

Appendix 3.03-B: Hoists

1. Scope

This Appendix is dedicated specifically to addressing hoists.

2. Safe Practices

a. Inspections

Hoisting devices rated below 5 tons (non-construction and other hoists) will be inspected by a qualified Reclamation employee or by a qualified third party.

b. Hoist Equipment for Spillway Gates

Refer to Reclamation Operation & Maintenance guidance and training resources Review of Operation and Maintenance Program Field Examination Guidelines and Guidelines for The Process of Evaluating the Reliability of Mechanical Equipment During Dam Safety Comprehensive Facility Review Examinations for inspection guidance for spillway gates hoist equipment.

3. Hoists

Base-mounted drum hoists will conform to the requirements of ASME B30.7 Winches. Air-powered hoists must conform to the requirements of ASME HST-6M Performance Standard for Air Wire Rope Hoists, or more stringent requirements of this section. Hoisting machines used in personnel related systems must also meet the requirements in the following paragraph, B.4 Overhead Hoists. The hoist manufacturer or a qualified engineer must design base mounted hoisting systems.

4. Overhead Hoists

Install, operate, and maintain overhead hoists in compliance with the more stringent provision of this subsection and ASME B30.16 Overhead Underhung and Stationary Hoists.

a. Design

The manufacturer or a qualified engineer must design hoists and hoist suspensions and anchorages.

b. Restrictions

Base-mounted drum hoist systems involving personnel use or exposure (e.g., movable work platforms, raising or lowering drilling machines, and personnel hoists) must conform to the provisions of this subsection.

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c. Working Load Limit

Indicate the working load limit, as determined by the manufacturer, on the hoist. Do not exceed the working load limit.

d. Support

Design the supporting structure to withstand the loads and forces imposed by the weight of the hoist and its rated load. The support will provide unobstructed movement of the hoist and load. It will also permit the operator to stand clear of the load in all hoisting positions.

e. Anti-Two Blocking Device

Equip power-operated overhead hoists with a limit switch to prevent the load hook from exceeding the upper travel limit.

f. Hoist Controls

Controls on powered hoists will return to a neutral position when released, and load hook movement will stop.

g. Brakes

Except for hand-powered hoists, all overhead hoists will have brakes that apply automatically when the controls are in neutral.

h. Air-Operated Hoists

Connect air hoists to an air supply of sufficient capacity and working pressure to safely operate the hoist with maximum load.

i. Hand-Powered Hoists

Hand-powered hoists will be worm-gear driven or equipped with a pawl or ratchet system that provides continuous effective control and braking reliability.

5. Material Hoists

In addition to the safe practices previously listed, material hoists shall conform to the manufacturer's instructions, 29 CFR 1926.552 Material hoists, personnel hoists, and elevators, and the current edition of ASSP A10.5 Safety Requirements for Material Hoists.

a. Assembly

The manufacturer or a qualified engineer shall supervise assembly and disassembly of hoist towers and material hoists.

b. Car-Arresting Devices

Test car-arresting devices before initial use and every 4 months thereafter. Conduct tests in accordance with ASSP A10.5.

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c. Posting

Post operating rules, including signals, line speeds, and loading, at the operator's station and on the cage frame or crosshead. A copy of the hoist operating manual shall always be available during operation.

d. Riding

Do not permit anyone to ride a material hoist, except for inspection and maintenance. Conspicuously post with "NO RIDERS ALLOWED."

e. Hoistway Entrances

Protect entrances to the Hoistway in accordance with 29 CFR 1926.552(b)(2), using substantial gates or bars that are installed the full width of the landing entrance and equip with a latching device. Paint entrance bars and gates with diagonal contrasting colors, such as black and yellow stripes.

f. Overhead Protection

Protect the top of the cage or platform with 2-inch planking, 3/4-inch plywood, or material of equivalent strength.

g. Tower Enclosures

The following requirements will apply:

- **Enclosed.** An enclosed hoistway or tower will be enclosed on all sides for its entire height, with half-inch wire mesh screen, No. 18 U.S. gauge wire or equivalent, except at access points.
- **Open Sides.** For an unenclosed hoist tower, totally enclose the hoist cage or platform on all sides between the floor and the protective top with half-inch wire mesh screen, No. 14 U.S. gauge wire or equivalent. The hoist cage or platform enclosure will include the required gates for loading and unloading. Install an enclosure at least 6 feet high on the unused sides of the hoist tower at ground level.

h. Operator's Station

Protect the operator's station with overhead planking not less than 2 inches thick or with material of equivalent strength.

i. Tower Support

Towers will rest on solid foundations. Ensure that the towers are plumb and well guyed or otherwise anchored in four directions to resist lateral movement and displacement.

j. Hinged Roof

The protective covering on top of cage or platform may be hinged to accommodate long materials being hoisted.

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k. Electric Hoists

Electric hoists will be provided with an automatic motor brake to stop and hold the load in case of a power failure.

l. Operating Restrictions

One hoisting machine, or one operator, will operate only one cage, bucket, or hoist platform at a time.

m. Hoisting Machines

Design and install hoisting machines to raise and lower the maximum rated load, plus the weight of equipment and ropes. Hoisting machines will incorporate the following features:

- **Brakes.** The brakes must be capable of stopping and holding 150% of the rated hoisting capacity under all operating conditions.
- **Mechanical Brakes.** Install mechanical brakes to stop movement of the hoist drum and equip the mechanical brakes with a positive acting device that will hold the brake in the engaged position.
- **Ratchet and Pawl.** Equip friction-clutch-driven winding drum hoisting machines with an effective pawl and ratchet capable of holding the rated load capacity when suspended.
- **Controls.** All controls will, when released, automatically return to neutral and set the brake. Plainly mark each control to indicate its function; it will be within easy reach of the operator.

n. Position Indicator

Use a positive system to indicate when the hoist car or platform has reached specific locations, including the top and bottom landings.

o. Communications

Hand signals may be used on a single drum hoist when the hoist tower is no more than 50 feet high and the signals are always visible to the operator. Use audio communications on all other material hoist installations. The system will be two-way, with a speaker located at the hoist operator's station and at each landing. The hoist operator will be able to communicate by voice to and from each station.

6. Facility Maintenance Hoisting Systems

Design, construct, install, and use hoisting systems to inspect and maintain facilities, such as penstocks, spillways, and airshafts, and for external building maintenance such as window washing, in accordance with ASSP A10.22 Safety Requirements for Rope-Guided and Nonguided Workers' Hoists for Construction and Demolition Operations, or ASME A120.1 Safety Requirements for Powered Platforms and Traveling Ladders and Gantries for Building Maintenance. The manufacturer or a qualified engineer will certify such hoisting systems for the

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intended use. Hoisting systems used on an incline or other nontraditional use will undergo a peer review by an independent engineer. The review will include the structure, controls, operating procedures, and a performance test of the completed and assembled system.