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WAC 296-155-584 Scope
(1) Except as provided in subsection (2) below, this standard applies to power-operated cranes and derricks used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: articulating 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); multi-purpose 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. However, items listed in subsection (2) are excluded from the scope of this standard. This standard applies to equipment in this paragraph whether used with or without attachments.

Note:
- Cranes that only have a powered hoist line and which are manually rotated are not covered by these rules.
- Articulating boom cranes that do not have a hoist line are not covered by these rules.

(2) Exemptions. This part does not cover:

(a) Equipment included in paragraph (1) while it has been converted or adapted for non-hoisting/lifting use. Such conversions/adaptations include, but are not limited to, power shovels, excavators and concrete pumps.

Deleted: Exclusions
(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, such as digger derricks (radial boom derricks), when used in the power line and electric service industries for auguring holes to set power and utility poles, 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) Cranes used on-site in manufacturing facilities or powerhouses for occasional or routine maintenance and repair work; and

(q) 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.

**WAC 296-155-58400 Definitions**

**Accredited crane certifier** means a crane inspector who has been certified 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 crane.** 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.

"Attachments" includes, but is not limited to, crane-attached or suspended hooks, magnets, grapples, clamshell buckets, orange peel buckets, concrete buckets, drag lines, personnel platforms, augers, or drills and pile-driving equipment.

**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)** 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., principle 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.** 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.** 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 inspector who has been certified by the department.
Climbing. 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).

"Construction" means all or any part of excavation, construction, erection, alteration, repair, demolition, and dismantling of buildings and other structures and all related operations; the excavation, construction, alteration, and repair of sewers, trenches, caissons, conduits, pipelines, roads, and all related operations; the moving of buildings and other structures, and the construction, alteration, repair, or removal of wharfs, docks, bridges, culverts, trestles, piers, abutments, or any other related construction, alteration, repair, or removal work. "Construction" does not include manufacturing facilities or powerhouses.

Counterweight. 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 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 crane 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. Equipment that has a type of base mounting which incorporates a continuous belt of sprocket driven track.

Crossover points. 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.

Derricks – as defined in ASME B30.6.

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. 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. 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. 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. 
Hoist. A mechanical device for lifting and lowering loads by winding rope onto or off a drum. 
Hoisting. 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. 
Land crane/derrick. Equipment not originally designed by the manufacturer for marine use by permanent attachment to barges, pontoons, vessels, or other means of flotation. 
List. Angle of inclination about the longitudinal axis of a barge, pontoons, vessel or other means of flotation. 
Load 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. 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. 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 a crane mounted on a base or car equipped for travel on a railroad track. 
Luffing boom 
Luffing jib limiting device is similar to a boom hoist limiting device, except that it limits the movement of the luffing jib. 
Mobile cranes. 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. 
Nationally recognized accrediting agency is an organization that, due to its independence and expertise, is widely recognized as competent to accredit testing organizations.
Operational Controls 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 lattice 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.

Power lines 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. 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.

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

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

Stability means the tendency of a barge, pontoons, vessel or other means of floatation to return to an upright position after having been inclined by an external force.

Taglines. 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. 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). 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.
WAC 296-155-58402 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 and/or derrick, 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 and/or derricks 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.

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

(4) All firms, partnerships, corporation or other legal entity wishing to provide crane/derrick certifying services:
   (a) Must comply with all federal and state laws, regulations, and other requirements with regard to business operations;
   (b) Must be covered by general liability insurance and errors and omissions.

(5) The department may issue an accreditation to a firm, partnership, corporation or other legal entity so long as the firm, partnership, corporation or other legal entity employs one or more crane/derrick certifier accredited under these rules. Accredited firms, partnerships, corporations, or other legal entities shall submit to the department a list of accredited crane/derrick certifiers employed by the firm, partnership, corporation, or legal entity. The department must be notified of any additions or deletions to this list within 15 calendar days.

WAC 296-155-58404 Accreditation - Application Form and Applicant Qualifications

(1) An accreditation to certify cranes and/or derricks 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) 902-5460 or by written request to:
   Post Office 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 and/or derrick types. 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 and derricks, including those specifically applicable to the types of cranes and/or derricks for which an accreditation will be issued.

(c) All applicants must demonstrate at least five years crane/derrick related experience, of which two years must be actual crane inspection activity under the direction of an experienced crane inspector. The other three years may include experience in duties such as a crane/derrick operator, crane/derrick mechanic, crane/derrick shop foreman, crane/derrick 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.

