

Tower Crane Inspections

August 24, 2020

Below is a list of items MLTSD inspectors may look for in a standard tower crane inspection on projects as per Ontario Regulation 213/91, Regulation for Construction Projects.

- Foundation (base) designed by P. Eng, drawing stamped. Constructed in accordance with manufacturer's specs, soils report. Rebar installation, concrete tests. Site specific crane erection drawing.
- Shoring and Bracing for tower crane (TC) support or tie in designed by P. Eng in accordance with the crane manufacturer's specifications / installed in accordance with the design.
- Structural P. Eng review design of TC installation and ensure integrity of building or structure - review, approve and sign drawings.
- Constructor to keep copy of the foundation, shoring and bracing drawings on project while TC is erected, along with any written opinion about the drawings by a structural engineer.
- Structural elements (documentation of non-destructive testing/NDT), including structural fasteners as indicated within the Professional Engineers Ontario (PEO) practice standard review for tower cranes. Turntable bearing are to be maintained and bolts replaced/NDT per manufacturer specifications and recommendations.
- TC visually inspected by a P.Eng or a competent worker designated by the P.Eng for defects in structural elements and components before used at project and at least every 12 months, repair any defects and P. Eng provide report. Constructor keep report at project.
- If applicable, written procedures from the crane's manufacturer for securing the crane from slewing freely. For example, if securing is required by the manufacturer as a standard procedure or if securing is required to prevent collision with another crane or structure or another object.
- Written procedures for climbing/extending the height of the crane and ensure the crane is plumb.
- Operator manual.
- Certificate for wire rope, log book, maintenance records.
- Authorization of items which increase the wind-exposed area (signage, etc.).
- Proof of operation tests were conducted by a competent worker to ensure TC automatic limit switches and overload devices are installed and functioning in accordance with the regulations and the manufacturer's specifications.
- Overload switches shall be tested by using test blocks that have their weight clearly marked on them and are kept at the project.
- Disconnect for crane with fuses and correct phasing indicator.
- Crane properly grounded, for electrical and lightning.
- Check crane anchoring connections.
- Check shores and braces, tie-ins and/or wedges - in accordance with drawings.
- Check that cotter pins or keepers in place.

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- Check connecting bolts and pins.
- Fall protection cage or rails from base to operator cabin, on boom and counter-jib does the operator have a safe route.
- Device from stopping the electrical cables from becoming twisted due to more than 360 deg slewing (slewing slip ring).
- Guarding for mechanically operated equipment.
- Load rating plate (chart) attached to the crane and readable by the operator while at the controls, ensure it is for the make and model of crane it is being used in.
- A luffing boom crane must have a boom angle indicator attached to the crane and readable by the operator while at the controls.
- Wind speed indicator.
- Temperature indicator.
- Cab (windows) safety glass.
- Is there a functional windshield wiper?
- Controls labelled with words or pictures.
- Fire extinguisher inspected and tagged monthly.
- Wire rope inspection been performed, defects noted, and inspection recorded in the log book
- When load at top is there at least 1/2 inch of drum flange above the cable.
- Are the brakes set up to engage if power is lost?
- Are the sheaves free from defects and saddle the rope closely?
- Are there devices to guide the rope back into the sheave if it becomes slack and exits the sheave groove.
- Are all electrical connections and boxes sealed with gaskets?
- Does the load trolley have protection from falling if a wheel fails?
- Does the load trolley have a brake on it?
- Trolley travel limit device for both vertical and horizontal.
- Look for deformation, corrosion or cracks.
- Operator authorized under the *Ontario College of Trades and Apprenticeship Act, 2009* (OCOT) – proof of Certificate of Qualification for hoisting engineer — Tower Crane Operator or authorized training agreement.
- Cab orientation in accordance with section 163 of the regulation.
- Proximity to energized overhead electrical conductors.
- Load block, hook safety catch, appropriate rigging.
- Access ladder, secure, consistent rungs, no defects or loose rungs, offset landings.

Operational Test

- hoisting and lowering
- traversing the trolley
- swing motion
- slowdown brake
- main brake
- on the clutch
- max load in high gear
- max load in low gear
- slow speed limit at top of hoisting
- stop at top of hoisting (progressively increase speed to 100%)
- limit boom
- load-weighing device - LMI (required for TC's manufactured after Mar 2004, recommended before)
- operator made the required daily entries into the cranes log

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- maintenance records for the crane in the log book
- limit switches and load limit switches operation tested regularly
- test blocks kept on the project while the crane is erected

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