

BEFORE THE  
FEDERAL RAILROAD ADMINISTRATION

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PETITION TO AMEND 40 C.F.R. PARTS 231, 237, AND 238:  
RAILROAD SAFETY APPLIANCE STANDARDS

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SUBMITTED BY THE  
ASSOCIATION OF AMERICAN RAILROADS

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The Association of American Railroads (AAR),<sup>1</sup> on behalf of itself and its member railroads, requests that FRA make the following changes to 49 C.F.R. sections 231.1, 231.27, and 231.28, addressing safety appliance standards. The changes sought either clarify the requirements of these sections or make minor changes reflecting modern rail car designs.

### **I. Introduction**

As background, AAR has drafted a Safety Appliance Standard, S-2044.<sup>2</sup> The purpose of S-2044 is to specify safety appliance requirements by modern car type. S-2044 consists of a base standard applicable to all car types and a series of appendices addressing specific car types. To date, the base standard and Appendices A, B, and C, covering box, covered hopper, and bulkhead flat cars, respectively, have been completed. AAR intends to draft appendices addressing other car types.

S-2044 restates FRA's safety appliance standards in a clearer manner and imposes requirements that go beyond FRA's standards and enhance safety.

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<sup>1</sup>AAR is a trade association whose membership includes freight railroads that operate 77 percent of the line-haul mileage, employ 92 percent of the workers, and account for 94 percent of the freight revenue of all railroads in the United States; and passenger railroads that operate intercity passenger trains and provide commuter rail service.

<sup>2</sup>S-2044 is enclosed as Attachment A.

*Improvements in Safety Provided by AAR Standard S-2044* explains the enhancements to safety that would result from the adoption of S-2044.<sup>3</sup> However, some of the enhancements to safety are dependent on changes to sections 231.1, 231.27, and 231.28. These changes would reflect changes in car design since the safety appliance standards were adopted in their current form.

S-2044, which was drafted by a Safety Appliance Task Force composed of representatives from railroads, private car owners, car builders, and labor unions, as well as representatives from FRA and Transport Canada, has been approved by AAR's Equipment Engineering Committee. AAR's intent is to put S-2044 into effect January 1, 2007, assuming FRA adopts the necessary rule changes beforehand.

The changes to sections 231.1, 231.27, and 231.28 that must be made to put S-2044 into effect are explained below.

## **II. Subsection 231.1: Running Boards on Box and House Cars**

AAR proposes that the requirements for the location and securement of running boards in 231.1(c) be clarified as follows, mirroring the requirements in S-2044, Appendix B, paragraphs 10.1.2 and 10.4:<sup>4</sup>

(3) *Location.* Full length of car, center of roof if car does not have roof hatches located at the center of the roof. Full length of car, one on each side of the roof hatches if the car has roof hatches located at the center of the roof. . . . .

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<sup>3</sup>*Improvements in Safety Provided by AAR Standard S-2044* is enclosed as Attachment B.

<sup>4</sup>In this petition, proposed amendments will be indicated by striking through language proposed to be deleted from FRA's regulations and double underlining language proposed to be added.

While 231.1(c) by its terms applies only to box and other house cars built before October 1, 1966, it also applies to current cars because it is cross-referenced in other sections of the regulations.

(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 of a number of pieces securely fastened to saddle blocks ~~with~~. Running boards shall be mechanically fastened using fasteners at least three-eighths ( $\frac{3}{8}$ ) inches in diameter. Sscrews, bolts, or rivets may be used to fasten running boards. Components to which running boards are fastened may be welded to the roof.

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A. The requirement for one running board in the center is not always feasible.

FRA does not apply the requirement for a running board at the center to cars with roof hatches at the center. It is impossible to have a running board at the center of the roof on a car with roof hatches at the center. On such cars, there is a running board on each side of the roof hatch. AAR believes it appropriate to clarify this requirement.

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B. FRA should clarify the requirements for securing running boards.

