NEW SECTION

WAC 296-155-529 Crane certifier accreditation and crane certification.

NEW SECTION

WAC 296-155-52900 Scope. (1) Except as provided in subsection (2) of this section, this part applies to power-operated cranes and derricks used in construction that can hoist, lower and horizontally move a suspended load (with or without attachments). Such equipment includes, but is not limited to: Articulating boom cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multipurpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as fixed jib ("hammerhead boom"), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; side-boom tractors; derricks; and variations of such equipment.

(2) Exemptions. WAC 296-155-529 through 296-155-53214 do not apply to the following:

(a) Equipment included in subsection (1) of this section while it has been converted or adapted for nonhoisting/lifting use. Such conversions/adaptations include, but are not limited to, power shovels, excavators and concrete pumps.

(b) Power shovels, excavators, wheel loaders, backhoes, loader backhoes, track loaders. This machinery is also excluded when used with chains, slings or other rigging to lift suspended loads.

(c) Automotive wreckers and tow trucks when used to clear wrecks and haul vehicles.

(d) Service trucks with mobile lifting devices designed specifically for use in the power line and electric service industries or handling associated materials to be installed or removed from utility poles.

(e) Equipment originally designed as vehicle-mounted aerial devices (for lifting personnel) and self-propelled elevating work platforms.

(f) Hydraulic jacking systems, including telescopic/hydraulic

gantries.

(g) Stacker cranes.

(h) Powered industrial trucks (forklifts).

(i) Mechanic's truck with a hoisting device when used in activities related to equipment maintenance and repair.

(j) Equipment that hoists by using a come-a-long or chainfall.

(k) Dedicated drilling rigs.

(l) Gin poles used for the erection of communication towers.

(m) Tree trimming and tree removal work.

(n) Anchor handling with a vessel or barge using an affixed A-frame.

(o) Roustabouts.

(p) Service cranes with booms that rotate manually.

(q) Machines equipped with a boom that is limited to up and down movement only and does not rotate.

(r) Cranes used on-site in manufacturing facilities or powerhouses for occasional or routine maintenance and repair work; and

(s) Crane operators operating cranes on-site in manufacturing facilities or powerhouses for occasional or routine maintenance and repair work.

(3) Where provisions of this standard direct an operator, crewmember, or other employee to take certain actions, the employer must establish, effectively communicate to the relevant persons, and enforce work rules, to ensure compliance with such provisions.

NEW SECTION

WAC 296-155-52902 Definitions. Accredited crane certifier means a crane inspector who has been accredited by the department.

Apprentice operator or **trainee** means a crane operator who has not met requirements established by the department under RCW 49.17.430.

Articulating boom crane means a crane whose boom consists of a series of folding, pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.

Audible signal means a signal made by a distinct sound or series of sounds. Examples include, but are not limited to, sounds made by a bell, horn, or whistle.

Bogie. See "travel bogie."

Boom (equipment other than tower crane) means an inclined spar, strut, or other long structural member which supports the upper hoisting tackle on a crane or derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height or height and reach when lifting loads. Booms can usually be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type or articulating type.

Boom (tower cranes) on tower cranes: If the "boom" (i.e., principal horizontal structure) is fixed, it is referred to as a jib; if it is moveable up and down, it is referred to as a boom.

Boom angle indicator means a device which measures the angle of the boom relative to horizontal.

Boom hoist limiting device includes boom hoist disengaging device, boom hoist shut-off, boom hoist disconnect, boom hoist hydraulic relief, boom hoist kick-outs, automatic boom stop device, or derricking limiter. This type of device disengages boom hoist power when the boom reaches a predetermined operating angle. It also sets brakes or closes valves to prevent the boom from lowering after power is disengaged.

Boom length indicator indicates the length of the permanent part of the boom (such as ruled markings on the boom) or, as in some computerized systems, the length of the boom with extensions/attachments.

Boom stop includes boom stops (belly straps with struts/standoff), telescoping boom stops, attachment boom stops, and backstops. These devices restrict the boom from moving above a certain maximum angle and toppling over backward.

Boom suspension systems means a system of pendants, running ropes, sheaves, and other hardware which supports the boom tip and controls the boom angle.

Certified crane inspector means a crane certifier accredited by the department.

Climbing means the process in which a tower crane is raised to a new working height, either by adding additional tower sections to the top of the crane (top climbing), or by a system in which the entire crane is raised inside the structure (inside climbing).

Counterjib (counterweight jib) means a horizontal member of the tower crane on which the counterweights and usually the hoisting machinery are mounted.

Counterweight means weight used to supplement the weight of equipment in providing stability for lifting loads by counterbalancing those loads.

Crane means power-operated equipment used in construction that can hoist, lower, and horizontally move a suspended load. "Crane" includes, but is not limited to: Articulating boom cranes, such as knuckle-boom cranes; crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes, such as wheel-mounted, rough-terrain, all-terrain, commercial truck mounted, and boom truck cranes; multipurpose machines when configured to hoist and lower by means of a winch or hook and horizontally move a suspended load; industrial cranes, such as carry-deck cranes; dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes, such as fixed jib, hammerhead boom, luffing boom, and self-erecting; pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; side-boom tractors; derricks; and variations of such equipment.

Crane/derrick type means cranes or derricks as established by American Society of Mechanical Engineers (ASME). Crane operator means an individual engaged in the operation of a crane.

Crawler crane means equipment that has a type of base mounting which incorporates a continuous belt of sprocket driven track.

Critical lift means a lift that:

- Exceeds seventy-five percent of the crane or derrick rated load chart capacity; or
- Requires the use of more than one crane or derrick.

Crossover points means locations on a wire rope which is spooled on a drum where one layer of rope climbs up on and crosses over the previous layer. This takes place at each flange of the drum as the rope is spooled onto the drum, reaches the flange, and begins to wrap back in the opposite direction.

Dedicated pile-driver is a machine that is designed to function exclusively as a pile-driver. These machines typically have the ability to both hoist the material that will be pile-driven and to pile-drive that material.

Derrick is an apparatus consisting of a mast or equivalent member held at the end by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes.

Directly under the load means a part or all of an employee is directly beneath the load.

Dismantling includes partial dismantling (such as dismantling to shorten a boom or substitute a different component).

Drum rotation indicator is a device on a crane or hoist which indicates in which direction and at what relative speed a particular hoist drum is turning.

Electrical contact means when a person, object, or equipment makes contact or comes close in proximity with an energized conductor or equipment that allows the passage of current.

Equipment means equipment covered by this part.

Equipment criteria means instructions, recommendations, limitations and specifications.

Fall protection equipment means guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall restraint systems.

Flange points means a point of contact between rope and drum flange where the rope changes layers.

Floating cranes/derricks means equipment designed by the manufacturer (or employer) for marine use by permanent attachment to a barge, pontoons, vessel or other means of flotation.

Free rated load test means testing stability and operation of crane, carrier, wheels, tires, tracks, brakes, etc., under load, when lifting without outriggers and/or traveling with the load are permitted at the activity for the type of crane being tested.

Hoist means a mechanical device for lifting and lowering loads by winding rope onto or off a drum.

Hoisting means the act of raising, lowering or otherwise moving a load in the air with equipment covered by this standard. As used in this standard, "hoisting" can be done by means other than wire rope/hoist drum equipment.

Jib means an extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in

line with the boom or offset to various angles in the vertical plane of the boom. For tower cranes, see boom (tower cranes).

Land crane/derrick means equipment not originally designed by the manufacturer for marine use by permanent attachment to barges, pontoons, vessels, or other means of flotation.

Load is the weight of the object being lifted or lowered, including the weight of the load-attaching equipment such as the load block, ropes, slings, shackles, and any other auxiliary attachment.

Load moment (or rated capacity) indicator means a system which aids the equipment operator by sensing the overturning moment on the equipment, i.e., load X radius. It compares this lifting condition to the equipment's rated capacity, and indicates to the operator the percentage of capacity at which the equipment is working. Lights, bells, or buzzers may be incorporated as a warning of an approaching overload condition.

Load moment (or rated capacity) limiter means a system which aids the equipment operator by sensing the overturning moment on the equipment, i.e., load X radius. It compares this lifting condition to the equipment's rated capacity, and when the rated capacity is reached, it shuts off power to those equipment functions which can increase the severity of loading on the equipment, e.g., hoisting, telescoping out, or luffing out. Typically, those functions which decrease the severity of loading on the equipment remain operational, e.g., lowering, telescoping in, or luffing in.

Locomotive crane means a crane mounted on a base or car equipped for travel on a railroad track.

Load sustaining/bearing parts means those parts of a crane that support the crane or load and upon failure could cause dropping, uncontrolled shifting, or uncontrolled movement of the crane or load.

Luffing boom is a member hinged to the rotating superstructure and used for supporting the hoisting tackle.

Luffing jib limiting device is similar to a boom hoist limiting device, except that it limits the movement of the luffing jib.

