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Transportation
**Federal Railroad
Administration**

Private Highway-Rail Grade Crossing Safety Research and Inquiry, Volume I

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Washington, DC 20590

DOT/FRA/ORD-10/02

Final Report
February 2010

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This report provides a summary of the private highway-rail grade crossing safety inquiry conducted by the United States Department of Transportation Federal Railroad Administration and the Volpe Center. The safety inquiry consisted of a series of public meetings to solicit oral commentary on the safety of the nation's private highway-rail grade crossings, a docket for electronic comment submission, a panel discussion at the Transportation Research Board's annual meeting, and other activities as described in the table of contents.

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1 square mile (sq mi, mi^2) = 2.6 square kilometers (km^2)	10,000 square meters (m^2) = 1 hectare (ha) = 2.5 acres
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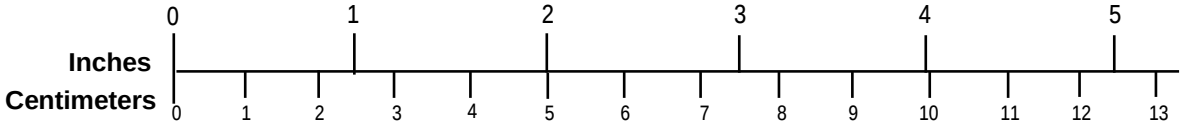

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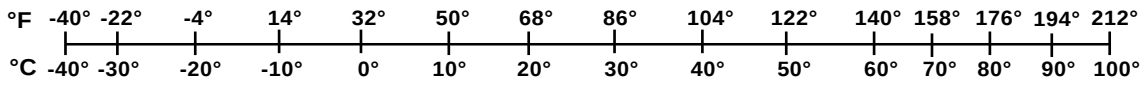

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Note: Appendices listed in the table of contents are available in Volume II.

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Executive Summary

Private highway-rail grade crossing safety has been a matter of concern to both the United States Department of Transportation (USDOT) and the National Transportation Safety Board (NTSB) for more than a decade. USDOT's Federal Railroad Administration (FRA) hosted an open meeting on July 13, 1993, to initiate an industrywide discussion concerning private crossing safety. Since then, both USDOT and NTSB have publicly weighed in on the topic. The 1994 USDOT Rail-Highway Action Plan addressed the need to review safety concerns at private highway-rail grade crossings. In the 2004 USDOT Highway-Rail Crossing Safety and Trespass Prevention Action Plan, the department committed to lead an effort to define responsibility for safety at private highway-rail grade crossings.

Private highway-rail grade crossings are intersections of highways and railroads on roadways either not open to public travel or not maintained by a public authority. According to the National Crossing Inventory maintained by FRA, more than 94,400 private crossings existed in the United States in 2006. Typical types of private crossings include:

- Farm crossings that provide access between tracts of land lying on both sides of the railroad.
- Industrial plant crossings that provide access between plant facilities on both sides of the railroad.
- Residential access crossings over which the occupants and their invitees reach private residences from another road, frequently a public road parallel and adjacent to the railroad right of way.
- Temporary crossings established for the duration of a private construction project or other seasonal activity. [*Railroad-Highway Grade Crossing Handbook; Revised Second Edition,* 2007. FHWA-SA-07-010]

The USDOT Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) (2003 edition) defines a public roadway as any road or street under the jurisdiction of and maintained by a public agency and open to public travel. If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing.

Approximately 400 incidents resulting in more than 30 fatalities occur at private highway-rail grade crossings per year. Historically, the number of fatalities at private crossings has exceeded the total number of on-duty deaths among railroad employees in all rail operations. During the past two decades, the number of incidents at public highway-rail grade crossings has decreased by approximately 60 percent, whereas the number of incidents at private crossings has decreased by approximately 26 percent.

Many safety treatments and initiatives have been implemented at public crossings. The steep decline in incidents at public crossings is likely associated with this implementation. However, because of the characteristics of and the inherent

responsibilities regarding private property, private crossings have not received many of the public grade crossing treatments and initiatives.

Private highway-rail grade crossings may be governed by legal agreements between private property owners and private railroad companies. Currently, few Federal regulations pertain to the safety, operation, maintenance, or responsibility designations at private highway-rail grade crossings, although some States and local jurisdictions have assumed varying degrees of authority over them.

To initiate a national discussion on safety issues at private highway-rail grade crossings, FRA conducted a safety inquiry from July 2006 through July 2007 with the intention of soliciting comments from all affiliated parties to determine current practices and regulations that pertain to private highway-rail grade crossing safety and the best course of action to improve safety.

The safety inquiry consisted of several parallel efforts to gain information. Staff conducted literature reviews, surveys of relevant State authorities, analyses of existing data, and interviews with representatives from international partnering nations. Comments from electronic docket submissions, five public meetings, and additional outreach sessions also contributed to the safety inquiry.

A wealth of information was received from railroads, labor organizations, State Department of Transportations (DOTs), private crossing holders, and the general public in the course of the safety inquiry. Although many different topics were discussed, certain topics recurred. Areas of particular interest and need for further consideration include:

- Enhanced definition of a private crossing
- Identification of crossing categories
- Data collection
- National Crossing Inventory requirements
- Notification of change in use of property
- Signage requirements
- Engineering treatments
- Education
- Rights and responsibilities
- Funding sources

This report documents the information gathered during the safety inquiry. The report includes the process used by FRA and the John A. Volpe National Transportation Systems Center (Volpe Center), written and oral commentary, and a summary of regional and local regulations, standards, and practices specific to private crossings. The report documents results and deliberations for activities conducted during this safety inquiry.

1. Introduction

The FHWA MUTCD defines a public highway-rail grade crossing as any intersection between a public roadway and railroad. The roadway on either side of the crossing must be a public roadway, i.e., under the jurisdiction of, and maintained by, a public authority and open to public travel. If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing.

In 2006, more than 94,400 private highway-rail grade crossings in the United States were in existence, at which over 400 incidents occurred, resulting in more than 30 fatalities.

Currently, accurate estimations of the physical conditions, operations, maintenance procedures, and estimated risks at private highway-rail grade crossings in the United States are unavailable, in large part because private crossing data are limited, incomplete, and in some instances inaccurate. Furthermore, the nature of private ownership and the contractual rights between private-property owners and railroads have complicated Federal, State, and local governmental authority regarding these types of crossings.

From July 2006 through July 2007, FRA, with support from USDOT/RITA/Volpe Center, conducted a safety inquiry to solicit comments from private crossing owners, railroads, and other interested parties on safety issues at private highway-rail grade crossings.

This report documents the information gathered during the safety inquiry. The document includes the process used by FRA and the Volpe Center, written and oral commentary, and a summary of regional and local regulations, standards, and practices specific to private crossings.

2. Background

Private highway-rail grade crossings have been a matter of concern to the USDOT, industry, and the general public for a long time. All items of concern cannot be addressed immediately because of constraints on time and resources; however, multiple agencies within the USDOT are involved in this effort. In particular, FRA and FHWA have made efforts to advance the safety of private highway-rail grade crossings.

2.1 Movement toward Safety Inquiry

On July 13, 1993, FRA hosted a public meeting to initiate a national, industrywide discussion on private highway-rail grade crossing safety.

In 1994, through the 1994 USDOT Rail-Highway Crossing Safety Action Plan, the USDOT further committed to address the safety of private highway-rail grade crossings by proposing to "develop and provide national, minimum safety standards for private crossings, and to eliminate the potential impediment to high speed rail operations posed by private crossings."

In 1998, NTSB publicly commented on the need for improved safety at private crossings through a study entitled *Safety at Passive Grade Crossings, Volume 1: Analysis* (No. SS-98-02). The report highlighted the need to improve safety at highway-rail grade crossings and recommended that the USDOT, in conjunction with the States, determine governmental oversight responsibility for safety at private highway-rail grade crossings.

In 1999, NTSB issued a report entitled *Collision of Northern Indiana Commuter Transportation District 102 with a Tractor-Trailer, Portage Indiana* (No. RAR-99-03) in which it reiterated the need for improved safety at private crossings. NTSB recommended that the USDOT "eliminate any difference between private and public highway-rail grade crossings with regard to providing funding for, or requiring the implementation of, safety improvements."

In 2004, USDOT committed to leading an effort to define responsibility for safety at private highway-rail grade crossings in the 2004 USDOT Highway-Rail Crossing Safety and Trespass Prevention Action Plan. As stated in the 2004 Action Plan, the USDOT made a commitment to determine minimum criteria for signage, identify safety needs at private highway-rail grade crossings, and expedite efforts to develop policy considerations for future FRA actions.

On July 27, 2006, FRA posted a notice in the *Federal Register*, stating its intent to conduct a safety inquiry into private highway-rail grade crossings. The effort included a series of public meetings throughout the United States in cooperation with State agencies to facilitate an open, industry wide dialogue into issues related to private crossing practices, responsibility, and safety. In addition, FRA opened a public docket on these issues for interested parties to submit written comments for public review and consideration.

In 2007, FHWA released an updated *Railroad-Highway Grade Crossing Handbook (Revised Second Edition, 2007)*, describing certain safety concerns regarding private highway-rail grade crossings.

