

**EXHIBIT A TO PRE-FILED TESTIMONY OF ALEX FUNDERBURG**

Code of Federal Regulations  
Title 49. Transportation  
Subtitle B. Other Regulations Relating to Transportation  
Chapter II. Federal Railroad Administration, Department of Transportation  
Part 222. Use of Locomotive Horns at Public Highway–Rail Grade Crossings

C.F.R. T. 49, Subt. B, Ch. II, Pt. 222, Refs & Annos  
Currentness

Authority: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

**Credits**

Source: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

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Subpart A. General

49 C.F.R. § 222.1

§ 222.1 What is the purpose of this regulation?

Effective: September 18, 2006

[Currentness](#)

The purpose of this part is to provide for safety at public highway-rail grade crossings by requiring locomotive horn use at public highway-rail grade crossings except in quiet zones established and maintained in accordance with this part.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

[Notes of Decisions \(12\)](#)

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49 C.F.R. § 222.3

§ 222.3 What areas does this regulation cover?

Effective: September 18, 2006

[Currentness](#)

(a) This part prescribes standards for sounding locomotive horns when locomotives approach and pass through public highway-rail grade crossings. This part also provides standards for the creation and maintenance of quiet zones within which locomotive horns need not be sounded.

(b) The provisions of this part are separate and severable from one another. If any provision is stayed or determined to be invalid, it is the intent of FRA that the remaining provisions shall continue in effect.

(c) This part does not apply to any Chicago Region highway-rail grade crossing where the railroad was excused from sounding the locomotive horn by the Illinois Commerce Commission, and where the railroad did not sound the horn, as of December 18, 2003.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.5

§ 222.5 What railroads does this regulation apply to?

Effective: September 18, 2006

[Currentness](#)

This part applies to all railroads except:

- (a) A railroad that exclusively operates freight trains only on track which is not part of the general railroad system of transportation;
- (b) Passenger railroads that operate only on track which is not part of the general railroad system of transportation and that operate at a maximum speed of 15 miles per hour over public highway-rail grade crossings; and
- (c) Rapid transit operations within an urban area that are not connected to the general railroad system of transportation. See [49 CFR part 209, appendix A](#) for the definitive statement of the meaning of the preceding sentence.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.7

§ 222.7 What is this regulation's effect on State and local laws and ordinances?

Effective: September 18, 2006

[Currentness](#)

(a) Except as provided in paragraph (b) of this section, issuance of this part preempts any State law, rule, regulation, or order governing the sounding of the locomotive horn at public highway-rail grade crossings, in accordance with [49 U.S.C. 20106](#).

(b) This part does not preempt any State law, rule, regulation, or order governing the sounding of locomotive audible warning devices at any highway-rail grade crossing described in [§ 222.3\(c\)](#) of this part.

(c) Except as provided in [§§ 222.25](#) and [222.27](#), this part does not preempt any State law, rule, regulation, or order governing the sounding of locomotive horns at private highway-rail grade crossings or pedestrian crossings.

(d) Inclusion of SSMs and ASMs in this part or approved subsequent to issuance of this part does not constitute federal preemption of State law regarding whether those measures may be used for traffic control. Individual states may continue to determine whether specific SSMs or ASMs are appropriate traffic control measures for that State, consistent with Federal Highway Administration regulations and the MUTCD. However, except for the SSMs and ASMs implemented at highway-rail grade crossings described in [§ 222.3\(c\)](#) of this part, inclusion of SSMs and ASMs in this part does constitute federal preemption of State law concerning the sounding of the locomotive horn in relation to the use of those measures.

(e) Issuance of this part does not constitute federal preemption of administrative procedures required under State law regarding the modification or installation of engineering improvements at highway-rail grade crossings.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.9

§ 222.9 Definitions.

Effective: September 18, 2006

Currentness

As used in this part—

Administrator means the Administrator of the Federal Railroad Administration or the Administrator's delegate.

Alternative safety measures (ASM) means a safety system or procedure, other than an SSM, established in accordance with this part which is provided by the appropriate traffic control authority or law enforcement authority and which, after individual review and analysis by the Associate Administrator, is determined to be an effective substitute for the locomotive horn in the prevention of highway-rail casualties at specific highway-rail grade crossings. Appendix B to this part lists such measures.

Associate Administrator means the Associate Administrator for Safety of the Federal Railroad Administration or the Associate Administrator's delegate.

Channelization device means a traffic separation system made up of a raised longitudinal channelizer, with vertical panels or tubular delineators, that is placed between opposing highway lanes designed to alert or guide traffic around an obstacle or to direct traffic in a particular direction. “Tubular markers” and “vertical panels”, as described in the MUTCD, are acceptable channelization devices for purposes of this part. Additional design specifications are determined by the standard traffic design specifications used by the governmental entity constructing the channelization device.

Chicago Region means the following six counties in the State of Illinois: Cook, DuPage, Lake, Kane, McHenry and Will.

Crossing Corridor Risk Index means a number reflecting a measure of risk to the motoring public at public grade crossings along a rail corridor, calculated in accordance with the procedures in appendix D of this part, representing the average risk at each public crossing within the corridor. This risk level is determined by averaging among all public crossings within the corridor, the product of the number of predicted collisions per year and the predicted likelihood and severity of casualties resulting from those collisions at each public crossing within the corridor.

Diagnostic team as used in this part, means a group of knowledgeable representatives of parties of interest in a highway-rail grade crossing, organized by the public authority responsible for that crossing, who, using crossing safety management principles, evaluate conditions at a grade crossing to make determinations or recommendations for the public authority concerning safety needs at that crossing.

Effectiveness rate means a number between zero and one which represents the reduction of the likelihood of a collision at a public highway-rail grade crossing as a result of the installation of an SSM or ASM when compared to the same crossing

equipped with conventional active warning systems of flashing lights and gates. Zero effectiveness means that the SSM or ASM provides no reduction in the probability of a collision, while an effectiveness rating of one means that the SSM or ASM is totally effective in eliminating collision risk. Measurements between zero and one reflect the percentage by which the SSM or ASM reduces the probability of a collision.

FRA means the Federal Railroad Administration.

Grade Crossing Inventory Form means the U.S. DOT National Highway–Rail Grade Crossing Inventory Form, FRA Form F6180.71. This form is available through the FRA's Office of Safety, or on FRA's Web site at <http://www.fra.dot.gov>.

Intermediate Partial Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail grade crossings at which State statutes or local ordinances restricted the routine sounding of locomotive horns for a specified period of time during the evening or nighttime hours, or at which locomotive horns did not sound due to formal or informal agreements between the community and the railroad or railroads for a specified period of time during the evening and/or nighttime hours, and at which such statutes, ordinances or agreements were in place and enforced or observed as of December 18, 2003, but not as of October 9, 1996.

Intermediate Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail grade crossings at which State statutes or local ordinances restricted the routine sounding of locomotive horns, or at which locomotive horns did not sound due to formal or informal agreements between the community and the railroad or railroads, and at which such statutes, ordinances or agreements were in place and enforced or observed as of December 18, 2003, but not as of October 9, 1996.

Locomotive means a piece of on-track equipment other than hi-rail, specialized maintenance, or other similar equipment—

- (1) With one or more propelling motors designed for moving other equipment;
- (2) With one or more propelling motors designed to carry freight or passenger traffic or both; or
- (3) Without propelling motors but with one or more control stands.

Locomotive audible warning device means a horn, whistle, siren, or bell affixed to a locomotive that is capable of producing an audible signal.

Locomotive horn means a locomotive air horn, steam whistle, or similar audible warning device (see [49 CFR 229.129](#)) mounted on a locomotive or control cab car. The terms “locomotive horn”, “train whistle”, “locomotive whistle”, and “train horn” are used interchangeably in the railroad industry. For purposes of this part, locomotive horns used in rapid transit operations must be suitable for street usage and/or designed in accordance with State law requirements.

Median means the portion of a divided highway separating the travel ways for traffic in opposite directions.

MUTCD means the Manual on Uniform Traffic Control Devices published by the Federal Highway Administration.

Nationwide Significant Risk Threshold means a number reflecting a measure of risk, calculated on a nationwide basis, which reflects the average level of risk to the motoring public at public highway-rail grade crossings equipped with flashing lights and gates and at which locomotive horns are sounded. For purposes of this rule, a risk level above the Nationwide Significant Risk Threshold represents a significant risk with respect to loss of life or serious personal injury. The Nationwide Significant Risk Threshold is calculated in accordance with the procedures in appendix D of this part. Unless otherwise indicated, references in this part to the Nationwide Significant Risk Threshold reflect its level as last published by FRA in the Federal Register.



New Partial Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail crossings at which locomotive horns are not routinely sounded between the hours of 10 p.m. and 7 a.m., but are routinely sounded during the remaining portion of the day, and which does not qualify as a Pre-Rule Partial Quiet Zone or an Intermediate Partial Quiet Zone.

New Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail grade crossings at which routine sounding of locomotive horns is restricted pursuant to this part and which does not qualify as either a Pre-Rule Quiet Zone or Intermediate Quiet Zone.

Non-traversable curb means a highway curb designed to discourage a motor vehicle from leaving the roadway. Non-traversable curbs are used at locations where highway speeds do not exceed 40 miles per hour and are at least six inches high. Additional design specifications are determined by the standard traffic design specifications used by the governmental entity constructing the curb.

Partial Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail grade crossings at which locomotive horns are not routinely sounded for a specified period of time during the evening and/or nighttime hours.

Pedestrian grade crossing means, for purposes of this part, a separate designed sidewalk or pathway where pedestrians, but not vehicles, cross railroad tracks. Sidewalk crossings contiguous with, or separate but adjacent to, public highway-rail grade crossings are presumed to be part of the public highway-rail grade crossing and are not considered pedestrian grade crossings.

Power-out indicator means a device which is capable of indicating to trains approaching a grade crossing equipped with an active warning system whether commercial electric power is activating the warning system at that crossing. This term includes remote health monitoring of grade crossing warning systems if such monitoring system is equipped to indicate power status.

Pre-existing Modified Supplementary Safety Measure (Pre-existing Modified SSM) means a safety system or procedure that is listed in appendix A to this Part, but is not fully compliant with the standards set forth therein, which was installed before December 18, 2003 by the appropriate traffic control or law enforcement authority responsible for safety at the highway-rail grade crossing. The calculation of risk reduction credit for pre-existing modified SSMs is addressed in appendix B of this part.

Pre-existing Supplementary Safety Measure (Pre-existing SSM) means a safety system or procedure established in accordance with this part before December 18, 2003 which was provided by the appropriate traffic control or law enforcement authority responsible for safety at the highway-rail grade crossing. These safety measures must fully comply with the SSM requirements set forth in appendix A of this part. The calculation of risk reduction credit for qualifying pre-existing SSMs is addressed in appendix A.

Pre-Rule Partial Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail crossings at which State statutes or local ordinances restricted the routine sounding of locomotive horns for a specified period of time during the evening and/or nighttime hours, or at which locomotive horns did not sound due to formal or informal agreements between the community and the railroad or railroads for a specified period of time during the evening and/or nighttime hours, and at which such statutes, ordinances or agreements were in place and enforced or observed as of October 9, 1996 and on December 18, 2003.

Pre-Rule Quiet Zone means a segment of a rail line within which is situated one or a number of consecutive public highway-rail crossings at which State statutes or local ordinances restricted the routine sounding of locomotive horns, or at which locomotive horns did not sound due to formal or informal agreements between the community and the railroad or railroads, and at which such statutes, ordinances or agreements were in place and enforced or observed as of October 9, 1996 and on December 18, 2003.

Private highway-rail grade crossing means, for purposes of this part, a highway-rail grade crossing which is not a public highway-rail grade crossing.

Public authority means the public entity responsible for traffic control or law enforcement at the public highway-rail grade or pedestrian crossing.

Public highway-rail grade crossing means, for purposes of this part, a location where a public highway, road, or street, including associated sidewalks or pathways, crosses one or more railroad tracks at grade. If a public authority maintains the roadway on both sides of the crossing, the crossing is considered a public crossing for purposes of this part.

Quiet zone means a segment of a rail line, within which is situated one or a number of consecutive public highway-rail crossings at which locomotive horns are not routinely sounded.

Quiet Zone Risk Index means a measure of risk to the motoring public which reflects the Crossing Corridor Risk Index for a quiet zone, after adjustment to account for increased risk due to lack of locomotive horn use at the crossings within the quiet zone (if horns are presently sounded at the crossings) and reduced risk due to implementation, if any, of SSMS and ASMS with the quiet zone. The calculation of the Quiet Zone Risk Index, which is explained in appendix D of this part, does not differ for partial quiet zones.

Railroad means any form of non-highway ground transportation that runs on rails or electromagnetic guideways and any entity providing such transportation, including:

- (1) Commuter or other short-haul railroad passenger service in a metropolitan or suburban area and commuter railroad service that was operated by the Consolidated Rail Corporation on January 1, 1979; and
- (2) High speed ground transportation systems that connect metropolitan areas, without regard to whether those systems use new technologies not associated with traditional railroads; but does not include rapid transit operations in an urban area that are not connected to the general railroad system of transportation.

Recognized State agency means, for purposes of this part, a State agency, responsible for highway-rail grade crossing safety or highway and road safety, that has applied for and been approved by FRA as a participant in the quiet zone development process.

Relevant collision means a collision at a highway-rail grade crossing between a train and a motor vehicle, excluding the following: a collision resulting from an activation failure of an active grade crossing warning system; a collision in which there is no driver in the motor vehicle; or a collision in which the highway vehicle struck the side of the train beyond the fourth locomotive unit or rail car. With respect to Pre-Rule Partial Quiet Zones, a relevant collision shall not include collisions that occur during the time period within which the locomotive horn is routinely sounded.

Risk Index With Horns means a measure of risk to the motoring public when locomotive horns are routinely sounded at every public highway-rail grade crossing within a quiet zone. In Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones, the Risk Index With Horns is determined by adjusting the Crossing Corridor Risk Index to account for the decreased risk that would result if locomotive horns were routinely sounded at each public highway-rail grade crossing.

Supplementary safety measure (SSM) means a safety system or procedure established in accordance with this part which is provided by the appropriate traffic control authority or law enforcement authority responsible for safety at the highway-rail grade crossing, that is determined by the Associate Administrator to be an effective substitute for the locomotive horn in the prevention of highway-rail casualties. Appendix A of this part lists such SSMS.

Waiver means a temporary or permanent modification of some or all of the requirements of this part as they apply to a specific party under a specific set of facts. Waiver does not refer to the process of establishing quiet zones or approval of quiet zones in accordance with the provisions of this part.

Wayside horn means a stationary horn located at a highway rail grade crossing, designed to provide, upon the approach of a locomotive or train, audible warning to oncoming motorists of the approach of a train.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. § 222.11

§ 222.11 What are the penalties for failure to comply with this part?

Effective: January 6, 2023

[Currentness](#)

Any person who violates any requirement of this part or causes the violation of any such requirement is subject to a civil penalty of least \$1,052 and not more than \$34,401 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 \$137,603 per violation may be assessed. Each day a violation continues shall constitute a separate offense. Any person who knowingly and willfully falsifies a record or report required by this part may be subject to criminal penalties under [49 U.S.C. 21311](#). FRA's website at [www.fra.dot.gov](http://www.fra.dot.gov) contains a schedule of civil penalty amounts used in connection with this part.

**Credits**

[[72 FR 51197](#), Sept. 6, 2007; [73 FR 79702](#), Dec. 30, 2008; [74 FR 46394](#), Sept. 9, 2009; [77 FR 24420](#), April 24, 2012; [81 FR 43110](#), July 1, 2016; [82 FR 16133](#), April 3, 2017; [82 FR 17765](#), April 13, 2017; [83 FR 60747](#), Nov. 27, 2018; [84 FR 23735](#), May 23, 2019; [84 FR 37073](#), July 31, 2019; [84 FR 57813](#), Oct. 29, 2019; [86 FR 1758](#), Jan. 11, 2021; [86 FR 23254](#), May 3, 2021; [87 FR 15868](#), March 21, 2022; [88 FR 1127](#), Jan. 6, 2023]

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.13

§ 222.13 Who is responsible for compliance?

Effective: September 18, 2006

[Currentness](#)

Any person, including but not limited to a railroad, contractor for a railroad, or a local or State governmental entity that performs any function covered by this part, must perform that function in accordance with this part.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.15

§ 222.15 How does one obtain a waiver of a provision of this regulation?

Effective: September 18, 2006

[Currentness](#)

(a) Except as provided in paragraph (b) of this section, two parties must jointly file a petition (request) for a waiver. They are the railroad owning or controlling operations over the railroad tracks crossing the public highway-rail grade crossing and the public authority which has jurisdiction over the roadway crossing the railroad tracks.

(b) If the railroad and the public authority cannot reach agreement to file a joint petition, either party may file a request for a waiver; however, the filing party must specify in its petition the steps it has taken in an attempt to reach agreement with the other party, and explain why applying the requirement that a joint submission be made in that instance would not be likely to contribute significantly to public safety. If the Associate Administrator determines that applying the requirement for a jointly filed submission to that particular petition would not be likely to significantly contribute to public safety, the Associate Administrator shall waive the requirement for joint submission and accept the petition for consideration. The filing party must also provide the other party with a copy of the petition filed with FRA.

(c) Each petition for waiver must be filed in accordance with 49 CFR part 211.

(d) If the Administrator finds that a waiver of compliance with a provision of this part is in the public interest and consistent with the safety of highway and railroad users, the Administrator may grant the waiver subject to any conditions the Administrator deems necessary.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.17

§ 222.17 How can a State agency become a recognized State agency?

Effective: September 18, 2006

[Currentness](#)

(a) Any State agency responsible for highway-rail grade crossing safety and/or highway and road safety may become a recognized State agency by submitting an application to the Associate Administrator that contains:

- (1) A detailed description of the proposed scope of involvement in the quiet zone development process;
- (2) The name, address, and telephone number of the person(s) who may be contacted to discuss the State agency application; and
- (3) A statement from State agency counsel which affirms that the State agency is authorized to undertake the responsibilities proposed in its application.

(b) The Associate Administrator will approve the application if, in the Associate Administrator's judgment, the proposed scope of State agency involvement will facilitate safe and effective quiet zone development. The Associate Administrator may include in any decision of approval such conditions as he/she deems necessary and appropriate.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

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Subpart B. Use of Locomotive Horns

49 C.F.R. § 222.21

§ 222.21 When must a locomotive horn be used?

Effective: September 18, 2006

[Currentness](#)

(a) Except as provided in this part, the locomotive horn on the lead locomotive of a train, lite locomotive consist, individual locomotive or lead cab car shall be sounded when such locomotive or lead cab car is approaching a public highway-rail grade crossing. Sounding of the locomotive horn with two long blasts, one short blast and one long blast shall be initiated at a location so as to be in accordance with paragraph (b) of this section and shall be repeated or prolonged until the locomotive occupies the crossing. This pattern may be varied as necessary where crossings are spaced closely together.

(b)(1) Railroads to which this part applies shall comply with all the requirements contained in this paragraph (b) beginning on December 15, 2006. On and after June 24, 2005, but prior to December 15, 2006, a railroad shall, at its option, comply with this section or shall sound the locomotive horn in the manner required by State law, or in the absence of State law, in the manner required by railroad operating rules in effect immediately prior to June 24, 2005.

(2) Except as provided in paragraphs (b)(3) and (d) of this section, or when the locomotive horn is defective and the locomotive is being moved for repair consistent with [section 229.9](#) of this chapter, the locomotive horn shall begin to be sounded at least 15 seconds, but no more than 20 seconds, before the locomotive enters the crossing. It shall not constitute a violation of this section if, acting in good faith, a locomotive engineer begins sounding the locomotive horn not more than 25 seconds before the locomotive enters the crossing, if the locomotive engineer is unable to precisely estimate the time of arrival of the train at the crossing for whatever reason.

(3) Trains, locomotive consists and individual locomotives traveling at speeds in excess of 60 mph shall not begin sounding the horn more than one-quarter mile (1,320 feet) in advance of the nearest public highway-rail grade crossing, even if the advance warning provided by the locomotive horn will be less than 15 seconds in duration.

(c) As stated in [§ 222.3\(c\)](#) of this part, this section does not apply to any Chicago Region highway-rail grade crossing at which railroads were excused from sounding the locomotive horn by the Illinois Commerce Commission, and where railroads did not sound the horn, as of December 18, 2003.

(d) Trains, locomotive consists and individual locomotives that have stopped in close proximity to a public highway-rail grade crossing may approach the crossing and sound the locomotive horn for less than 15 seconds before the locomotive enters the highway-rail grade crossing, if the locomotive engineer is able to determine that the public highway-rail grade crossing is not obstructed and either:



(1) The public highway-rail grade crossing is equipped with automatic flashing lights and gates and the gates are fully lowered; or

(2) There are no conflicting highway movements approaching the public highway-rail grade crossing.

(e) Where State law requires the sounding of a locomotive audible warning device other than the locomotive horn at public highway-rail grade crossings, that locomotive audible warning device shall be sounded in accordance with paragraphs (b) and (d) of this section.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

#### Notes of Decisions (125)

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

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Title 49. Transportation

Subtitle B. Other Regulations Relating to Transportation

Chapter II. Federal Railroad Administration, Department of Transportation

Part 222. Use of Locomotive Horns at Public Highway–Rail Grade Crossings (Refs & Annos)

Subpart B. Use of Locomotive Horns

49 C.F.R. § 222.23

§ 222.23 How does this regulation affect sounding of a horn during an emergency or other situations?

Effective: September 18, 2006

[Currentness](#)

(a)(1) Notwithstanding any other provision of this part, a locomotive engineer may sound the locomotive horn to provide a warning to animals, vehicle operators, pedestrians, trespassers or crews on other trains in an emergency situation if, in the locomotive engineer's sole judgment, such action is appropriate in order to prevent imminent injury, death, or property damage.

(2) Notwithstanding any other provision of this part, including provisions addressing the establishment of a quiet zone, limits on the length of time in which a horn may be sounded, or installation of wayside horns within quiet zones, this part does not preclude the sounding of locomotive horns in emergency situations, nor does it impose a legal duty to sound the locomotive horn in such situations.

(b) Nothing in this part restricts the use of the locomotive horn in the following situations:

(1) When a wayside horn is malfunctioning;

(2) When active grade crossing warning devices have malfunctioned and use of the horn is required by one of the following sections of this chapter: §§ [234.105](#), [234.106](#), or [234.107](#);

(3) When grade crossing warning systems are temporarily out of service during inspection, maintenance, or testing of the system; or

(4) When SSMs, modified SSMs or engineering SSMs no longer comply with the requirements set forth in appendix A of this part or the conditions contained within the Associate Administrator's decision to approve the quiet zone in accordance with [section 222.39\(b\)](#) of this part.

(c) Nothing in this part restricts the use of the locomotive horn for purposes other than highway-rail crossing safety (e.g., to announce the approach of a train to roadway workers in accordance with a program adopted under part 214 of this chapter, or where required for other purposes under railroad operating rules).

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

#### Notes of Decisions (9)

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Subpart B. Use of Locomotive Horns

49 C.F.R. § 222.25

§ 222.25 How does this rule affect private highway-rail grade crossings?

Effective: September 18, 2006

[Currentness](#)

This rule does not require the routine sounding of locomotive horns at private highway-rail grade crossings. However, where State law requires the sounding of a locomotive horn at private highway-rail grade crossings, the locomotive horn shall be sounded in accordance with § 222.21 of this part. Where State law requires the sounding of a locomotive audible warning device other than the locomotive horn at private highway-rail grade crossings, that locomotive audible warning device shall be sounded in accordance with §§ 222.21(b) and (d) of this part.

(a) Private highway-rail grade crossings located within the boundaries of a quiet zone must be included in the quiet zone.

(b)(1) Private highway-rail grade crossings that are located in New Quiet Zones or New Partial Quiet Zones and allow access to the public, or which provide access to active industrial or commercial sites, must be evaluated by a diagnostic team and equipped or treated in accordance with the recommendations of such diagnostic team.

(2) The public authority shall provide the State agency responsible for grade crossing safety and all affected railroads an opportunity to participate in the diagnostic team review of private highway-rail grade crossings.

(c)(1) At a minimum, each approach to every private highway-rail grade crossing within a New Quiet Zone or New Partial Quiet Zone shall be marked by a crossbuck and a “STOP” sign, which are compliant with MUTCD standards unless otherwise prescribed by State law, and shall be equipped with advance warning signs in compliance with § 222.35(c) of this part.