(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 types of cranes and/or derricks 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 and/or derricks types subject to the accreditation, including inspection and proof loading requirements.

(5) Crane certifiers accredited by any other State, will be authorized to inspect cranes in Washington State provided the certifier submits an application, resume along with your certificate of accreditation from that state. This authorization will expire on 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.

**WAC 296-155-58406 Issuance of Accreditation.**

(1) The department must issue a certificate of accreditation if the applicant satisfies the requirements of this rule.

(2) The department may impose restrictions on the scope and use of the accreditation, such as limiting it to specific types of cranes and/or derricks 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 and/or derricks the certifier is authorized to certify.

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

**WAC 296-155-58408 Accreditation Application--Processing Time**

(1) Within 45 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 75 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.
(1) The accreditation will be valid for three years. Crane certifiers must complete forty (40) hours of crane related training every three years, in courses recognized and approved by the department.

(2) Application for renewal must be filed with the department not less than 60 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 296-155-58404 hereof providing the applicant has been actively inspecting cranes and/or derricks during their prior accreditation period. An applicant is considered active if he/she has certified at least twenty-one cranes and/or derricks during their accreditation period. If the applicant certified cranes/derricks in another state, then that applicant must provide documentation showing they were active during their accreditation period.

(3) All applicants for renewal must successfully complete the written examinations every six years.

WAC 296-155-58412 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 and/or derrick certifier to maintain records;
(j) Failure by an accredited crane and/or derrick certifier to report crane and/or derrick safety deficiencies affecting the safe operation of a crane and/or derrick 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 request 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 an authorized representative of the assistant director.

(4) A suspension or revocation order 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) Following the period of suspension or revocation, an application for an accreditation may be filed with the department.

(6) The filing of an appeal must not stay the revocation or suspension, 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.

**WAC 296-155-58414 Monitoring of Accredited Crane Certifiers**

The Division of Occupational Safety and Health must monitor accredited crane and/or derrick certifiers to ensure that these certifiers certify cranes and/or derricks in accordance with all applicable Washington State laws and regulations. Monitoring activities will include, but not be limited to, audits of crane and/or derrick certifier’s activities, complaint inspections, referrals, or accident investigations.
WAC 296-155-58416 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 and/or derrick.

(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 and/or derrick identifies deficiencies that would affect the safe operation or load handling capabilities of the crane and/or derrick, the accredited crane certifier must notify the department within five working days from completion of the onsite 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 and/or derrick no temporary certificate of operation will be issued until all identified deficiencies have been corrected and verified by an onsite 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 a permanent certificate of operation.

(5) If a limited certification is being performed, the accredited crane and/or derrick certifier will indicate on the worksheet exactly what configuration the crane and/or derrick is certified to operate in. This limited certification must be clearly marked as to its limitations on the temporary and permanent certificate issued to the crane and/or derrick owner. Should the crane and/or derrick owner desire to have a full certification of that crane and/or derrick prior to the expiration of the limited certification, an inspection and proof load test must be completed in the configurations that were not inspected during the limited certification; the expiration date for this certification will be one year from the date that the limited certification was completed.

(6) The accredited crane/derrick certifier must attach an identification tag to each crane/derrick component (boom or jib section) not currently installed but that has been inspected and approved for use. The identification tag number must be entered on the inspection work sheet submitted to the department. Identification tags may only be removed by a department representative or an accredited crane/derrick certifier.
(7) Maintaining Required Records. Accredited crane and derrick certifiers are required to maintain complete and accurate records pertaining to each crane and/or derrick 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 or derrick certifier to maintain required records may result in accreditation suspension or revocation.

WAC 296-155-58418 Crane De-Certification 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;
   (c) Any significant modification or repairs of structural parts;

(2) The owner or lessee must notify the department within 24 hours if any of the above occurs.

(3) The certification may be re-instated only after affected components have been re-inspected by an accredited crane/derrick certifier. If the accredited crane/derrick certifier identifies any deficiencies during the re-inspection, the deficiencies must be corrected before the certification can be reinstated. If the accredited crane/derrick 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 structural components, proof load testing shall be performed prior to reinstatement. The accredited crane/derrick certifier must notify the department that the certification has been reinstated.

