Title 49 —Transportation
Subtitle B —Other Regulations Relating to Transportation
Chapter II —Federal Railroad Administration, Department of Transportation

Part 231 Railroad Safety Appliance Standards

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PART 231—RAILROAD SAFETY APPLIANCE STANDARDS

Authority: 49 U.S.C. 20102-20103, 20107, 20131, 20301-20303, 21301-21302, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Source: 33 FR 19663, Dec. 25, 1968, unless otherwise noted.

Note: Where rivets or bolts are required in this part 231 a two-piece steel rivet may be used consisting of:
(a) A solid shank of one-half ($^1/_2$) inch minimum diameter steel or material of equal or greater strength having cold forged head on one end, a shank length for material thickness fastened, locking grooves, breakneck groove and pull grooves (all annular grooves) on the opposite end.

(b) A collar of similar material which is cold swaged into the locking grooves forming a head for the opposite end of item (a) after the pull groove section has been removed.

§ 231.0 Applicability and penalties.

(a) Except as provided in paragraphs (b) and (c) of this section, this part applies to all standard gage railroads.

(b) This part does not apply to:

(1) A railroad that operates only on track inside an installation which is not part of the general railroad system of transportation; or

(2) Rapid transit operations in an urban area that are not connected with the general railroad system of transportation.

(3) Freight and other non-passenger trains of four-wheel coal cars.

(4) Freight and other non-passenger trains of eight-wheel standard logging cars if the height of each car from the top of the rail to the center of the coupling is not more than 25 inches.

(5) A locomotive used in hauling a train referred to in paragraph (b)(4) of this section when the locomotive and cars of the train are used only to transport logs.

(c) Except for the provisions governing uncoupling devices, this part does not apply to Tier II passenger equipment as defined in § 238.5 of this chapter (*i.e.,* passenger equipment operating at speeds exceeding 125 mph but not exceeding 160 mph).

(d) As used in this part, *carrier* means "railroad," as that term is defined below.

(e) ***Railroad*** means all forms of non-highway ground transportation that run on rails or electromagnetic guideways, including

(1) commuter or other short-haul rail passenger service in a metropolitan or suburban area, and

(2) high speed ground transportation systems that connect metropolitan areas, without regard to whether they use new technologies not associated with traditional railroads. Such term does not include rapid transit operations within an urban area that are not connected to the general railroad system of transportation.

(f) Any person (an entity of any type covered under 1 U.S.C. 1, including but not limited to the following: a railroad; a manager, supervisor, official, or other employee or agent of a railroad; any owner, manufacturer, lessor, or lessee of railroad equipment, track, or facilities; any independent contractor providing goods or services to a railroad; and any employee of such owner, manufacturer, lessor, lessee, or independent contractor) who violates any requirement of this part or causes the violation of any such requirement is subject to a civil penalty of at least $1,114 and not more than $36,439 per violation, except that: Penalties may be assessed against individuals only for willful violations, and, where a grossly negligent violation or a pattern of repeated violations has created an imminent hazard of death or injury to persons, or has caused death or injury, a penalty not to exceed $145,754 per violation may be assessed. Each day a violation continues shall constitute a separate offense. See FRA's website at *www.fra.dot.gov* for a statement of agency civil penalty policy.

(g) Except as provided in paragraph (b) of this section, § 231.31 also applies to an operation on a 24-inch, 36-inch, or other narrow gage railroad.

[54 FR 33229, Aug. 14, 1989]

Editorial Note: For FEDERAL REGISTER citations affecting § 231.0, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

§ 231.1 Box and other house cars built or placed in service before October 1, 1966.

Except for box and other house cars that comply with either § 231.27 or § 231.28, each box and other house car shall be equipped to meet the following specifications:

(a) ***Handbrake*** —

(1) ***Number.*** One efficient handbrake which shall operate in harmony with the power brake installed on the car. Each such handbrake shall

(i) provide the same degree of safety as the design shown on plate A, or

(ii) provide the same degree of safety as that specified in § 231.27.

(2) ***Dimensions.***

(i) The brake shaft shall be not less than $1^{1}/_{4}$ inches in diameter, of wrought iron or steel without weld.

(ii) The brake wheel may be flat or dished, not less than 15, preferably 16, inches in diameter, of malleable iron, wrought iron, or steel.

(3) ***Location.***

(i) The hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not less than 17 nor more than 22 inches from center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

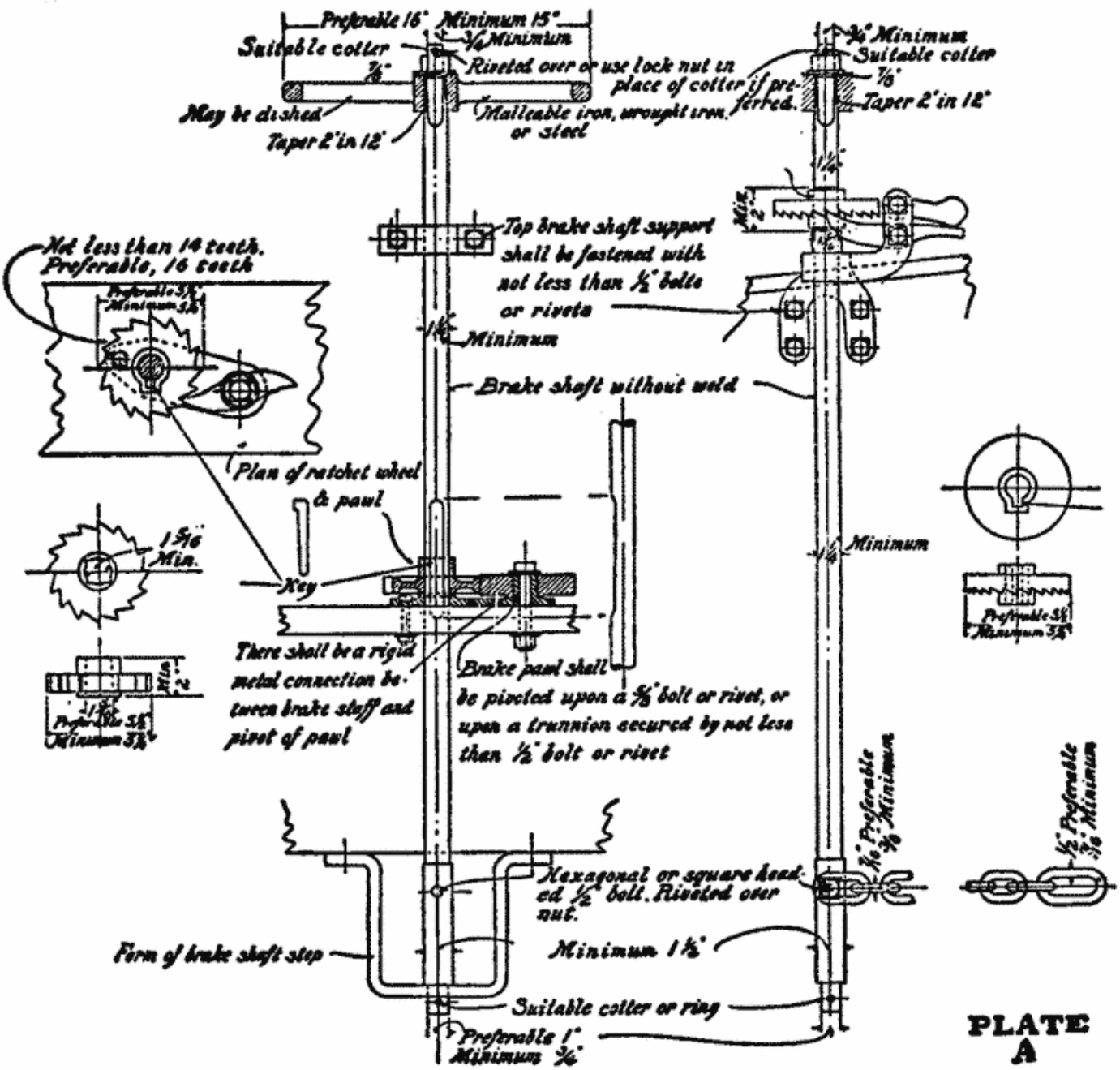
(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.***

(i) There shall be not less than 4 inches clearance around rim of brake wheel.

(ii) Outside edge of brake wheel shall be not less than 4 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(iii) Top brake-shaft support shall be fastened with not less than $^{1}/_{2}$-inch bolts or rivets. (See plate A.)



(iv) A brake-shaft step shall support the lower end of brake shaft. A brake-shaft step which will permit the brake chain to drop under the brake shaft shall not be used. U-shaped form of brakeshaft step is preferred. (See plate A.)

(v) Brake shaft shall be arranged with a square fit at its upper end to secure the hand-brake wheel; said square fit shall be not less than seven-eighths of an inch square. Square-fit taper, nominally 2 in 12 inches. (See plate A.)

(vi) Brake chain shall be of not less than $^{3}/_{8}$-, preferably $^{7}/_{16}$-, inch wrought iron or steel, with a link on the brakerod end of not less than $^{7}/_{16}$-, preferably $^{1}/_{2}$-, inch wrought iron or steel, and shall be secured to brake-shaft drum by not less than $^{1}/_{2}$-inch hexagon or square-headed bolt. Nut on said bolt shall be secured by riveting end of bolt over nut. (See plate A.)

(vii) Lower end of brake shaft shall be provided with a trunnion of not less than $^{3}/_{4}$-, preferably 1, inch in diameter extending through brake-shaft step and held in operating position by a suitable cotter or ring. (See plate A.)

(viii) Brake-shaft drum shall be not less than $1^{1}/_{2}$ inches in diameter. (See plate A.)

(ix) Brake ratchet wheel shall be secured to brake shaft by a key or square fit; said square fit shall be not less than $1^{5}/_{16}$ inches square. When ratchet wheel with square fit is used, provision shall be made to prevent ratchet wheel from rising on shaft to disengage brake pawl. (See plate A.)

(x) Brake ratchet wheel shall be not less than $5^{1}/_{4}$, preferably $5^{1}/_{2}$, inches in diameter and shall have not less than 14, preferably 16, teeth. (See plate A.)

(xi) If brake ratchet wheel is more than 36 inches from brake wheel, a brake-shaft support shall be provided to support this extended upper portion of brake shaft; said brake-shaft support shall be fastened with not less than $^{1}/_{2}$-inch bolts or rivets.

(xii) The brake pawl shall be pivoted upon a bolt or rivet not less than five-eighths of an inch in diameter, or upon a trunnion secured by not less than $^{1}/_{2}$-inch bolt or rivet, and there shall be a rigid metal connection between brake shaft and pivot of pawl.

(xiii) Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said threaded portion shall be not less than three-fourths of an inch in diameter; said nut shall be secured by riveting over or by the use of a lock nut or suitable cotter.

(xiv) Brake wheel shall be arranged with a square fit for brake shaft in hub of said wheel; taper of said fit, nominally 2 in 12 inches. (See plate A.)

(b) ***Brake step.*** If brake step is used, it shall be not less than 28 inches in length. Outside edge shall be not less than 8 inches from face of car and not less than 4 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(1) ***Manner of application.*** Brake step shall be supported by not less than two metal braces having a minimum cross-sectional area $^{3}/_{8}$ by $1^{1}/_{2}$ inches or equivalent, which shall be securely fastened to body of car with not less than $^{1}/_{2}$-inch bolts or rivets.

(c) ***Running boards*** —

(1) ***Number.*** One longitudinal running board. On outside-metal-roof cars two latitudinal extensions.

(2) ***Dimensions.*** Longitudinal running board shall be not less than 18 and preferably 20 inches in width. Latitudinal extensions shall be not less than 24 inches in width. Wooden running boards or extensions hereafter installed shall be constructed of wood not less than $1^{1}/_{8}$ inches in thickness.

(3) ***Location.*** Full length of car, center of roof. On outside-metal-roof cars there shall be two latitudinal extensions from longitudinal running board to ladder locations, except on refrigerator cars where such latitudinal extensions cannot be applied on account of ice hatches.

(4) ***Manner of application.***

(i) Running board shall be continuous from end to end and not cut or hinged at any point: *Provided,* That the length and width of running board may be made up of a number of pieces securely fastened to saddle-blocks with screws, bolts, or rivets.

(ii) The ends of longitudinal running board shall be not less than 6 nor more than 10 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or endsill; and if more than 4 inches from edge of roof of car, shall be securely supported their full width by substantial metal braces.

(iii) Running board shall be securely fastened to car and be made of wood or of material which provides the same as or a greater degree of safety than wood of $1^{1}/_{8}$ inches thickness. When made of material other than wood the tread surface shall be of anti-skid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(d) ***Sill steps*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum cross-sectional area $^{1}/_{2}$ by $1^{1}/_{2}$ inches, or equivalent, of wrought iron or steel. Minimum length of tread, 10, preferably 12, inches. Minimum clear depth, 8 inches.

(3) ***Location.***

(i) One near each end of each side of car, so that there shall be not more than 18 inches from end of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than 4 inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(iv) Carriers are not required to change location of sill steps on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.***

(i) Sill steps exceeding 21 inches in depth shall have an additional tread.

(ii) Sill steps shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(e) ***Ladders*** —

(1) ***Number.*** Four.

(2) ***Dimensions.***

(i) Minimum clear length of tread: Side ladders 16 inches; end ladders 14 inches. Maximum spacing between ladder treads, 19 inches.

(ii) Top ladder tread shall be located not less than 12 nor more than 18 inches from roof at eaves.

(iii) Spacing of side ladder treads shall be uniform within a limit of 2 inches from top ladder tread to bottom tread of ladder.

(iv) Maximum distance from bottom tread of side ladder to top tread of sill step, 21 inches.

(v) End ladder treads shall be spaced to coincide with treads of side ladders, a variation of 2 inches being allowed. Where construction of car will not permit the application of a tread of end ladder to coincide with bottom tread of side ladder, the bottom tread of end ladder must coincide with second tread from bottom of side ladder.

(vi) Hardwood treads, minimum dimensions $1^{1}/_{2}$ by 2 inches.

(vii) Iron or steel treads, minimum diameter five-eighths of an inch.

(viii) Minimum clearance of treads, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) One on each side, not more than 8 inches from right end of car; one on each end, not more than 8 inches from left side of car; measured from inside edge of ladder stile or clearance of ladder treads to corner of car.

(ii) Carriers are not required to change the location of ladders on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(iii) Carriers are not required to change the end ladders on steel or steel underframe cars with platform end sill, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.***

(i) Metal ladders without stiles near corners of cars shall have foot guards or upward projections not less than 2 inches in height near inside end of bottom treads.

(ii) Stiles of ladders, projecting 2 or more inches from face of car, will serve as foot guards.

(iii) Ladders shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets. Three-eighths-inch bolts may be used for wooden treads which are gained into stiles.

