walls of such thickness and be so reinforced that the stresses in the walls caused by a given internal pressure are no greater than the circumferential stresses which would exist under the same internal pressure in the wall of a tank of circular cross section designed in accordance with paragraphs § 179.100–6 (a) and (b), but in no case shall the wall thickness be less than that specified in § 179.101.

(c) [Reserved]

(d) Valves and fittings need not be mounted on the manway cover.

(e) One opening may be provided in each head for use in purging the tank interior.

[29 FR 18995, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 179–50, 60 FR 49077, Sept. 21, 1995]

§ 179.103–2 Manway cover.

(a) The manway cover must be an approved design.

(b) If no valves or measuring and sampling devices are mounted on manway cover, no protective housing is required.

[29 FR 18995, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 179–50, 60 FR 49077, Sept. 21, 1995]

§ 179.103–3 Venting, loading and unloading valves, measuring and sampling devices.

(a) Venting, loading and unloading valves, measuring and sampling devices, when used, shall be attached to a nozzle or nozzles on the tank shell or heads.

(b) These valves and appurtenances must be grouped in one location and, except as provided in § 179.103–5, must be equipped with a protective housing with cover, or may be recessed into tank shell with cover. An additional set grouped in another location may be provided. Protective housing with cover, when used, must have steel sidewalls not less than three-fourths inch in thickness and a metal cover not less than one-fourth inch in thickness that can be securely closed. Underframe sills are an acceptable alternate to the protective housing cover, provided the arrangement is of approved design. For fittings recessed into tank shell, protective cover must be metal and not less than one-fourth inch in thickness.

(c) When tank car is used to transport liquefied flammable gases, the interior pipes of the loading, unloading, and sampling valves must be equipped with excess flow valves of approved design except when quick closing internal valves of approved design are used. When the interior pipe of the gaging device provides a means for the passage of lading from the interior to the exterior of the tank, it must be equipped with an excess flow valve of approved design or with an orifice not exceeding 0.060 inch.

[29 FR 18995, Dec. 29, 1964. Redesignated at 32 FR 5606, Apr. 5, 1967, and amended by Amdt. 179–10, 36 FR 21348, Nov. 6, 1971]

§ 179.103–4 Safety relief devices and pressure regulators.

(a) Safety relief devices and pressure regulators must be located on top of the tank near the center of the car on a nozzle, mounting plate or recess in the shell. Through or stud bolts, if used, must not enter the tank.

(b) Metal guard of approved design must be provided to protect safety relief devices and pressure regulators from damage.

[Amdt. 179–10, 36 FR 21348, Nov. 6, 1971]

§ 179.103–5 Bottom outlets.

(a) In addition to or in place of the venting, loading and unloading valves, measuring and sampling devices as prescribed in § 179.103–3, tanks may be equipped with approved bottom outlet valves. If applied, bottom outlet valves must meet the following requirements:

(1) On cars with center sills, a ball valve may be welded to the outside bottom of the tank or mounted on a pad or nozzle with a tongue and groove or male and female flange attachment, but in no case shall the breakage groove or equivalent extend below the bottom flange of the center sill. On cars without continuous center sills, a ball valve may be welded to the outside bottom of the tank or mounted with a tongue and groove or male and female flange attachment on a pad attached to the outside bottom of the tank. The mounting pad must have a maximum thickness of 2½ inches measured on the longitudinal centerline of the tank. The valve operating mechanism must