(2) At a minimum, each approach to every private highway-rail grade crossing within a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone shall, by June 24, 2008, be marked by a crossbuck and a “STOP” sign, which are compliant with MUTCD standards unless otherwise prescribed by State law, and shall be equipped with advance warning signs in compliance with § 222.35(c) of this part.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Notes of Decisions (4)

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Subpart B. Use of Locomotive Horns

49 C.F.R. § 222.27

§ 222.27 How does this rule affect pedestrian grade crossings?

Effective: September 18, 2006

[Currentness](#)

This rule does not require the routine sounding of locomotive horns at pedestrian grade crossings. However, where State law requires the sounding of a locomotive horn at pedestrian grade crossings, the locomotive horn shall be sounded in accordance with § 222.21 of this part. Where State law requires the sounding of a locomotive audible warning device other than the locomotive horn at pedestrian grade crossings, that locomotive audible warning device shall be sounded in accordance with §§ 222.21(b) and (d) of this part.

- (a) Pedestrian grade crossings located within the boundaries of a quiet zone must be included in the quiet zone.
- (b) Pedestrian grade crossings that are located in New Quiet Zones or New Partial Quiet Zones must be evaluated by a diagnostic team and equipped or treated in accordance with the recommendations of such diagnostic team.
- (c) The public authority shall provide the State agency responsible for grade crossing safety and all affected railroads an opportunity to participate in diagnostic team reviews of pedestrian grade crossings.
- (d) Advance warning signs.
  - (1) Each approach to every pedestrian grade crossing within a New Quiet Zone shall be equipped with a sign that advises the pedestrian that train horns are not sounded at the crossing. Such sign shall conform to the standards contained in the MUTCD.
  - (2) Each approach to every pedestrian grade crossing within a New Partial Quiet Zone shall be equipped with a sign that advises the pedestrian that train horns are not sounded at the crossing or that train horns are not sounded at the crossing between the hours of 10 p.m. and 7 a.m., whichever is applicable. Such sign shall conform to the standards contained in the MUTCD.
  - (3) Each approach to every pedestrian grade crossing within a Pre–Rule Quiet Zone shall be equipped by June 24, 2008 with a sign that advises the pedestrian that train horns are not sounded at the crossing. Such sign shall conform to the standards contained in the MUTCD.

(4) Each approach to every pedestrian grade crossing within a Pre–Rule Partial Quiet Zone shall be equipped by June 24, 2008 with a sign that advises the pedestrian that train horns are not sounded at the crossing or that train horns are not sounded at the crossing for a specified period of time, whichever is applicable. Such sign shall conform to the standards contained in the MUTCD.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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Subpart C. Exceptions to the Use of the Locomotive Horn

49 C.F.R. § 222.31

§ 222.31 [Reserved]

Effective: September 18, 2006

[Currentness](#)

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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Silenced Horns at Individual Crossings

49 C.F.R. § 222.33

§ 222.33 Can locomotive horns be silenced at an individual public  
highway-rail grade crossing which is not within a quiet zone?

Effective: September 18, 2006

[Currentness](#)

(a) A railroad operating over an individual public highway-rail crossing may, at its discretion, cease the sounding of the locomotive horn if the locomotive speed is 15 miles per hour or less and train crew members, or appropriately equipped flaggers, as defined in [49 CFR 234.5](#), flag the crossing to provide warning of approaching trains to motorists.

(b) This section does not apply where active grade crossing warning devices have malfunctioned and use of the horn is required by [49 CFR 234.105](#), [234.106](#), or [234.107](#).

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.35

§ 222.35 What are the minimum requirements for quiet zones?

Effective: September 18, 2006

Currentness

The following requirements apply to quiet zones established in conformity with this part.

(a) Minimum length.

(1)(i) Except as provided in paragraph (a)(1)(ii) of this section, the minimum length of a New Quiet Zone or New Partial Quiet Zone established under this part shall be one-half mile along the length of railroad right-of-way.

(ii) The one-half mile minimum length requirement shall be waived for any New Quiet Zone or New Partial Quiet Zone that is added onto an existing quiet zone, provided there is no public highway-rail grade crossing at which locomotive horns are routinely sounded within one-half mile of the New Quiet Zone or New Partial Quiet Zone.

(iii) New Quiet Zones and New Partial Quiet Zones established along the same rail line within a single political jurisdiction shall be separated by at least one public highway-rail grade crossing, unless a New Quiet Zone or New Partial Quiet Zone is being added onto an existing quiet zone.

(2)(i) The length of a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone may continue unchanged from that which existed as of October 9, 1996.

(ii) With the exception of combining adjacent Pre–Rule Quiet Zones or Pre–Rule Partial Quiet Zones, the addition of any public highway-rail grade crossing to a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone shall end the grandfathered status of that quiet zone and transform it into a New Quiet Zone or New Partial Quiet Zone that must comply with all requirements applicable to New Quiet Zones and New Partial Quiet Zones.

(iii) The deletion of any public highway-rail grade crossing from a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone, with the exception of a grade separation or crossing closure, must result in a quiet zone of at least one-half mile in length in order to retain Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone status.

(3) A quiet zone may include grade crossings on a segment of rail line crossing more than one political jurisdiction.

(b) Active grade crossing warning devices.

(1) Each public highway-rail grade crossing in a New Quiet Zone established under this part must be equipped, no later than the quiet zone implementation date, with active grade crossing warning devices comprising both flashing lights and gates which control traffic over the crossing and that conform to the standards contained in the MUTCD. Such warning devices shall be equipped with constant warning time devices, if reasonably practical, and power-out indicators.

(2) With the exception of public highway-rail grade crossings that will be temporarily closed in accordance with appendix A of this part, each public highway-rail grade crossing in a New Partial Quiet Zone established under this part must be equipped, no later than the quiet zone implementation date, with active grade crossing warning devices comprising both flashing lights and gates which control traffic over the crossing and that conform to the standards contained in the MUTCD. Such warning devices shall be equipped with constant warning time devices, if reasonably practical, and power-out indicators.

(3) Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones must retain, and may upgrade, the grade crossing safety warning system which existed as of December 18, 2003. Any upgrade involving the installation or renewal of an automatic warning device system shall include constant warning time devices, where reasonably practical, and power-out indicators. In no event may the grade crossing safety warning system, which existed as of December 18, 2003, be downgraded. Risk reduction resulting from upgrading to flashing lights or gates may be credited in calculating the Quiet Zone Risk Index.

(c) Advance warning signs.

(1) Each highway approach to every public and private highway-rail grade crossing within a New Quiet Zone shall be equipped with an advance warning sign that advises the motorist that train horns are not sounded at the crossing. Such sign shall conform to the standards contained in the MUTCD.

(2) Each highway approach to every public and private highway-rail grade crossing within a New Partial Quiet Zone shall be equipped with an advance warning sign that advises the motorist that train horns are not sounded at the crossing or that train horns are not sounded at the crossing between the hours of 10 p.m. and 7 a.m., whichever is applicable. Such sign shall conform to the standards contained in the MUTCD.

(3) Each highway approach to every public and private highway-rail grade crossing within a Pre-Rule Quiet Zone shall be equipped by June 24, 2008 with an advance warning sign that advises the motorist that train horns are not sounded at the crossing. Such sign shall conform to the standards contained in the MUTCD.

(4) Each highway approach to every public and private highway-rail grade crossing within a Pre-Rule Partial Quiet Zone shall be equipped by June 24, 2008 with an advance warning sign that advises the motorist that train horns are not sounded at the crossing or that train horns are not sounded at the crossing for a specified period of time, whichever is applicable. Such sign shall conform to the standards contained in the MUTCD.

(5) This paragraph (c) does not apply to public and private highway-rail grade crossings equipped with wayside horns that conform to the requirements set forth in § 222.59 and Appendix E of this part.

(d) Bells.

(1) Each public highway-rail grade crossing in a New Quiet Zone or New Partial Quiet Zone that is subjected to pedestrian traffic and equipped with one or more automatic bells shall retain those bells in working condition.

(2) Each public highway-rail grade crossing in a Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone that is subjected to pedestrian traffic and equipped with one or more automatic bells shall retain those bells in working condition.

(e) All private highway-rail grade crossings within the quiet zone must be treated in accordance with this section and § 222.25 of this part.

(f) All pedestrian grade crossings within a quiet zone must be treated in accordance with § 222.27 of this part.

(g) All public highway-rail grade crossings within the quiet zone must be in compliance with the requirements of the MUTCD.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.37

§ 222.37 Who may establish a quiet zone?

Effective: September 18, 2006

[Currentness](#)

(a) A public authority may establish quiet zones that are consistent with the provisions of this part. If a proposed quiet zone includes public highway-rail grade crossings under the authority and control of more than one public authority (such as a county road and a State highway crossing the railroad tracks at different crossings), both public authorities must agree to establishment of the quiet zone, and must jointly, or by delegation provided to one of the authorities, take such actions as are required by this part.

(b) A public authority may establish quiet zones irrespective of State laws covering the subject matter of sounding or silencing locomotive horns at public highway-rail grade crossings. Nothing in this part, however, is meant to affect any other applicable role of State agencies or the Federal Highway Administration in decisions regarding funding or construction priorities for grade crossing safety projects, selection of traffic control devices, or engineering standards for roadways or traffic control devices.

(c) A State agency may provide administrative and technical services to public authorities by advising them, acting on their behalf, or acting as a central contact point in dealing with FRA; however, any public authority eligible to establish a quiet zone under this part may do so.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

Current through March 2, 2023, [88 FR 13264](#). Some sections may be more current. See credits for details.

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49 C.F.R. § 222.38

§ 222.38 Can a quiet zone be created in the Chicago Region?

Effective: September 18, 2006

[Currentness](#)

Public authorities that are eligible to establish quiet zones under this part may create New Quiet Zones or New Partial Quiet Zones in the Chicago Region, provided the New Quiet Zone or New Partial Quiet Zone does not include any highway-rail grade crossing described in § 222.3(c) of this part.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.39

§ 222.39 How is a quiet zone established?

Effective: September 18, 2006

[Currentness](#)

(a) Public authority designation. This paragraph (a) describes how a quiet zone may be designated by a public authority without the need for formal application to, and approval by, FRA. If a public authority complies with either paragraph (a)(1), (a)(2), or (a)(3) of this section, and complies with the information and notification provisions of § 222.43 of this part, a public authority may designate a quiet zone without the necessity for FRA review and approval.

(1) A quiet zone may be established by implementing, at every public highway-rail grade crossing within the quiet zone, one or more SSMS identified in appendix A of this part.

(2) A quiet zone may be established if the Quiet Zone Risk Index is at, or below, the Nationwide Significant Risk Threshold, as follows:

(i) If the Quiet Zone Risk Index is already at, or below, the Nationwide Significant Risk Threshold without being reduced by implementation of SSMS; or

(ii) If SSMS are implemented which are sufficient to reduce the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Threshold.

(3) A quiet zone may be established if SSMS are implemented which are sufficient to reduce the Quiet Zone Risk Index to a level at or below the Risk Index With Horns.

(b) Public authority application to FRA.

(1) A public authority may apply to the Associate Administrator for approval of a quiet zone that does not meet the standards for public authority designation under paragraph (a) of this section, but in which it is proposed that one or more safety measures be implemented. Such proposed quiet zone may include only ASMS, or a combination of ASMS and SSMS at various crossings within the quiet zone. Note that an engineering improvement which does not fully comply with the

requirements for an SSM under appendix A of this part, is considered to be an ASM. The public authority's application must:

(i) Contain an accurate, complete and current Grade Crossing Inventory Form for each public, private and pedestrian grade crossing within the proposed quiet zone;

(ii) Contain sufficient detail concerning the present safety measures at each public, private and pedestrian grade crossing proposed to be included in the quiet zone to enable the Associate Administrator to evaluate their effectiveness;

(iii) Contain detailed information about diagnostic team reviews of any crossing within the proposed quiet zone, including a membership list and a list of recommendations made by the diagnostic team;

(iv) Contain a statement describing efforts taken by the public authority to address comments submitted by each railroad operating the public highway-rail grade crossings within the quiet zone, the State agency responsible for highway and road safety, and the State agency responsible for grade crossing safety in response to the Notice of Intent. This statement shall also list any objections to the proposed quiet zone that were raised by the railroad(s) and State agencies;

(v) Contain detailed information as to which safety improvements are proposed to be implemented at each public, private, or pedestrian grade crossing within the proposed quiet zone;

(vi) Contain a commitment to implement the proposed safety improvements within the proposed quiet zone; and

(vii) Demonstrate through data and analysis that the proposed implementation of these measures will reduce the Quiet Zone Risk Index to a level at, or below, either the Risk Index With Horns or the Nationwide Significant Risk Threshold.

(2) If the proposed quiet zone contains newly established public or private highway-rail grade crossings, the public authority's application for approval must also include five-year projected vehicle and rail traffic counts for each newly established grade crossing;

(3) 60-day comment period.

(i) The public authority application for FRA approval of the proposed quiet zone shall be provided, by certified mail, return receipt requested, to: all railroads operating over the public highway-rail grade crossings within the quiet zone; the highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone; the landowner having control over any private highway-rail grade crossings within the quiet zone; the State agency responsible for highway and road safety; the State agency responsible for grade crossing safety; and the Associate Administrator.

(ii) Except as provided in paragraph (b)(3)(iii) of this section, any party that receives a copy of the public authority application may submit comments on the public authority application to the Associate Administrator during the 60-day period after the date on which the public authority application was mailed.



(iii) If the public authority application for FRA approval contains written statements from each railroad operating over the public highway-rail grade crossings within the quiet zone, the highway or traffic control authority or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety stating that the railroad, vehicular traffic authority and State agencies have waived their rights to provide comments on the public authority application, the 60-day comment period under paragraph (b)(3)(ii) of this section shall be waived.

(4)(i) After reviewing any comments submitted under paragraph (b)(3)(ii) of this section, the Associate Administrator will approve the quiet zone if, in the Associate Administrator's judgment, the public authority is in compliance with paragraphs (b)(1) and (b)(2) of this section and has satisfactorily demonstrated that the SSMs and ASMs proposed by the public authority result in a Quiet Zone Risk Index that is either:

(A) At or below the Risk Index With Horns or

(B) At or below the Nationwide Significant Risk Threshold.

(ii) The Associate Administrator may include in any decision of approval such conditions as may be necessary to ensure that the proposed safety improvements are effective. If the Associate Administrator does not approve the quiet zone, the Associate Administrator will describe, in the decision, the basis upon which the decision was made. Decisions issued by the Associate Administrator on quiet zone applications shall be provided to all parties listed in paragraph (b)(3)(i) of this section and may be reviewed as provided in §§ 222.57(b) and (d) of this part.

(c) Appendix C of this part contains guidance on how to create a quiet zone.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. § 222.41

§ 222.41 How does this rule affect Pre–Rule Quiet Zones and Pre–Rule Partial Quiet Zones?

Effective: September 18, 2006

Currentness

(a) Pre–Rule Quiet Zones that will be established by automatic approval.

(1) A Pre–Rule Quiet Zone may be established by automatic approval and remain in effect, subject to § 222.51, if the Pre–Rule Quiet Zone is in compliance with §§ 222.35 (minimum requirements for quiet zones) and 222.43 of this part (notice and information requirements) and:

(i) The Pre–Rule Quiet Zone has at every public highway-rail grade crossing within the quiet zone one or more SSMS identified in appendix A of this part; or

(ii) The Quiet Zone Risk Index is at, or below, the Nationwide Significant Risk Threshold, as last published by FRA in the Federal Register; or

(iii) The Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold, as last published by FRA in the Federal Register, but less than twice the Nationwide Significant Risk Threshold and there have been no relevant collisions at any public highway-rail grade crossing within the quiet zone since April 27, 2000 or

(iv) The Quiet Zone Risk Index is at, or below, the Risk Index with Horns.

(2) The public authority shall provide Notice of Quiet Zone Establishment, in accordance with § 222.43 of this part, no later than December 24, 2005.

(b) Pre–Rule Partial Quiet Zones that will be established by automatic approval.

(1) A Pre–Rule Partial Quiet Zone may be established by automatic approval and remain in effect, subject to § 222.51, if the Pre–Rule Partial Quiet Zone is in compliance with §§ 222.35 (minimum requirements for quiet zones) and 222.43 of this part (notice and information requirements) and:

(i) The Pre–Rule Partial Quiet Zone has at every public highway-rail grade crossing within the quiet zone one or more SSMs identified in appendix A of this part; or

(ii) The Quiet Zone Risk Index is at, or below, the Nationwide Significant Risk Threshold, as last published by FRA in the Federal Register; or

(iii) The Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold, as last published by FRA in the Federal Register, but less than twice the Nationwide Significant Risk Threshold and there have been no relevant collisions at any public highway-rail grade crossing within the quiet zone since April 27, 2000. With respect to Pre–Rule Partial Quiet Zones, collisions that occurred during the time period within which the locomotive horn was routinely sounded shall not be considered “relevant collisions”; or

(iv) The Quiet Zone Risk Index is at, or below, the Risk Index with Horns.

(2) The public authority shall provide Notice of Quiet Zone Establishment, in accordance with § 222.43 of this part, no later than December 24, 2005.

(c) Pre–Rule Quiet Zones and Pre–Rule Partial Quiet Zones that will not be established by automatic approval.

(1) If a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone will not be established by automatic approval under paragraph (a) or (b) of this section, existing restrictions may, at the public authority's discretion, remain in place until June 24, 2008, if a Notice of Quiet Zone Continuation is provided in accordance with § 222.43 of this part.

(2)(i) Existing restrictions on the routine sounding of the locomotive horn may remain in place until June 24, 2010, if:

(A) Notice of Intent is mailed, in accordance with § 222.43 of this part, by February 24, 2008; and

(B) A detailed plan for quiet zone improvements is filed with the Associate Administrator by June 24, 2008. The detailed plan shall include a detailed explanation of, and timetable for, the safety improvements that will be implemented at each public, private and pedestrian grade crossing located within the Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone which are necessary to comply with §§ 222.25, 222.27, 222.35 and 222.39 of this part.

(ii) In the event that the safety improvements planned for the quiet zone require approval of FRA under § 222.39(b) of this part, the public authority should apply for such approval prior to December 24, 2007, to ensure that FRA has ample time in which to review such application prior to the end of the extension period.

(3) Locomotive horn restrictions may continue for an additional three years beyond June 24, 2010, if:

(i) Prior to June 24, 2008, the appropriate State agency provides to the Associate Administrator: A comprehensive State-wide implementation plan and funding commitment for implementing improvements at Pre–Rule Quiet Zones and Pre–Rule Partial Quiet Zones which, when implemented, would enable them to qualify as quiet zones under this part; and

(ii) Prior to June 24, 2009, either safety improvements are initiated at a portion of the crossings within the quiet zone, or the appropriate State agency has participated in quiet zone improvements in one or more Pre–Rule Quiet Zones or Pre–Rule Partial Quiet Zones elsewhere within the State.

(4) A public authority may establish a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone upon compliance with:

(A) The Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone requirements contained within §§ 222.25, 222.27, and 222.35 of this part;

(B) The quiet zone standards set forth in § 222.39 of this part; and

(C) All applicable notification and filing requirements contained within this paragraph (c) and § 222.43 of this part.

(d) Pre–Rule Partial Quiet Zones that will be converted to 24–hour New Quiet Zones. A Pre–Rule Partial Quiet Zone may be converted into a 24–hour New Quiet Zone, if:

(1) The quiet zone is brought into compliance with the New Quiet Zone requirements set forth in §§ 222.25, 222.27, and 222.35 of this part;

(2) The quiet zone is brought into compliance with the quiet zone standards set forth in § 222.39 of this part; and

(3) The public authority complies with all applicable notification and filing requirements contained within this paragraph (c) and § 222.43 of this part.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

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Chapter II. Federal Railroad Administration, Department of Transportation

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Subpart C. Exceptions to the Use of the Locomotive Horn

Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.42

§ 222.42 How does this rule affect Intermediate Quiet Zones and Intermediate Partial Quiet Zones?

Effective: September 18, 2006

Currentness

(a)(1) Existing restrictions may, at the public authority's discretion, remain in place within the Intermediate Quiet Zone or Intermediate Partial Quiet Zone until June 24, 2006, if the public authority provides Notice of Quiet Zone Continuation, in accordance with § 222.43 of this part.

(2) A public authority may continue locomotive horn sounding restrictions beyond June 24, 2006 by establishing a New Quiet Zone or New Partial Quiet Zone. A public authority may establish a New Quiet Zone or New Partial Quiet Zone if:

(i) Notice of Intent is mailed, in accordance with § 222.43 of this part;

(ii) The quiet zone complies with the standards set forth in § 222.39 of this part;

(iii) The quiet zone complies with the New Quiet Zone standards set forth in §§ 222.25, 222.27, and 222.35 of this part;

(iv) Notice of Quiet Zone Establishment is mailed, in accordance with § 222.43 of this part, by June 3, 2006.

(b) Conversion of Intermediate Partial Quiet Zones into 24-hour New Quiet Zones. An Intermediate Partial Quiet Zone may be converted into a 24-hour New Quiet Zone if:

(1) Notice of Intent is mailed, in accordance with § 222.43 of this part;

(2) The quiet zone complies with the standards set forth in § 222.39 of this part;

(3) The quiet zone is brought into compliance with the New Quiet Zone requirements set forth in §§ 222.25, 222.27, and 222.35 of this part; and

(4) Notice of Quiet Zone Establishment is mailed, in accordance with § 222.43 of this part, by June 3, 2006.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.43

§ 222.43 What notices and other information are required to create or continue a quiet zone?

Effective: September 18, 2006

Currentness

(a)(1) The public authority shall provide written notice, by certified mail, return receipt requested, of its intent to create a New Quiet Zone or New Partial Quiet Zone under § 222.39 of this part or to implement new SSMs or ASMs within a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone under § 222.41(c) or (d) of this part. Such notification shall be provided to: All railroads operating over the public highway–rail grade crossings within the quiet zone; the State agency responsible for highway and road safety; and the State agency responsible for grade crossing safety.

(2) The public authority shall provide written notification, by certified mail, return receipt requested, to continue a Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone under § 222.41 of this part or to continue an Intermediate Quiet Zone or Intermediate Partial Quiet Zone under § 222.42 of this part. Such notification shall be provided to: All railroads operating over the public highway–rail grade crossings within the quiet zone; the highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone; the landowner having control over any private highway–rail grade crossings within the quiet zone; the State agency responsible for highway and road safety; the State agency responsible for grade crossing safety; and the Associate Administrator.

(3) The public authority shall provided written notice, by certified mail, return receipt requested, of the establishment of a quiet zone under § 222.39 or § 222.41 of this part. Such notification shall be provided to: All railroads operating over the public highway–rail grade crossings within the quiet zone; the highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone; the landowner having control over any private highway–rail grade crossings within the quiet zone; the State agency responsible for highway and road safety; the State agency responsible for grade crossing safety; and the Associate Administrator.

(b) Notice of Intent—

(1) Timing.

(i) The Notice of Intent shall be mailed at least 60 days before the mailing of the Notice of Quiet Zone Establishment, unless the public authority obtains written comments and/or “no-comment” statements from each railroad operating over public highway–rail grade crossings within the quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety, in accordance with paragraph (b)(3)(ii) of this section.

(ii) The Notice of Intent shall be mailed no later than February 24, 2008 for all Pre–Rule Quiet Zones and Pre–Rule Partial Quiet Zones governed by §§ 222.41(c) and (d) of this part, in order to continue existing locomotive horn sounding restrictions beyond June 24, 2008 without interruption.

(2) Required Contents. The Notice of Intent shall include the following:

(i) A list of each public, private, and pedestrian grade crossing within the quiet zone, identified by both U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name, if applicable.

(ii) A statement of the time period within which restrictions would be imposed on the routine sounding of the locomotive horn (i.e., 24 hours or from 10 p.m. until 7 a.m.).

(iii) A brief explanation of the public authority's tentative plans for implementing improvements within the proposed quiet zone.

(iv) The name and title of the person who will act as point of contact during the quiet zone development process and the manner in which that person can be contacted.

(v) A list of the names and addresses of each party that will receive notification in accordance with paragraph (a)(1) of this section.

(3) 60–day comment period.

(i) A party that receives a copy of the public authority's Notice of Intent may submit information or comments about the proposed quiet zone to the public authority during the 60–day period after the date on which the Notice of Intent was mailed.

(ii) The 60–day comment period established under paragraph (b)(3)(i) of this section may terminate when the public authority obtains from each railroad operating over public highway–rail grade crossings within the proposed quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety:

(A) Written comments; or

(B) Written statements that the railroad and State agency do not have any comments on the Notice of Intent (“no-comment statements”).

(c) Notice of Quiet Zone Continuation—

(1) Timing.



(i) In order to prevent the resumption of locomotive horn sounding on June 24, 2005, the Notice of Quiet Zone Continuation under § 222.41 or § 222.42 of this part shall be served no later than June 3, 2005.

