

Erecting Tower Cranes: Required Protocol for Third-party Certifications

Erecting a tower crane is **only** permitted after the equipment applicant – Engineer of Record (EOR) – submits **all required documentation** and the Department’s Cranes and Derricks Unit reviews the submission and issues a Crane Notice (CN) approval. Before the issuance of a CN, the EOR **must** submit all third-party certifications, which include: certification letters, reports and documentation to the Department’s Cranes and Derricks Unit.

The following protocol outlines the requirements for the EOR, third-party inspectors (inspector) and crane owners (owner) and may be updated to meet statutory requirements and industry practices.

THIRD-PARTY CERTIFICATION

Third-party certification **must** be provided and include certification letters from the EOR, inspector and owner. These letters **must** contain references to the equipment and project, such as the: CN approval number, Crane Device (CD) number, Crane Serial Number (SN), crane model number, project location of the crane, and all other relevant documentation outlined in this protocol. The third-party certification **must** state:

1. A thorough review of the crane installation, operation and maintenance manuals has been undertaken for a comprehensive understanding of the components, functions, servicing and inspection requirements;
2. The repair, testing and inspection records, and any other relevant crane documents were reviewed;
3. A complete inspection and non-destructive testing of the crane and all of its structural, mechanical, electrical and control components were performed and documented; and
4. That the electrical power source was connected by a Department verified licensed Master Electrician (for tower cranes operated primarily by electrical power source).

EOR PROVIDED DOCUMENTS

The *Applicant EOR Certification Letter* **must** state the EOR has reviewed the inspector certification package, including all relevant documents of the inspection, and has found it to be complete and does not object to the crane’s erection.

DOCUMENTS PROVIDED BY INSPECTOR

- *Third-Party Inspector Certification Letter* – submitted through the EOR with references to CD number and the equipment SN **must** state that:
 - The crane installation, operation and maintenance manuals (properly identified with the equipment SN) have been reviewed.

- Maintenance/repair records, inspection reports and logs have been reviewed (particularly logs and records showing crane meter hour and load cycle counter collating manufacturer's interval maintenance requirements with the actual performance hour readings and stating the condition of brakes, pads, gears and lubrication for all winches and slewing) and that a review was undertaken of the slew bearing's last inspection and maintenance report stating the latest date of inspection.
- Original equipment has not been altered, any visual structural damage and/or repairs and modifications performed have been identified and disclosed, and any repair or replacement components match or exceed the original manufacturers' standards and safety factors.
- All of the unassembled crane components are identified with unique numbers and component description in the summary and checklists and are in acceptable condition to permit erection. All individual counterweights are marked permanently noting their appropriate weights.
- Crane Component Checklist and Status – **must** be provided and list:
 - Hardware, including but not limited to: structural bolts; nuts; washers; pins (boom/jib); mast, sheave, etc.; holders and keepers; ladders; railings; platforms; and paint and/or corrosion coating
 - Electronic monitoring (indicating device model numbers and manufacturer) controlling load, moment, angle, radius, anemometer, visual and audible warning – Load Moment Indicator (LMI)
 - Original Equipment Manufacturer (OEM) starter legs/anchor stools, undercarriages, templates, and mast sections
 - Boom/jib sections and jib extension sections
 - Transitioning section, turntable, slew ring, bearings and gears
 - Winch assembly, brakes and covers, fittings, valves, hoses and gears
 - Machine deck, A-frame, bridle, solid bar pendants, connection lugs and bushings
 - Wire rope pendants, wire ropes and sheaves
 - Trolley, hooks, headache/overhaul ball, load blocks and anti-two- block device
 - Operator Cab (including but not limited to the cab housing, wiring, dead-man control, control panels and windshields)
 - Electrical, direct/hard wire communication system, aviation strobe, lightning arrestor/grounding systems (stating the condition of wiring, contacts and components)
 - Hydraulic system (stating condition of hoses, fittings and valves, and condition of pumps and motors)
 - Top Climbers Climbing Frames (stating the condition of cylinders, valves, hoses, fittings, clips, shoes and gauges)

- OEM tie-ins, collar components and counterweights
- All major components shall have an identifying unique number stamped or otherwise tagged on the component itself and the associated corresponding number shall be noted alongside the named component in the checklist and/or the testing documents. Identification numbers on starter legs shall be visible after embedment. For electrically powered cranes, all electrical equipment must be labeled.

