WSR 10-08-068
EXPEDITED RULES
DEPARTMENT OF LABOR AND INDUSTRIES

[Filed April 6, 2010, 11:48 a.m.]

Title of Rule and Other Identifying Information: Chapter 296-155 WAC, Part L, Cranes, derricks, hoists, elevators, and conveyors.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Naomi Goodman, Department of Labor and Industries, P.O. Box 44001, Olympia, WA 98504-4001, AND RECEIVED BY June 8, 2010.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department is proposing to make minor amendments to the crane certifier accreditation and crane certification rules, as well as the crane operator qualifications and certification rules, located in chapter 296-155 WAC, Part L. These minor changes are housekeeping in nature and are being proposed for clarification reasons.

WAC 296-155-52900 Scope.

- Change the numbers of the paragraphs in this section.
- Subsection (1) - update the internal reference from subsection "(2)" to "(3)."
- Subsection (1) - add the words "cranes being used as" before the words "dedicated pile drivers."
- Add a new subsection (2) that reads, "Attachments. This standard applies to equipment included in subsection (1) when used with attachments. Such attachments, whether crane-attached or suspended include, but are not limited to: Hooks, magnets, grapples, clamshell buckets, orange peel buckets, concrete buckets, drag lines, personnel platforms, augers or drills and pile driving equipment."
- Subsection (3) - update the internal reference from "WAC 296-155-53214" to "WAC 296-155-53300."

WAC 296-155-52901 Certification and proof load testing—Requirement.

- Add this new section explaining that effective January 1, 2010, all cranes and derricks covered in WAC 296-155-52900, must be certified and proof load tested annually by an accredited certifier recognized by the department.

WAC 296-155-52902 Definitions.

- Modify the definition of "operational aid" by removing the words "crane level indicator."
- Modify the definition of "safety devices" by adding the words "crane level indicator."

WAC 296-155-53108 Duration and renewal of an accreditation.

- Subsection (2) - add an "s" to the word "exam" in the last sentence.

WAC 296-155-53200 General inspection criteria, wire rope inspection and removal criteria, and preproof load test requirements for all cranes.

- Subsection (5)(d) - modify language to read, "Remove wire rope from service if reduction from nominal diameter is greater than five percent."
- Delete Table 2, maximum allowable reduction from nominal diameter.

WAC 296-155-53202 Additional inspection criteria and proof load testing—Mobile cranes.

- Subsection (4)(a) - add language to the first sentence, it now reads, "Proof load tests must be completed on all hoist lines to maximum line pull as configured. Any hoist line not proof load tested is not considered certified."
- Subsection (4)(c) - add language to this paragraph, it now reads, "Quadrennial proof load testing. No major component (luffing boom, swing-away jibs, fly sections, jibs at variable offsets, boom sections, and back masts) 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. All major components are to be proof load tested to a minimum of 100%, not to exceed 110% of each component's charted structural capacity. Hoist line pull or rigging is not to be a limiting factor for structural proof load tests."
- Subsection (4)(d)(i) - fix a grammatical error.

WAC 296-155-53206 Additional inspection criteria and proof load testing—Tower cranes.

- Subsection (2) - add the words "structural supports" after "crane foundation." Also, changed the word "movement" to "moment" at the end of the sentence.

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

- Change the title of this section to "Qualifications and certification."

WAC 296-155-53300 Operator qualifications and certification.

- Subsection (1)(a) - add the words "for each crane category listed in Table 2 and by crane type for mobile cranes" at the end of the paragraph.
- Note after subsection (1) - add a new note, it reads, "If there is no accredited written or practical test for operator certification available, the employer must ensure the operator has been completely trained, evaluated and tested by the employer on the operating procedures for the piece of equipment in use as

recommended by the crane equipment manufacturer. This process must be documented and made available upon request.

- Table 1 - fix a grammatical error in the small telescopic boom crane category and renumber the table to "Table 2."
- Note following Table 1 - update an internal reference.

