

Draft Elevator Safety Orders, Group V: Briefing of Issues

Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA), August 26, 2015

The use of unsafe or defective conveyances imposes a substantial probability of serious and preventable injury to employees and the public. The prevention of these injuries and protection of employees and the public from unsafe conditions is in the best interest of the people of this state. *California Labor Code § 7300(b)*

Topic	Criticism of the Draft Elevator Safety Orders	Response to Criticism of the Draft Elevator Safety Orders
<p>1. Worker Safety</p>	<p>In the process of developing the model consensus standard, ASME A17.1 – 2013, the committees drafting the provisions of the standard conducted hazard assessments analyzing the potential risks faced by elevator workers and consider those risks to be fully addressed by the provisions of the consensus standard.</p>	<p>Exhaustive Elevator Unit review has determined that many provisions of the current version of the model consensus standard are less protective of worker safety than the minimum requirements contained in the Title 8 General Industry Safety Orders (“GISO”) that apply to all places of employment in California and which are enforced by Cal/OSHA.</p> <p><u>The model consensus standard - ASME A17.1 – 2013 allows:</u></p> <ul style="list-style-type: none"> • Critical elevator equipment to be installed in difficult or, in some cases, dangerous to reach locations at the top of the hoistway. This equipment is frequently maintained, examined, and inspected, but ASME A17.1 – 2013 does not require fixed ladders, stairways or safe platforms for access to these work spaces as is required by the minimum safety provisions contained in Title 8 GISO §3207 and §3270. • Permanent pit ladders that have rungs 9 inches in length (Title 8 GISO §3277 requires 16 inches) with 4 ½ inches from the center of the rung to the wall (Title 8 GISO §3277 requires 7 inches). This allows the installation of ladders that do not provide Elevator workers with the horizontal or vertical foothold space required by the GISO. • Critical equipment that is frequently maintained, examined, and inspected to be located in locations in the hoistway that would be defined as a “confined space” under Title 8 GISO §5157. ASME A17.1 – 2013 allows such confined work spaces to be created, but does not establish confined space working procedures as required by Title 8 GISO §5157. <p>The stricter provisions of the proposed Group V Elevator Safety Orders were drafted to re-establish equivalence (previous versions of ASME A17.1 were equivalent) with the Title 8 General Industry Safety Orders. The draft Elevator Safety Orders must provide for an installation that meets the minimum safety standards enforced by Cal/OSHA.</p>

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2. Hoistways	<p>ASME 17.1 – 2013 allows the installation of Machine Room-less elevators (“MRLs”) which have been installed and proven safe throughout the world. In a standard MRL installation, all elevator equipment is installed in the elevator hoistway.</p>	<p>The elevator hoistway is the most dangerous place that an elevator mechanic can work. Nearly all the elevator mechanic deaths that have been investigated by the Division have occurred in the hoistway. The elevator mechanic trade is second only to iron workers in workplace fatality rates among the commercial building trades. Working in elevator hoistways routinely exposes elevator mechanics to falling, shearing, crushing and electrical hazards. In recent years, DOSH has investigated the following elevator mechanic fatalities resulting from accidents that occurred while working in an elevator hoistway:</p> <p>8/1/12 Paramount, CA – An elevator mechanic working in the hoistway from the elevator car top fell four floors into the elevator pit and died.</p> <p>2/8/11 Santa Monica, CA - An elevator mechanic was working from the car top of a stalled elevator. He couldn’t reach the door above to get out of the hoistway, so he attempted to traverse from the stalled elevator to the adjacent running elevator. As the adjacent elevator continued to move up, the mechanic’s body became entangled between the car top and the underside of a hoistway sill. His body was then thrown back down onto the stalled adjacent elevator car top where he was found dead.</p> <p>6/11/13 Santa Clara, CA - An elevator mechanic was killed when his head was crushed between the elevator counterweight and a guide rail bracket while working in the hoistway.</p> <p>11/6/14 Beverly Hills, CA - An elevator mechanic was electrocuted while making adjustments to energized parts of a car door operator in the hoistway. He was found dead on the elevator car top.</p> <p>Installing more equipment (driving-machines, motors, tachometers, brakes, brake switches, governors, encoders and controller equipment) in the hoistway that must be frequently maintained, examined and inspected means that elevator workers will spend more time in a dangerous work environment. The Elevator Unit’s extensive experience with MRLs that have been installed in California indicates that locating this equipment in the hoistway is neither essential to the elevator’s operation nor does it improve the performance or reliability of the elevator in any way that would justify the additional risk to elevator workers posed by elements of MRL design that are allowed under ASME 17.1 - 2013.</p>