Clarification of the securement requirements is also appropriate. Current paragraph (c)(4) requires that running boards be mechanically fastened. For many years, running boards have been mechanically fastened to components which are then welded. The use of welds instead of mechanical fasteners avoids problems that would occur were mechanical fasteners used, such as leakage around the fasteners and problems the fasteners would create with interior linings. Welding has proven to be a satisfactory method of attachment.

### **III. Subsection 231.27: Box and House Cars Without Roof Hatches**

#### A. Subsection 231.27(b): End Platforms

Paragraph 231.27(b)(3) governs the location of end platforms. AAR proposes that paragraph (b)(3) be amended, based on S-2044, Appendix A, paragraph 6.3.1, Appendix B, paragraph 7.3.1, and Appendix C, paragraphs 8.3.1 and 8.3.3, as follows:

One (1) centered on each end of car between inner ends of handholds not more than eight (8) inches above top of center sill. The center of the outer mounting holes shall be no more than 7¾ inches (7.75 inches) from the clearance points of the nearest end handholds. The transverse center of the end platform mounting brackets shall be at the center of the distance between the end handholds and, where practicable, at the center of the car end. The platform-support surface of the mounting brackets shall be no more than 2 inches above nor more than 4⅜ inches (4.375 inches) below the top surface of the nearest end handhold.

1. The centering requirement is problematic.

S-2044 applies a maximum distance of 7¾ inches between the center of the outer mounting holes and the clearance points of the nearest end handholds to prevent a larger space which might result in a person's foot being jammed in between. On a full-width car with 60-inch end platforms (required by paragraph 231.27(b)(2)) and 16-inch length end handholds (required by paragraph 231.27(f)(2)(ii)), the distance from the outer edge of the end platform to the clearance point of the end handholds will be 15 inches or less. Under S-2044, the distance will be less than six inches (7¾ inches less the distance between the edge of the platform to the center of the outboard mounting hole, which is always greater than 1¾ inches). A distance of less than six inches should be sufficient to avoid a person's foot from becoming jammed.

However, a distance of less than six inches between the end platform and the clearance point of the end handholds cannot be maintained on some cars with the end handholds on one side longer than the end handholds on the other side because of the current requirement that the end platforms be centered. Covered hopper cars with roof handholds offset toward the center of the car to avoid infringing on the sloped portion of the clearance diagram provide one such example. To maintain a reasonable overlap of the roof handhold over the ladder below it, the left side end handholds on such cars are often longer than the right side end handholds. If the end platform were centered on the end of a car, the gap between the right end handhold and the adjacent end platform would not only be larger than the gap between the left end handhold and the adjacent end platform, it also would likely exceed the desired 7¾ inches. (If the handholds on each side

were of the same length, there might not be enough room for the required 60-inch end platform.)

It is unnecessary to require the end platform to be centered between the ends of the car. S-2044 properly requires that the end platform be centered between the end handholds rather than between each end of the car and enhances safety by specifying a maximum 7<sup>3</sup>/<sub>4</sub>-inch distance between the outer end platform mounting holes and the clearance points of the adjacent end handholds.

American Railcar Industries (ARI) Drawing 5-W-5396 shows the arrangement of end safety appliances on 3201 and 2356 cubic-foot hopper cars.<sup>5</sup> The ladder and end handholds on the left side of the car are wider than those on the right side in order to provide a significant overlap of the roof handhold and the ladder beneath it. The 60-inch platform is centered on the end of the car, resulting in a large gap between the platform and end handholds to the right. ARI Drawing 5-W-5832 shows a proposed arrangement in which the platform is centered between the end handholds, but not between the ends of the cars.<sup>6</sup> Under this latter arrangement, there are very small gaps on either side of the end platform, providing a safer end platform arrangement.

2. The cap on the height of the platform in section 231.27 does not provide as much protection as does S-2044.

The critical issue from the perspective of the height of the end platform is the distance between the end platform and the end handholds, because railroad employees step up or down when moving between the end platform and end handholds. S-2044 limits the distance from the top of the end platform to the top of the nearest end handhold to 4 inches (4<sup>3</sup>/<sub>8</sub> inches between the surface of the mounting brackets and the top surface of the end handhold less the minimum <sup>3</sup>/<sub>8</sub>-inch thickness of the end platform).

