Cranes and Derricks Signalling Construction

WHAT'S AT STAKE?

Signal persons are a crane operator's eyes and ears on the ground and have a major responsibility in guiding operations. Signaling and communicating correctly with crane operators is vital to prevent crane accidents.

WHAT'S THE DANGER?

It has been well documented that the construction work site can be very perilous for worker safety.

Here are some stark statistics:

- Between 1992 and 2010 there were 5,096 fatalities in the United States due to fatal contact with electricity on construction sites. There was a total of 66,748 injuries that required days away from work in the same time period due to electricity. **The construction industry experience the majority of injuries and fatalities due to electricity.** These statistics do not include injuries caused by secondary events. For example, an individual falling from a ladder due to getting shocked. If these types of injuries were included, the statistics would be higher.
- One of the biggest exposures for a fatality on a construction site is ground personnel being struck by moving equipment. OSHA states approximately 75% of struck – by fatalities involve heavy equipment such as cranes or trucks.

HOW TO PROTECT YOURSELF

The construction site is fraught with dangerous equipment and, therefore potentially dangerous circumstances. Coupled with human error, workers can be endangered in this environment. Signaling is an important element to reduce / eliminate injuries and fatalities in construction crane work.

Signaling is an important part of hoisting and rigging and one should be familiar with the internationally recognized system of standard hand signals.

In many cases, hand signals are the most efficient form of communication between riggers and crane operators.

When is a signal person required?

On construction sites, signaling is required in five situations.

1. When the operator cannot see the load.
2. When the operator cannot see the load landing area.
3. When the operator cannot see the path of travel of either the load or the crane.
4. When the operator is too far from the load to judge distance accurately.
5. When the crane or other hoisting device is working close to live power lines or equipment.

Hand signals have their limitations. For example, they should never be used when distance or visibility prevents accurate communication with the operator.

There is a signal for each action of the crane. By using the correct hand signals, you can get a crane to do almost anything you want. The operator only needs to clearly see and understand your signals.

These are the ground rules for signaling:

- While only one person should signal the operator, anyone can give the STOP signal and it must be obeyed immediately.
- Signals should be clear and, wherever possible, barehanded.
- The load must be directed so that it never passes over anyone.
- Operators should not make a move until they receive and understand your signal. If contact between you and the operator is broken for any reason, the operation must stop.
- Some situations call for two signalers. For instance, during a concrete pour, one signaler may be needed to direct the lift while the other directs the drop.
- Where a difficult lift demands voice communication, use two-way radios instead of hand signals.

What does a signal person need to know?

- Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the Standard Method for hand signals.
- Be competent in the application of the type of signals used.
- Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.
- Demonstrate that he/she meets all the requirements through an oral or written test, and through a practical test.

How does a signal person become qualified?

- The employer of the signal person must ensure that each signal person meets the Qualification Requirements prior to giving any signals. This requirement must be met by using either Option (1) or Option (2).
- (1) Option – Third Party Qualified Evaluator. The signal person has

documentation from a Third-Party Qualified Evaluator showing that the signal person meets the Qualification Requirements.

- (2) Option –
- The Employer’s Qualified Evaluator assesses the individual and determines that the individual meets the Qualification Requirements and provides documentation of that determination. An assessment by an Employer’s Qualified Evaluator under this option is not portable—other employers are not permitted to use it to meet the requirements of this section

Voice Communication

There are situations where hand signals are not appropriate or impossible to implement. Voice signal communication can be instituted in place of hand signals.

Prior to Lifting Operations

Prior to beginning lifting operations using voice signals, the signals shall be discussed and agreed upon by the person directing lifting operations, the crane operator, and the appointed signalperson.

Telephones, radios, or equivalent, if used, shall be tested before lifting operations begin.

Prior to commencing a lift, the operator and signalperson shall contact and identify each other.

- Begin by calling for the operator by name
- Operator will acknowledge with the signalperson’s name

Voice Command Basics

The devices used to transmit signals shall be tested on site before beginning operations to ensure that the signal transmission is clear and reliable.

Signal transmission must be through a dedicated channel.

The operator’s reception of signals must be by a hands-free system.

Cautions regarding radio use may include the following:

- Awareness of any explosive devices in general area (radio transmissions have been known to cause premature detonation of explosives that use electric detonators)
- Other electronics (potential for interference)
- Other radios nearby operating on the same frequency

Elements of Voice Signals

Each series of voice signals shall contain three elements stated in the following order:

1. Function and direction
2. Distance and/or speed
3. Function stop

FINAL WORD

The modern-day construction site safety norm relies heavily on the seamless interaction between the crane operator and the signal person on the ground.