

# **Considerations for Optimizing Construction Safety**

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Out of the 4,674 reported worker fatalities in U.S. private industry in 2017, one in five were in construction.<sup>1</sup> Excluding highway collisions, the leading causes of construction fatalities are falls, strikes by objects, electrocution, and accidents where a worker is caught in equipment or caught between collapsing materials. The U.S. Bureau of Labor Statistics estimates that eliminating these "Fatal Four" causes would save 582 construction workers' lives each year.<sup>2</sup>

Construction company owners and equipment operators can take several steps to minimize the risk of worker injury and fatality. These include complying with evolving Occupational Health and Safety Administration (OSHA) regulations; conducting comprehensive hazard awareness training; enforcing site-specific safety plans; and communicating daily job hazard analyses or job safety analyses to the crews conducting work on site.

## **Compliance to Evolving OSHA Regulations**

OSHA's Safety and Health Regulations for Construction are managed under 29 CFR Part 1926.<sup>3</sup> This single set of regulations contains 29 subparts that include, but are not limited to, fall protection; personal protective and life-saving equipment; fire protection and prevention; signs, signals, and barricades; materials handling and storage; steel erection; demolition; excavations; cranes and derricks; and electrical. Each sub-part contains multiple standards to which both construction labor and management must adhere.

29 CFR Part 1926 Subpart CC for cranes and derricks in construction has been a particularly challenging set of standards for many construction company owners and

Our team at Exponent includes both qualified OSHA outreach trainers and experts who can speak specifically to OSHA requirements for crane regulations. We recently partnered with several utilities to rewrite standard operating procedures to better adhere to new requirements for crane operator certification. We also partnered with a client who, following an accident, was suspected of not complying with OSHA's crane requirements. Our investigators demonstrated that the crane operations were indeed Subpart CC compliant, which led to a favorable litigation outcome.

equipment operators. Until recently, large municipalities like New York City and Chicago had licensing requirements for crane operators, but no nationwide standard existed. Subpart CC was first introduced in 2010 and was made official in late 2018 after years of industry negotiations regarding certification requirements for crane operators. Part CC mandates that crane operators are both certified in general and certified for the type of crane to be operated. This includes, but is not limited to, articulating cranes, crawler cranes, floating cranes, cranes on barges, mobile cranes, industrial cranes, tower cranes, and overhead and gantry cranes.4

<sup>&</sup>lt;sup>1</sup> https://www.osha.gov/oshstats/commonstats.html

<sup>&</sup>lt;sup>2</sup> https://www.bls.gov/iif/oshwc/cfoi/cftb0321.htm

<sup>&</sup>lt;sup>3</sup> https://www.osha.gov/laws-regs/regulations/standardnumber/1926

<sup>&</sup>lt;sup>4</sup> https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1400

# **Comprehensive Hazard Awareness** Training

Hazard awareness training (HAT) is another critical component of construction safety for both general employees and any others that may come to a job site. HAT helps ensure that workers are aware of safety risks that may be present on site. Depending on the construction site location, hazards can include underground utilities that may explode if hit or overhead power lines that may pose an electrocution risk if aerial work platforms or cranes are located in close proximity. Additional hazards may include, but are not limited to, chemicals stored on site; chemicals or hazardous materials present in contaminated soil; and combustible dust in silos or other working areas.

## Enforcement of Site-Specific Safety Plans

Site-specific safety plans (SSSPs) are generally developed by each site contractor and are designed to mitigate safety risks associated with identified site hazards. Effective SSSPs will incorporate potential hazards identified in either the scope of work or on the actual work site. They will also link to existing policies, controls, or practices for the safe handling of hazardous materials or other identified hazards.

Our team at Exponent is often asked to investigate the cause of construction site accidents. One of the most common blind spots we see is lack of adherence to the

<sup>5</sup> https://www.osha.gov/oshstats/commonstats.html

Jeffrey A. Travis, P.E., S.E. Buildings & Structures Principal Engineer Warrenville (630) 658-7504 | jtravis@exponent.com SSSP. Individuals who are overly familiar with a specific task or operation may fail to adhere to minor protection requirements or wear personal protective equipment (PPE) as prescribed by the SSSP. To minimize the risk of serious accident or death, we encourage construction site managers to ensure that the SSSP is routinely enforced.

# Communication of Daily Job Hazard Analyses/Job Safety Analyses

Job hazard analyses (JHAs) and job safety analyses (JSAs) are prepared by the foreman of the crew or jointly prepared alongside the crew and are applied to individual, specific tasks performed on site. Whereas an SSSP highlights different workers' responsibilities for the job overall, a JHA or JSA applies to specific tasks. For example, if a crew is performing excavation work, the JHA will discuss support requirements, limitations to digging without the presence of a trench box, etc. If done well, a JHA or JSA will communicate to the crew the task at hand for the day, what to look out for, and ways to stay safe.

### **Exponent's Expertise**

Exponent's multi-disciplinary team of engineers and human factors experts can help construction operators proactively evaluate OSHA compliance and identify safety gaps in SSSPs.<sup>5</sup> We also conduct construction site accident investigations to identify their root cause(s); assess the effectiveness of safety warnings on machinery; and evaluate SSSP and JHA/JSA compliance.

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