Current paragraph 231.27(b)(3) not only fails to address the distance an employee might have to step up or down when moving between the end platform

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<sup>5</sup>Drawing 5-W-5396 is enclosed as Attachment C.

<sup>6</sup>Drawing 5-W-5832 is enclosed as Attachment D.

and end handholds, it actually makes it impossible in some cases to achieve the objective of limiting the distance. Consider, for example, a car where the lowest end handholds are three inches below the top of the center sill. Since the end platform cannot be located below the top of the center sill, it needs to be aligned with the second-lowest end handholds. If the second-lowest end handholds are sixteen inches above the lowest handholds, then they would be 13 inches above the top of the center sill. Since current 231.27(b)(3) requires that the top of the end platform must be no more than 8 inches above the top of the center sill, under 213.27(b)(3) the end platform can be no closer to the second-lowest end handholds than five inches.

Since the paramount safety issue is the distance between the end platform and the end handholds, FRA should amend 213.27(b)(3) to delete the 8-inch cap on the distance between the end platform and the center sill and substitute AAR's recommended limits on the distance between the end platform and the handholds.

#### B. Subsection 231.27(c): Sill Steps

Subsection 231.27(c) addresses sill steps. AAR proposes improvements on the requirements for tread length and location. Specifically, based on S-2044, Appendices A, B, and C, paragraphs 3.2.1, 3.3.1, and 3.3.2, AAR proposes that subsection 231.27(c) be amended as follows:

(2) *Dimensions*. . . . Minimum length of tread, ~~ten (10)~~, preferably twelve (12) inches.

(3) *Location*. (i) One (1) near each end of each side of the car, located in the longitudinal direction so that ~~there shall be no more than eighteen (18) inches from each end of car to center of tread of sill step~~ the inside face of the outboard vertical leg of the sill step is no more than two inches inboard from the outboard clearance point of any side handhold and the inside face of the inboard vertical leg of the still step is no less than ten inches from the outboard clearance point of any side handhold .

(ii) Outside edge of tread of step shall be no more than six (6) inches inboard or outboard of the inside surface of the lowest adjacent side handhold and no more than four (4) inches inboard of any car structure below the lowest adjacent side handhold in the area from the

inboard clearance point of the handhold to the outboard vertical leg of the sill step ~~inside of face of side of car, preferably flush with side of car .~~

(iii) Tread shall be not more than . . .

The critical factor in the location of the sill step is to position the step so that someone climbing down from the side handholds to the sill step will do so safely. Under current subsection 231.27(c)(3), the distance between the outboard vertical leg of the sill step and the outboard clearance of the lowest handhold could be as much as eleven inches. AAR believes that distance is too great and thus S-2044 imposes a two-inch limit. However, if a two-inch limit is to be required, the current restriction of eighteen inches between the end of a car and the center of the sill step must be eliminated.

AAR also believes that a twelve-inch sill step provides greater safety than a ten-inch sill step. Thus, AAR proposes eliminating the option for a ten-inch step.

#### C. Subsections 231.27(e) and (f): End and Side Handholds

Paragraph 231.27(e)(3) and (f)(3) address the number and location of side and end handholds, respectively. AAR proposes that the side and end handholds be located relative to each other instead of the current requirement that the handholds be located relative to where the side and end of a car meet, as set forth in S-2044, Appendices A, B, and C, paragraphs 4.3.3 and 5.3.3. AAR also proposes that there be twenty end and side handholds, where appropriate, as specified in Appendix C, paragraphs 4.1 and 5.1; currently, sixteen are required. Specifically, AAR proposes that paragraphs 231.27(e)(3) and (f)(3) be amended as follows:

(e) Side handholds—(1) Number. Sixteen (16). When the end platforms are aligned with the lowest end handholds, there shall be sixteen (16) side handholds, four near each end on each side of the car. When the end platforms are aligned with the second lowest end handholds, there shall be twenty (20) side handholds, five (5) near each end on each side of the car.

(2) Dimensions. . . .