DOCUMENTS PROVIDED BY THE OWNER

- *The Owner's Certification Letter*, with reference to the CD number, equipment SN, and Equipment Model Number **must** state that:
 - Current installation, operation and maintenance manuals were made available to Third-party Inspector for review.
 - Installation, operation and maintenance manuals are up-to-date, reference the correct serial number of the crane, contain service bulletins and a maintenance checklist appended to it, and are furnished within the crane.
 - No structural repairs and/or modifications have been performed on the crane or any of its components.
 - Records listing all accidents, major repair history, and maintenance history were made available to third-party for review.
 - All fastening hardware is OEM supplied, noting also if bolts and nuts are original or replacement components.
 - Hydraulic oil and filter of all hydraulic systems have been drained, flushed, replaced with new hydraulic fluid and filters according to the manufacturer's recommendation for this specific project and that the system and hydraulic oil will be tested based on the manufacturer's recommendation.
 - All required operational safety devices (indicators, limiters, visual and audio warnings) on the crane and associated components, including software, are current to manufacturer's specifications, that all devices will be calibrated by the manufacturer or its representative or certified mechanic immediately after erection and prior to scheduling the load testing, and whether these safety devices are OEM or other.
 - The crane or its components were not submerged in water or exposed to flooding conditions
- *Five Years of Crane History*
Provide records listing previous worksite locations and storage yards with appropriate dates.
- *List of Inspections Required*
Provide detailed checklist of frequent and periodic maintenance, service and inspection requirements to be completed by the crane operator, maintenance engineer or designated person appointed by crane owner.

- *Non-OEM Components*

The following documents are required for all proposed use of non-OEM manufactured sections and/or components:

1. Vendor certifications and statements attesting that manufactured components meet OEM standards and are in compliance with or exceed all manufacturer safety factors; and
2. EOR's acceptance certificate.

- *Special Requirements*

- **Potain GME Model Cranes.** Owner shall provide a Certificate of Inspection that the owner has inspected all of K-Mast components according to Manitowoc Crane Care Service Bulletin G09-T2 and found them to be free of defects.
- **Potain External Climber 800TA (Models: MR-415, 405, 295 & 90B).** Owner shall provide a letter documenting performance date of a cracked-leg special inspection and repair procedure as outlined by Manitowoc.
- **Manitowoc Wind Sail Plate Stiffening Support.** Owner shall provide a Certificate of Inspection that the owner has inspected the wind sail support components in accordance with Manitowoc Crane Care Service Bulletin T11-062 and found them to be free of defects.
- **Terex Model CTL630.** Owner shall provide a letter documenting the performance date of a Special check as indicated in Terex notification dated August 11, 2013 for wear and cracks at the Counterweight Support Leverage Arms Bushings connections.
- **Favco Models 220, 440 & 760.** Owner to provide a letter documenting the performance date of a Special Inspection of all hoisting winch and slew drive spline and pinion gear motors on the crane. Before crane erection all motor spline and pinion gears must be removed, inspected for wear and damage, checked for proper alignment and fit, and re-lubricated in accordance with manufacturer's recommendations.
- **Favco Models 220, 440 & 760 Split deck lug welds.** Owner shall provide a letter documenting the performance date of a special check for cracks at counter jib (split deck) lugs at the slew mount weld connections.
- **Favco Models 440 & 760. Slew Mount welds.** Please confirm that the Favco service bulletin dated June 30, 2017 and supplement Notice (paint removal before NDT) of July 29, 2017 for out of service condition has been performed. This would include but not limited to DOB notification and approval of repair along with EOR and Favco Certification letters.
- **Favco Model 760. Mast leg Pivot plate crack** (area between boom heel pin lugs and forward A-frame strut lugs). Please confirm that the Favco Service bulletin dated August 23, 2017 has been performed. Please provide NDT report results to the Department and all Favco documents if indications were found.