Finding:

- The safety of private crossings is a longstanding priority, which the government has only recently been able to begin to address.

2.2 Federal Regulations and Jurisdictional Issues

Private crossings present a unique set of safety challenges and issues because of their private, or nonpublic, character. Ownership of private crossings can vary, ranging from outright ownership of the underlying property to documented easements to prescriptive easements to documented licenses under contract to verbal agreements. In addition, private highway-rail grade crossings serve the needs of large, disparate populations of businesses and individuals with very different requirements. The highly localized needs, risks, and ownership arrangements that are therefore present at the Nation's private highway-rail grade crossings have complicated any efforts to develop a cohesive strategy for addressing safety on a national scale.

FHWA has regulatory and statutory authority regarding over public roadways, including those at public highway-rail grade crossings, on the basis of Title 23 U.S. Code Sections 130 and 646. These regulations afford authority over public crossings and Federal aid programs funded through transportation bills such as the current SAFETEA-LU. Under this bill, States can request and receive funding to address the use of safety warning devices at public highway-rail grade crossings. FRA has regulatory and statutory authority over the Nation's rail networks, including safety, maintenance, and operations.

State and local authorities are largely reluctant to exercise any jurisdiction over operations and safety at private crossings because they consider private crossings to be private property. Title 23 of the U.S. Code also prohibits funding of private crossing improvements with few exceptions, such as private crossings on designated high-speed rail corridors (discussed in Section 5, State and Local Authority).

Finding:

- Within DOT, FRA is the only agency with statutory authority directly relevant to the subject matter. However, in the interest of effectively serving the multimodal populations at risk, other DOT surface modes should participate in program development.

3. Safety Inquiry Structure

FRA and the Volpe Center used a broad set of activities to engage the public and provide an open line of communication on the developments of the safety inquiry on private highway-rail grade crossing safety. The activities included the following: use of the *Federal Register* and a Web site to post updates; establishment of an electronic docket to solicit written commentary; a survey of current Federal, State, and local authority related to private crossings; analysis of available private crossing data; interviews of representatives of the international community to gain an international perspective; solicitation of oral commentary at five public meetings; additional outreach at industry-specific events such as the Transportation Research Board's (TRB) Annual Meeting; and investigation summaries for reported private crossing incidents that occurred during the safety inquiry. All activities were publicly documented and posted on the electronic docket.

3.1 *Federal Register*/Private Crossing Web site

FRA used the services of the Office of Federal Register, National Archives and Records Administration to publish communications regarding the safety inquiry, scheduled dates for public meetings, and updates to scheduled meetings. The *Federal Register* is the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations.

FRA posted an initial notice of intent to facilitate a safety inquiry in the *Federal Register* on Thursday, July 27, 2006. The initial posting contained a summary of the intended safety inquiry, supplemental information regarding private crossing safety, the schedule for the first public meeting, and contact information. Notices for subsequent public meetings were posted in the *Federal Register* prior to each meeting. Update notices for scheduled meetings were also posted in the *Federal Register*.

In addition, FRA hosted a website that provided updated information regarding the safety inquiry. This information included links to the safety inquiry's *Federal Register* notices, a link to the electronic docket for the inquiry, and contact information for FRA staff managing the safety inquiry.

Questions of Interest

In the initial *Federal Register* notice, FRA solicited discussion and commentary on many areas related to private highway-rail grade crossings. To facilitate discussion and target specific areas, commentary was encouraged regarding 10 topics as follows:

- At-grade highway-rail crossings present inherent risks to users, including the railroad and its employees, and to other persons in the vicinity, should a train derail into an occupied area or release hazardous materials. When passenger trains are involved, the risks are heightened. From the standpoint of public policy, how do we determine whether creation or continuation of a private crossing is justified?

- Is the current assignment of responsibility for safety at private crossings effective? To what extent do risk management practices associated with insurance arrangements result in ‘‘regulation’’ of safety at private crossings?
- How should improvement and/or maintenance costs associated with a private crossing be allocated?
- Is there a need for alternative dispute resolution mechanisms to handle disputes that may arise between private crossing owners and the railroads?
- Should the State or Federal government assume greater responsibility for safety at private crossings?
- Should there be nationwide standards for warning devices at private crossings or for intersection design of new private grade crossings?
- How do we determine when a private crossing has a public purpose and is subject to public use?
- Should some private crossings be categorized as commercial crossings rather than as private crossings?
- Are there innovative traffic control treatments that could improve safety at private crossings on major rail corridors, including those on which passenger service is provided?
- Should DOT request enactment of legislation to address private crossings? If so, what should it include?

3.2 Electronic Docket

FRA established an electronic docket to facilitate public participation in the safety inquiry on private highway-rail grade crossings. The electronic docket provided an outlet for information dissemination and written comment submission through the U.S. Docket Management System at http://dms.dot.gov/ or http://www.regulations.gov/ [Safety of Private Highway-Rail Grade Crossing: Safety Inquiry, Docket No. FRA-2005-23281].

A full list of submissions received in the docket can be found in Appendix A.7.

3.3 Survey of State and Local Authority

The Volpe Center conducted a review of past and present authority related to private highway-rail grade crossings. The survey was implemented through the use of available documentation and contact with States. This review researched State legislative authority specific to safety and closure of private highway-rail grade crossings.

In large part, authority over crossing safety and the closure of at-grade crossings resides with the State agency that regulates and oversees transportation. However, in some States, crossing closure responsibility resides with regulatory bodies such as a State public utility commission, and in some cases, the responsibility is shared between two State agencies or a State agency and a local authority.

The level of regulatory authority granted to State agencies through legislation varies depending on the State. For example, some States have the authority to regulate warning device installation

at private crossings. Florida requires signage at private highway-rail grade crossings to comply with the MUTCD, while South Carolina requires private highway-rail grade crossings to be equipped with the same warning devices as public crossings.

Other States have regulatory authority over the evaluation and creation of new private highway-rail grade crossings and the closure of existing private highway-rail grade crossings. Virginia appears to have the authority to forbid the creation of new private highway-rail grade crossings. Rhode Island appears to have the authority to close existing private highway-rail grade crossings. California appears to have the authority to close existing private highway-rail grade crossings through their environmental review process, which contains a dispute resolution component.

Twenty-two States that have regulations granting some varying level of authority over the safety and closure of private highway-rail grade crossings. The remaining 28 States do not appear to have specific regulatory authority over the safety or closure of private highway-rail grade crossings. From interviews, public meetings, and docket submissions, the statement could be made that not all States that have authority over private crossings exercise or are successfully exercising this authority.

3.4 International Perspective

In an effort to determine the state of private crossings internationally, a review of partnering nations' regulatory authority was conducted. The USDOT has memoranda of understanding with certain countries that facilitate information sharing between those nations and the United States. These memoranda enabled staff to interview representatives of Canada and the United Kingdom to gain insight into their regulations or other authorities specific to safety and closure of private highway-rail grade crossings.

3.5 Private Crossing Data Evaluation

FRA's National Crossing Inventory and Railroad Accident and Incident Reporting System (RAIRS) databases contain publicly available highway-rail grade crossing information. The National Crossing Inventory was developed as a voluntary database to provide a uniform inventory that could be combined with incident data and used to support planning and implementation of crossing safety improvements implemented by States. States and railroads both file extensive information on every public grade crossing but submit a much smaller data set on each private crossing. RAIRS contains several databases that document the circumstances and outcomes of incidents and incidents occurring on the Nation's railroads. Railroads are required to submit data to the RAIRS databases on a timely basis. Of particular interest for the purposes of this study, one of the RAIRS databases, the Grade Crossing Incident Report (GXIR) database, contains a record for every grade crossing incident occurring nationwide, regardless of whether the crossing is public or private.

Although limited by the relative lack of inventory information, the private crossing data available were reviewed and analyzed in an effort to understand the physical conditions and incidents associated with private highway-rail grade crossings. Initial analysis examined the incident, injury, and fatality rates of private crossings relative to public crossings. Further analysis was

conducted in an effort to obtain an understanding of the incident, injury, and fatality rates at private crossings relative to public crossings.

3.6 Public Meetings

FRA and the Volpe Center hosted a series of five public meetings throughout the United States to solicit comments from State agencies, industry, and the general public. Each meeting was coordinated and conducted in conjunction with the respective State agencies for the locality in which the meeting was held. Meetings were conducted in five cities: Fort Snelling, MN; Raleigh, NC; San Francisco, CA; New Orleans, LA; and Syracuse, NY.

Each public meeting was conducted in an organized, uniform format. The meetings provided background information on private crossing safety and the safety inquiry, time for individuals and organizations to submit statements, and an interactive open discussion.

At each of the public meetings, the interactive open discussion was tailored to a specific topic. Topics included the 10 initial topical questions, rights and responsibilities, engineering, data needs, and policy considerations. Topic-specific discussions were held in regions of the country that have demonstrated particular interest or advancement in private crossing safety or that have innovative procedures or authority to address concerns in that area (see Section 6).

An official transcript of each meeting was recorded and posted on the electronic docket (see Appendices A1–A5).

