

WAC 296-155-54400 Floating cranes/derricks and land cranes/derricks on barges.

(1) This section contains supplemental requirements for floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation (i.e., vessel/flotation device). The sections of this part apply to floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation, unless specified otherwise. The requirements of this section do not apply when using jacked barges when the jacks are deployed to the river, lake, or sea bed and the barge is fully supported by the jacks.

(2) **General requirements.** The requirements in subsections (3) through (10) of this section apply to both floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation.

(3) **Work area control.**

(a) The requirements of WAC 296-155-53400(42) (work area control) apply, except for WAC 296-155-53400 (42)(b)(ii).

(b) You must either:

(i) Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas; or

(ii) Clearly mark the hazard areas by a combination of warning signs (such as, "Danger - Swing/Crush Zone") and high visibility markings on the equipment that identify the hazard areas. In addition, you must train each employee to understand what these markings signify.

(4) **Keeping clear of the load.** WAC 296-155-53400(43) does not apply.

(5) **Additional safety devices.** In addition to the safety devices listed in WAC 296-155-53410, the following safety devices are required:

(a) Barge, pontoon, vessel or other means of flotation list and trim indicator. The safety device must be located in the cab or, when there is no cab, at the operator's station.

(b) Positive equipment house lock.

(c) Wind speed and direction indicator. A competent person must determine if wind is a factor that needs to be considered; if wind needs to be considered, you must use a wind speed and direction indicator.

(6) **Operational aids.**

(a) An anti two-block device is required only when hoisting personnel or hoisting over an occupied cofferdam or shaft.

(b) WAC 296-155-53412 (3)(h) (Load weighing and similar devices) does not apply to dragline, clamshell (grapple), magnet, drop ball, container handling, concrete bucket, and pile driving work performed under this section.

(7) **Accessibility of procedures applicable to equipment operation.** If the crane/derrick has a cab, the requirements of WAC 296-155-53400(6) apply. If the crane/derrick does not have a cab, you must ensure that:

(a) Rated capacities (load charts) are posted at the operator's station. If the operator's station is moveable (such as with pendant-controlled equipment), the load charts are posted on the equipment.

(b) Procedures applicable to the operation of the equipment (other than load charts), recommended operating speeds, special hazard warnings, instructions and operators manual, must be readily available on board the vessel/flotation device.

(8) **Inspections.** In addition to meeting the requirements of WAC 296-155-53405 for inspecting the crane/derrick, you must inspect the

barge, pontoons, vessel or other means of flotation used to support a floating crane/derrick or land crane/derrick, to ensure that:

(a) **Shift.** For each shift inspection, the means used to secure/attach the equipment to the vessel/flotation device is in proper condition, including wear, corrosion, loose or missing fasteners, defective welds, and (when applicable) insufficient tension.

(b) **Monthly.** For each monthly inspection:

(i) The means used to secure/attach the equipment to the vessel/flotation device is in proper condition, including inspection for wear, corrosion, and (when applicable) insufficient tension.

(ii) The vessel/flotation device is not taking on water.

(iii) The deck load is properly secured.

(iv) The vessel/flotation device is watertight based on the condition of the chain lockers, storage, fuel compartments, and hatches.

(v) The firefighting and lifesaving equipment is in place and functional.

(c) The shift and monthly inspections are conducted by a competent person, and:

(i) If any deficiency is identified, an immediate determination is made by a qualified person whether the deficiency constitutes a hazard.

(ii) If the deficiency is determined to constitute a hazard, the vessel/flotation device is removed from service until the deficiency has been corrected.

(d) Annual: External vessel/flotation device inspection. For each annual inspection:

(i) The external portion of the barge, pontoons, vessel or other means of flotation used is inspected annually by a qualified person who has expertise with respect to vessels/flotation devices and that the inspection includes the following items:

(A) The items identified in this subsection.

(B) Cleats, bitts, chocks, fenders, capstans, ladders, and stanchions, for significant corrosion, wear, deterioration, or deformation that could impair the function of these items.

(C) External evidence of leaks and structural damage; evidence of leaks and damage below the waterline may be determined through internal inspection of the vessel/flotation device.

(D) 4-corner draft readings.

(E) Firefighting equipment for serviceability.

(ii) Rescue skiffs, lifelines, work vests, life preservers and ring buoys are inspected for proper condition.

(iii) If any deficiency is identified, an immediate determination is made by the qualified person whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly inspections.

(A) If the qualified person determines that the deficiency constitutes a hazard, the vessel/flotation device is removed from service until it has been corrected. See requirements in WAC 296-155-53400(68).

(B) If the qualified person determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly inspections.

(e) 4-year: Internal vessel/flotation device inspection. For each 4-year inspection:

(i) A marine engineer, marine architect, licensed surveyor, or other qualified person who has expertise with respect to vessels/

flotation devices surveys the internal portion of the barge, pontoons, vessel, or other means of flotation.