(ii) If the Notice of Quiet Zone Continuation under § 222.41 or § 222.42 of this part is mailed after June 3, 2005, the Notice of Quiet Zone Continuation shall state on which date locomotive horn use at grade crossings within the quiet zone shall cease, but in no event shall that date be earlier than 21 days after the date of mailing.

(2) Required contents. The Notice of Quiet Zone Continuation shall include the following:

(i) A list of each public, private, and pedestrian grade crossing within the quiet zone, identified by both U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name.

(ii) A specific reference to the regulatory provision that provides the basis for quiet zone continuation, citing as appropriate, § 222.41 or § 222.42 of this part.

(iii) A statement of the time period within which restrictions on the routine sounding of the locomotive horn will be imposed (i.e., 24 hours or nighttime hours only.)

(iv) An accurate and complete Grade Crossing Inventory Form for each public, private, and pedestrian grade crossing within the quiet zone that reflects conditions currently existing at the crossing.

(v) The name and title of the person responsible for monitoring compliance with the requirements of this part and the manner in which that person can be contacted.

(vi) A list of the names and addresses of each party that will receive notification in accordance with paragraph (a)(2) of this section.

(vii) A statement signed by the chief executive officer of each public authority participating in the continuation of the quiet zone, in which the chief executive officer certifies that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief.

(d) Notice of Quiet Zone Establishment—

(1) Timing.

(i) The Notice of Quiet Zone Establishment shall provide the date upon which the quiet zone will be established, but in no event shall the date be earlier than 21 days after the date of mailing.

(ii) If the public authority was required to provide a Notice of Intent, in accordance with paragraph (a)(1) of this section, the Notice of Quiet Zone Establishment shall not be mailed less than 60 days after the date on which the Notice of Intent was mailed, unless the Notice of Quiet Zone Establishment contains a written statement affirming that written comments and/or “no-comment” statements have been received from each railroad operating over public highway-rail grade crossings within the proposed quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety, in accordance with paragraph (b)(3)(ii) of this section.

(2) Required contents. The Notice of Quiet Zone Establishment shall include the following:

(i) A list of each public, private, and pedestrian grade crossing within the quiet zone, identified by both U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name, if applicable.

(ii) A specific reference to the regulatory provision that provides the basis for quiet zone establishment, citing as appropriate, § 222.39(a)(1), 222.39(a)(2)(i), 222.39(a)(2)(ii), 222.39(a)(3), 222.39(b), § 222.41(a)(1)(i), 222.41(a)(1)(ii), 222.41(a)(1)(iii), 222.41(a)(1)(iv), 222.41(b)(1)(i), 222.41(b)(1)(ii), 222.41(b)(1)(iii), or 222.41(b)(1)(iv) of this part.

(A) If the Notice contains a specific reference to § 222.39(a)(2)(i), 222.39(a)(2)(ii), 222.39(a)(3), § 222.41(a)(1)(ii), 222.41(a)(1)(iii), 222.41(a)(1)(iv), 222.41(b)(1)(ii), 222.41(b)(1)(iii), or 222.41(b)(1)(iv) of this part, it shall include a copy of the FRA Web page that contains the quiet zone data upon which the public authority is relying (<http://www.fra.dot.gov/us/content/1337>).

(B) If the Notice contains a specific reference to § 222.39(b) of this part, it shall include a copy of FRA's notification of approval.

(iii) If a diagnostic team review was required under § 222.25 or § 222.27 of this part, the Notice shall include a statement affirming that the State agency responsible for grade crossing safety and all affected railroads were provided an opportunity to participate in the diagnostic team review. The Notice shall also include a list of recommendations made by the diagnostic team.

(iv) A statement of the time period within which restrictions on the routine sounding of the locomotive horn will be imposed (i.e., 24 hours or from 10 p.m. until 7 a.m.).

(v) An accurate and complete Grade Crossing Inventory Form for each public, private, and pedestrian grade crossing within the quiet zone that reflects the conditions existing at the crossing before any new SSMs or ASMs were implemented.

(vi) An accurate, complete and current Grade Crossing Inventory Form for each public, private, and pedestrian grade crossing within the quiet zone that reflects SSMs and ASMs in place upon establishment of the quiet zone. SSMs and ASMs that cannot be fully described on the Inventory Form shall be separately described.

(vii) If the public authority was required to provide a Notice of Intent, in accordance with paragraph (a)(1) of this section, the Notice of Quiet Zone Establishment shall contain a written statement affirming that the Notice of Intent was provided

in accordance with paragraph (a)(1) of this section. This statement shall also state the date on which the Notice of Intent was mailed.

(viii) If the public authority was required to provide a Notice of Intent, in accordance with paragraph (a)(1) of this section, and the Notice of Intent was mailed less than 60 days before the mailing of the Notice of Quiet Zone Establishment, the Notice of Quiet Zone Establishment shall also contain a written statement affirming that written comments and/or “no-comment” statements have been received from each railroad operating over public highway-rail grade crossings within the proposed quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety, in accordance with paragraph (b)(3)(ii) of this section.

(ix) The name and title of the person responsible for monitoring compliance with the requirements of this part and the manner in which that person can be contacted.

(x) A list of the names and addresses of each party that shall be notified in accordance with paragraph (a)(3) of this section.

(xi) A statement signed by the chief executive officer of each public authority participating in the establishment of the quiet zone, in which the chief executive officer shall certify that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

Current through March 2, 2023, [88 FR 13264](#). Some sections may be more current. See credits for details.

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49 C.F.R. § 222.45

§ 222.45 When is a railroad required to cease routine sounding of locomotive horns at crossings?

Effective: September 18, 2006

[Currentness](#)

On the date specified in a Notice of Quiet Zone Continuation or Notice of Quiet Zone Establishment that complies with the requirements set forth in [§ 222.43](#) of this part, a railroad shall refrain from, or cease, routine sounding of the locomotive horn at all public, private and pedestrian grade crossings identified in the Notice.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.47

§ 222.47 What periodic updates are required?

Effective: September 18, 2006

Currentness

(a) Quiet zones with SSMS at each public crossing. This paragraph addresses quiet zones established pursuant to §§ 222.39(a)(1), 222.41(a)(1)(i), and 222.41(b)(1)(i) (quiet zones with an SSM implemented at every public crossing within the quiet zone) of this part. Between 4 ½ and 5 years after the date of the quiet zone establishment notice provided by the public authority under § 222.43 of this part, and between 4 ½ and 5 years after the last affirmation under this section, the public authority must:

(1) Affirm in writing to the Associate Administrator that the SSMS implemented within the quiet zone continue to conform to the requirements of appendix A of this part. Copies of such affirmation must be provided by certified mail, return receipt requested, to the parties identified in § 222.43(a)(3) of this part; and

(2) Provide to the Associate Administrator an up-to-date, accurate, and complete Grade Crossing Inventory Form for each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone.

(b) Quiet zones which do not have a supplementary safety measure at each public crossing. This paragraph addresses quiet zones established pursuant to §§ 222.39(a)(2) and (a)(3), 222.39(b), 222.41(a)(1)(ii), (a)(1)(iii), and (a)(1)(iv), and 222.41(b)(1)(ii), (b)(1)(iii), and (b)(1)(iv) (quiet zones which do not have an SSM at every public crossing within the quiet zone) of this part. Between 2 ½ and 3 years after the date of the quiet zone establishment notice provided by the public authority under § 222.43 of this part, and between 2 ½ and 3 years after the last affirmation under this section, the public authority must:

(1) Affirm in writing to the Associate Administrator that all SSMS and ASMS implemented within the quiet zone continue to conform to the requirements of Appendices A and B of this part or the terms of the Quiet Zone approval. Copies of such notification must be provided to the parties identified in § 222.43(a)(3) of this part by certified mail, return receipt requested; and

(2) Provide to the Associate Administrator an up-to-date, accurate, and complete Grade Crossing Inventory Form for each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian grade crossing within the quiet zone.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. § 222.49

§ 222.49 Who may file Grade Crossing Inventory Forms?

Effective: September 18, 2006

[Currentness](#)

(a) Grade Crossing Inventory Forms required to be filed with the Associate Administrator in accordance with §§ 222.39, 222.43 and 222.47 of this part may be filed by the public authority if, for any reason, such forms are not timely submitted by the State and railroad.

(b) Within 30 days after receipt of a written request of the public authority, the railroad owning the line of railroad that includes public or private highway rail grade crossings within the quiet zone or proposed quiet zone shall provide to the State and public authority sufficient current information regarding the grade crossing and the railroad's operations over the grade crossing to enable the State and public authority to complete the Grade Crossing Inventory Form.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. § 222.51

§ 222.51 Under what conditions will quiet zone status be terminated?

Effective: September 18, 2006

Currentness

(a) New Quiet Zones—Annual risk review.

(1) FRA will annually calculate the Quiet Zone Risk Index for each quiet zone established pursuant to §§ 222.39(a)(2) and 222.39(b) of this part, and in comparison to the Nationwide Significant Risk Threshold. FRA will notify each public authority of the Quiet Zone Risk Index for the preceding calendar year. FRA will not conduct annual risk reviews for quiet zones established by having an SSM at every public crossing within the quiet zone or for quiet zones established by reducing the Quiet Zone Risk Index to the Risk Index With Horns.

(2) Actions to be taken by public authority to retain quiet zone. If the Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold, the quiet zone will terminate six months from the date of receipt of notification from FRA that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk Threshold, unless the public authority takes the following actions:

(i) Within six months after the date of receipt of notification from FRA that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk Threshold, provide to the Associate Administrator a written commitment to lower the potential risk to the traveling public at the crossings within the quiet zone to a level at, or below, the Nationwide Significant Risk Threshold or the Risk Index With Horns. Included in the commitment statement shall be a discussion of the specific steps to be taken by the public authority to increase safety at the crossings within the quiet zone; and

(ii) Within three years after the date of receipt of notification from FRA that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk Threshold, complete implementation of SSMs or ASMs sufficient to reduce the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Threshold, or the Risk Index With Horns, and receive approval from the Associate Administrator, under the procedures set forth in § 222.39(b) of this part, for continuation of the quiet zone. If the Quiet Zone Risk Index is reduced to the Risk Index With Horns, the quiet zone will be considered to have been established pursuant to § 222.39(a)(3) of this part and subsequent annual risk reviews will not be conducted for that quiet zone.

(iii) Failure to comply with paragraph (a)(2)(i) of this section shall result in the termination of the quiet zone six months after the date of receipt of notification from FRA that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk



Threshold. Failure to comply with paragraph (a)(2)(ii) of this section shall result in the termination of the quiet zone three years after the date of receipt of notification from FRA that the Quiet Zone Risk Index exceeds the Nationwide Significant Risk Threshold.

(b) Pre-Rule Quiet Zones—Annual risk review.

(1) FRA will annually calculate the Quiet Zone Risk Index for each Pre-Rule Quiet Zone and Pre-Rule Partial Quiet Zone that qualified for automatic approval pursuant to §§ 222.41(a)(1)(ii), 222.41(a)(1)(iii), 222.41(b)(1)(ii), and 222.41(b)(1)(iii) of this part. FRA will notify each public authority of the Quiet Zone Risk Index for the preceding calendar year. FRA will also notify each public authority if a relevant collision occurred at a grade crossing within the quiet zone during the preceding calendar year.

(2) Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones authorized under §§ 222.41(a)(1)(ii) and 222.41(b)(1)(ii).

(i) If a Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone originally qualified for automatic approval because the Quiet Zone Risk Index was at, or below, the Nationwide Significant Risk Threshold, the quiet zone may continue unchanged if the Quiet Zone Risk Index as last calculated by the FRA remains at, or below, the Nationwide Significant Risk Threshold.

(ii) If the Quiet Zone Risk Index as last calculated by FRA is above the Nationwide Significant Risk Threshold, but is lower than twice the Nationwide Significant Risk Threshold and no relevant collisions have occurred at crossings within the quiet zone within the five years preceding the annual risk review, then the quiet zone may continue as though it originally received automatic approval pursuant to § 222.41(a)(1)(iii) or 222.41(b)(1)(iii) of this part.

(iii) If the Quiet Zone Risk Index as last calculated by FRA is at, or above, twice the Nationwide Significant Risk Threshold, or if the Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold, but is lower than twice the Nationwide Significant Risk Threshold and a relevant collision occurred at a crossing within the quiet zone within the preceding five calendar years, the quiet zone will terminate six months after the date of receipt of notification from FRA of the Nationwide Significant Risk Threshold level, unless the public authority takes the actions specified in paragraph (b)(4) of this section.

(3) Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones authorized under §§ 222.41(a)(1)(iii) and 222.41(b)(1)(iii).

(i) If a Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone originally qualified for automatic approval because the Quiet Zone Risk Index was above the Nationwide Significant Risk Threshold, but below twice the Nationwide Significant Risk Threshold, and no relevant collisions had occurred within the five-year qualifying period, the quiet zone may continue unchanged if the Quiet Zone Risk Index as last calculated by FRA remains below twice the Nationwide Significant Risk Threshold and no relevant collisions occurred at a public grade crossing within the quiet zone during the preceding calendar year.

(ii) If the Quiet Zone Risk Index as last calculated by FRA is at, or above, twice the Nationwide Significant Risk Threshold, or if a relevant collision occurred at a public grade crossing within the quiet zone during the preceding calendar year, the quiet zone will terminate six months after the date of receipt of notification from FRA that the Quiet Zone Risk Index is at, or exceeds twice the Nationwide Significant Risk Threshold or that a relevant collision occurred at a crossing within the quiet zone, unless the public authority takes the actions specified in paragraph (b)(4) of this section.

(4) Actions to be taken by the public authority to retain a quiet zone.

(i) Within six months after the date of FRA notification, the public authority shall provide to the Associate Administrator a written commitment to lower the potential risk to the traveling public at the crossings within the quiet zone by reducing the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Threshold or the Risk Index With Horns. Included in the commitment statement shall be a discussion of the specific steps to be taken by the public authority to increase safety at the public crossings within the quiet zone; and

(ii) Within three years of the date of FRA notification, the public authority shall complete implementation of SSMS or ASMs sufficient to reduce the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Threshold, or the Risk Index With Horns, and receive approval from the Associate Administrator, under the procedures set forth in § 222.39(b) of this part, for continuation of the quiet zone. If the Quiet Zone Risk Index is reduced to a level that fully compensates for the absence of the train horn, the quiet zone will be considered to have been established pursuant to § 222.39(a)(3) of this part and subsequent annual risk reviews will not be conducted for that quiet zone.

(iii) Failure to comply with paragraph (b)(4)(i) of this section shall result in the termination of the quiet zone six months after the date of receipt of notification from FRA. Failure to comply with paragraph (b)(4)(ii) of this section shall result in the termination of the quiet zone three years after the date of receipt of notification from FRA.

(c) Review at FRA's initiative.

(1) The Associate Administrator may, at any time, review the status of any quiet zone.

(2) If the Associate Administrator makes any of the following preliminary determinations, the Associate Administrator will provide written notice to the public authority, all railroads operating over public highway-rail grade crossings within the quiet zone, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings within the quiet zone, the landowner having control over any private crossings within the quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety and will publish a notice of the determination in the Federal Register:

(i) Safety systems and measures implemented within the quiet zone do not fully compensate for the absence of the locomotive horn due to a substantial increase in risk;

(ii) Documentation relied upon to establish the quiet zone contains substantial errors that may have an adverse impact on public safety; or

(iii) Significant risk with respect to loss of life or serious personal injury exists within the quiet zone.

(3) After providing an opportunity for comment, the Associate Administrator may require that additional safety measures be taken or that the quiet zone be terminated. The Associate Administrator will provide a copy of his/her decision to the

public authority and all parties listed in paragraph (c)(2) of this section. The public authority may appeal the Associate Administrator's decision in accordance with § 222.57(c) of this part. Nothing in this section is intended to limit the Administrator's emergency authority under 49 U.S.C. 20104 and 49 CFR part 211.

(d) Termination by the public authority.

(1) Any public authority that participated in the establishment of a quiet zone under the provisions of this part may, at any time, withdraw its quiet zone status.

(2) A public authority may withdraw its quiet zone status by providing written notice of termination, by certified mail, return receipt requested, to all railroads operating the public highway-rail grade crossings within the quiet zone, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings within the quiet zone, the landowner having control over any private crossings within the quiet zone, the State agency responsible for grade crossing safety, the State agency responsible for highway and road safety, and the Associate Administrator.

(3)(i) If the quiet zone that is being withdrawn was part of a multi-jurisdictional quiet zone, the remaining quiet zones may remain in effect, provided the public authorities responsible for the remaining quiet zones provide statements to the Associate Administrator certifying that the Quiet Zone Risk Index for each remaining quiet zone is at, or below, the Nationwide Significant Risk Threshold or the Risk Index With Horns. These statements shall be provided, no later than six months after the date on which the notice of quiet zone termination was mailed, to all parties listed in paragraph (d)(2) of this section.

(ii) If any remaining quiet zone has a Quiet Zone Risk Index in excess of the Nationwide Significant Risk Threshold and the Risk Index With Horns, the public authority responsible for the quiet zone shall submit a written commitment, to all parties listed in paragraph (d)(2) of this section, to reduce the Quiet Zone Risk Index to a level at or below the Nationwide Significant Risk Threshold or the Risk Index With Horns within three years. Included in the commitment statement shall be a discussion of the specific steps to be taken by the public authority to reduce the Quiet Zone Risk Index. This commitment statement shall be provided to all parties listed in paragraph (d)(2) of this section no later than six months after the date on which the notice of quiet zone termination was mailed.

(iii) Failure to comply with paragraphs (d)(3)(i) and (d)(3)(ii) of this section shall result in the termination of the remaining quiet zone(s) six months after the date on which the notice of quiet zone termination was mailed by the withdrawing public authority in accordance with paragraph (d)(2) of this section.

(iv) Failure to complete implementation of SSMs and/or ASMs to reduce the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Index or the Risk Index With Horns, in accordance with the written commitment provided under paragraph (d)(3)(ii) of this section, shall result in the termination of quiet zone status three years after the date on which the written commitment was received by FRA.

(e) Notification of termination.

(1) In the event that a quiet zone is terminated under the provisions of this section, it shall be the responsibility of the public authority to immediately provide written notification of the termination by certified mail, return receipt requested, to all

railroads operating over public highway-rail grade crossings within the quiet zone, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings within the quiet zone, the landowner having control over any private crossings within the quiet zone, the State agency responsible for grade crossing safety, the State agency responsible for highway and road safety, and the Associate Administrator.

(2) Notwithstanding paragraph (e)(1) of this section, if a quiet zone is terminated under the provisions of this section, FRA shall also provide written notification to all parties listed in paragraph (e)(1) of this section.

(f) Requirement to sound the locomotive horn. Upon receipt of notification of quiet zone termination pursuant to paragraph (e) of this section, railroads shall, within seven days, and in accordance with the provisions of this part, sound the locomotive horn when approaching and passing through every public highway-rail grade crossing within the former quiet zone.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

Current through March 2, 2023, [88 FR 13264](#). Some sections may be more current. See credits for details.

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.53

§ 222.53 What are the requirements for supplementary and alternative safety measures?

Effective: September 18, 2006

[Currentness](#)

(a) Approved SSMS are listed in appendix A of this part. Approved SSMS can qualify for quiet zone risk reduction credit in the manner specified in appendix A of this part.

(b) Additional ASMs that may be included in a request for FRA approval of a quiet zone under [§ 222.39\(b\)](#) of this part are listed in appendix B of this part. Modified SSMS can qualify for quiet zone risk reduction credit in the manner specified in appendix B of this part.

(c) The following do not, individually or in combination, constitute SSMS or ASMs: Standard traffic control device arrangements such as reflectorized crossbucks, STOP signs, flashing lights, or flashing lights with gates that do not completely block travel over the line of railroad, or traffic signals.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. § 222.55

§ 222.55 How are new supplementary or alternative safety measures approved?

Effective: September 18, 2006

[Currentness](#)

(a) The Associate Administrator may add new SSMs and standards to appendix A of this part and new ASMs and standards to appendix B of this part when the Associate Administrator determines that such measures or standards are an effective substitute for the locomotive horn in the prevention of collisions and casualties at public highway-rail grade crossings.

(b) Interested parties may apply for approval from the Associate Administrator to demonstrate proposed new SSMs or ASMs to determine whether they are effective substitutes for the locomotive horn in the prevention of collisions and casualties at public highway-rail grade crossings.

(c) The Associate Administrator may, after notice and opportunity for comment, order railroad carriers operating over a public highway-rail grade crossing or crossings to temporarily cease the sounding of locomotive horns at such crossings to demonstrate proposed new SSMs or ASMs, provided that such proposed new SSMs or ASMs have been subject to prior testing and evaluation. In issuing such order, the Associate Administrator may impose any conditions or limitations on such use of the proposed new SSMs or ASMs which the Associate Administrator deems necessary in order to provide the level of safety at least equivalent to that provided by the locomotive horn.

(d) Upon completion of a demonstration of proposed new SSMs or ASMs, interested parties may apply to the Associate Administrator for their approval. Applications for approval shall be in writing and shall include the following:

- (1) The name and address of the applicant;
- (2) A description and design of the proposed new SSM or ASM;
- (3) A description and results of the demonstration project in which the proposed SSMs or ASMs were tested;
- (4) Estimated costs of the proposed new SSM or ASM; and

(5) Any other information deemed necessary.

(e) If the Associate Administrator is satisfied that the proposed safety measure fully compensates for the absence of the warning provided by the locomotive horn, the Associate Administrator will approve its use as an SSM to be used in the same manner as the measures listed in appendix A of this part, or the Associate Administrator may approve its use as an ASM to be used in the same manner as the measures listed in appendix B of this part. The Associate Administrator may impose any conditions or limitations on use of the SSMs or ASMs which the Associate Administrator deems necessary in order to provide the level of safety at least equivalent to that provided by the locomotive horn.

(f) If the Associate Administrator approves a new SSM or ASM, the Associate Administrator will: Notify the applicant, if any; publish notice of such action in the Federal Register; and add the measure to the list of approved SSMs or ASMs.

(g) A public authority or other interested party may appeal to the Administrator from a decision by the Associate Administrator granting or denying an application for approval of a proposed SSM or ASM, or the conditions or limitations imposed on its use, in accordance with § 222.57 of this part.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. § 222.57

§ 222.57 Can parties seek review of the Associate Administrator's actions?

Effective: September 18, 2006

Currentness

(a) A public authority or other interested party may petition the Administrator for review of any decision by the Associate Administrator granting or denying an application for approval of a new SSM or ASM under § 222.55 of this part. The petition must be filed within 60 days of the decision to be reviewed, specify the grounds for the requested relief, and be served upon the following parties: All railroads ordered to temporarily cease sounding of the locomotive horn over public highway-rail grade crossings for the demonstration of the proposed new SSM or ASM, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings affected by the new SSM/ASM demonstration, the State agency responsible for grade crossing safety, the State agency responsible for highway and road safety, and the Associate Administrator. Unless the Administrator specifically provides otherwise, and gives notice to the petitioner or publishes a notice in the Federal Register, the filing of a petition under this paragraph does not stay the effectiveness of the action sought to be reviewed. The Administrator may reaffirm, modify, or revoke the decision of the Associate Administrator without further proceedings and shall notify the petitioner and other interested parties in writing or by publishing a notice in the Federal Register.

(b) A public authority may request reconsideration of a decision by the Associate Administrator to deny an application by that authority for approval of a quiet zone, or to require additional safety measures, by filing a petition for reconsideration with the Associate Administrator. The petition must specify the grounds for asserting that the Associate Administrator improperly exercised his/her judgment in finding that the proposed SSMs and ASMs would not result in a Quiet Zone Risk Index that would be at or below the Risk Index With Horns or the Nationwide Significant Risk Threshold. The petition shall be filed within 60 days of the date of the decision to be reconsidered and be served upon all parties listed in § 222.39(b)(3) of this part. Upon receipt of a timely and proper petition, the Associate Administrator will provide the petitioner an opportunity to submit additional materials and to request an informal hearing. Upon review of the additional materials and completion of any hearing requested, the Associate Administrator shall issue a decision on the petition that will be administratively final.

(c) A public authority may request reconsideration of a decision by the Associate Administrator to terminate quiet zone status by filing a petition for reconsideration with the Associate Administrator. The petition must be filed within 60 days of the date of the decision, specify the grounds for the requested relief, and be served upon all parties listed in § 222.51(c)(2) of this part. Unless the Associate Administrator publishes a notice in the Federal Register that specifically stays the effectiveness of his/her decision, the filing of a petition under this paragraph will not stay the termination of quiet zone status. Upon receipt of a timely and proper petition, the Associate Administrator will provide the petitioner an opportunity to submit additional materials and to request an informal hearing. Upon review of the additional materials and completion of any hearing requested, the Associate Administrator shall issue a decision on the petition that will be administratively final. A copy of this decision shall be served upon all parties listed in § 222.51(c)(2) of this part.