USDOT conducted many outreach activities in an effort to publicize related activities. Each meeting was announced publicly via a press release. In addition, FRA developed a database of government, industry, and academic contacts by combining the contact lists from FRA Railroad Safety Advisory Committee (RSAC) and the 23 U.S.C. Section 130 Funding Program. National metropolitan planning organizations, trucking associations, agricultural associations, police authorities, delivery companies, commercial organizations, and railroad supply companies were added to the database. A letter of invitation was mailed to each individual or organization listed in this extended database (more than 700 contacts) prior to each meeting.

3.7 Additional Outreach

In an effort to broaden outreach as much as possible, the Volpe Center hosted a panel discussion session on safety at private highway-rail grade crossings at the National Academy of Sciences (NAS) Transportation Research Board's (TRB) 86th Annual Meeting on January 23, 2007, in Washington, DC. The TRB annual meeting attracts roughly 10,000 transportation professionals from around the world, including policymakers, administrators, practitioners, and researchers and representatives from industry, academia, and government.

The panel discussion was hosted by TRB's Highway-Rail Grade Crossing Committee, AHB60, and included six members representing government, industry, and labor unions with concerns regarding private crossing safety. Representatives from FRA, FHWA, North Carolina Department of Transportation (NCDOT), Railroad Controls Limited, Association of American

Railroads (AAR), and Rail Safety and Standards Board (RSSB), United Kingdom, each provided brief statements and facilitated a discussion with the audience (see Section 7).

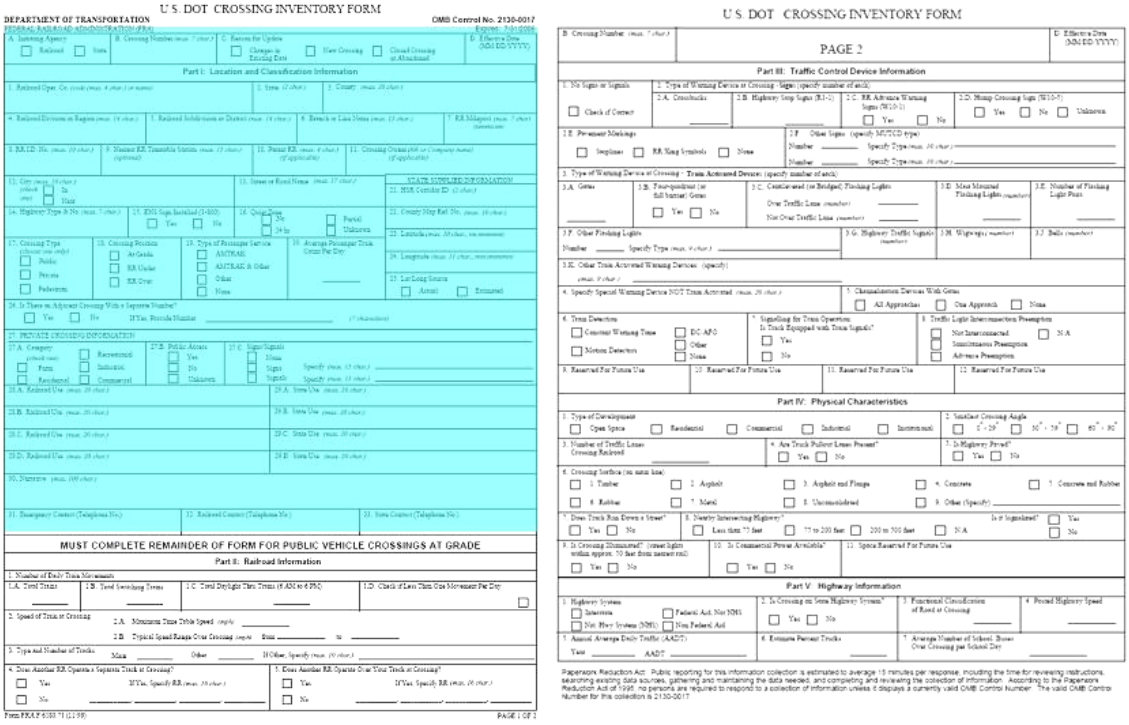
3.8 Private Highway-Rail Grade Crossing Reported Incidents

During the course of the safety inquiry, FRA conducted a series of incident investigations to provide current field data on selected private crossings. In addition to collecting the data required for a grade crossing investigation, FRA inspectors collected information specific to the incident-involved private crossing. The additional data included information about the frequency and types of rail and highway traffic, some data about the geometric configuration at the crossing, signage that was present, and any ownership or maintenance agreement information available. The summaries of nine incident investigations completed during the safety inquiry are listed in Section 8.

4. Highway-Rail Grade Crossing Inventory and Incident Review

The National Crossing Inventory and the RAIRS Grade Crossing Incident Report databases were used to conduct an analysis of the physical conditions and incidents associated with private highway-rail grade crossings. Initially, the Volpe Center compared the incident, injury, and fatality rates of private crossings with those of public crossings. Further review was conducted in an effort to examine the incident, injury, and fatality rates at private crossings.

Highway-rail grade crossing physical characteristics are collected and submitted by the railroads and the States to the National Crossing Inventory on a standard form (FRA F 6180.71, Rev. 11/99) (Figure 1). The database was designed to capture public crossing information to facilitate analysis supporting grade crossing safety improvement programs using Federal funds under a program commonly referred to as Section 130 (U.S.C. Section 130); currently, the submission of crossing data is voluntary. Because crossing improvement programs funded through Section 130 are generally limited to public crossings, only a small subset of the data elements listed on the form is requested for private crossings. Consequently, limited characteristic data exist for the Nation's private crossings.


U.S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)
OMB Control No. 2130-0017
Expires: 7/31/2002

Part I: Location and Classification Information

MUST COMPLETE REMAINDER OF FORM FOR PUBLIC VEHICLE CROSSINGS AT GRADE

Part II: Railroad Information

Form FRA F 6180.71 (11/99) PAGE 1 OF 2

U.S. DOT CROSSING INVENTORY FORM

PAGE 2

Part III: Traffic Control Device Information

Part IV: Physical Characteristics

Part V: Highway Information

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Note: Private crossing information is highlighted in blue

Figure 1. USDOT National Crossing Inventory Form

Because the database is updated on a voluntary basis and contains detailed records for more than 240,000 crossings nationwide, it is not possible to verify accuracy, timeliness, or completeness of the data for private crossings. A simple examination of the average dates on which records were updated reveals differences between records for public crossings and those for private

crossings. As of December 2007, the average age of public crossing records in the National Crossing Inventory is 6.7 years; the corresponding average age of private crossing records is 13.9 years. About one-third of the private crossing data records in the National Crossing Inventory have been updated since 2001, but roughly the same proportion of the current private crossing data records have never been updated.

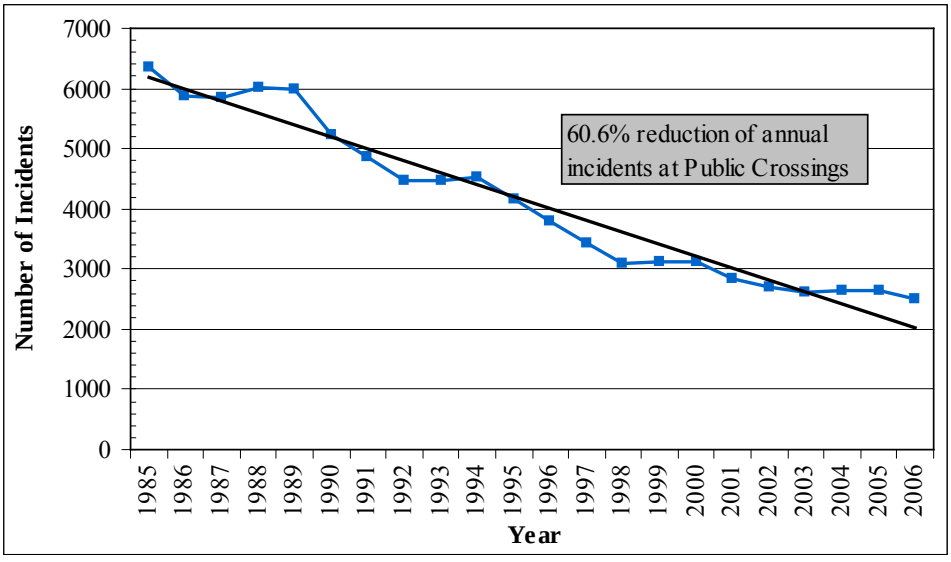
All highway-rail grade crossing incident, fatality, and injury data are submitted by the railroads. The railroads are required to report all rail-related grade crossing incidents to FRA on a monthly basis through submission of the standard FRA Highway-Rail Grade Crossing Accident/Incident Report form (FRA F 6180.57, Rev. 03/03). The submitted data are stored in the RAIRS GXIR database.

Finding:

- The data currently stored in the National Highway-Railroad Crossing Inventory for private crossings are generally not current and not suited for most analyses, and were historically not intended to support effective resource allocation.

