Crackdown on cranes

The Ministry of Labour is coming to see your tower crane

If your site has a tower crane, expect the Ministry of Labour (MOL) to come knocking.

In 2005, several incidents happened in the Ottawa area:

- A tower crane's load ascended uncontrolled. The cable snapped, dropping an over 200-pound block into a public intersection. Luckily, no one was hurt.
- After this problem was fixed, the same crane's block ascended uncontrolled. The operator applied the brakes in time.
- Another crane's concrete bucket descended uncontrolled.

These incidents led MOL inspectors to look into the condition and operation of tower cranes in the Ottawa area. The MOL launched the Eastern Ontario Tower Crane Audit.

Previously, it was rare for an inspector to climb a tower crane to examine the conditions of the tower, operator's cab, control systems, boom, and other elements from up close. Now, the inspectors began climbing the cranes in the Ottawa area. They ended up auditing 20 cranes, using a checklist based on the CSA standard Z248-04 *Code for Tower Cranes* to ensure consistency in their inspections.

What they saw came as quite a surprise.

What inspectors found

Inspectors found startling examples of poor maintenance practices.

Equipment was often in terrible shape, patched together or mended improperly. They saw improper wiring, broken electrical connectors, non-standard parts (e.g., nails used instead of cotter pins), and unrepaired safety redundancies.

Some operators, using generic checklists, were checking off items that weren't even part of their crane!

Most of the problems were "common sense" issues—they were obvious hazards.

Orders issued

The inspectors ended up issuing 39 orders among the 20 cranes.

Most orders were based on Section 25 (2) (h) of the *Occupational Health and Safety Act*, which states that an employer must "take every precaution reasonable in the circumstances for the protection of a worker". The inspectors considered the provisions of CSA standard Z248-04 *Code for Tower Cranes* to be reasonable precautions.

Here's a sample of some of the orders:

- Electrical connectors missing or inadequate for use.
- Guarding: Guard around chain and sprockets for hoist upper-limit control mechanism missing.
- Slewing brake not to manufacturer's specifications.
- Wind speed or temperature indicators missing (you also need a sign in the cab stating the wind and temperature conditions which should stop the crane operation).
- No procedure for operating more than one crane on site.

After the inspections, the MOL reviewed its findings and drew these conclusions:

- The safety condition of the crane usually depended on the age of the crane. The older the crane, the worse the safety condition.
- Most of the problems were found in the system of controls rather than in the structure of the crane.

Provincial crackdown

The findings in Eastern Ontario led the MOL to wonder if similar problems occur elsewhere in Ontario. So this year, the MOL has launched a crackdown on cranes throughout the province. Expect inspectors to show up on your site.

Here are just some of the things the inspectors will be looking for.

In the trailer

- ❑ Drawing of crane base.
- ❑ Crane pre- and post-installation inspection log.
- ❑ Wire rope certification.
- ❑ Elevation and plan drawings of crane on site.
- ❑ Soil load bearing report (if applicable).

Between the trailer and the climb

- ❑ Test blocks (in reach and labeled with weight).
- ❑ Base of crane (cracks, condition of bolts, debris, etc.)
- ❑ Crane grounded for lightning protection.
- ❑ Disconnect for crane with fuses.

The climb

- ❑ Ladder securely fastened with consistent rungs
- ❑ Rest platform every 9 metres with ladder offset at platform
- ❑ Device for preventing crane from rotating to a point which would twist and snap electrical cables.

The cab

- ❑ Wind and temperature indicators visible to operator.
- ❑ Fire extinguisher.
- ❑ Operator controls properly labeled.
- ❑ Check sheet.

Outside the cab

- ❑ When the load is at top, there is at least $^{1}/_{2}$-inch of drum flange above the cable.
- ❑ When the load is at bottom, there is at least 3 wraps of the cable on the drum.
- ❑ The diameter of the drum is at least 18 times the diameter of the cable and sheaves.
- ❑ All electrical connectors are 3S or 4 type (sealed against rain).
- ❑ All electrical boxes sealed with gaskets.

Resources

This is just a sample. For a thorough checklist, refer to

- ✓ the manufacturer's manual
- ✓ CSA standard Z248-04 *Code for Tower Cranes*.

Although the CSA standard is not part of the Construction Regulation, it provides criteria for safe operation of tower cranes. The MOL can also use these criteria for assessing whether workplace parties are taking reasonable precautions for protecting workers and the public.

Tower crane crackdown: results

Violations were widespread. Ministry of Labour to inspect tower cranes regularly.

