

**OCCUPATIONAL SAFETY  
AND HEALTH STANDARDS BOARD**

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Attachment No. 2INITIAL STATEMENT OF REASONS

## CALIFORNIA CODE OF REGULATIONS

TITLE 8: Chapter 4, Subchapter 7, Article 96, Section 4968  
and Article 99, New Section 5022.1 of the  
General Industry Safety Orders

Tower Crane Warning Devices and Crane Test Weight RequirementsSUMMARY

This rulemaking action was initiated at the request of the Division of Occupational Safety and Health (Division). The Division submitted two Form 9s, Request for New, or Change in Existing Safety Order, dated February 4, 2000 and July 20, 2000, outlining the need for amendments in the requirements pertaining to tower crane warning devices in General Industry Safety Orders (GISO) Section 4968, and the need for requirements regarding crane test weights.

The Division stated that existing Section 4968 permits cranes to be overloaded because the audible warning signal and automatic stop must be activated at 105 and 110 percent of the rated load<sup>1</sup>, respectively. Cranes are designed to operate up to 100 percent of the rated load. The Division stated that most, if not all, tower crane manufacturers do not recommend overloading their cranes under any conditions. Consequently, amendments are proposed to address these concerns.

The Division further recommended a new crane standard, GISO Section 5022.1 be established to address requirements related to test weights used for the purpose of proof load testing of cranes and derricks. During several job site inspections, the Division identified test weights that lacked structural integrity with regard to their design, particularly the lifting attachments, which were made from wire rope or reinforcing steel (rebar). Inadequately designed test weights may break or fail during the lifting process resulting in crane collapse due to sudden release of the test weight.

This rulemaking action addresses the Division's aforementioned concerns and recommendations, and was developed with the assistance of an advisory committee.  
Section 4968. Safety Devices.

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<sup>1</sup> The "rated load" is the maximum load for which a crane or individual hoist is designed and built by the manufacturer and as shown on the equipment nameplate(s) or load capacity chart.

Existing Section 4968 provides requirements for tower crane safety devices. The section requires visual warning devices, an audible signal and an automatic stop, all of which must operate at a percentage of the crane's rated load (i.e. 100, 105, and 110 percent, respectively). Other requirements in this section pertain to limit devices and the use of constant pressure controls.

#### Subsection (a)

Existing subsection (a)(1) and (2), require that a tower crane must be equipped with either a warning light that activates at 100 percent of the rated load, or that the crane be equipped with electric instrumentation that gives a continuous reading of the load weight and the trolley radius. An amendment is proposed for subsection (a)(1) to reduce the activation point of the warning light from the existing requirement of 100 percent to "a percentage of the rated load, not to exceed 95 percent of the rated load." The proposed amendments are necessary to provide the crane operator a visual warning before the load reaches 100 percent of its capacity and will also permit activation of the warning light below 95 percent on the rated load.

#### Subsection (b)

Existing subsection (b) requires an audible signal that operates at 105 percent of a crane's rated load. An amendment is proposed to reduce the activation point of the audible signal from the existing requirement of 105 percent, to "a percentage of the rated load not to exceed 100 percent of the rated load." The proposed amendments are necessary to provide the crane operator an audible warning as the load reaches 100 percent of its capacity and will also permit activation of the audible signal below 100 percent of the rated load.

#### New subsection (c)

A new subsection (c) is proposed that would require the visual warning light, and audible signal in subsections (a)(1) and (b) to be set to avoid simultaneous activation, and operate with a difference of at least 5 percent of the rated load. The proposed amendment is necessary to ensure that these warning devices do not simultaneously activate providing the crane operator with clear and independent warnings.

#### Subsection (d)

Existing subsection (c) is lettered subsection (d) in the proposal, and currently requires an automatic stop that must operate at 110 percent of the rated load. Cranes are designed to operate at 100 percent of the rated load, however, an automatic stop that activates at 110 percent of the rated load could potentially result in an overload condition. An amendment is proposed to require an automatic stop that operates at a percentage of the rated load, not to exceed 105 percent of the rated load. According to crane industry representatives, the automatic stop should be set slightly above 100 percent of the rated load (i.e. 105 percent) to avoid unnecessary activation of the automatic stop. The amendment is necessary to permit cranes to operate safely without de-rating the designed lifting capacity of the crane.