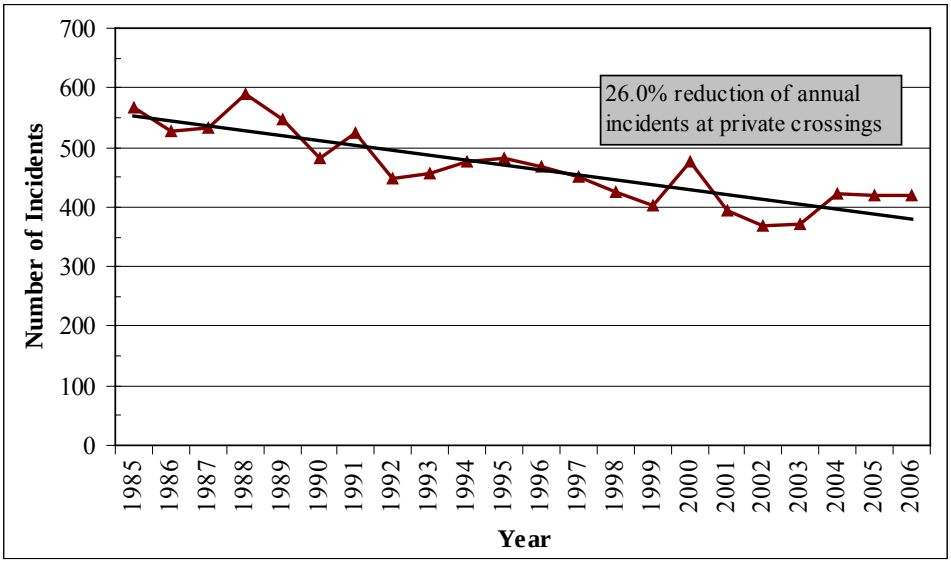
4.1 Highway-Rail Grade Crossing Incident, Injury, and Fatality Statistics

Approximately 240,000 at-grade highway-rail crossings exist in the United States. Of those 240,000, over 39 percent (94,400) are private highway-rail grade crossings. Between 1985 and 2006, there has been a reduction in the number of incidents at both public and private crossings. The reduction at public crossings of 60.6 percent has been much greater than that at private crossings, 26.0 percent (see Figures 2 and 3).



Source: USDOT FRA RAIRS database, October 2007.

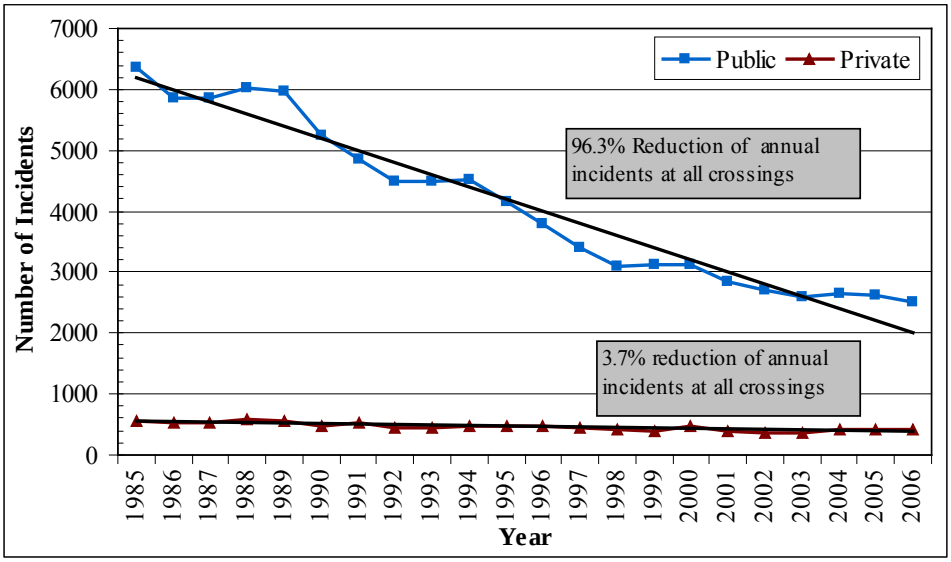
Figure 2. Annual Number of Incidents at Public Crossings, 1985–2006



Source: USDOT FRA RAIRS database, October 2007.

Figure 3. Annual Number of Incidents at Private Crossings, 1985–2006

An examination of the proportion of overall grade crossing incident reduction that can be attributed to each crossing category shows that private crossing incident count reductions account for a relatively small (3.7 percent) part (Figure 4). Despite the fact that traffic counts, both highway and railroad, at all crossings have generally increased over the relevant time period, creating higher risk levels, nevertheless public crossings have accounted for 96.3 percent of the reduction in incidents occurring at all crossings.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 4. Annual Number of Incidents at All Highway Crossings, 1985–2006

One factor that may in part explain the disparity in incident reduction between the two types of crossings is that the population of motorists using a private crossing is generally more limited, suggesting that there may be fewer motorists who are unfamiliar with the private crossing than there might be at a public crossing. Studies suggest that drivers who habitually use a given crossing may develop an expectation that they will not encounter a train while traversing that crossing.[1] Research has also shown that because the frequency of trains at grade crossings is so low, drivers tend to bias their behavior toward not stopping.[2] Accordingly, it may be that drivers who are not as familiar with a particular grade crossing may be more alert to the possibility of a train's approach. A higher proportion of nonhabitual users at public crossings, therefore, may also translate to a higher proportion of drivers who are alert to the approach of a train than is the case at private crossings.

Another factor that may play a role in decreasing incident incidence at public crossings is the use of highway enforcement to affect driver behavior. In at least one State, for example, photo enforcement has been shown to reduce the number of traffic violations occurring at grade crossings.[3] Enforcement, however, whether photo enforcement or more traditional methods involving police personnel, is not generally available at private grade crossings.

A third, and possibly the most significant factor in the decrease in the number of incidents between public and private crossings, is due to the differences in the number of crossings that have been subject to engineering improvements during the relevant period. Upgrading warning devices, improving roadway or track geometry, and other physical improvements to the crossing environment have a positive effect on crossing safety. Engineering improvements, however, tend to come at a high price, more than many local jurisdictions, let alone private landowners, can afford. The most effective crossing improvements, therefore, are typically funded through the States using Federal funds from the Section 130 Program. As Section 130 funds may only be used at public crossings, with few exceptions, improvements at private crossings are very rare.

4.2 Private Highway-Rail Grade Crossing Data Review

In an effort to understand the factors affecting private crossing incidents, staff examined the available data in further detail. This began with a review of the National Crossing Inventory. As noted in Section 4, relatively few data elements are submitted for private crossings. Furthermore, because the data submissions are voluntary, the existing private crossing data are in many cases not accurate and up to date. Indeed, in many instances, the particular data fields reviewed were recorded as unavailable or unknown. The RAIRS GXIR database offered a more complete dataset, but analyses combining the two datasets yielded results with undetermined

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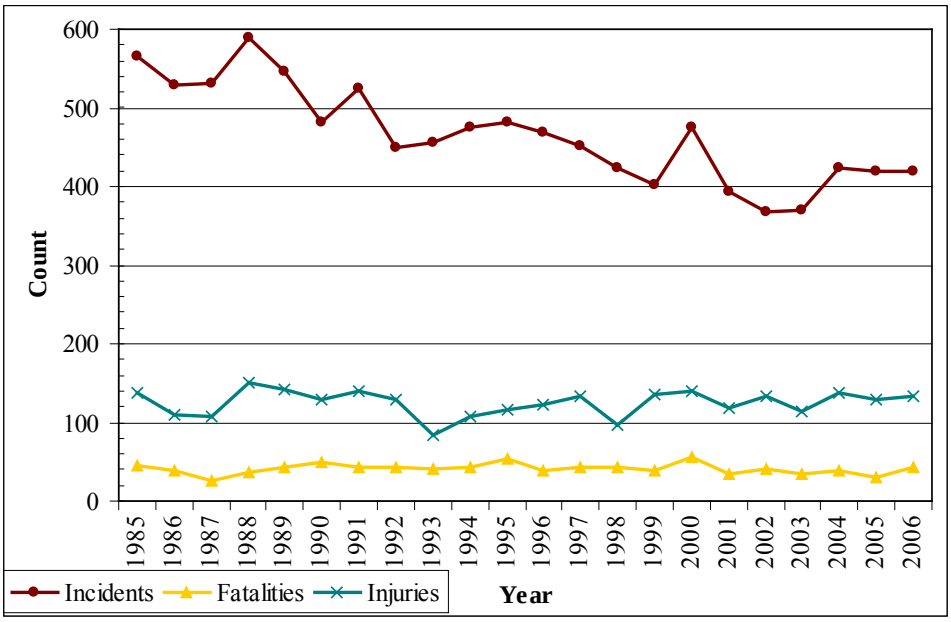
[1] National Transportation Safety Board. 1998. *Safety at Passive Highway/Rail Grade Crossings, Volume 1: Analysis.* No. SS-98-02, p. 48. Washington, DC.

[2] Raslear, Thomas. 1996. Driver behavior at rail-highway grade crossings: a signal detection theory analysis. In: *Safety of Highway-Railroad Grade Crossings: Research Needs Workshop. Vol. II: Appendices.* DOT/FRA/ORD-95/14.2; DOT-VNTSC-FRA-95-12.2, F-9–F-56, p. F-22). Washington, DC: U.S. Department of Transportation, Federal Railroad Administration.

