Fargo-Moorhead Quiet Zone Demonstration Project

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ABSTRACT

The Federal Railroad Administration’s (FRA) Final Rule on quiet zones was issued in April 2005. It will allow many cities an opportunity to end the routine sounding of locomotive horns while maintaining public safety. This case study provides local officials with information about technical aspects of the FRA’s Final Rule and describes practical implementation actions, based on the results of a national quiet zone demonstration project located in the Fargo, ND-Moorhead, MN, metropolitan area.

The aims of the Fargo-Moorhead Demonstration Quiet Zone project were the following: (1) improve public safety along the tracks and (2) foster downtown redevelopment by eliminating train horns. To complete this pilot project, a citizen task force appointed by each city’s mayor led a six-year effort that required extensive coordination with the FRA, Burlington Northern Santa Fe (BNSF) Railway, two state departments of transportation, the metropolitan planning organization (MPO), and downtown interest groups. A detailed planning and design process was completed after substantial agency and public input. Additionally, state legislative action was required and the FRA rule-making process was monitored. Further negotiations on multiple issues were necessary to identify safety measures acceptable to various stakeholders. Finally, the application to gain FRA/BNSF approval was completed, and grantsmanship efforts were undertaken to secure the funding necessary to implement the project.

In September 2003, the FRA approved the quiet zone for the Fargo-Moorhead area as a demonstration project. Implementation is currently underway.

Key words: Fargo-Moorhead—quiet zones—railroad—safety
PROBLEM STATEMENT

The need for a Fargo-Moorhead metropolitan quiet zone was generated by two complementary local desires: (1) to provide a positive environment for downtown redevelopment by mitigating the adverse effect of locomotive horns, and (2) alleviate serious pedestrian and vehicle safety problems caused by rail conflicts.

Regarding downtown rail impacts, the Federal Railroad Administration (FRA) data, later adjusted by Burlington Northern Santa Fe (BNSF) Railway (August 2002), indicated rail movements for the northern trackage (Prosper subdivision) averaging 17 trains per day. Rail movements to the southern mainline trackage (KO subdivision) were 50 trains per day, down from 70 trains per day in 1997. Maximum train speeds averaged 20–25 mph on the Prosper line and up to 40 mph on the KO line. Approximately 45% of these metro train movements occurred between 10:00 pm and 7:00 am. Based on field surveys, train horns created noise levels ranging from 57 to 106 decibels (dBA). During public meetings held for the downtown redevelopment planning process, numerous business leaders expressed the need to reduce rail noise as a fundamental action if central business district revitalization were to be successful.

Another important factor supporting the need for a quiet zone was at-grade crossing collision data. FRA collision data reflected a 30-year period from 1975 to January 2005. Both vehicle and pedestrian incidents and the level of severity (injuries, fatalities) were documented for each at-grade crossing in the proposed metro quiet zone. Overall during this period, there were 46 vehicle accidents, 9 pedestrian incidents, 9 serious personal injuries, and 16 fatalities, 10 of which were in the last five years. Clearly, business leaders argued, the use of train horns was not fully protecting public safety, and improved rail crossing measures that also supported downtown revitalization were needed.

RESEARCH OBJECTIVES

To address these significant needs, the mayors of both Fargo and Moorhead appointed a Metropolitan Railroad Issues Task Force (MRITF) and challenged it to attain two objectives: 1) improve public safety along the trackage downtown and 2) foster redevelopment by eliminating train horn sounding in a manner that would have legal standing with the railroad and state (federal cognizant agencies). This was a daunting mission that would required the creation of the longest, most complex quiet zone in the nation, and the only bi-state quiet zone in the United States.

METHODOLOGY

After much planning and evaluation, the MRITF identified the area for the proposed metropolitan bi-state quiet zone. It was to cover the downtown areas of Fargo and Moorhead, cross two states’ boundaries, and encompass both BNSF Railway’s KO and Prosper mainline tracks. The strategically located quiet zone would stretch almost two miles, which would provide a train horn cessation area of nearly five miles within a three-city area.