Mobile cranes means a lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road. These are referred to in Europe as a crane mounted on a truck carrier.

Multiple lift rigging means a rigging assembly manufactured by wire rope rigging suppliers that facilitates the attachment of up to five independent loads to the hoist rigging of a crane.

Nationally recognized accrediting agency is an organization that, due to its independence and expertise, is widely recognized as competent to accredit testing organizations.

Nonstandard tower crane base means any deviation from the structural support or base configuration recommended by the crane manufacturer.

Occasional or routine maintenance and repair work means

regular, customary and foreseeable work necessary to keep equipment in good repair and/or condition. This also includes regular, customary and foreseeable work necessary to return equipment to sound condition after damage.

Operational aid means an accessory that provides information to facilitate operation of a crane or that takes control of particular functions without action of the operator when a limiting condition is sensed. Examples of such devices include, but are not limited to, the following: Anti-two-block device, rated capacity indicator, rated capacity (load) limiter, boom angle or radius indicator, lattice boom hoist disconnect device, boom length indicator, crane level indicator, drum rotation indicator, load indicator, and wind speed indicator.

Operational controls means levers, switches, pedals and other devices for controlling equipment operation.

Operator is a person who is operating the equipment.

Overhead and gantry cranes includes overhead/bridge cranes, semigantry, cantilever gantry, wall cranes, storage bridge cranes, launching gantry cranes, and similar equipment, irrespective of whether it travels on tracks, wheels, or other means.

Pendants includes both wire and bar types. Wire type: A fixed length of wire rope with mechanical fittings at both ends for pinning segments of wire rope together. Bar type: Instead of wire rope, a bar is used. Pendants are typically used in a latticed boom crane system to easily change the length of the boom suspension system without completely changing the rope on the drum when the boom length is increased or decreased.

Powerhouse means a plant wherein electric energy is produced by conversion from some other form of energy (e.g., chemical, nuclear, solar, mechanical, or hydraulic) by means of suitable apparatus. This includes all generating station auxiliaries and other associated equipment required for the operation of the plant. Not included are stations producing power exclusively for use with communication systems.

Power lines means electrical distribution and electrical transmission lines.

Qualified crane operator means a crane operator who meets the requirements established by the department under RCW 49.17.430.

Qualified person means a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

Rated capacity means the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.

Rated capacity indicator, see load moment indicator.

Rated capacity limiter, see load moment limiter.

RPE means a registered professional engineer licensed under RCW 18.43.040(1).

RPSE means a registered professional structural engineer licensed under RCW 18.43.040(1).

Running wire rope is a wire rope that moves over sheaves or drums.

Safety devices, examples of safety devices are, but are not limited to, the following: Crane level indicator, horn, boom/jib or trolley stops, hydraulic holding device/check valve, rail clamps, rail stops, brakes, deadman control or forced neutral return control, emergency stop switch, guards, handrails, audible and visual alarms, etc.

Safety or health standard means a standard adopted under this chapter.

Taglines means a rope (usually fiber) attached to a lifted load for purposes of controlling load spinning and pendular motions or used to stabilize a bucket or magnet during material handling operations.

Tower crane means a type of lifting structure which utilizes a vertical mast or tower to support a working boom (jib) suspended from the working boom. While the working boom may be fixed horizontally or have luffing capability, it can always rotate about the tower center to swing loads. The tower base may be fixed in one location or ballasted and moveable between locations.

Travel bogie (tower cranes) means an assembly of two or more axles arranged to permit vertical wheel displacement and equalize the loading on the wheels.

Two blocking means a condition in which a component that is uppermost on the hoist line such as the load block, hook block, overhaul ball, or similar component, comes in contact with the boom tip, fixed upper block or similar component. This binds the system and continued application of power can cause failure of the hoist rope or other component.

NEW SECTION

WAC 296-155-531 Crane certifier accreditation process.

NEW SECTION

WAC 296-155-53100 Accreditation of crane certifiers of cranes and derricks--Requirements. (1) Any person engaging in the testing, examination or inspection for the certification of a crane, used in lifting at a construction site, must apply for and obtain a certificate of accreditation from the department pursuant to this rule. For the purposes of this rule an "accredited crane

certifier" refers to any individual holding a certificate of accreditation pursuant to this regulation.

(2) Any person authorized by the department to certify maritime cranes prior to the effective date of this rule may continue to perform services under this regulation until January 1, 2012. Any accredited crane certifier desiring to continue providing services pursuant to this rule must have applied for and obtained a certificate of accreditation under these rules from the department prior to January 1, 2012. Maritime certifiers wishing to perform construction crane certifications must notify the department that they will perform construction crane certifications. In addition, the maritime certifier must specify which cranes they are qualified to inspect under their maritime certificate. The department may issue these individuals a provisional accreditation specifying the crane types they are authorized to inspect which will be valid through December 31, 2011, or upon expiration of their maritime certification, whichever is earlier. Any provisionally accredited crane certifier desiring to continue providing services pursuant to this rule must have applied for and obtained a certificate of accreditation under these rules from the department prior to January 1, 2012.

(3) Crane certifiers accredited by any other state or governmental entity may be authorized to inspect cranes in Washington state provided the certifier submits an application and resume along with the certificate of accreditation from that state or governmental entity, and the types of cranes they are authorized to inspect. The department may issue these individuals a provisional accreditation specifying the crane types they are authorized to inspect which will be valid through December 31, 2011, or upon expiration of their out-of-state certification, whichever is earlier. Any provisionally accredited crane certifier desiring to continue providing services pursuant to this rule must have applied for and obtained a certificate of accreditation under these rules from the department prior to January 1, 2012.

(4) No person that has modified, altered, or repaired a crane which affected a load sustaining member of the crane may conduct the certifying inspection and proof load testing of that particular crane within the same certification period.

NEW SECTION

WAC 296-155-53102 Accreditation--Application form and applicant qualifications. (1) An accreditation to certify cranes pursuant to this rule may be obtained by submitting a completed application to the division of occupational safety and health (DOSH) and successfully completing written examinations developed and administered by the department or its authorized representative. Application forms may be obtained by calling the:

Crane certification section of DOSH 360-902-4943 or by written request to:

P.O. Box 44650, Olympia, WA 98504-4650

(2) An applicant seeking an accreditation must satisfy all of the following criteria:

(a) An application with an attached resume must be submitted to the department based on experience with the various crane types per the ASME B30 series. The application and resume must include knowledge, training and experience with verifiable references.

(b) All applicants must possess knowledge of chapter 296-155 WAC, Safety standards for construction work, as well as American Society of Mechanical Engineers (ASME) standards, relating to the design, testing, inspection and operation of cranes, including those specifically applicable to the types of cranes for which an accreditation will be issued.

(c) All applicants must demonstrate at least five years crane related experience, of which two years must be actual crane inspection activities. The other three years may include experience in duties such as a crane operator, crane mechanic, crane shop foreman, crane operations supervision, or rigging specialist. Related education may be substituted for related experience at a ratio of two years of education for one year of experience up to three years. Related education could include such courses in engineering, physics, applied mathematics, applied science courses in nondestructive testing, construction technology, technical courses in heavy equipment mechanic, welding technology, etc.

(3) Application form. Any application for accreditation will be accepted by the department upon the filing of a completed application. All information and attachments must be given under penalty of perjury. The application must include, but not be limited to, the following:

(a) A statement of the crane types per the ASME B30 series the applicant desires to certify pursuant to the accreditation.

(b) A statement of qualifications and experience, including their capacities, satisfying at a minimum the criteria set forth in this section as well as any and all other qualifications the applicant wishes the department to consider.

(c) Any other relevant information the applicant desires to be considered by the department.

(4) Written examinations. Applicants to be approved for accreditation must successfully complete the written examinations administered by the department or its authorized representative.

(a) Once the department receives the application and resume, the department will make the determination and notify the applicant if they meet the minimum qualifications to take the written examinations.

(b) The first written examination will include a general knowledge of operation, testing, inspection and maintenance requirements, and the duties and recordkeeping responsibilities required by this rule.

(c) The other written examinations will include safe operating and engineering principles and practices with respect to specific crane types subject to the accreditation, including inspection and proof loading requirements.

NEW SECTION

WAC 296-155-53104 Issuance of accreditation. (1) The department may impose restrictions on the scope and use of the accreditation, such as limiting it to specific types of cranes based upon the qualifications of the applicant. The accreditation issued by the department will identify any limitations imposed by the department and the types of cranes the certifier is authorized to certify.

(2) The department must deny issuance of an accreditation if the applicant does not satisfy the requirements of this rule.

NEW SECTION

WAC 296-155-53106 Accreditation application--Processing time. (1) Within forty-five calendar days of receipt of a completed application for an accreditation, the department must inform the applicant in writing that it is either complete and accepted for filing or that it is deficient and what specific information or documentation is required to complete the application and will inform the applicant if the applicant is eligible to take the written examination. An application is considered complete if it is in compliance with the requirements of this rule.