### New subsection (e)

A new proposed subsection (e) would require that when the crane manufacturer specifies lower activation points for safety devices than required by subsections (a)(1), (b) and (d), the manufacturers' specifications shall be followed. The proposed subsection is necessary to ensure that the proposal does not conflict with manufacturer's specifications when provided, and that the employer follows the manufacturer's specifications for activation of warning devices and the automatic stop.

Existing subsections (d) and (e) are proposed for relettering as (f) and (g), respectively.

### New Section 5022.1. Test Weights.

The scope of this proposed new section pertains to requirements for test weights manufactured for the purpose of proof load testing of cranes and derricks.

#### Subsection (a)

Proposed subsection (a) requires that test weights be legibly marked to indicate the documented weight. This provision is necessary to ensure that test weights are marked so that the weight can be easily read and identified by personnel.

#### Subsection (b)

Proposed subsection (b) requires lifting attachments on test weights to be visually inspected prior to each use. Subsection (b) also specifies that damaged or defective lifting attachments that are not suitable for safe use shall not be used. This provision is necessary to ensure that the attachments are inspected prior to each use for any cracks, deformity, or wear that might affect their structural integrity. Moreover, it is necessary to prevent any damaged or defective lifting attachments that are not suitable for use from being used.

#### Subsection (c)

Proposed subsection (c) prohibits the use of embedded wire rope and reinforcing steel (rebar) for use as lifting attachments. According to representatives in the crane industry, wire rope and rebar are unacceptable materials for use as test weight lifting attachments. Rebar is comprised of low-grade steel that is not designed for use as a test weight lifting attachment point and for the loads imposed in proof load testing of cranes. Further, wire rope used repetitively as a fixed lifting attachment in a test weight is subject to fraying, wearing and kinking and other defects all of which increase the likelihood of failure during proof load testing. This provision is necessary to prohibit the use of these inferior materials for test weight lifting attachments.

### DOCUMENTS RELIED UPON

1. Memorandum dated February 4, 2000 and attached Form 9, Request for New, or Change in Existing Safety Order from John Howard, Chief, Division of Occupational Safety and Health to John MacLeod, Executive Officer, Occupational Safety and Health Standards Board.
2. Memorandum dated July 20, 2000 and attached Form 9, Request for New, or Change in Existing Safety Order from John Howard, Chief, Division of Occupational Safety and Health to John MacLeod, Executive Officer, Occupational Safety and Health Standards Board.

These documents are available for review Monday through Friday from 8:00 a.m. to 4:30 p.m. at the Standards Board Office located at 2520 Venture Oaks Way, Suite 350, Sacramento, California.

### DOCUMENTS INCORPORATED BY REFERENCE

None.

### REASONABLE ALTERNATIVES THAT WOULD LESSEN ADVERSE ECONOMIC IMPACT ON SMALL BUSINESSES

No reasonable alternatives were identified by the Board and no reasonable alternatives identified by the Board or otherwise brought to its attention would lessen the impact on small businesses.

### SPECIFIC TECHNOLOGY OR EQUIPMENT

This proposal will not mandate the use of specific technologies or equipment.

### COST ESTIMATES OF PROPOSED ACTION

#### Costs or Savings to State Agencies

No costs or savings to state agencies will result as a consequence of the proposed action. Proposed amendments for Section 4968 are specific to tower cranes and the Board is not aware of any state agencies that own tower cranes. With respect to proposed new Section 5022.1, "Test Weights," the California Department of Water Resources and the California Department of Transportation each own approximately 12 mobile cranes that would require proof load testing. Board staff contacted the Health and Safety Departments of these two agencies and was advised that neither agency owns their own test weights. Proof load testing of these cranes is contracted out to crane certificating agencies. Both state agencies stated that the proposal should not result in any measurable cost impact. Further, the rationale under the heading "Impact on Businesses" explains that costs to businesses resulting from the proposal are expected to be negligible.

