

# DO YOU KNOW?

## “Crane Safety”

### Rated Capacity Indicator Alert

Do you know that no matter how effective automatic load indicators on the crane are, they still require the operator to properly set up a crane before the pick?

A recent mobile crane fatality was the result of a mobile crane being operated with the outriggers deployed on only one side of the crane. During operation, the crane overturned allowing the operator’s cab to strike a nearby vehicle, killing the crane operator. The function of the Rated Capacity Indicator (RCI) installed on the crane has become an issue.

Two issues from this incident will be discussed in this article. For the sake of uniformity, the term “overload” will be used to indicate a condition that causes a failure of the crane either from a structural failure (something breaks) or a loss of stability (the crane overturns).

The first issue has to do with Outriggers. These devices are used on mobile cranes to:

1. Level the crane.
2. Lift the wheels clear of the ground.
3. Increase the crane’s resistance to tipping by increasing the distance from the tipping point to the center of rotation.

When Outriggers are installed, a specific outrigger chart is provided by the manufacturer. When multiple outrigger positions are allowed (100% out, 75% out, 50% out, etc) a separate chart is provided for each position. The load charts are predicated on the fact that all four outriggers are set to the same position. When this is not true, the outriggers with the least extension govern operation and the load chart for that position should be used. In this claim, use of the governing load chart was not enforced. The other option would have been a company policy that did not allow differential outrigger settings.

Issue two has to do with operator aids. There are three operator aids required on mobile cranes built after September 2005 to assist the operator from overloading the crane: a load indicator, a rated load indicator, and a rated capacity (load) limiter. The differences as defined by ANSI B30.5\* are very important.:

- A Load Indicator as a device that measures the weight of the load.
- A Rated Capacity Indicator is a device that automatically monitors radius, load weight, and load rating and warns the operator of an overload condition.
- A Rated Capacity Limiter is a device that automatically monitors radius, load weight, and load rating and prevents movements of the crane which would result in an overload condition.”

As illustrated in the definitions, all three operator aides measure parameters which could lead to an overloaded state, but what they do with the information is very different. The rated capacity indicator warns the operator using a light, buzzer, or horn, but does not stop the operation causing the overloaded condition. The rated capacity limiter goes that extra step and stops the problematic operation, boom down, boom extend or slew, before it results in an overloaded condition.

While all three devices are used by the crane operator to determine the capacity of the crane in real time, the devices may require crane operator input such as boom angle, boom length, load weight,

or outrigger configuration while others obtain some or all of the information from sensors mounted on the crane. Even if sensors are used, it falls to the operator to set-up the crane according to the manufacture's specifications as other parameters not measured by these devices, such as degree of level, outrigger settings, counterweights mounted, or auxiliary devices installed, can also cause an overload.

Getting back to the opening paragraph, the owner or operator may have relied on the Rated Capacity Indicator to warn of the overload condition, not knowing the limitations of the particular device installed. In this case, the device allowed operation with the outriggers improperly set either because it was not correctly set by the operator or was not included as a monitored function.

## Crane lift approvals

We require the following for all LAUSD crane lifts.

1. The 19-point questionnaire
2. The Lift Evaluation Form
  - a. Provide location, date & time of lift
  - b. Identify how much "stick" will be needed for lift. This is boom length in feet.
  - c. What is the worse angle that will be used (smaller angles are more hazardous)?
3. The crane's complete load chart
4. The crane's most recent Quadrennial
5. The crane operator's certification
6. Proof of liability
7. What type of fall protection will be used for those on the roof?

Please visit our website at <http://mo.laschools.org/fis/existing-facilities/safety/>.

The link for our Crane Lift Evaluation Form is [CRANE SAFETY - Lift Plan Consideration - Updated 8/7/2008](#).

Please feel free to contact me if you have any safety related questions or concerns.

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***"We Build on Safety!"***