(2) Within seventy-five calendar days from the date of completion of the written examinations, the department must inform the applicant in writing of its decision regarding the issuance of the certificate of accreditation.

NEW SECTION

WAC 296-155-53108 Duration and renewal of an accreditation. (1) The accreditation will be valid for three years. Crane certifiers must complete forty hours of crane related training every three years, in courses recognized by the department.

(2) Application for renewal must be filed with the department

not less than sixty days prior to expiration of the accredited crane certifier's certification. A renewal may be obtained by filing a completed application for renewal meeting the requirements of WAC 296-155-53102 hereof providing the applicant has been actively inspecting cranes during their prior accreditation period. An applicant is considered active if he/she has certified at least twenty-one cranes during their accreditation period. If the applicant certified cranes in another state, then that applicant must provide documentation showing they were active during their accreditation period. An applicant who has not certified at least twenty-one cranes during the accreditation period may take the written exam to become recertified.

(3) At a minimum, all applicants for renewal must successfully complete the written examinations every six years.

NEW SECTION

WAC 296-155-53110 Revocation or suspension of an accreditation. (1) The department may suspend or revoke a certificate issued under the provisions of these rules upon the following grounds:

(a) Permitting the duplication or use of one's own accreditation certificate by another;

(b) Performing work for which accreditation has not been received;

(c) Any person who obtains accreditation through fraudulent representation of accreditation requirements such as education, training, professional registration, or experience;

(d) Any person who falsifies training documentation;

(e) The holder of the certificate is found to be incompetent to carry out the work for which the certificate was issued;

(f) Gross negligence, gross incompetence, a pattern of incompetence, or fraud in the certification of a crane;

(g) Willful or deliberate disregard of any occupational safety standard while certifying a crane;

(h) Misrepresentation of a material fact in applying for, or obtaining, a license to certify under this chapter;

(i) Failure by an accredited crane certifier to maintain records;

(j) Failure by an accredited crane certifier to report crane safety deficiencies affecting the safe operation of a crane while in the process of conducting an annual certification inspection;

(k) Failure to meet or comply with the requirements of this rule or the limitations imposed on the accreditation; or

(l) Performance of work not in compliance with applicable laws and regulations.

(2) Before any certificate may be suspended or revoked, the certificate holder must be given written notice of the department's

intention, mailed by certified mail, return receipt requested to the address as shown on the application form. The notice must specify the reasons for the department action and must give the certificate holder the opportunity to attend a hearing before the department. The department must also include within the notice of revocation or suspension specific conditions which must be met before the applicant will be entitled to apply for a new certification. At the suspension/revocation hearing the department must give the certificate holder the opportunity to produce witnesses and give testimony.

(3) The hearing will be held at the department's headquarters office or at such other location as may be designated by the assistant director and must be presided over by an authorized representative of the assistant director. Following the informal hearing the department will issue a final decision on suspension or revocation.

(4) A final suspension or revocation decision may be appealed to the superior court for the state of Washington in either the county in which the certificate holder resides or in Thurston County within thirty days after the suspension or revocation order is entered.

(5) The filing of an appeal must not stay the suspension or revocation, and such action must remain in effect until such time as the applicant presents proof that the specified written conditions required by the department are met or until otherwise ordered after resolution of the appeal.

NEW SECTION

WAC 296-155-53112 Monitoring of accredited crane certifiers. The division of occupational safety and health must monitor accredited crane certifiers to ensure that these certifiers certify cranes in accordance with all applicable Washington state laws and regulations. Monitoring activities will include, but not be limited to, audits of crane certifier's activities, complaint inspections, referrals, or accident investigations.

NEW SECTION

WAC 296-155-53114 Issuance of temporary and annual certificates of operation. (1) Accredited crane certifiers will issue a temporary certificate of operation if upon inspection and load proof testing no deficiencies were found that would affect the safe operation of the crane.

(2) The accredited crane certifier will submit inspection worksheets and proof of load testing to the department within ten working days from the completion of the inspection and load proof test for consideration of the department for the issuance of a permanent certificate of operation.

(3) If the accredited crane certifier upon inspection of a crane identifies deficiencies that would affect the safe operation or load handling capabilities of the crane, the accredited crane certifier must notify the department within five working days from completion of the on-site inspection by submitting the worksheet that identifies the deficiencies. If deficiencies are found that affect the safe operation or load handling capabilities of the crane, no temporary certificate of operation will be issued until all identified deficiencies have been corrected and verified by an on-site visit by an accredited crane certifier.

(4) After the accredited crane certifier has verified that all deficiencies have been corrected and the crane has successfully passed a load proof test, the accredited crane certifier will issue a temporary certificate of operation. The accredited crane certifier will submit inspection worksheets and proof of load testing to the owner or lessee and within ten days of completion of the inspection to the department for consideration of the department for the issuance of an annual certificate of operation.

(5) The accredited crane certifier must attach an identification sticker if not already attached and legible to each crane and crane component (component meaning: Luffing boom, swing-away jibs, fly sections, jibs at variable offsets and boom sections). The identification sticker number must be entered on the inspection worksheet submitted to the department. Identification stickers may only be removed by a department representative or an accredited crane certifier.

Note: Certified components may be installed without voiding the annual proof load test, providing the component was proof load tested within the prior four-year period.

(6) Certificates of operation issued by the department under the crane certification program established in this section are valid for one year from the effective date of the temporary operating certificate issued by the certified crane inspector.

(7) The temporary or annual certificate of operation must be posted in the operator's cab or with the operator's manual.

(8) Maintaining required records. Accredited crane certifiers are required to maintain complete and accurate records pertaining to each crane of all inspections, tests and other work performed as well as copies of all notices of crane safety deficiencies, verifications of correction of crane safety deficiencies, and crane certifications issued for the previous five years and provide these records to the department upon request. Failure by an accredited crane certifier to maintain required records may result in accreditation suspension or revocation.

NEW SECTION

WAC 296-155-532 Crane certification requirements for cranes.

NEW SECTION

WAC 296-155-53200 General inspection criteria, wire rope inspection and removal criteria, and preproof load test requirements for all cranes. (1) The accredited crane certifier must review the following documents as part of the crane certification process:

(a) Crane maintenance records of critical components to ensure maintenance of these components has been performed in accordance with the manufacturer's recommendations.

(b) Crane periodic and frequent inspection documentation.

(2) Safety devices. Make sure all safety devices are installed on equipment in accordance with the requirements located in chapter 296-155 WAC, Part L.

(3) Operational aids. Operations must not begin unless operational aids are in proper working order, except where the owner or lessee meets the specified temporary alternative measures. See chapter 296-155 WAC, Part L for the list of operational aids.

Note: All accredited crane certifiers must meet and follow the requirements relating to fall protection, located in chapter 296-155 WAC, Part C-1, Fall restraint and fall arrest.

(4) General.

(a) The accredited crane certifier must determine that the configurations of the crane are in accordance with the manufacturer's equipment criteria.

(b) Where the manufacturer equipment criteria are unavailable, a registered professional engineer (RPE), familiar with the type of equipment involved, must ensure criteria are developed for the equipment configuration.

(5) Wire rope.

(a) Wire ropes must meet the crane or wire rope manufacturer's specifications for size, type and inspection requirements. In the absence of the manufacturer's specifications, follow the requirements for removal criteria located in this section, including Table 1.

Table 1 - Wire Rope Inspection/Removal Criteria
(See also Figure 1 - Wire Rope)

Crane Type	Running Ropes* # of allowable broken wires in		Rotation Resistant* # of allowable broken wires in		Standing Ropes* # of allowable broken wires	
	1 rope lay	1 strand in 1 lay	1 rope lay	1 strand in 1 lay	in 1 lay beyond end connection	at end connection
Mobile	6	3	2 (in 6xd)	4 (in 30xd)	2	1
Articulating	6	3	Consult rope mfg.	Consult rope mfg.	2	1
Tower	12	4	4	2	--	--
Self-Erector	12	4	4	2	--	--
Overhead & Bridge	12	4	2 (in 6xd)	4 (in 30xd)	--	--
Derricks	6	3	Consult rope mfg.	Consult rope mfg.	2	1

* **Also remove if you detect 1 wire broken at the contact point with the core or adjacent strand; so called valley breaks or evidence from any heat damage from any cause.**

(b) The accredited crane certifier must perform a complete and thorough inspection covering the surface of the working range plus three additional wraps on the drum of the wire ropes.

(c) If a deficiency is identified, an immediate determination must be made by the accredited crane certifier as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, the crane must not be certified until:

(i) The wire rope is replaced and verified by the accredited crane certifier; or

(ii) If the deficiency is localized, the problem is corrected by severing the wire rope; the undamaged portion may continue to be used. Joining lengths of wire rope by splicing is prohibited.