(d) A railroad may request reconsideration of a decision by the Associate Administrator to approve an application for approval of a proposed quiet zone under § 222.39(b) of this part by filing a petition for reconsideration with the Associate Administrator. The petition must specify the grounds for asserting that the Associate Administrator improperly exercised his/her judgment in finding that the proposed SSMS and ASMs would result in a Quiet Zone Risk Index that would be at or below the Risk Index With Horns or the Nationwide Significant Risk Threshold. The petition shall be filed within 60 days of the date of the decision to be reconsidered, and be served upon all parties listed in § 222.39(b)(3) of this part. Upon receipt of a timely and proper petition, the Associate Administrator will provide the petitioner an opportunity to submit additional materials and to request an informal hearing. Upon review of the additional materials and completion of any hearing requested, the Associate Administrator shall issue a decision that will be administratively final.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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Silenced Horns at Groups of Crossings—Quiet Zones

49 C.F.R. § 222.59

§ 222.59 When may a wayside horn be used?

Effective: September 18, 2006

Currentness

(a)(1) A wayside horn conforming to the requirements of appendix E of this part may be used in lieu of a locomotive horn at any highway-rail grade crossing equipped with an active warning system consisting of, at a minimum, flashing lights and gates.

(2) A wayside horn conforming to the requirements of appendix E of this part may be installed within a quiet zone. For purposes of calculating the length of a quiet zone, the presence of a wayside horn at a highway-grade crossing within a quiet zone shall be considered in the same manner as a grade crossing treated with an SSM. A grade crossing equipped with a wayside horn shall not be considered in calculating the Quiet Zone Risk Index or Crossing Corridor Risk Index.

(b) A public authority installing a wayside horn at a grade crossing within a quiet zone shall provide written notice that a wayside horn is being installed to all railroads operating over the public highway-rail grade crossings within the quiet zone, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossings within the quiet zone, the landowner having control over any private crossings within the quiet zone, the State agency responsible for grade crossing safety, the State agency responsible for highway and road safety, and the Associate Administrator. This notice shall provide the date on which the wayside horn will be operational and identify the grade crossing at which the wayside horn shall be installed by both the U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name. The railroad or public authority shall provide notification of the operational date at least 21 days in advance.

(c) A railroad or public authority installing a wayside horn at a grade crossing located outside a quiet zone shall provide written notice that a wayside horn is being installed to all railroads operating over the public highway-rail grade crossing, the highway or traffic control authority or law enforcement authority having control over vehicular traffic at the crossing, the State agency responsible for grade crossing safety, the State agency responsible for highway and road safety, and the Associate Administrator. This notice shall provide the date on which the wayside horn will be operational and identify the grade crossing at which the wayside horn shall be installed by both the U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name. The railroad or public authority shall provide notification of the operational date at least 21 days in advance.

(d) A railroad operating over a grade crossing equipped with an operational wayside horn installed within a quiet zone pursuant to this section shall cease routine locomotive horn use at the grade crossing. A railroad operating over a grade crossing that is equipped with a wayside horn and located outside of a quiet zone shall cease routine locomotive horn use at the grade crossing on the operational date specified in the notice required by paragraph (c) of this section.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. Pt. 222, App. A

APPENDIX A TO PART 222—APPROVED SUPPLEMENTARY SAFETY MEASURES

Effective: September 18, 2006

[Currentness](#)

A. Requirements and Effectiveness Rates for Supplementary Safety Measures

This section provides a list of approved supplementary safety measures (SSMs) that may be installed at highway-rail grade crossings within quiet zones for risk reduction credit. Each SSM has been assigned an effectiveness rate, which may be subject to adjustment as research and demonstration projects are completed and data is gathered and refined. Sections B and C govern the process through which risk reduction credit for pre-existing SSMs can be determined.

1. Temporary Closure of a Public Highway–Rail Grade Crossing: Close the crossing to highway traffic during designated quiet periods. (This SSM can only be implemented within Partial Quiet Zones.)

Effectiveness: 1.0.

Because an effective closure system prevents vehicle entrance onto the crossing, the probability of a collision with a train at the crossing is zero during the period the crossing is closed. Effectiveness would therefore equal 1. However, analysis should take into consideration that traffic would need to be redistributed among adjacent crossings or grade separations for the purpose of estimating risk following the silencing of train horns, unless the particular “closure” was accomplished by a grade separation.

Required:

- a. The closure system must completely block highway traffic on all approach lanes to the crossing.
- b. The closure system must completely block adjacent pedestrian crossings.
- c. Public highway-rail grade crossings located within New Partial Quiet Zones shall be closed from 10 p.m. until 7 a.m. every day. Public highway-rail grade crossings located within Pre–Rule Partial Quiet Zones may only be closed during one period each 24 hours.
- d. Barricades and signs used for closure of the roadway shall conform to the standards contained in the MUTCD.
- e. Daily activation and deactivation of the system is the responsibility of the public authority responsible for maintenance of the street or highway crossing the railroad tracks. The public authority may provide for third party activation and deactivation; however, the public authority shall remain fully responsible for compliance with the requirements of this part.
- f. The system must be tamper and vandal resistant to the same extent as other traffic control devices.

g. The closure system shall be equipped with a monitoring device that contains an indicator which is visible to the train crew prior to entering the crossing. The indicator shall illuminate whenever the closure device is deployed.

Recommended:

Signs for alternate highway traffic routes should be erected in accordance with MUTCD and State and local standards and should inform pedestrians and motorists that the streets are closed, the period for which they are closed, and that alternate routes must be used.

2. Four-Quadrant Gate System: Install gates at a crossing sufficient to fully block highway traffic from entering the crossing when the gates are lowered, including at least one gate for each direction of traffic on each approach.

Effectiveness:

Four-quadrant gates only, no presence detection: .82.

Four-quadrant gates only, with presence detection: .77.

Four-quadrant gates with traffic of at least 60 feet (with or without presence detection): .92.

Note: The higher effectiveness rate for four-quadrant gates without presence detection does not mean that they are inherently safer than four-quadrant gates with presence detection. Four-quadrant gates with presence detection have been assigned a lower effectiveness rate because motorists may learn to delay the lowering of the exit gates by driving onto the opposing lane of traffic immediately after an opposing car has driven over the grade crossing. Since the presence detection will keep the exit gate raised, other motorists at the crossing who observe this scenario may also be tempted to take advantage of the raised exit gate by driving around the lowered entrance gates, thus increasing the potential for a crossing collision.

It should, however, be noted that there are site-specific circumstances (such as nearby highway intersections that could cause traffic to back up and stop on the grade crossing), under which the use of presence detection would be advisable. For this reason, the various effectiveness rates assigned to four-quadrant gate systems should not be the sole determining factor as to whether presence detection would be advisable. A site-specific study should be performed to determine the best application for each proposed installation. Please refer to paragraphs (f) and (g) for more information.

Required:

Four-quadrant gate systems shall conform to the standards for four-quadrant gates contained in the MUTCD and shall, in addition, comply with the following:

- a. When a train is approaching, all highway approach and exit lanes on both sides of the highway-rail crossing must be spanned by gates, thus denying to the highway user the option of circumventing the conventional approach lane gates by switching into the opposing (oncoming) traffic lane in order to enter the crossing and cross the tracks.
- b. Crossing warning systems must be activated by use of constant warning time devices unless existing conditions at the crossing would prevent the proper operation of the constant warning time devices.
- c. Crossing warning systems must be equipped with power-out indicators.

Note: Requirements b and c apply only to New Quiet Zones or New Partial Quiet Zones. Constant warning time devices and power-out indicators are not required to be added to existing warning systems in Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones. However, if existing automatic warning device systems in Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones are renewed, or new automatic warning device systems are installed, power-out indicators and constant warning time devices are required, unless existing conditions at the crossing would prevent the proper operation of the constant warning devices.

d. The gap between the ends of the entrance and exit gates (on the same side of the railroad tracks) when both are in the fully lowered, or down, position must be less than two feet if no median is present. If the highway approach is equipped with a median or a channelization device between the approach and exit lanes, the lowered gates must reach to within one foot of the median or channelization device, measured horizontally across the road from the end of the lowered gate to the median or channelization device or to a point over the edge of the median or channelization device. The gate and the median top or channelization device do not have to be at the same elevation.

e. “Break-away” channelization devices must be frequently monitored to replace broken elements.

Recommendations for new installations only:

f. Gate timing should be established by a qualified traffic engineer based on site specific determinations. Such determination should consider the need for and timing of a delay in the descent of the exit gates (following descent of the conventional entrance gates). Factors to be considered may include available storage space between the gates that is outside the fouling limits of the track(s) and the possibility that traffic flows may be interrupted as a result of nearby intersections.

g. A determination should be made as to whether it is necessary to provide vehicle presence detectors (VPDs) to open or keep open the exit gates until all vehicles are clear of the crossing. VPD should be installed on one or both sides of the crossing and/or in the surface between the rails closest to the field. Among the factors that should be considered are the presence of intersecting roadways near the crossing, the priority that the traffic crossing the railroad is given at such intersections, the types of traffic control devices at those intersections, and the presence and timing of traffic signal preemption.

h. Highway approaches on one or both sides of the highway-rail crossing may be provided with medians or channelization devices between the opposing lanes. Medians should be defined by a non-traversable curb or traversable curb, or by reflectorized channelization devices, or by both.

i. Remote monitoring (in addition to power-out indicators, which are required) of the status of these crossing systems is preferable. This is especially important in those areas in which qualified railroad signal department personnel are not readily available.

3. Gates With Medians or Channelization Devices: Install medians or channelization devices on both highway approaches to a public highway-rail grade crossing denying to the highway user the option of circumventing the approach lane gates by switching into the opposing (oncoming) traffic lane and driving around the lowered gates to cross the tracks.

Effectiveness:

Channelization devices—.75.

Non-traversable curbs with or without channelization devices—.80.

Required:

- a. Opposing traffic lanes on both highway approaches to the crossing must be separated by either: (1) medians bounded by non-traversable curbs or (2) channelization devices.
- b. Medians or channelization devices must extend at least 100 feet from the gate arm, or if there is an intersection within 100 feet of the gate, the median or channelization device must extend at least 60 feet from the gate arm.
- c. Intersections of two or more streets, or a street and an alley, that are within 60 feet of the gate arm must be closed or relocated. Driveways for private, residential properties (up to four units) within 60 feet of the gate arm are not considered to be intersections under this part and need not be closed. However, consideration should be given to taking steps to ensure that motorists exiting the driveways are not able to move against the flow of traffic to circumvent the purpose of the median and drive around lowered gates. This may be accomplished by the posting of “no left turn” signs or other means of notification. For the purpose of this part, driveways accessing commercial properties are considered to be intersections and are not allowed. It should be noted that if a public authority can not comply with the 60 feet or 100 feet requirement, it may apply to FRA for a quiet zone under § 222.39(b), “Public authority application to FRA.” Such arrangement may qualify for a risk reduction credit in calculation of the Quiet Zone Risk Index. Similarly, if a public authority finds that it is feasible to only provide channelization on one approach to the crossing, it may also apply to FRA for approval under § 222.39(b). Such an arrangement may also qualify for a risk reduction credit in calculation of the Quiet Zone Risk Index.
- d. Crossing warning systems must be activated by use of constant warning time devices unless existing conditions at the crossing would prevent the proper operation of the constant warning time devices.
- e. Crossing warning systems must be equipped with power-out indicators. Note: Requirements d and e apply only to New Quiet Zones and New Partial Quiet Zones. Constant warning time devices and power-out indicators are not required to be added to existing warning systems in Pre-Rule Quiet Zones or Pre-Rule Partial Quiet Zones. However, if existing automatic warning device systems in Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones are renewed, or new automatic warning device systems are installed, power-out indicators and constant warning time devices are required, unless existing conditions at the crossing would prevent the proper operation of the constant warning devices.
- f. The gap between the lowered gate and the curb or channelization device must be one foot or less, measured horizontally across the road from the end of the lowered gate to the curb or channelization device or to a point over the curb edge or channelization device. The gate and the curb top or channelization device do not have to be at the same elevation.
- g. “Break-away” channelization devices must be frequently monitored to replace broken elements.
4. One Way Street with Gate(s): Gate(s) must be installed such that all approaching highway lanes to the public highway-rail grade crossing are completely blocked.

Effectiveness: .82.

Required:

- a. Gate arms on the approach side of the crossing should extend across the road to within one foot of the far edge of the pavement. If a gate is used on each side of the road, the gap between the ends of the gates when both are in the lowered, or down, position must be no more than two feet.
- b. If only one gate is used, the edge of the road opposite the gate mechanism must be configured with a non-traversable curb extending at least 100 feet.

- c. Crossing warning systems must be activated by use of constant warning time devices unless existing conditions at the crossing would prevent the proper operation of the constant warning time devices.
- d. Crossing warning systems must be equipped with power-out indicators.

Note: Requirements c and d apply only to New Quiet Zones and New Partial Quiet Zones. Constant warning time devices and power-out indicators are not required to be added to existing warning systems in Pre–Rule Quiet Zones or Pre–Rule Partial Quiet Zones. If automatic warning systems are, however, installed or renewed in a Pre–Rule Quiet or Pre–Rule Partial Quiet Zone, power-out indicators and constant warning time devices shall be installed, unless existing conditions at the crossing would prevent the proper operation of the constant warning time devices.

5. Permanent Closure of a Public Highway–Rail Grade Crossing: Permanently close the crossing to highway traffic.

Effectiveness: 1.0.

Required:

- a. The closure system must completely block highway traffic from entering the grade crossing.
- b. Barricades and signs used for closure of the roadway shall conform to the standards contained in the MUTCD.
- c. The closure system must be tamper and vandal resistant to the same extent as other traffic control devices.
- d. Since traffic will be redistributed among adjacent crossings, the traffic counts for adjacent crossings shall be increased to reflect the diversion of traffic from the closed crossing.

#### B. Credit for Pre–Existing SSMs in New Quiet Zones and New Partial Quiet Zones

A community that has implemented a pre-existing SSM at a public grade crossing can receive risk reduction credit by inflating the Risk Index With Horns as follows:

1. Calculate the current risk index for the grade crossing that is equipped with a qualifying, pre-existing SSM. (See appendix D. FRA's web-based Quiet Zone Calculator may be used to complete this calculation.)
2. Adjust the risk index by accounting for the increased risk that was avoided by implementing the pre-existing SSM at the public grade crossing. This adjustment can be made by dividing the risk index by one minus the SSM effectiveness rate. (For example, the risk index for a crossing equipped with pre-existing channelization devices would be divided by .25.)
3. Add the current risk indices for the other public grade crossings located within the proposed quiet zone and divide by the number of crossings. The resulting risk index will be the new Risk Index With Horns for the proposed quiet zone.

#### C. Credit for Pre–Existing SSMs in Pre–Rule Quiet Zones and Pre–Rule Partial Quiet Zones

A community that has implemented a pre-existing SSM at a public grade crossing can receive risk reduction credit by inflating the Risk Index With Horns as follows:

1. Calculate the current risk index for the grade crossing that is equipped with a qualifying, pre-existing SSM. (See appendix D. FRA's web-based Quiet Zone Calculator may be used to complete this calculation.)



2. Reduce the current risk index for the grade crossing to reflect the risk reduction that would have been achieved if the locomotive horn was routinely sounded at the crossing. The following list sets forth the estimated risk reduction for certain types of crossings:

- a. Risk indices for passive crossings shall be reduced by 43%;
- b. Risk indices for grade crossings equipped with automatic flashing lights shall be reduced by 27%; and
- c. Risk indices for gated crossings shall be reduced by 40%.

3. Adjust the risk index by accounting for the increased risk that was avoided by implementing the pre-existing SSM at the public grade crossing. This adjustment can be made by dividing the risk index by one minus the SSM effectiveness rate. (For example, the risk index for a crossing equipped with pre-existing channelization devices would be divided by .25.)

4. Adjust the risk indices for the other crossings that are included in the Pre–Rule Quiet Zone or Pre–Rule Partial Quiet Zone by reducing the current risk index to reflect the risk reduction that would have been achieved if the locomotive horn was routinely sounded at each crossing. Please refer to step two for the list of approved risk reduction percentages by crossing type.

5. Add the new risk indices for each crossing located within the proposed quiet zone and divide by the number of crossings. The resulting risk index will be the new Risk Index With Horns for the quiet zone.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

Code of Federal Regulations

Title 49. Transportation

Subtitle B. Other Regulations Relating to Transportation

Chapter II. Federal Railroad Administration, Department of Transportation

Part 222. Use of Locomotive Horns at Public Highway–Rail Grade Crossings (Refs & Annos)

49 C.F.R. Pt. 222, App. B

## APPENDIX B TO PART 222—ALTERNATIVE SAFETY MEASURES

Effective: September 18, 2006

[Currentness](#)

### Introduction

A public authority seeking approval of a quiet zone under public authority application to FRA (§ 222.39(b)) may include ASMs listed in this appendix in its proposal. This appendix addresses three types of ASMs: Modified SSMs, Non–Engineering ASMs, and Engineering ASMs. Modified SSMs are SSMs that do not fully comply with the provisions listed in appendix A. As provided in section I.B. of this appendix, public authorities can obtain risk reduction credit for pre-existing modified SSMs under the final rule. Non-engineering ASMs consist of programmed enforcement, public education and awareness, and photo enforcement programs that may be used to reduce risk within a quiet zone. Engineering ASMs consist of engineering improvements that address underlying geometric conditions, including sight distance, that are the source of increased risk at crossings.

### I. Modified SSMs

#### A. Requirements and Effectiveness Rates for Modified SSMs

1. If there are unique circumstances pertaining to a specific crossing or number of crossings which prevent SSMs from being fully compliant with all of the SSM requirements listed in appendix A, those SSM requirements may be adjusted or revised. In that case, the SSM, as modified by the public authority, will be treated as an ASM under this appendix B, and not as a SSM under appendix A. After reviewing the estimated safety effect of the modified SSM and the proposed quiet zone, FRA will approve the proposed quiet zone if FRA finds that the Quiet Zone Risk Index will be reduced to a level at or below either the Risk Index With Horns or the Nationwide Significant Risk Threshold.
2. The public authority must provide estimates of effectiveness. These estimates may be based upon adjustments from the effectiveness levels provided in appendix A or from actual field data derived from the crossing sites. The specific crossing and applied mitigation measure will be assessed to determine the effectiveness of the modified SSM. FRA will continue to develop and make available effectiveness estimates and data from experience under the final rule.
3. If one or more of the requirements associated with an SSM as listed in appendix A is revised or deleted, data or analysis supporting the revision or deletion must be provided to FRA for review. The following engineering types of ASMs may be included in a proposal for approval by FRA for creation of a quiet zone: (1) Temporary Closure of a Public Highway–Rail Grade Crossing, (2) Four–Quadrant Gate System, (3) Gates With Medians or Channelization Devices, and (4) One–Way Street With Gate(s).

#### B. Credit for Pre–Existing Modified SSMs in New Quiet Zones and New Partial Quiet Zones

A community that has implemented a pre-existing modified SSM at a public grade crossing can receive risk reduction credit by inflating the Risk Index With Horns as follows:

1. Calculate the current risk index for the grade crossing that is equipped with a pre-existing modified SSM. (See appendix D. FRA's web-based Quiet Zone Calculator may be used to complete this calculation.)
2. Obtain FRA approval of the estimated effectiveness rate for the pre-existing modified SSM. Estimated effectiveness rates may be based upon adjustments from the SSM effectiveness rates provided in appendix A or actual field data derived from crossing sites.
3. Adjust the risk index by accounting for the increased risk that was avoided by implementing the pre-existing modified SSM at the public grade crossing. This adjustment can be made by dividing the risk index by one minus the FRA-approved modified SSM effectiveness rate.
4. Add the current risk indices for the other public grade crossings located within the proposed quiet zone and divide by the number of crossings. The resulting risk index will be the new Risk Index With Horns for the proposed quiet zone.

#### C. Credit for Pre-Existing Modified SSMs in Pre-Rule Quiet Zones and Pre-Rule Partial Quiet Zones

A community that has implemented a pre-existing modified SSM at a public grade crossing can receive risk reduction credit by inflating the Risk Index With Horns as follows:

1. Calculate the current risk index for the grade crossing that is equipped with a pre-existing modified SSM. (See appendix D. FRA's web-based Quiet Zone Calculator may be used to complete this calculation.)
2. Reduce the current risk index for the grade crossing to reflect the risk reduction that would have been achieved if the locomotive horn was routinely sounded at the crossing. The following list sets forth the estimated risk reduction for certain types of crossings:
  - a. Risk indices for passive crossings shall be reduced by 43%;
  - b. Risk indices for grade crossings equipped with automatic flashing lights shall be reduced by 27%; and
  - c. Risk indices for gated crossings shall be reduced by 40%.
3. Obtain FRA approval of the estimated effectiveness rate for the pre-existing modified SSM. Estimated effectiveness rates may be based upon adjustments from the SSM effectiveness rates provided in appendix A or actual field data derived from crossing sites.
4. Adjust the risk index by accounting for the increased risk that was avoided by implementing the pre-existing modified SSM at the public grade crossing. This adjustment can be made by dividing the risk index by one minus the FRA-approved modified SSM effectiveness rate.
5. Adjust the risk indices for the other crossings that are included in the Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone by reducing the current risk index to reflect the risk reduction that would have been achieved if the locomotive horn was routinely sounded at each crossing. Please refer to step two for the list of approved risk reduction percentages by crossing type.
6. Add the new risk indices for each crossing located within the proposed quiet zone and divide by the number of crossings. The resulting risk index will be the new Risk Index With Horns for the quiet zone.

## II. Non-Engineering ASMs

A. The following non-engineering ASMs may be used in the creation of a Quiet Zone: (The method for determining the effectiveness of the non-engineering ASMs, the implementation of the quiet zone, subsequent monitoring requirements, and dealing with an unacceptable effectiveness rate is provided in paragraph B.)

1. Programmed Enforcement: Community and law enforcement officials commit to a systematic and measurable crossing monitoring and traffic law enforcement program at the public highway-rail grade crossing, alone or in combination with the Public Education and Awareness ASM.

Required:

- a. Subject to audit, a statistically valid baseline violation rate must be established through automated or systematic manual monitoring or sampling at the subject crossing(s); and
- b. A law enforcement effort must be defined, established and continued along with continual or regular monitoring that provides a statistically valid violation rate that indicates the effectiveness of the law enforcement effort.
- c. The public authority shall retain records pertaining to monitoring and sampling efforts at the grade crossing for a period of not less than five years. These records shall be made available, upon request, to FRA as provided by [49 U.S.C. 20107](#).

2. Public Education and Awareness: Conduct, alone or in combination with programmed law enforcement, a program of public education and awareness directed at motor vehicle drivers, pedestrians and residents near the railroad to emphasize the risks associated with public highway-rail grade crossings and applicable requirements of state and local traffic laws at those crossings.

Requirements:

- a. Subject to audit, a statistically valid baseline violation rate must be established through automated or systematic manual monitoring or sampling at the subject crossing(s); and
- b. A sustainable public education and awareness program must be defined, established and continued along with continual or regular monitoring that provides a statistically valid violation rate that indicates the effectiveness of the public education and awareness effort. This program shall be provided and supported primarily through local resources.
- c. The public authority shall retain records pertaining to monitoring and sampling efforts at the grade crossing for a period of not less than five years. These records shall be made available, upon request, to FRA as provided by [49 U.S.C. 20107](#).

3. Photo Enforcement: This ASM entails automated means of gathering valid photographic or video evidence of traffic law violations at a public highway-rail grade crossing together with follow-through by law enforcement and the judiciary.

Requirements:

- a. State law authorizing use of photographic or video evidence both to bring charges and sustain the burden of proof that a violation of traffic laws concerning public highway-rail grade crossings has occurred, accompanied by commitment of administrative, law enforcement and judicial officers to enforce the law;
- b. Sanction includes sufficient minimum fine (e.g., \$100 for a first offense, “points” toward license suspension or revocation) to deter violations;

- c. Means to reliably detect violations (e.g., loop detectors, video imaging technology);
- d. Photographic or video equipment deployed to capture images sufficient to document the violation (including the face of the driver, if required to charge or convict under state law).

Note: This does not require that each crossing be continually monitored. The objective of this option is deterrence, which may be accomplished by moving photo/video equipment among several crossing locations, as long as the motorist perceives the strong possibility that a violation will lead to sanctions. Each location must appear identical to the motorist, whether or not surveillance equipment is actually placed there at the particular time. Surveillance equipment should be in place and operating at each crossing at least 25 percent of each calendar quarter.

