

Fatality File

Father Operating Faulty Crane Lead to Son's Death



Three men hug near where the bodies of two workers were recovered after they died when their crane-hoisted lift basket fell 80 feet at a bridge construction site on Putah Creek in Winters. The basket landed on timbers covering a 30-foot hole dug for footings for the new span. The 10-worker crew included the father of one of the men killed, said Richard Disney, president of Burlingame-based Disney Construction, which was building the bridge. HECTOR AMEZCUA HAMEZCUA@SACBEE.COM

2014: California OSHA cited Disney Construction, Inc. \$106,110 for serious violations following the deaths of two employees who fell 80 feet from a crane-hoisted platform at a bridge construction site. The Sacramento District Cal-OSHA Office's investigation found that Disney Construction's crane had not been certified or visually inspected for defects to satisfy current testing and examination standards. The crane operator failed to perform an unmanned trial run or have a competent person inspect the rigging and platform before usage and there was no qualified, trained signal person to assist with the lifting operation.

On the day of the incident workers were using a pile driver crane when a cable broke near the top of a pile driver. A second crane was then used to hoist a personnel platform with two workers, Marcus Powell and Glenn Hodgson, so they could troubleshoot the cable on the pile driver. The rigging used to connect the platform to the crane dislodged, causing the platform and workers to fall some 80 feet to the ground. source: <https://www.dir.ca.gov/DIRNews/2014/2014-107.pdf>

2017: The crane operator, Mark Powell, was charged with involuntary manslaughter in the death of his son, Marcus, and the other victim, Glenn Hodgson. Cal-OSHA said Mark Powell used an aging crane that needed repairs and was not approved for lifting - to hoist Marcus and Glenn 80 feet into the air where the basket broke and both men fell to their deaths.

In addition to what Cal-OSHA characterized as a "long list of mechanical deficiencies," the agency said in its report of the incident that the basket used to lift Powell and Hudson did not have a working safety latch. According to Cal-OSHA inspectors, Disney supervisors failed to inspect the crane and personnel lifting equipment, which they determined was "the root cause of the accident." source: <https://www.constructiondive.com/news/ca-crane-operator-charged-in-fatal-accident/433201/>

"Since the decision was made to use a crane and a personnel platform, the root cause of the accident was the failure to survey and inspect the equipment being used and the equipment being repaired," the agency's inspectors concluded. source: <https://www.sacbee.com/news/local/crime/article124001954.html>

Picture This

Unsafe Outriggers

What we've got here are a few people who aren't concerned at all about stability or gravity. My question is how did everyone/ anyone on these sites let this happen? Even if you're not well-versed in safety regulations these situations look incredibly unsafe.



How did they manage to get those blocks SAFELY under the truck? The ground is muddy and the wooden blocks the outriggers are on appear to be sinking into the ground - at least on one side. Two of the three men don't have any PPE - it's unclear what's going on with the second man behind the outriggers.



Next, we have an outrigger "resting" on two compressed gas bottles. Are they full? Empty? Are they rated to hold the weight of the crane and the load? No, no they are not. They're not designed to be used as an outrigger mat. And look at the debris and unstable ground under and around the outrigger. This is not a safe area to put down your outriggers.

Here are some safe outrigger tips:

1. Every time the outriggers are deployed, your outrigger pads or crane mats must be under them.
 - a. Ultimately the ground is supporting everything. It must be taken into consideration in every application. Outrigger pads should always be set-up on sufficiently compacted, drained and level surfaces.
 - b. All uneven ground should be leveled prior to the placement of any outrigger pad or crane pad.
2. When stacking outrigger pads, always stack a smaller outrigger pad on top of a larger underlying pad.
3. Never stack a larger outrigger pad on top of smaller outrigger pads, cribbing, dunnage or other supporting materials.
4. Always use materials of a known strength that are designed as support for heavy equipment.
5. Outrigger pad/floats must be smooth and free from debris in order to evenly spread the load and achieve solid contact with the outrigger pad or crane mat.

Be A Better Supervisor - 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 workers and bystanders.

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. source: <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.

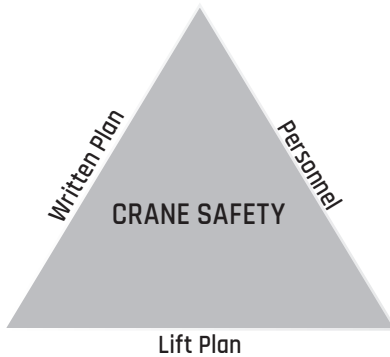
The Crane

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.



Workplan - Lift Plan for Critical Lifts

Think of crane safety as a triangle. One side is the written crane, hoist, and rigging policy, which includes requirements for frequent and periodic inspections.