(3) *Location. . . .* The clearance points of the outboard end of the side outer ends of handholds shall be not more than ten inches inboard of, and no farther outboard than, the inside surface of the end handholds eight (8) inches from end of car. . . .

(f) *End handholds—(1) Number. Sixteen (16).* When the end platforms are aligned with the lowest end handholds, there shall be sixteen (16) end handholds, four near each side on each end of the car. When the end platforms are aligned with the second lowest end handholds, there shall be twenty (20) end handholds, five (5) near each side on each end of the car.

(2) *Dimensions. . . .*

(3) *Location. . . .* The clearance points of the outboard end of the end outer ends of handholds shall be not more than ten inches from the inside surface of the side handholds eight (8) inches from side of car. . . .

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1. There needs to be 20 end and 20 side handholds on certain cars.

As explained above,<sup>7</sup> S-2044 requires that the end platform be vertically aligned with the nearest end handhold. On some bulkhead flat cars and center beam cars, vertical alignment cannot be accomplished with only four end handholds at each corner, as specified in 49 C.F.R. § 231.27(f)(1). This problem occurs primarily on cars with deep side sills, but could occur on any car having a side sill with a bottom flange more than fifteen inches below the top of the center sill.<sup>8</sup> As shown in the diagram in Attachment A, on such cars the end platform must be aligned with the second end handhold from the bottom, not the lowest end handhold because the bottom handhold must not be more than twenty-one inches from the sill step. A fifth handhold would then be necessary because 49 C.F.R. § 231.27(g)(3) requires that there be a horizontal end-platform handhold at least forty-eight inches above the end platform. If five end handholds are necessary, then there should be a side handhold aligned with each end handhold so that a

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<sup>7</sup>See page 5.

<sup>8</sup>Since this problem should not occur on box and covered hopper cars, Appendices A and B in S-2044 require four end and side handholds at each corner.



person can safely move from the end platform to the side of the car without stepping down.<sup>9</sup>

## 2. The end and side handholds should be located relative to each other.

As a worker moves around the corner of a car from the end handholds to the side handholds, the critical distance insofar as the side and end handholds are concerned is the distance between them. Unlike the case with current paragraphs 231.27(e)(3) and (f)(3), S-2044 addresses that distance.

In addition, because of the difficulty in precisely distinguishing between the sides and ends of a car on some rail cars, compliance with the current regulations cannot always be determined. On curved-side covered hopper cars, for example, it is not clear whether the side sill, side top chord, or widest part of the side sheet constitute the side of the car in the context of 231.27(f)(3). If there is ambiguity as to what constitutes the sides and the ends of cars, it might not be possible to determine whether the outer ends of the end and side handholds are more than eight inches from the side or end of the car, respectively.

Under S-2044, the end and side handholds will be more than eight inches from the side or end of the car, respectively, on a limited number of cars, such as when side handholds are recessed behind a side sheet or end handholds are recessed between end corrugations. However, this should not matter since the critical distance from the employee's perspective is the distance between the side and end handholds.

### D. Subsection 231.27(g): End Platform Handholds

S-2044 departs from the requirement in paragraph 231.27(g)(2)(iii) that end platform handholds be at least sixty inches long. Consequently, AAR proposes that the first sentence in 231.27(g)(2)(iii) be deleted.

Both 231.27(b) and S-2044, Appendices A ( 6.2), B (7.2), and C (8.2), require that end platforms be sixty inches in length (longer if necessary). As a

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<sup>9</sup>Section 5.2 in Appendices A, B, and C require that the side and end handholds aligned with the end platform have foot guards.

result, the distance between the end platform handholds should be at least sixty inches and compliance with 231.27(g)(2)(iii) should not be an issue. However, the actual requirement in 237.27(g)(2)(iii) is that the “clear length” must be sixty inches. “Clear length” is not defined by FRA. The phrase is defined in S-2044, 4.5, which provides that the clear length “does not include handhold portions in other directions. Under the definition in S-2044, the portion of handholds bent up or down at their ends would not be considered part of the clear length and on some cars that might result in the clear length being less than sixty inches.<sup>10</sup> AAR’s definition of “clear length” illustrates the ambiguity as to what 231.27(g)(2)(iii) actually requires.

