

HOISTING APPARATUS AND CONVEYORS

wise in cage-operated cranes the controls should be identified.

If there are several cranes on the same runway or in the same building, all should have the controls in identical positions so that a substitute operator will not be confused.

Safe means should be provided for the operator to pass from the cage to the footwalk. Stairs are preferable to ladders. If ladders are used, they should meet safety standards.

The space that the operator must step across in going from the landing or the runway girder to the crane should not exceed 12 in.

In case of fire, the operator must be able to escape from the crane regardless of its location on the runway. He would be in particular danger if a fire should occur when the crane was attached to a load which could not be picked up quickly so that the crane could travel at once to the access landing. Unless a continuous handrail about 42 in above the runway rail is provided, an emergency rope ladder or other means of escape should be installed in the cage.

Safe access must be provided also to the bridge motor and brake and to the equipment on the crane trolley (the trolley is the carriage on which the hoist is mounted, it is movable on the bridge). At least a 12-in clearance must be maintained between the highest part of the trolley and overhead obstructions, to prevent a man on the moving crane from being brushed off by low beams or trusses.

Footwalks and platforms should be substantial, rigidly braced, and protected on open sides with standard railings and toeboards.

A footwalk with handrails should be installed along the entire length of the crane runway. The walk should be reached by one or more fixed ladders not less than 20 in wide. The outside edge of the walk should be not less than 30 in from the nearest part of the trolley.

The bridge walkway should have a 42-in high handrail and a 4-in toeplate, and the space at the squaring shaft should be guarded so that a man cannot fall between the walkway and the crane girder.

A footwalk should be provided also, if headroom permits, along the entire length

of the bridge of any crane having the trolley running on the tops of the girders. This footwalk should be on the drive side of the bridge and should have toeboards and metal handrails. Safe access to the opposite side of the trolley also should be provided.

Floors of walks should be neatly fitted so as to leave no openings and should have a nonslip surface. Vertical clearance between the floor of the walk and overhead trusses, structural parts, or other permanent fixtures should be at least 6½ ft. Where such clearance is structurally impossible, built-in members should be distinctively painted or striped and padded where necessary.

Toeplates should be provided at the edges of flooring on the trolley to prevent tools from falling to the floor below.

Stanchions or grab irons should be installed to enable a man to climb onto the trolley in safety.

To guard against electric shock, a heavy rubber mat should be provided at the control panel in the cage. The operator should have an unobstructed view of the load hook in any possible position.

A warning gong and a small CO₂ or dry chemical fire extinguisher should be installed in the cage.

The bridge truck wheels and the trolley wheels should have guards to push away a man's foot or hand. To prevent a serious impact on the crane if a bridge wheel should fail, the end frames or trucks should have safety lugs only 1 in above the top of the rails.

To prevent clothing from being caught on revolving equipment, the cross-shaft couplings should be guarded.

Runway rails, after years of service, may no longer be straight or the span between them may be altered because of settling of the column footings, so that wear on the flanges of the bridge wheels results. Rail alignment, therefore, should be checked every few years. If the tread of bridge truck wheels is tapered, the crane will run square with the runway constantly.

Rail stops or bumpers must be so located that when the wheels are against them, the crane bridge is square with the runway.

If two or more cranes operate on the same runway, buffers or cushioning devices should be placed between the cranes at both ends of the bridges of each.