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3. New Technology	More restrictive Group V provisions would prohibit California building owners and businesses from installing the latest elevator technologies.	The proposed Elevator Safety Orders do not prohibit any new technologies currently allowed by ASME A17.1 – 2013, including, for example, permanent magnet a.c. gearless machines, state of the art elevator controllers with regenerative power capability, energy saving “sleep” modes, and alternate suspension residual strength monitoring means.
4. New Designs	More restrictive Group V provisions will force private and public sector purchasers of conveyances to buy technology that is over 15 years old, moving California away from its role as a leader in the development and application of new designs and technology.	<p>As discussed above, the majority of MRL products currently marketed in California pose serious potential risks to elevator workers by making access to critical components for inspection and maintenance difficult and in many configurations unnecessarily dangerous. This warrants regulations stricter than the provisions of ASME 17.1 – 2013 to insure that elevator worker safety is equivalent to that which is already required by the General Industry Safety Orders that apply to all workers in California.</p> <p>DOSH acknowledges that the stricter regulations will require current MRL designs to be redesigned to become compliant with Group V. Based on the Elevator Unit’s experience with current MRL designs that have been installed in California under permanent or temporary variances, this will require only minor redesign in many cases. In some cases, however, more significant redesign may be required.</p> <p>DOSH believes, however, that removing the floor between the hoistway and machine room does not constitute “new technology,” but rather a design choice which has the potential of creating unsafe working conditions for California workers. Accordingly, one of the major goals of the Group V proposal is to require elevators that are installed in California to be designed with worker safety foremost.</p> <p>Finally, review of on-line sales materials from all of the manufactures marketing MRL products in California indicates that they already offer the same energy efficient technologies in a safer machine room configuration which appear to meet all or most Group V requirements as designed.</p> <p>Note: The DOSH Elevator Unit’s proposed Group V Elevator Safety Orders have already led to changes to car top railing clearances in the proposed ASME A17.1 – 2016 model consensus standard. After considering the proposed Group V Elevator Safety Orders, ASME Hoistway Committee members asked the DOSH Elevator Unit to work with members of an ASME A17.1 task group that is re-considering car top clearances for the 2019 model consensus standard.</p>

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5. Energy Efficient Equipment	More restrictive Group V provisions will hamper the ability of private building owners and other businesses to meet the Governor's "green building" goals.	<p>As discussed above in items 3 and 4, the proposed Group V Elevator Safety Orders would not prohibit any new or more energy efficient technologies and would thus have no effect on the energy efficiency of elevator equipment.</p> <p>The only potential impact that has been identified is the assertion by NEII representatives that air conditioning would be required if the equipment is located in a machine room rather than the hoistway. However, because ASME A17.1 – 2013 requires natural or mechanical ventilation for sensitive electronic equipment installed anywhere in the building, including the hoistway, air conditioning of hoistways would be required under ASME 17.1 – 2013 as written. Because the hoistway of a typical five story building is 3,520 cubic feet, versus 600 cubic foot for a typical elevator machine room, Group V requirements may be <u>more</u> energy efficient than requiring air conditioning in hoistways.</p>
6. Rentable Space	More restrictive Group V provisions will require larger hoistways and larger elevators that will lead to loss of rentable building space.	DOSH does not believe that the Group V requirements designed to protect workers from shearing and crushing hazards in the hoistway that are not addressed by ASME A17.1 – 2013 would require larger hoistways or larger elevators. Rather, Elevator Unit experience indicates that mitigation of these hazards by clearances and/or guarding as required by Group V can be achieved without making either hoistways or elevators larger. As noted above in Item 4, Elevator Unit staff is working with an ASME task group to address these concerns in a future consensus standard.

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7. Elevator Cost	More restrictive Group V design requirements will create an additional cost of \$125,000 to \$225,000 per traction elevator.	<p>DOSH has been presented with no detailed justification for the assertion that the proposed Elevator Safety Orders will double or triple the cost of a traction elevator in California. To the contrary, a California small business enterprise that installs state of the art elevator equipment (supplied by independent manufacturers) has estimated that the proposed Group V requirements may result in a slight decrease in the overall cost of a traction elevator in California.</p> <ul style="list-style-type: none"> • DOSH estimates that initially, approximately 10% of all traction elevators will remain MRL (machine room-less) designs. Within a few years we anticipate that up to 30% of the traction elevators installed in the State of California will be MRL (machine room-less) designs. • As noted above, all NEII manufacturers already have a standardized machine room design that incorporates all of their state of the art technologies. • If a machine room is required, DOSH estimates that the additional building cost (vertically extending the hoistway approximately 5 feet, adding a door and a floor) to be between \$5,000 to \$20,000 per traction elevator. • Moreover, if a machine room is required, the need for a control space in a rentable portion of the building will be eliminated because the elevator controller will be located in the machine room, which is typically on the roof of the building with other building equipment. This would result in a cost savings of approximately \$7,140 per year (17 sq.ft. x \$35/sq.ft. x 12 months) for building owners and managers.

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8. Expert Input	The Group V proposal was developed without expert input.	<p>DOSH Elevator Unit personnel have hosted numerous Advisory Committee Meetings and Subcommittee Meetings with industry experts from all affected stakeholders to obtain input that was relied on while developing the Group V proposal.</p> <ul style="list-style-type: none"> • 12/18/12 - Proposed Group 4.5 Interim Adoption Advisory Committee Meeting • 2/6/13 - Meeting with elevator company representatives • 6/26/13 - Subcommittee Meeting with various stakeholders (elevator company representatives, elevator company engineers, elevator consultants, labor representatives) to discuss proposed car top and car top railing clearances • 4/17/14 - Meeting with elevator company representatives and engineers • 4/22/14 - Proposed Group V Advisory Committee Meeting • 7/14/14 - Meeting with building owner and building manager representatives • 10/9/14 - Meeting with elevator company representatives and engineers • 2/3/15 and 2/4/15 - Meeting with elevator company representatives and engineers • 4/9/15 and 4/10/15 - Meeting with elevator company representatives and engineers • 6/9/15 - Meeting with elevator company representatives and engineers • 6/10/15 - Meeting with building owner and building manager representatives