A Ministry of Labour (MOL) crackdown on tower cranes last year revealed widespread safety violations. The findings mean that the MOL will be paying special attention to tower cranes now and in the future. This article can help you prevent injuries and property damage, and avoid fines and orders.

The background

The crackdown came as a response to indications of wide-ranging safety problems with tower cranes. Several incidents in Ottawa in 2005 provoked the MOL to audit cranes in that region. The inspectors ended up issuing 39 orders among the 20 audited cranes.

This result led the MOL to launch a crackdown across the province. The inspectors visited 120 projects across Ontario from May 1 to October 31, 2007.

The inspections

When an MOL team of inspectors visited a site, one group would inspect the crane while the remaining inspectors would audit the health-and-safety situation on the rest of the jobsite.

The inspectors judged the condition and operation of the cranes—as well as related aspects such as the electrical and mechanical systems—against the provisions of the Construction Regulation (Ontario Regulation 213/91) as well as the CSA (Canadian Standards Association) standard Z248-04 *Code for Tower Cranes*.

The results

The inspectors issued an astonishing 1,415 orders for the 120 projects they visited. Of those orders, 151 were stop-work orders, which were issued on more than half of all visits.

The average number of orders per visit (7.7) was more than three times higher than the average during regular MOL inspection visits to construction sites (2.3).

The problems

While there were certainly problems with crane structure and condition, most of the problems related to the mechanical or electrical systems. These areas are not captured by the professional engineer's inspection of the crane's structure.

The top orders inspectors issued were for violations of these requirements:

- The requirement for the employer to "take every precaution reasonable in the circumstances for the protection of a worker," as required by the *Occupational Health and Safety Act* Section 25 (2) (h). The inspectors considered the provisions of CSA standard Z248-04 *Code for Tower Cranes* to be reasonable precautions.
- Fall protection (e.g., at offset platforms).
- Requirements of the "Cranes, Hoisting and Rigging" part of the Construction Regulation.
- Electrical safety (e.g., lack of weatherproof connections).
- Reports and engineer review (see Section 54 of the *Occupational Health and Safety Act*) (e.g., operators were not actually doing the logbook inspections, but instead were just checking items on the list and signing the log).
- Requirements of the "Equipment, General" part of the Construction Regulation.
- Proper access and ladders.

The very last inspection that the MOL carried out provides examples of typical problems the inspectors encountered throughout the crackdown:

- Missing guardrails on rest platforms
- Broken welds on rest platforms and walkways
- Poorly maintained or improper electrical equipment
- Improper hoist cable

- Hoist cable not spooling properly
- Improper and missing lock pins
- Missing operator's manual.

What to expect in the future

If you have a crane on site, expect MOL inspectors to show up unannounced. The MOL plans to inspect all cranes—province-wide—after they are erected, and have dedicated field staff and engineers for this purpose. As well, the Electrical Safety Authority (ESA) will begin to participate in province-wide tower-crane surveillance.

Employer's responsibilities

Follow all the requirements of

- the Construction Regulation
- the crane manufacturer's instructions
- CSA standard Z248-04 (get a copy from CSA at 1-800-463-6727 or www.csa.ca)

If you're renting or leasing a crane, ensure that the paperwork you get includes the manufacturer's instructions, as well as proof that the crane has been North American certified.

The lease agreement generally states that the contractor is responsible for the costs of required repairs, parts, and other maintenance while leasing the crane. This condition means that there is little incentive for suppliers to do repairs at their own cost before leasing out the crane. Be aware that regardless of who owns the crane, **the employer is required to ensure that the crane and its systems are in good repair**.

Before you erect the crane, you are legally required to contact the Electrical Safety Authority (ESA, 1-877-372-7233) for an inspection of the electrical aspects of the crane.

Once you erect the crane, a professional engineer must inspect it. If the inspection reveals any defects, you must fix them. A report on the inspection must be prepared, and the engineer must sign it. After this process, the employer is responsible for maintaining the crane. It must be reinspected every 12 months.

Operator's responsibilities

- Follow all of the requirements that your employer and Ontario law require, as well as good crane inspection and operating practices.
- Put your training and expertise into practice. Inspect and operate the crane with a high degree of professional responsibility.
- You have the obligation to report problems to your employer.
- Refuse to operate a crane under unsafe conditions. You have the right to refuse unsafe work.
- If safety problems go uncorrected and the internal responsibility system within the company isn't working, inform the Ministry of Labour. ■