(d) Remove wire rope from service if reductions from nominal diameter are greater than those shown below in Table 2.

Table 2 - Maximum Allowable Reduction from Nominal Diameter

Rope Diameter	Maximum Allowable Reduction from Nominal Diameter
Up to 5/16 inch (8 mm)	1/64 inch (0.4 mm)
3/8 inch (9.5 mm) to 1/2 inch (13 mm)	1/32 inch (0.8 mm)
9/15 inch (14.5 mm) to 3/4 inch (19 mm)	3/64 inch (1.2 mm)
7/8 inch (22 mm) to 1 1/8 inch (29 mm)	1/16 inch (1.6 mm)
Over 1 1/8 inch (32 mm) to 1 1/2 inch (38 mm)	3/32 inch (2.4 mm)

(e) Replacement rope must be of a compatible size and have a strength rating at least as great as the original rope furnished or recommended by the crane manufacturer.

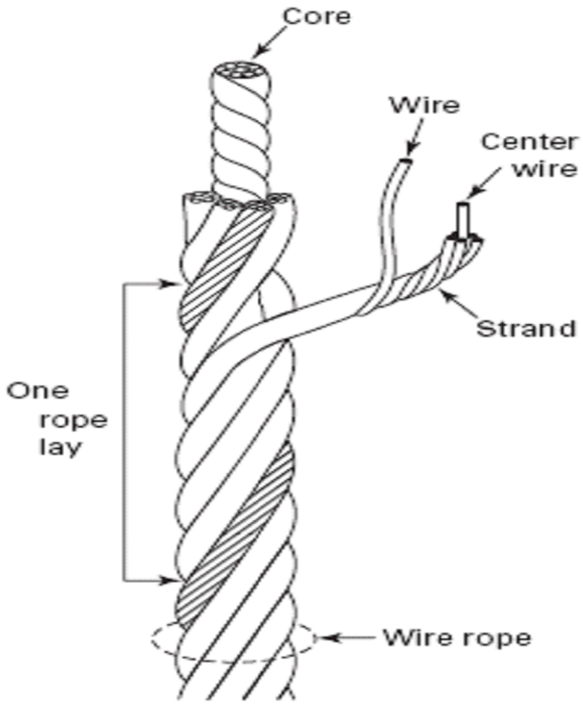

Figure 1 - Wire Rope

(6) Prior to performing a proof load test:

(a) A safe test area must be selected and all traffic and unauthorized personnel and equipment must be cleared from test area. This test area must be roped off or otherwise secured to prevent entry of unauthorized personnel and equipment;

(b) Rigging gear must be inspected by a qualified person prior to using for load test of crane;

(c) The employer must ensure all load test personnel understand the safety procedures of the test;

(d) Proof load tests, with the exception of tower cranes, are overload tests and extreme caution must be observed at all times. Personnel must remain clear of suspended loads and areas where they could be struck in the event of boom failure. The test load must be raised only to a height sufficient to perform the test;

(e) During tests, safe operating speeds must be employed. Rated speeds in accordance with manufacturer's specifications need not be attained. Emphasis must be placed on the ability to safely control loads through all motions at normal speeds;

(f) Proof load tests require the use of certified weights, or scaled weights using a certified scale with a current certificate of calibration;

(g) Proof load tests must not exceed the manufacturer's specifications. Where these specifications are unavailable, a registered professional engineer familiar with the type of equipment involved must develop written specifications.

NEW SECTION

WAC 296-155-53202 Additional inspection criteria and proof load testing--Mobile cranes. (1) After it is determined that the crane configurations meet the criteria in WAC 296-155-53200, the accredited crane certifier must conduct a visual inspection of the following components, if applicable, which can be visually inspected without disassembly (not including removal of inspection covers):

(a) All control and drive mechanisms for adjustments interfering with proper operation and for excessive wear or contamination by lubricants or other foreign matter;

(b) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;

(c) Hydraulic system for proper fluid level;

(d) Safety latches on hooks for damage;

(e) Hooks for deformation, cracks, excessive wear, or damage such as from chemicals or heat;

(f) A legible and applicable operator's manual and load chart is in the operator's cab or station;

(g) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing;

(h) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and catwalks, if applicable;

(i) Wire rope reeving for compliance with the manufacturer's specifications;

(j) Wire rope, in accordance with WAC 296-155-53200(5);

(k) Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation;

(l) Tires (when in use) for proper inflation and condition;

(m) Ground conditions around the equipment for proper support, including ground settling under and around outriggers and supporting foundations, ground water accumulation, or similar conditions;

(n) The equipment for level position;

(o) Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view;

(p) Rails, rail stops, rail clamps and supporting surfaces when the equipment has rail traveling;

(q) Equipment structure (including the boom and, if equipped, the jib):

(i) Structural members: Deformed, cracked, or significantly corroded.

(ii) Bolts, rivets and other fasteners: Loose, failed or significantly corroded.

(iii) Welds for cracks.

(r) Sheaves and drums for cracks or significant wear;

(s) Parts such as pins, bearings, shafts, gears, rollers and locking devices for distortion, cracks or significant wear;

(t) Brake and clutch system parts, linings, pawls and ratchets for excessive wear;

(u) Safety devices and operational aids for proper operation (including significant inaccuracies);

(v) Gasoline, diesel, electric, or other power plants for safety-related problems (such as leaking exhaust and emergency shut-down feature), condition and operation;

(w) Chains and chain drive sprockets for excessive wear of sprockets and excessive chain stretch;

(x) Travel steering, brakes, and locking devices, for proper operation;

(y) Tires for damage or excessive wear;

(z) Hydraulic, pneumatic and other pressurized hoses, fittings and tubing, as follows:

(i) Flexible hose or its junction with the fittings for indications of leaks.

(ii) Threaded or clamped joints for leaks.

(iii) Outer covering of the hose for blistering, abnormal deformation or other signs of failure/impending failure.

(iv) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing.

(aa) Hydraulic and pneumatic pumps and motors, as follows:

(i) Performance indicators: Unusual noises or vibration, low operating speed.

(ii) Loose bolts or fasteners.

(iii) Shaft seals and joints between pump sections for leaks.

(bb) Hydraulic and pneumatic cylinders, as follows:

(i) Drifting.

(ii) Rod seals and welded joints for leaks.

(iii) Cylinder rods for scores, nicks and dents.

(iv) Case (barrel) for significant dents.

(v) Rod eyes and connecting joints: Loose or deformed.

(cc) Outrigger pads/floats and slider pads for excessive wear or cracks; cribbing/dunnage for proper installation;

(dd) Electrical components and wiring for cracked or split insulation and loose or corroded terminations;

(ee) Legible warning labels and decals as required by the manufacturer;

(ff) Operator seat: Missing or unusable;

(gg) Equipped with original, or the equivalent, steps, ladders, handrails, guards;

(hh) Steps, ladders, handrails, guards: In unusable/unsafe condition;

(2) Crane deficiencies. If the accredited crane certifier determines other findings need to be monitored, the accredited crane certifier must provide written notification to the owner or lessee.

(3) Operational testing. An operational test must be made without a load applied to the hook of the following items if they are applicable to the crane to ensure they function correctly:

(a) Load lifting/hoisting and lowering mechanisms;

(b) Boom lifting/hoisting and lowering mechanisms;

(c) Boom extension and retraction mechanism;

(d) Swing mechanism;

(e) Travel mechanism;

(f) Brakes and clutches;

(g) Limit, locking, and safety devices;

(h) Suspension systems for cranes that work on rubber (tires); and

(i) During the operational testing, special attention must be paid to hydraulic and pneumatic valves: Spools (sticking, improper return to neutral, and leaks); leaks; valve housing cracks; relief valves.

(4) Annual and quadrennial proof load testing.

(a) Proof loads test must be completed on all hoist lines. The test load must be at least one hundred percent but not to exceed one hundred and ten percent of rated capacity (i.e., for the crane's configuration of reeving, boom length, etc.). The rated capacity must be the capacity shown on the posted load chart or as limited by other factors such as hook block capacity or wire rope line pull if the crane is not fully reeved. The test load includes the weight of (or deduction values for) the hook, block, slings, and auxiliary lifting devices (and for some cranes hoist wire rope not accounted for in load charts), and the combined weight deduction values must be subtracted from the nominal test load in order to determine the amount of test weights to be used. Follow original equipment manufacturer (OEM) load chart instructions for weight deduction values. Check accuracy of load indicators where installed. Test procedures for these cranes must follow OEM procedures and recommendations.

(b) Annual proof load testing. After the crane has passed the visual and operational tests, a proof load test must be conducted in the as-configured condition and must be performed within the structural and stability section of the manufacturer's load chart, as applicable. This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(c) Quadrennial proof load testing. No major component (luffing boom, swing-away jibs, fly sections, jibs at variable offsets and boom sections) may be used unless it has been proof load tested within the prior four-year period. For jibs with variable offset angles, tests at the maximum offset used and maximum extension of all boom sections.