WAC 296-155-58420 Inspection Criteria

- 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.
- All accredited crane certifiers must meet and follow the requirements relating to work area control, located in chapter 296-155 WAC, Part L.

(1) The accredited crane certifier must review the following document as part of the crane certification process:
   (a) Crane/derrick maintenance records of critical components to ensure maintenance of these components has been performed in accordance with the manufacturer’s recommendations.
   (b) Crane/derrick 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.

(4) General.

(a) The accredited crane certifier must determine that the configurations of the crane/derrick 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) After it is determined that the crane configurations meet the criteria in subsection (4) above, the accredited crane certifier must conduct a visual inspection of the following components which can be visually inspected without disassembly (not including removal of inspection covers):

(a) Control mechanisms for maladjustments interfering with proper operation.

(b) Control and drive mechanisms for apparent excessive wear of components and contamination by lubricants, water or other foreign matter.

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

(d) Hydraulic system for proper fluid level.

(e) Safety latches on hooks for damage.

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

(g) A legible and applicable operator’s manual and load chart is in the operator’s cab.

(h) A fire extinguisher readily accessible to the operator for enclosed cabs with internal combustion engines;
(i) Wire rope reeving for compliance with the manufacturer’s specifications.

(j) Wire rope, in accordance with WAC 296-155-58420(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) Safety devices and operational aids for proper operation.

(r) 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.

(s) Sheaves and drums for cracks or significant wear.

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

(u) Brake and clutch system parts, linings, pawls and ratchets for excessive wear.

(v) Safety devices and operational aids for proper operation (including significant inaccuracies).

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

(x) Chains and chain drive sprockets for excessive wear of sprockets and excessive chain stretch.

(y) Travel steering, brakes, and locking devices, for proper operation.

(z) Tires for damage or excessive wear.

(aa) 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.

(bb) 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.

(cc) Hydraulic and pneumatic cylinders, as follows:
   (i) Drifting.
   (ii) Rod seals and welded joints for leaks.
   (iii) Cylinder rods for scores, nick and dents.
   (iv) Case (barrel) for significant dents.
   (v) Rod eyes and connecting joints: loose or deformed.

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

(ee) Electrical components and wiring for cracked or split insulation and loose or corroded terminations.

(ff) Warning labels and decals required under this standard: missing or unreadable.

(gg) Operator seat: missing or unusable.

(hh) Equipped with original, or the equivalent, steps, ladders, handrails, guards.

(ii) Steps, ladders, handrails, guards: in unusable/unsafe condition.

(5) Wire Rope. Wire ropes must meet the crane manufacturer’s specifications for size and type. Wire rope end connections and terminations must meet the rope manufacturer’s specifications. **Wire rope deficiencies are divided into three different categories as follows:**

   (a) Category I. Apparent deficiencies in this category include the following:
(i) Significant distortion of the wire rope structure such as kinking, crushing, unstranding, birdcaging, signs of core failure or steel core protrusion between the outer strands.

(ii) Significant corrosion.

(iii) Electric arc (from a source other than power lines) or heat damage.

(iv) End connections and terminations that do not meet manufacturer’s specifications.

(v) Significantly corroded, cracked, bent, or worn end connections (such as from severe service)

(b) Category II. Apparent deficiencies in this category are:

(i) Visible broken wires as identified by the rope manufacturer’s out of service/removal criteria;

(ii) A diameter reduction as identified by the rope manufacturer’s out of service/removal criteria.

(c) Category III. Apparent deficiencies in this category include the following:

(i) In rotation resistant wire rope, core protrusion or other distortion indicating core failure.

(ii) Electrical contact with a power line.

(iii) A broken strand.
(d) 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.

(e) 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/derrick 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 in two; the undamaged portion may continue to be used. Joining lengths of wire rope by splicing is prohibited.

(f) Critical Review Items. The accredited crane certifier must give particular attention to:
   (i) Rotation resistant wire rope in use.
   (ii) Wire rope being used for boom hoists and luffing hoists, particularly at reverse bends.
   (iii) Wire rope at flange points, crossover points and repetitive pickup points on drums.
   (iv) Wire rope adjacent to end connections.
   (v) Wire rope at and on equalizer sheaves.
(g) Removal from service.

(i) If a deficiency in Category I 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, operations involving use of the wire rope in question must be prohibited until:

(A) The wire rope is replaced, or
(B) If the deficiency (other than power line contact) is localized, the problem is corrected by severing the wire rope in two; the undamaged portion may continue to be used. Joining lengths of wire rope by splicing is prohibited. Repair of wire rope that contacted an energized power line is also prohibited.