- e. Appropriate integration, testing and maintenance of the system to provide evidence supporting enforcement;
- f. Public awareness efforts designed to reinforce photo enforcement and alert motorists to the absence of train horns;
- g. Subject to audit, a statistically valid baseline violation rate must be established through automated or systematic manual monitoring or sampling at the subject crossing(s); and
- h. A law enforcement effort must be defined, established and continued along with continual or regular monitoring.
- i. The public authority shall retain records pertaining to monitoring and sampling efforts at the grade crossing for a period of not less than five years. These records shall be made available, upon request, to FRA as provided by [49 U.S.C. 20107](#).

B. The effectiveness of an ASM will be determined as follows:

- 1. Establish the quarterly (three months) baseline violation rates for each crossing in the proposed quiet zone.
  - a. A violation in this context refers to a motorist not complying with the automatic warning devices at the crossing (not stopping for the flashing lights and driving over the crossing after the gate arms have started to descend, or driving around the lowered gate arms). A violation does not have to result in a traffic citation for the violation to be considered.
  - b. Violation data may be obtained by any method that can be shown to provide a statistically valid sample. This may include the use of video cameras, other technologies (e.g., inductive loops), or manual observations that capture driver behavior when the automatic warning devices are operating.
  - c. If data is not collected continuously during the quarter, sufficient detail must be provided in the application in order to validate that the methodology used results in a statistically valid sample. FRA recommends that at least a minimum of 600 samples (one sample equals one gate activation) be collected during the baseline and subsequent quarterly sample periods.
  - d. The sampling methodology must take measures to avoid biases in their sampling technique. Potential sampling biases could include: Sampling on certain days of the week but not others; sampling during certain times of the day but not others; sampling immediately after implementation of an ASM while the public is still going through an adjustment period; or applying one sample method for the baseline rate and another for the new rate.
  - e. The baseline violation rate should be expressed as the number of violations per gate activations in order to normalize for unequal gate activations during subsequent data collection periods.

f. All subsequent quarterly violation rate calculations must use the same methodology as stated in this paragraph unless FRA authorizes another methodology.

2. The ASM should then be initiated for each crossing. Train horns are still being sounded during this time period.

3. In the calendar quarter following initiation of the ASM, determine a new quarterly violation rate using the same methodology as in paragraph (1) above.

4. Determine the violation rate reduction for each crossing by the following formula:

Violation rate reduction = (new rate - baseline rate)/baseline rate

5. Determine the effectiveness rate of the ASM for each crossing by multiplying the violation rate reduction by .78.

6. Using the effectiveness rates for each grade crossing treated by an ASM, determine the Quiet Zone Risk Index. If and when the Quiet Zone Risk Index for the proposed quiet zone has been reduced to a level at, or below, the Risk Index With Horns or the Nationwide Significant Risk Threshold, the public authority may apply to FRA for approval of the proposed quiet zone. Upon receiving written approval of the quiet zone application from FRA, the public authority may then proceed with notifications and implementation of the quiet zone.

7. Violation rates must be monitored for the next two calendar quarters and every second quarter thereafter. If, after five years from the implementation of the quiet zone, the violation rate for any quarter has never exceeded the violation rate that was used to determine the effectiveness rate that was approved by FRA, violation rates may be monitored for one quarter per year.

8. In the event that the violation rate is ever greater than the violation rate used to determine the effectiveness rate that was approved by FRA, the public authority may continue the quiet zone for another quarter. If, in the second quarter the violation rate is still greater than the rate used to determine the effectiveness rate that was approved by FRA, a new effectiveness rate must be calculated and the Quiet Zone Risk Index re-calculated using the new effectiveness rate. If the new Quiet Zone Risk Index indicates that the ASM no longer fully compensates for the lack of a train horn, or that the risk level is equal to, or exceeds the National Significant Risk Threshold, the procedures for dealing with unacceptable effectiveness after establishment of a quiet zone should be followed.

### III. Engineering ASMs

A. Engineering improvements, other than modified SSMS, may be used in the creation of a Quiet Zone. These engineering improvements, which will be treated as ASMs under this appendix, may include improvements that address underlying geometric conditions, including sight distance, that are the source of increased risk at the crossing.

B. The effectiveness of an Engineering ASM will be determined as follows:

1. Establish the quarterly (three months) baseline violation rate for the crossing at which the Engineering ASM will be applied.

a. A violation in this context refers to a motorist not complying with the automatic warning devices at the crossing (not stopping for the flashing lights and driving over the crossing after the gate arms have started to descend, or driving around the lowered gate arms). A violation does not have to result in a traffic citation for the violation to be considered.

b. Violation data may be obtained by any method that can be shown to provide a statistically valid sample. This may include the use of video cameras, other technologies (e.g. inductive loops), or manual observations that capture driver behavior when the automatic warning devices are operating.

c. If data is not collected continuously during the quarter, sufficient detail must be provided in the application in order to validate that the methodology used results in a statistically valid sample. FRA recommends that at least a minimum of 600 samples (one sample equals one gate activation) be collected during the baseline and subsequent quarterly sample periods.

d. The sampling methodology must take measures to avoid biases in their sampling technique. Potential sampling biases could include: Sampling on certain days of the week but not others; sampling during certain times of the day but not others; sampling immediately after implementation of an ASM while the public is still going through an adjustment period; or applying one sample method for the baseline rate and another for the new rate.

e. The baseline violation rate should be expressed as the number of violations per gate activations in order to normalize for unequal gate activations during subsequent data collection periods.

f. All subsequent quarterly violation rate calculations must use the same methodology as stated in this paragraph unless FRA authorizes another methodology.

2. The Engineering ASM should be initiated at the crossing. Train horns are still being sounded during this time period.

3. In the calendar quarter following initiation of the Engineering ASM, determine a new quarterly violation rate using the same methodology as in paragraph (1) above.

4. Determine the violation rate reduction for the crossing by the following formula:

Violation rate reduction = (new rate - baseline rate)/baseline rate

5. Using the Engineering ASM effectiveness rate, determine the Quiet Zone Risk Index. If and when the Quiet Zone Risk Index for the proposed quiet zone has been reduced to a risk level at or below the Risk Index With Horns or the Nationwide Significant Risk Threshold, the public authority may apply to FRA for approval of the quiet zone. Upon receiving written approval of the quiet zone application from FRA, the public authority may then proceed with notifications and implementation of the quiet zone.

6. Violation rates must be monitored for the next two calendar quarters. Unless otherwise provided in FRA's notification of quiet zone approval, if the violation rate for these two calendar quarters does not exceed the violation rate that was used to determine the effectiveness rate that was approved by FRA, the public authority can cease violation rate monitoring.

7. In the event that the violation rate over either of the next two calendar quarters are greater than the violation rate used to determine the effectiveness rate that was approved by FRA, the public authority may continue the quiet zone for a third calendar quarter. However, if the third calendar quarter violation rate is also greater than the rate used to determine the effectiveness rate that was approved by FRA, a new effectiveness rate must be calculated and the Quiet Zone Risk Index re-calculated using the new effectiveness rate. If the new Quiet Zone Risk Index exceeds the Risk Index With Horns and the Nationwide Significant Risk Threshold, the procedures for dealing with unacceptable effectiveness after establishment of a quiet zone should be followed.

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

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Code of Federal Regulations  
Title 49. Transportation  
Subtitle B. Other Regulations Relating to Transportation  
Chapter II. Federal Railroad Administration, Department of Transportation  
Part 222. Use of Locomotive Horns at Public Highway–Rail Grade Crossings (Refs & Annos)

49 C.F.R. Pt. 222, App. C

## APPENDIX C TO PART 222—GUIDE TO ESTABLISHING QUIET ZONES

Effective: September 18, 2006

[Currentness](#)

### Introduction

This Guide to Establishing Quiet Zones (Guide) is divided into five sections in order to address the variety of methods and conditions that affect the establishment of quiet zones under this rule.

Section I of the Guide provides an overview of the different ways in which a quiet zone may be established under this rule. This includes a brief discussion on the safety thresholds that must be attained in order for train horns to be silenced and the relative merits of each. It also includes the two general methods that may be used to reduce risk in the proposed quiet zone, and the different impacts that the methods have on the quiet zone implementation process. This section also discusses Partial (e.g. night time only quiet zones) and Intermediate Quiet Zones. An Intermediate Quiet Zone is one where horn restrictions were in place after October 9, 1996, but as of December 18, 2003.

Section II of the Guide provides information on establishing New Quiet Zones. A New Quiet Zone is one at which train horns are currently being sounded at crossings. The Public Authority Designation and Public Authority Application to FRA methods will be discussed in depth.

Section III of the Guide provides information on establishing Pre–Rule Quiet Zones. A Pre–Rule Quiet Zone is one where train horns were not routinely sounded as of October 9, 1996 and December 18, 2003. The differences between New and Pre–Rule Quiet Zones will be explained. Public Authority Designation and Public Authority Application to FRA methods also apply to Pre–Rule Quiet Zones.

Section IV of the Guide deals with the required notifications that must be provided by public authorities when establishing both New and continuing Pre–Rule or Intermediate Quiet Zones.

Section V of the Guide provides examples of quiet zone implementation.

### Section I—Overview

In order for a quiet zone to be qualified under this rule, it must be shown that the lack of the train horn does not present a significant risk with respect to loss of life or serious personal injury, or that the significant risk has been compensated for by other means. The rule provides four basic ways in which a quiet zone may be established. Creation of both New Quiet Zones and Pre–Rule Quiet Zones are based on the same general guidelines; however, there are a number of differences that will be noted in the discussion on Pre–Rule Quiet Zones.

### A. Qualifying Conditions

(1) One of the following four conditions or scenarios must be met in order to show that the lack of the train horn does not present a significant risk, or that the significant risk has been compensated for by other means:

- a. One or more SSMs as identified in appendix A are installed at each public crossing in the quiet zone; or
- b. The Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold without implementation of additional safety measures at any crossings in the quiet zone; or
- c. Additional safety measures are implemented at selected crossings resulting in the Quiet Zone Risk Index being reduced to a level equal to, or less than, the Nationwide Significant Risk Threshold; or
- d. Additional safety measures are taken at selected crossings resulting in the Quiet Zone Risk Index being reduced to at least the level of the Risk Index With Horns (that is, the risk that would exist if train horns were sounded at every public crossing in the quiet zone).

(2) It is important to consider the implications of each approach before deciding which one to use. If a quiet zone is qualified based on reference to the Nationwide Significant Risk Threshold (i.e. the Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold—see the second and third scenarios above), then an annual review will be done by FRA to determine if the Quiet Zone Risk Index remains equal to, or less than, the Nationwide Significant Risk Threshold. Since the Nationwide Significant Risk Threshold and the Quiet Zone Risk Index may change from year to year, there is no guarantee that the quiet zone will remain qualified. The circumstances that cause the disqualification may not be subject to the control of the public authority. For example, an overall national improvement in safety at gated crossings may cause the Nationwide Significant Risk Threshold to fall. This may cause the Quiet Zone Risk Index to become greater than the Nationwide Significant Risk Threshold. If the quiet zone is no longer qualified, then the public authority will have to take additional measures, and may incur additional costs that might not have been budgeted, to once again lower the Quiet Zone Risk Index to at least the Nationwide Significant Risk Threshold in order to retain the quiet zone. Therefore, while the initial cost to implement a quiet zone under the second or third scenario may be lower than the other options, these scenarios also carry a degree of uncertainty about the quiet zone's continued existence.

(3) The use of the first or fourth scenarios reduces the risk level to at least the level that would exist if train horns were sounding in the quiet zone. These methods may have higher initial costs because more safety measures may be necessary in order to achieve the needed risk reduction. Despite the possibility of greater initial costs, there are several benefits to these methods. The installation of SSMs at every crossing will provide the greatest safety benefit of any of the methods that may be used to initiate a quiet zone. With both of these methods (first and fourth scenarios), the public authority will never need to be concerned about the Nationwide Significant Risk Threshold, annual reviews of the Quiet Zone Risk Index, or failing to be qualified because the Quiet Zone Risk Index is higher than the Nationwide Significant Risk Threshold. Public authorities are strongly encouraged to carefully consider both the pros and cons of all of the methods and to choose the method that will best meet the needs of its citizens by providing a safer and quieter community.

(4) For the purposes of this Guide, the term “Risk Index with Horns” is used to represent the level of risk that would exist if train horns were sounded at every public crossing in the proposed quiet zone. If a public authority decides that it would like to fully compensate for the lack of a train horn and not install SSMs at each public crossing in the quiet zone, it must reduce the Quiet Zone Risk Index to a level that is equal to, or less than, the Risk Index with Horns. The Risk Index with Horns is similar to the Nationwide Significant Risk Threshold in that both are targets that must be reached in order to establish a quiet zone under the rule. Quiet zones that are established by reducing the Quiet Zone Risk Index to at least the level of the Nationwide Significant Risk Threshold will be reviewed annually by FRA to determine if they still qualify under the rule to retain the quiet

zone. Quiet zones that are established by reducing the Quiet Zone Risk Index to at least the level of the Risk Index with Horns will not be subject to annual reviews.

(5) The use of FRA's web-based Quiet Zone Calculator is recommended to aid in the decision making process (<http://www.fra.dot.gov/us/content/1337>). The Quiet Zone Calculator will allow the public authority to consider a variety of options in determining which SSMS make the most sense. It will also perform the necessary calculations used to determine the existing risk level and whether enough risk has been mitigated in order to create a quiet zone under this rule.

## B. Risk Reduction Methods

FRA has established two general methods to reduce risk in order to have a quiet zone qualify under this rule. The method chosen impacts the manner in which the quiet zone is implemented.

1. Public Authority Designation (SSMs)—The Public Authority Designation method (§ 222.39(a)) involves the use of SSMS (see appendix A) at some or all crossings within the quiet zone. The use of only SSMS to reduce risk will allow a public authority to designate a quiet zone without approval from FRA. If the public authority installs SSMS at every crossing within the quiet zone, it need not demonstrate that they will reduce the risk sufficiently in order to qualify under the rule since FRA has already assessed the ability of the SSMS to reduce risk. In other words, the Quiet Zone Calculator does not need to be used. However, if only SSMS are installed within the quiet zone, but not at every crossing, the public authority must calculate that sufficient risk reduction will be accomplished by the SSMS. Once the improvements are made, the public authority must make the required notifications (which includes a copy of the report generated by the Quiet Zone Calculator showing that the risk in the quiet zone has been sufficiently reduced), and the quiet zone may be implemented. FRA does not need to approve the plan as it has already assessed the ability of the SSMS to reduce risk.

2. Public Authority Application to FRA (ASMs)—The Public Authority Application to FRA method (§ 222.39(b)) involves the use ASMs (see appendix B). ASMs include modified SSMS that do not fully comply with the provisions found in appendix A (e.g., shorter than required traffic channelization devices), non-engineering ASMs (e.g., programmed law enforcement), and engineering ASMs (i.e., engineering improvements other than modified SSMS). If the use of ASMs (or a combination of ASMs and SSMS) is elected to reduce risk, then the public authority must provide a Notice of Intent and then apply to FRA for approval of the quiet zone. The application must contain sufficient data and analysis to confirm that the proposed ASMs do indeed provide the necessary risk reduction. FRA will review the application and will issue a formal approval if it determines that risk is reduced to a level that is necessary in order to comply with the rule. Once FRA approval has been received and the safety measures fully implemented, the public authority would then provide a Notice of Quiet Zone Establishment and the quiet zone may be implemented. The use of non-engineering ASMs will require continued monitoring and analysis throughout the existence of the quiet zone to ensure that risk continues to be reduced.

3. Calculating Risk Reduction—The following should be noted when calculating risk reductions in association with the establishment of a quiet zone. This information pertains to both New Quiet Zones and Pre-Rule Quiet Zones and to the Public Authority Designation and Public Authority Application to FRA methods.

Crossing closures: If any public crossing within the quiet zone is proposed to be closed, include that crossing when calculating the Risk Index with Horns. The effectiveness of a closure is 1.0. However, be sure to increase the traffic counts at other crossings within the quiet zone and recalculate the risk indices for those crossings that will handle the traffic diverted from the closed crossing. It should be noted that crossing closures that are already in existence are not considered in the risk calculations.

Example: A proposed New Quiet Zone contains four crossings: A, B, C and D streets. A, B and D streets are equipped with flashing lights and gates. C Street is a passive crossbuck crossing with a traffic count of 400 vehicles per day. It is decided that C Street will be closed as part of the project. Compute the risk indices for all four streets. The calculation for C Street will utilize flashing lights and gates as the warning device. Calculate the Crossing Corridor Risk Index by averaging the risk

indices for all four of the crossings. This value will also be the Risk Index with Horns since train horns are currently being sounded. To calculate the Quiet Zone Risk Index, first re-calculate the risk indices for B and D streets by increasing the traffic count for each crossing by 200. (Assume for this example that the public authority decided that the traffic from C Street would be equally divided between B and D streets.) Increase the risk indices for A, B and D streets by 66.8% and divide the sum of the three remaining crossings by four. This is the initial Quiet Zone Risk Index and accounts for the risk reduction caused by closing C Street.

**Grade Separation:** Grade separated crossings that were in existence before the creation of a quiet zone are not included in any of the calculations. However, any public crossings within the quiet zone that are proposed to be treated by grade separation should be treated in the same manner as crossing closures. Highway traffic that may be diverted from other crossings within the quiet zone to the new grade separated crossing should be considered when computing the Quiet Zone Risk Index.

**Example:** A proposed New Quiet Zone contains four crossings: A, B, C and D streets. All streets are equipped with flashing lights and gates. C Street is a busy crossing with a traffic count of 25,000 vehicles per day. It is decided that C Street will be grade separated as part of the project and the existing at-grade crossing closed. Compute the risk indices for all four streets. Calculate the Crossing Corridor Risk Index, which will also be the Risk Index with Horns, by averaging the risk indices for all four of the crossings. To calculate the Quiet Zone Risk Index, first re-calculate the risk indices for B and D streets by decreasing the traffic count for each crossing by 1,200. (The public authority decided that 2,400 motorists will decide to use the grade separation at C Street in order to avoid possible delays caused by passing trains.) Increase the risk indices for A, B and D streets by 66.8% and divide the sum of the three remaining crossings by four. This is the initial Quiet Zone Risk Index and accounts for the risk reduction caused by the grade separation at C Street.

**Pre-Existing SSMs:** Risk reduction credit may be taken by a public authority for a SSM that was previously implemented and is currently in place in the quiet zone. If an existing improvement meets the criteria for a SSM as provided in appendix A, the improvement is deemed a Pre-Existing SSM. Risk reduction credit is obtained by inflating the Risk Index With Horns to show what the risk would have been at the crossing if the pre-existing SSM had not been implemented. Crossing closures and grade separations that occurred prior to the implementation of the quiet zone are not Pre-Existing SSMs and do not receive any risk reduction credit.

**Example 1.** A proposed New Quiet Zone has one crossing that is equipped with flashing lights and gates and has medians 100 feet in length on both sides of the crossing. The medians conform to the requirements in appendix A and qualify as a Pre-Existing SSM. The risk index as calculated for the crossing is 10,000. To calculate the Risk Index With Horns for this crossing, you divide the risk index by difference between one and the effectiveness rate of the pre-existing SSM ( $10,000 \div (1 - 0.75) = 40,000$ ). This value (40,000) would then be averaged in with the risk indices of the other crossings to determine the proposed quiet zone's Risk Index With Horns. To calculate the Quiet Zone Risk Index, the original risk index is increased by 66.8% to account for the additional risk attributed to the absence of the train horn ( $10,000 \times 1.668 = 16,680$ ). This value (16,680) is then averaged into the risk indices of the other crossings that have also been increased by 66.8%. The resulting average is the Quiet Zone Risk Index.

**Example 2.** A Pre-Rule Quiet Zone consisting of four crossings has one crossing that is equipped with flashing lights and gates and has medians 100 feet in length on both sides of the crossing. The medians conform to the requirements in appendix A and qualify as a Pre-Existing SSM. The risk index as calculated for the crossing is 20,000. To calculate the Risk Index With Horns for this crossing, first reduce the risk index by 40 percent to reflect the risk reduction that would be achieved if train horns were routinely sounded ( $20,000 \times 0.6 = 12,000$ ). Next, divide the resulting risk index by difference between one and the effectiveness rate of the pre-existing SSM ( $12,000 \div (1 - 0.75) = 48,000$ ). This value (48,000) would then be averaged with the adjusted risk indices of the other crossings to determine the pre-rule quiet zone's Risk Index With Horns. To calculate the Quiet Zone Risk Index, the original risk index (20,000) is then averaged into the risk original indices of the other crossings. The resulting average is the Quiet Zone Risk Index.

Pre-Existing Modified SSMs: Risk reduction credit may be taken by a public authority for a modified SSM that was previously implemented and is currently in place in the quiet zone. Modified SSMs are Alternative Safety Measures which must be approved by FRA. If an existing improvement is approved by FRA as a modified SSM as provided in appendix B, the improvement is deemed a Pre-Existing Modified SSM. Risk reduction credit is obtained by inflating the Risk Index With Horns to show what the risk would have been at the crossing if the pre-existing SSM had not been implemented. The effectiveness rate of the modified SSM will be determined by FRA. The public authority may provide information to FRA to be used in determining the effectiveness rate of the modified SSM. Once an effectiveness rate has been determined, follow the procedure previously discussed for Pre-Existing SSMs to determine the risk values that will be used in the quiet zone calculations.

Wayside Horns: Crossings with wayside horn installations will be treated as a one for one substitute for the train horn and are not to be included when calculating the Crossing Corridor Risk Index, the Risk Index with Horns or the Quiet Zone Risk Index.

Example: A proposed New Quiet Zone contains four crossings: A, B, C and D streets. All streets are equipped with flashing lights and gates. It is decided that C Street will have a wayside horn installed. Compute the risk indices for A, B and D streets. Since C Street is being treated with a wayside horn, it is not included in the calculation of risk. Calculate the Crossing Corridor Risk Index by averaging the risk indices for A, B and D streets. This value is also the Risk Index with Horns. Increase the risk indices for A, B and D streets by 66.8% and average the results. This is the initial Quiet Zone Risk Index for the proposed quiet zone.

### C. Partial Quiet Zones

A Partial Quiet Zone is a quiet zone in which locomotive horns are not routinely sounded at public crossings for a specified period of time each day. For example, a quiet zone during only the nighttime hours would be a partial quiet zone. Partial quiet zones may be either New or Pre-Rule and follow the same rules as 24 hour quiet zones. New Partial Quiet Zones must be in effect during the hours of 10 p.m. to 7 a.m. All New Partial Quiet Zones must comply with all of the requirements for New Quiet Zones. For example, all public grade crossings that are open during the time that horns are silenced must be equipped with flashing lights and gates that are equipped with constant warning time (where practical) and power out indicators. Risk is calculated in exactly the same manner as for New Quiet Zones. The Quiet Zone Risk Index is calculated for the entire 24-hour period, even though the train horn will only be silenced during the hours of 10 p.m. to 7 a.m.

A Pre-Rule Partial Quiet Zone is a partial quiet zone at which train horns were not sounding as of October 9, 1996 and on December 18, 2003. All of the regulations that pertain to Pre-Rule Quiet Zones also pertain to Pre-Rule Partial Quiet Zones. The Quiet Zone Risk Index is calculated for the entire 24-hour period for Pre-Rule Partial Quiet Zones, even though train horns are only silenced during the nighttime hours. Pre-Rule Partial Quiet Zones may qualify for automatic approval in the same manner as Pre-Rule Quiet Zones with one exception. If the Quiet Zone Risk Index is less than twice the National Significant Risk Threshold, and there have been no relevant collisions during the time period when train horns are silenced, then the Pre-Rule Partial Quiet Zone is automatically qualified. In other words, a relevant collision that occurred during the period of time that train horns were sounded will not disqualify a Pre-Rule Partial Quiet Zone that has a Quiet Zone Risk Index that is less than twice the National Significant Risk Index. Pre-Rule Partial Quiet Zones must provide the notification as required in § 222.43 in order to keep train horns silenced. A Pre-Rule Partial Quiet Zone may be converted to a 24 hour New Quiet Zone by complying with all of the New Quiet Zone regulations.

### D. Intermediate Quiet Zones

An Intermediate Quiet Zone is one where horn restrictions were in place after October 9, 1996, but as of December 18, 2003 (the publication date of the Interim Final Rule). Intermediate Quiet Zones and Intermediate Partial Quiet Zones will be able to keep train horns silenced until June 24, 2006, provided notification is made per § 222.43. This will enable public authority to have additional time to make the improvement necessary to come into compliance with the rule. Intermediate Quiet Zones must

conform to all the requirements for New Quiet Zones by June 24, 2006. Other than having the horn silenced for an additional year, Intermediate Quiet Zones are treated exactly like New Quiet Zones.