(f) ***End ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, running board or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

(g) ***Roof handholds*** —

(1) ***Number.***

(i) One over each ladder.

(ii) One right-angle handhold may take the place of two adjacent specified roof handholds, provided the dimensions and locations coincide, and that an extra leg is securely fastened to car at point of angle.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.***

(i) On roof of car, one parallel to treads of each ladder, not less than 8 nor more than 15 inches from edge of roof, except on refrigerator cars where ice hatches prevent, when location may be nearer edge of roof.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handhold under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Roof handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(h) ***Side handholds*** —

(1) ***Number.*** Four. (Tread of side ladder is a side handhold.)

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches, preferably 24 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) Horizontal, one near each end on each side of car. Side handholds shall be not less than 24 nor more than 30 inches above center line of coupler, except as provided above, where tread of ladder is a handhold. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Side handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(i) ***Horizontal end handholds*** —

(1) ***Number.*** Eight or more, four on each end of car. (Tread of end ladder is an end handhold.)

(2) ***Dimensions.***

(i) Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches, preferably 24 inches.

(ii) A handhold 14 inches in length may be used where it is impossible to use one 16 inches in length.

(iii) Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) One near each side on each end of car, not less than 24 nor more than 30 inches above center line of coupler, except as provided above, when tread of end ladder is an end handhold. Clearance of outer end of handhold shall be not more than 8 inches from side of car.

(ii) One near each side of each end of car on face of end sill or sheathing over end sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(iii) On each end of cars with platform end sills 6 or more inches in width, measured from end post or siding and extending entirely across end of car, there shall be one additional end handhold not less than 24 inches in length, located near center of car, not less than 30 nor more than 60 inches above platform end sill.

(iv) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Horizontal end handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(j) ***Vertical end handholds*** —

(1) ***Number.*** Two on full-width platform end-sill cars, as heretofore described.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 18, preferably 24, inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) One on each end of car opposite ladder, not more than 8 inches from side of car; clearance of bottom end of handhold shall be not less than 24 nor more than 30 inches above center line of coupler.

(ii) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Vertical end handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(k) ***Uncoupling levers*** —

(1) ***Number.*** Two. Uncoupling levers may be either single or double, and of any efficient design.

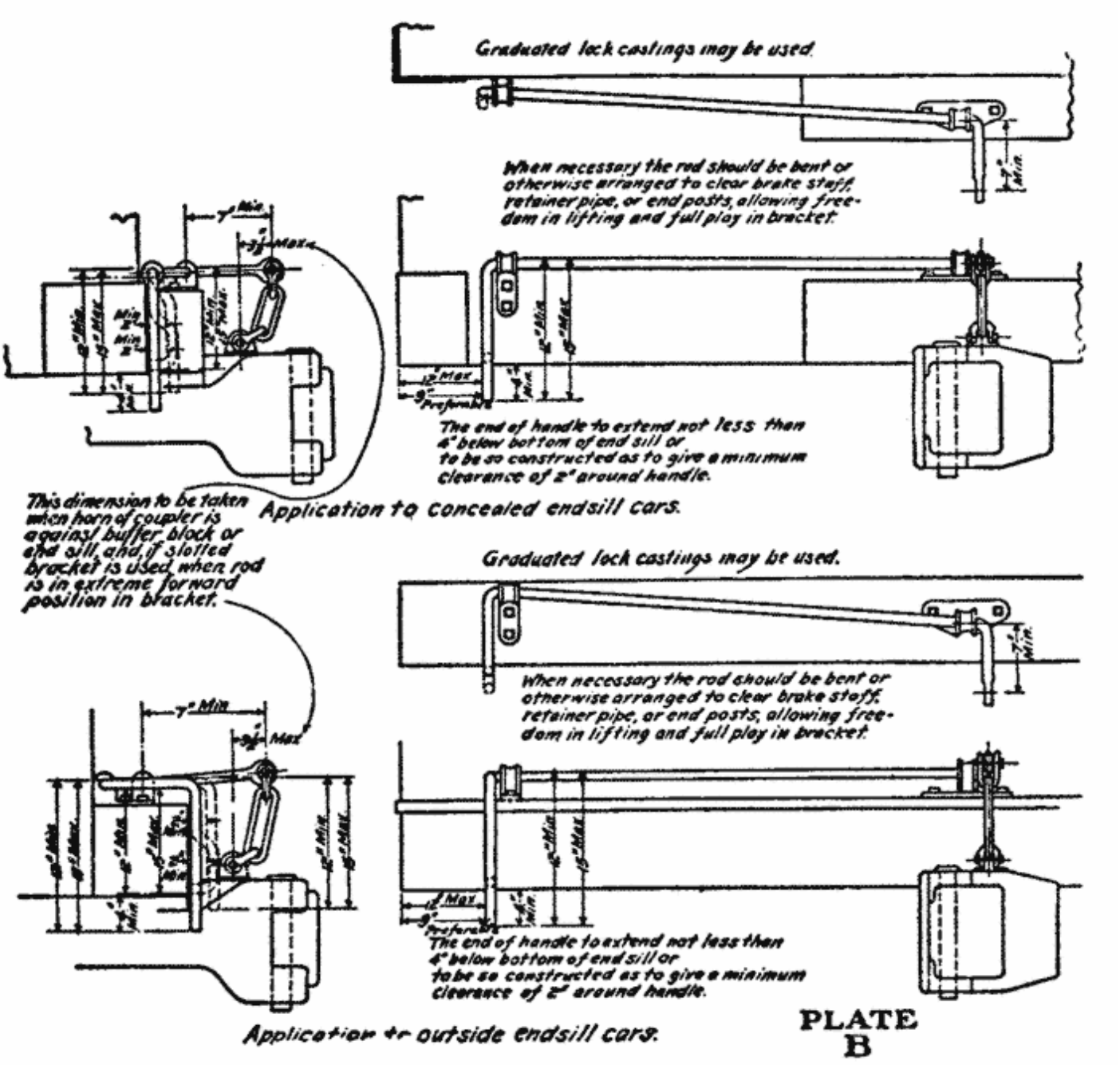
(2) ***Dimensions.***

(i) Handles of uncoupling levers, except those shown on plate B or of similar designs, shall be not more than 6 inches from sides of car.

(ii) Uncoupling levers of design shown on plate B and of similar designs shall conform to the following prescribed limits:

(iii) Handles shall be not more than 12, preferably 9, inches from sides of cars. Center lift arms shall be not less than 7 inches long.

(iv) Center of eye at end of center lift arm shall be not more than $3\frac{1}{2}$ inches beyond center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill. (See plate B.)



(v) Ends of handles shall extend not less than 4 inches below bottom of end sill or shall be so constructed as to give a minimum clearance of 2 inches around handle. Minimum drop of handles shall be 12 inches; maximum, 15 inches over all. (See plate B.)

(vi) Handles of uncoupling levers of the "rocking" or "push-down" type shall be not less than 18 inches from top of rail when lock block has released knuckle, and a suitable stop shall be provided to prevent inside arm from flying up in case of breakage.

(3) ***Location.*** One on each end of car. When single lever is used, it shall be placed on left side of end of car.

(Secs. 2, 4, and 6, 27 Stat. 531, as amended; secs, 1 and 3, 32 Stat. 943, as amended; sec. 6(e) and (f), 80 Stat. 939 (45 U.S.C. 2, 4, 6, 8, and 10, 11-16 and 49 U.S.C. 103(c)(1))

[33 FR 19663, Dec. 25, 1968, as amended at 49 FR 26745, June 29, 1984]

§ 231.2 Hopper cars and high-side gondolas with fixed ends.

(Cars with sides more than 36 inches above the floor are high-side cars.)

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of, and not more than 22 inches from, center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Brake step.*** Same as specified for "Box and other house cars" (see § 231.1 (b)).

(c) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(d) ***Ladders*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(e)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(e)(2)), except that top ladder tread shall be located not more than 4 inches from top of car.

(3) ***Location.*** Same as specified for "Box and other house cars" (see § 231.1(e)(3)).

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(e)(4)).

(e) ***Side handholds.*** Same as specified for "Box and other house cars" (see § 231.1(h)).

(f) ***Horizontal end handholds.*** Same as specified for "Box and other house cars" (see § 231.1(i)).

(g) ***Vertical end handholds.*** Same as specified for "Box and other house cars" (see § 231.1(j)).

(h) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(i) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.3 Drop-end high-side gondola cars.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(c) ***Ladders*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(e)(2)), except that top ladder tread shall be located not more than 4 inches from top of car.

(3) ***Location.***

(i) One on each side, not more than 8 inches from right end of car, measured from inside edge of ladder stile or clearance of ladder treads to corner of car.

(ii) Carriers are not required to change the location of ladders on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(e)(4)).

(d) ***Side handholds.*** Same as specified for "Box and other house cars" (see § 231.1(h)).

(e) ***Horizontal end handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) One near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(f) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(g) ***End ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face or buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.4 Fixed-end low-side gondola and low-side hopper cars.

(Cars with sides 36 inches or less above the floor are low-side cars.)

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not more than 22 inches from center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Brake step.*** Same as specified for "Box and other house cars" (see § 231.1(b)).

(c) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(d) ***Side handholds*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(h)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit, but handhold shall not project above top of side. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(e) ***Horizontal end handholds*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(i)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) One near each side on each end of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit. Clearance of outer end of handhold shall be not more than 8 inches from side of car.

(ii) One near each side of each end of car on face of end sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(f) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(g) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake step, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.5 Drop-end low-side gondola cars.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)), provided that top brake-shaft support may be omitted.

(b) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(c) ***Side handholds*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(h)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit, but handhold shall not project above top of side. Clearance of outer end of handhold shall be no more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(d) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(e) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(f) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.6 Flat cars.

(Cars with sides 12 inches or less above the floor may be equipped the same as flat cars.)

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on the end of car to the left of center, or on side of car not more than 36 inches from right-hand end thereof.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(c) ***Side handholds*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(h)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one on face of each side sill near each end. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(d) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(e) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

§ 231.7 Tank cars with side platforms.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(c) ***Side handholds*** —

(1) ***Number.*** Four or more.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one on face of each side sill near each end. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) If side safety railings are attached to tank or tank bands, four additional vertical handholds shall be applied, one as nearly as possible over each sill step and securely fastened to tank or tankband.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(d) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(e) ***Tank-head handholds*** —

(1) ***Number.*** Two. (Not required if safety railing runs around ends of tank.)

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches. Clear length of handholds shall extend to within 6 inches of outer diameter of tank at point of application.

(3) ***Location.***

(i) Horizontal, one across each head of tank not less than 30 nor more than 60 inches above platform.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Tankhead handholds shall be securely fastened.

(f) ***Safety railings*** —

(1) ***Number.*** One continuous safety railing running around sides and ends of tank, securely fastened to tank or tank bands at ends and sides of tank; or two running full length of tank at sides of cars supported by posts.

(2) ***Dimensions.*** Not less than three-fourths of an inch, iron.

(3) ***Location.*** Running full length of tank either at side supported by posts or securely fastened to tank or tank bands, not less than 30 nor more than 60 inches above platform.

(4) ***Manner of application.*** Safety railings shall be securely fastened to tank body, tank bands, or posts.

(g) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(h) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel or uncoupling level shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.8 Tank cars without side sills and tank cars with short side sills and end platforms.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Running boards*** —

(1) ***Number.*** One continuous running board around sides and ends; or two running full length of tank, one on each side.

(2) ***Dimensions.*** Minimum width on sides, 10 inches. Minimum width on ends, 6 inches.

(3) ***Location.*** Continuous around sides and ends of cars. On tank cars having end platforms extending to bolsters, running boards shall extend from center to center of bolsters, one on each side.

(4) ***Manner of application.***

(i) If side running boards are applied below center of tank, outside edge of running boards shall extend not less than 7 inches beyond bulge of tank.

(ii) The running boards at ends of car shall be not less than 6 inches from a point vertically above the inside face of knuckle when closed with coupler horn against the buffer block, end sill or back stop.

(iii) Running boards shall be securely fastened to tank or tank bands.

(c) ***Sill steps*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(d)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(d)(2)).

(3) ***Location.***

(i) One near each end on each side under side handhold.

(ii) Outside edge of tread of step shall be not more than 4 inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(iv) Carriers are not required to change the location of sill steps on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed in said order.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(d)(4)).

(d) ***Ladders.*** (If running boards are so located as to make ladders necessary.)

(1) ***Number.*** Two on cars with continuous running boards. Four on cars with side running boards.

(2) ***Dimensions.***

(i) Minimum clear length of tread, 10 inches. Maximum spacing of treads, 19 inches. Hardwood treads, minimum dimensions, $1^{1}/_{2}$ by 2 inches.

(ii) Wrought iron or steel treads, minimum diameter five-eighths of an inch. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.*** On cars with continuous running boards, one at right end of each side. On cars with side running boards, one at each end of each running board.

(4) ***Manner of application.*** Ladders shall be securely fastened with not less than $^{1}/_{2}$-inch bolts or rivets.

(e) ***Side handholds*** —

(1) ***Number.*** Four or more.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one on face of each side sill near each end on tank cars with short side sills, or one attached to top of running board projecting outward above sill steps or ladders on tank cars without side sills. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) If side safety railings are attached to tank or tank bands four additional vertical handholds shall be applied, one as nearly as possible over each sill step and securely fastened to tank or tank bands.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(f) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(g) ***Tank-head handholds*** —

(1) ***Number.*** Two. (Not required if safety railing runs around ends of tank.)

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) Horizontal, one across each head of tank not less than 30 nor more than 60 inches above platform on running board. Clear length of handholds shall extend to within 6 inches of outer diameter of tank at point of application.

(ii) Carriers are not required to change the location of handholds on cars in service July 7, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Tankhead handholds shall be securely fastened.

(h) ***Safety railings*** —

(1) ***Number.*** One running around sides and ends of tank or two running full length of tank.

(2) ***Dimensions.*** Minimum diameter, seven-eighths of an inch, wrought iron or steel. Minimum clearance, $2^{1}/_{2}$ inches.

(3) ***Location.*** Running full length of tank, not less than 30 nor more than 60 inches above platform or running board.

(4) ***Manner of application.*** Safety railings shall be securely fastened to tank or tank bands and secured against end shifting.

(i) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(j) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel, running boards or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same, above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.9 Tank cars without end sills.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion. The brake shaft shall be located on end of car to the left of center.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Brake step.*** Same as specified for "Box and other house cars" (see § 231.1(b)).

(c) ***Running boards*** —

(1) ***Number.*** One.

(2) ***Dimensions.*** Minimum width on sides, 10 inches. Minimum width on ends, 6 inches.

(3) ***Location.*** Continuous around sides and ends of tank.

(4) ***Manner of application.***

(i) If running boards are applied below center of tank, outside edge of running boards shall extend not less than 7 inches beyond bulge of tank.

