

DEPARTMENT OF INDUSTRIAL RELATIONS  
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH  
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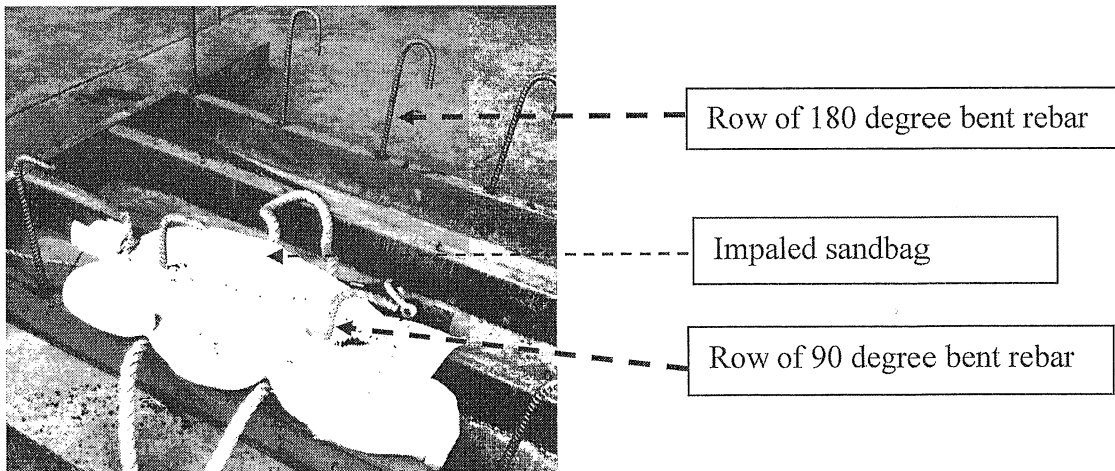
November 17, 2014

Steve Rank  
Executive Director of Safety and Health  
Ironworkers International Union  
[srank@iwintl.org](mailto:srank@iwintl.org)

Dear Mr. Rank

Thank you for allowing Senior Safety Engineer Keummi Park and I to observe testing of 'hooked'<sup>1</sup> reinforcing bar (rebar) as impalement protection at the Ironworkers Training Facility in Benicia on November 5, 2014. The testing was conducted by the International Association of Bridge, Structural, Ornamental and Reinforcing Ironworkers (Ironworkers Union). The Division of Occupational Safety and Health (Cal/OSHA) recognizes proper impalement protection as essential to providing a safe workplace.

The test performed consisted of dropping 250 pound sand bags made from woven nylon approximately 10 feet onto a series of rebars bent at 90 degrees and separately onto rebars bent at an angle of 180 degrees. The rebar consisted of 5/8 of an inch diameter number 5 rebar approximately 14 inches in height. The picture below shows the two rebar configurations and one of the bags which was dropped onto the vertical rebar.



The sand bags were impaled (the rebar passed completely through the bags) during drop tests onto both the 180 degree rebar and the 90 degree rebar. Although the sand bags do not represent the human body, the woven nylon upon inspection appeared to be much stronger and tougher than

<sup>1</sup> "Hooked Rebar" is vertical reinforcing steel bent over to an angle of 90 degrees or more

human skin. It is reasonable to assume that a human who falls 10 feet onto the bent rebar samples would also be impaled.

Rulemaking conducted by the Occupational Safety and Health Standards Board (Standards Board) in 2003 proposed to allow 'hooking' of rebar as an acceptable form of impalement protection. The Standards Board removed provisions from the regulations to allow 'hooking' based on testing which demonstrated that 'hooking' does not provide impalement protection. Documentation of the rulemaking proceedings is located at <http://www.dir.ca.gov/oshsb/rebarhazzards0.html>.

Cal/OSHA does not accept bending or 'hooking' of rebar as an acceptable method of impalement protection. An employer that bends or hooks rebar for employee impalement protection instead of providing approved covers or troughs is in violation of Title 8 section 1712. Such an employer would also be placing their employees at risk of serious injury. The tests conducted by the Ironworkers Union on November 5, 2014 serve to reinforce the position of Cal/OSHA.

Thank you for your interest in occupational safety and health. Please feel free to contact me if you have any questions

Sincerely,



Eric Berg

Acting Principal Safety Engineer

Research & Standards Development Occupational Safety Unit