## Section II—New Quiet Zones

FRA has established several approaches that may be taken in order to establish a New Quiet Zone under this rule. Please see the preceding discussions on “Qualifying Conditions” and “Risk Reduction Methods” to assist in the decision-making process on which approach to take. This following discussion provides the steps necessary to establish New Quiet Zones and includes both the Public Authority Designation and Public Authority Application to FRA methods. It must be remembered that in a New Quiet Zone all public crossings must be equipped with flashing lights and gates. The requirements are the same regardless of whether a 24-hour or partial quiet zone is being created.

### A. Requirements for Both Public Authority Designation and Public Authority Application

The following steps are necessary when establishing a New Quiet Zone. This information pertains to both the Public Authority Designation and Public Authority Application to FRA methods.

1. The public authority must provide a written Notice of Intent (§ 222.43(a)(1) and § 222.43(b)) to the railroads that operate over the proposed quiet zone, the State agency responsible for highway and road safety and the State agency responsible for grade crossing safety. The purpose of this Notice of Intent is to provide an opportunity for the railroads and the State agencies to provide comments and recommendations to the public authority as it is planning the quiet zone. They will have 60 days to provide these comments to the public authority. The quiet zone cannot be created unless the Notice of Intent has been provided. FRA encourages public authorities to provide the required Notice of Intent early in the quiet zone development process. The railroads and State agencies can provide an expertise that very well may not be present within the public authority. FRA believes that it will be very useful to include these organizations in the planning process. For example, including railroads and State agencies in the inspections of the crossing will help ensure accurate Inventory information for the crossings. The railroad can provide information on whether the flashing lights and gates are equipped with constant warning time and power out indicators. Pedestrian crossings and private crossings with public access, industrial or commercial use that are within the quiet zone must have a diagnostic team review and be treated according to the team's recommendations. Railroads and the State agency responsible for grade crossing safety must be invited to the diagnostic team review. Note: Please see Section IV for details on the requirements of a Notice of Intent.
2. Determine all public, private and pedestrian at-grade crossings that will be included within the quiet zone. Also, determine any existing grade-separated crossings that fall within the quiet zone. Each crossing must be identified by the U.S. DOT Crossing Inventory number and street or highway name. If a crossing does not have a U.S. DOT Crossing Inventory number, then contact FRA's Office of Safety (202-493-6299) for assistance.
3. Ensure that the quiet zone will be at least one-half mile in length. (§ 222.35(a)(1)) If more than one New Quiet Zone or New Partial Quiet Zone will be created within a single political jurisdiction, ensure that each New Quiet Zone or New Partial Quiet Zone will be separated by at least one public highway-rail grade crossing. (§ 222.35(a)(1)(iii))
4. A complete and accurate Grade Crossing Inventory Form must be on file with FRA for all crossings (public, private and pedestrian) within the quiet zone. An inspection of each crossing in the proposed quiet zone should be performed and the Grade Crossing Inventory Forms updated, as necessary, to reflect the current conditions at each crossing.
5. Every public crossing within the quiet zone must be equipped with active warning devices comprising both flashing lights and gates. The warning devices must be equipped with power out indicators. Constant warning time circuitry is also required unless existing conditions would prevent the proper operation of the constant warning time circuitry. FRA recommends that these automatic warning devices also be equipped with at least one bell to provide an audible warning to pedestrians. If the warning

devices are already equipped with a bell (or bells), the bells may not be removed or deactivated. The plans for the quiet zone may be made assuming that flashing lights and gates are at all public crossings; however the quiet zone may not be implemented until all public crossings are actually equipped with the flashing lights and gates. (§§ 222.35(b)(1) and 222.35(b)(2))

6. Private crossings must have cross-bucks and “STOP” signs on both approaches to the crossing. Private crossings with public access, industrial or commercial use must have a diagnostic team review and be treated according to the team's recommendations. The public authority must invite the State agency responsible for grade crossing safety and all affected railroads to participate in the diagnostic review. (§§ 222.25(b) and (c))

7. Each highway approach to every public and private crossing must have an advance warning sign (in accordance with the MUTCD) that advises motorists that train horns are not sounded at the crossing, unless the public or private crossing is equipped with a wayside horn. (§ 222.35(c))

8. Each pedestrian crossing must be reviewed by a diagnostic team and equipped or treated in accordance with the recommendation of the diagnostic team. The public authority must invite the State agency responsible for grade crossing safety and all affected railroads to participate in the diagnostic review. At a minimum, each approach to every pedestrian crossing must be equipped with a sign that conforms to the MUTCD and advises pedestrians that train horns are not sounded at the crossing. (§ 222.27)

#### B. New Quiet Zones—Public Authority Designation

Once again it should be remembered that all public crossings must be equipped with automatic warning devices consisting of flashing lights and gates in accordance with § 222.35(b). In addition, one of the following conditions must be met in order for a public authority to designate a new quiet zone without FRA approval:

- a. One or more SSMs as identified in appendix A are installed at each public crossing in the quiet zone (§ 222.39(a)(1)); or
- b. The Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold without SSMs installed at any crossings in the quiet zone (§ 222.39(a)(2)(i)); or
- c. SSMs are installed at selected crossings, resulting in the Quiet Zone Risk Index being reduced to a level equal to, or less than, the Nationwide Significant Risk Threshold (§ 222.39(a)(2)(ii)); or
- d. SSMs are installed at selected crossings, resulting in the Quiet Zone Risk Index being reduced to a level of risk that would exist if the horn were sounded at every crossing in the quiet zone (i.e., the Risk Index with Horns) (§ 222.39(a)(3)).

Steps necessary to establish a New Quiet Zone using the Public Authority Application to FRA method:

1. If one or more SSMs as identified in appendix A are installed at each public crossing in the quiet zone, the requirements for a public authority designation quiet zone will have been met. It is not necessary for the same SSM to be used at each crossing. However, before any improvements are implemented, the public authority must provide a Notice of Intent, which will trigger a 60-day comment period. During the 60-day comment period, railroads operating within the proposed quiet zone and State agencies responsible for grade crossing, highway and road safety may submit comments on the proposed quiet zone improvements to the public authority. Once the necessary improvements have been installed, Notice of Quiet Zone Establishment shall be provided and the quiet zone implemented in accordance with the rule. If SSMs are not installed at each public crossing, proceed on to Step 2 and use the risk reduction method.

2. To begin, calculate the risk index for each public crossing within the quiet zone (See appendix D. FRA's web-based Quiet Zone Calculator may be used to do this calculation). If flashing lights and gates have to be installed at any public crossings,

calculate the risk indices for such crossings as if lights and gates were installed. (Note: Flashing lights and gates must be installed prior to initiation of the quiet zone.) If the Inventory record does not reflect the actual conditions at the crossing, be sure to use the conditions that currently exist when calculating the risk index. Note: Private crossings and pedestrian crossings are not included when computing the risk for the proposed quiet zone.

3. The Crossing Corridor Risk Index is then calculated by averaging the risk index for each public crossing within the proposed quiet zone. Since train horns are routinely being sounded for crossings in the proposed quiet zone, this value is also the Risk Index with Horns.

4. In order to calculate the initial Quiet Zone Risk Index, first adjust the risk index at each public crossing to account for the increased risk due to the absence of the train horn. The absence of the horn is reflected by an increased risk index of 66.8% at gated crossings. The initial Quiet Zone Risk Index is then calculated by averaging the increased risk index for each public crossing within the proposed quiet zone. At this point the Quiet Zone Risk Index will equal the Risk Index with Horns multiplied by 1.668.

5. Compare the Quiet Zone Risk Index to the Nationwide Significant Risk Threshold. If the Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold, then the public authority may decide to designate a quiet zone and provide the Notice of Intent, followed by the Notice of Quiet Zone Establishment. With this approach, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk Index. If the Quiet Zone Risk Index for the quiet zone rises above the Nationwide Significant Risk Threshold, FRA will notify the Public Authority so that appropriate measures can be taken. (See § 222.51(a)).

6. If the Quiet Zone Risk Index is greater than the Nationwide Significant Risk Threshold, then select an appropriate SSM for a crossing. Reduce the inflated risk index calculated in Step 4 for that crossing by the effectiveness rate of the chosen SSM. (See appendix A for the effectiveness rates for the various SSMs). Recalculate the Quiet Zone Risk Index by averaging the revised inflated risk index with the inflated risk indices for the other public crossings. If this new Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold, the quiet zone would qualify for public authority designation. If the Quiet Zone Risk Index is still higher than the Nationwide Significant Risk Threshold, treat another public crossing with an appropriate SSM and repeat the process until the Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold. Once this result is obtained, the quiet zone will qualify for establishment by public authority designation. Early in the quiet zone development process, a Notice of Intent should be provided by the public authority, which will trigger a 60-day comment period. During this 60-day comment period, railroads operating within the proposed quiet zone and State agencies responsible for grade crossing, highway and road safety may provide comments on the proposed quiet zone improvements described in the Notice of Intent. Once all the necessary safety improvements have been implemented, Notice of Quiet Zone Establishment must be provided. With this approach, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk Index. If the Quiet Zone Risk Index for the quiet zone rises above the Nationwide Significant Risk Threshold, FRA will notify the public authority so that appropriate measures can be taken. (See § 222.51(a)).

7. If the public authority wishes to reduce the risk of the quiet zone to the level of risk that would exist if the horn were sounded at every crossing within the quiet zone, the public authority should calculate the initial Quiet Zone Risk Index as in Step 4. The objective is to now reduce the Quiet Zone Risk Index to the level of the Risk Index with Horns by adding SSMs at the crossings. The difference between the Quiet Zone Risk Index and the Risk Index with Horns is the amount of risk that will have to be reduced in order to fully compensate for lack of the train horn. The use of the Quiet Zone Calculator will aid in determining which SSMs may be used to reduce the risk sufficiently. Follow the procedure stated in Step 6, except that the Quiet Zone Risk Index must be equal to, or less than, the Risk Index with Horns instead of the Nationwide Significant Risk Threshold. Once this risk level is attained, the quiet zone will qualify for establishment by public authority designation. Early in the quiet zone development process, a Notice of Intent should be provided by the public authority, which will trigger a 60-day comment period. During this 60-day comment period, railroads operating within the proposed quiet zone and State agencies responsible for grade crossing, highway and road safety may provide comments on the proposed quiet zone improvements described in



the Notice of Intent. Once all the necessary safety improvements have been implemented, Notice of Quiet Zone Establishment must be provided. One important distinction with this option is that the public authority will never need to be concerned with the Nationwide Significant Risk Threshold or the Quiet Zone Risk Index. The rule's intent is to make the quiet zone as safe as if the train horns were sounding. If this is accomplished, the public authority may designate the crossings as a quiet zone and need not be concerned with possible fluctuations in the Nationwide Significant Risk Threshold or annual risk reviews.

### C. New Quiet Zones—Public Authority Application to FRA

A public authority must apply to FRA for approval of a quiet zone under three conditions. First, if any of the SSMs selected for the quiet zone do not fully conform to the design standards set forth in appendix A. These are referred to as modified SSMs in appendix B. Second, when programmed law enforcement, public education and awareness programs, or photo enforcement is used to reduce risk in the quiet zone, these are referred to as non-engineering ASMs in appendix B. It should be remembered that non-engineering ASMs will require periodic monitoring as long as the quiet zone is in existence. Third, when engineering ASMs are used to reduce risk. Please see appendix B for detailed explanations of ASMs and the periodic monitoring of non-engineering ASMs.

The public authority is strongly encouraged to submit the application to FRA for review and comment before the appendix B treatments are initiated. This will enable FRA to provide comments on the proposed ASMs to help guide the application process. If non-engineering ASMs or engineering ASMs are proposed, the public authority also may wish to confirm with FRA that the methodology it plans to use to determine the effectiveness rates of the proposed ASMs is appropriate. A quiet zone that utilizes a combination of SSMs from appendix A and ASMs from appendix B must make a Public Authority Application to FRA. A complete and thoroughly documented application will help to expedite the approval process.

The following discussion is meant to provide guidance on the steps necessary to establish a new quiet zone using the Public Authority Application to FRA method. Once again it should be remembered that all public crossings must be equipped with automatic warning devices consisting of flashing lights and gates in accordance with § 222.35(b).

1. Gather the information previously mentioned in the section on “Requirements for both Public Authority Designation and Public Authority Application.”
2. Calculate the risk index for each public crossing as directed in Step 2—Public Authority Designation.
3. Calculate the Crossing Corridor Risk Index, which is also the Risk Index with Horns, as directed in Step 3—Public Authority Designation.
4. Calculate the initial Quiet Zone Risk Index as directed in Step 4—Public Authority Designation.
5. Begin to reduce the Quiet Zone Risk Index through the use of ASMs and SSMs. Follow the procedure provided in Step 6—Public Authority Designation until the Quiet Zone Risk Index has been reduced to equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns. (Remember that the public authority may choose which level of risk reduction is the most appropriate for its community.) Effectiveness rates for ASMs should be provided as follows:
  - a. Modified SSMs—Estimates of effectiveness for modified SSMs may be based upon adjustments from the effectiveness rates provided in appendix A or from actual field data derived from the crossing sites. The application must provide an estimated effectiveness rate and the rationale for the estimate.
  - b. Non-engineering ASMs—Effectiveness rates are to be calculated in accordance with the provisions of appendix B, paragraph II B.

c. Engineering ASMs—Effectiveness rates are to be calculated in accordance with the provisions of appendix B, paragraph III B.

6. Once it has been determined through analysis that the Quiet Zone Risk Index will be reduced to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns, the public authority must provide a Notice of Intent. The mailing of the Notice of Intent will trigger a 60-day comment period, during which railroads operating within the proposed quiet zone and State agencies responsible for grade crossing, highway and road safety may provide comments on the proposed quiet zone improvements. After reviewing any comments received, the public authority may make application to FRA for a quiet zone under § 222.39(b). FRA will review the application to determine the appropriateness of the proposed effectiveness rates, and whether or not the proposed application demonstrates that the quiet zone meets the requirements of the rule. When submitting the application to FRA for approval, the application must contain the following (§ 222.39(b)(1)):

a. Sufficient detail concerning the present safety measures at all crossings within the proposed quiet zone. This includes current and accurate crossing inventory forms for each public, private, and pedestrian grade crossing.

b. Detailed information on the safety improvements that are proposed to be implemented at public, private and pedestrian grade crossings within the proposed quiet zone.

c. Membership and recommendations of the diagnostic team (if any) that reviewed the proposed quiet zone.

d. Statement of efforts taken to address comments submitted by affected railroads, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety, including a list of any objections raised by the railroads or State agencies.

e. A commitment to implement the proposed safety measures.

f. Demonstrate through data and analysis that the proposed measures will reduce the Quiet Zone Risk Index to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns.

g. A copy of the application must be provided to: All railroads operating over the public highway-rail grade crossings within the quiet zone; the highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone; the landowner having control over any private crossings within the quiet zone; the State agency responsible for highway and road safety; the State agency responsible for grade crossing safety; and the Associate Administrator. (§ 222.39(b)(3))

7. Upon receiving written approval from FRA of the quiet zone application, the public authority may then provide the Notice of Quiet Zone Establishment and implement the quiet zone. If the quiet zone is qualified by reducing the Quiet Zone Risk Index to a level at, or below, the Nationwide Significant Risk Threshold, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk Index. If the Quiet Zone Risk Index for the quiet zone rises above the Nationwide Significant Risk Threshold, FRA will notify the public authority so that appropriate measures can be taken. (See § 222.51(a))

Note: The provisions stated above for crossing closures, grade separations, wayside horns, pre-existing SSMs and pre-existing modified SSMs apply for Public Authority Application to FRA as well.

### Section III—Pre-Rule Quiet Zones

Pre-Rule Quiet Zones are treated slightly differently from New Quiet Zones in the rule. This is a reflection of the statutory requirement to “take into account the interest of communities that have in effect restrictions on the sounding of a locomotive horn at highway-rail grade crossings. \* \* \*” (49 U.S.C. 20153(i)) It also recognizes the historical experience of train horns not being sounded at Pre-Rule Quiet Zones.

Overview

Pre–Rule Quiet Zones that are not established by automatic approval (see discussion that follows) must meet the same requirements as New Quiet Zones as provided in § 222.39. In other words, risk must be reduced through the use of SSMS or ASMs so that the Quiet Zone Risk Index for the quiet zone has been reduced to either the risk level which would exist if locomotive horns sounded at all crossings in the quiet zone (i.e. the Risk Index with Horns) or to a risk level equal to, or less than, the Nationwide Significant Risk Threshold. There are four differences in the requirements between Pre–Rule Quiet Zones and New Quiet Zones that must be noted.

(1) First, since train horns have not been routinely sounded in the Pre–Rule Quiet Zone, it is not necessary to increase the risk indices of the public crossings to reflect the additional risk caused by the lack of a train horn. Since the train horn has already been silenced, the added risk caused by the lack of a horn is reflected in the actual collision history at the crossings. Collision history is an important part in the calculation of the severity risk indices. In other words, the Quiet Zone Risk Index is calculated by averaging the existing risk index for each public crossing without the need to increase the risk index by 66.8%. For Pre–Rule Quiet Zones, the Crossing Corridor Risk Index and the initial Quiet Zone Risk Index have the same value.

(2) Second, since train horns have been silenced at the crossings, it will be necessary to mathematically determine what the risk level would have been at the crossings if train horns had been routinely sounded. These revised risk levels then will be used to calculate the Risk Index with Horns. This calculation is necessary to determine how much risk must be eliminated in order to compensate for the lack of the train horn. This will allow the public authority to have the choice to reduce the risk to at least the level of the Nationwide Significant Risk Threshold or to fully compensate for the lack of the train horn.

To calculate the Risk Index with Horns, the first step is to divide the existing severity risk index for each crossing by the appropriate value as shown in Table 1. This process eliminates the risk that was caused by the absence of train horns. The table takes into account that the train horn has been found to produce different levels of effectiveness in preventing collisions depending on the type of warning device at the crossing. (Note: FRA's web-based Quiet Zone Calculator will perform this computation automatically for Pre–Rule Quiet Zones.) The Risk Index with Horns is the average of the revised risk indices. The difference between the calculated Risk Index with Horns and the Quiet Zone Risk Index is the amount of risk that would have to be reduced in order to fully compensate for the lack of train horns.

**Table 1—Risk Index Divisor Values**

	<b>Passive</b>	<b>Flashing lights</b>	<b>Lights &amp; gates</b>
U.S.....	1.749	1.309	1.668

(3) The third difference is that credit is given for the risk reduction that is brought about through the upgrading of the warning devices at public crossings (§ 222.35(b)(3)). For New Quiet Zones, all crossings must be equipped with automatic warning devices consisting of flashing lights and gates. Crossings without gates must have gates installed. The severity risk index for that crossing is then calculated to establish the risk index that is used in the Risk Index with Horns. The Risk Index with Horns is then increased by 66.8% to adjust for the lack of the train horn. The adjusted figure is the initial Quiet Zone Risk Index. There is no credit received for the risk reduction that is attributable to warning device upgrades in New Quiet Zones.

For Pre–Rule Quiet Zones, the Risk Index with Horns is calculated from the initial risk indices which use the warning devices that are currently installed. If a public authority elects to upgrade an existing warning device as part of its quiet zone plan, the accident prediction value for that crossing will be re-calculated based on the upgraded warning device. (Once again, FRA's web-based Quiet Zone Calculator can do the actual computation.) The new accident prediction value is then used in the severity risk

index formula to determine the risk index for the crossing. This adjusted risk index is then used to compute the new Quiet Zone Risk Index. This computation allows the risk reduction attributed to the warning device upgrades to be used in establishing a quiet zone.

(4) The fourth difference is that Pre–Rule Quiet Zones have different minimum requirements under § 222.35. A Pre–Rule Quiet Zone may be less than one-half mile in length if that was its length as of October 9, 1996 (§ 222.35(a)(2)). A Pre–Rule Quiet Zone does not have to have automatic warning devices consisting of flashing lights and gates at every public crossing (§ 222.35(b)(3)). The existing crossing safety warning systems in place as of December 18, 2003 may be retained but cannot be downgraded. It also is not necessary for the automatic warning devices to be equipped with constant warning time devices or power out indicators; however, when the warning devices are upgraded, constant warning time and power out indicators will be required if reasonably practical (§ 222.35(b)(3)). Advance warning signs that notify the motorist that train horns are not sounded do not have to be installed on each approach to public, private, and pedestrian grade crossings within the quiet zone until June 24, 2008. (§§ 222.27(d) and 222.35(c)) Similarly, STOP signs and crossbucks do not have to be installed on each approach to private crossings within the quiet zone until June 24, 2008. (§ 222.25(c)).

#### A. Requirements for Both Public Authority Designation and Public Authority Application—Pre–Rule Quiet Zones

The following is necessary when establishing a Pre–Rule Quiet Zone. This information pertains to Automatic Approval, the Public Authority Designation and Public Authority Application to FRA methods.

1. Determine all public, private and pedestrian at-grade crossings that will be included within the quiet zone. Also determine any existing grade separated crossings that fall within the quiet zone. Each crossing must be identified by the U.S. DOT Crossing Inventory number and street name. If a crossing does not have a U.S. DOT crossing number, then contact FRA for assistance.
2. Document the length of the quiet zone. It is not necessary that the quiet zone be at least one-half mile in length. Pre–Rule Quiet Zones may be shorter than one-half mile. However, the addition of a new crossing that is not a part of an existing Pre–Rule Quiet Zone to a quiet zone nullifies its pre-rule status, and the resulting New Quiet Zone must be at least one-half mile. The deletion of a crossing from a Pre–Rule Quiet Zone (except through closure or grade separation) must result in a quiet zone that is at least one-half mile in length. It is the intent of the rule to allow adjacent Pre–Rule Quiet Zones to be combined into one large pre-rule quiet zone if the respective public authorities desire to do so. (§ 222.35(a)(2))
3. A complete and accurate Grade Crossing Inventory Form must be on file with FRA for all crossings (public, private and pedestrian) within the quiet zone. An inspection of each crossing in the proposed quiet zone should be performed and the Grade Crossing Inventory Forms updated, as necessary, to reflect the current conditions at each crossing.
4. Pre–Rule Quiet Zones must retain, and may upgrade, the existing grade crossing safety warning systems. Unlike New Quiet Zones, it is not necessary that every public crossing within a Pre–Rule Quiet Zone be equipped with active warning devices comprising both flashing lights and gates. Existing warning devices need not be equipped with power out indicators and constant warning time circuitry. If warning devices are upgraded to flashing lights, or flashing lights and gates, the upgraded equipment must include, as is required for New Quiet Zones, power out indicators and constant warning time devices (if reasonably practical). (§ 222.35(b)(3))
5. By June 24, 2008, private crossings must have cross-bucks and “STOP” signs on both approaches to the crossing. (§ 222.25(c))
6. By June 24, 2008, each approach to a public, private, and pedestrian crossing must be equipped with an advance warning sign that conforms to the MUTCD and advises pedestrians and motorists that train horns are not sounded at the crossing. (§§ 222.27(d), 222.35(c))

7. It will be necessary for the public authority to provide a Notice of Quiet Zone Continuation in order to prevent the resumption of locomotive horn sounding when the rule becomes effective. A detailed discussion of the requirements of § 222.43(c) is provided in Section IV of this appendix. The Notice of Quiet Zone Continuation must be provided to the appropriate parties by all Pre–Rule Quiet Zones that have not established quiet zones by automatic approval. This should be done no later than June 3, 2005 to ensure that train horns will not start being sounded on June 24, 2005. A Pre–Rule Quiet Zone may provide a Notice of Quiet Zone Continuation before it has determined whether or not it qualifies for automatic approval. Once it has been determined that the Pre–Rule Quiet Zone will be established by automatic approval, the Public Authority must provide the Notice of Quiet Zone Establishment. This must be accomplished no later than December 24, 2005. If the Pre–Rule Quiet Zone will not be established by automatic approval, the Notice of Quiet Zone Continuation will enable the train horns to be silenced until June 24, 2008. (Please refer to § 222.41(c) for more information.)

#### B. Pre–Rule Quiet Zones—Automatic Approval

In order for a Pre–Rule Quiet Zone to be established under this rule (§ 222.41(a)), one of the following conditions must be met:

- a. One or more SSMs as identified in appendix A are installed at each public crossing in the quiet zone;
- b. The Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold;
- c. The Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold but less than twice the Nationwide Significant Risk Threshold and there have been no relevant collisions at any public grade crossing within the quiet zone for the preceding five years; or
- d. The Quiet Zone Risk Index is equal to, or less than, the Risk Index With Horns.