(ii) Running boards at ends of car shall be not less than 6 inches from a point vertically above the inside face of knuckle when closed with coupler horn against the buffer block, end sill or back stop.

(iii) Running boards shall be securely fastened to tank or tank bands.

(d) ***Sill steps*** —

(1) ***Number.*** Four. (If tank has high running boards, making ladders necessary, sill steps must meet ladder requirements.)

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(d)(2)).

(3) ***Location.***

(i) One near each end on each side, flush with outside edge of running board as near end of car as practicable.

(ii) Tread not more than 24, preferably not more than 22, inches above the top of rail.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.***

(i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Sill steps shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and, riveted over, or with $^{1}/_{2}$-inch rivets.

(e) ***Side handholds*** —

(1) ***Number.*** Four or more.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location*** —

(i) ***Horizontal,*** one near each end on each side of car over sill step on running board, not more than 2 inches back from outside edge of running board, projecting downward or outward.

(ii) Where such side handholds are more than 18 inches from end of car, an additional handhold must be placed near each end on each side not more than 30 inches above center line of coupler.

(iii) Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(iv) If safety railings are on tank, four additional vertical handholds shall be applied, one over each sill step on tank.

(v) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(f) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side on each end of car on running board, not more than 2 inches back from edge of running board projecting downward or outward, or on end of tank not more than 30 inches above center line of coupler.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(g) ***Safety railings*** —

(1) ***Number.*** One.

(2) ***Dimensions.*** Minimum diameter, seven-eighths of an inch, wrought iron or steel. Minimum clearance, $2^{1}/_{2}$ inches.

(3) ***Location.*** Safety railings shall be continuous around sides and ends of car, not less than 30 nor more than 60 inches above running board.

(4) ***Manner of application.*** Safety railings shall be securely fastened to tank or tank bands, and secured against end shifting.

(h) ***Uncoupling levers*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(k)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(k)(2)), except that minimum length of uncoupling lever shall be 42 inches, measured from center line of end of car to handle of lever.

(3) ***Location.*** Same as specified for "Box and other house cars" (see § 231.1(k)(3)), except that uncoupling lever shall be not more than 30 inches above center line of coupler.

(i) ***End-ladder clearance.***

(1) No part of car above buffer block within 30 inches from side of car, except brake shaft, brake-shaft brackets, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or back stop, and no other part of end of car or fixtures on same, above buffer block, other than exceptions herein noted, shall extend beyond the face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.10 Caboose cars with platforms.

Note: a. The term "bottom of car" as used in § 231.10 is construed to mean "bottom of side-sill or sheathing over side-sill."
b. The term "corner of car" as used in § 231.10 is construed to mean the "line at inner edge of platform formed by the intersection of the side and end of car."

(a) ***Hand brakes*** —

(1) ***Number.***

(i) Each caboose car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

(ii) The hand brake may be of any efficient design, but must provide the same degree of safety as the design shown on plate A.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft on caboose cars with platforms shall be located on platform to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Running boards*** —

(1) ***Number.*** One longitudinal running board.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(c)(2)).

(3) ***Location.***

(i) Full length of car, center of roof. (On caboose cars with cupolas, longitudinal running boards shall extend from cupola to ends of roof.)

(ii) Outside - metal - roof - cars shall have latitudinal extensions leading to ladder locations.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(c)(4)). See note below.

(c) ***Ladders*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** None specified.

(3) ***Location.*** One on each end.

(4) ***Manner of application.*** Same as (*see* § 231.1(e)(4)). See note below.

(d) ***Roof handholds*** —

(1) ***Number.*** One over each ladder. Where stiles of ladders extend 12 inches or more above roof, no other roof handholds are required.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(g)(2)).

(3) ***Location.***

(i) On roof of caboose in line with and running parallel to treads of ladder, not less than 8 nor more than 15 inches from edge of roof.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(g)(4)). See note below.

(e) ***Cupola handholds*** —

(1) ***Number.*** One or more.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.***

(i) One continuous handhold extending around top of cupola not more than 3 inches from edge of cupola roof.

(ii) Four right-angle handholds, one at each corner, not less than 16 inches in clear length from point of angle, may take the place of the one continuous handhold specified, if locations coincide.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Cupola handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside and riveted over or with not less than $^{1}/_{2}$-inch rivets. See note below.

(f) ***Side handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 36 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) One near each end on each side of car, curving downward toward center of car from a point not less than 30 inches above platform to a point not more than 8 inches from bottom of car. Top end of handhold shall be not more than 8 inches from outside face of end sheathing.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(h)(4)).

(g) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.***

(i) Horizontal, one near each side on each end of car on face of platform end sill. Clearance of outer end of handhold shall be not more than 16 inches from end of platform end sill.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(h) ***End-platform handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.***

(i) One right-angle handhold on each side of each end extending horizontally from door post to corner of car at approximate height of platform rail, then downward to within 12 inches of bottom of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Handholds shall be securely fastened with bolts, screws, or rivets.

(i) ***Caboose-platform steps.*** Safe and suitable box steps leading to caboose platforms shall be provided at each corner of caboose. Lower tread of step shall be not more than 24 inches above top of rail.

(j) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

Note: Running boards may be omitted from Caboose Cars with platforms built after June 1, 1970,

when each of the following conditions have been met:
(1) That ladders, roof handholds (including ladder extensions) and cupola handholds as specified in paragraphs (c), (d), and (e) of this § 231.10 are also omitted.

(2) That an appropriate notice be posted in protective manner or stenciled on interior of caboose stating “operating employees are prohibited under all conditions from occupying the roof of this caboose.”

(3) That a safe means must be provided to assure the safety of an operating employee when required to clean or maintain windows of a caboose without running boards.

(4) That the following additional safety appliances as specified be securely installed at the outer edge of each platform:

(a) Safety railing

(i) Number:

Horizontal—Four (4), two (2) upper and two (2) lower.

Vertical—Four (4).

(ii) Dimensions:

Minimum diameter—One (1) inch wrought iron, steel, or other material of equivalent strength.

Minimum clearance—Four (4), preferably six (6) inches except at brace and fastening locations.

(iii) Location:

Vertical—One (1) at each corner of car extending from platform end sill to level of lower horizontal safety railing or to suitable bracket at roof.

Horizontal—Upper: Across each end of car near outer edge securely braced with vertical supports not less than 48 nor more than 54 inches above top of platform extending not less than full width of platform excluding hand brake stanchion area.

Horizontal—Lower: Across each end of car near outer edge securely braced with vertical supports not less than 36 nor more than 42 inches above top of platform excluding hand brake stanchion area. An opening may be provided near center. Such opening shall be provided with a secure safety chain(s) not less than $^{1}/_{4}$-inch diameter wrought iron, or steel, or other secure suitable closure.

(iv) Manner of application:

Safety railing shall be securely fastened with 1/2-inch bolts or rivets when possible and securely supported. A weld at connection of vertical and horizontal safety railing and vertical supports is permissible when those appliances are fabricated as a single unit.

(b) Kick plates

(i) Number: Four (4).

(ii) Dimensions:

Minimum thickness 10-gauge wrought iron, steel or other material of equivalent strength.

Width—Minimum 24 inches.

Height—Minimum 24 inches.

(iii) Location: One near each side on each and. Outer edge not more than 12 inches from adjacent vertical safety railing with bottom edge near top of platform. Hand brake stand may serve as part of kick plate.

(iv) Manner of application: Securely fastened by 1/2-inch bolts or rivets, or weld.

(v) Vertical hand rail supports spaced not more than eighteen (18) inches apart may be used in lieu of kick plates.

(5) That stove pipe shall be secured to prevent turning.

(6) That windows shall be laminated safety-type glass or equivalent.

Existing caboose cars with platforms. Running boards may be removed from Caboose Cars with Platforms built or under construction on or before June 1, 1970, when each of the following conditions have been met:

(1) That ladder treads above safety railing, roof handholds including ladder extensions, and cupola handholds specified in paragraphs (c), (d), and (e) of this § 231.10 are removed.

(2) That an appropriate notice be posted in protective manner or stenciled in interior of caboose stating “operating employees are prohibited under all conditions from occupying the roof of this caboose.”

(3) That a safe means must be provided to assure the safety of an operating employee when required to clean or maintain windows of a caboose without running boards.

(4) That end platform safety railing and handhold arrangement will be deemed to meet requirements except as to upper safety railing and kick plates, when those appliances are not provided. When vertical supports are not more than twenty-four (24) inches apart, such supports may be used in lieu of kick plates.

(5) That the following additional safety appliances (when not so provided) shall be securely installed at outer edge of each platform:

(a) Safety railing.

(i) Number:

Horizontal upper—Two (2).

(ii) Dimensions:

Minimum diameter—One (1) inch wrought iron, steel, or other material of equivalent strength.

Minimum clearance—Four (4), preferably six (6) inches except at brace and fastening locations.

(iii) Location:

Horizontal—Upper: Across each end of car near outer edge securely braced with vertical supports not less than 48 nor more than 54 inches above top of platform extending not less than full width of platform excluding hand brake stanchion area. Ladder tread not more than two (2) inches below level of upper safety railing may serve as a portion of said safety railing.

(b) Kick plates or vertical supports—Same as provided for caboose cars with platforms built after June 1, 1970, this note. See above.

(6) That stove pipe should be secured to prevent turning.

(7) Cupola or bay windows shall be laminated safety-type glass or equivalent and all other caboose windows shall be so provided on or before June 1, 1975.

[33 FR 19663, Dec. 25, 1968, as amended at 35 FR 10149, June 20, 1970]

§ 231.11 Caboose cars without platforms.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.***

(i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft on caboose cars without platforms shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***Brake step.*** Same as specified for "Box and other house cars" (see § 231.1(b)).

(c) ***Running boards*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(c)(1)).

(2) ***Dimension.*** Same as specified for "Box and other house cars" (see § 231.1(c)(2)).

(3) ***Location.***

(i) Full length of car, center of roof. (On caboose cars with cupolas, longitudinal running boards shall extend from cupola to ends of roof.)

(ii) Outside-metal-roof cars shall have latitudinal extensions leading to ladder locations.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(c)(4)).

(d) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(e) ***Side-door steps*** —

(1) ***Number.*** Two. (If caboose has side doors.)

(2) ***Dimensions.*** Minimum length, 5 feet. Minimum width, 6 inches. Minimum thickness of tread, $1^{1}/_{2}$ inches. Minimum height of back stop, 3 inches. Maximum height from top of rail to top of tread, 24 inches.

(3) ***Location.*** One under each side door.

(4) ***Manner of application.*** Side-door steps shall be supported by 2 iron brackets having a minimum cross-sectional area $^{7}/_{8}$ by 3 inches or equivalent, each of which shall be securely fastened to car by not less than two $^{3}/_{4}$-inch bolts.

(f) ***Ladders*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(e)(2)).

(3) ***Location.*** Same as specified for "Box and other house cars" (see § 231.1(e)(3), except when caboose has side doors, then side ladders shall be located not more than 8 inches from doors.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(e)(4)).

(g) ***End-ladder clearance.***

(1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, running board, or uncoupling lever shall extend to within 12 inches of a vertical plane, parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

(h) ***Roof handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(g)(2)).

(3) ***Location.***

(i) One over each ladder, on roof in line with and running parallel to treads of ladder, not less than 8 nor more than 15 inches from edge of roof.

(ii) Where stiles of ladders extend 12 inches or more above roof, no other roof handholds are required.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Roof handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(i) ***Cupola handholds*** —

(1) ***Number.*** One or more.

(2) ***Dimensions.*** Minimum diameter, five-eights of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.***

(i) One continuous cupola handhold extending around top of cupola, not more than 3 inches from edge of cupola roof.

(ii) Four right-angle handholds, one at each corner, not less than 16 inches in clear length from point of angle, may take the place of the one continuous handhold specified, if locations coincide.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Cupola handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside and riveted over or with not less than $^{1}/_{2}$-inch rivets.

(j) ***Side handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.***

(i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.(h)(4)).

(k) ***Side-door handholds*** —

(1) ***Number.*** Four: Two curved, two straight.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.***

(i) One curved handhold, from a point at side of each door opposite ladder, not less than 36 inches above bottom of car, curving away from door downward to a point not more than 6 inches above bottom of car.

(ii) One vertical handhold at ladder side of each door from a point not less than 36 inches above bottom of car to a point not more than 6 inches above level of bottom of door.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) ***Manner of application.*** Side-door handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over or with not less than $^{1}/_{2}$-inch rivets.

(l) ***Horizontal end handholds*** —

(1) ***Number.*** Same as specified for "Box and other house cars." (See § 231.1(i)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars." (see § 231.1(i)(2)).

(3) ***Location.***

(i) Same as specified for "Box and other house cars" (see § 231.1(i)(3)), except that one additional end handhold shall be on each end of cars with platform end sills as heretofore described, unless car has door in center of end. Said handhold shall be not less than 24 inches in length, located near center of car, not less than 30 nor more than 60 inches above platform end sill.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed in said order.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(m) ***Vertical end handholds.*** Same as specified for "Box and other house cars" (see § 231.1(j)).

(n) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

§ 231.12 Passenger-train cars with wide vestibules.

(a) ***Hand brakes*** —

(1) ***Number.*** Each passenger-train car shall be equipped with an efficient hand brake, which shall operate in harmony with the power brake thereon.

(2) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion.

(b) ***Side handholds*** —

(1) ***Number.*** Eight.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, metal. Minimum clear length, 16 inches. Minimum clearance, $1^{1}/_{4}$, preferably $1^{1}/_{2}$ inches.

(3) ***Location.*** Vertical, one on each vestibule door post.

(4) ***Manner of application.*** Side handholds shall be securely fastened with bolts, rivets, or screws.

(c) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.***

(i) Minimum diameters, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(ii) Handholds shall be flush with or project not more than 1 inch beyond vestibule face.

(3) ***Location.*** Horizontal, one near each side on each end projecting downward from face of vestibule end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(4) ***Manner of application.*** End handholds shall be securely fastened with bolts or rivets. When marker sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(d) ***Uncoupling levers.***

(1) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(2) Minimum length of ground uncoupling attachment, 42 inches, measured from center line of end of car to handle of attachment.

(3) On passenger-train cars used in freight or mixed-train service, the uncoupling attachment shall be so applied that the coupler can be operated from left side of car.

§ 231.13 Passenger-train cars with open-end platforms.

(a) ***Hand brakes*** —

(1) ***Number.*** Each passenger-train car shall be equipped with an efficient hand brake, which shall operate in harmony with the power brake thereon.

(2) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion.

(b) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches. Handholds shall be flush with or project not more than 1 inch beyond surface of end sill.

(3) ***Location.*** Horizontal, one near each side of each end on face of platform end sill, projecting downward. Clearance of outer end of handhold shall be not more than 16 inches from end of end sill.