Reasons Supporting Proposal: These proposed revisions will resolve some confusion since these rules became effective on January 1, 2010.

Statutory Authority for Adoption: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.

Statute Being Implemented: Chapter 49.17 RCW.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of labor and industries, governmental.

Name of Agency Personnel Responsible for Drafting: Tracy Spencer, Tumwater, (360) 902-5530; Implementation and Enforcement: Michael Silverstein, Tumwater, (360) 902-4805.

April 6, 2010
Judy Schurke
Director

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

WAC 296-155-52900 Scope. (1) Except as provided in subsection ((~~(2)~~)) (3) 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); cranes being used as 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) Attachments. This standard applies to equipment included in subsection (1) of this section when used with attachments. Such attachments, whether crane-attached or suspended include, but are not limited to:

- Hooks;
- Magnets;
- Grapples;
- Clamshell buckets;
- Orange peel buckets;
- Concrete buckets;
- Draglines;
- Personnel platforms;
- Augers or drills; and
- Pile driving equipment.

(3) Exemptions. WAC 296-155-529 through ((~~296-155-53214~~)) 296-155-53300 do not apply to the following:

(a) Cranes having a maximum rated capacity of one ton or less are exempt from this rule for the purposes of crane certification and operator certification.

(b) 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.

(c) 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.

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

(e) Service trucks with mobile lifting devices designed specifically for use in the power line and electric service industries or handling associated materials.

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

(g) Hydraulic jacking systems, including telescopic/hydraulic gantries.

(h) Stacker cranes.

(i) Powered industrial trucks (forklifts).

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

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

(l) Dedicated drilling rigs.

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

(n) Tree trimming and tree removal work.

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

(p) Roustabouts.

(q) Service cranes with booms that rotate manually.

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

(s) Conveyors.

(t) Pump hoists with booms that do not rotate.

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

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

((~~(3)~~)) (4) 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 296-155-52901 Certification and proof load testing—Requirement. Effective January 1, 2010, all cranes and derricks covered in WAC 296-155-52900 and not

exempt in subsection (3) of that section, must be certified and proof load tested annually by an accredited crane certifier recognized by the department.

Note: For additional inspection criteria and proof load testing requirements for specific types of cranes, see:
- WAC 296-155-53202 for mobile cranes.
- WAC 296-155-53204 for articulating boom cranes.
- WAC 296-155-53206 for tower cranes.
- WAC 296-155-53208 for self-erecting tower cranes.
- WAC 296-155-53210 for overhead and bridge cranes.
- WAC 296-155-53212 for derricks.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

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 drilling rig means a machine which creates bore holes and/or shafts in the ground.

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: Horn, boom/jib or trolley stops, crane level indicator, 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.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/09)

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/inspected 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/inspected at least twenty-one cranes during the accreditation period may take the written exams to become recertified.

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

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

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)

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

*** 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.**

Note: xd means times the "diameter."

(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 reduction((~~s~~)) from nominal diameter ((~~are~~)) is greater than ((~~those shown below in Table 2~~)) five percent.

((~~**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.