(ii) If a deficiency in Category II is identified, the accredited crane certifier must consider the deficiency to constitute a safety hazard where it meets the wire rope manufacturer’s established criterion for removal from service or meets a different criterion that the wire rope manufacturer has approved in writing for that specific wire rope. If the deficiency is considered a safety hazard, operations involving use of the wire rope in question must be prohibited until the wire rope is replaced, or the damage is removed in accordance with paragraph (g)(i)(B).

(iii) If a deficiency in Category III is identified, operations involving use of the wire rope in question must be prohibited until:

(A) The wire rope is replaced, or
(B) If the deficiency (other than power line contact) is localized, the problem is corrected by severing the wire rope in two; the undamaged portion may continue to be used. Joining lengths of wire rope by splicing is prohibited. Repair of wire rope that contacted an energized power line is also prohibited.

(iv) Where a wire rope is required to be removed from service under this section, either the equipment (as a whole) or the hoist with that wire rope must be tagged-out, in accordance with WAC 296-155-58534(6)(a), until the wire rope is repaired or replaced.

(6) If the accredited crane certifier determines that, though not presently a deficiency that warrants repair or denial of a temporary certificate, the finding needs to be monitored, the accredited crane certifier must notify the owner or lessee of the finding. Other findings that may become serious deficiencies must be noted on the inspection worksheet submitted to the department.
(7) 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/derrick 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) Trolley mechanism;
(e) Swing mechanism;
(f) Travel mechanism;
(g) Brakes and clutches;
(h) Limit, locking, and safety devices; 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 (failure to reach correct pressure - if there is a manufacturer procedure for checking pressure it must be followed).

(8) Proof load testing - General (applies to all cranes and derricks listed in this section).

(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/derrick.

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

(d) Proof load tests 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 be conducted in accordance with the manufacturer’s instructions. Where these instructions are unavailable, a registered professional
engineer familiar with the type of equipment involved must develop written load test procedures.

(9) Proof load testing of mobile 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 in the as configured condition 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 accredited crane/derrick certifier may deem necessary. This test must be documented on the form provided 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) Quadrennial 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 with all major components, i.e., luffing boom, swing-away jibs, power pinned fly sections, manual extensions, jibs at variable offsets, boom sections, etc. This test 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 accredited crane/derrick certifier may deem necessary. For jibs with variable offset angles, test at the greatest offset used. Record each test configuration and test load on the certification supplement form.

(i) This test must be performed in accordance with this section and documented on the form provided 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 examination.

Note: If the quadrennial proof load testing cannot be performed, a partial/limited certification will be submitted to the department and the certifier will notify the employer that the components that were not proof load tested cannot be used until such tests are completed by an accredited crane certifier.

(c) Complete tests must be performed on each load hook. The nominal test load must at least 100 percent but not to exceed 110 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.

(d) Free rated load test. 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 “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 (3 to 4 inches) above ground. Test personnel must stand clear of tires during load tests.

(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 (i) and (ii).

- Rotate through the appropriate working arc.
- Travel a minimum of 50 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 step (i) above 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. For all boom types, see subparagraph (4) for determination of radius, but ensure test is performed in the stability region of the load chart. 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 pre-measured radius. Lift the test load only high enough to perform the required tests.

(10) Proof load testing of derricks.

(a) Annual proof load testing. After the derrick has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is
conducted in the as configured condition 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 accredited crane/derrick certifier may deem necessary. This test must be documented on the form provided 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) Quadrennial proof load testing. After the derrick has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted with all major components, i.e. luffing boom, swing-away jibs, power pinned fly sections, manual extensions, jibs at variable offsets, boom sections, etc. This test 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 accredited crane/derrick certifier may deem necessary. For jibs with variable offset angles, test at the greatest offset used. Record each test configuration and test load on the certification supplement form.

(i) This test must be performed in accordance with this section and documented on the form provided 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 examination.

Note: If the quadrennial proof load testing cannot be performed, a partial/limited certification will be submitted to the department and the certifier will notify the employer that the components that were not proof load tested cannot be used until such tests are completed by an accredited crane certifier.