[3] Illinois Commerce Commission. 2002. Photo enforcement at highway-rail grade crossings: 2001 status report to the General Assembly. Working paper 2002–02; available at www.icc.illinois.gov/downloads/public/rr/0502_Photo%20Enforcement_Followup%20Report.pdf on January 8, 2008.

accuracy. Nevertheless, an examination of the available data illustrated general trends and helped to identify problematic areas for further investigation.

On average, during the past few years, approximately 400 incidents have occurred annually at private highway-rail grade crossings. These incidents resulted in 100–150 injuries and 30–40 fatalities. Comparatively, approximately 2,600 incidents resulting in 900–1,000 injuries and 350–400 fatalities occurred annually at public highway-rail grade crossings. Although the number of incidents has declined, the annual number of injuries and fatalities has remained relatively constant (Figure 5).



Source: USDOT FRA RAIRS Database, October 2007.

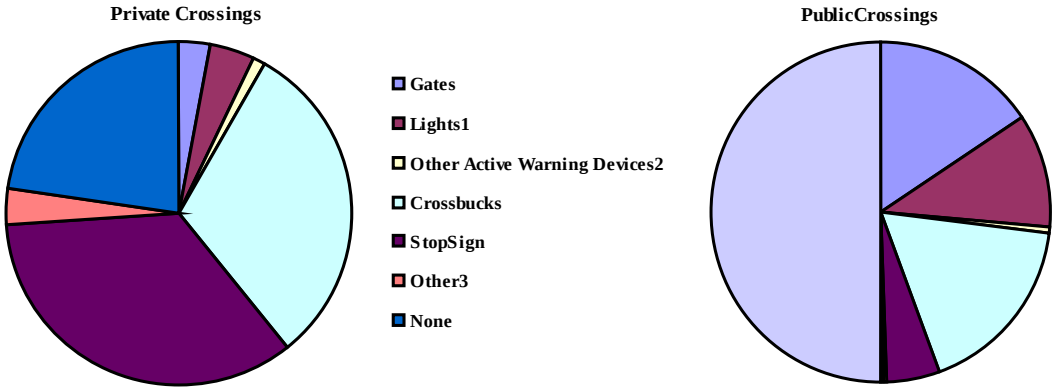
Figure 5. Annual Number of Incidents, Fatalities, and Injuries at Private Crossings, 1985–2006

On the basis of numerous analyses, four factors warranted additional review. The factors included the type of warning device in place at the time of an incident (warning device type), the speed at which a train was traveling at the time of an incident (train speed), the category of type of development in which the crossing was located (type of development), and the categorized roadway user type involved in the incident (roadway user type). Private crossing incident data were examined in reference to the four factors and compared with the corresponding data for public crossings.

Warning Device Type

When incidents are categorized according to the warning device in place at a crossing at the time of an incident, certain differences between incidences at public and private crossings appear (Figure 6). The highest number of incidents at private crossings occurs at passive crossings equipped with cross buck or stop signs. At public crossings, on the other hand, although the highest number of incidents again occurs at crossings equipped with the cross buck sign, a high

number of incidents occur at crossings equipped with either flashing lights or flashing lights and gates.

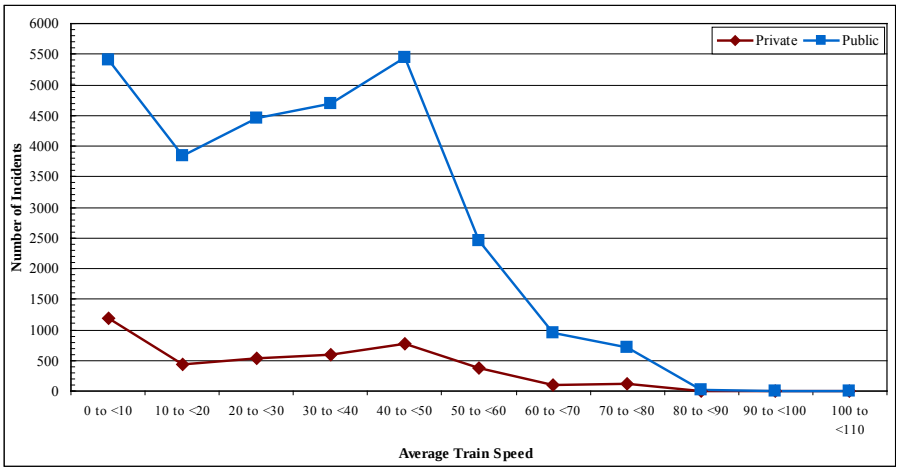


Source: USDOT FRA RAIRS Database, October 2007.
[1] Lights include incidents at crossings with standard and cantilever flashing lights.
[2] Other active warning devices include incidents at wigwag, highway traffic signal, and audible.
[3] Other includes incidents at crossing with watchman, flagged by crew, and other.

Figure 6. Number of Incidents by Warning Device, 1997–2006

Train Speed

Incidents occurring between 1997 and 2006 at public and private crossings were distributed according to train speed documented on the incident form. For purposes of this analysis, staff grouped train speeds into 10-mile-per-hour (mph) increments. The highest numbers of incidents at private crossings occurred in the 0-to-10-mile-per-hour category, which can be correlated with yard and switching train movements. The highest numbers of incidents at public crossings occurred in the 40-to- 50-mile-per-hour speed category, which can be correlated with average speed of passenger and freight train service and with 0-to-10-mile-per-hour yard and switching train movements. Although the resultant curves for private and public crossings differ in magnitude (Figure 7), they show peaks in the same speed categories and are otherwise rather similar.



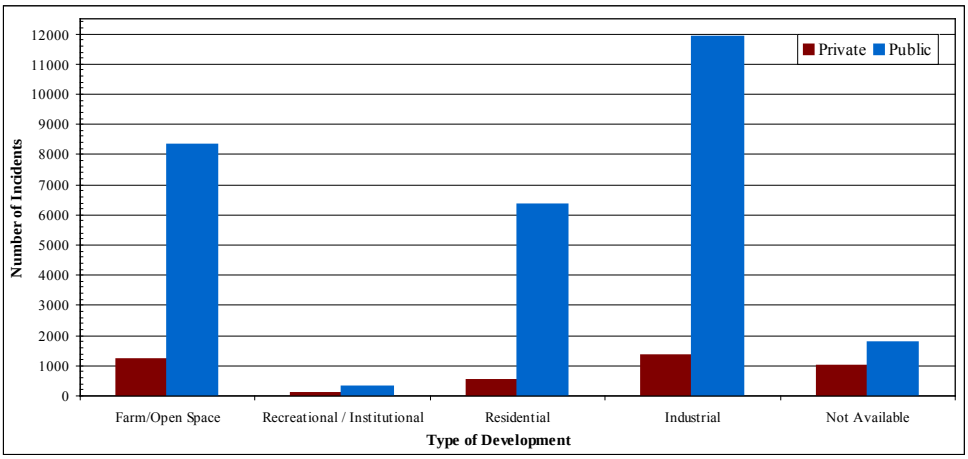
Source: USDOT FRA RAIRS Database, October 2007.
Note: 2.25% of the incident data were not coded for train speed

Figure 7. Number of Incidents by Train Speed, 1997–2006

Type of Development

The National Crossing Inventory contains information about the characteristics of the area surrounding a crossing, but unfortunately the data for private and public crossings are stored in two different fields, each with its own categorization values. Private crossings are categorized as farm, recreational, residential, industrial, or commercial, whereas public crossings are categorized as residential, industrial, commercial, open space, or institutional. The differences between category definitions, coupled with the fact that the category was not always filled out for private crossings, means that no definitive comparison can be made. An examination of the category definitions suggests that, although the fields are defined differently, there nevertheless may be enough similarities to provide some insight. For example, the public crossing category "open space" is defined as sparsely or undeveloped, lightly populated, or agricultural; this category, therefore, likely bears some similarity to the private crossing category "farm." Likewise, although there are private "commercial" and "industrial" categories, the public crossing categories of "commercial" and "industrial" are similar to the private crossing category "industrial." The public crossing category "institutional," although not identical to the private crossing category "recreational," bears similarities to it, and both types of crossings have a "residential" category.

The highest numbers of private crossing incidents between 1997 and 2006 where development type was known occurred at industrial and farm crossings. The highest numbers of incidents at public crossings occurred at open space, commercial, and residential crossings (Figure 8).