(4) ***Manner of application.*** End-handholds shall be securely fastened with bolts or rivets.

(c) ***End-platform handholds*** —

(1) ***Number.*** Four. (Cars equipped with safety gates do not require end-platform handholds.)

(2) ***Dimensions.*** Minimum clearance, 2, preferably $2^{1}/_{2}$ inches, metal.

(3) ***Location.*** Horizontal from or near door post to a point not more than 12 inches from corner of car, then approximately vertical to a point not more than 6 inches from top of platform. Horizontal portion shall be not less than 24 inches in length nor more than 40 inches above platform.

(4) ***Manner of application.*** End-platform handholds shall be securely fastened with bolts, rivets, or screws.

(d) ***Uncoupling levers.***

(1) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(2) Minimum length of ground uncoupling attachment, 42 inches, measured from center of end of car to handle of attachment.

(3) On passenger-train cars used in freight or mixed-train service the uncoupling attachments shall be so applied that the coupler can be operated from left side of car.

§ 231.14 Passenger-train cars without end platforms.

(a) ***Handbrakes*** —

(1) ***Number.*** Each passenger-train car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

(2) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion.

(b) ***Sill steps*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum length of tread, 10, preferably 12, inches. Minimum cross-sectional area, $^{1}/_{2}$ by $1^{1}/_{2}$ inches or equivalent, wrought iron or steel. Minimum clear depth, 8 inches.

(3) ***Location.***

(i) One near each end on each side not more than 24 inches from corner of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than 2 inches inside of face of side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(4) ***Manner of application.***

(i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Sill steps shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(c) ***Side handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16, preferably 24, inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.*** Horizontal or vertical, one near each end on each side of car over sill step.

(i) If horizontal, not less than 24 nor more than 30 inches above center line of coupler.

(ii) If vertical, lower end not less than 18 nor more than 24 inches above center line of coupler.

(4) ***Manner of application.*** Side handholds shall be securely fastened with bolts, rivets or screws.

(d) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.*** Horizontal, one near each side on each end projecting downward from face of end sill or sheathing. Clearance of outer end of handholds shall be not more than 16 inches from side of car.

(4) ***Manner of application.***

(i) Handholds shall be flush with or project not more than 1 inch beyond face of end sill.

(ii) End handholds shall be securely fastened with bolts or rivets.

(iii) When marker sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(e) ***End handrails.*** (On cars with projecting end sills.)

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.*** One on each side of each end, extending horizontally from doorpost or vestibule frame to a point not more than 6 inches from corner of car, then approximately vertical to a point not more than 6 inches from top of platform end sill; horizontal portion shall be not less than 30 nor more than 60 inches above platform end sill.

(4) ***Manner of application.*** End handrails shall be securely fastened with bolts, rivets or screws.

(f) ***Side-door steps*** —

(1) ***Number.*** One under each door.

(2) ***Dimensions.*** Minimum length of tread, 10, preferably 12, inches. Minimum cross-sectional area, $^{1}/_{2}$ by $1^{1}/_{2}$ inches or equivalent, wrought iron or steel. Minimum clear depth, 8 inches.

(3) ***Location.*** Outside edge of tread of step not more than 2 inches inside of face of side of car. Tread not more than 24, preferably not more than 22, inches above the top of rail.

(4) ***Manner of application.***

(i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Side-door steps shall be securely fastened with not less than $^{1}/_{2}$-inch bolts with nuts outside (when possible) and riveted over, or with not less than $^{1}/_{2}$-inch rivets.

(iii) A vertical handhold not less than 24 inches in clear length shall be applied above each side-door step on door post.

(g) ***Uncoupling levers.***

(1) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(2) Minimum length of ground uncoupling attachment, 42 inches, measured from center line of end of car to handle of attachment.

(3) On passenger-train cars used in freight or mixed-train service, the uncoupling attachment shall be so applied that the coupler can be operated from the left side of car.

§ 231.15 Steam locomotives used in road service.

(a) ***Tender till-steps*** —

(1) ***Number.*** Four on tender.

(2) ***Dimensions.***

(i) Bottom tread not less than 8 by 12 inches, metal. (May have wooden treads.)

(ii) If stirrup steps are used, clear length of tread shall be not less than 10, preferably 12, inches.

(3) ***Location.*** One near each corner of tender on sides.

(4) ***Manner of application.*** Tender sill-steps shall be securely fastened with bolts or rivets.

(b) ***Pilot sill-steps*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Tread not less than 8 inches in width by 10 inches in length, metal. (May have wooden treads.)

(3) ***Location.*** One on or near each end of buffer-beam outside of rail and not more than 16 inches above rail.

(4) ***Manner of application.*** Pilot sill-steps shall be securely fastened with bolts or rivets.

(c) ***Pilot-beam handholds*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 14, preferably 16, inches. Minimum clearance, $2^{1}/_{2}$ inches.

(3) ***Location.*** One on each end of buffer-beam. If uncoupling lever extends across front end of locomotive to within 8 inches of end of buffer-beam, and is seven-eighths of an inch or more in diameter, securely fastened, with a clearance of $2^{1}/_{2}$ inches, it is a handhold.)

(4) ***Manner of application.*** Pilot-beam handholds shall be securely fastened with bolts or rivets.

(d) ***Side handholds*** —

(1) ***Number.*** Six.

(2) ***Dimensions.*** Minimum diameter, if horizontal, five-eighths of an inch; if vertical, seven-eighths of an inch, wrought iron or steel. Horizontal, minimum clear length, 16 inches. Vertical, clear length equal to approximate height of tank. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.***

(i) Horizontal or vertical. If vertical, one on each side of tender within 6 inches of rear or on corner; if horizontal, same as specified for “Box and other house cars” (see § 231.1(h)(3)).

(ii) One on each side of tender near gangway; 1 on each side of locomotive at gangway; applied vertically.

(4) ***Manner of application.*** Side handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts or rivets.

(e) ***Rear-end handholds*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 14 inches. Minimum clearance, 2, preferably $2^{1}/_{2}$, inches.

(3) ***Location.*** Horizontal, one near each side of rear end of tender on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of tender.

(4) ***Manner of application.*** Rear-end handholds shall be securely fastened with not less than $^{1}/_{2}$-inch bolts or rivets.

(f) ***Uncoupling levers*** —

(1) ***Number.*** Two double levers, operative from either side.

(2) ***Dimensions.*** Rear-end levers shall extend across end of tender with handles not more than 12, preferably 9, inches from side of tender with a guard bent on handle to give not less than 2 inches clearance around handle.

(3) ***Location.*** One on rear end of tender and one on front end of locomotive. Handles of front-end leavers shall be not more than 12, preferably 9, inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of 2 inches around handle.

(4) ***Manner of application.*** Uncoupling levers shall be securely fastened with bolts or rivets.

(g) ***Couplers.*** Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.16 Steam locomotives used in switching service.

(a) ***Footboards*** —

(1) ***Number.*** Two or more.

(2) ***Dimensions.***

(i) Minimum width of tread, 10 inches.

(ii) Minimum height of back stop, 4 inches above tread.

(iii) Height from top of rail to top of tread, not more than 12 nor less than 9 inches.

(iv) If made of wood, minimum thickness of tread shall be $1^{1}/_{2}$, preferably 2 inches.

(v) Footboards may be made of material other than wood which provides the same as or a greater degree of safety than wood of $1^{1}/_{2}$ inches thickness. When made of material other than wood, the tread surface shall be of antiskid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(3) ***Location.*** Ends or sides. If on ends, they shall extend not less than 18 inches outside of guage of straight track, and shall be not more than 12 inches shorter than buffer-beam at each end.

(4) ***Manner of application.***

(i) End footboards may be constructed in two sections, provided that practically all space on each side of coupler is filled; each section shall be not less than 3 feet in length.

(ii) Footboards shall be securely bolted to two 1- by 4-inch metal brackets, provided footboard is not cut or notched at any point.

(iii) If footboard is cut or notched or in two sections, not less than four 1- by 3-inch metal brackets shall be used, two located on each side of coupler. Each bracket shall be securely bolted to buffer-beam, end sill or tank frame by not less than two $^{7}/_{8}$-inch bolts.

(iv) If side footboards are used, a substantial handhold or rail shall be applied not less than 30 inches nor more than 60 inches above tread or footboard.

(b) ***Sill steps*** —

(1) ***Number.*** Two or more.

(2) ***Dimensions.***

(i) Lower tread of step shall be not less than 8 by 12 inches, metal. (May have wooden treads.)

(ii) If stirrup steps are used, clear length of tread shall be not less than 10, preferably 12, inches.

(3) ***Location.*** One or more on each side at gangway secured to locomotive or tender.

(4) ***Manner of application.*** Sill steps shall be securely fastened with bolts or rivets.

(c) ***End handholds*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Minimum diameter, 1 inch, wrought iron or steel. Minimum clearance, 4 inches, except at coupler casting or braces when minimum clearance shall be 2 inches.

(3) ***Location.*** One on pilot, buffer-beam; one on rear end of tender, extending across front end of locomotive and rear end of tender. Ends of handholds shall be not more than 6 inches from ends of buffer-beam or end sill, securely fastened at ends.

(4) ***Manner of application.*** End handholds shall be securely fastened with bolts or rivets.

(d) ***Side handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Minimum diameter, seven-eighths of an inch, wrought iron or steel. Clear length equal to approximate height of tank. Minimum clearance, 2, preferably $2^{1}/_{2}$ inches.

(3) ***Location.*** Vertical. One on each side of tender near front corner; one on each side of locomotive at gangway.

(4) ***Manner of application.*** Side handholds shall be securely fastened with bolts or rivets.

(e) ***Uncoupling levers*** —

(1) ***Number.*** Two double levers, operative from either side.

(2) ***Dimensions.***

(i) Handles of front-end levers shall be not more than 12, preferably 9, inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of 2 inches around handle.

(ii) Rear-end levers shall extend across end of tender with handles not more than 12, preferably 9, inches from side of tender, with a guard bent on handle to give not less than 2 inches clearance around handle.

(3) ***Location.*** One on rear end of tender and one on front end of locomotive.

(f) ***Handrails and steps for headlights.*** Switching locomotives with sloping tenders with manhole or headlight located on sloping portion of tender shall be equipped with secure steps and handrail or with platform and handrail leading to such manhole or headlight.

(g) ***End-ladder clearance.*** No part of locomotive or tender except draft rigging, coupler and attachments, safety chains, buffer block, footboard, brake pipe, signal pipe, steam-heat pipe or arms of uncoupling lever shall extend to within 14 inches of a vertical plane passing through the inside face of knuckle when closed with horn of coupler against buffer block or end sill.

(h) ***Couplers.*** Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.17 Specifications common to all steam locomotives.

(a) ***Hand brakes.***

(1) Hand brakes will not be required on locomotives nor on tenders when attached to locomotives.

(2) If tenders are detached from locomotives and used in special service, they shall be equipped with efficient hand brakes.

(b) ***Running boards*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Not less than 10 inches wide. If of wood, not less than $1^{1}/_{2}$ inches in thickness; if of metal, not less than three-sixteenths of an inch, properly supported.

(3) ***Location.*** One on each side of boiler extending from cab to front end near pilot-beam. (Running boards may be in sections. Flat-top steamchests may form section of running board.)

(4) ***Manner of application.***

(i) Running boards shall be securely fastened with bolts, rivets, or studs.

(ii) Locomotives having Wootten type boilers with cab located on top of boiler more than 12 inches forward from boiler head shall have suitable running boards running from cab to rear of locomotive, with handrailings not less than 20 nor more than 48 inches above outside edge of running boards, securely fastened with bolts, rivets, or studs.

(c) ***Handrails*** —

(1) ***Number.*** Two or more.

(2) ***Dimensions.*** Not less than 1 inch in diameter, wrought iron or steel.

(3) ***Location.*** One on each side of boiler extending from near cab to near front end of boiler, and extending across front end of boiler, not less than 24 nor more than 66 inches above running board.

(4) ***Manner of application.*** Handrails shall be securely fastened to boiler.

(d) ***Tenders of Vanderbilt type.***

(1) Tenders known as the Vanderbilt type shall be equipped with running boards; one on each side of tender not less than 10 inches in width and one on top of tender not less than 48 inches in width, extending from coal space to rear of tender.

(2) There shall be a handrail on each side of top running board, extending from coal space to rear of tank, not less than 1 inch in diameter and not less than 20 inches in height above running board from coal space to manhole.

(3) There shall be a handrail extending from coal space to within 12 inches of rear of tank, attached to each side of tank above side running board not less than 30 nor more than 66 inches above running board.

(4) There shall be one vertical end handhold on each side of Vanderbilt type of tender, located within 8 inches of rear of tank extending from within 8 inches of top of end sill to within 8 inches of side handrail. Post supporting rear end of side running board, if not more than 2 inches in diameter and properly located, may form section of handhold.

(5) An additional horizontal end handhold shall be applied on rear end of all Vanderbilt type of tenders which are not equipped with vestibules. Handhold to be located not less than 30 nor more than 66 inches above top of end sill. Clear length of handhold to be not less than 48 inches.

(6) Ladders shall be applied at forward ends of side running boards.

(e) ***Handrails and steps for headlights.***

(1) Locomotives having headlights which can not be safely and conveniently reached from pilot-beam or steam chests shall be equipped with secure handrails and steps suitable for the use of men in getting to and from such headlights.

(2) A suitable metal end or side ladder shall be applied to all tanks more than 48 inches in height, measured from the top of end sill, and securely fastened with bolts or rivets.

(f) ***Couplers.*** Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.18 Cars of special construction.

Cars of construction not covered specifically in the foregoing sections in this part, relative to handholds, sill steps, ladders, hand brakes and running boards may be considered as of special construction, but shall have, as nearly as possible, the same complement of handholds, sill steps, ladders, hand brakes, and running boards as are required for cars of the nearest approximate type.

§ 231.19 Definition of "Right" and "Left."

Right or *Left* refers to side of person when facing end or side of car from ground.

§ 231.20 Variation in size permitted.

To provide for the usual inaccuracies of manufacturing and for wear, where sizes of metal are specified, a total variation of 5 percent below size given is permitted.

§ 231.21 Tank cars without underframes.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion. The brake shaft shall be located on end of car to the left of center.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) ***End platforms*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Minimum width, ten inches. Minimum thickness, one and three-quarters inches.

(3) ***Location.*** One on each end extending across car a distance equal to or greater than any other portion of car. Outside edge of end platform shall extend not less than seven inches beyond bulge of tank head and safety railing.

(4) ***Manner of application.*** End platforms shall be securely fastened to the draft sills and be sufficiently rigid to prevent sagging.

(c) ***Sill steps.*** Same as specified for "Box and other house cars" (see § 231.1(d)).

