

j. Figure 5 shows sketches of a catwalk and ladder acceptable to the Authority.

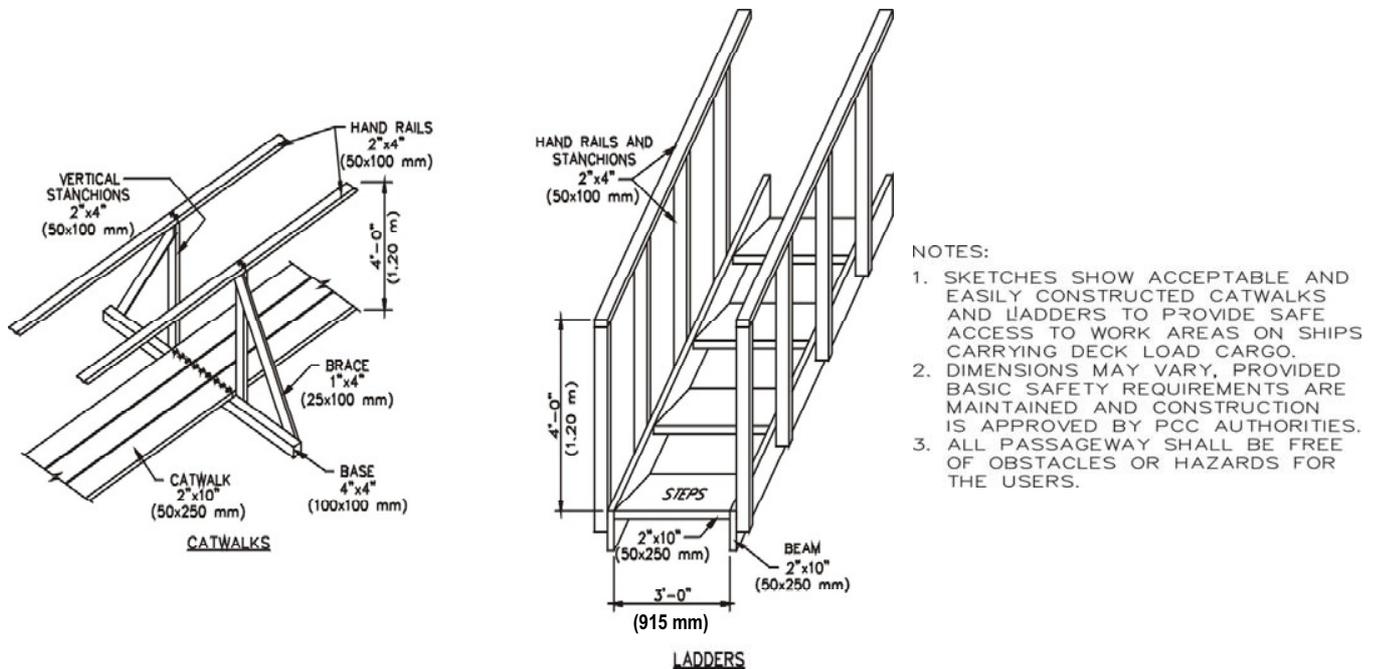


FIGURE 5 - Catwalk and Ladder Sketches

8. Construction, Number and Location of Chocks and Bitts

a. A vessel passing through the locks shall normally be assisted by electric locomotives using steel towing wires. At the discretion of the Transit Operations Division manager, certain vessels, usually those under 125 feet (38.10 m) in length, may be handled with their own lines either against the lock wall or from both walls in the center of the chamber. Vessels transiting the Canal are required to have chocks and bitts as follows:

(1) All chocks for towing wires shall be of heavy closed construction and shall have a convex bearing surface with a radius of not less than 7 inches (180 mm). The convex surface shall extend so that a wire from the bitt, or from the locks locomotive through the chock, shall be tangent to the 7 inches (180 mm) radius at any angle up to 90 degrees with respect to a straight line through the chock.

(2) No part of the vessel which may be contacted by the towing wires, at any angle, shall have less than a 7-inch (180 mm) radius.

(3) Chocks designated as single chocks shall have a throat opening of not less than 100 square inches (650 square cm) in area — preferred dimensions are 12 x 9 inches (305 x 230 mm)

— and shall be capable of withstanding the stress caused by a load of 100,000 pounds (45,360 kg) from the towing wires in any direction.

