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

PART 221—REAR END MARKING DEVICE—PASSENGER, COMMUTER AND FREIGHT TRAINS

Authority: 49 U.S.C. 20103, 20107; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Source: 42 FR 2321, Jan. 11, 1977, unless otherwise noted.

Subpart A—General

§ 221.1 Scope.

This part prescribes minimum requirements governing highly visible marking devices for the trailing end of the rear car of all passenger, commuter and freight trains. So long as these minimum requirements are met, railroads may adopt additional or more stringent requirements for rear end marking devices.

§ 221.3 Application.

(a) Except as provided in paragraph (b) of this section, this part applies to passenger, commuter and freight trains when operated on a standard gage main track which is part of the general railroad system of transportation.

(b) This part does not apply to:

(1) A railroad that operates only trains consisting of historical or antiquated equipment for excursion, educational, or recreational purposes;

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

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

(4) A railroad that operates only one train at any given time.

[42 FR 2321, Jan. 11, 1977, as amended at 53 FR 28600, July 28, 1988]

§ 221.5 Definitions.

As used in this part:

(a) ***Train*** means a locomotive unit or locomotive units coupled, with or without cars, involved in a railroad operation conducted on a main track. It does not include yard movements.

(b) ***Commuter train*** means a short haul passenger train operating on track which is part of the general railroad system of transportation, within an urban, suburban or metropolitan area. It includes a passenger train provided by an instrumentality of a State or political subdivision thereof.

(c) ***Locomotive*** means a self-propelled unit of equipment designed for moving other equipment in revenue service and includes a self-propelled unit designed to carry freight or passenger traffic, or both.

(d) ***Main track*** means a track, other than an auxiliary track, extending through yards or between stations, upon which trains are operated by timetable or train order or both, or the use of which is governed by a signal system.

(e) ***Train order*** means mandatory directives issued as authority for the conduct of a railroad operation outside of yard limits.

(f) ***Red-orange-amber color range*** means those colors defined by chromaticity coordinates, as expressed in terms of the International Commission on Illumination's 1931 Colormetric System, which lie within the region bounded by the spectrum locus and lines defined by the following equations:

$X + Y = .97$ (white boundary)

$Y = X - .12$ (green boundary)

(g) ***Administrator*** means the Federal Railroad Administrator, the Deputy Administrator, or any official of the Federal Railroad Administration to whom the Administrator has delegated his authority under this part.

(h) ***Effective intensity*** means that intensity of a light in candela as defined by the Illuminating Engineering Society's Guide for Calculating the Effective Intensity of Flashing Signal Lights, November, 1964.

(i) ***Qualified person*** means any person who has the skill to perform the task and has received adequate instruction.

[42 FR 2321, Jan. 11, 1977; 42 FR 3843, Jan. 21, 1977, as amended at 51 FR 25185, July 10, 1986]

§ 221.7 Civil penalty.

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.

[53 FR 28600, July 28, 1988]

Editorial Note: For FEDERAL REGISTER citations affecting § 221.7, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at *www.govinfo.gov*.

§ 221.9 Waivers.

(a) A railroad may petition the Federal Railroad Administrator for a waiver of compliance with any requirement prescribed in this part.

(b) Each petition for a waiver under this section must be filed in the manner and contain the information required by part 211 of this chapter.

(c) If the Administrator finds that a waiver of compliance is in the public interest and is consistent with railroad safety, he may grant the waiver subject to any condition he deems necessary. Notice of each waiver granted, including a statement of the reasons therefor, will be published in the FEDERAL REGISTER.

§ 221.11 State regulation.

Notwithstanding the provisions of this part, a State may continue in force any law, rule, regulation, order, or standard that was in effect on July 8, 1976, relating to lighted marking devices on the rear car of freight trains except to the extent that such law, rule, regulation, order, or standard would cause such cars to be in violation of this part.

Subpart B—Marking Devices

§ 221.13 Marking device display.