(i) This test must be performed in accordance with this section and documented on the form or in the format approved by the department.

(ii) A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the inspection.

(d) Free rated load test ("on rubber"). Check the stability and operation of crane, carrier, wheels, tires, tracks, brakes, etc., under load by performing the following tests, when lifting without outriggers and/or traveling with the load are permitted at

the activity for the type of crane being tested.

Note: Ensure all free rated load tests "on rubber" lifting requirements established by the OEM are complied with. Attach taglines to the load to control oscillation. For cranes with outriggers, extend outriggers and maintain minimal clearance (three to four inches) above ground. Test personnel must stand clear of tires during load tests. This test is only required if the owner/lessee wants an "on rubber" certification. If the crane has "on rubber" capabilities and the owner does not desire this certification, the crane certifier must document it on the certification document.

(i) Maximum free rated load. Hoist maximum free rated test load at minimum possible radius over the rear (or over the front as required by the OEM). Slowly boom down to the maximum radius for the load. With boom and load hoist pawls (dogs) engaged where applicable, complete (d)(i)(A) and (B) of this subsection.

(A) Rotate through the appropriate working arc;

(B) Travel a minimum of fifty feet with test load over the rear (or front as required by the OEM) with the boom parallel to the longitudinal axis of the crane carrier.

(ii) Stability test. Repeat the step in (d)(i) of this subsection with a test load corresponding to the radii determined as follows: For telescoping boom cranes, test with the boom approximately halfway between fully retracted and fully extended but do not exceed OEM's boom length limitation for lifting on rubber. If no ratings are governed by stability, no stability test is required.

Note: When lifting test loads, always lift the load well within the maximum radius and slowly boom down to a premeasured radius. Lift the test load only high enough to perform the required tests.

NEW SECTION

WAC 296-155-53204 Additional inspection criteria and proof load testing--Articulating boom cranes. (1) After it is determined that the crane configurations meet the criteria in WAC 296-155-53200, the accredited crane certifier must visually inspect the following items, if applicable, on cranes for sound physical condition and that they are functional within the manufacturer's recommendations (not including removal of inspection covers):

(a) All control and drive mechanisms for adjustments interfering with proper operation and for excessive wear or contamination by lubricants or other foreign matter;

(b) Safety devices for malfunction;

(c) All hydraulic hoses, particularly those which flex in normal operation of crane functions;

(d) Hooks and latches for deformation, chemical damage, cracks, and wear;

(e) Rope reeving for compliance with crane manufacturer's specifications;

(f) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation;

(g) Hydraulic system for proper oil level and leaks;

(h) Excessively worn or damaged tires. Recommended inflation

pressure, cuts, and loose wheel nuts;

(i) Connecting pins and locking device for wear and damage;

(j) Deformed, cracked, or corroded members in the crane structure and carrier;

(k) Loose bolts, particularly mounting bolts;

(l) Cracked or worn sheaves and drums;

(m) Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers, and locking devices;

(n) Excessive wear on brake and clutch system parts and lining;

(o) Travel steering, braking, and locking devices, for malfunction;

(p) Hydraulic, pneumatic and other pressurized hoses, fittings and tubing, as follows:

(i) Flexible hose or its junction with the fittings for indications of leaks.

(ii) Threaded or clamped joints for leaks.

(iii) Outer covering of the hose for blistering, abnormal deformation or other signs of failure/impending failure.

(iv) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing;

(q) Hydraulic and pneumatic pumps and motors, as follows:

(i) Performance indicators: Unusual noises or vibration, low operating speed.

(ii) Loose bolts or fasteners.

(iii) Shaft seals and joints between pump sections for leaks;

(r) Hydraulic and pneumatic cylinders, as follows:

(i) Drifting.

(ii) Rod seals and welded joints for leaks.

(iii) Cylinder rods for scores, nicks and dents.

(iv) Case (barrel) for significant dents;

(s) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and catwalks, if applicable;

(t) Legible warning labels and decals as required by the manufacturer;

(u) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing;

(v) A legible and applicable operator's manual and load chart is in the operator's cab or station.

(2) Annual proof load testing of articulating boom cranes.

(a) Annual proof load testing. After the crane has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted and must be performed within the structural and stability section of the manufacturer's load chart, as applicable. This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(b) Test loads must not be less than one hundred percent or more than one hundred and ten percent of the rated load, unless

otherwise recommended by the manufacturer.

(c) Hoist the tests load to assure that the load is supported by the crane and held by the hoist brake(s).

(d) Swing the crane, if applicable, the full range of its swing.

(e) Boom the crane up and down within allowable working radius for the test load.

(f) Lower the test load, stop and hold the load with the brake(s).

(3) Quadrennial proof load testing. If the articulating boom crane has a jib or boom extension, these components may not be used unless it has been proof load tested within the prior four-year period.

NEW SECTION

WAC 296-155-53206 Additional inspection criteria and proof load testing--Tower cranes. (1) Tower cranes and tower crane assembly parts must be inspected by a crane certifier both prior to assembly, following erection of the tower crane, after each climbing operation, or reconfiguring the boom, jib, or counterjib before placing the crane in service.

(2) The accredited crane certifier must verify a registered professional structural engineer, licensed under chapter 18.43 RCW, has certified that the crane foundations and underlying soil are adequate support for the tower crane with its maximum overturning movement.

(3) Prior to erecting a tower crane on a nonstandard tower crane base, the accredited crane certifier must verify that the engineering configuration of this base has been reviewed and acknowledged as acceptable by an independent registered professional structural engineer, licensed under chapter 18.43 RCW.

(4) The accredited crane certifier must review the following documents as part of the crane certification process for the current location and inspection period:

(a) Crane maintenance records of critical components to ensure maintenance of these components has been performed in accordance with the manufacturer's recommendations;

(b) Crane periodic and frequent inspection documentation.

(5) After it is determined that the crane configurations meet the criteria in WAC 296-155-53200, the accredited crane certifier must visually inspect the following items, if applicable, on tower cranes for sound physical condition and that they are functional within the manufacturer's recommendations (not including removal of inspection covers):

(a) All control and drive mechanisms for interfering with proper operation and for excessive wear or contamination by lubricants or other foreign matter;

(b) Motion limiting devices for proper operation with the crane unloaded; each motion should be inched into its limiting device by carefully running at slow speed;

(c) Load limiting devices for proper operation and accuracy of settings;

(d) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;

(e) Hydraulic system for proper fluid level;

(f) Hydraulic, pneumatic and other pressurized hoses, fittings and tubing, as follows:

(i) Flexible hose or its junction with the fittings for indications of leaks.

(ii) Threaded or clamped joints for leaks.

(iii) Outer covering of the hose for blistering, abnormal deformation or other signs of failure/impending failure.

(iv) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing;

(g) Hydraulic and pneumatic pumps and motors, as follows:

(i) Performance indicators: Unusual noises or vibration, low operating speed.

(ii) Loose bolts or fasteners.

(iii) Shaft seals and joints between pump sections for leaks;

(h) Hydraulic and pneumatic cylinders, as follows:

(i) Drifting.

(ii) Rod seals and welded joints for leaks.

(iii) Cylinder rods for scores, nicks and dents.

(iv) Case (barrel) for significant dents;

(i) Electrical components for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation, wiring for cracked or split insulation, and loose or corroded terminations;

(j) Stationary cranes for manufacturer's recommended grounding of structure and power supply. Rail traveling cranes for grounding of each rail and the power supply per the manufacturer's recommendations;

(k) Runway rail and clamps. Inspect for loose, broken or missing clamps;

(l) Hooks and safety latches for deformation, cracks, excessive wear, or damage such as from chemicals or heat;

(m) Wedges and supports of climbing cranes for looseness or dislocation;

(n) Braces or guys supporting cranes' masts (towers) and anchor bolt base connections for looseness;

(o) Crane structure (including the boom, jib and counter jib):

(i) Structural members: Deformed, cracked, or significantly corroded.

(ii) Bolts, rivets and other fasteners: Loose, failed or significantly corroded.

(iii) Welds for cracks.

(p) Cracked or worn sheaves and drums;

(q) Worn, cracked, or distorted parts such as pins, bearings,

shafts, gears, rollers, locking and clamping devices, sprockets, and drive chains or belts;

(r) Excessive wear on brake and clutch system parts, linings, pawls, and ratchets;

(s) Load, wind, and other indicators for inaccuracies outside the tolerances recommended by the manufacturer;

(t) Travel mechanisms for malfunction, excessive wear or damage;

(u) A legible and applicable operator's manual and load chart is in the operator's cab;

(v) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and catwalks, if applicable;

(w) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing;

(x) When applicable, tower tie-in collars, struts, and connections to building structure are structurally sound, free of cracks, distortion, excessive wear or corrosion. Pins and structural bolts are tight and installed per the manufacturer's specification;

(y) Ballast blocks in place and secured per manufacturer's recommendations;

(z) For cranes that telescope, the raising mechanism operates within the manufacturer's specifications;

(aa) For cranes that top climb, the climbing frame operates within the manufacturer's specifications;

(bb) A means to prevent traveling tower cranes running into stops while under power;

(cc) A functional audible warning alarm that automatically sounds whenever the traveling tower crane travels;

(dd) Wire rope reeving for compliance with the manufacturer's specifications;

(ee) Wire rope, in accordance with WAC 296-155-53200(5);

(ff) Safety devices and operational aids for proper operation (including significant inaccuracies);

(gg) Legible warning labels and decals as required by the manufacturer;

(hh) Steps, ladders, handrails and guards are in safe and usable condition.