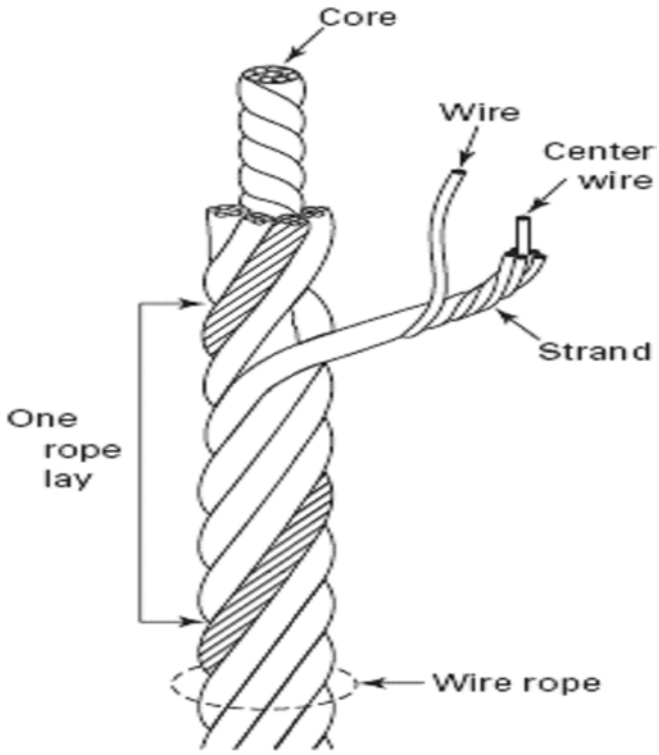

Figure 1 - Wire Rope

(6) Sheaves.

(a) Sheave grooves must be free from surface defects that could damage the rope. The cross-sectional radius at the bottom of the groove should be such as to form a close fitting saddle for the size of rope used. The sides of the groove must be tapered outward and rounded at the rim to facilitate entrance of the rope into the groove. Flange rims must run true about the axis of rotation.

(b) Sheave guards must be in place to:

(i) Guide the rope back into the sheave groove, when using ropes that can be momentarily unloaded.

(ii) Prevent ropes from becoming fouled when the block is lying on the ground with loose ropes.

(c) Sheave bearings, except for permanently lubricated ones, must have a means of lubrication.

(7) 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.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

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, and guards are in safe and usable 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 load tests must be completed on all hoist lines to maximum line pull as configured. Any hoist line not proof load tested is not considered certified. 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, and back masts) 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. All major components are to be proof load tested to a minimum of one hundred percent, not to exceed one hundred ten percent of each component's charted structural capacity. Hoist line pull or rigging is not to be a limiting factor for structural proof load tests.

(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.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

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/structural supports and underlying soil are adequate support for the tower crane with its maximum overturning ((~~movement~~)) moment.

(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.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

WAC 296-155-533 ((~~Crane operator~~)) Qualifications and certification.

AMENDATORY SECTION (Amending WSR 08-22-080, filed 11/4/08, effective 1/1/10)

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 for each crane category listed in Table 2 and by crane type for mobile cranes.

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.
- If there is no accredited written or practical test for operator certification available, the employer must ensure the operator has been completely trained, evaluated and tested by the employer on the operating procedures for the piece of equipment in use as recommended by the crane equipment manufacturer. This process must be documented and made available upon request.

(b) Has crane hours of experience as shown in Table ((1)) 2; 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 for Cranes Used in the Construction Industry
Table ((1)) 2

The 5 Categories of Cranes and their Types	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
	Under 300 tons 500 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
(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
	Over 5 tons ((to)) and under 15 tons 20 Hours	Over 5 tons ((to)) and under 15 tons 20 Hours
	5 tons and under 8 hours	5 tons and under 16 hours
(2) Articulating Boom Cranes	20 Hours	20 Hours
(3) Tower Cranes		
(a) Hammerhead	500 Hours	500 Hours
(b) Luffer	500 Hours	500 Hours
(c) Self-Erecting	50 Hours	50 Hours
(4) Overhead Cranes		
(a) Cab Operated	40 Hours	40 Hours
(b) Pendant/Remote	40 Hours	40 Hours
(5) 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).		

Crane Operator Experience for Cranes Used in the Construction Industry
Table ((1)) 2

The 5 Categories of Cranes and their Types	Number of Hours of Actual Crane Operating Experience	Number of Hours of Crane Related Experience
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))) (3).

(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, 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 signed 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.

Note: For experience obtained while working outside of the department's jurisdiction, the employer may accept a signed declaration from the crane operator attesting to actual hours of crane operator experience and crane related experience separated out by crane type and capacity.

(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.