The second side of the triangle are the supervisors, qualified and trained operators, and any designated or authorized persons qualified to operate or work around the crane.

The third side is the lift plan. Most crane collapses, failures, injuries, and deaths can be prevented by using a lift plan. All lifts require at least some planning – how much does the load weigh, what’s the capacity of the crane – but critical lifts require more planning and oversight to ensure a safe and successful lift.

There are many definitions of what a critical lift is. A common definition is a lift that exceeds 75 percent of the crane’s maximum rated capacity. Here are the common components of a lift plan.

Components of a Lift Plan

Description of lift, rigging plan, other plans or diagrams.	Crane position and configuration.	Lift height, load radius, and boom length and angle.
Size and weight of load and percent of crane’s rated capacity.	Personnel involved.	Communication method(s).
Ground and environmental conditions. i.e. wind, wet ground, etc.	Inspection procedures and requirements.	Procedures for hoisting personnel.

Pre-Lift Review

Hold a pre-lift meeting with the crane operator, lift supervisor, rigger and anyone else involved. The critical lift plan should be reviewed to ensure the team is ready to safely conduct the lift. Whenever possible, a practice lift with similar crane configurations and load conditions should be done. Remember, practice lifts should always be performed by the same crew, using the same lifting equipment, as those used for the lift.

Hoisting Personnel

Hoisting workers must only occur if there is not a safer way to access an elevated work area and these requirements are followed.

The total weight of the load must not exceed 50% of the crane’s load chart capacity. The weight of the platform and rated safe working load weights must be conspicuously and permanently marked on the platform.

A positive locking safety latch must be on the crane hook and load lines must have a safety factor of at least seven times the maximum intended load. Guard rails must be provided with a locking gate that does not swing outward. Proof testing at 125% of the platform’s rating capacity is required prior to hoisting employees and after any repair or modification. Whenever the crane is moved to a new location, a new proof test is required.

A proper tie-off to a structural member inside the basket or the lower load block/overhaul ball should be reviewed during the pre-lift meeting.

The platform during the unmanned trial lift must be loaded to at least to the expected lift weight should be made from ground level to each location at which personnel will be hoisted.



TOOL: Mobile Crane Daily/Monthly Inspection

This sample checklist, from the North Carolina Department of Labor, is designed to help you in developing programs tailored to your own operation. Please copy, expand, modify and customize this sample as needed.

This document is provided as a compliance aid but does not constitute a legal interpretation of safety legislation or standards, nor does it replace the need to be familiar with, and follow, actual safety legislation and standards.

MOBILE CRANE MONTHLY INSPECTION		
Inspection Checklist may also be used for shift inspection		
Signature of Competent Person: _____		Date*: _____
Crane Model:	Crane Serial #	Max. Crane Capacity:
Notes:		

General	Status: S = Satisfactory X = Deficiency R = Recommendation N/A = Not Applicable
A. Control Mechanisms	
B. Control and drive mechanisms	
C. Air, hydraulic, and other pressurized lines	
D. Hydraulic system	
E. Hooks and latches	
F. Wire rope reeving	
G. Wire rope	
H. Electrical apparatus	
I. Tires	
J. Ground conditions	
K. Equipment level	
L. Operator cab windows	
M. Rails, rail stops, rail clamps	
N. Safety devices and operational aids	

**Form must be retained according to regulatory/company policy.*

By the Numbers

Six Ways Crane Accidents Occur

Crane accidents are one of the leading causes of construction workers' deaths. Causes include:

- 1 Cranes buckling or collapsing.** Cranes have weight limits to ensure they do not tip over. Cranes also use counterweight and outrigging systems to counterbalance the weight. If the weight limits are exceeded, the crane can tip over or the boom could collapse.
- 2 Improper crane assembly.** A major reason booms collapse is improper assembly of the crane. In addition, if the crane does not have the proper wood or metal blocking supports to stabilize the load the crane is carrying, the load could move and cause the crane to collapse.
- 3 Improper employee training.** Crane workers must be properly trained in the use of cranes and proper operation of cranes.

Employers also need to ensure that workers are warned of crane dangers and maintain a safe distance between the crane operation and work performed by other workers.

- 4 Mechanical failures.** Cranes need to be maintained regularly to prevent accidents caused by mechanical failures. Crane components should be kept oiled, and any problems should be repaired promptly.
- 5 Contact with electrical lines.** Electrocution from overhead power lines is a common cause of accidents. The crane operator and workers in the basket must be aware of where live wires are. In addition, the power to electrical lines should be shut off before work begins near live wires.
- 6 Inspections.** Employers rushing to get a construction project completed may encourage quick, sloppy inspections of their cranes. However, thorough inspections are critical to prevent crane accidents. Inspectors must ensure the crane is really safe before clearing it to be used.