(6) Additional requirements for tower cranes prior to performing a proof load test.

Note: General requirements relating to preproof load tests for all cranes are located in WAC 296-155-53200.

(a) When tower cranes are erected, and before placing in service, all functional motions, motion limiting, load limiting devices, locking and safety devices, brakes and clutches must be tested for operation and be within the manufacturer's specification prior to placing the crane in operation.

(b) Proof load tests require the use of certified weights, or scaled weights using a certified scale with a current certificate of calibration.

(c) Functional motion test must be at crane manufacturer's

rated load. Each test must include:

(i) Load hoisting and lowering;

(ii) Jib (boom) hoisting and lowering, or trolley travel;

(iii) Slewing motion;

(iv) Travel motion when rail mounted;

(v) Brakes and clutches; and

(vi) Limit, locking, and safety devices.

Note: Functional motion tests made after climbing or telescoping may be performed without a load.

(d) The functional motion test listed in (c) of this subsection must continue until all controls, drives, and braking systems have been engaged and have functioned per the crane manufacturer's specifications.

(e) Order in which tests of tower cranes are to be performed is as follows:

(i) Functional motion test without rated load;

(ii) Functional motion test at crane manufacturer's rated load. For other than traveling cranes, these tests may be combined with test of base structural support or foundation system given in (c) of this subsection;

(iii) Test of base structural support or foundation under (f) of this subsection.

(f) During functional motion tests, the crane's base structural support or foundation system must be visually checked by the accredited crane certifier. If any part of the crane's base structural support or foundation system shows excessive visual displacement, visual distress, or audible distress, then the lifted load must be lowered at hoist creep speed and all crane operations are to cease. An evaluation must then be made by the accredited crane certifier.

(7) Proof load testing of tower cranes. Setting hoist load limits for tower cranes.

(a) Annual proof load testing. After the crane has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted and must be performed according to the manufacturer's recommendations. This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(b) Tower crane hoist load limit switches must be set in accordance with the manufacturer's specifications using specified certified weights. Procedure is to be verified by the accredited crane certifier. In the absence of the manufacturer's specifications, hoist load limit switches must be verified by means of a static test using test loads of one hundred and two and one-half percent to one hundred and ten percent of the applicable ratings. Test loads are to be lifted at creep speed until just clear of the ground.

(c) Setting of hoist load limits must be documented on the form provided by the department. A copy of the completed form and inspection worksheets must be sent to the department within ten days upon completion of the examination.

(d) After erection of fixed freestanding tower cranes, the base structural support or foundation system on which the crane is supported must be tested before placing the crane in service. The test must be conducted with the crane manufacturer's rated load placed at maximum radius permitted by site conditions. When the base structural support or foundation is symmetrical, the crane's jib (boom) must be rotated through ninety degrees with ten minute stops at the starting position and at each forty-five degree position. When the support is asymmetrical, the crane's jib (boom) must be rotated through three hundred and sixty degrees with ten minute stops at the starting position and at each forty-five degree position.

(e) After erection of rail traveling tower cranes, the base structural support or foundation system to which the rail is attached must be tested before placing the crane in service. The test must be conducted with the crane manufacturer's rated load placed at maximum radius permitted by site conditions. The jib (boom) must be located over the bogie. The crane must travel the entire length of runway, returning with the same load over the bogie on the opposite rail.

NEW SECTION

WAC 296-155-53208 Additional inspection criteria and proof load testing--Self-erecting tower cranes. (1) After it is determined that the crane configurations meet the criteria in WAC 296-155-53200, the accredited crane certifier must visually inspect the following items, if applicable, on cranes for sound physical condition and that they are functional within the manufacturer's recommendations (not including removal of inspection covers):

(a) For cranes that telescope the internal tower by a climbing frame, the climbing mechanism is structurally sound; is free of cracks, distortion, excessive wear or corrosion; operates within the manufacturer's specifications;

(b) Structural bolts are tightened;

(c) All control and drive mechanisms for interfering with proper operation and for excessive wear or contamination by lubricants or other foreign matter;

(d) Motion limiting devices for proper operation with the crane unloaded; each motion should be inched into its limiting device by carefully running at slow speed;

(e) Load limiting devices for proper operation and accuracy of settings;

(f) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;

(g) Hydraulic system for proper fluid level;

(h) Hydraulic, pneumatic and other pressurized hoses, fittings

and tubing, as follows:

(i) Flexible hose or its junction with the fittings for indications of leaks.

(ii) Threaded or clamped joints for leaks.

(iii) Outer covering of the hose for blistering, abnormal deformation or other signs of failure/impending failure.

(iv) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing;

(i) Hydraulic and pneumatic pumps and motors, as follows:

(i) Performance indicators: Unusual noises or vibration, low operating speed.

(ii) Loose bolts or fasteners.

(iii) Shaft seals and joints between pump sections for leaks;

(j) Hydraulic and pneumatic cylinders, as follows:

(i) Drifting.

(ii) Rod seals and welded joints for leaks.

(iii) Cylinder rods for scores, nicks and dents.

(iv) Case (barrel) for significant dents;

(k) Electrical components for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation, wiring for cracked or split insulation, and loose or corroded terminations;

(l) Ensure crane is grounded per manufacturer's specifications;

(m) Hooks and safety latches for deformation, cracks, excessive wear, or damage such as from chemicals or heat;

(n) Crane structure (including the boom, jib and counter jib):

(i) Structural members: Deformed, cracked, or significantly corroded.

(ii) Bolts, rivets and other fasteners: Loose, failed or significantly corroded.

(iii) Welds for cracks;

(o) Cracked or worn sheaves and drums;

(p) Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices, sprockets, and drive chains or belts;

(q) Excessive wear on brake and clutch system parts, linings, pawls, and ratchets;

(r) Load, wind, and other indicators for inaccuracies outside the tolerances recommended by the manufacturer;

(s) A legible and applicable operator's manual and load chart is in the operator's station;

(t) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and catwalks, if applicable;

(u) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing;

(v) Ballast blocks in place and secured per manufacturer's recommendations;

(w) Wire rope reeving for compliance with the manufacturer's specifications;

(x) Wire rope, in accordance with WAC 296-155-53200(5);

(y) Safety devices and operational aids for proper operation (including significant inaccuracies);

(z) Legible warning labels and decals as required by the manufacturer;

(aa) Steps, ladders, handrails and guards are in safe and usable condition.

(2) Additional requirements for self-erecting tower cranes prior to performing a proof load test.

Note: General requirements relating to preproof load tests for all cranes are located in WAC 296-155-53200.

(a) Functional motion test must be at crane manufacturer's rated load. Each test must include:

(i) Load hoisting and lowering;

(ii) Jib (boom) hoisting and lowering, or trolley travel;

(iii) Slewing motion;

(iv) Brakes and clutches;

(v) Limit, locking, and safety devices.

(b) The functional motion test listed in (a) of this subsection must continue until all controls, drives, and braking systems have been engaged and have functioned per the crane manufacturer's specifications.

(c) Order in which tests of self-erecting tower cranes are to be performed is as follows:

(i) Functional motion test without rated load;

(ii) Functional motion test at crane manufacturer's rated load. These tests may be combined with test of base structural support or foundation system given in (a) of this subsection.

(d) During functional motion tests, the crane's base structural support or foundation system must be visually checked by the accredited crane certifier. If any part of the crane's base structural support or foundation system shows excessive visual displacement, visual distress, or audible distress, then the lifted load must be lowered at hoist creep speed and all crane operations are to cease. An evaluation must then be made by the accredited crane certifier.

(3) Annual proof load testing of self-erecting tower cranes.

(a) Annual proof load testing. After the crane has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted and must be performed according to the manufacturer's recommendations. This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(b) The structural support or foundation examination during proof load test:

(i) This test must be conducted with the rated load placed at maximum radius permitted by site conditions. The superstructure must be rotated through three hundred sixty degrees with five-minute stops at each outrigger position. If any part of the support structure becomes displaced or distressed, all crane operations must stop until an evaluation is made by a qualified

person.

