



Engineering Guide

Implementing Railroad Quiet Zone Crossings

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Adding a quiet zone around a railroad crossing where the trains can't blast their horns is a proven way to improve the livability of neighborhoods within earshot of the crossing.

Everyone can visualize a standard railroad crossing in action. The lights start flashing, the gates start to come down, and then the train whistles its approach. Most people don't think about the crossing, or the train horn unless they happen to live near the crossing. Then the train horn is a general annoyance and can disrupt sleep if the train blasts its horn in the middle of the night.

To deal with this problem the Federal Rail Administration (FRA) started allowing the creation of Quiet Zones. These are crossings where improvements have been made to allow the train to proceed without using its horn, except in emergencies. Many cities across the United States have improved the livability of their neighborhoods by going through the FRA's process for implementing Quiet Zones.

Who pays for the improvements required for installing railroad quiet zone crossings?

Even if your crossing meets the above requirements, the FRA often requires physical improvements to the crossing before they will

implement a quiet zone. These improvements typically cost more than \$250,000 for the rail improvements. On top of that, you may need to improve the street approaches at the crossing.

Since railroad companies don't view the typical quiet zone as a safety measure, they almost never participate in the cost of the improvements, leaving the requesting city to pay. Because of this many agencies choose to implement a quiet zone in conjunction with the crossing road reconstruction, when the city has already allocated funds for making improvements.

Recommended process for analyzing railroad quiet zone crossings

City staff or their consultant should perform the calculations and review the minimum requirements. If they think the crossing is eligible for a Quiet Zone, it is time to engage the railroad company that operates the rails and the crossing as well as county or state of the street crossing the tracks under their jurisdiction.

Based on our experience, the railroads will try to negotiate one of the following improvements with

the list going from their most to least preferred alternatives.

- **Crossing Closure:** the railroads typical first choice, closing one or more crossings reduces the safety risk in a rail corridor. Closing one crossing typically results in needing fewer improvements at the adjacent crossings.
- **Four-Quadrant Gates:** two sets of two gates, one for entering traffic and one for exiting traffic, are provided on each side of the street at the railroad crossing to prevent motorists from driving around the gates. Four-quadrant gates usually need additional detection mechanisms within the gates to prevent a vehicle from becoming trapped. This detection requires complex agreements between a city and the railroad to define the ongoing maintenance and emergency procedures.
- **Two-Quadrant Gates with a Median or Channelizing Device:** using a raised median, posts, or pylons on the crossing street, stretching back at least 60 feet (100 feet preferred) from the crossing, also eliminates the possibility of motorists driving around the gates.
- **Wayside Horns:** Horns are positioned at the crossing and pointed down the road. The wayside horn replaces the train horn and sound is directed down the road, reducing the overall sound impact in a neighborhood. Gates, flashing lights, a constant warning time device, and a power out indicator must still be a part of an improvement that includes wayside horns.
- **Quiet Zone:** As documented.

We recommend going through the preliminary analysis and talking to the operating railroad company to quickly determine the feasibility of implementing a Quiet Zone and also develop a preliminary estimate for physical improvements. Then, have a frank discussion with the City Council to determine if they want to allocate funds for the project. If the City Council wants to move forward, then continue with the negotiation process and prepare the formal FRA application.

RAILROAD QUIET ZONE CROSSING ELIGIBILITY CALCULATIONS

1. Calculate the Quiet Zone Risk Index of the crossing with the FRA's online calculator (<http://safetydata.fra.dot.gov/quiet/login.aspx>). Note you need to register to have access to the calculator.
2. Look up the Nationwide Significant Risk Threshold (average of calculated risk for all railroad crossings).
3. Look up the Risk Index with Horns (average of calculated risk for the crossings within the study corridor).
4. The study crossing is eligible for a quiet zone if the Quiet Zone Risk Index score is below the nationwide and corridor average risk scores.

MINIMUM PHYSICAL REQUIREMENTS FOR INSTALLING RAILROAD QUIET ZONE CROSSINGS

- Each crossing within the desired quiet zone must have gates, flashing lights, constant warning time devices, and power out indicators
- The quiet zone can include one crossing or multiple crossings but must be at least ½ mile in total length
- The quiet zone must not have any other non-quiet zone crossings within ¼ mile of the first or last crossing in the zone (the quiet zone must be extended to include other crossings within ¼ mile of each other)

Resources

- FRA Railroad Safety, [The Train Horns Rule and Quiet Zone website](#)
- FRA, [How to Create a Quiet Zone](#)
- FRA, [Guide to the Quiet Zone Establishment Process](#)
- FRA, Final Rule – [Use of Locomotive Horns at Highway-Rail Grade Crossings](#)

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