Whether the “clear length” is sixty inches is not of critical importance. What is important is the relationship between the end-platform handholds and the end handholds. Paragraph 231.27(g)(3) provides that the clearance points of the end-platform handholds must be no more than six inches from the clearest point of the nearest end handholds. This enables a person to easily move his hand from the end handhold to the end-platform handhold or vice versa, regardless of the length of the end-platform handhold.

Note that Technical Bulletin MP&E 98-19 permits the use of end-platform handholds shorter than sixty inches on specific cars.<sup>11</sup>

#### E. Subsection 231.27(j): Painting Cars

AAR seeks two modifications to the painting and marking requirements for cars with roofs 16' 10", above the top of the rail. One modifies the requirement that the portion of the car fifteen feet above the top of rail be painted with reflectorized paint. The other modifies the requirement for a border around the rectangle indicating the car is of “excess height.”

(1) Eighty percent of 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, or substantially covered with

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<sup>10</sup>This is illustrated in Attachment E.

<sup>11</sup>Technical Bulletin MP&E 98-19 is enclosed as Attachment F.

reflectorized material, and bear the words “excess height car” in lettering not less than three (3) inches high.

(2) On each side sill near end corner there shall be painted a yellow rectangular area with a three-fourths ( $\frac{3}{4}$ ) inch ~~black~~ border of contrasting color containing the words “this car excess height” in lettering not less than one and one-half ( $\frac{1}{2}$ ) inches high.

The parallel requirement in S-2044 is in Appendices A, B, and C, paragraphs 10.2, 14.2, and 12.2, respectively.

The reason for providing an alternative to reflectorized paint is that it is becoming more difficult to obtain reflectorized paint and there are alternatives which might be preferable in terms of maintaining reflectivity. There are two reasons for requiring 80 percent of the car fifteen feet above the top of the rail to be reflectorized instead of 100 percent: 1) it is difficult to apply some reflectorized material over irregularly shaped surfaces, such as fasteners and door operating rods; and 2) there can be wearing away or obscuring of reflectorized material over time.

The reason for changing the requirement for a black border to a requirement for a border of contrasting color is that many cars are painted black or another dark color. Requiring a border of contrasting color ensures that the border and marking will stand out, as intended.

#### **IV. Subsection 231.28: Box and House Cars With Roof Hatches**

Paragraph 231.28(b)(3) addresses the location of ladders. AAR proposes that ladders be located relative to the end and side handholds instead of the current requirement that they be located relative to the left-hand side. Based on S-2044, Appendices B and C, paragraph 6.3.4, AAR proposes that paragraph 231.28(b)(3) be amended as follows:

One (1) on each end of car ~~not more than eight (8) inches from left-hand side~~ located so that the clearance points of the outboard end of the ladder treads shall be no more than ten inches from the inside surface of the side handholds and the clearance points of the inboard

ends of the ladder treads and the end handholds beneath them shall be in vertical alignment in the transverse direction.

In discussing the location of the side and end handholds on box and house cars without roof hatches above, AAR observed that the critical distance should be the location of the side and end handholds relative to each other to facilitate a worker moving around a rail car.<sup>12</sup> Similarly, the critical distance for the ladder is the location relative to the handholds. Current paragraph 231.28(b)(3) does not address that issue; AAR's proposed revision would.

As is the case with the handholds, since the precise demarcation between the sides and the ends cannot be determined on all rail cars, compliance with current paragraph 231.28(b)(3) could be problematic. Compliance is not an issue under S-2044 since the demarcation between the sides and ends of cars is irrelevant.

## **V. Conclusion**

AAR urges FRA to act expeditiously so that AAR can meet its January 1, 2007, target date for adoption of S-2044.

Respectfully submitted,

Louis P. Warchot  
Michael J. Rush  
Counsel for the Association  
of American Railroads  
50 F St., N.W.  
Washington, D.C. 20001  
(202) 639-2503

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<sup>12</sup>See p. 8.