According to railroad and federal standards, a quiet zone is defined as “a segment of rail line that has one or more consecutive public/rail crossings where train horns are not routinely sounded because acceptable safety improvements have been installed.” The MRITF designed its quiet zone to meet this standard.

The MRITF worked closely with BNSF Railway, the FRA, Federal Highway Administration (FHWA), Minnesota Department of Transportation (Mn/DOT), North Dakota Department of Transportation (NDDOT), and local leaders to prepare a mutually agreeable metropolitan quiet zone proposal. This proposal complied with both the BNSF-Whistle Ban Implementation Criteria Pre-FRA Rules Adoption
(December 13, 2002) and the FRA-Proposed Rule 49 CFR Parts 222 and 229-Use of Locomotive Horns at Highway-Rail Grade Crossing. The proposal used three of the five supplementary safety measures (SSMs) approved by Congress. The quiet zone also included alternative safety measures (ASMs) which were specially designed SSMs that required FRA review and approval. These SSMs and ASMs included three- and four-quadrant gates, medians, and road closures at 20 at-grade crossings in Fargo and Moorhead on both the Prosper and KO BNSF Railway mainline tracks. The program of safety measures were installed on 1 private and 19 public at-grade crossings.

Compliance with Applicable Quiet Zone Standards

The MRITF and the cities understood that to achieve a metropolitan quiet zone certain criteria must be met. The MRITF designed its quiet zone to meet both railroad and federal criteria.

In designing its metropolitan quiet zone, the MRITF worked closely with BNSF Railway representatives to satisfy BNSF Railway criteria. The cities or the MRITF completed all pre-requisites needed to secure BNSF Railway’s support, prior to the submission of its quiet zone application to FRA. These specific actions or commitments included the following:

• The MRITF completed four on-site diagnostic item evaluations with BNSF Railway, State DOTs, the FRA, FHWA, city engineers, and task force personnel to select the most appropriate SSMs per site, field inspect the sites, and establish preliminary design and costs for SSMs along both the KO and Prosper trackage.

• The cities installed at all grade crossings the required minimum traffic control devices (flashing lights and automatic gates).

• The communities, with BNSF Railway’s advice, mutually selected SSMs that were eligible under the law and FRA’s interim rule.

• The communities committed to a continuing program of public awareness and police enforcement of grade crossing violations.

• The communities agreed to reimburse BNSF Railway for all costs associated within the quiet zone implementation.

• The communities secured written approval from NDDOT and Mn/DOT that each DOT would provide a small portion of their federal Section 130 funds to establish the warning devices in the quiet zone, as required by BNSF Railway.

• The communities understood that to obtain horn cessation FRA must approve their quiet zone application and officially notify BNSF that the use of horns at the crossings would cease within the zone.

• The communities further understood that each state DOT needed to approve the warning devices installed at each crossing in the quiet zone.

Furthermore, FRA’s interim rule contained certain threshold requirements that also had to be addressed before the federal agency could approve the quiet zone application. The cities and the MRITF met these criteria as well. For example, these included the following:

• The Fargo-Moorhead quiet zone will extend at least one-half mile in length and all at-grade crossings within the zone will be served by approved SSMs or ASMs, even at a private crossing not required to be addressed.

• The mutually selected engineering-based SSMs were designed according to federal standards (MUTCD, 49 CFR 222), and the ASMs were designed with BNSF and FRA input.

• The application for a quiet zone was submitted jointly with the affected railroad, as preferred by the FRA.
Through these efforts and commitments, the approved quiet zone for the Fargo-Moorhead area met or exceeded all FRA and BNSF Railway safety criteria. These safeguards ensured that the quiet zone was effective and that public safety would not be compromised as railroad noise impacts were reduced.