(ii) If the surveyor identifies a deficiency, an immediate determination is made by the surveyor as to whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly or annual inspections, as appropriate.

(A) If the surveyor determines that the deficiency constitutes a hazard, the vessel/flotation device is removed from service until it has been corrected.

(B) If the surveyor determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly or annual inspections, as appropriate.

(f) **Documentation.** The monthly and annual inspections required in (b) and (d) of this subsection are documented in accordance with WAC 296-155-53405, respectively, and that the 4-year inspection required in this section is documented, except that you must retain the documentation for that inspection for a minimum of 4 years. You must make all such documents available, during the applicable document retention period, to all persons who conduct inspections in accordance with WAC 296-155-53405.

(9) **Working with a diver.** You must meet the following additional requirements when working with a diver in the water:

(a) If a crane/derrick is used to get a diver into and out of the water, you must not use it for any other purpose until the diver is back on board. When used for more than one diver, you must not use it for any other purpose until all divers are back on board.

(b) The operator must remain at the controls of the crane/derrick at all times.

(c) In addition to the requirements in WAC 296-155-53406 (Signals), either:

(i) A clear line of sight must be maintained between the operator and dive tender; or

(ii) The signals between the operator and dive tender must be transmitted electronically.

(d) The means used to secure the crane/derrick to the vessel/flotation device (see subsection (12)(e) of this section) must not allow any amount of shifting in any direction.

(10) Barge, pontoons, vessel or other flotation manufacturer's specifications and limitations.

(a) You must ensure that the barge, pontoons, vessel, or other means of flotation must be capable of withstanding imposed environmental, operational and in-transit loads when used in accordance with the manufacturer's specifications and limitations.

(b) You must ensure that the manufacturer's specifications and limitations with respect to environmental, operational, and in-transit loads for a barge, pontoon, vessel, or other means of flotation are not exceeded or violated.

(c) When the manufacturer's specifications and limitations are unavailable, you must ensure that the specifications and limitations established by a marine engineer, marine architect, licensed surveyor, or other qualified person who has expertise with respect to environmental, operational and in-transit loads for the barge, pontoons, vessel, or other means of flotation are not exceeded or violated.

(11) **Floating cranes/derricks.** For equipment designed by the manufacturer (or employer) for marine use by permanent attachment to barges, pontoons, vessels or other means of flotation:

(a) Load charts.

(i) You must not exceed the manufacturer load charts applicable to operations on water. When using these charts, you must comply with all parameters and limitations (such as dynamic and environmental parameters) applicable to the use of the charts.

(ii) You must ensure that load charts take into consideration a minimum wind speed of 40 miles per hour.

(b) You must ensure that the requirements for maximum allowable list and maximum allowable trim as specified in Table 6 of this section are met.

Table 6

Equipment designed for marine use by permanent attachment (other than derricks):		
Rated Capacity	Maximum Allowable List	Maximum Allowable Trim
25 tons or less	5 degrees	5 degrees
Over 25 tons	7 degrees	7 degrees
Derricks designed for marine use by permanent attachment:		
Any rated capacity	10 degrees	10 degrees

(c) You must ensure that the equipment is stable under the conditions specified in Tables 7 and 8 of this section. (Note: Freeboard is the vertical distance between the water line and the main deck of the vessel.)

Table 7

Operated at	Wind speed	Minimum freeboard
Rated capacity	60 mph	2 ft
Rated capacity plus 25%	60 mph	2 ft
High boom, no load	60 mph	2 ft

Table 8

For backward stability of the boom:	
Operated at	Wind speed
High boom, no load, full back list (least stable condition)	90 mph

(d) If the equipment is employer-made, you must not use it unless you have documents demonstrating that the load charts and applicable parameters for use meet the requirements of (a) through (c) of this subsection. Such documents must be signed by a registered professional engineer who is a qualified person with respect to the design of this type of equipment (including the means of flotation).

(e) You must ensure that the barge, pontoons, vessel or other means of flotation used:

(i) Are structurally sufficient to withstand the static and dynamic loads of the crane/derrick when operating at the crane/derrick's maximum rated capacity with all planned and actual deck loads and ballasted compartments.

(ii) Have a subdivided hull with one or more longitudinal watertight bulkheads for reducing the free-surface effect.

(iii) Have access to void compartments to allow for inspection and pumping.

(12) **Land cranes/derricks.** For land cranes/derricks used on barges, pontoons, vessels or other means of flotation, you must ensure that:

(a) The rated capacity of the equipment (including, but not limited to, modification of load charts) applicable for use on land is reduced to:

(i) Account for increased loading from list, trim, wave action, and wind.

(ii) Be applicable to a specified location(s) on the specific barge, pontoons, vessel or other means of flotation that will be used, under the environmental conditions expected and encountered.