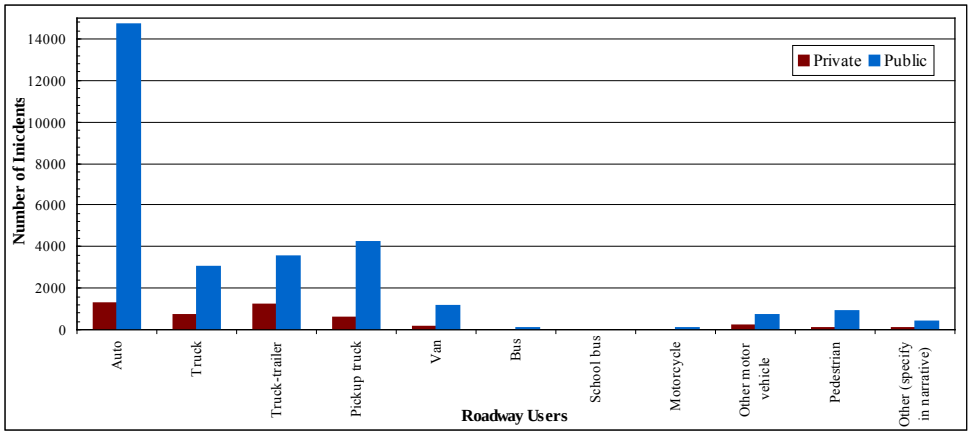
Sources: USDOT National Highway-Rail Crossing Inventory, November 2006; USDOT FRA RAIRS Database, October 2007.

Figure 8. Number of Incidents by Type of Development, 1997–2006

Roadway User Type

USDOT also examined whether different populations of motor vehicle types might be involved in more incidents at private crossings than at public crossings (Figure 9). According to RAIRS GXIS data, between 1997 and 2006, the highest numbers of incidents at private crossings

involved truck-trailers and automobiles. During that same time period, the majority of incidents at public crossings involved automobiles.



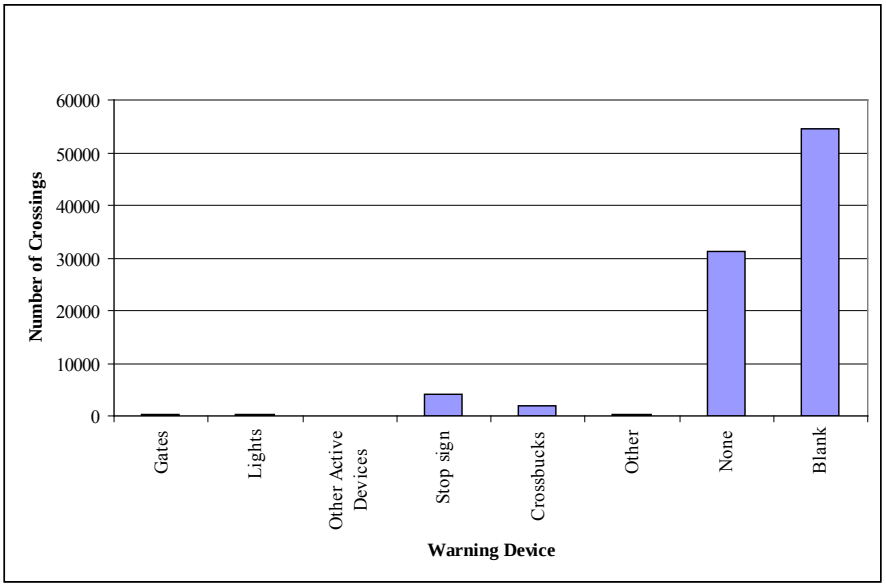
Source: USDOT FRA RAIRS Database, October 2007.

Figure 9. Number of Incidents by Roadway User Type, 1997–2006

The following sections provide a more detailed examination of what the data show when categorized by these four factors.

4.2.1 Warning Device Type

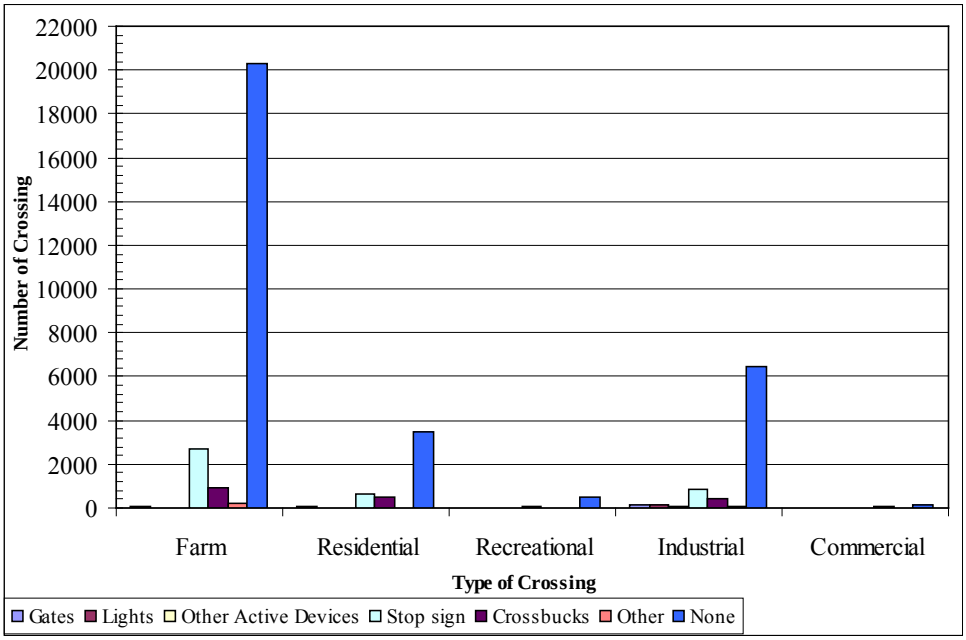
Using the National Crossing Inventory as of November 2006, USDOT assembled private crossing counts grouped by warning device type (Figure 10). As noted above, data available are limited and incomplete in many instances. This point is clearly illustrated by the fact that for private crossings, the warning device field is predominantly blank.



Source: USDOT National Highway-Rail Crossing Inventory, November 2006.

Figure 10. Number of Private Crossings Equipped with Warning Devices

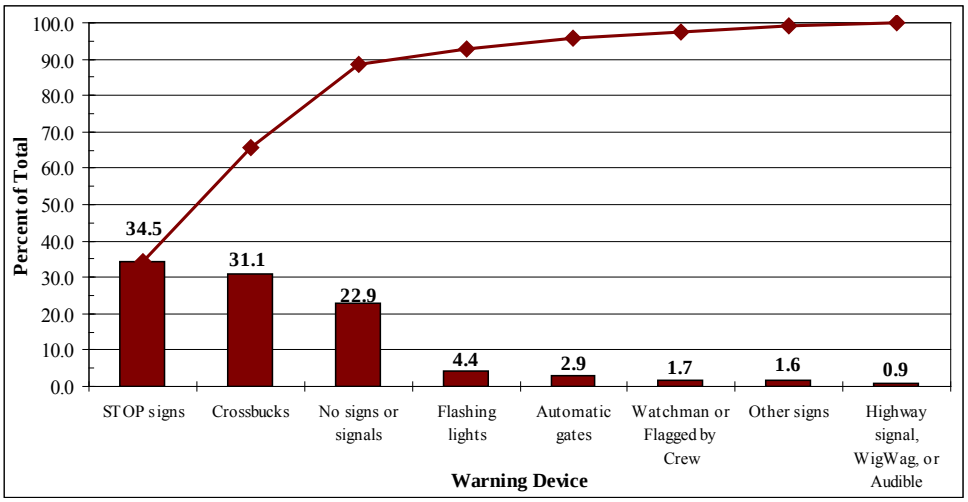
Of the private crossing records for which a warning device was recorded (41 percent), the majority, roughly 80 percent, were equipped with no warning devices. When the crossings with nonblank warning device codes were further subdivided according to development type, it became apparent that in most development types, the second largest number of crossings were equipped with stop signs (Figure 11).



Source: USDOT National Highway Rail Crossing Inventory, November 2006.
Note: Fifty-nine percent of private crossings were not coded for warning device types and 1.8% of private crossings were not coded for private crossing development types.

Figure 11. Number of Private Crossings Equipped with Warning Devices by Type of Crossing, November 2006

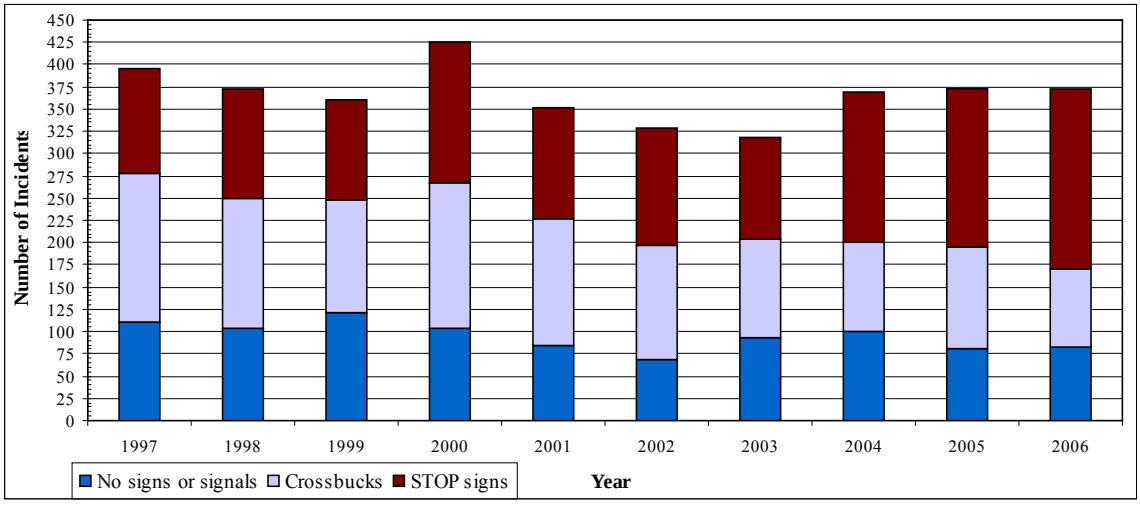
Organizing private crossings' incident proportions, as seen in Figure 11, in order of descending magnitude, offered some insight (Figure 12). It is easy to see that passive crossings (those equipped with stop signs, cross buck signs, or no warning device) account for more than 88 percent of the incidents. Again, the majority of private crossings are recorded as either having no warning devices or as having passive warning devices.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 12. Private Crossing Incident Proportion by Warning Device, 1997–2006