(a) During the periods prescribed in paragraph (b) of this section, each train to which this part applies that occupies or operates on main track shall

(1) be equipped with,

(2) display on the trailing end of the rear car of that train, and

(3) continuously illuminate or flash a marking device prescribed in this subpart.

(b) Unless equipped with a functioning photoelectric cell activation mechanism complying with paragraph (c) of this section, the marking devices prescribed by this subpart shall be illuminated continuously or flash during the period between one hour before sunset and one hour after sunrise, and during all other hours when weather conditions so restrict visibility that the end silhouette of a standard box car cannot be seen from $^{1}/_{2}$ mile on tangent track by a person having 20/20 corrected vision.

(c) Marking devices prescribed by this part and equipped with a functioning photoelectric cell activation mechanism shall illuminate or flash the device continuously when there is less than 1.0 candela per square meter of ambient light.

(d) The centroid of the marking device must be located above the coupler, where its visibility is not obscured and it does not interfere with an employee's access to, or use of, any other safety appliance on the car.

[51 FR 25185, July 10, 1986, as amended at 85 FR 80569, Dec. 11, 2020]

§ 221.14 Marking devices.

(a) As prescribed in § 221.13, passenger, commuter and freight trains shall be equipped with at least one marking device, which has been approved by the Federal Railroad Administrator in accordance with the procedures included in appendix A of this part, and which has the following characteristics:

(1) An intensity of not less than 100 candela nor more than 1000 candela (or an effective intensity of not less than 100 candela nor more than 1000 candela for flashing lights) as measured at the center of the beam width;

(2) A horizontal beam with a minimum arc width of fifteen (15) degrees each side of the vertical center line, and a vertical beam with a minimum arc width of five (5) degrees each side of the horizontal center line as defined in terms of the 50 candela intensity points;

(3) A color defined by the red-orange-amber color range; and

(4) If a flashing light is used, a flash rate of not less than once every 1.3 seconds nor more than once every .7 seconds.

(b) Marking devices used on passenger and commuter trains in compliance with paragraph (a) of this section shall be lighted under the conditions prescribed in § 221.13 (b) and (c).

(c) When a locomotive is operated singly, or at the rear of a train, highly visible marking devices may be provided by the use of:

(1) At least one marking device that complies with paragraph (a) of this section; or

(2) At least one illuminated red or amber classification light on the rear of the locomotive, provided it complies with paragraph (a) of this section; or

(3) The rear headlight of the locomotive illuminated on low beam.

[51 FR 25185, July 10, 1986]

§ 221.15 Marking device inspection.

(a) Each marking device displayed in compliance with this part shall be examined at each crew change point to assure that the device is in proper operating condition.

(b) This examination shall be accomplished either by visually observing that the device is functioning as required or that the device will function when required by either:

(1) Repositioning the activation switch or

(2) Covering the photoelectric cell.

(c) This examination shall be conducted either by the train crew or some other qualified person, *Provided that,* if a non-train crewmember performs the examination, that person shall communicate his or her findings to the locomotive engineer of the new train crew.

(d) When equipped with a radio telemetry capability, a marker displayed in accordance with this part may be examined by observing the readout information displayed in the cab of the controlling locomotive demonstrating that the light is functioning as required in lieu of conducting a visual observation.

[51 FR 25185, July 10, 1986]

§ 221.16 Inspection procedure.

(a) Prior to operating the activation switch or covering the photoelectric cell when conducting this test, a non-train crew person shall determine that he is being protected against the unexpected movement of the train either under the procedures established in part 218 of this chapter or under the provisions of paragraph (b) of this section.

(b) In order to establish the alternative means of protection under this section,

(1) the train to be inspected shall be standing on a main track;

(2) the inspection task shall be limited to ascertaining that the marker is in proper operating condition; and

(3) prior to performing the inspection procedure, the inspector shall personally contact the locomotive engineer or hostler and be advised by that person that they are occupying the cab of the controlling locomotive and that the train is and will remain secure against movement until the inspection has been completed.