(d) ***End platform safety railing*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** Minimum of seven-eighths inch diameter, wrought iron or steel, or one and one-quarter inch pipe. Minimum clearance, two and one-half inches.

(3) ***Location.*** One safety railing at each end of car shall extend horizontally across car not less than thirty-six inches nor more than fifty-four inches above end platform and extend downward within three inches of the end of the platform. The safety railing shall be located not more than six inches from the inside edge of the platform.

(4) ***Manner of application.*** Safety railings shall be supported at center of car and at each end by extending downward at the ends and attaching to the platform.

(e) ***Side railing*** —

(1) ***Number.*** Two.

(2) ***Dimensions.*** One and one-quarter inch pipe. Minimum clearance two and one-half inches.

(3) ***Location.*** One on each side of car, extending from end platform to end platform at a distance of not less than 51 inches from centerline of car, except that where break in side railing is necessary for side ladder or operating cabinet, the side railing shall be securely attached to such ladder and/or cabinet.

(4) ***Manner of application.*** Safety railings shall be securely attached to end platforms and supported from the car at intervals not exceeding ten feet.

(f) ***Side handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) ***Location.*** Four horizontal; one on face of end platform end, over sill step, projecting downward or outward. Clearance of outer end of handhold shall be not more than twelve inches from end of car. Vertical portion of end platform safety railing shall be considered as a side vertical handhold.

(4) ***Manner of application.*** Same as prescribed for "Box and other house cars" (see § 231.1(h)(4)).

(g) ***End handholds*** —

(1) ***Number.*** Four.

(2) ***Dimensions.*** Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) ***Location.*** Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall not be more than sixteen inches from side of car.

(4) ***Manner of application.*** Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(h) ***Uncoupling levers.*** Same as specified for "Box and other house cars" (see § 231.1(k)).

(i) ***End ladder clearance.*** No part of car above end sills within thirty inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel, running boards or uncoupling lever shall extend to within twelve inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same, above end sills, other than exceptions herein noted, shall extend beyond the outer face of the buffer block.

(j) ***Operating platform, ladder and safety railing*** —

(1) ***Number.*** One operating platform, two ladders and safety railing. Not required if all fittings used in the loading or unloading of the tank car are accessible from ground or end platform.

(2) ***Dimensions.***

(i) Ladder: Ladder stiles, three-eighths by two inches or equivalent, wrought iron or steel. One and one-quarter inch extra strong pipe will be considered equivalent.

(ii) Ladder treads minimum diameter, five-eighths of an inch, wrought iron or steel.

(iii) Minimum clear length of treads, fourteen inches.

(iv) Maximum spacing of treads, nineteen inches.

(v) Minimum clearance of treads and ladder stiles, two inches, preferably two and one-half inches.

(vi) Operating platform, minimum width, seven inches; minimum thickness, one and three-quarters inches.

(vii) Safety railing, one and one-quarter inch wrought iron or steel pipe.

(3) ***Location.***

(i) Operating platform to be of sufficient length to provide access to all operating fittings. Ladder to be located on sides of car at center.

(ii) The safety railing shall enclose the operating platform, manway and fittings used in the loading and unloading of the tank. Railing shall be open only at the ladders where it shall extend in a vertical direction down to, and be securely attached to the platform. Maximum width of opening, twenty-four inches.

(4) ***Manner of application.***

(i) The ladders shall be securely fastened to the operating platform. The lower portion of ladder shall be braced in such a manner as to prevent any movement.

(ii) The operating platforms shall be supported to prevent sagging and be securely attached to the tank.

(iii) The safety railing shall be securely attached to four stanchions or corner posts, which shall be securely attached to the tank or operating platform.

(k) ***Manner of application of safety appliances on tank cars covered with jackets.*** On tanks covered with jackets, metal pads shall be securely attached to the shell proper, to which brackets shall be fastened for securing the safety appliances attached to the tanks; or, the safety appliances (with the exception of the operating platform brackets) may be secured to the jackets reinforced with metal pads at the point of attachment, which pads shall extend at least two inches from the center line of rivet holes. The operating platform brackets shall be secured to the jacket reinforced with suitable bands. When the safety appliances are attached to the jacket covering of the tank, the jacket shall be tightened so that there will be no danger of its slipping around.

[33 FR 19663, Dec. 25, 1968, as amended at 34 FR 11974, July 16, 1969]

§ 231.22 Operation of track motor cars.

On and after August 1, 1963, it shall be unlawful for any railroad subject to the requirements of the Safety Appliance Acts to operate or permit to be operated on its line track motor cars to pull or haul trailers, push trucks, hand cars, or similar cars or equipment.

Effective Date Note: At 28 FR 7839, Aug. 1, 1963, the effective date of § 231.22 was stayed until further notice.

§ 231.23 Unidirectional passenger-train cars adaptable to van-type semi-trailer use.

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Passenger-Train Cars Without End-Platforms."

(2) ***Location.*** Each hand brake shall be so located that it can be safely operated while car is in motion. The hand brake operating device shall be located on the end of car to the left of center.

(b) ***Brake step*** —

(1) ***Number.*** One (1).

(2) ***Dimensions.*** Not less than twenty-eight (28) inches in length. Outside edge not less than eight (8) inches from face of car, except when "A" frame is used and extends beyond end of car, a platform of anti-skid design covering the extended portion of the "A" frame may be used as brake step.

(3) ***Manner of application.*** Brake step shall be securely fastened to car and when additional support is necessary, metal braces having a minimum cross-sectional area three-eighths ($^3/_8$) by one and one-half ($1^1/_2$) inches or equivalent shall be securely fastened to body of car with not less than one-half ($^1/_2$) inch bolts or rivets.

(c) ***Sill steps*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.*** Minimum length of tread, ten (10) preferably twelve (12) inches. Minimum cross-sectional area, one-half ($^1/_2$) by one and one-half ($1^1/_2$) inches, or equivalent, wrought iron, steel or other metal of equivalent strength. Minimum clear depth, eight (8) inches.

(3) ***Location.*** One (1) near the rear or trailing end of the car on each side, not more than twenty-four (24) inches from corner of car to center of tread of sill step.

(4) ***Manner of application.*** Same as specified for "Passenger-Train Cars Without End-Platforms."

(d) ***End-clearance.*** No part of car above end sills except the brake step shall extend to within twenty (20) inches of a vertical plane parallel with end of car and passing through the outside edge of any part of an adjoining car.

(e) ***Side handholds*** —

(1) ***Number.*** Four (4).

(2) ***Dimensions.*** Minimum diameter, five-eighths ($^5/_8$) of an inch, wrought iron, steel or metal of equivalent strength. Minimum clear length, sixteen (16) preferably twenty-four (24) inches. Minimum clearance, two (2) preferably two and one-half ($2^1/_2$) inches.

(3) ***Location.*** Horizontal, two (2) over each sill step. Lower handhold shall be not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler. Upper handhold shall be not less than fifteen (15) nor more than nineteen (19) inches above lower handhold. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

(4) ***Manner of application.*** Side handholds shall be securely fastened with not less than one-half ($^1/_2$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($^1/_2$) inch rivets.

(f) ***Horizontal end-handholds*** —

(1) ***Number.*** Seven (7).

(2) ***Dimensions.*** Minimum diameter, five-eighths ($^5/_8$) of an inch, wrought iron, steel or other metal of equivalent strength. Minimum clear length, sixteen (16) inches. Minimum clearance, two (2) preferably two and one-half ($2^1/_2$) inches.

(3) ***Location.*** End-sill: One (1) near each side at the rear or trailing end of car on face of end-sill or sheathing over end-sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

(i) Lower: One near each side of the rear or trailing end of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler.

(ii) Upper: One (1) near each side at the rear or trailing end of car not less than fifteen (15) nor more than nineteen (19) inches above lower handholds. Clearance of outer ends of lower and upper handholds shall be not more than eight (8) inches from side of car. Lower and upper handholds shall be spaced to coincide with corresponding side handholds, a variation of two (2) inches being allowed. On front end of car there shall be one (1) additional end handhold full length of car not less than forty (40) nor more than fifty (50) inches above center line of

coupler. Clearance of each end of handhold shall be not more than eight (8) inches from side of car. When construction will not permit the use of a single handhold, four (4) handholds, each not less than sixteen (16) inches in length may be used, provided dimensions and location coincide.

(4) ***Manner of application.*** End handholds shall be securely fastened with not less than one-half ($^1/_2$) inch bolts with the nuts outside (when possible) and riveted over, or with not less than one-half ($^1/_2$) inch rivets. When marker sockets or brackets are located so that they cannot be conveniently reached, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(g) ***Uncoupling levers.*** Each car shall be equipped to provide means of coupling and uncoupling without the necessity of men going between the cars.

§ 231.24 Box and other house cars with roofs, 16 feet 10 inches or more above top of rail.[1]

(a) ***Hand brakes*** —

(1) ***Number.*** Same as specified for "Box and Other House Cars."

(2) ***Dimensions.*** Same as specified for "Box and Other House Cars."

(3) ***Location.*** Each hand brake shall be located so that it can be safely operated from the end-platform. Each brake shaft shall be located on end of car to left of center and not more than twenty-four (24) inches from left side of car.

(4) ***Manner of application.*** Same as specified for "Box and Other House Cars."

(b) ***End-platforms*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.*** Width, not less than ten (10) inches. Length, full width of car.

(3) ***Location.*** One (1) on each end of car not more than eight (8) inches above center sill.

(4) ***Manner of application.*** Each end-platform shall be securely supported by not less than four (4) metal braces having a minimum cross sectional area three-eighths ($^3/_8$) by one and one-half ($1^1/_2$) inches or equivalent which shall be securely fastened to body of car with not less than one-half ($^1/_2$) inch bolts or rivets. The outside edge of each end-platform shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end sill and cushioning device (if used) at full buff. End-platform shall be made of running board material as specified for "Box and Other House Cars."

(c) ***Sill steps.*** Same as specified for "Box and Other House Cars."

(d) ***End-ladder clearance.*** No part of car above end-sills within thirty (30) inches from side of car, except buffer block brake-shaft, brake wheel, end-platform, horizontal end handholds, or coupling lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle, when closed with the coupler horn against the buffer block or end-sill and cushioning device (if used) at full buff, and no other part of end of car or fixtures on same above end-sill, other than exceptions herein noted, shall extend beyond outer face of buffer block.

(e) ***Side handholds*** —

(1) ***Number.*** Sixteen (16).

(2) ***Dimensions.*** Same as specified for "Box and Other House Cars."

(3) ***Location.*** Horizontal: Four (4) near each end and on each side of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with horizontal end-platform handhold, a variation of two (2) inches being allowed. Spacing of side handholds shall be uniform within a limit of two (2) inches from top handhold to bottom handhold. Clearance of outer ends of handholds shall be not more than eight (8) inches from end of car.

(4) ***Manner of application.*** Same as specified for "Box and Other House Cars," except each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(f) ***Horizontal end handholds*** —

(1) ***Number.*** Four (4).

(2) ***Dimension.*** Same as specified for "Box and Other House Cars."

(3) ***Location.*** One (1) near each side of each end of car on outer edge of end platform, projecting downward with clearance of outer end not more than sixteen (16) inches from side of car.

(4) ***Manner of application.*** Same as specified for "Box and Other House Cars."

(g) ***Horizontal end-platform handholds*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.*** Same as specified for "Horizontal End Handholds" for "Box and Other House Cars," except length shall extend across end of car.

(3) ***Location.*** Extending across each end of car, not less than forty-eight (48) nor more than sixty (60) inches above tread of end-platform with clearance at each end of not more than four (4) inches from side of car, supported by an extra leg near center of handholds.

(4) ***Manner of application.*** Same as specified for "Horizontal End Handholds" for "Box and Other House Cars."

(h) ***Vertical end-handholds*** —

(1) ***Number.*** Four (4).

(2) ***Dimensions.*** Minimum diameter five-eighths ($^{5}/_{8}$) of an inch, wrought iron or steel. Minimum clearance, two (2), preferably two and one-half ($2^{1}/_{2}$) inches.

(3) ***Location.*** One (1) on each side of each end of car, not more than four (4) inches from side of car, extending downward from end of horizontal end-platform handhold to within eight (8) inches above tread of end-platform. One (1) continuous handhold with two (2) right angles, or two (2) right angle handholds, may take the place of two (2) specified vertical end-handholds and one (1) horizontal end-platform handhold, provided the dimensions and locations coincide, and extra legs at points of angle and center are provided and securely fastened to car.

(4) ***Manner of application.*** Same as specified for "Box and Other House Cars."

(i) ***Uncoupling levers.*** Same as specified for "Box and Other House Cars."

(j) ***Painting and stenciling.***

(1) That portion of each end of car more than fifteen (15) feet above top of rail shall be painted with contrasting reflectorized paint and shall bear the words “No running board” to the left of center and “Excess height car” to the right of center.

(2) Lettering to be not less than three

(3) inches high. On each side-sill near end corner there shall be painted a yellow rectangular area with a three-fourths ($^3/_4$) inch black border containing the words “This car excess height—no running board.” Lettering to be not less than one and one-half ($1^1/_2$) inches high. When car is equipped with center sill or underframe cushioning device having more than twelve (12) inches longitudinal impact absorbing travel, and a part of the uncoupling device and/or brake pipe is located parallel to the exposed end of the center sill, such part shall provide at least two (2) inches of clearance near the coupler of sufficient length to permit use as an emergency handhold during air hose coupling operation and the top of exposed ends of sliding center sill shall be coated with anti-skid paint.

[33 FR 19663, Dec. 25, 1968, as amended at 40 FR 34347, Aug. 15, 1975]

[1] (a) Each car of this type built or rebuilt after (January 1, 1976) or under construction prior thereto and placed in service after (effective date) shall be equipped as specified in § 231.27(a) through (h) and (j) or, if it has roof hatches, as specified in § 231.28.

(b) Each car of this type placed in service after November 23, 1964 and before (effective date) shall be equipped—

(1) As specified in § 231.24; or

(2) As specified in § 231.27(a) through (h) and (j); or

(3) If it has roof hatches, as specified in § 231.28.

(c) Each car of this type placed in service before October 22, 1964, or under construction on October 22, 1964 and placed in service before November 23, 1964, shall be equipped—

(1) As specified in § 231.1; or

(2) As specified in §§ 231.1 and 231.27(i); or

(3) As specified in § 231.27(a) through (h) and (j); or

(4) If it has roof hatches, as specified in § 231.28.

§ 231.25 Track motorcars (self-propelled 4-wheel cars which can be removed from the rails by men).

(a) ***Handbrakes*** (*includes foot operated brake*). Each track motorcar shall be equipped with an efficient handbrake so located that it can be safely operated while the car is in motion. Each handbrake shall be equipped with a ratchet or other suitable device which will provide a means of keeping the brake applied when car is not in motion.