(4) Chocks designated as double chocks shall have a throat opening of not less than 140 square inches (900 square cm) in area — preferred dimensions are 14 x 10 inches (355 x 255 mm) — and shall be capable of withstanding the stress caused by a load of 140,000 pounds (64,000 kg) from the towing wires in any direction.

(5) Use of existing roller chocks is permissible provided they are not less than 49 feet (15 m) above the waterline at the vessel's maximum Panama Canal draft and provided they are in good condition, meet all of the requirements for solid chocks as specified in Paragraphs 8.a(1), 8.a(2), 8.a(3) and 8.a(4) of this section, as the case may be, and are so fitted that transition from the rollers to the chock body will prevent damage to towing wires. **However, roller chocks are not accepted in plans of new constructions which are submitted for approval as per Paragraph 2.i of this Notice.**

(6) Each single chock shall have an accompanying bitt — preferred diameter of 14 inches (356 mm) — capable of withstanding the stress caused by a load of 100,000 pounds (45,360 kg).

(7) Each double chock located at the stem and the stern, in accordance with Paragraph 8.a(8) of this section, shall have two pairs of accompanying heavy bitts with each bitt of each pair — preferred diameter of 16 inches (406 mm) — capable of withstanding the stress caused by a load of 140,000 pounds (64,000 kg). Other double chocks shall have a pair of accompanying heavy bitts with each bitt capable of withstanding a strain of 140,000 pounds (64,000 kg).

(8) All vessels, except those not requiring locomotives, shall be fitted with a double chock set athwartships right in the stem and another double chock set athwartships right in the stern, except that on vessels of less than 75 feet (22.86 m) in beam, two single chocks may be substituted for each double chock required by this subsection; on vessels of over 75 feet (22.86 m) in beam two double chocks may be substituted. If such substitution is made, the chocks shall be placed port and starboard not more than 8 feet (2.5 m) abaft the stem or 10 feet (3 m) forward of the stern, provided that these chocks are not more than 10 feet (3 m) from the center line of the vessel.

(9) Vessels under 200 feet (60.96 m) in length and less than 50 feet (15.24 m) in beam shall have a double chock or two single chocks at the stem and stern. If the vessel is equipped with the two single chocks they shall be placed, port and starboard, not more than 8 feet (2.5 m) abaft the stem or 10 feet (3 m) forward of the stern, and not more than 10 feet (3 m) off the center line (see Figure 6).

(10) Vessels 200 to 400 feet (60.96 to 121.92 m) in length and not exceeding 75 feet (22.86 m) in beam shall have a double chock at the stem and at the stern or two single chocks at the bow and stern, port and starboard, not more than 8 feet (2.5 m) abaft the stem or 10 feet (3 m) forward of the stern and not more than 10 feet (3 m) off the center line and shall have two additional single chocks, port and starboard, 30 to 50 feet (9 to 16 m) abaft the stem and 30 to 50 feet (9 to 16 m) forward of the stern (see Figure 6).

(11) Vessels 400 to 570 feet (121.92 to 173.74 m) in length and not more than 75 feet (22.86 m) in beam shall have a double chock at the stem and stern or two single chocks at the bow and stern, port and starboard, not more than 8 feet (2.5 m) abaft the stem or 10 feet (3 m) forward

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of the stern and not more than 10 feet (3 m) off the center line. In addition, these vessels shall have a double chock, port and starboard, 40 to 50 feet (12 to 16 m) abaft the stem, a single chock port and starboard, 80 to 90 feet (24 to 28 m) abaft the stem, and a single chock, port and starboard, 40 to 50 feet (12 to 16 m) forward of the stern (see Figure 6).