(iii) The conditions required in (c) and (d) of this subsection are met.

(b) The rated capacity modification required in (a) of this subsection is performed by the equipment manufacturer, or a qualified person who has expertise with respect to both land crane/derrick capacity and the stability of vessels/flotation devices.

(c) For list and trim.

(i) The maximum allowable list and the maximum allowable trim for the barge, pontoon, vessel or other means of flotation must not exceed the amount necessary to ensure that the conditions in (d) of this subsection are met. In addition, the maximum allowable list and the maximum allowable trim does not exceed the least of the following: 5 degrees, the amount specified by the crane/derrick manufacturer, or, when, an amount is not so specified, the amount specified by the qualified person.

(ii) The maximum allowable list and the maximum allowable trim for the land crane/derrick does not exceed the amount specified by the crane/derrick manufacturer, or, when, an amount is not so specified, the amount specified by the qualified person.

(d) For the following conditions:

(i) All deck surfaces of the barge, pontoons, vessel or other means of flotation used are above water.

(ii) The entire bottom area of the barge, pontoons, vessel or other means of flotation used is submerged.

(e) Physical attachment, corraling, rails system and centerline cable system meet the requirements in Option (1), Option (2), Option (3), or Option (4) of this section, and that whichever option is used also meets the requirements of (e)(v) of this subsection.

(i) **Option (1) - Physical attachment.** The crane/derrick is physically attached to the barge, pontoons, vessel or other means of flotation. Methods of physical attachment include crossed-cable systems attached to the crane/derrick and vessel/flotation device, bolting or welding the crane/derrick to the vessel/flotation device, strapping the crane/derrick to the vessel/flotation device with chains, or other methods of physical attachment.

(ii) **Option (2) - Corraling.** The crane/derrick is prevented from shifting by installing barricade restraints (i.e., a corraling system). You must ensure that corraling systems do not allow the equipment to shift by any amount of shifting in any direction.

(iii) **Option (3) - Rails.** You must prevent the crane/derrick from shifting by being mounted on a rail system. You must ensure that rail

clamps and rail stops are used unless the system is designed to prevent movement during operation by other means.

(iv) **Option (4) - Centerline cable system.** The crane/derrick is prevented from shifting by being mounted to a wire rope system. You must ensure that the wire rope system meets the following requirements:

(A) The wire rope and attachments are of sufficient size and strength to support the side load of crane/derrick.

(B) The wire rope is attached physically to the vessel/flotation device.

(C) The wire rope is attached to the crane/derrick by appropriate attachment methods (such as shackles or sheaves) on the undercarriage, and that the method used will allow the crew to secure the crane/derrick from movement during operation and to move the crane/derrick longitudinally along the vessel/flotation device for repositioning.

(D) Means are installed to prevent the crane/derrick from passing the forward or aft end of the wire rope attachments.

(E) The crane/derrick is secured from movement during operation.

(v) The systems/means used to comply with Option (1), Option (2), Option (3), or Option (4) of this section are designed by a marine engineer, registered professional engineer familiar with floating crane/derrick design, or qualified person familiar with floating crane/derrick design.

(f) **Exception.** For mobile auxiliary cranes used on the deck of a floating crane/derrick, the requirement specified by (e) of this subsection to use Option (1), Option (2), Option (3), or Option (4) does not apply when the employer demonstrates implementation of a plan and procedures that meet the following requirements:

(i) A marine engineer or registered professional engineer familiar with floating crane/derrick design develops and signs a written plan for the use of the mobile auxiliary crane.

(ii) The plan is designed so that the applicable requirements of this section are met despite the position, travel, operation, and lack of physical attachment (or corraling, use of rails or cable system) of the mobile auxiliary crane.

(iii) The plan specifies the areas of the deck where the mobile auxiliary crane is permitted to be positioned, travel, and operate, and the parameters and limitations of such movements and operation.

(iv) The deck is marked to identify the permitted areas for positioning, travel, and operation.

(v) The plan specifies the dynamic and environmental conditions that must be present for use of the plan.

(vi) If the dynamic and environmental conditions in (f)(v) of this subsection are exceeded, the mobile auxiliary crane is attached physically or corralled in accordance with Option (1), Option (2) or Option (4) of (e) of this subsection.

(g) The barge, pontoons, vessel or other means of flotation used:

(i) Are structurally sufficient to withstand the static and dynamic loads of the crane/derrick when operating at the crane/derrick's maximum rated capacity with all anticipated deck loads and ballasted compartments.

(ii) Have a subdivided hull with one or more longitudinal watertight bulkheads for reducing the free surface effect.

(iii) Have access to void compartments to allow for inspection and pumping.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060.
WSR 16-09-085, § 296-155-54400, 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, §
296-155-54400, filed 12/20/11, effective 2/1/12.]