due to a rollover accident on the roadway or shoulder where the fill cover is not struck by a substantial obstacle.

(e) On cargo tank motor vehicles manufactured after October 1, 2004, each manhole assembly must be permanently marked on the outside by stamping or other means in a location visible without opening the manhole assembly or fill opening, with:

(1) Manufacturer’s name;
(2) Test pressure \( \text{psi} \);
(3) A statement certifying that the manhole cover meets the requirements in §178.345–5.

(f) All components mounted on a manhole cover that form part of the lading retention structure of the cargo tank wall must withstand the same static internal fluid pressure as that required for the manhole cover. The component manufacturer shall verify compliance using the same test procedure and frequency of testing as specified in §178.345–5(b).


§ 178.345–6 Supports and anchoring.

(a) A cargo tank with a frame not integral to the cargo tank must have the tank secured by restraining devices to eliminate any motion between the tank and frame that may abrade the tank shell due to the stopping, starting, or turning of the cargo tank motor vehicle. The design calculations of the support elements must include the stresses indicated in §178.345–3(b) and as generated by the loads described in §178.345–3(c).

(b) A cargo tank designed and constructed so that it constitutes, in whole or in part, the structural member used in lieu of a frame must be supported in such a manner that the resulting stress levels in the cargo tank do not exceed those specified in §178.345–3(a). The design calculations of the support elements must include the stresses indicated in §178.345–3(b) and as generated by the loads described in §178.345–3(c). [Amdt. 178–89, 54 FR 25023, June 12, 1989, as amended by Amdt. 178–105, 59 FR 55175, Nov. 3, 1994; Amdt. 178–118, 61 FR 51341, Oct. 1, 1996]

§ 178.345–7 Circumferential reinforcements.

(a) A cargo tank with a shell thickness of less than \( \frac{3}{8} \) inch must be circumferentially reinforced with bulkheads, baffles, ring stiffeners, or any combination thereof, in addition to the cargo tank heads.

(1) Circumferential reinforcement must be located so that the thickness and tensile strength of the shell material in combination with the frame and reinforcement produces structural integrity at least equal to that prescribed in §178.345–3 and in such a manner that the maximum unreinforced portion of the shell does not exceed 60 inches. For cargo tanks designed to be loaded by vacuum, spacing of circumferential reinforcement may exceed 60 inches provided the maximum unreinforced portion of the shell conforms with the requirements in Section VIII of the ASME Code (IBR, see §171.7 of this subchapter).

(b) Except for doubler plates and knuckle pads, no reinforcement may cover any circumferential joint.

(c) When a baffle or baffle attachment ring is used as a circumferential reinforcement member, it must produce structural integrity at least equal to that prescribed in §178.345–3.