Note: The requirements of this rule will be satisfied if the ratchet or other suitable device operates in connection with at least one handbrake on track motorcars that may be equipped with more than one such brake.

(b) ***Handholds.*** One or more safe and suitable handholds conveniently located shall be provided. Each handhold shall be securely fastened to car.

(c) ***Sill steps or footboards.*** Each track motorcar shall be equipped with safe and suitable sill steps or footboards conveniently located and securely fastened to car when bed or deck of track motorcar is more than 24 inches above top of rail.

(d) ***Couplers.*** When used to haul other cars, each track motorcar shall be equipped with a coupler at each end where such cars are coupled

(1) which provides a safe and secure attachment,

(2) which can be coupled or uncoupled without the necessity of men going between the ends of the cars.

§ 231.26 Pushcars.

(a) ***Handbrakes.*** When used to transport persons, each pushcar shall be equipped with an efficient handbrake so located that it can be safely operated while the car is in motion.

(b) ***Handholds*** (*includes handles*). Each pushcar shall be provided with one or more secure handholds. When used to transport persons, each pushcar shall be provided with one or more safe and suitable handholds conveniently located above the top of the bed of each pushcar.

(c) ***Sill steps or footboards.*** When used to transport persons, each pushcar shall be equipped with safe and suitable sillsteps or footboards conveniently located and securely fastened to car, when bed or deck of pushcar is more than 24 inches above top of rail.

(d) ***Couplers.*** When moved together with other vehicles, each pushcar shall be equipped with a coupler at each end where such vehicles are coupled

(1) which provides a safe and secure attachment, and

(2) which can be coupled or uncoupled without the necessity of men going between the ends of the cars.

Note: Sections 231.25 and 231.26 are applicable only when the vehicles governed thereby are coupled together and moved together.

§ 231.27 Box and other house cars without roof hatches or placed in service after October 1, 1966.

(a) ***Handbrakes.*** The handbrake may be of any efficient design, but must provide the same degree of safety as, or a greater degree of safety than, the following specifications:

(1) ***Number.***

(i) Each box or other house car without roof hatches shall be equipped with an efficient vertical wheel handbrake which shall operate in harmony with the power brake thereon.

(ii) The handbrake may be of any efficient design, but must provide a total braking force applied to brake shoes not less than the total force applied to the brake shoes by the brake cylinders at 50 pounds per square inch.

(2) ***Dimensions.***

(i) The brake wheel may be deep or shallow, of malleable iron, wrought iron, steel, or other material of equivalent strength.

(ii) Overall diameter of brake wheel nominally twenty-two (22) inches.

(iii) Depth of brake wheel hub shall be two and five-eighths ($2^{5}/_{8}$) inches with square taper shaft fit, taper two (2) inches in twelve (12) inches with small end of taper fit seven-eighths ($^{7}/_{8}$) inches.

(iv) Brake wheel and drum shall be arranged so that both will revolve when applying and gradually releasing the handbrake. Handbrake shall be provided with means to prevent application of the brake by winding in a counterclockwise direction.

(v) Brake shaft shall be arranged with a square fit at its outer end to secure the handbrake wheel; said square fit shall be not less than seven-eighths ($^{7}/_{8}$) of an inch square. Square-fit taper: Nominally two (2) in twelve (12) inches (see Plate A).

(vi) All chains shall be not less than nine-sixteenths ($^{9}/_{16}$) inch BBB coil chain.

(vii) All handbrake rods shall be not less than three-fourths ($^{3}/_{4}$) inch diameter.

(3) ***Location.***

(i) The handbrake shall be so located that it can be safely operated from horizontal end platform while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not less than seventeen (17) nor more than twenty-two (22) inches from center and not less than twenty-six (26) nor more than forty (40) inches above top of end-platform tread.

(4) ***Manner of application.***

(i) Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said thread portion shall be not less than three-fourths ($^{3}/_{4}$) of an inch in diameter; said nut shall be secured by riveting over or by the use of a locknut or suitable cotter.

(ii) Outside edge of brake wheel shall be not less than four (4) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(iii) Handbrake housing shall be securely fastened to car.

(b) ***End platforms*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.*** Width not less than eight (8) inches; length, not less than sixty (60) inches.

(3) ***Location.*** One (1) centered on each end of car between inner ends of handholds not more than eight (8) inches above top of center sill.

(4) ***Manner of application.***

(i) Each end platform shall be securely supported by not less than three (3) metal braces having a minimum cross sectional area of three-eighths ($^{3}/_{8}$) by one and one-half ($1^{1}/_{2}$) inches or equivalent, which shall be securely fastened to body of car with not less than one-half ($^{1}/_{2}$) inch bolts or rivets.

(ii) Where conventional draft gear or cushioning device having longitudinal travel less than six (6) inches is used the outside edge of each end platform shall be not less than twelve (12) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against buffer block. Where cushioning device having longitudinal travel six (6) inches or more is used the outside edge of each end platform shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with end sill and cushioning device at full buff. End platform shall be made of wood or of material which provides the same as or a greater degree of safety than wood of $1^{1}/_{8}$ inches thickness. When made of material other than wood the tread surface shall be of anti-skid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(c) ***Sill steps*** —

(1) ***Number.*** Four (4).

(2) ***Dimensions.*** Minimum cross-sectional area one-half ($^{1}/_{2}$) by one and one-half ($1^{1}/_{2}$) inches, or equivalent, of wrought iron, steel, or other material of equivalent strength. Minimum length of tread, ten (10), preferably twelve (12) inches. Minimum clear depth, eight (8) inches.

(3) ***Location.***

(i) One (1) near each end of each side car, so that there shall be no more than eighteen (18) inches from end of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than four (4) inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than twenty-four (24), preferably not more than twenty-two (22) inches above the top of rail.

(4) ***Manner of application.***

(i) Sill steps exceeding twenty-one (21) inches in depth shall have an additional tread.

(ii) Sill steps shall be securely fastened with not less than one-half ($^{1}/_{2}$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($^{1}/_{2}$) inch rivets.

(d) ***End ladder*** (*appliances*) *clearance.* No part of car above end sills within thirty (30) inches from side of car, except buffer block, brake shaft, brake wheel, end platform, horizontal end handholds, or uncoupling lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle, when closed with the coupler horn against the buffer block or end sill and cushioning device (if used) at full buff, and no other part of end of car or fixtures on same above end sill, other than exceptions herein noted, shall extend beyond outer face of buffer block.

(e) ***Side handholds*** —

(1) ***Number.*** Sixteen (16).

(2) ***Dimensions.*** Minimum diameter, five-eighths ($^{5}/_{8}$) of an inch, wrought iron, steel, or other material of equivalent strength. Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches. Minimum clearance, two (2), preferably two and one-half ($2^{1}/_{2}$) inches.

(3) ***Location.*** Horizontal; four (4) near each end and on each side of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with top end handhold, a variation of two (2) inches being allowed. Spacing of side handholds shall be uniform within a limit of two (2) inches from top handhold to bottom handhold. Clearance of outer ends of handholds shall be not more than eight (8) inches from end of car.

(4) ***Manner of application.*** Side handholds shall be securely fastened with not less than one-half ($^{1}/_{2}$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($^{1}/_{2}$) inch rivets. Each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(f) ***End handholds*** —

(1) ***Number.*** Sixteen (16).

(2) ***Dimensions.***

(i) Minimum diameter, five-eighths ($^{5}/_{8}$) of an inch, wrought iron, steel, or other material of equivalent strength.

(ii) Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches.

(iii) Minimum clearance, two (2) preferably two and one-half ($2^{1}/_{2}$) inches.

(3) ***Location.*** Horizontal: Four (4) near each side and on each end of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with end platform handholds, a variation of two (2) inches being allowed. Clearance of outer ends of handholds shall be not more than eight (8) inches from side of car.

(4) ***Manner of application.*** End handholds shall be securely fastened with not less than one-half ($^{1}/_{2}$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($^{1}/_{2}$) inch rivets. Each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(g) ***Horizontal end-platform handholds*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.***

(i) Minimum diameter, five-eighths ($^{5}/_{8}$) of an inch, wrought iron, steel, or other material of equivalent strength.

(ii) Minimum clearance, two (2) preferably two and one-half ($2^{1}/_{2}$) inches.

(iii) Minimum clear length sixty (60) inches. When security of attachment requires, an extra supporting leg may be applied near center of clear length.

(3) ***Location.*** One (1) on each end of car above end platform. Outer legs shall be not more than six (6) inches from inner legs of top end handholds. Height above tread of end platform: Not less than forty-eight (48) nor more than sixty (60) inches.

(4) ***Manner of application.*** End-platform handholds shall be securely fastened with not less than one-half ($^1/_2$) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half ($^1/_2$) inch rivets.

(h) ***Uncoupling levers*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.***

(i) Handles of uncoupling levers, except those shown on Plate B or of similar designs, shall be not more than six (6) inches from side of car.

(ii) Uncoupling levers of design shown on Plate B and of similar designs shall conform to the following prescribed limits:

(*a*) Handles shall be not more than twelve (12), preferably nine (9) inches from sides of car. Center lift arms shall be not less than seven (7) inches long.

(*b*) Center of eye at end of center lift arm shall be not more than three and one-half ($3^1/_2$) inches beyond center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill (see Plate B).

(*c*) End of handles shall extend not less than four (4) inches below bottom of end sill or shall be so constructed as to give a minimum clearance of two (2) inches around handle. Minimum drop of handles shall be twelve (12) inches; maximum, fifteen (15) inches overall (see Plate B).

(iii) Handles of uncoupling levers of the “rocking” or “push-down” type shall be not less than eighteen (18) inches from top of rail when lockblock has released knuckle, and a suitable stop shall be provided to prevent inside arm from flying up in case of breakage.

(3) ***Location.*** One (1) on each end of car. When single lever is used, it shall be placed on left side of end of car.

(i) ***Existing box and other house cars without roof hatches.***

(1) Box and other house cars without roof hatches built on or before April 1, 1966, or under construction prior thereto and placed in service before October 1, 1966, shall be deemed equipped as nearly as possible within the intent of § 231.1 and of this section when:

(i) The running board, roof handholds over side and end ladders at “A” end of car and ladder treads above the fourth tread from bottom of side and end ladder at “A” end are removed;

(ii) One (1) horizontal end-platform handhold is applied on each end of car as specified in this section except the right hand end shall be not more than eight (8) inches from side of car, or where car end contour makes impractical the use of a single continuous end handhold, there is applied the equivalent consisting of two (2) handholds, the center handhold to be a minimum of

thirty (30) inches in clear length and the handhold to the right to be a minimum of nineteen (19) inches in clear length and to extend to within eight (8) inches of the right side of the car, such handholds to be not more than twelve (12) inches apart; and

(iii) With handbrake operated near roof of car: a brake step shall be provided as specified in § 231.1 and lettering one and one-half ($1^1/_2$) inches high shall be painted on a yellow background on side sill near "B" end of car with a three-fourths ($^3/_4$) inch black border containing the words "Keep Off Roof—No Running Board," or with handbrake operated from approximate level of top of end sill: roof handholds and side and end ladder treads above the fourth tread from the bottom of ladders at "B" end of car shall be removed and a brake step as specified by § 231.1 shall be used with top of tread surface being level with or not more than four (4) inches below adjacent end handhold.

(2) Paragraph (i)(1)(ii) of this section shall not apply to cars equipped with end platforms and end platform handholds.

(j) ***Painting and marking.*** Box and other house cars with roofs 16 feet and 10 inches or more above top of rail shall be painted and marked as follows:

(1) That portion of each end of the car which is more than fifteen (15) feet above top of rail shall be painted with contrasting reflectorized paint and bear the words "excess height car" in lettering not less than three (3) inches high; and

(2) On each side sill near end corner there shall be painted or otherwise displayed a yellow rectangular area with a three-fourths ($^3/_4$) inch black border containing the words "this car excess height" in lettering not less than one and one-half ($1^1/_2$) inches high.

(Secs. 2, 4, and 6, 27 Stat. 531, as amended; secs, 1 and 3, 32 Stat. 943, as amended; sec. 6(e) and (f), 80 Stat. 939 (45 U.S.C. 2, 4, 6, 8, and 10, 11-16 and 49 U.S.C. 103(c)(1))

[33 FR 19663, Dec. 25, 1968, as amended at 40 FR 34347, Aug. 15, 1975; 49 FR 26745, June 29, 1984]

§ 231.28 Box and other house cars with roof hatches built or placed in service after October 1, 1966.

The specifications of § 231.27 shall apply except as to the following:

(a) ***Running boards.*** Same as specified in § 231.1, except: the end of longitudinal running board shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against buffer block or end sill.

(b) ***Ladders*** —

(1) ***Number.*** Two (2).

(2) ***Dimensions.***

(i) Minimum clear length of tread: Sixteen (16) inches.

(ii) Maximum spacing between treads nineteen (19) inches.

(3) ***Location.*** One (1) on each end of car not more than eight (8) inches from left-hand side.

(4) ***Manner of application.*** Same as specified in § 231.1.

(c) ***Roof handholds*** —

(1) ***Number.*** Two (2), one (1) over each ladder.

(2) ***Dimensions.*** Same as specified in § 231.1.

(3) ***Location.*** On roof of car. One (1) parallel to treads of each ladder, not less than eight (8) nor more than fifteen (15) inches from edge of roof, except on refrigerator cars where ice hatches prevent, when location may be nearer edge of roof.

(4) ***Manner of application.*** Same as specified in § 231.1.

(d) ***End handholds.*** (Treads of end ladders are end handholds.) Same as specified for § 231.27.

(e) ***Existing box and other house cars with roof hatches.*** Box and other house cars with roof hatches built on or before April 1, 1966, or under construction prior thereto and placed in service before October 1, 1966, shall be deemed equipped as nearly as possible within the intent of § 231.1 and of this section when: Equipped as specified in § 231.1, except (1) the side ladder treads above the fourth tread from bottom of side ladder near "A" end of car and roof handhold over the side ladder near "A" end shall be removed; (2) and (1) end platform handhold shall be provided on each end of car as specified in § 231.27(i); and when handbrake is operated near roof of car a brake step shall be provided as specified by § 231.1 or when handbrake is operated from approximate level of top of end sill the roof handhold over side ladder near "B" end and treads above the fourth tread from bottom of side ladder near "B" end shall be removed and a brake step as specified in § 231.1 shall be used with top of tread surface level with or not more than four (4) inches below adjacent end handhold.

(Secs. 2, 4, and 6, 27 Stat. 531, as amended; secs, 1 and 3, 32 Stat. 943, as amended; sec. 6(e) and (f), 80 Stat. 939 (45 U.S.C. 2, 4, 6, 8, and 10, 11-16 and 49 U.S.C. 103(c)(1))

[33 FR 19663, Dec. 25, 1968, as amended at 49 FR 26745, June 29, 1984]

§ 231.29 Road locomotives with corner stairways.

