

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

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

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

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

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

(e) **Bridge inspection.**

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

(ii) Handrails, walkways, and ladders. Inspect for loose, missing, bent, deteriorated or misaligned members, loose bolts, rivets, broken welds and hangers;

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

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

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

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

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

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

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

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

(n) **Shafts, couplings, and bearings.** Inspect shafts for vibration, cuts and nicks, loose or worn keyways and misalignment. Check

coupling for wear, loose bolts or keys and misalignment. Inspect bearing for clearance, chatter, loose bearing caps and proper lubrication;

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

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

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

(r) **Motor.** Inspect for damage, bearing noise, vibration and lubrication, spark and cleanliness of commutator and brush wear, loose hold down bolts and motor brackets. Inspect commutator or slip rings for evidence of overheating and brush sparking. Inspect motor leads and insulators, damaged or deteriorated insulation and loose connections. Inspect brush holder for proper clearance to commutator or slip rings, and freedom of brushes;

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

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

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

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

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

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

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

(z) A portable fire extinguisher, with a basic minimum extinguishing rating of 10 BC must be installed in the cab or at the machinery housing.

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

(a) **Annual proof load testing.** After the crane has passed the visual and operational tests, the accredited crane certifier must ensure a proof load test is conducted and must be performed according to the manufacturer's recommendations or a registered professional structural engineer (RPSE). This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within 10 working days upon completion of the examination.

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

(c) This test must be documented on the form or in the format approved by the department. A copy of this completed form and inspection worksheets must be sent to the department within 10 working days upon completion of the examination.

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

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

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

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

(h) **Mechanical load brake tests.** Hoist test load and hold for 5 minutes.

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

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-53210, filed 4/19/16, effective 5/20/16. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.440, 49.17.060, and 29 C.F.R. 1926, Subpart CC. WSR 12-01-086, § 296-155-53210, filed 12/20/11, effective 2/1/12. Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060, 49.17.400, 49.17.410, 49.17.420, 49.17.430, and 49.17.440. WSR 08-22-080, § 296-155-53210, filed 11/4/08, effective 1/1/10.]