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12.0 HOISTS

12.1 Scope

This Hanford Site Hoisting and Rigging Manual (HSHRM) chapter applies to the marking, construction, installation, inspection, testing, maintenance and operation of the following:

- Overhead Underhung and Stationary Hoists
- Hand chain-operated chain hoists and electric and air-powered chain and rope hoists
- Lever Hoists
- Ratchet and pawl and friction brake type manually lever operated chain, rope, and web strap hoists used for lifting, pulling, and tensioning applications

The proper and safe use of hoists is governed by the American Society of Mechanical Engineers (ASME) standards and Occupational Safety and Health Administration (OSHA) regulations.

This chapter implements required criteria from the following standards:

- ASME B30.16, *Overhead Underhung and Stationary Hoists*
- ASME B30.21, *Lever Hoists*
- OSHA 29 CFR 1910.179, *Overhead and Gantry Cranes*
- OSHA 29 CFR 1926 Subpart CC, Section 1926.1438, *Overhead and Gantry Cranes* (only applies to temporarily installed cranes)

The responsible engineer may invoke ASME NUM-1, *Rules for Construction of Cranes, Monorails, and Hoists (with Bridge or Trolley or Hoist of the Underhung Type)*, for cranes used at nuclear facilities. ASME NUM-1 applies to the design, manufacture, testing, inspection, shipment, storage, and erection of monorails and hoists (with bridge, trolley, or hoist of the underhung type).

12.2 Accessing Requirements

- a. To access ASME standards, choose one of the following options:
 - IHS Engineering Standards, Regulations and Technical Specifications. The contractor must have paid for access to the specific standard.
 - Purchase standards directly from ASME.
- b. To access OSHA standards, go to the following links:
 - [OSHA 29 CFR 1910.179, Overhead and Gantry Cranes](#)
 - [OSHA 29 CFR 1926.554, Overhead Hoists](#)

12.3 Implementation

Contractors shall comply with OSHA, ASME, this HSHRM, and manufacturers' requirements. Users of this HSHRM are responsible to implement all applicable requirements. If standards conflict, the user shall adhere to the standard containing the most stringent requirements. In most cases, ASME standards provide the most comprehensive information.

Users should contact a Hanford Hoisting and Rigging Committee (HHRC) representative or send an [email](#) requesting a formal interpretation. See Chapter 17, *Interpretations*, for the process to be followed when requesting an interpretation. Notify the HHRC if any inconsistent standards are identified.

This HSHRM does not intend to require retrofitting of existing equipment. However, when any hoisting or rigging equipment is modified, its performance requirements shall be reviewed relative to the requirements within the current HSHRM. The need to meet the current requirements shall be evaluated by a qualified person selected by the owner (user). Recommended changes shall be made by the owner (user).

12.4 Inconsistent Standards

No inconsistencies between standards are currently identified.

12.5 Hanford Specific Requirements and Practices

CAUTION: *Working on or under a suspended load is prohibited, except when the load can be supported by blocking or cribbing, can be securely braced, or can be supported substantially by some other means that would prevent the load from moving. Some loads being lifted and set in place may require special handling control measures such as inspecting, landing, setting, or controlling the load, that may require personnel to position their hands or other body parts under the load when no other method is feasible. These special handling control activities MUST BE APPROVED by management and industrial safety PRIOR TO BEING PERFORMED.*

12.5.1 Load-Test Weight

The load-test weight shall be traceable to a recognized standard or verified by engineering calculations. Load tests shall never be less than minimum requirements defined in the applicable ASME Standard. Any one of the following options will meet this requirement:

- Use a calibrated Load-Indicating Device (LID) ($\pm 2\%$ of the maximum rated load) during the load test
- Determine the test load with a calibrated LID before the test
- Calculate the test load based on known unit weights and dimensions of the test fixture. Dimensions and calculations shall be checked (signed and dated) by a qualified engineer

12.5.2 Load Test Report

Load or proof tests shall never be less than the minimum requirements defined in the ASME B30 standards. After the test is completed, the load-test report shall be signed and dated by the person

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in charge of conducting the load test. The person in charge shall ensure that the test is placed in the maintenance file.

12.5.3 Maintenance Files

The maintenance file is a compilation of various documents and records relating to operation, maintenance, inspection, testing, evaluation, assembly, disassembly, and repair of the equipment. The file may be centrally located or proportioned into satellite holding areas. The methods selected for establishing adequate information retention and retrieval shall be determined by the equipment custodian, who is the responsible person for ensuring that a safe and reliable maintenance program is in place.

12.5.3.1 Intent of Maintenance Files

The maintenance file shall contain, as a minimum, the required current dated inspection records and other documentation to provide the user with evidence of a safe and reliable maintenance program. Inspection records should be retained in a format and location that allows easy accessibility. Maintenance file information should provide a source for comparing existing and past conditions to determine whether existing conditions show a trending pattern of wear, deterioration, or other similar factors that may compromise safe, continued use of the equipment. Length of record retention shall be determined by the equipment custodian's established maintenance program.

12.5.3.2 Maintenance File Contents

Maintenance files shall contain the following documentation, as applicable:

1. Manufacturer's technical and safety-related information for the piece of equipment
2. Documented Inspection records
3. Load test reports
4. Documentation of altered, replaced, or repaired load-sustaining parts
5. Records of special inspections on safety-related items such as brakes, hooks, ropes, hydraulic/pneumatic cylinders, and hydraulic/pneumatic pressure relief valves
6. Copies of waivers, exemptions, hostile environment plans, or similar documentation applicable to the equipment (to include manufacturer's safety bulletins, safety alerts, and product recall information)
7. Documentation for replacement ropes (see Chapter 8.0, *Ropes*)
8. Rope manufacturer's certification for replacement ropes

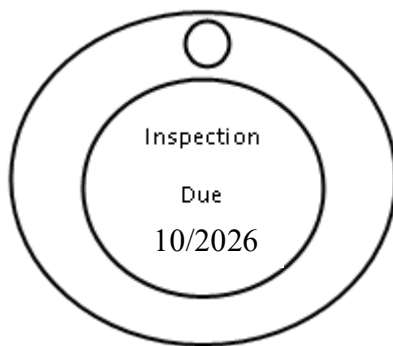
12.5.3.3 Periodic Inspection Tag

Identify each hoist with a tag (see sample in Figure 12-1) or institute a comprehensive marking program (such as color coding) to indicate when the next inspection is required.

12.5.3.4 Load-Test Tag (Proof Test)

A tag indicating date of load test may be affixed to the device in an accessible location for verification. See an example in Figure 12-2.

**Figure 12-1: Example Of A
Periodic Inspection Tag**



**Figure 12-2: Example Of A
Load Test Tag**