After September 30, 1979, road locomotives with corner stairway openings must be equipped with (a) uncoupling mechanisms that can be operated safely from the bottom stairway opening step as well as ground level, and (b) the vertical handholds and horizontal end handholds prescribed in § 231.30(e) and (g). No part of the uncoupling mechanism may extend into the stairway opening or end platform area when the mechanism is in its normal position or when it is operated. Each carrier shall so equip forty percent (40 percent) of its road locomotives by October 1, 1977, seventy percent (70 percent) by October 1, 1978, and all its road locomotives by October 1, 1979.

[41 FR 37783, Sept. 8, 1976]

§ 231.30 Locomotives used in switching service.

(a) ***General requirements.***

(1) Except for steam locomotives equipped as provided in § 231.16 of this part, all locomotives used in switching service built after March 31, 1977, must be equipped as provided in this section.

(2) Except for steam locomotives equipped as prescribed in § 231.16 of this part, all locomotives built prior to April 1, 1977, used in switching service after September 30, 1979, shall be equipped as provided in this section. Each carrier shall so equip forty percent (40 percent) of such locomotives by October 1, 1977, seventy percent (70 percent) by October 1, 1978, and all such locomotives by October 1, 1979.

(3) Locomotives without corner stairway openings may not be used to perform any switching service after September 30, 1979 except passenger car switching service at passenger stations.

(b) ***Definitions.***

(1) ***Locomotive used in switching service*** means a locomotive regularly assigned to perform yard switching service.

(2) ***Switching service*** means the classification of cars according to commodity or destination; assembling of cars for train movements; changing the position of cars for purposes of loading, unloading, or weighing, placing of locomotives and cars for repair or storage; or moving of rail equipment in connection with work service that does not constitute a road movement. However, this term does not include movement of a train or part of a train within yard limits by the road locomotive and the placement of locomotives or cars in a train or their removal from a train by the road locomotive while en route to the train's destination.

(3) ***Safety tread surface*** means that portion of anti-skid surface of a switching step that actually is contacted by a shoe or boot.

(4) ***Uncoupling mechanism*** means the arrangement for operating the coupler lock lift, including the uncoupling lever and all other appurtenances that facilitate operation of the coupler.

(c) ***Switching step*** —

(1) ***Number.*** Each locomotive used in switching service must have four (4) switching steps. (See Plate A)

(2) ***Dimensions.*** Each such switching step must have—

(i) On locomotives built after March 31, 1977, a minimum width of twenty-four (24) inches and a minimum depth of twelve (12) inches, except when necessary to accommodate the turning arc of a six-wheel truck and its appurtenances, the inside edge of the switching step shall have a minimum width of seventeen (17) inches (See Plate B);

(ii) On locomotives built prior to April 1, 1977, a minimum width of eighteen (18) inches, and a minimum depth of eight (8) inches;

(iii) A backstop, solid or perforated, with minimum height of backstop of six (6) inches above the safety tread surface; and

(iv) A height of not more than nineteen (19) inches, preferably fifteen (15) inches, measured from top of rail to the safety tread surface.

(3) ***Location.*** Switching steps must be located on each side near each end of a locomotive used in switching service. The bottom step of the stairway at these locations may also serve as a switching step if it meets all of the requirements of this section.

(4) ***Manner of application.***

(i) Switching steps must be supported by a bracket at each end and fastened to the bracket by two bolts or rivets of at least one-half ($^1/_2$) inch diameter or by a weldment of at least twice the strength of a bolted attachment.

(ii) Vertical clearance must be unobstructed, except for minor intrusions created by mechanical fasteners or a small triangular gusset plate at the platform level walkway, and free for use for at least a distance of eighty-four (84) inches over a portion of the switching step that is not less than seven (7) inches deep by eighteen (18) inches wide on locomotives built prior to April 1, 1977, and of not less than seven (7) inches deep by twenty-four (24) inches wide on locomotives built after March 31, 1977.

(5) ***Material.***

(i) Steel or other material of equivalent or better strength and deflection characteristics, anti-skid, safety design, having at least fifty percent (50%) of the tread surface as open space must be used.

(ii) When the step material creates a second level safety tread surface, the maximum difference in surface levels may not exceed three-eighths ($^3/_8$) of an inch.

(iii) The safety tread surface must extend to within one-half ($^1/_2$) inch of each edge of the step.

(6) ***Visibility.*** The outer edge of each switching step that is not illuminated must be painted a contrasting color. On locomotives built after March 31, 1977, switching steps shall be illuminated; on multiple-unit locomotive consists used in switching service, only the front switching steps of the leading unit and the rear switching steps of the trailing unit must be illuminated.

(d) ***End footboards and pilot steps.***

(1) Except for steam locomotives equipped as provided in § 231.16, locomotives used in switching service built after March 31, 1975, may not be equipped with end footboards or pilot steps.

(2) Except for steam locomotives equipped as provided in § 231.16, locomotives used in switching service built before April 1, 1975, may not be equipped with end footboards or pilot steps after September 30, 1978. Whenever end footboards or pilot steps are removed from a locomotive, the uncoupling mechanism and horizontal end handholds of the locomotive must be modified to comply with paragraphs (f) and (g) of this section.

(e) ***Vertical handholds.*** Each switching step must be provided with two (2) vertical handholds or handrails, one on each side of the switching step stairway.

(1) On locomotives built after March 31, 1977, each vertical handhold must—

(i) Be constructed of wrought iron, steel or other material of equivalent strength and durability that is at least one (1) inch diameter and be securely fastened to the locomotive with one-half ($^1/_2$) inch or larger bolts or rivets;

(ii) Begin not less than six (6) inches nor more than thirty-two (32) inches above the safety tread surface of the switching step; on units with high snowplows, each must begin not more than thirty-six (36) inches above the safety tread surface of the switching step;

(iii) Extend upward from switching step surface at least forty-eight (48) inches;

(iv) Be painted in a contrasting color to a height of at least forty-eight (48) inches above the safety tread surface of the switching step; and

(v) Provide at least two and one-half ($2^{1}/_{2}$) inches of usable hand clearance throughout its entire length.

(2) On locomotives built before April 1, 1977, each vertical handhold must—

(i) Be constructed of wrought iron, steel or other material of equivalent strength and durability that is at least seven-eighths ($^{7}/_{8}$) inch in diameter and be securely fastened with one-half ($^{1}/_{2}$) inch or larger bolts or rivets;

(ii) Begin not less than five (5) inches nor more than thirty-two (32) inches above the safety tread surface; on units with high snowplows, each must begin not more than thirty-six (36) inches above the safety tread surface;

(iii) Extend upward from safety tread surface of the switching step at least forty-eight (48) inches;

(iv) Be painted in a contrasting color to a height of at least forty-eight (48) inches above the safety tread surface of the switching step; and

(v) Provide at least two and one-half ($2^{1}/_{2}$) inches usable hand clearance throughout its entire length.

(f) ***Uncoupling mechanisms.*** Each locomotive used in switching service must have means for operating the uncoupling mechanism safely from the switching step as well as from ground level. No part of the uncoupling mechanism may extend into the switching step or stairway opening or end platform area when the mechanism is in its normal position or when it is operated. (See Plate A)

(g) ***Horizontal end handholds.*** Each locomotive used in switching service must have four (4) horizontal end handholds.

(1) Each horizontal end handhold must—

(i) Be constructed of wrought iron, steel or other material of equivalent strength and durability that is at least five-eighths ($^{5}/_{8}$) inch in diameter and be securely fastened to the locomotive with one-half ($^{1}/_{2}$) inch or larger bolts or rivets;

(ii) Be located not less than thirty (30) inches nor more than fifty (50) inches above the top of rail with its outer end not more than 16 inches from the side of the locomotive; on units with a high snowplow that makes normal end handhold location inaccessible, end handhold shall be located on top of plow blade, with the center of the handhold not more than fifty-three (53) inches above the top of rail, and be in line with the slope of the plow blade;

(iii) Be at least fourteen (14) inches long; and

(iv) Provide at least two (2) inches, preferably two and one-half ($2^{1}/_{2}$) inches, usable hand clearance throughout its entire length.

(2) An uncoupling lever may also serve as a horizontal end handhold if it complies with the requirements of this paragraph. When an uncoupling lever also serves as the horizontal end handhold, it is considered to be securely fastened if its securement brackets are attached to the locomotive by one-half ($^{1}/_{2}$) inch or larger bolts or rivets and its movement between those brackets is limited to the rotation necessary for performance of the uncoupling function.

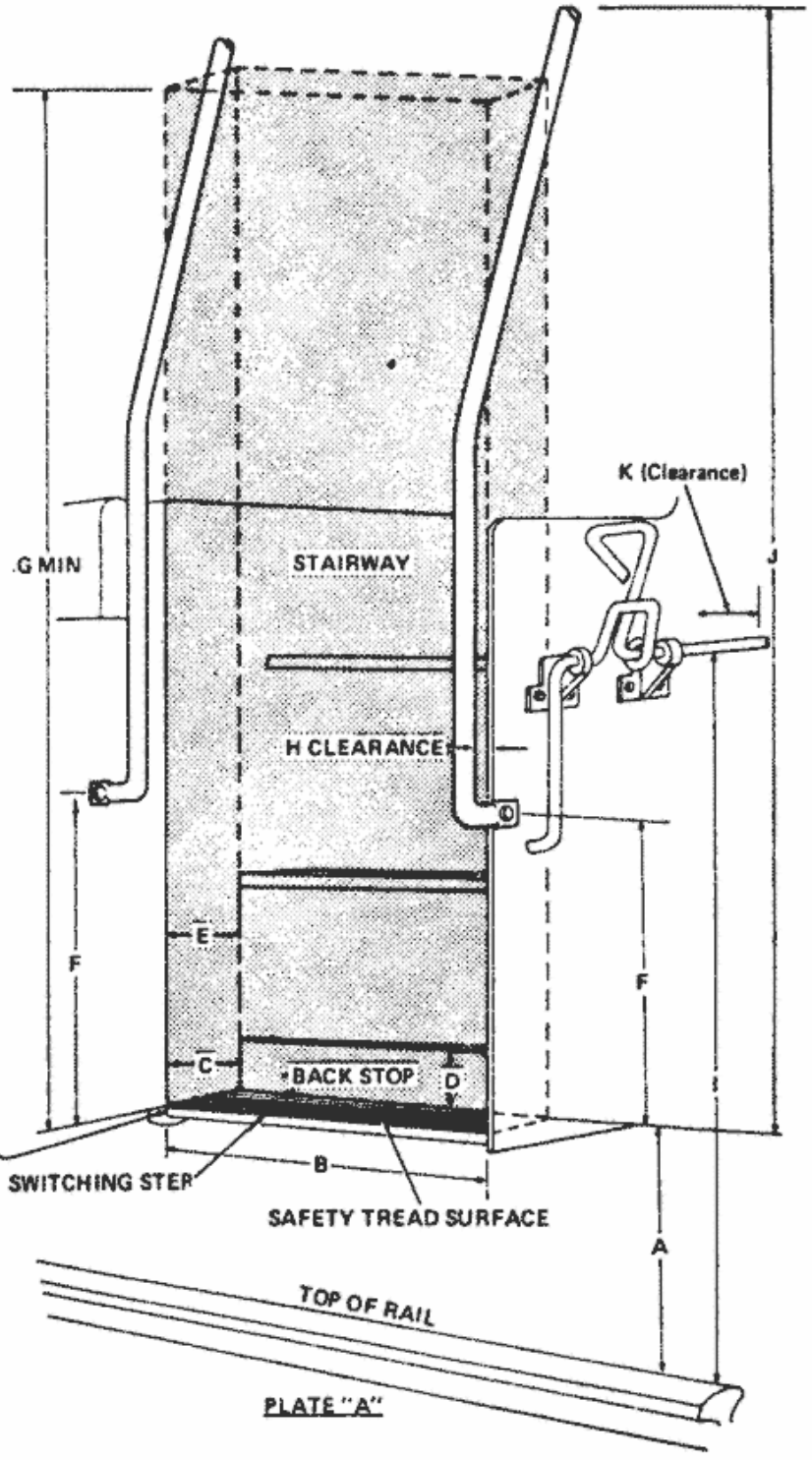
ITEM	DIMENSION NEW UNITS	DIMENSION EXISTING UNITS
A. Height of switching step above rail	15" preferred 19" maximum	15" preferred 19" maximum
B. Minimum width of switching step (between stairway supports)	24"	18"
C. Minimum depth of switching step	12"	8"
D. Minimum height of backstop	6"	6"
E. Minimum distance from front edge of switching step to front edge of first step above	7"	7"
F. Distance above switching step for start of vertical handholds Minimum-Maximum EXCEPTION: Maximum for units with high snowplows	6"-32" 36"	5"-32" 36"
G. Clear height above switching step	84"	84"
H. Vertical handhold clearance	2½" minimum	2½" minimum
I. Height above top of rail for horizontal handhold or uncoupling lever if used as horizontal handhold EXCEPTION: Maximum for units with high snowplow	30"-50" 53"	30"-50" 53"
J. Minimum height above switching step of vertical handhold	48"	48"
K. Horizontal handhold clearance or uncoupling lever clearance if used as horizontal handhold	2"-2½"	2"-2½"

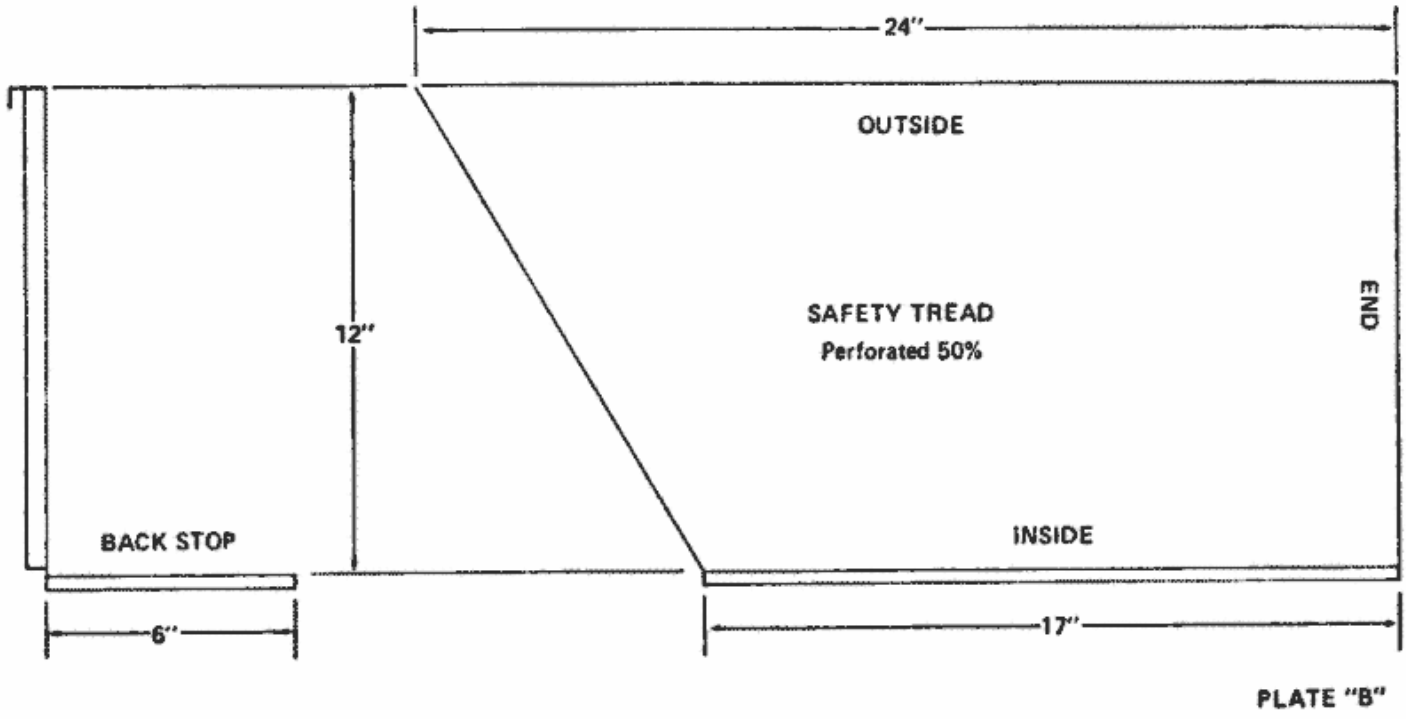
NOTES:

1. Switching steps must be supported by a bracket at each end and fastened to the bracket by two bolts or rivets of at least one-half (½) inch diameter or by a weldment of at least twice the strength of a bolted attachment.