### Impact on Housing Costs

The Board has made an initial determination that this proposal will not significantly affect housing costs.

### Impact on Businesses

The Board has made an initial determination that this proposal will not result in a significant statewide adverse economic impact affecting businesses, including the ability of California businesses to compete with businesses in other states. Proposed amendments for Section 4968 related to tower crane safety devices would require resetting the activation settings for the warning light, audible signal, and the automatic stop on some cranes. Advisory committee members, however, indicated that this would simply be a matter of readjusting the setting points on the crane circuit board. The existing crane orders already require that a certified manufacturer's representative be present when a tower crane is erected or dismantled, and that the representative is qualified to make any necessary adjustments to warning device settings.

Proposed new Section 5022.1, "Test Weights," would require that test weights be legibly marked to indicate the documented weight, and that they be visually inspected prior to each use. These requirements should not result in cost impact to the employer as nearly all test weights are marked to indicate the weight, and inspecting test weights prior to use is a procedural requirement. Concrete block test weights are one type of test weight used to proof load test cranes, and a minority of concrete test weights have wire rope or rebar lifting attachments. Proposed Section 5022.1(c) would prohibit test weights with embedded wire rope or rebar used as lifting attachment points. However, existing test weights with wire rope or rebar lifting attachments could still be used for load testing within an appropriately designed lifting frame or lifting rack, or within a properly rigged sling. Consequently, the cost impact on businesses is expected to be negligible.

### Cost Impact on Private Persons or Businesses

The Board is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

### Costs or Savings in Federal Funding to the State

The proposal will not result in costs or savings in federal funding to the state.

### Costs or Savings to Local Agencies or School Districts Required to be Reimbursed

No costs to local agencies or school districts are required to be reimbursed. See explanation under "Determination of Mandate."

### Other Nondiscretionary Costs or Savings Imposed on Local Agencies

This proposal does not impose nondiscretionary costs or savings on local agencies.

### DETERMINATION OF MANDATE

The Occupational Safety and Health Standards Board has determined that the proposed standards do not impose a local mandate. Therefore, reimbursement by the State is not required pursuant to Part 7 (commencing with Section 17500) of Division 4 of the Government Code because the proposed amendments will not require local agencies or school districts to incur additional costs in complying with the proposal. Furthermore, these standards do not constitute a “new program or higher level of service of an existing program within the meaning of Section 6 of Article XIII B of the California Constitution.”

The California Supreme Court has established that a “program” within the meaning of Section 6 of Article XIII B of the California Constitution is one which carries out the governmental function of providing services to the public, or which, to implement a state policy, imposes unique requirements on local governments and does not apply generally to all residents and entities in the state. (County of Los Angeles v. State of California (1987) 43 Cal.3d 46.)

These proposed standards do not require local agencies to carry out the governmental function of providing services to the public. Rather, these standards require local agencies to take certain steps to ensure the safety and health of their own employees only. Moreover, these proposed standards do not in any way require local agencies to administer the California Occupational Safety and Health program. (See City of Anaheim v. State of California (1987) 189 Cal.App.3d 1478.)

These proposed standards do not impose unique requirements on local governments. All state, local and private employers will be required to comply with the prescribed standards.

### EFFECT ON SMALL BUSINESSES

The Board has determined that the proposed amendments may affect small businesses. However, no economic impact is anticipated. Also see the comments above under the heading, “Impact on Businesses.”

### ASSESSMENT

The adoption of the proposed amendments to these standards will neither create nor eliminate jobs in the State of California nor result in the elimination of existing businesses or create or expand businesses in the State of California.

ALTERNATIVES THAT WOULD AFFECT PRIVATE PERSONS

No reasonable alternatives have been identified by the Board or have otherwise been identified and brought to its attention that would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.