§ 174.310  General.

(a) Each hopper dredge under this subpart must be shown by design calculations based on the assumptions under paragraphs (b), (c), (d), and (e) of this section, that it meets—

(1) The requirements in §§170.170, 170.173, and 170.300 of this chapter in each condition of loading and operation; and

(2) The survival conditions of §174.320 in each condition of loading and operation assuming the character and extent of damage specified in §174.315.

(b) The calculations required by paragraph (a) of this section must assume:

(1) The hoppers are full of seawater;

(2) The permeability of flooded spaces is as provided by Table 174.310;

(3) The equalization provisions of §174.325; and


(c) The calculations required by this section must take into account a sufficient number of loading conditions to

§ 174.260  Freeboard.

(a) Each liftboat not required to obtain and maintain a loadline in compliance with subchapter E of this chapter must place markings on each side of the vessel amidships. These markings must each consist of a horizontal line 460 millimeters (18 inches) in length and 25 millimeters (1 inch) in height. The upper edges of the markings must be at a distance equal to the authorized freeboard measured vertically below the intersection of the continuation outwards of the upper surface of the weather deck and the outer surface of the shell. This distance must be at least 610 millimeters (24 inches).

(b) The markings required by paragraph (a) of this section may not be submerged in any condition of loading or operation.

Subpart I—Hopper Dredges With Working Freeboard Assignments

SOURCE: CGD 76–080, 54 FR 36977, Sept. 6, 1989, unless otherwise noted.

§ 174.300  Specific applicability.

This subpart applies to each self-propelled hopper dredge for which a working freeboard assignment is being sought under part 44, subpart C, of this chapter.

§ 174.305  Definitions.

Hopper dredge has the same meaning as contained in §44.310 of this chapter.

Length has the same meaning as contained in §42.13–15(a) of this chapter.

Working freeboard has the same meaning as contained in §4.310 of this chapter.

CALCULATIONS

§ 174.310  General.

(a) Each hopper dredge under this subpart must be shown by design calculations based on the assumptions under paragraphs (b), (c), (d), and (e) of this section, that it meets—

(1) The requirements in §§170.170, 170.173, and 170.300 of this chapter in each condition of loading and operation; and

(2) The survival conditions of §174.320 in each condition of loading and operation assuming the character and extent of damage specified in §174.315.

(b) The calculations required by paragraph (a) of this section must assume:

(1) The hoppers are full of seawater;

(2) The permeability of flooded spaces is as provided by Table 174.310;

(3) The equalization provisions of §174.325; and


(c) The calculations required by this section must take into account a sufficient number of loading conditions to
§ 174.315 Extent and character of damage.

(a) The calculations required by § 174.310 must show that the dredge can survive damage at any location along the length of the vessel including at a transverse bulkhead in accordance with paragraph (b) of this section.

(b) The calculations required by paragraph (a) of this section must assume the most disabling side penetration with the damage collision penetration provided by Table 174.315, except that if the most disabling damage collision penetrations would be less than those provided by Table 174.315, the smaller damage collision penetration must be assumed.

§ 174.320 Damage survival.

A hopper dredge survives assumed damage if it meets the following conditions:

(a) The maximum angle of heel in each stage of flooding must not exceed 30 degrees or the angle of downflooding whichever is less.

(b) The final waterline, taking into account sinkage, heel, and trim, must be below the lowest edge of each opening through which progressive flooding may take place.

(c) The righting arm curve calculated after damage must:

(1) Have a minimum positive range of 20 degrees beyond the angle of equilibrium; and

(2) Reach a height of at least 4 inches (100mm) within the 20 degree positive range.

(d) Each opening within, or partially within, the 20 degree range beyond the angle of equilibrium must be weathertight.

(e) After flooding or equalization as allowed by § 174.325, the hopper dredge’s metacentric height must be at least 2 inches (50mm) when the dredge is in an upright position.

§ 174.325 Equalization.

When doing the calculations required by § 174.310 of this subpart—

(a) Equalization arrangements requiring mechanical aids, such as valves, may not be assumed to be effective in reducing the angle of heel; and

(b) Spaces joined by ducts may be assumed to be common spaces only if equalization takes place within 15 minutes after flooding begins.