[51 FR 25185, July 10, 1986]

§ 221.17 Movement of defective equipment.

(a) Whenever the marking device prescribed in this part becomes inoperative enroute, the train may be moved to the next forward location where the marking device can be repaired or replaced.

(b) Defective rolling equipment which, because of the nature of the defect, can be placed only at the rear of a train for movement to the next forward location at which repairs can be made need not be equipped with marking devices prescribed in this part.

(c) When a portion of a train has derailed, and a portable marking device is not available, the remainder of the train may be moved to the nearest terminal without being equipped with the marking device prescribed in this part.

Appendix A to Part 221—Procedures for Approval of Rear End Marking Devices

As provided in § 221.15 of this part, marking devices must be approved by the Administrator, Approval shall be issued in accordance with the following procedures:

(a) Each submission for approval of a marking device consisting of lighted elements only shall contain the following information:

(1) A detailed description of the device including the type, luminance description, size of lens, manufacturer and catalog number, lamp manufacturer, lamp type and model number, and any auxiliary optics used.

(2) A certification, signed by the chief operating officer of the railroad, that—

(i) The device described in the submission has been tested in accordance with the current "Guidelines for Testing of FRA Rear End Marking Devices," copies of which may be obtained from the Office of Safety, Federal Railroad Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590;

(ii) The results of the tests performed under paragraph (i) of this subsection demonstrate marking device performance in compliance with the standard prescribed in 49 CFR 221.15;

(iii) Detailed test records, including as a minimum the name and address of the testing organizations, the name of the individual in charge of the tests, a narrative description of the test procedures, the number of samples tested, and for each sample tested, the on-axis beam candela, the beam candela at the ±15 degree points in the horizontal plane, the beam candela at the ±5 degree points in the vertical plane, and the chromaticity coordinates, are maintained by the railroad and are available for inspection by the FRA at a designated location which is identified in the submission;

(iv) Marking devices of this type installed in the operating environment shall consist of the same type and model of components as were used in the samples tested for purposes of this approval submission.

(3) Unless otherwise qualified, acknowledgement of the receipt of the submission required by this section shall constitute approval of the device. The FRA reserves the right to review the test records maintained by the railroad, or to test independently any device submitted for approval under these procedures, and to withdraw the approval of such device at any time, after notice and opportunity for oral comment, if its performance in the operating environment fails to substantiate the rest results or to comply with 49 CFR 221.15.

(b)

(1) Each submission for approval of a marking device consisting of non-lighted elements or a combination of lighted and non-lighted elements shall contain the following information:

(i) A detailed description of the device including the type of material, the reflectance factor, the size of the device, and the manufacturer and catalogue number;

(ii) A detailed description of the external light source including the intensity throughout its angle of coverage, and the manufacturer and catalogue number;

(iii) A detailed description of the proposed test procedure to be used to demonstrate marking device compliance with the standard prescribed in 49 CFR 221.15, including any detailed mathematical data reflecting expected performance.

(2) FRA will review the data submitted under subsection (1) of this section, and in those instances in which compliance with 49 CFR 221.15 appears possible from a theoretical analysis, the FRA will authorize and may take part in testing to demonstrate such compliance.

(3) Where authorized testing has demonstrated compliance with 49 CFR 221.15, a railroad shall submit a certification, signed by the chief operating officer of the railroad, that—

(i) The device described in the original submission has been tested in accordance with the procedures described therein;

(ii) The results of the tests performed under paragraph (i) of this subsection demonstrate marking device performance in compliance with the standard prescribed in 49 CFR 221.15;

(iii) Detailed test records, including as a minimum the name and address of the testing organization, the name of the individual in charge of the tests, a narrative description of the test procedure, a description of the external light source used, the number of samples tested, and for each sample tested, the on-axis beam candela, the beam candela at the ±15 degree points in the horizontal plane, the beam candela at the ±15 degree point in the vertical plane, and the chromaticity coordinates, are maintained by the railroad and are available for inspection by the FRA at a designated location which is identified in the submission;

(iv) Marking devices of this type installed in the operating environment and the external light source used to illuminate them shall consist of the same type and model of components as were used in the samples tested for purposes of this approval submission.