Proposed Metropolitan Quiet Zone

The entire 20-crossing metropolitan quiet zone extends along the BNSF Railway KO line (approximately two miles) from 8th Street in Fargo through each downtown to 14th Street in Moorhead, and along BNSF Railway’s Prosper subdivision (approximately two miles) from 7th Street in Fargo to 14th Street in Moorhead. Figure 1 presents the metropolitan quiet zone, locates each at-grade crossing within it, and notes the SSM/ASM to be installed at each crossing. Specific SSM layouts for each of these 20 crossings were then prepared to establish cost estimates. Figure 2 provides examples of the three types of SSMs utilized in the Fargo-Moorhead quiet zone. These SSMs reflected the diagnostic team’s assessment and further negotiations and agreement between the cities and BNSF Railway.

![Figure 1. Fargo-Moorhead quiet zone and proposed SSM treatments](image-url)
RESULTS

After many years of collaboration, the MRITF unanimously approved at its May 2, 2002 meeting a motion to proceed with the metropolitan quiet zone application process. The Fargo-Moorhead Council of Governments then secured consultant assistance in August 2002, and additional public/private meetings were convened to prepare cooperatively the application for FRA review and approval. A draft application was circulated to all interested parties (cities, state and federal agencies, and BNSF Railway) for comment in November 2002. Additional work was then completed, which included responding to comments on the draft and conducting additional field work to prepare detailed SSM layouts. A final draft application was prepared in April 2003.

Prior to submitting the quiet zone application to the FRA, all key partners executed letters documenting their support for the application and indicating their commitment to implement cooperatively the proposed safety measures within the proposed quiet zone. The formal application for the Fargo-Moorhead metropolitan quiet zone was completed and approved by the MRITF and the cities of Moorhead and Fargo in May 2003. In September 2003, the national demonstration project was approved by the FRA.

Concurrently, the MRITF and the cities actively pursued grantsmanship efforts, with over $5 million of various federal funds secured to implement the $7 million project. The progress made in establishing the metropolitan quiet zone has prompted over $2.3 million in private redevelopment investments to be announced in the downtown area, with additional projects anticipated.

Over the past year, the design of the SSMs and ancillary traffic control (detection and preemption) was completed, as required by BNSF. Furthermore, after a year of negotiations, the contract between BNSF and the cities was approved in June 2005, which allows for the manufacture and installation of the SSMs on railroad property. The SSM installation is slated for summer 2006, with the quiet zone officially in operation shortly after that date.
The project serves as a national showcase demonstrating effective rail safety measures and the beneficial impacts of train horn cessation in the revitalization of a central business district.

LESSONS LEARNED

The successful completion of this major metropolitan collaborative effort required the following:

- Strong leadership
- Clear project objectives
- Perseverance and tenacity
- Substantial technical advice and traffic/rail operations knowledge
- Strong partnerships
- Cooperation, negotiation, and compromise
- Congressional support
- Aggressive grantsmanship efforts
- Intergovernmental coordination and landowner support

CONCLUSION

The Fargo-Moorhead Demonstration Quiet Zone project presented an excellent research opportunity for FRA to address methods and processes prior to preparing its Final Rule on quiet zones. The FRA’s Final Rule was issued on April 22, 2005 and will take effect on June 24, 2005. This rule will allow communities to establish quiet zones with less effort, at lower costs, and with less influence from railroads. Furthermore, future quiet zone approvals will be based on risk-reduction statistical data, unlike the Fargo-Moorhead Demonstration Quiet Zone project, which was largely determined through multi-agency negotiations and qualitative assessment.

ACKNOWLEDGMENTS

The Fargo-Moorhead area quiet zone project was an inclusive process. Over the six-year planning effort, representatives from BNSF Railway, the FRA, FHWA, Mn/DOT, NDDOT, MRITF, the cities of Fargo and Moorhead, and the Fargo-Moorhead Council of Governments were invited to participate, and all were actively involved in the detailed analysis required to advance this complex project.