Focus On: Crane Safety

Crane accidents can be dramatic events. Think of the news stories you've seen – large tall cranes collapsing on a busy street in the middle of downtown New York or Toronto, destroying buildings and any other structures in their wake, crushing people, and hurling deadly flying debris. While not all crane accidents are this dramatic, they are no less horrific and deadly for bystanders and victims.

The Hazards

Working with cranes, either operating or working around them exposes workers to the hazards of lifted and moving loads and equipment, shock and electrocution hazards from overhead powerlines, and the falling or collapse of the crane itself. The good news is there are things you can do immediately and in the long-term to keep your workers safe and equipment in safe working condition.

Be a Better Supervisor

The very first thing you can do is choose operators and competent persons who are trained and qualified to do their jobs. You wouldn't think of getting on a plane if the pilot wasn't trained and qualified. Or even something as ordinary getting a haircut – you probably wouldn't let someone cut your hair who knows nothing about cutting hair. But are you letting untrained operators and unqualified personnel be in charge of complex and hazardous crane operations?

You must maintain and inspect each crane daily before use and as otherwise directed by the crane manufacturer and according to regulatory requirements – i.e. monthly, after a crane hasn't been used for six months, annual certification. Inspection and maintenance include all slings, wire ropes, hoists and other rigging equipment.

Before a lift happens, always consider the following regarding the load and the location.

1. **The Load** – What type of load is being lifted – forms, precast deck panels, or bridge deck girders?
2. **Load Weight** – Are the net and gross load weights known? Did you remember to factor in the weight of a crane load block; jib; rigging; hook, ball, and swivel; all cable below boom point; and other accessories?
3. **What's in the "Box"?** –Are there any hidden contents that could affect load weight and stability, or that could be hazardous if spilled? Is the center of gravity marked on the load?
4. **Is the site an Obstacle Course?** – Is the crane site suitable? Is the crane next to a haul road? Can the crane's superstructure rotate 360°without coming into contact with any object creating a trapping point between the counterweight and the fixed object? Can the crane be assembled and disassembled with outriggers or crawlers fully extended in accordance with manufacturer's specifications?
5. **Ground Conditions** – Is the ground on which the crane is to sit firm and level? Is it capable of withstanding the ground-bearing pressure of an outrigger jack or a crawler crane track with the load suspended over the corner of the track or outrigger? Are there any hollow structures under the crane pad? Are crane mats needed to stabilize any soft ground conditions? Information on ground-bearing pressures can be obtained from the crane supplier and manufacturer. http://www.agcil.org/cms/ckfinder/userfiles/files/SafetyCorner.pdf
6. **Is it a Critical Lift?** – A common definition of a critical lift is a lift that exceeds 75 percent of the crane's maximum rated capacity. Other critical lifts include lifts in congested areas; lifts that involve turning or flipping the load, which can result in "shock loading" or "side loading", both of which can lead to collapse. Lifts where the load weight is not known and if the load contains any potentially unstable pieces or materials. Lifts in areas where you don't know the capacity of the surface the crane will be parked on and areas of poor soil or unknown ground conditions – including wet soil (from rain or snow melt).

Lastly, lifts that require multiple cranes to lift and move the load.

The Crane

Your competent person (which could be you) must know the following when it comes to the crane doing the lifting. The capacity and limitations of the crane and the methods of work the crane can perform. The crane's safe working loads from the load chart. The dimensions and weight of the crane, both in transit and after being fully set up. If necessary, the outrigger or crawler crane track ground-bearing pressures (available from the supplier or manufacturer). Any restrictions or limitations on crane operations in the area. Finally, if renting a crane for the lift, request crane annual inspection certificate and maintenance records. http://www.agcil.org/cms/ckfinder/userfiles/files/SafetyCorner.pdf