2. The outer edge of each switching step that is not illuminated must be painted a contrasting color.

3. Vertical handholds must be painted in a contrasting color to a height of at least forty-eight (48) inches above the safety tread surface of the switching step.





SWITCHING STEP SHOWING INSIDE RELIEF FOR CLEARANCE
OF SIX-WHEEL TRUCK

[41 FR 37783, Sept. 8, 1976]

§ 231.31 Drawbars for freight cars; standard height.

(a) Except on cars specified in paragraph (b) of this section—

(1) On standard gage ($56^{1}/_{2}$-inch gage) railroads, the maximum height of drawbars for freight cars (measured perpendicularly from the level of the tops of the rails to the centers of the drawbars) shall be $34^{1}/_{2}$ inches, and the minimum height of drawbars for freight cars on such standard gage railroads (measured in the same manner) shall be $31^{1}/_{2}$ inches.

(2) On 36-inch gage railroads, the maximum height of drawbars for freight cars (measured perpendicularly from the level of the tops of the rails to the centers of the drawbars) shall be 26 inches, and the minimum height of drawbars for freight cars on such 36-inch gage railroads (measured in the same manner) shall be 23 inches.

(3) On 24-inch gage railroads, the maximum height of drawbars for freight cars (measured perpendicularly from the level of the tops of the rails to the centers of the drawbars) shall be $17^{1}/_{2}$ inches, and the minimum height of drawbars for freight cars on 24-inch gage railroads (measured in the same manner) shall be $14^{1}/_{2}$ inches.

(4) On railroads operating on track with a gage other than those contained in paragraphs (a)(1) through (a)(3) of this section, the maximum and minimum height of drawbars for freight cars operating on those railroads shall be established upon written approval of FRA.

(b) This section shall not apply to a railroad all of whose track is less than 24 inches in gage.

[66 FR 4192, Jan. 17, 2001]

§ 231.33 Procedure for special approval of existing industry safety appliance standards.

(a) ***General.*** The following procedures govern the submission, consideration and handling of any petition for special approval of an existing industry safety appliance standard for new construction of railroad cars, locomotives, tenders, or other rail vehicles.

(b) ***Submission.*** An industry representative may submit a petition for special approval of an existing industry safety appliance standard for new construction. A petition for special approval of an industry standard for safety appliances shall include the following:

(1) The name, title, address, and telephone number of the primary individual to be contacted with regard to review of the petition.

(2) An existing industry-wide standard that, at a minimum:

(i) Identifies the type(s) of equipment to which the standard would be applicable and the section or sections within the safety appliance regulations that the existing industry standard would operate as an alternative to for new car construction;

(ii) Ensures, as nearly as possible, based upon the design of the equipment, that the standard provides for the same complement of handholds, sill steps, ladders, hand or parking brakes, running boards, and other safety appliances as are required for a piece of equipment of the nearest approximate type(s) already identified in this part;

(iii) Complies with all statutory requirements relating to safety appliances contained at 49 U.S.C. 20301 and 20302; and

(iv) Addresses the specific number, dimension, location, and manner of application of each safety appliance contained in the industry standard;

(3) Appropriate data or analysis, or both, for FRA to consider in determining whether the existing industry standard will provide at least an equivalent level of safety;

(4) Drawings, sketches, or other visual aids that provide detailed information relating to the design, location, placement, and attachment of the safety appliances;

(5) A demonstration of the ergonomic suitability of the proposed arrangements in normal use; and

(6) A statement affirming that the petitioner has served a copy of the petition on designated representatives of the employees responsible for the equipment's operation, inspection, testing, and maintenance under this part, together with a list of the names and addresses of the persons served.

(c) ***Service.***

(1) Each petition for special approval under paragraph (b) of this section shall be submitted to the FRA Docket Clerk, West Building Third Floor, Office of Chief Counsel, 1200 New Jersey Avenue, SE., Washington, DC 20590.

(2) Service of each petition for special approval of an existing industry safety appliance standard under paragraph (b) of this section shall be made on the following:

(i) Designated representatives of the employees responsible for the equipment's operation, inspection, testing, and maintenance under this part;

(ii) Any organizations or bodies that either issued the standard to which the special approval pertains or issued the industry standard that is proposed in the petition; and

(iii) Any other person who has filed with FRA a current statement of interest in reviewing special approvals under the particular requirement of this part at least 30 days but not more than 5 years prior to the filing of the petition. If filed, a statement of interest shall be filed with the FRA Docket Clerk, West Building Third Floor, Office of Chief Counsel, 1200 New Jersey Avenue, SE., Washington, DC 20590, and shall reference the specific section(s) of this part in which the person has an interest. A statement of interest that properly references the specific section(s) in which the person has an interest will be posted in the docket to ensure that each statement is accessible to the public.

(d) FEDERAL REGISTER document. FRA will publish a document in the FEDERAL REGISTER announcing the receipt of each petition received under paragraph (b) of this section. The document will identify the public docket number in the Federal eRulemaking Portal (FeP) where the contents of each petition can be accessed and reviewed. The FeP can be accessed 24 hours a day, seven days a week, via the Internet at the docket's Web site at *http://www.regulations.gov*. All documents in the FeP are available for inspection and copying on the Web site or are available for examination at the DOT Docket Management Facility, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, during regular business hours (9 a.m.-5 p.m.).

(e) ***Comment.*** Not later than 60 days from the date of publication in the FEDERAL REGISTER concerning a petition received pursuant to paragraph (b) of this section, any person may comment on the petition. Any such comment shall:

(1) Set forth specifically the basis upon which it is made and contain a concise statement of the interest of the commenter in the proceeding; and

(2) Be submitted by mail or hand-delivery to the Docket Clerk, DOT Docket Management Facility, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, or electronically via the Internet at *http://www.regulations.gov*. Any comments or information sent directly to FRA will be immediately provided to the DOT FeP for inclusion in the public docket related to the petition. All comments should identify the appropriate docket number for the petition to which they are commenting.

(f) ***Disposition of petitions.***

(1) FRA will conduct a hearing on a petition in accordance with the procedures provided in § 211.25 of this chapter, if necessary.

(2) FRA will normally act on a petition within 90 days of the close of the comment period related to the petition. If the petition is neither granted nor denied within that timeframe, the petition will remain pending unless withdrawn by the petitioner.

(3) A petition may be:

(i) Granted where it is determined that the petition complies with all applicable Federal statutes, that the petition complies with the requirements of this section, and the existing industry safety appliance standard provides at least an equivalent level of safety as the existing FRA standards;

(ii) Denied where it is determined that the petition does not comply with an applicable Federal statute, the petition does not comply with the requirements of this section, or the existing industry safety appliance standard does not provide at least an equivalent level of safety as the existing FRA standards; or

(iii) Returned to the petitioner for additional consideration where it is determined that further information is required or that the petition may be amended in a reasonable manner to comply with all applicable Federal statutes, that petition may be amended to comply with the requirements of this section, or to ensure that the existing industry standard provides at least an equivalent level of safety as the existing FRA standards. Where the petition is returned to the petitioner, FRA will provide written notice to the petitioner of the item(s) identified by FRA as requiring additional consideration. Petitioner shall reply within 60 days from the date of FRA's written notice of return for additional consideration or the petition will be deemed withdrawn, unless good cause is shown. Petitioner's reply shall:

(A) Address the item(s) raised by FRA in the written notice of the return of the petition for additional consideration;

(B) Comply with the submission requirements of paragraph (b) of this section; and

(C) Comply with the service requirements in paragraph (c) of this section.

(4) When FRA grants or denies a petition, or returns a petition for additional consideration, written notice will be sent to the petitioner and other interested parties.

(5) If a petition is granted, it shall go into effect on the date specified in FRA's written notice granting the petition. If no date is specified in FRA's written notice granting the petition, the effective date shall begin on January 1st, not less than one (1) year and not more than two (2) years from the date of FRA's written notice granting the petition. FRA will place a copy of the approved industry safety appliance standard in the related public docket where it can be accessed by all interested parties.

(6) A petition, once approved, may be re-opened upon good cause shown. Good cause exists where subsequent evidence demonstrates that an approved petition does not comply with an applicable Federal statute; that the approved petition does not comply with the requirements of this section; that the existing industry safety appliance standard does not provide at least an equivalent level of safety as the corresponding FRA regulation for the nearest railcar type(s); or that further information is required to make such a determination. When a petition is re-opened for good cause shown, it shall return to pending status and shall not be considered approved or denied.

(g) ***Enforcement.*** Any industry standard approved pursuant to this section will be enforced against any person, as defined at 49 CFR 209.3, who violates any provision of the approved standard or causes the violation of any such provision. Civil penalties will be assessed under this part by using the applicable defect code in the statement of agency civil penalty policy on FRA's website at *www.fra.dot.gov*.

[76 FR 23726, Apr. 28, 2011, as amended at 84 FR 23736, May 23, 2019]

§ 231.35 Procedure for modification of an approved industry safety appliance standard for new railcar construction.

(a) ***Petitions for modification of an approved industry safety appliance standard.*** An industry representative may seek modification of an existing industry safety appliance standard for new construction of railroad cars, locomotives, tenders, or other rail vehicles after the petition for special approval has been approved pursuant to § 231.33. The petition for modification shall include each of the elements identified in § 231.33(b).

(b) ***Service.***

(1) Each petition for modification of an approved industry standard under paragraph (a) of this section shall be submitted to the FRA Docket Clerk, West Building Third Floor, Office of Chief Counsel, 1200 New Jersey Avenue, SE., Washington, DC 20590.

(2) Service of each petition for modification of an existing industry safety appliance standard under paragraph (a) of this section shall be made on the following:

(i) Designated representatives of the employees responsible for the equipment's operation, inspection, testing, and maintenance under this part;

(ii) Any organizations or bodies that either issued the standard incorporated in the section(s) of the rule to which the modification pertains or issued the industry standard that is proposed in the petition for modification; and

(iii) Any other person who has filed with FRA a current statement of interest in reviewing special approvals under the particular requirement of this part at least 30 days but not more than 5 years prior to the filing of the petition. If filed, a statement of interest shall be filed with FRA's Associate Administrator for Safety and shall reference the specific section(s) of this part in which the person has an interest.

(c) FEDERAL REGISTER document. Upon receipt of a petition for modification, FRA will publish a document in the FEDERAL REGISTER announcing the receipt of each petition received under paragraph (a) of this section. The document will identify the public docket number in the Federal eRulemaking Portal (FeP) where the contents of each petition can be accessed and reviewed. The FeP can be accessed 24 hours a day, seven days a week, via the Internet at the docket's Web site at *http://www.regulations.gov*. All documents in the FeP are available for inspection and copying on the Web site or are available for examination at the DOT Docket Management Facility, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, during regular business hours (9 a.m.-5 p.m.).

(d) ***Comment.*** Not later than 60 days from the date of publication in the FEDERAL REGISTER concerning a petition for modification under paragraph (a) of this section, any person may comment on the petition. Any such comment shall:

(1) Set forth specifically the basis upon which it is made, and contain a concise statement of the interest of the commenter in the proceeding; and

(2) Be submitted by mail or hand-delivery to the Docket Clerk, DOT Docket Management Facility, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, or electronically via the Internet at *http://www.regulations.gov*. Any comments or information sent directly to FRA will be immediately provided to the DOT FeP for inclusion in the public docket related to the petition. All comments should identify the appropriate docket number for the petition to which they are commenting.

(e) ***FRA Review.*** During the 60 days provided for public comment, FRA will review the petition. If FRA objects to the requested modification, written notification will be provided within this 60-day period to the party requesting the modification detailing FRA's objection.

(f) ***Disposition of petitions for modification.***

(1) If no comment objecting to the requested modification is received during the 60-day comment period, provided by paragraph (d) of this section, or if FRA does not issue a written objection to the requested modification, the modification will become effective fifteen (15) days after the close of the 60-day comment period.

(2) If an objection is raised by an interested party, during the 60-day comment period, or if FRA issues a written objection to the requested modification, the requested modification will be treated as a petition for special approval of an existing industry safety appliance standard and handled in accordance with the procedures provided in § 231.33(f).

(3) A petition for modification, once approved, may be re-opened upon good cause shown. Good cause exists where subsequent evidence demonstrates that an approved petition does not comply with the an applicable Federal statute, that an approved petition does not comply with the requirements of this section; that the existing industry safety appliance standard does not provide at least an equivalent level of safety as the corresponding FRA regulation for the nearest railcar type(s); or that further information is required to make such a determination. When a petition is re-opened for good cause shown, it shall return to pending status and shall not be considered approved or denied.

(g) ***Enforcement.*** Any modification of an industry standard approved pursuant to this section will be enforced against any person, as defined at 49 CFR 209.3, who violates any provision of the approved standard or causes the violation of any such provision. Civil penalties will be assessed under this part by using the applicable defect code in the statement of agency civil penalty policy on FRA's website at *www.fra.dot.gov*.

[76 FR 23726, Apr. 28, 2011, as amended at 84 FR 23736, May 23, 2019]