(4) Unless otherwise qualified, acknowledgement of the receipt of the submission required by this subsection shall constitute approval of the device. The FRA reserves the right to review the test records maintained by the railroad, or to test independently any device submitted for approval under these procedures, and to disapprove the use of such device at any time if its performance fails to comply with 49 CFR 221.15.

(c) Whenever a railroad elects to use a marking device which has been previously approved by the FRA, and is included in the current list in appendix B to this part, the submission shall contain the following information:

(1) The marking device model designation as it appears in appendix B.

(2) A certification, signed by the chief operating officer of the railroad that—

(i) Marking devices of this type installed in the operating environment shall consist of the same type and model of components as were used in the samples tested for the original approval.

(d) Each submission for approval of a marking device shall be filed with the Office of Standards and Procedures, Office of Safety, Federal Railroad Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590.

[42 FR 62004, Dec. 8, 1977, as amended at 74 FR 25173, May 27, 2009; 85 FR 80569, Dec. 11, 2020]

Appendix B to Part 221—Approved Rear End Marking Devices

part i—approved devices tested for or by manufacturers

1. Manufacturer: Star Headlight & Lantern Co., 168 West Main Street, Honeoye Falls, NY 14472.

   FRA identification Nos. FRA-PLE-STAR-845-F (flasher) and FRA-PLE-STAR-845-C (steady burn).

2. Manufacturer: Julian A. McDermott Corp., 1639 Stephen Street, Ridgewood, Long Island, NY 11227.

   FRA identification Nos. FRA-MEC-MCD-100-C (steady burn), FRA-MEC-MCD-100-F (flasher), FRA-MEC-MCD-300-C (steady burn), and FRA-MEC-MCD-300-F (flasher).

3. Manufacturer: American Electronics, Inc.,[1] 40 Essex Street, Hackensack, NJ 07601.

   FRA identification Nos. FRA-DRGW-YANK-300 (portable strobe), FRA-WP-YANK-301R (flashing), FRA-WP-YANK-305R (flashing), and FRA-WP-YANK-306R (steady burn).

part ii—approved devices tested for or by rail carriers

1. Carrier: Atchison, Topeka & Santa Fe Railway Co., Technical Research & Development Department, 1001 Northeast Atchison Street, Topeka, Kans. 66616.

   Manufacturer: Trans-Lite, Inc., P.O. Box 70, Milford, Conn. 06460.

   FRA identification Nos. FRA-ATSF-TL-875-150, FRA-ATSF-TL-875-60, FRA-ATSF-TL-875-4412, and FRA-ATSF-TL-200.

2. Carrier: Amtrak—National Railroad Passenger Corporation, 400 North Capitol Street NW., Washington, DC 20001.

Manufacturer: (a) Trans-Lite, Inc., P.O. Box 70, Milford, Conn. 06460.

FRA identification Nos. FRA-ATK-TL-3895-1, FRA-ATK-TL-4491-2, FRA-ATK-TL-4491-3, and FRA-ATK-TL-FM-4491-1.

Manufacturer: (b) Luminator Division of Gulfton Industries, Inc., 1200 East Dallas North Parkway, Plano, Tex. 75074.

FRA identification No. FRA-ATK-LUM-0101890-001.

Manufacturer: (c) Whelen Engineering Co., Inc., Deep River, Conn. 06417.

FRA identification No. FRA-ATK-WHE-WERT-12.

[43 FR 36447, Aug. 17, 1978]

[1] NOTE: Yankee Metal Products Corp. previously produced these devices.