

TOWER CRANES WARRANT CLOSER LOOK

By Thomas Richard Barth

According to statistics, about 125,000 tower cranes are operating worldwide and, on average, are erected in 2 days on various jobsites to build skyscrapers. There are two types of cranes, tower and mobile, which can be purchased or rented depending on the company's scope of work. Mobile cranes are limited because they must be moved from location to location on the jobsite to maneuver materials. Tower cranes can be placed closer together, have a radius of about 140 square meters, and can lift steel, concrete, and a variable range of building material. Contractors can save 50 percent on the cost of material handling by using self-erecting tower cranes and onsite labor, saving thousands. Due to the flexibility of tower cranes, they are becoming more commercialized and are high in demand.

CRANE OPERATION

Operating a crane is very demanding and requires the operator to stay focused. Because the crane is usually the tallest piece of equipment on the jobsite, the base of the crane is typically bolted onto a large concrete pad. The base connects to the mast, which holds the gears and motor at the top, allowing the crane to rotate.

CRANE SAFETY

Crane safety comes under scrutiny when there is an accident. Some of the disturbing findings include operators unknowingly using defective cranes, maintenance personnel not trained to recognize defects, and no plan in place to prevent cranes from colliding when two or more are present on the jobsite. There should be no slippage of training or inspection. Upon investigation, most accidents lead primarily back to these areas.

PROPER OPERATION

It is important to maintain secure anchors and a concrete foundation to bear the weight of the crane. Anchors and the concrete foundation can become worn due to shifts or movements of an improperly operated crane. Slings carrying a load that tears, causing the load to fall, can affect the anchors and foundation. Crane operators should operate the crane in a steady, smooth motion; this will add life to the tower crane. Operating cranes in a jerky, unsafe manner—such as side loading, shock loading, fast swinging, and stopping the swing abruptly—can cause metal fatigue putting undue stress on the pins, chords, lacing, foundation, and the whole tower crane.

There are instances when the job foreman may ask a crane operator to perform lifting and pulling actions, placing the

tower crane at risk. It is vital to have crane operators completely trained on proper operating procedures. The crane operator should communicate to the ground crew if weather conditions, such as wind, may affect the instructions to move material. Different surface areas will be affected by wind differently, and the size of the load can cause difficulty with stability.

WEAR AND TEAR

Normal wear and tear happens over time by transporting, erecting, and disassembling a tower crane. It is important to have proper maintenance and repair to ensure crane safety for the operator and the workers on the ground. It is crucial to properly weld repairs and have repairs inspected thoroughly to prevent a collapse. During inspections, check for corrosion that can cause a decrease in the strength of the crane or cause the lifting jib to break.

REPAIR EXPERTS

Maintenance personnel should be trained on every aspect of the tower crane. Understanding the mechanics of the crane and the parts that need careful inspection is just one part of the training needed. All mechanics know that bolts can loosen, gaps can occur in joint sections, and pins may fall out, causing the equipment to fail. Properly trained crane maintenance personnel also know the right tools for the job. For example, a moment wrench is needed to tighten bolts, and if this is done incorrectly, the crane may collapse. Regular maintenance and a proper daily check of the tower crane are critical.

THE COST OF DOING BUSINESS

The cost of proper training and maintenance is priceless. These areas should not be on the chopping block when it comes to cutting costs. Time and money spent on the front end can diminish the risk of accidents, injury, or loss of life. Investing in professional training and safety sessions on the jobsite will pay for itself with accident-free workplaces and increased efficiency for material handling.

As infrastructures are built and rebuilt, tower cranes will continue to dot city skylines from coast to coast. With proper training of crane operators and maintenance personnel, accidents involving tower cranes will be reduced and safe operations will prevail. ♦

ABOUT the
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