Additionally, the Pre–Rule Quiet Zone must be in compliance with the minimum requirements for quiet zones (§ 222.35) and the notification requirements in § 222.43.

The following discussion is meant to provide guidance on the steps necessary to determine if a Pre–Rule Quiet Zone qualifies for automatic approval.

1. All of the items listed in Requirements for Both Public Authority Designation and Public Authority Application—Pre–Rule Quiet Zones previously mentioned are to be accomplished. Remember that a Pre–Rule Quiet Zone may be less than one-half mile in length if that was its length as of October 9, 1996. Also, a Pre–Rule Quiet Zone does not have to have automatic warning devices consisting of flashing lights and gates at every public crossing.
2. If one or more SSMs as identified in appendix A are installed at each public crossing in the quiet zone, the quiet zone qualifies and the public authority may provide the Notice of Quiet Zone Establishment. If the Pre–Rule Quiet Zone does not qualify by this step, proceed on to the next step.
3. Calculate the risk index for each public crossing within the quiet zone (See appendix D.) Be sure that the risk index is calculated using the formula appropriate for the type of warning device that is actually installed at the crossing. Unlike New Quiet Zones, it is not necessary to calculate the risk index using flashing lights and gates as the warning device at every public crossing. (FRA's web-based Quiet Zone Calculator may be used to simplify the calculation process). If the Inventory record does not reflect the actual conditions at the crossing, be sure to use the conditions that currently exist when calculating the risk index.
4. The Quiet Zone Risk Index is then calculated by averaging the risk index for each public crossing within the proposed quiet zone. (Note: The initial Quiet Zone Risk Index and the Crossing Corridor Risk Index are the same for Pre–Rule Quiet Zones.)

5. Compare the Quiet Zone Risk Index to the Nationwide Significant Risk Threshold. If the Quiet Zone Risk Index is equal to, or less than, the Nationwide Significant Risk Threshold, then the quiet zone qualifies, and the public authority may provide the Notice of Quiet Zone Establishment. With this approach, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk. If the Quiet Zone Risk Index for the quiet zone is found to be above the Nationwide Significant Risk Threshold, FRA will notify the public authority so that appropriate measures can be taken (See § 222.51(b)). If the Pre-Rule Quiet Zone is not established by this step, proceed on to the next step.

6. If the Quiet Zone Risk Index is above the Nationwide Significant Risk Threshold but less than twice the Nationwide Significant Risk Threshold and there have been no relevant collisions at any public grade crossing within the quiet zone for the preceding five years, then the quiet zone qualifies for automatic approval. However, in order to qualify on this basis, the public authority must provide a Notice of Quiet Zone Establishment by December 24, 2005. (Note: A relevant collision means a collision at a highway-rail grade crossing between a train and a motor vehicle, excluding the following: a collision resulting from an activation failure of an active grade crossing warning system; a collision in which there is no driver in the motor vehicle; or a collision where the highway vehicle struck the side of the train beyond the fourth locomotive unit or rail car.) With this approach, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk. If the Quiet Zone Risk Index for the quiet zone is above two times the Nationwide Significant Risk Threshold, or a relevant collision has occurred during the preceding year, FRA will notify the public authority so that appropriate measures can be taken (See § 222.51(b)).

If the Pre-Rule Quiet Zone is not established by automatic approval, continuation of the quiet zone may require implementation of SSMs or ASMs to reduce the Quiet Zone Risk Index for the quiet zone to a risk level equal to, or below, either the risk level which would exist if locomotive horns sounded at all crossings in the quiet zone (i.e. the Risk Index with Horns) or the Nationwide Significant Risk Threshold. This is the same methodology used to create New Quiet Zones with the exception of the four differences previously noted. A review of the previous discussion on the two methods used to establish quiet zones may prove helpful in determining which would be the most beneficial to use for a particular Pre-Rule Quiet Zone.

### C. Pre-Rule Quiet Zones—Public Authority Designation

The following discussion is meant to provide guidance on the steps necessary to establish a Pre-Rule Quiet Zone using the Public Authority Designation method.

1. The public authority must provide a Notice of Intent (§§ 222.43(a)(1) and 222.43(b)) to the railroads that operate within the proposed quiet zone, the State agency responsible for highway and road safety and the State agency responsible for grade crossing safety. This notice must be mailed by February 24, 2008, in order to continue existing locomotive horn restrictions beyond June 24, 2008 without interruption. The purpose of this Notice of Intent is to provide an opportunity for the railroads and the State agencies to provide comments and recommendations to the public authority as it is planning the quiet zone. They will have 60 days to provide these comments to the public authority. The Notice of Intent must be provided, if new SSMs or ASMs will be implemented within the quiet zone. FRA encourages public authorities to provide the required Notice of Intent early in the quiet zone development process. The railroads and State agencies can provide an expertise that very well may not be present within the public authority. FRA believes that it will be very useful to include these organizations in the planning process. For example, including them in the inspections of the crossing will help ensure accurate Inventory information for the crossings. Note: Please see Section IV for details on the requirements of a Notice of Intent.

2. All of the items listed in “Requirements for Both Public Authority Designation and Public Authority Application—Pre-Rule Quiet Zones” previously mentioned are to be accomplished. Remember that a Pre-Rule Quiet Zone may be less than one-half mile in length if that was its length as of October 9, 1996. Also, a Pre-Rule Quiet Zone does not have to have automatic warning devices consisting of flashing lights and gates at every public crossing.

3. Calculate the risk index for each public crossing within the quiet zone as in Step 3—Pre-Rule Quiet Zones—Automatic Approval.

4. The Crossing Corridor Risk Index is then calculated by averaging the risk index for each public crossing within the proposed quiet zone. Since train horns are not being sounded for crossings, this value is actually the initial Quiet Zone Risk Index.

5. Calculate Risk Index with Horns by the following:

a. For each public crossing, divide the risk index that was calculated in Step 2 by the appropriate value in Table 1. This produces the risk index that would have existed had the train horn been sounded.

b. Average these reduced risk indices together. The resulting average is the Risk Index with Horns.

6. Begin to reduce the Quiet Zone Risk Index through the use of SSMs or by upgrading existing warning devices. Follow the procedure provided in Step 6—Public Authority Designation until the Quiet Zone Risk Index has been reduced to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns. A public authority may elect to upgrade an existing warning device as part of its Pre-Rule Quiet Zone plan. When upgrading a warning device, the accident prediction value for that crossing must be re-calculated for the new warning device. Determine the new risk index for the upgraded crossing by using the new accident prediction value in the severity risk index formula. This new risk index is then used to compute the new Quiet Zone Risk Index. (Remember that FRA's web-based Quiet Zone Calculator will be able to do the actual computations.) Once the Quiet Zone Risk Index has been reduced to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns, the quiet zone may be established by the Public Authority Designation method, and the public authority may provide the Notice of Quiet Zone Establishment once all the necessary improvements have been installed. If the quiet zone is established by reducing the Quiet Zone Risk Index to a risk level equal to, or less than, the Nationwide Significant Risk Threshold, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk Index. If the Quiet Zone Risk Index for the quiet zone rises above the Nationwide Significant Risk Threshold, FRA will notify the public authority so that appropriate measures can be taken (See § 222.51(b)).

7. If the Pre-Rule Quiet Zone will not be established before June 24, 2008, the public authority must file a detailed plan for quiet zone improvements with the Associate Administrator by June 24, 2008. By providing a Notice of Intent (see Step 1 above) and a detailed plan for quiet zone improvements, existing locomotive horn restrictions may continue until June 24, 2010. (If a comprehensive State-wide implementation plan and funding commitment are also provided and safety improvements are initiated within at least one Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone, existing locomotive horn restrictions may continue until June 24, 2013.) (See § 222.41(c) for more information.)

Note: The provisions stated above for crossing closures, grade separations, wayside horns, pre-existing SSMs and pre-existing modified SSMs apply for Public Authority Application to FRA as well.

#### D. Pre-Rule Quiet Zones—Public Authority Application to FRA

The following discussion is meant to provide guidance on the steps necessary to establish a Pre-Rule Quiet Zone using the Public Authority Application to FRA method.

1. The public authority must provide a Notice of Intent (§§ 222.43(a)(1) and 222.43(b)) to the railroads that operate within the proposed quiet zone, the State agency responsible for highway and road safety and the State agency responsible for grade crossing safety. This notice must be mailed by February 24, 2008, in order to continue existing locomotive horn restrictions beyond June 24, 2008 without interruption. The purpose of this Notice of Intent is to provide an opportunity for the railroads and the State agencies to provide comments and recommendations to the public authority as it is planning the quiet zone. They will have 60 days to provide these comments to the public authority. The Notice of Intent must be provided, if new SSMs or ASMs will be implemented within the quiet zone. FRA encourages public authorities to provide the required Notice of Intent early in the quiet zone development process. The railroads and State agencies can provide an expertise that very well may not

be present within the public authority. FRA believes that it will be very useful to include these organizations in the planning process. For example, including them in the inspections of the crossing will help ensure accurate Inventory information for the crossings. Note: Please see Section IV for details on the requirements of a Notice of Detailed Plan.

2. All of the items listed in “Requirements for both Public Authority Designation and Public Authority Application—Pre–Rule Quiet Zones” previously mentioned are to be accomplished. Remember that a Pre–Rule Quiet Zone may be less than one-half mile in length if that was its length as of October 9, 1996. Also, a Pre–Rule Quiet Zone does not have to have automatic warning devices consisting of flashing lights and gates at every public crossing.

3. Calculate the risk index for each public crossing within the quiet zone (See appendix D. FRA's web-based Quiet Zone Calculator may be used to simplify the calculation process). If the Inventory record does not reflect the actual conditions at the crossing, be sure to use the conditions that currently exist when calculating the risk index.

4. The Crossing Corridor Risk Index is then calculated by averaging the risk index for each public crossing within the proposed quiet zone. Since train horns are not being sounded for crossings, this value is actually the initial Quiet Zone Risk Index.

5. Calculate Risk Index with Horns by the following:

a. For each public crossing, divide its risk index that was calculated in Step 2 by the appropriate value in Table 1. This produces the risk index that would have existed had the train horn been sounded.

b. Average these reduced risk indices together. The resulting average is the Risk Index with Horns.

6. Begin to reduce the Quiet Zone Risk Index through the use of ASMs and/or SSMS. Follow the procedure provided in Step 6—New Quiet Zones Public Authority Designation—until the Quiet Zone Risk Index has been reduced to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns. A public authority may elect to upgrade an existing warning device as part of its Pre–Rule Quiet Zone plan. When upgrading a warning device, the accident prediction value for that crossing must be re-calculated for the new warning device. Determine the new risk index for the upgraded crossing by using the new accident prediction value in the severity risk index formula. (Remember that FRA's web-based quiet zone risk calculator will be able to do the actual computations.) This new risk index is then used to compute the new Quiet Zone Risk Index. Effectiveness rates for ASMS should be provided as follows:

a. Modified SSMS—Estimates of effectiveness for modified SSMS may be based upon adjustments from the benchmark levels provided in appendix A or from actual field data derived from the crossing sites. The application must provide an estimated effectiveness rate and the rationale for the estimate.

b. Non-engineering ASMS—Effectiveness rates are to be calculated in accordance with the provisions of appendix B, section II B.

c. Engineering ASMS—Effectiveness rates are to be calculated in accordance with the provisions of appendix B, section III B.

7. Once it has been determined through analysis that the Quiet Zone Risk Index will be reduced to a level equal to, or less than, either the Nationwide Significant Risk Threshold or the Risk Index with Horns, the public authority may make application to FRA for a quiet zone under § 222.39(b). FRA will review the application to determine the appropriateness of the proposed effectiveness rates, and whether or not the proposed application demonstrates that the quiet zone meets the requirements of the rule. When submitting the application to FRA for approval, it should be remembered that the application must contain the following (§ 222.39(b)(1)):



- a. Sufficient detail concerning the present safety measures at all crossings within the proposed quiet zone to enable the Associate Administrator to evaluate their effectiveness. This includes current and accurate crossing Inventory forms for each public, private and pedestrian grade crossing.
  - b. Detailed information on the safety improvements, including upgraded warning devices that are proposed to be implemented at public, private, and pedestrian grade crossings within the proposed quiet zone.
  - c. Membership and recommendations of the diagnostic team (if any) that reviewed the proposed quiet zone.
  - d. Statement of efforts taken to address comments submitted by affected railroads, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety, including a list of any objections raised by the railroads or State agencies.
  - e. A commitment to implement the proposed safety measures.
  - f. Demonstrate through data and analysis that the proposed measures will reduce the Quiet Zone Risk Index to a level at, or below, either the Nationwide Significant Risk Threshold or the Risk Index with Horns.
  - g. A copy of the application must be provided to all railroads operating over the public highway-rail grade crossings within the quiet zone; the highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone; the landowner having control over any private crossings within the quiet zone; the State agency responsible for highway and road safety; the State agency responsible for grade crossing safety; and the Associate Administrator. (§ 222.39(b)(3))
8. Upon receiving written approval from FRA of the quiet zone application, the public authority may then provide the Notice of Quiet Zone Establishment and implement the quiet zone. If the quiet zone is established by reducing the Quiet Zone Risk Index to a level equal to, or less than, the Nationwide Significant Risk Threshold, FRA will annually recalculate the Nationwide Significant Risk Threshold and the Quiet Zone Risk. If the Quiet Zone Risk Index for the quiet zone is above the Nationwide Significant Risk Threshold, FRA will notify the public authority so that appropriate measures can be taken (See § 222.51(b)).

Note: The provisions stated above for crossing closures, grade separations, wayside horns, pre-existing SSMs and pre-existing modified SSMs apply for Public Authority Application to FRA as well.

## Section IV—Required Notifications

### A. Introduction

The public authority is responsible for providing notification to parties that will be affected by the quiet zone. There are several different types of notifications and a public authority may have to make more than one notification during the entire process of complying with the regulation. The notification process is to ensure that interested parties are made aware in a timely manner of the establishment or continuation of quiet zones. It will also provide an opportunity for State agencies and affected railroads to provide input to the public authority during the development of quiet zones. Specific information is to be provided so that the crossings in the quiet zone can be identified. Providing the appropriate notification is important because once the rule becomes effective, railroads will be obligated to sound train horns when approaching all public crossings unless notified in accordance with the rule that a New Quiet Zone has been established or that a Pre-Rule or Intermediate Quiet Zone is being continued.

### B. Notice of Intent—§ 222.43(b)

The purpose of the Notice of Intent is to provide notice to the railroads and State agencies that the public authority is planning on creating a New Quiet Zone or implementing new SSMs or ASMs within a Pre-Rule Quiet Zone. The Notice of Intent provides an opportunity for the railroad and the State agencies to give input to the public authority during the quiet zone development process. The State agencies and railroads will be given sixty days to provide information and comments to the public agency.

The Notice of Intent must be provided under the following circumstances:

1. A New Quiet Zone or New Partial Quiet Zone is under consideration.
2. An Intermediate Quiet Zone or Intermediate Partial Quiet Zone that will be converted into a New Quiet Zone or New Partial Quiet Zone. Please note that Notice of Intent must be mailed by April 3, 2006, in order prevent the resumption of locomotive horn sounding on June 24, 2006.
3. The implementation of SSMs or ASMs within a Pre-Rule Quiet Zone or Pre-Rule Partial Quiet Zone is under consideration. Please note that Notice of Intent must be mailed by February 24, 2008, in order to continue existing restrictions on locomotive horn sounding beyond June 24, 2008 without interruption. Each public authority that is creating a New Quiet Zone must provide written notice, by certified mail, return receipt requested, to the following:
  1. All railroads operating within the proposed quiet zone
  2. State agency responsible for highway and road safety
  3. State agency responsible for grade crossing safety

The Notice of Intent must contain the following information:

1. A list of each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossings within the proposed quiet zone. The crossings are to be identified by both the U.S. DOT Crossing Inventory Number and the street or highway name.
2. A statement of the time period within which the restrictions would be in effect on the routine sounding of train horns (i.e., 24 hours or from 10 p.m. to 7 a.m.).
3. A brief explanation of the public authority's tentative plans for implementing improvements within the proposed quiet zone.
4. The name and title of the person who will act as the point of contact during the quiet zone development process and how that person can be contacted.
5. A list of the names and addresses of each party that will receive a copy of the Notice of Intent.

The parties that receive the Notice of Intent will be able to submit information or comments to the public authority for 60 days. The public authority will not be able to establish the quiet zone during the 60 day comment period unless each railroad and State agency that receives the Notice of Intent provides either written comments to the public authority or a written statement waiving its right to provide comments on the Notice of Intent. The public authority must provide an affirmation in the Notice of Quiet Zone Establishment that each of the required parties was provided the Notice of Intent and the date it was mailed. If the quiet zone is being established within 60 days of the mailing of the Notice of Intent, the public authority also must affirm each of the parties have provided written comments or waived its right to provide comments on the Notice of Intent.

#### C. Notice of Quiet Zone Continuation—§ 222.43(c)

The purpose of the Notice of Quiet Zone Continuation is to provide a means for the public authority to formally advise affected parties that an existing quiet zone is being continued after the effective date of the rule. All Pre–Rule, Pre–Rule Partial, Intermediate and Intermediate Partial Quiet Zones must provide this Notice of Quiet Zone Continuation no later than June 3, 2005 to ensure that train horns are not sounded at public crossings when the rule becomes effective on June 24, 2005. This will enable railroads to properly comply with the requirements of the Final Rule.

Each public authority that is continuing an existing Pre–Rule, Pre–Rule Partial, Intermediate and Intermediate Partial Quiet Zone must provide written notice, by certified mail, return receipt requested, to the following:

1. All railroads operating over the public highway-rail grade crossings within the quiet zone;
2. The highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone;
3. The landowner having control over any private crossings within the quiet zone;
4. The State agency responsible for highway and road safety;
5. The State agency responsible for grade crossing safety; and
6. The Associate Administrator.

The Notice of Quiet Zone Continuation must contain the following information:

1. A list of each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone, identified by both U.S. DOT National Highway–Rail Grade Crossing Inventory Number and street or highway name.
2. A specific reference to the regulatory provision that provides the basis for quiet zone continuation, citing as appropriate, § [222.41](#) or [222.42](#).
3. A statement of the time period within which restrictions on the routine sounding of the locomotive horn will be imposed (i.e., 24 hours or nighttime hours only.)
4. An accurate and complete Grade Crossing Inventory Form for each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone that reflects conditions currently existing at the crossing.
5. The name and title of the person responsible for monitoring compliance with the requirements of this part and the manner in which that person can be contacted.
6. A list of the names and addresses of each party that will receive the Notice of Quiet Zone Continuation.
7. A statement signed by the chief executive officer of each public authority participating in the continuation of the quiet zone, in which the chief executive officer certifies that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief.

Public authorities should remember that this notice is required to ensure that train horns will remain silent. Even if a public authority has not been able to determine whether its Pre–Rule or Pre–Rule Partial Quiet Zone qualifies for automatic approval under the rule, it should issue a Notice of Quiet Zone Continuation to keep the train horns silent after the effective date of the rule.

## E. Notice of Quiet Zone Establishment—§ 222.43(d)

The purpose of the Notice of Quiet Zone Establishment is to provide a means for the public authority to formally advise affected parties that a quiet zone is being established. Notice of Quiet Zone Establishment must be provided under the following circumstances:

1. A New Quiet Zone or New Partial Quiet Zone is being created.
2. A Pre-Rule Quiet Zone or a Pre-Rule Partial Quiet Zone that qualifies for automatic approval under the rule is being established.
3. An Intermediate Quiet Zone or Intermediate Partial Quiet Zone that is creating a New Quiet Zone under the rule. Please note that Notice of Quiet Zone Establishment must be provided by June 3, 2006, in order to prevent the resumption of locomotive horn sounding on June 24, 2006.
4. A Pre-Rule Quiet Zone or a Pre-Rule Partial Quiet Zone that was not established by automatic approval and has since implemented improvements to establish a quiet zone in accordance to the rule.

Each public authority that is establishing a quiet zone under the above circumstances must provide written notice, by certified mail, return receipt requested, to the following:

1. All railroads operating over the public highway-rail grade crossings within the quiet zone;
2. The highway or traffic control or law enforcement authority having jurisdiction over vehicular traffic at grade crossings within the quiet zone;
3. The landowner having control over any private crossings within the quiet zone;
4. The State agency responsible for highway and road safety;
5. The State agency responsible for grade crossing safety; and
6. The Associate Administrator.

The Notice of Quiet Establishment must contain the following information:

1. A list of each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone, identified by both U.S. DOT National Highway-Rail Grade Crossing Inventory Number and street or highway name.
2. A specific reference to the regulatory provision that provides the basis for quiet zone establishment, citing as appropriate, § 222.39(a)(1), 222.39(a)(2)(i), 222.39(a)(2)(ii), 222.39(a)(3), 222.39(b), 222.41(a)(1)(i), 222.41(a)(1)(ii), 222.41(a)(1)(iii), 222.41(a)(1)(iv), 222.41(b)(1)(i), 222.41(b)(1)(ii), 222.41(b)(1)(iii), or 222.41(b)(1)(iv).

(a) If the Notice of Quiet Establishment contains a specific reference to § 222.39(a)(2)(i), 222.39(a)(2)(ii), 222.39(a)(3), 222.41(a)(1)(ii), 222.41(a)(1)(iii), 222.41(a)(1)(iv), 222.41(b)(1)(ii), 222.41(b)(1)(iii), or 222.41(b)(1)(iv), it shall include a copy of the FRA web page that contains the quiet zone data upon which the public authority is relying.

(b) If the Notice of Quiet Establishment contains a specific reference to § 222.39(b), it shall include a copy of FRA's notification of approval.

3. If a diagnostic team review was required under § 222.25 (private crossings) or § 222.27 (pedestrian crossings), the Notice of Quiet Establishment shall include a statement affirming that the State agency responsible for grade crossing safety and all affected railroads were provided an opportunity to participate in the diagnostic team review. The Notice of Quiet Establishment shall also include a list of recommendations made by the diagnostic team.

4. A statement of the time period within which restrictions on the routine sounding of the locomotive horn will be imposed (i.e., 24 hours or from 10 p.m. until 7 a.m.)

5. An accurate and complete Grade Crossing Inventory Form for each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone that reflects the conditions existing at the crossing before any new SSMs or ASMs were implemented.

6. An accurate, complete and current Grade Crossing Inventory Form for each public highway-rail grade crossing, private highway-rail grade crossing, and pedestrian crossing within the quiet zone that reflects SSMs and ASMs in place upon establishment of the quiet zone. SSMs and ASMs that cannot be fully described on the Inventory Form shall be separately described.

7. If the public authority was required to provide a Notice of Intent:

(a) The Notice of Quiet Zone Establishment shall contain a statement affirming that the Notice of Intent was provided in accordance with the rule. This statement shall also state the date on which the Notice of Intent was mailed.

(b) If the Notice of Quiet Zone Establishment will be mailed less than 60 days after the date on which the Notice of Intent was mailed, the Notice of Quiet Zone Establishment shall also contain a written statement affirming that comments and/or written waiver statements have been received from each railroad operating over public grade crossings within the proposed quiet zone, the State agency responsible for grade crossing safety, and the State agency responsible for highway and road safety.

8. The name and title of the person responsible for monitoring compliance with the requirements of this part and the manner in which that person can be contacted.

9. A list of the names and addresses of each party that is receiving a copy of the Notice of Quiet Establishment.

10. A statement signed by the chief executive officer of each public authority participating in the establishment of the quiet zone, in which the chief executive officer shall certify that the information submitted by the public authority is accurate and complete to the best of his/her knowledge and belief.

#### Section V—Examples of Quiet Zone Implementations

##### Example 1—New Quiet Zone

(a) A public authority wishes to create a New Quiet Zone over four public crossings. All of the crossings are equipped with flashing lights and gates, and the length of the quiet zone is 0.75 mile. There are no private crossings within the proposed zone.

(b) The tables that follow show the street name in the first column, and the existing risk index for each crossing with the horn sounding (“Crossing Risk Index w/ Horns”) in the second. The third column, “Crossing Risk Index w/o Horns”, is the risk index for each crossing after it has been inflated by 66.8% to account for the lack of train horns. The fourth column, “SSM Eff”, is the

effectiveness of the SSM at the crossing. A zero indicates that no SSM has been applied. The last column, “Crossing Risk Index w/o Horns Plus SSM”, is the inflated risk index for the crossing after being reduced by the implementation of the SSM. At the bottom of the table are two values. The first is the Risk Index with Horns (“RIWH”) which represents the average initial amount of risk in the proposed quiet zone with the train horn sounding. The second is the Quiet Zone Risk Index (“QZRI”), which is the average risk in the proposed quiet zone taking into consideration the increased risk caused by the lack of train horns and the reductions in risk attributable to the installation of SSMs. For this example it is assumed that the Nationwide Significant Risk Threshold is 17,030. In order for the proposed quiet zone to qualify under the rule, the Quiet Zone Risk Index must be reduced to a level at, or below, the Nationwide Significant Risk Threshold (17,030) or the Risk Index with Horns.

