

circumventing the approach lane gates by switching into the opposing (oncoming) traffic lane in order to drive around 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 b and c apply only to New 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. However, if warning systems in Pre-Rule Quiet Zones are upgraded, or new warning systems are installed, constant warning time devices, if reasonably practical, and power-out indicators are required.

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. Constant warning time devices and power-out indicators are not required to be added to existing warning systems in Pre-Rule Quiet Zones. However, if warning systems in Pre-Rule Quiet Zones are upgraded, or new warning systems are installed, constant warning time devices, if reasonably practical, and power-out indicators are required.

Appendix B to Part 222—Alternative Safety Measures

Introduction

A public authority seeking approval of a quiet zone under public authority application to FRA (§ 222.39(b)) may include in its proposal ASMs listed in this appendix. Credit will be given for closing of public highway-rail grade crossings provided the baseline severity risk index at other crossings is appropriately adjusted by increasing traffic counts at neighboring crossings as input data to the severity risk formula (except to the extent that nearby grade separations are expected to carry that traffic). FRA Regional Managers for Grade Crossing Safety can assist in performing the required analysis.

Appendix B addresses two types of ASMs: Modified SSMs and non-engineering ASMs. Modified SSMs are SSMs that do not fully comply with the provisions listed in appendix A. Depending on the resulting configuration, non-compliant SSMs may still provide a substantial reduction in risk and can contribute to the creation of quiet zones. Non-engineering ASMs are programmed enforcement, public education and awareness, and photo enforcement that may be used to reduce risk in the creation of a quiet zone. The public authority must receive written FRA approval of the quiet zone application prior to the silencing of train horns. The public authority is strongly encouraged to submit the application to FRA for review and comment *before* the appendix B treatments are initiated to ensure that the

proposed modified SSMs and/or non-engineering ASMs will meet with FRA's approval. If non-engineering ASMs are proposed, the public authority may wish to confirm with FRA that the sampling methods are appropriate.

I. Modified SSMs

a. 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 an SSM under Appendix A. FRA will review the safety effects of the modified SSMs and the proposed quiet zone, and will approve the proposal if it finds that the Quiet Zone Risk Index is reduced to the level that would be expected with the sounding of the train horns or to a level at, or below the Nationwide Significant Risk Threshold, whichever is greater.

b. A public authority may provide estimates of effectiveness 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.

c. 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).

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 provision for 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