawings shall also contain complete wiring and schematic diagrams and coordination details for proper function of unit.

(2) Spare parts data shall be furnished for each different item of material and equipment specified.

(3) Operations and Maintenance manuals and instructions will be provided.

(4) Performance Test Reports will be submitted, upon completion and testing of the installed system, in booklet form to prove compliance with the specified performance criteria.

b. Manufacturer's Representative

The manufacturer's representative shall supervise the installation, adjusting, and testing of the cranes and hoists.

c. Operator Training Instructions

A field training course shall be provided for designated operating staff members. The course will cover all items contained in the Operations and Maintenance Instructions.

1 Dec 92

d. Delivery and Storage

Equipment when delivered will be stored with protection from the weather, humidity, temperature variations, dirt, dust, or other contaminants

14B-03 ERECTION AND TESTING

a. Structural

(1) Check TM 5-809-10 to determine seismic considerations for your construction site. Review Chapter 13, Seismic Design of Buildings. Tell your supervisor if lateral restraints or hold down clamps are required but not provided for.

(2) Structural bolted connections shall be made with ASTM A325 bolts. A490 bolts or galvanized bolts shall not be used.

(3) The bridge rail shall be fastened to the top cover plate with welded clips. Bridge rail joints shall be bolted using standard joint bars. Rail joints shall be staggered. A positive stop shall be provided at the bridge rail ends to prevent creep.

(4) Provide structural trolley stops on the bridge to engage the trolley wheels, and locate to permit maximum trolley travel. Bumpers shall be the spring or hydraulic type for the bridge or trolley.

(5) Compare the name plate capacity of equipment with specified requirements.

(6) Check track for:

- (a) Size of members.
- (b) Method of supporting and anchoring.
- (c) Stability and minimum sway.
- (d) Being level and parallel.
- (e) End-of-track stops or bumpers.
- (f) The way wheels ride on track.

(7) Confirm that clearances are provided for required operation.

(8) Check welding and bolted connections of members.

(9) Insure that erection procedures for crane will not cause internal stresses, forced or improvised fits, misalignments, nicks of high strength structural steel components, stress-raising welds, and rough burrs.

(10) After crane is erected any damaged paint surfaces shall be cleaned and repainted.

b. Mechanical Alignment

All motors, couplings, brakes, gear boxes, and drive components shall be aligned when reinstalled, in accordance with the manufacturer*s tolerances.

c. Electrical Alignment

(1) The control system shall be aligned in accordance with the manufacturer*s instructions. Alignment data shall include the following:

- (a) Timer settings
- (b) Resistor tap settings
- (c) Pot settings
- (d) Test point voltages
- (e) Supply voltages
- (f) Motor voltages
- (g) Motor currents
- (h) Test conditions, such as ambient temperature, motor load, date performed, and person performing the alignment.

(2) A copy of the final alignment data shall be stored in control panel door.

d. Testing

- (1) Check ease of operating equipment.
- (2) Determine that all the various speeds can be obtained.
- (3) Check if all safety devices such as lift switches, brakes, etc., have been furnished, connected, and function as designed.
- (4) See that specified tests are performed and recorded.
- (5) The contractor shall provide all personnel necessary to conduct the tests including but not limited to crane operators, riggers, rigging gear, and test weights. Tests will be performed in the presence of the Government representatives.
- (6) Test sequence shall be in accordance to specified procedure.
- (7) Test data shall be recorded on appropriate test record forms for retention for the life of the crane. Recorded values shall be compared with design specifications or manufacturer*s recommended values.
- (8) Equipment monitoring. During load test, check for improper operation or poor condition of safety devices, electrical components, mechanical equipment and structural assemblies. Report all defects to test supervisor immediately.
- (9) Check specifications for specific tests to be conducted.