The relatively large number of private crossings equipped with stop signs and the concomitant large number of incidents at stop-sign–equipped private crossings may be related to recent activities on the part of some railroads. Before 2002, the highest annual number of incidents occurred at private crossings equipped with cross bucks. In 2002, however, this changed (Figure 13). Since 2002, private crossings equipped with stop signs have experienced the highest annual number of incidents. During this same period, the railroad community, partly in response to recommendations made by NTSB,[4] initiated programs to attempt standardization of the signs at private crossings. This initiative resulted in large numbers of private crossings being equipped for the first time with stop signs during the period in question.



Source: USDOT FRA RAIRS Database, October 2007.

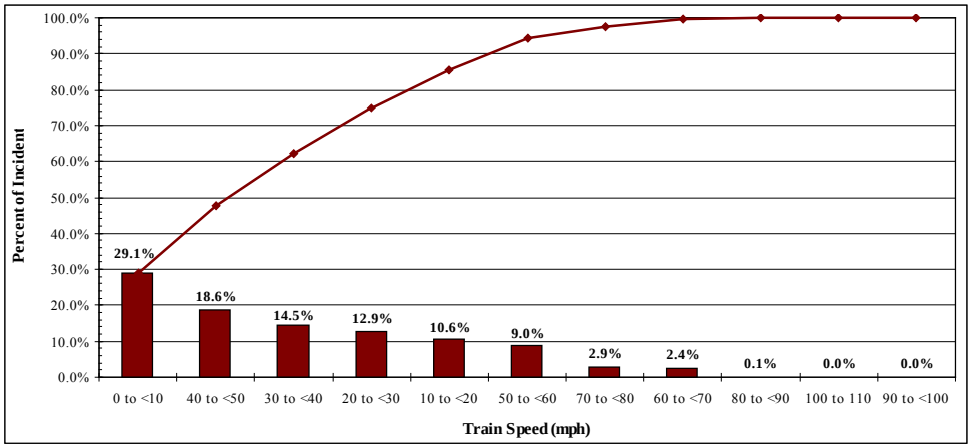
Figure 13. Number of Private Crossing Incidents by Warning Device, 1997–2006

[4] National Transportation Safety Board. 1998. Safety at Passive Highway/Rail Grade Crossings, Volume 1: Analysis. (Number SS-98-02) Washington, DC.

Research has shown that at many intersections (grade crossings included), the installation of warning devices or upgraded warning devices can have a positive effect on the safety of that intersection.[5] Given the large number of private crossings at which no warning device at all is placed, it seems clear that, in all likelihood, requiring a minimum suite of warning devices would be effective in reducing the annual number of incidents. However, the implementation of stop signs may not be the universal solution considering that the majority of incidents at crossings equipped with a warning device are at those equipped with a stop sign.

4.2.2 Train Speed

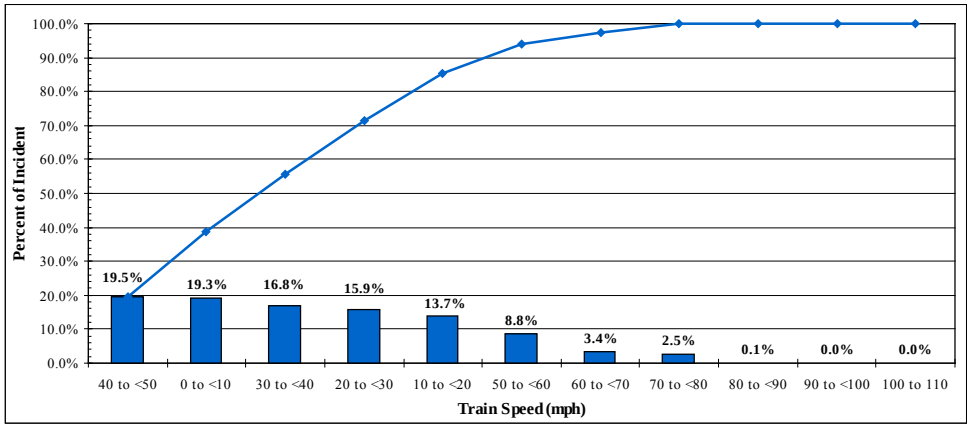
Grade crossing collisions involve trains that are traveling at speeds ranging from just a few miles per hour up through 110 mph. Between 1997 and 2006, the largest number of incidents at private crossings involved trains moving 9 mph or even slower (Figure 14). The second largest group of collisions private crossings involved trains traveling between 40 and 49 mph. At public crossings, however, the largest number of incidents involved trains traveling between 40 and 49 mph, followed closely by incidents at train speeds less than 9 mph (Figure 15). The comparatively large number of low train speed incidents at private crossings may be related to the fact that, as noted in Section 4.2, a large proportion of private crossing incidents occur at industrial crossings, where it is common for trains to perform switching and other low-speed maneuvers.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 14. Private Crossing Incident Proportion by Train Speed, 1997–2006

[5] Ogden, Brent. 2007. Railroad-Highway Grade Crossing Handbook – Revised Second Edition 2007. (FHWA-SA-07-010) Washington, DC: U.S. Department of Transportation, Federal Highway Administration: Section IV Identification of Alternatives, I. Active Traffic Control Devices (pages 97–99).

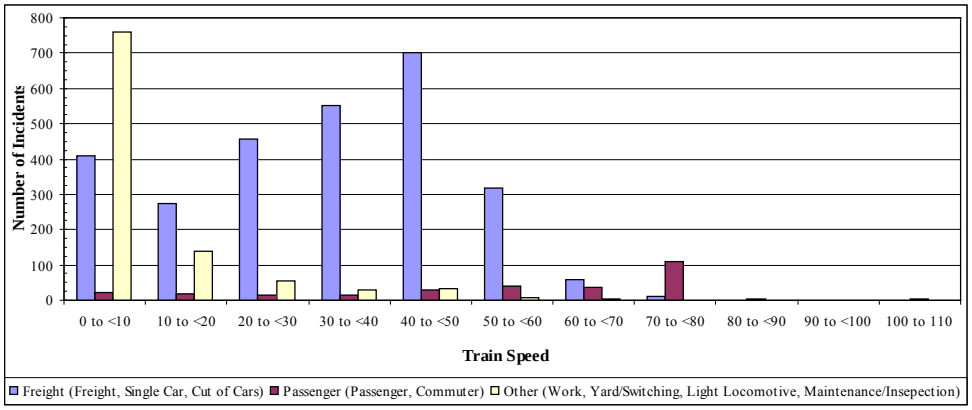


Source: USDOT FRA RAIRS Database, October 2007.

Figure 15. Public Crossing Incident Proportion by Train Speed, 1997–2006

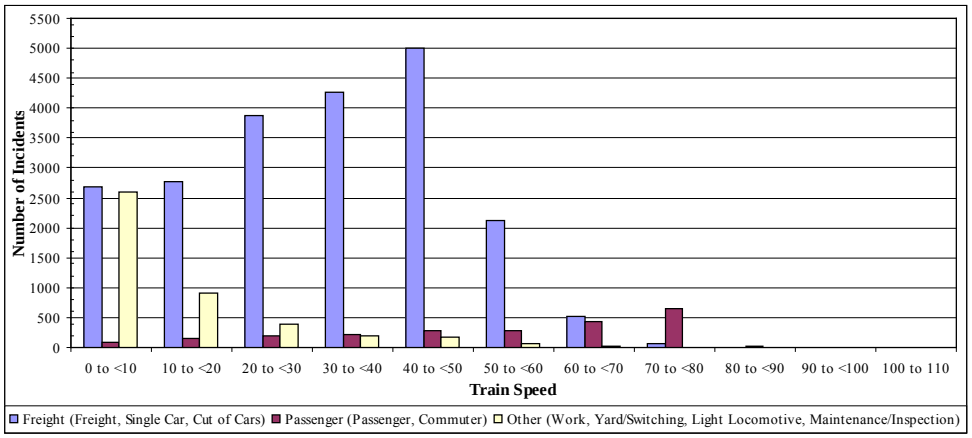
An examination of the types of trains involved in incidents at different speeds provides further illumination (Figures 16 and 17). Incidents were sorted by train speed and by whether the train equipment involved was freight, passenger, or other equipment. For the purposes of this analysis, the category of freight included freight equipment, single cars, and cuts of cars. The passenger category included passenger and commuter equipment. "Other" included work, yard switching, light locomotive, maintenance, and inspection equipment.