(c) 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 exceed the safe working load (SWL) as follows:

<table>
<thead>
<tr>
<th>SWL</th>
<th>Proof Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20 tons</td>
<td>25 percent in excess</td>
</tr>
<tr>
<td>20-50 tons</td>
<td>5 tons in excess</td>
</tr>
<tr>
<td>Over 50 tons</td>
<td>10 percent in excess</td>
</tr>
</tbody>
</table>
(d) Proof loads must be applied at the designed maximum and minimum boom angles or radii or as close to these as practicable. The angles or radii of test must be in the certificate of test. Proof loads must be swung as far as possible in both directions. The weight of all auxiliary handling devices such as blocks, hooks, etc., must be considered a part of the load.

(e) 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.

(f) This test must be documented on the form provided 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.

(11) Proof load testing of tower cranes. Setting hoist load limits for tower cranes (including self-erecting tower cranes).

(a) 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.

(b) 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.

(12) Proof load testing of bridge/overhead cranes.

(a) Proof load testing of bridge/overhead cranes must be in accordance with the manufacturer’s specifications or a registered professional engineer (RPE).

(b) The proof load test must be at least 100 percent but not to exceed 125 percent of the rated capacity.

(c) This test must be documented on the form provided 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.
**Mobile Crane Load Test Report**

Complete as applicable for the type of crane certified. Indicate “NA” for configurations that do not apply.

<table>
<thead>
<tr>
<th>Crane ID:</th>
<th>Crane Type:</th>
<th>Serial No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer:</td>
<td>Model:</td>
<td>Employer’s Name:</td>
</tr>
</tbody>
</table>

**OEM’s Rated Capacity**

<table>
<thead>
<tr>
<th></th>
<th>OEM’s Rated Capacity</th>
<th>Certified Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pounds</td>
<td>Feet</td>
</tr>
<tr>
<td>Main</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whip</td>
<td></td>
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</tbody>
</table>

- **Boom Length**
  - Test load %
  - Minimum Radius
  - Maximum Radius

<table>
<thead>
<tr>
<th></th>
<th>Minimum Radius</th>
<th>Maximum Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounds</td>
<td>Feet</td>
<td>Pounds</td>
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<tr>
<td>Main</td>
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<td>Aux</td>
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<tr>
<td>Whip</td>
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<td>Whip</td>
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</tbody>
</table>

**Hook Tram Measurements**

- **Base Measurement**
  - Before Test
  - After Test

<table>
<thead>
<tr>
<th></th>
<th>Before Test</th>
<th>After Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Hook</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Lattice Boom Crane**

- **On Out Riggers**
  - Test Load
  - Radius

<table>
<thead>
<tr>
<th></th>
<th>Min. Radius</th>
<th>Max. Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Load</td>
<td>Radius</td>
<td>Min. Radius Boom Retracted</td>
</tr>
<tr>
<td>On Tires (Stationary)</td>
<td>Test Load</td>
<td>Radius</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Min. Radius</th>
<th>Max. Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Load</td>
<td>Radius</td>
<td>Min. Radius</td>
</tr>
</tbody>
</table>

**Telescoping Boom Crane**

<table>
<thead>
<tr>
<th></th>
<th>Min. Radius</th>
<th>Max. Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Tires (Stationary)</td>
<td>Test Load</td>
<td>Radius</td>
</tr>
</tbody>
</table>

- **On Tires (Pick and Carry)**
  - (Describe configurations and list test loads/radii)

<table>
<thead>
<tr>
<th></th>
<th>Min. Radius</th>
<th>Max. Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Tires (Pick and Carry)</td>
<td>Max. Radius (Boom 50% Extended)</td>
<td>On Tires (Pick and Carry) (Describe configurations and list test loads/radii/boom length)</td>
</tr>
</tbody>
</table>

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**Comment [CI2]:** Still need to create additional load tests worksheets based on type of crane.

**Comment [CI3]:** Chuck can provide an illustration on how to do this, based on a comment received from Leroy Lamar.
Other Configurations, including auxiliary equipment if applicable.  
(Describe and list test loads/radii)

This is to certify that the inspections and tests have been conducted in accordance with the provisions set forth in chapter 296-155 WAC. It is further certified that the crane identified above is satisfactory to lift its certified capacity.

<table>
<thead>
<tr>
<th>Certifier ID:</th>
<th>Signature</th>
<th>Date of Load Test:</th>
</tr>
</thead>
</table>

List all configurations (e.g., over the side/over rear, boom extended/retracted, lifts on tires, traveling, etc.)