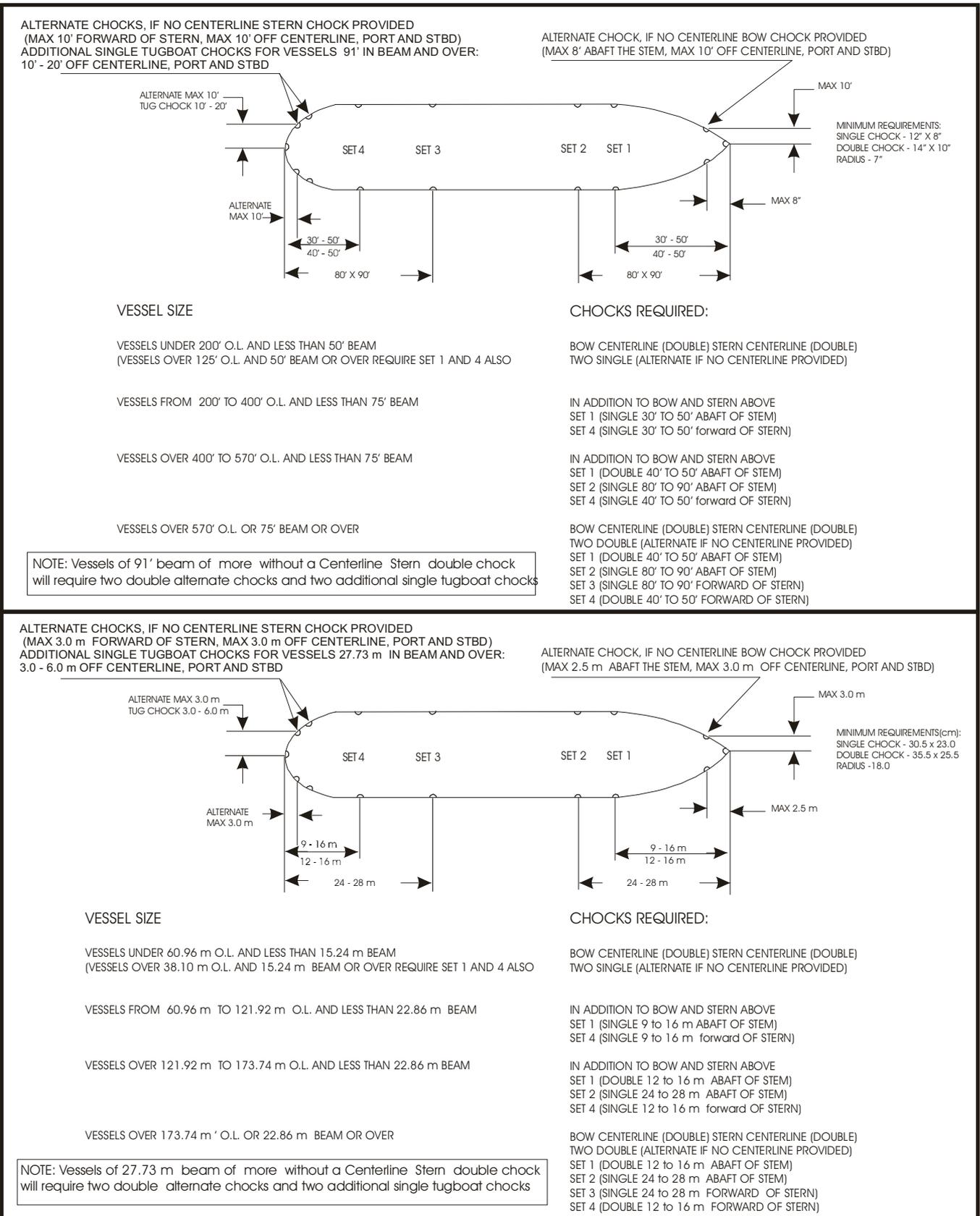


FIGURE 6 – Location of Chocks and Bits

(12) Vessels over 570 feet (173.74 m) in length or 75 feet (22.86 m) in beam or over shall have a double chock at the stem and stern or two double chocks at the bow and stern, port and starboard, not more than 8 feet (2.5 m) abaft the stem or 10 feet (3 m) forward of the stern and not more than 10 feet (3 m) off the center line. In addition, these vessels shall have a double chock, port and starboard, 40 to 50 feet (12 to 16 m) abaft the stem; a single chock, port and starboard, 80 to 90 feet (24 to 28 m) abaft the stem; a double chock, port and starboard, 40 to 50 feet (12 to 16 m) forward of the stern and a single chock, port and starboard, 80 to 90 feet (24 to 28 m) forward of the stern. On vessels over 900 feet (274.32 m) in length with maximum beam of 91 feet or more extending to the stern, the double chocks required on port and starboard, 40 to 50 feet (12 to 16 m) forward of the stern, shall be located no less than 42.65 feet (13 m) above the waterline at the maximum Panama Canal fresh water draft of the vessel.

(13) All vessels with a maximum beam of 91 feet (27.73 m) or more, in addition to the double chock at the stern, which is required by Paragraph 8.a(12) above, shall have two single chocks on the stern. One chock shall be to port of the centerline and one chock shall be to starboard of the centerline. The single chocks shall be symmetrically spaced not less than 10 feet (3 m) nor more than 20 feet (6 m) from the centerline.

