

(2) The sides of the cage of every indoor overhead traveling crane shall be enclosed as follows:

- (a) Solid to a height of 42 inches, or,
- (b) With not less than No. 10 wire screen with mesh openings not greater than 3 inches, to a height of 42 inches, with toeboard, or,
- (c) With a standard guard rail and toeboard.

(3) The cage of every outdoor traveling crane shall be fully enclosed with windows on 3 sides.

(a) *Windows* shall provide ample vision for operators and may be fixed at the front and back. Side windows shall be openable.

(b) *Doors*. 1. If an integral outside platform is provided, the door shall be a sliding type or open outward.

2. In the absence of an outside platform, the door shall open inward or slide and shall be self-closing.

(c) *Temperature*. A temperature reasonably comfortable for the operator shall be maintained in cold weather.

Note: See section Ind 1.70 (1) Scope for types of equipment involved.

History: Cr. Register, February, 1962, No. 74, eff. 3-1-62; r. and recr. (3), Register, September, 1968, No. 153, eff. 10-1-68.

Ind 1.75 Hoists. (1) **LIMIT SWITCHES**. Each overhead electric or air-operated hoist motor shall be equipped with an effective limit switch so placed and arranged as to disconnect the motor and apply the brake in time to stop the motor before the hook passes the highest point of safe travel.

(2) **BRAKES**. (a) Each electric or air-operated hoist motor shall be provided with an electrically or mechanically-operated brake so arranged that the brake will be applied when the power is cut off from the hoist. This brake shall have sufficient holding torque to sustain not less than 1½ times the rated load.

(b) The hoisting drum of all hand power hoists shall be equipped with an effective brake, and shall be provided with a ratchet and pawl of sufficient strength to hold the load in any position.

(3) **CAPACITY MARKING**. The rated load of each hoist, in pounds or tons, shall be legibly marked on the hoist or load block.

(4) **CONTROL EQUIPMENT**. Operating controls shall be legibly marked or suitably shaped to indicate the resultant direction of travel.

History: Cr. Register, February, 1962, No. 74, eff. 3-1-62.

Ind 1.76 Cables, ropes and chains. (1) Chains, ropes, cables, hooks, rings, slings, and other devices and accessories used for hoisting and lifting shall not be subjected to greater working loads than recommended by their manufacturers.

(2) They shall be frequently inspected and shall be renewed when inspection reveals unsafe conditions.

(3) Bolts or nails shall not be used to connect, splice or shorten chains. Knots shall not be tied in the chain.

(4) A hoist cable shall be considered unsafe and shall be renewed when because of broken wires, wear, rust, undue strain, or other cause the strength of the cable becomes reduced 25%. Hoist cables will be considered unsafe when upon inspection 10% or more of the total number of wires are broken in a length equal to eight diameters of the cable.

Note: Crane hoist cables should be lubricated and inspected at frequent intervals. Proper lubrication adds much to their durability.

(5) Chains, cables, slings and ropes shall be properly stored to protect them against damage.

History: Cr. Register, February, 1962, No. 74, eff. 3-1-62.

Safety
Register, September, 1968, No. 153

Ind 1.77 Conveyors. (1) The nipping and shearing points of conveyors when exposed to contact shall be guarded in accordance with subsection Ind 1.03 (2).

(2) The tops of screw conveyor troughs, where screw is exposed to contact, shall be kept covered. Openings into which persons may step, reach or fall shall be protected by standard handrails as required by subsection Ind 1.03 (1), or other equally effective protection.

(3) Conveyor systems passing through more than one room, or from one working level to another, shall be provided in each room, or working level, where exposed to contact, with means to disconnect the power.

(4) When a conveyor (a) passes over passageways, aisles or working areas and (b) is so constructed that it is reasonable to expect materials on the conveyor to be dislodged and be hazardous to persons in such areas, suitable guards shall be provided.

History: Cr. Register, February, 1962, No. 74, eff. 3-1-62.

Ind 1.78 Endless belt; man lifts. (1) Man lifts may be used in places of employment where it is necessary for employees to travel from one elevation to another. Man lifts may also be used for transporting materials, provided that in no case shall men and materials be transported simultaneously. The use of each man lift shall be restricted to employees who have been fully and personally trained in the operation and use of this equipment. In using the man lift no employee shall carry tools or material in either hand.

(2) Each man lift and all mechanical parts thereof shall be designed with a factor of safety of not less than 6, and shall operate at a speed not to exceed 90 feet per minute.

(3) Treads or steps shall be not less than 10 inches deep and at least 12 inches wide and shall have a non-slip surface. All steps shall be designed to withstand a load of 400 pounds without misalignment or undue deflection and shall be so attached to the step brackets that they will be at right angles to the belt in ascending and descending. The steps shall have rollers of a sufficient lap so as to be properly guided throughout the length of the man lift. The frame guiding the steps shall be of such construction and so braced so that there will be no chance of any step roller being disengaged from its guide. The distance between step treads shall not be less than 16 feet.

(4) The belt shall be at least 12 inches wide and shall withstand a simultaneous load of 200 pounds on each step of one run of belt without loss of traction.

(5) Hand-holds shall be securely attached to both runs of the belt at points not less than 4 feet nor more than 4 feet 8 inches above the step tread. There shall be neither step nor hand-hold available for use in either direction without a corresponding hand-hold or step. Only closed type hand-holds shall be used.

(6) Man lifts shall not be installed with the boot pulley stand in a pit. The boot pulley stand shall be supported on a normal floor landing. A mounting platform shall be provided in front of or to one side of the belt for the up run at the lowest landing and shall be high enough to meet the steps when they reach a level position. A landing shall be provided on the down side in front of or to one side of the