(c) Table 2 shows the existing conditions in the proposed quiet zone. SSMs have not yet been installed. The Risk Index with Horns for the proposed quiet zone is 11,250. The Quiet Zone Risk Index without any SSMs is 18,765.

**Table 2**

Street	Crossing risk index w/horns	Crossing risk index w/o horns	SSM EFF	Crossing risk index w/o horns plus SSM
A.....	12000	20016	0	20016
B.....	10000	16680	0	16680
C.....	8000	13344	0	13344
D.....	15000	25020	0	25020
	RIWH	.....	.....	QZRI
	11250	.....	.....	18765

(d) The public authority decides to install traffic channelization devices at D Street. Reducing the risk at the crossing that has the highest severity risk index will provide the greatest reduction in risk. The effectiveness of traffic channelization devices is 0.75. Table 3 shows the changes in the proposed quiet zone corridor that would occur when traffic channelization devices are installed at D Street. The Quiet Zone Risk Index has been reduced to 14,073.75. This reduction in risk would qualify the quiet zone as the risk has been reduced lower than the Nationwide Significant Risk Threshold which is 17,030.

**Table 3**

Street	Crossing risk index w/horns	Crossing risk index w/o horns	SSM EFF	Crossing risk index w/o horns plus SSM
A.....	12000	20016	0	20016
B.....	10000	16680	0	16680
C.....	8000	13344	0	13344
D.....	15000	25020	0.75	6255
	RIWH	.....	.....	QZRI

11250 ..... 14073.75

(e) The public authority realizes that reducing the Quiet Zone Risk Index to a level below the Nationwide Significant Risk Threshold will result in an annual re-calculation of the Quiet Zone Risk Index and comparison to the Nationwide Significant Risk Threshold. As the Quiet Zone Risk Index is close to the Nationwide Significant Risk Threshold (14,074 to 17,030), there is a reasonable chance that the Quiet Zone Risk Index may some day exceed the Nationwide Significant Risk Threshold. This would result in the quiet zone no longer being qualified and additional steps would have to be taken to keep the quiet zone. Therefore, the public authority decides to reduce the risk further by the use of traffic channelization devices at A Street. Table 4 shows the results of this change. The Quiet Zone Risk Index is now 10,320.75 which is less than the Risk Index with Horns of 11,250. The quiet zone now qualifies by fully compensating for the loss of train horns and will not have to undergo annual reviews of the Quiet Zone Risk Index.

**Table 4**

Street	Crossing risk index w/horns	Crossing risk index w/o horns	SSM EFF	Crossing risk index w/o horns plus SSM
A.....	12000	20016	0.75	5004
B.....	10000	16680	0	16680
C.....	8000	13344	0	13344
D.....	15000	25020	0.75	6255
	RIWH	.....	.....	QZRI
	11250	.....	.....	10320.75

Example 2—Pre-Rule Quiet Zone

(a) A public authority wishes to qualify a Pre-Rule Quiet Zone which did not meet the requirements for Automatic Approval because the Quiet Zone Risk Index is greater than twice the Nationwide Significant Risk Threshold. There are four public crossings in the Pre-Rule Quiet Zone. Three of the crossings are equipped with flashing lights and gates, and the fourth (Z Street) is passively signed with a STOP sign. The length of the quiet zone is 0.6 mile, and there are no private crossings within the proposed zone.

(b) The tables that follow are very similar to the tables in Example 1. The street name is shown in the first column, and the existing risk index for each crossing (“Crossing Risk Index w/o Horns”) in the second. This is a change from the first example because the risk is calculated without train horns sounding because of the existing ban on whistles. The third column, “Crossing Risk Index w/ Horns”, is the risk index for each crossing after it has been adjusted to reflect what the risk would have been had train horns been sounding. This is mathematically done by dividing the existing risk index for the three gated crossing by 1.668. The risk at the passive crossing at Z Street is divided by 1.749. (See the above discussion in “Pre-Rule Quiet Zones—Establishment Overview” for more information.) The fourth column, “SSM Eff”, is the effectiveness of the SSM at the crossing. A zero indicates that no SSM has been applied. The last column, “Crossing Risk Index w/o Horns Plus SSM”, is the risk index without horns for the crossing after being reduced for the implementation of the SSM. At the bottom of the table are two values. The first is the Risk Index with Horns (RIWH), which represents the average initial amount of risk in the proposed quiet zone with the train horn sounding. The second is the Quiet Zone Risk Index (“QZRI”), which is the average risk in the proposed quiet zone taking into consideration the increased risk caused by the lack of train horns and reductions in risk attributable to

the installation of SSMs. Once again it is assumed that the Nationwide Significant Risk Threshold is 17,030. The Quiet Zone Risk Index must be reduced to either the Nationwide Significant Risk Threshold (17,030) or to the Risk Index with Horns in order to qualify under the rule.

(c) Table 5 shows the existing conditions in the proposed quiet zone. SSMs have not yet been installed. The Risk Index with Horns for the proposed quiet zone is 18,705.83. The Quiet Zone Risk Index without any SSMs is 31,375. Since the Nationwide Significant Risk Threshold is less than the calculated Risk Index with Horns, the public authority's goal will be to reduce the risk to at least value of the Risk Index with Horns. This will qualify the Pre-Rule Quiet Zone under the rule.

**Table 5**

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W.....	35,000	20,983.21	0	35,000
X.....	42,000	25,179.86	0	42,000
Y.....	33,500	20,083.93	0	33,500
Z.....	15,000	8,576.33	0	15,000
	RIWH	.....	.....	QZRI
	18,705.83	.....	.....	31,375

(d) The Z Street crossing is scheduled to have flashing lights and gates installed as part of the state's highway-rail grade crossing safety improvement plan (Section 130). While this upgrade is not directly a part of the plan to authorize a quiet zone, the public authority may take credit for the risk reduction achieved by the improvement from a passive STOP sign crossing to a crossing equipped with flashing lights and gates. Unlike New Quiet Zones, upgrades to warning devices in Pre-Rule Quiet Zones do contribute to the risk reduction necessary to qualify under the rule. Table 6 shows the quiet zone corridor after including the warning device upgrade at Z Street. The Quiet Zone Risk Index has been reduced to 29,500.

**Table 6**

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W.....	35,000	20,983.21	0	35,000
X.....	42,000	25,179.86	0	42,000
Y.....	33,500	20,083.93	0	33,500
Z.....	7,500	8,576.33	0	7,500
	RIWH	.....	.....	QZRI
	18,705.83	.....	.....	29,500



(e) The public authority elects to install four-quadrant gates without vehicle presence detection at X Street. As shown in Table 7, this reduces the Quiet Zone Risk Index to 20,890. This risk reduction is not sufficient to qualify as quiet zone under the rule.

**Table 7**

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W.....	35,000	20,983.21	0	35,000
X.....	42,000	25,179.86	0.82	7,560
Y.....	33,500	20,083.93	0	33,500
Z.....	7,500	8,576.33	0	7,500
	RIWH	.....	.....	QZRI
	18,705.83	.....	.....	20,890

(f) The public authority next decides to use traffic channelization devices at W Street. Table 8 shows that the Quiet Zone Risk Index is now reduced to 14,327.5. This risk reduction fully compensates for the loss of the train horn as it is less than the Risk Index with Horns. The quiet zone is qualified under the rule.

**Table 8**

Street	Crossing risk index w/o horns	Crossing risk index w/horns	SSM EFF	Crossing risk index w/o horns plus SSM
W.....	35000	20983.21	0.75	8750
X.....	42000	25179.86	0.82	7560
Y.....	33500	20083.93	0	33500
Z.....	7500	8576.33	0	7500
	RIWH	.....	.....	QZRI
	18705.83	.....	.....	14327.5

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. Pt. 222, App. D

## APPENDIX D TO PART 222—DETERMINING RISK LEVELS

Effective: October 9, 2007

Currentness

### Introduction

The Nationwide Significant Risk Threshold, the Crossing Corridor Risk Index, and the Quiet Zone Risk Index are all measures of collision risk at public highway-rail grade crossings that are weighted by the severity of the associated casualties. Each crossing can be assigned a risk index.

(a) The Nationwide Significant Risk Threshold represents the average severity weighted collision risk for all public highway-rail grade crossings equipped with lights and gates nationwide where train horns are routinely sounded. FRA developed this index to serve as a threshold of permissible risk for quiet zones established under this rule.

(b) The Crossing Corridor Risk Index represents the average severity weighted collision risk for all public highway-rail grade crossings along a defined rail corridor.

(c) The Quiet Zone Risk Index represents the average severity weighted collision risk for all public highway-rail grade crossings that are part of a quiet zone.

### The Prediction Formulas

(a) The Prediction Formulas were developed by DOT as a guide for allocating scarce traffic safety budgets at the State level. They allow users to rank candidate crossings for safety improvements by collision probability. There are three formulas, one for each warning device category:

1. automatic gates with flashing lights;
2. flashing lights with no gates; and
3. passive warning devices.

(b) The prediction formulas can be used to derive the following for each crossing:

1. the predicted collisions (PC)
2. the probability of a fatal collision given that a collision occurs (P(FC|C))

3. the probability of a casualty collision given that a collision occurs ( $P(CC|C)$ )

(c) The following factors are the determinants of the number of predicted collisions per year:

1. average annual daily traffic
2. total number of trains per day
3. number of highway lanes
4. number of main tracks
5. maximum timetable train speed
6. whether the highway is paved or not
7. number of through trains per day during daylight hours

(d) The resulting basic prediction is improved in two ways. It is enriched by the particular crossing's collision history for the previous five years and it is calibrated by resetting normalizing constants. The normalizing constants are reset so that the sum of the predicted accidents in each warning device group (passive, flashing lights, gates) for the top twenty percent most hazardous crossings exactly equals the number of accidents which occurred in a recent period for the top twenty percent of that group. This adjustment factor allows the formulas to stay current with collision trends. The calibration also corrects for errors such as data entry errors. The final output is the predicted number of collisions (PC).

(e) The severity formulas answer the question, "What is the chance that a fatality (or casualty) will happen, given that a collision has occurred?" The fatality formula calculates the probability of a fatal collision given that a collision occurs (i.e., the probability of a collision in which a fatality occurs)  $P(FC|C)$ . Similarly, the casualty formula calculates the probability of a casualty collision given that a collision occurs  $P(CC|C)$ . As casualties consist of both fatalities and injuries, the probability of a non-fatal injury collision is found by subtracting the probability of a fatal collision from the probability of a casualty collision. To convert the probability of a fatal or casualty collision to the number of expected fatal or casualty collisions, that probability is multiplied by the number of predicted collisions (PC).

(f) For the prediction and severity index formulas, please see the following DOT publications: Summary of the DOT Rail–Highway Crossings Resource Allocation Procedure—Revised, June 1987, and the Rail–Highway Crossing Resource Allocation Procedure: User's Guide, Third Edition, August 1987. Both documents are in the docket for this rulemaking and also available through the National Technical Information Service located in Springfield, Virginia 22161.

#### Risk Index

(a) The risk index is basically the predicted cost to society of the casualties that are expected to result from the predicted collisions at a crossing. It incorporates three outputs of the DOT prediction formulas. The two components of a risk index are:

1. Predicted Cost of Fatalities =  $PC \times P(FC|C) \times (\text{Average Number of Fatalities Observed In Fatal Collisions}) \times \$3 \text{ million}$
2. Predicted Cost of Injuries =  $PC \times (P(CC|C) - P(FC|C)) \times (\text{Average Number of Injuries in Collisions Involving Injuries}) \times \$1,167,000$

PC,  $P(CC|C)$ , and  $P(FC|C)$  are direct outputs of the DOT prediction formulas.

(b) The average number of fatalities observed in fatal collisions and the average number of injuries in collisions involving injuries are calculated by FRA as described in paragraphs (c) through (e).

(c) FRA will match the highway-rail incident files for the past five years against a data file containing the list of grade crossings where the train horn was not routinely sounded over that five-year period to identify two types of collisions involving trains and motor vehicles: (1) Those that occurred at crossings where the train horn was not routinely sounded during the period, and (2) those that occurred at crossings equipped with automatic gates where the train horn was routinely sounded. Certain records will be excluded, including records pertaining to incidents where the driver was not in the motor vehicle or where the motor vehicle struck the train beyond the fourth locomotive or rail car that entered the crossing. FRA believes that sounding the train horn would not be very effective at preventing such incidents.<sup>1</sup>

(d) Collisions in the group containing the gated crossings nationwide where horns were routinely sounded will then be identified as fatal, injury only or no casualty. Collisions will be identified as fatal if one or more deaths occurred, regardless of whether injuries were also sustained. Collisions will be identified as injury only when injuries, but no fatalities, resulted.

(e) The collisions (incidents) will be summarized by year for the five-year period preceding the year in which the risk index is being updated. The fatality rate for each year will be calculated by dividing the number of fatalities by the number of fatal incidents. The injury rate will be calculated by dividing the number of injuries in injury only incidents by the number of injury only incidents. FRA will publish updated fatality and injury rates on an annual basis in the Federal Register.

(f) Per guidance from DOT, \$3 million is the value placed on preventing a fatality. The Abbreviated Injury Scale (AIS) developed by the Association for the Advancement of Automotive Medicine categorizes injuries into six levels of severity. Each AIS level is assigned a value of injury avoidance as a fraction of the value of avoiding a fatality. FRA rates collisions that occur at train speeds in excess of 25 mph as an AIS level 5 (\$2,287,500) and injuries that result from collisions involving trains traveling under 25 mph as an AIS level 2 (\$46,500). About half of grade crossing collisions occur at speeds greater than 25 mph. Therefore, FRA estimates that the value of preventing the average injury resulting from a grade crossing collision is \$1,167,000 (the average of an AIS-5 injury and an AIS-2 injury).

(g) Notice that the quantity  $[PC * P(FC \# C)]$  represents the expected number of fatal collisions. Similarly,  $\{PC * [P(CC|C) - P(FC|C)]\}$  represents the expected number of injury collisions. These are then multiplied by their respective average number of fatalities and injuries (from the table above) to develop the number of expected casualties. The final parts of the expressions attach the dollar values for these casualties.

(h) The Risk Index for a Crossing is the integer sum of the Predicted Cost of Fatalities and the Predicted Cost of Injuries.

#### Nationwide Significant Risk Threshold

The Nationwide Significant Risk Threshold is simply an average of the risk indexes for all of the gated public crossings nationwide where train horns are routinely sounded. This value will be recalculated annually and published in a notice in the Federal Register. For the most recent value of the Nationwide Significant Risk Threshold, please visit FRA's public Web site at <http://www.fra.dot.gov>.

#### Crossing Corridor Risk Index

The Crossing Corridor Risk Index is the average of the risk indexes of all the public crossings in a defined rail corridor.

#### Quiet Zone Risk Index

The Quiet Zone Risk Index is the average of the risk indexes of all the public crossings in a Quiet Zone. It takes into consideration the absence of the horn sound and any safety measures that may have been installed.

**Credits**

[72 FR 44792, Aug. 9, 2007; 72 FR 59019, Oct. 18, 2007]

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

Current through March 2, 2023, 88 FR 13264. Some sections may be more current. See credits for details.

**Footnotes**

- 1 The data used to make these exclusions is contained in blocks 18—Position of Car Unit in Train; 19—Circumstance: Rail Equipment Struck/Struck by Highway User; 28—Number of Locomotive Units; and 29—Number of Cars on the current FRA Form 6180–57 Highway–Rail Grade Crossing Accident/Incident Report.

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49 C.F.R. Pt. 222, App. E

APPENDIX E TO PART 222—REQUIREMENTS FOR WAYSIDE HORNS

Effective: September 18, 2006

[Currentness](#)

This appendix sets forth the following minimum requirements for wayside horn use at highway-rail grade crossings:

1. Highway-rail crossing must be equipped with constant warning time device, if reasonably practical, and power-out indicator;
2. Horn system must be equipped with an indicator or other system to notify the locomotive engineer as to whether the wayside horn is operating as intended in sufficient time to enable the locomotive engineer to sound the locomotive horn for at least 15 seconds prior to arrival at the crossing in the event the wayside horn is not operating as intended;
3. The railroad must adopt an operating rule, bulletin or special instruction requiring that the train horn be sounded if the wayside horn indicator is not visible approaching the crossing or if the wayside horn indicator, or an equivalent system, indicates that the system is not operating as intended;
4. Horn system must provide a minimum sound level of 92 dB(A) and a maximum of 110 dB(A) when measured 100 feet from the centerline of the nearest track;
5. Horn system must sound at a minimum of 15 seconds prior to the train's arrival at the crossing and while the lead locomotive is traveling across the crossing. It is permissible for the horn system to begin to sound simultaneously with activation of the flashing lights or descent of the crossing arm; arm
6. Horn shall be directed toward approaching traffic.

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. Pt. 222, App. F

## APPENDIX F TO PART 222—DIAGNOSTIC TEAM CONSIDERATIONS

Effective: September 18, 2006

[Currentness](#)

For purposes of this part, a diagnostic team is a group of knowledgeable representatives of parties of interest in a highway-rail grade crossing, organized by the public authority responsible for that crossing who, using crossing safety management principles, evaluate conditions at a grade crossing to make determinations or recommendations for the public authority concerning the safety needs at that crossing. Crossings proposed for inclusion in a quiet zone should be reviewed in the field by a diagnostic team composed of railroad personnel, public safety or law enforcement, engineering personnel from the State agency responsible for grade crossing safety, and other concerned parties.

This diagnostic team, using crossing safety management principles, should evaluate conditions at a grade crossing to make determinations and recommendations concerning safety needs at that crossing. The diagnostic team can evaluate a crossing from many perspectives and can make recommendations as to what safety measures authorized by this part might be utilized to compensate for the silencing of the train horns within the proposed quiet zone.

### All Crossings Within a Proposed Quiet Zone

The diagnostic team should obtain and review the following information about each crossing within the proposed quiet zone:

1. Current highway traffic volumes and percent of trucks;
2. Posted speed limits on all highway approaches;
3. Maximum allowable train speeds, both passenger and freight;
4. Accident history for each crossing under consideration;
5. School bus or transit bus use at the crossing; and
6. Presence of U.S. DOT grade crossing inventory numbers clearly posted at each of the crossings in question.

The diagnostic team should obtain all inventory information for each crossing and should check, while in the field, to see that inventory information is up-to-date and accurate. Outdated inventory information should be updated as part of the quiet zone development process.

When in the field, the diagnostic team should take note of the physical characteristics of each crossing, including the following items:



1. Can any of the crossings within the proposed quiet zone be closed or consolidated with another adjacent crossing? Crossing elimination should always be the preferred alternative and it should be explored for crossings within the proposed quiet zone.
2. What is the number of lanes on each highway approach? Note the pavement condition on each approach, as well as the condition of the crossing itself.
3. Is the grade crossing surface smooth, well graded and free draining?
4. Does the alignment of the railroad tracks at the crossing create any problems for road users on the crossing? Are the tracks in superelevation (are they banked on a curve?) and does this create a conflict with the vertical alignment of the crossing roadway?
5. Note the distance to the nearest intersection or traffic signal on each approach (if within 500 feet or so of the crossing or if the signal or intersection is determined to have a potential impact on highway traffic at the crossing because of queuing or other special problems).
6. If a roadway that runs parallel to the railroad tracks is within 100 feet of the railroad tracks when it crosses an intersecting road that also crosses the tracks, the appropriate advance warning signs should be posted as shown in the MUTCD.
7. Is the posted highway speed (on each approach to the crossing) appropriate for the alignment of the roadway and the configuration of the crossing?
8. Does the vertical alignment of the crossing create the potential for a “hump crossing” where long, low-clearance vehicles might get stuck on the crossing?
9. What are the grade crossing warning devices in place at each crossing? Flashing lights and gates are required for each public crossing in a New Quiet Zone. Are all required warning devices, signals, pavement markings and advance signing in place, visible and in good condition for both day and night time visibility?
10. What kind of train detection is in place at each crossing? Are these systems old or outmoded; are they in need of replacement, upgrading, or refurbishment?
11. Are there sidings or other tracks adjacent to the crossing that are often used to store railroad cars, locomotives, or other equipment that could obscure the vision of road users as they approach the crossings in the quiet zone? Clear visibility may help to reduce automatic warning device violations.
12. Are motorists currently violating the warning devices at any of the crossings at an excessive rate?
13. Do collision statistics for the corridor indicate any potential problems at any of the crossings?
14. If school buses or transit buses use crossings within the proposed quiet zone corridor, can they be rerouted to use a single crossing within or outside of the quiet zone?

#### Private Crossings Within a Proposed Quiet Zone

In addition to the items discussed above, a diagnostic team should note the following issues when examining any private crossings within a proposed quiet zone:

1. How often is the private crossing used?

2. What kind of signing or pavement markings are in place at the private crossing?

3. What types of vehicles use the private crossing?

School buses

Large trucks

Hazmat carriers

Farm equipment

4. What is the volume, speed and type of train traffic over the crossing?

5. Do passenger trains use the crossing?

6. Do approaching trains sound the horn at the private crossing?

State or local law requires it?

Railroad safety rule requires it?

7. Are there any nearby crossings where train horns sound that might also provide some warning if train horns were not sounded at the private crossing?

8. What are the approach (corner) sight distances?

9. What is the clearing sight distance for all approaches?

10. What are the private roadway approach grades?

11. What are the private roadway pavement surfaces?

#### Pedestrian Crossings Within a Proposed Quiet Zone

In addition to the items discussed in the section titled, “All crossings within a proposed quiet zone”, a diagnostic team should note the following issues when examining any pedestrian crossings within a proposed quiet zone:

1. How often is the pedestrian crossing used?

2. What kind of signing or pavement markings are in place at the pedestrian crossing?

3. What is the volume, speed, and type of train traffic over the crossing?

4. Do approaching trains sound the horn at the pedestrian crossing?

State or local law requires it?

Railroad safety rule requires it?

5. Are there any crossings where train horns sound that might also provide some warning if train horns were not sounded at the pedestrian crossing?

6. What are the approach sight distances?

7. What is the clearing sight distance for all approaches?

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103](#), [20107](#), [20153](#), [21301](#), [21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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49 C.F.R. Pt. 222, App. G

APPENDIX G TO PART 222—EXCESS RISK ESTIMATES FOR PUBLIC HIGHWAY–RAIL GRADE CROSSINGS

Effective: November 9, 2009

Currentness

**Ban Effects/Train Horn Effectiveness**

[Summary table]

Warning type	Excess risk estimate
Nation (Except Florida East Coast Railway and Chicago Region Crossings)	
Passive.....	74.9.
Flashers only.....	30.9.
Flashers with gates.....	66.8.
Florida East Coast Railway Crossings	
Flashers with gates.....	90.9.
Chicago Region Crossings	
Passive.....	To be determined.
Flashers only.....	To be determined.
Flashers with gates.....	To be determined.

Note One: The warning type column reflects primary warning device types. FRA is aware that a variety of arrangements are in place at individual crossings.

Note Two: The “excess risk estimate” is a figure that represents the amount by which collision frequency has been estimated to increase when routine locomotive horn sounding is restricted at public highway-rail grade crossings.

**Credits**

[74 FR 46394, Sept. 9, 2009]

SOURCE: 71 FR 47634, Aug. 17, 2006; 81 FR 43110, July 1, 2016; 82 FR 17765, April 13, 2017; 87 FR 15868, March 21, 2022, unless otherwise noted.

AUTHORITY: 49 U.S.C. 20103, 20107, 20153, 21301, 21304; 28 U.S.C. 2461 note; and 49 CFR 1.89.

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49 C.F.R. Pt. 222, App. H

APPENDIX H TO PART 222—[RESERVED BY 84 FR 23735]

Effective: May 23, 2019

[Currentness](#)

**Credits**

[[84 FR 23735](#), May 23, 2019]

SOURCE: [71 FR 47634](#), Aug. 17, 2006; [81 FR 43110](#), July 1, 2016; [82 FR 17765](#), April 13, 2017; [87 FR 15868](#), March 21, 2022, unless otherwise noted.

AUTHORITY: [49 U.S.C. 20103, 20107, 20153, 21301, 21304](#); [28 U.S.C. 2461](#) note; and [49 CFR 1.89](#).

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