(14) Vessels with large flared bows or unusually high freeboard, such as container vessels or vehicle carriers, will be required to provide single closed chocks located further aft than those required in Paragraph 8.a(12) of this Notice for correct positioning of assisting tugs, or may be required to fit recessed tug bollards into the hull so that tugs can work without coming in contact with the bow flare or without requiring extra long lines and/or inefficient leads (see Figure 6).

(15) Where recessed hull bitts are installed in the hull, they shall be installed not less than 12 feet (3.7 m) and not more than 15 feet (4.6 m) above the vessel's waterline. Vessels that have an appreciable variation in draft may be required to install two sets of recessed hull bitts so that one bitt is located over the other bitt. Also, the recessed hull bitts are to be installed in the hull as far forward as possible, both port and starboard sides, where the bow flare does not exceed 25 degrees as measured from the vertical line of the vessel's side. This position may require locating the chocks and bitts further aft than the 80 to 90 feet (24 to 28 m) abaft the stem as in Paragraph 8.a(11) above. This position will allow ACP tugboats to work safely under the bow flare without the tugboats mast or pilothouse coming in contact with the vessel's hull.

(16) A vessel not requiring locomotives shall have a chock arrangement similar to that described in Paragraph 8.a(9) of this Notice, except that the chocks need only be single chocks or, if approved by the Canal Authority, of lesser strength.

(17) Any vessel that fails to meet these requirements may be denied transit. If the Maritime Operations Director or his representative decides that the vessel can be handled without undue danger to equipment or to personnel, notwithstanding her failure to comply with other requirements of this section, the vessel may be allowed to transit after executing a release. The master of the vessel must sign an undertaking for the vessel, her owners, operators or any other persons having any interest in her, and for himself, releasing the Authority from and indemnifying it against any loss, damage or liability incurred by the Canal Authority to the extent and in the proportion that such failure to meet the requirements of this section proximately causes or contributes to the casualty and resulting damages.

(18) **All new vessels are expected to comply with all current vessel requirements.** Pre-existing vessels are granted a waiver for one round trip or for one year from the date of the waiver, whichever comes first. Certain tank vessels, and other vessels that prove to the satisfaction of the Authority that the work necessary to fit the chocks on the stern cannot be safely performed while at dockside, will be provided with a waiver extending until the next yard overhaul. **Vessels with ACP approved recessed bitt on the stern may, upon written application, be exempted from this requirement.**

(19) Adequate working space shall be provided on deck areas adjacent to winches, capstans, chocks, bitts and fairleads and along the path of mooring lines at least 3 feet (0.915 m) in width. This space shall be unencumbered by shoring, lashings or other obstacles deemed hazardous to normal passage or work by line handlers. Height over these areas may not be less than 7 feet (2.134 m). The working space provided along the path of the mooring lines and beside the bitts must be sufficient so that three linehandlers can pull the lines aboard without using winches or capstans.

- b. For further information contact the Transit Operations Division manager.

9. Mooring Lines, Anchors and Deck Machinery

a. Vessels are required to have on deck, six manila or synthetic mooring lines forward and six aft prior to commencing transit. The size and strength suitable for the vessel to dock, moor at a lock approach wall or secure in a lock chamber are the vessel's responsibility. The master shall inform the Boarding Officer whether or not the vessel complies with the above, so that he may advise Marine Traffic Control. Wire ropes, and ropes composed of both wire and fiber or filaments, are not acceptable for Canal operations.

b. These lines are required to be on deck prior to commencing transit and ready for immediate use. Each line shall be at least 250 feet (75 m) in length and shall have an eye of at least five feet (1.50 m) spliced in one end. If one of these lines is 500 feet (150 m) or more in length with an eye in each end, it will qualify as two lines for the purpose of this requirement. They shall be in good condition. Non-compliance with this requirement could result in transit delay.

- c. Anchors and deck machinery shall be operational at all times.

d. All mooring winches shall be capable of retrieving the lines used for pulling the locomotive wires onboard at a rate of 120 feet (37 meters) per minute.

- e. Anchors shall be retrieved at a rate of 3 minutes per shot.

10. Boarding Facilities

a. The Authority considers proper boarding facilities to be an absolute necessity to insure the safety of operations personnel and others using these facilities in Canal waters. Poorly constructed, installed, maintained or operated boarding facilities are not acceptable for use in Canal waters. Requirements for boarding facilities are defined in the ACP Navigation Regulations,