(ii) For rail-mounted cranes, a load test must be conducted with the jib in the position causing maximum loading on one wheel or bogie. The test must comprise traveling the entire length of the runway, then returning with the same load on the other rail. If a sleeper or support becomes displaced or damaged, crane operations must stop until an evaluation is made by a qualified person or until track ballast has been reset, or repairs made and a satisfactory test performed.

(c) Self-erecting tower crane hoist load limit switches must be set in accordance with the manufacturer's specifications using specified certified weights. Procedure is to be verified by the accredited crane certifier.

(d) Setting of hoist load limits must be documented on the form provided by the department. A copy of the completed form and inspection worksheets must be sent to the department within ten days upon completion of the examination.

NEW SECTION

WAC 296-155-53210 Additional inspection criteria and proof load testing--Overhead and bridge cranes. (1) After it is determined that the crane configurations meet the criteria in WAC 296-155-53200, the accredited crane certifier must visually inspect, without disassembly, and if applicable, the following items on overhead and bridge cranes for sound physical condition and that they are functional within the manufacturer's recommendations (not including removal of inspection covers):

(a) Controllers. Control mechanisms for interfering with proper operation. Control and drive mechanisms for apparent excessive wear of components and contamination by lubricants, water or other foreign matter;

(b) Load hooks. Inspect for damage wear to hook nuts, mousing device and hook swivel. Check for deformation, cracks, excessive wear, or damage such as from chemicals or heat. Inspect blocks for wear to sheaves, check plates, and pins. Check for loose pins, bolts and guards;

(c) Sheaves and bearings. Check all sheaves and bearings for lubrication and excessive wear. Ensure sheaves turn freely. Check sheave pin locking device;

(d) Structural supports. Inspect for damage or bent girders, girder seat top plate, diaphragms and structural column connections. Check for loose bolts or rivets, and cracks;

(e) Bridge inspection.

(i) Check complete structure for broken, cracked, damaged, missing, or corroded parts and members.

(ii) Handrails, walkways, and ladders. Inspect for loose, missing, bent, deteriorated or misaligned members, loose bolts,

rivets, broken welds and hangers;

(f) Brackets. Check for cracked or corroded welds, missing or loose bolts, bent or cracked brackets;

(g) End stops. Inspect for damaged wheels, broken welds, loose or missing bolts, damaged bumpers, missing pins or damaged plates;

(h) Runway rail and clamps. Inspect for loose, broken or missing clamps. Check the condition of railhead and side wear, rail splice plates and/or welds, rail gaps and associated bolts, wedges, connectors and rail switches;

(i) Crane alignment. Inspect for proper bridge end float while crane travels in both directions on runway. Check all corner connections for rust, shear marks, loose or missing bolts, nuts and washers. Inspect square marks and legibility of dimension;

(j) Wheels and bearings. Inspect wheels for wear, flat spots, chips, flange wear, cracks, loose axle pins, or securing devices. Check bearing clearance, chatter, loose bearing caps and lubrication;

(k) Trolley. Check for loose, missing, broken or bent members. Inspect for loose, faulty or missing coupling guards. Check for broken, loose or missing axle pins. Inspect for axle pins displaying excessive wear;

(l) Trolley rail. Inspect for bent or damaged members, loose bolts, rivets, guards, trolley rail clamps, end stops and broken welds. Check condition of rail head and side wear, rail splice plates and/or welds and rail gaps;

(m) Trolley conductors. Inspect insulators and clamps, loose connectors, bent, pitted or damaged wires or collectors;

(n) Shafts, couplings, and bearings. Inspect shafts for vibration, cuts and nicks, loose or worn keyways and misalignment. Check coupling for wear, loose bolts or keys and misalignment. Inspect bearing for clearance, chatter, loose bearing caps and proper lubrication;

(o) Gearing. Inspect gears for worn teeth, cracked teeth, superficial root cracks, pitting, unusual indentation or wear marks, full contact or end loading, loose set screws and keys. Check guards and covers. Inspect gear cases for excessive noise and vibration, proper lubrication and leaking;

(p) Wire rope and drum. Inspect wire rope for damage. Check rope clip fittings and associated mounting hardware for wear and damage. Inspect drum grooves for excessive wear. Inspect drum pedestal and bearing condition. Check for cracks in drum;

(q) Electrical items. Check all contacts for proper alignment and evidence of excess heating or unusual arcing. Inspect all coils, contact leads, shunts and wires, fuses or overload devices for loose connections and evidence of overheating. Inspect panel board and arc shields for cracks, loose bolts, dirt and moisture. Check panel marking for legibility. Inspect speed control resistors for damaged insulation, cracked or broken grids, loose connections, bolts and brackets;

(r) Motor. Inspect for damage, bearing noise, vibration and lubrication, spark and cleanliness of commutator and brush wear,

loose hold down bolts and motor brackets. Inspect commutator or slip rings for evidence of overheating and brush sparking. Inspect motor leads and insulators, damaged or deteriorated insulation and loose connections. Inspect brush holder for proper clearance to commutator or slip rings, and freedom of brushes;

(s) Brakes. Inspect for wear in linkage, pins and cams, weakness of springs, wear and condition of lining, smoothness of the drum, heat check crack and clearance between drum or disk. Inspect for improper solenoid air gap; evidence of overheating; damaged brass, and loose core laminations; delay or restriction in opening of brakes;

(t) Hoist brakes. Inspect for wear in linkage, pins and cams, weakness of springs, wear and condition of lining, smoothness of drum, heat check cracks and clearance between drum or disk. Inspect for improper solenoid air gap; evidence of overheating; damaged brass, and loose core laminations; delay or restriction in opening of brakes;

(u) Limit switches. Remove covers and inspect all electrical and mechanical components for malfunction including contacts, springs, ratchets, pins, arm and insulators, rollers, cams and dogs. Inspect cover gaskets, counterweight guides. Check all securing bolts and guards. Check for weather or moisture damage. Check for proper operation;

(v) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and catwalks, if applicable;

(w) Operation of crane controls. Operate all crane controls and check for proper operation. Check for smooth and regular motions without abnormal sensations, hesitations, binding, vibrations, shimmy, or irregularity;

(x) Warning device/fire protection. Inspect for proper operation of sirens, horns, bells and lights. Check switches and inspect wiring and connections;

(y) A legible and applicable operator's manual and load chart is in the operator's cab or station;

(z) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing.

(2) Annual proof load testing of bridge/overhead cranes.

(a) Annual proof load testing. After the crane has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted and must be performed according to the manufacturer's recommendations or a registered professional structural engineer (RPSE). This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(b) The proof load test must be at least one hundred percent but not to exceed one hundred twenty-five percent of the rated capacity.

(c) This test must be documented on the form or in the format

approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(d) Hoist the test load a distance to assure that the load is supported by the crane and held by the hoist brake(s).

(e) Transport the test load by means of the trolley for the full length of the bridge, as practical.

(f) Transport the test load by means of the bridge for the full length of the runway in one direction with the trolley as close to the extreme right-hand end of the crane as practical, and in the other direction with the trolley as close to the left-hand end of the crane as practical.

(g) Lower the test load, and stop and hold the test load with the brake(s).

(h) Mechanical load brake tests. Hoist test load and hold for five minutes.

Release the holding brake, either mechanically or electrically to verify mechanical load brake function or hoist the rated load then lower, monitoring the hoist for any speed control issues.

NEW SECTION

WAC 296-155-53212 Additional inspection criteria and proof load testing--Derricks. (1) After it is determined that the derrick configurations meet the criteria in WAC 296-155-53200, the accredited derrick certifier must visually inspect the following items, if applicable, on derricks for sound physical condition and that they are functional within the manufacturer's recommendations (not including removal of inspection covers):

(a) All control and drive mechanisms for adjustments interfering with proper operation and for excessive wear or contamination by lubricants or other foreign matter;

(b) All chords and lacing, tension in guys, plumb of the mast, external indication of deterioration or leakage in air or hydraulic systems;

(c) Derrick hooks for deformation or cracks, distortion causing an increase in throat opening of five percent not to exceed one-quarter inch or as recommended by the manufacturer. Any wear exceeding ten percent (or as recommended by the manufacturer) of the original section dimension of the hook;

(d) Rope reeving for noncompliance with derrick manufacturer's specifications;

(e) Hoist brakes, clutches, and operating levers;

(f) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt and moisture accumulation;

(g) Structural members for deformation, cracks, and corrosion;

(h) Crane cleanliness and housekeeping. Inspect for trash, oil, grease, debris or excessive dirt on crane components and

catwalks, if applicable;

(i) Bolts and rivets for tightness;

(j) Parts such as pins, bearings, shafts, gears, sheaves, drums, rollers, locking and clamping devices, for wear, cracks, and distortion;

(k) Gudgeon pin for cracks, wear and distortion;

(l) Foundation or supports for continued ability to sustain the imposed loads;

(m) A legible and applicable operator's manual and load chart is in the operator's cab or station;

(n) A portable fire extinguisher, with a basic minimum extinguishing rating of ten BC must be installed in the cab or at the machinery housing.

(2) Annual proof load testing of derricks.

(a) Annual proof load testing. After the derrick has passed the visual and operational tests, the accredited derrick certifier must ensure a proof load test is conducted and must be performed at the maximum and minimum boom angles or radii or as close to these as practical and at such intermediate radii as the derrick manufacturer or RPSE may deem necessary. This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten working days upon completion of the examination.

(b) Proof load tests and safe working load ratings must be based on the designed load ratings at the ranges of boom angle or operating radii. Proof loads must be as per the manufacturer's recommendations. When the manufacturer recommendations are not available follow the requirements in Table 3 below:

Table 3 - Derrick Load Test

Safe Working Load SWL	Proof Load
Up to 20 tons	25 percent in excess
20-50 tons	5 tons in excess
Over 50 tons	10 percent in excess

(c) Hoist the test load a few inches and hold to verify that the load is supported by the derrick and held by the hoist brake(s).

(d) Swing the derrick, if applicable, the full range of its swing, at the maximum allowable working radius for the test load.

(e) Boom the derrick up and down within the allowable working radius for the test load.

(f) Lower the test load, stop and hold the load with the brake(s).

(g) After satisfactory completion of a proof load test, the derrick and all component parts thereof shall be carefully examined in all applicable requirements in this section.

(h) This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within ten

working days upon completion of the examination.

NEW SECTION

WAC 296-155-53214 Crane decertification and reinstatement. (1) If any of the following occur, the certification becomes invalid:

(a) Contact with an energized power line;

(b) Any overload, other than proof load testing, or one that has been approved in writing in advance by the crane manufacturer or a RPE;

(c) Any significant modifications or significant repairs of a load sustaining/bearing part.

Note: Replacement of hoisting rope does not constitute decertification.

(2) The owner or lessee must notify the crane certification section by phone within twenty-four hours if any of the above occurs.

(3) The certification may be reinstated only after affected components have been reinspected by an accredited crane certifier. If the accredited crane certifier identifies any deficiencies during the reinspection, the deficiencies must be corrected before the certification can be reinstated. If the accredited crane certifier believes proof load testing should be conducted prior to reinstatement of the certification, proof load testing shall be conducted. In the case of major modifications or repairs to important load sustaining/bearing parts, proof load testing shall be performed prior to reinstatement. The accredited crane certifier must notify the department that the certification has been reinstated.

NEW SECTION

WAC 296-155-533 Crane operator qualifications and certification.

NEW SECTION

WAC 296-155-53300 Operator qualifications and certification. (1) Prior to operating any crane covered under chapter 296-155 WAC, Part L, with the exception of the trainee/apprentice requirements outlined in subsection (2) of this section, the employer must ensure that the crane operator:

(a) Has a valid crane operator certificate, for the type of crane to be operated, issued by a crane operator testing organization accredited by a nationally recognized accrediting agency. The operator certification must include a successful passing of a written and practical examination.

Notes:
- An operator's certificate issued by the accredited testing agency is valid for a five-year period, and must be renewed to ensure operators maintain qualified operator status.
- For self-erecting tower cranes, the department will accept a tower crane certification issued by a nationally accrediting testing agency.
- For derricks, the department will accept, at a minimum, a lattice boom truck or crawler mobile crane operator's certificate.

(b) Has crane hours of experience as shown in Table 1; and

(c) Pass a substance abuse test conducted by a recognized laboratory.

Exemption: When it is necessary in the performance of their duties, manufacture representatives, factory representatives and maintenance personnel are not required to be certified crane operators.

Crane Operator Experience
Table 1

Crane Type	Number of Hours of Actual Crane Operating Experience	Number of Hours of Crane Related Experience
(1) Mobile Cranes		
(a) Lattice Boom Crawler Cranes (LBC)	300 tons and above 1000 Hours	300 tons and above 1000 Hours
	300 tons and above 1000 Hours	Under 300 tons 500 Hours
(b) Lattice Boom Truck Cranes (LBT)	300 tons and above 1000 Hours	300 tons and above 1000 Hours
	Under 300 tons 500 Hours	Under 300 tons 500 Hours

Crane Type	Number of Hours of Actual Crane Operating Experience	Number of Hours of Crane Related Experience
(c) Large Telescopic Boom Cranes (Swing Cab) (TLL)	Over 130 tons 750 Hours	Over 130 tons 750 Hours
	Over 40 tons to 130 tons 250 Hours	Over 40 tons to 130 tons 250 Hours
	40 tons and under 40 Hours	40 tons and under 40 Hours
(d) Small Telescopic Boom Cranes (Fixed Cab) (TSS)	15 tons and above 40 Hours	15 tons and above 40 Hours
	Under 15 tons 20 Hours	Under 15 tons 20 Hours
(e) Articulating Boom Cranes	20 Hours	20 Hours
(2) Tower Cranes		
(a) Hammerhead	500 Hours	500 Hours
(b) Luffer	500 Hours	500 Hours
(c) Self-Erecting	50 Hours	50 Hours
(3) Overhead Cranes		
(a) Cab Operated	40 Hours	40 Hours
(b) Pendant/Remote	40 Hours	40 Hours
(4) Derricks	20 Hours	500 Hours
Hours of actual crane operating experience. For all cranes: Time while the operator is at the controls of the crane; and/or has direct control of that crane; and/or a combination of operating hours within the same crane type. For mobile cranes: It also includes time while installing/removing boom sections, luffing boom, jib, extending and retracting outriggers/stabilizers, leveling crane, and replacing hoisting rope. For tower cranes: It includes time while jumping (increasing the height of the tower/mast). **Note:** Additional actual crane operator experience may account for crane related experience.		
Hours of crane related experience: Time as a signalman/bellman, oiler, crane mechanic, crane inspector, formal classroom training, crane simulator operation, and a combination of operating hours on other categories of cranes.		

Note: Cranes and other lifting machines that are exempt can be found in WAC 296-155-52900(2).

(2) Prequalification/certification training period. An employee who is not a qualified crane operator as outlined in subsection (1) of this section is permitted to operate the crane as part of his/her training providing the following requirements are met:

(a) The employee ("trainee/apprentice") must be provided with sufficient training prior to operating the crane to enable the trainee to operate the crane safely under limitations established by this section (including continuous supervision) and any additional limitations established by the employer.

(b) The tasks performed by the trainee/apprentice while operating the crane must be within the trainee's ability, as determined by the supervising qualified crane operator.

(c) Qualified crane operator. While operating the equipment, the trainee/apprentice must be continuously supervised by a qualified crane operator who meets the following requirements:

(i) The qualified crane operator is an employee or agent of the trainee's/apprentice's employer.

(ii) The qualified crane operator under this section is

familiar with the proper use of the equipment's controls.

(iii) While supervising the trainee/apprentice, the qualified crane operator performs no tasks that detract from the qualified crane operator's ability to supervise the trainee/apprentice.

(iv) For cranes other than tower cranes: The qualified crane operator and the trainee/apprentice must be in direct line of sight of each other. In addition, they must communicate verbally or by hand signal.

(v) For tower cranes: The qualified crane operator and the trainee/apprentice must be in direct communication with each other.

(d) The trainee/apprentice must not operate the crane in any of the following circumstances:

(i) If any part of the crane, load line or load (including rigging and lifting accessories), if operated up to the crane's maximum working radius in the work zone, could get within twenty feet of a power line that is up to three hundred fifty kV, or within fifty feet of a power line that is over three hundred fifty kV;

(ii) If the crane is used to hoist personnel;

(iii) In a multiple-crane lift situation; or

(iv) Multiple-lift rigging, as defined in WAC 296-155-52902, can only be accomplished by the trainee/apprentice when the qualified crane operator determines that the trainee's/apprentice's skills are sufficient for this high-skill work.

(v) Critical lifts, excluding tower cranes, and as defined in WAC 296-155-52902, can only be accomplished by the trainee/apprentice when the qualified crane operator determines that the trainee's/apprentice's skills are sufficient for this high-skill work.

(3) The employer must obtain documentation showing hours of crane operator experience and crane related experience separated out by crane type and capacity.

(4) The department may recognize crane operator certification from another state or territory of the United States as equivalent to qualified crane operator requirements if the department determines that the other jurisdiction's credentialing standards are substantially similar to the qualified crane operator requirements.

(5) For experience obtained prior to January 1, 2010, the employer may accept a declaration from the crane operator attesting to actual hours of crane operator experience and crane related experience separated out by crane type and capacity. Hours documented prior to 2010 will count towards the hour requirements of actual crane operating experience and crane related experience.

(6) Beginning January 1, 2010, crane operator experience and crane related experience must be documented and separated out by crane type and capacity. If the employer is documenting crane operating and/or related crane experience hours, the employer must provide a copy of the hours to the operator as soon as practical, if requested.