In incidents where the train speed was recorded between 40 and 49 mph, the largest category by count for public crossings, freight trains predominated at both public and private crossings. This is not particularly surprising, because freight trains operate more train-miles than do passenger trains, and relatively few "other" equipment types operate at such high speeds. In the low-speed incident category, however, the number of "other" equipment involved at private crossings is considerably higher than that of freight equipment, while the counts are roughly equivalent for the public crossing data.



Source: USDOT FRA RAIRS Database, October 2007.

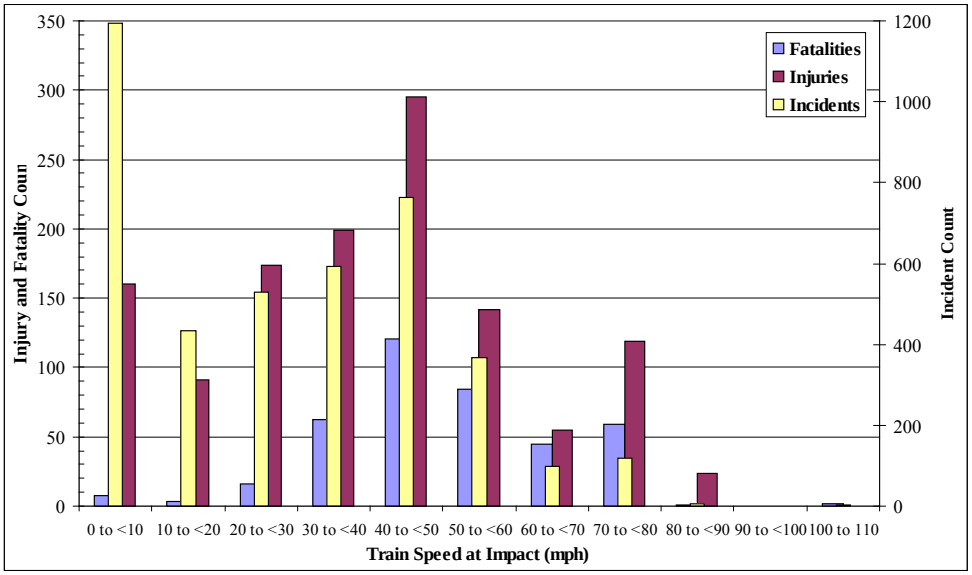
Figure 16. Total Private Crossing Incidents by Train Speed and Type of Equipment, 1997–2006



Source: USDOT FRA RAIRS Database, October 2007.

Figure 17. Total Public Crossing Incidents by Train Speed and Type of Equipment, 1997–2006

Currently, establishing a means to prioritize limited resources for the implementation of crossing improvements is often difficult. An examination of the incidents, injuries, and fatalities at private crossings categorized by train speed at impact (Figure 18) may aid in developing a methodology.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 18. Private Crossing Injuries and Fatalities by Train Speed at Impact, 1997–2006

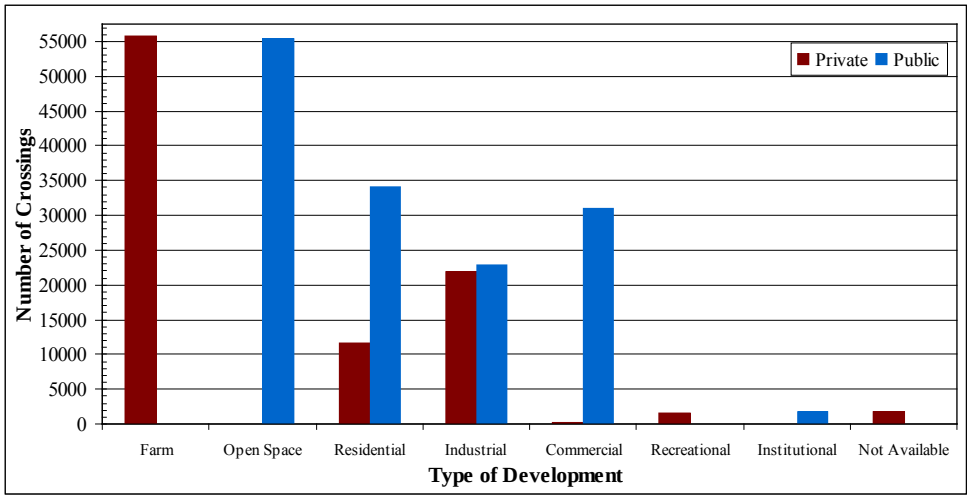
Note that, although frequency does not increase uniformly with train speed, the proportion of incidents that involve either injury or fatality seems to grow as train speed increases. The trend is particularly notable at higher-speed ranges. This may provide insight that will help to

establish priorities, suggesting a risk-based approach that might reasonably focus on inner-city passenger operations.

4.2.3 Type of Development

As previously mentioned, the sets of development types recorded in the National Crossing Inventory for public and private crossings are not the same. Private crossings are categorized as farm, recreational, residential, industrial, or commercial. Public crossings, on the other hand, may be categorized as residential, industrial, commercial, open space, or institutional. Although this causes some issues with comparing private and public crossing data, rough comparisons nevertheless may illuminate safety issues at private grade crossings.

As noted previously, it is possible to consider the "Farm" category for private crossings to be somewhat analogous to the "Open Space" category of public crossings. Furthermore, the private crossing "Recreational" and the public crossing "Institutional" categories are somewhat similar. Interestingly, the number of "Farm" crossings is more or less equal to the number of "Open Space" crossings (Figure 19). The number of "Recreational" crossings also equates roughly to the number of "Institutional" crossings, and there is similar correspondence between the public and private crossing counts in "Industrial" developments. In the categories of residential and commercial crossings, however, public crossings outnumber private crossings by considerable margins.

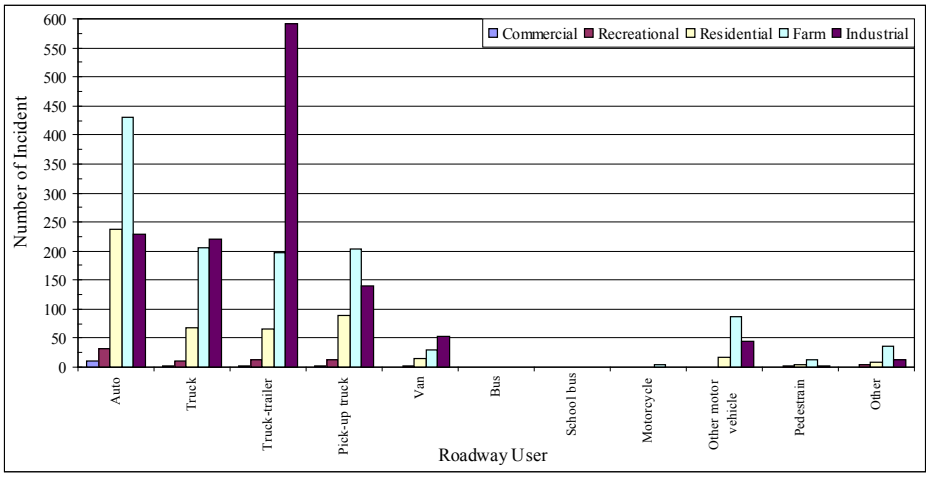


Source: USDOT National Highway Rail Crossing Inventory, November 2006.
Note: Private crossing categories include Farm and Recreational, which public crossings do not. Public crossing categories include Open Space and Institutional, where private crossings do not.

Figure 19. Number of Crossings by Type of Development, 1997–2006

Figure 8 shows that, between 1997 and 2006, the largest numbers of incidents at private crossings occurred at industrial crossings, followed by those at farm crossings. USDOT examined these incident data to determine what types of motor vehicles were involved in incidents in different development categories (Figure 20). At farm crossings, automobiles were involved in the largest number of incidents, followed by trucks of various types. Relatively few farm-crossing incidents were recorded involving other types of motor vehicles, the category most

likely to include tractors and other varieties of heavy agricultural equipment. Automobiles also predominated in incidents at commercial, recreational, and residential private crossings. At industrial crossings, however, truck-trailer combination vehicles accounted for the largest number of incidents.



Sources: USDOT National Highway Rail Crossing Inventory, November 2006;
USDOT FRA RAIRS Database, October 2007.

Figure 20. Private Crossing Incidents by Development and Roadway User, 1997–2006

The type of development in the vicinity of a crossing may also play a role in the speeds at which trains travel. An examination of incidents occurring between 1997 and 2006 shows that incidents where trains were traveling at speeds below 10 mph accounted for more than 40 percent of industrial crossing incidents, the development type that accounted for the highest number of private crossing incidents. For other types of development, on the other hand, the incidents appear to involve trains moving at higher speeds (Table 1). At farm crossings, for example, which accounted for the second-highest number of private crossing incidents, the highest number of incidents involved trains traveling between 40 and 49 mph, and incidents involving trains speeds between 30 and 50 mph accounted for more than 48 percent of the total farm incidents.

Table 1. Private Crossing Incidents by Development and Train Speed, 1997–2006

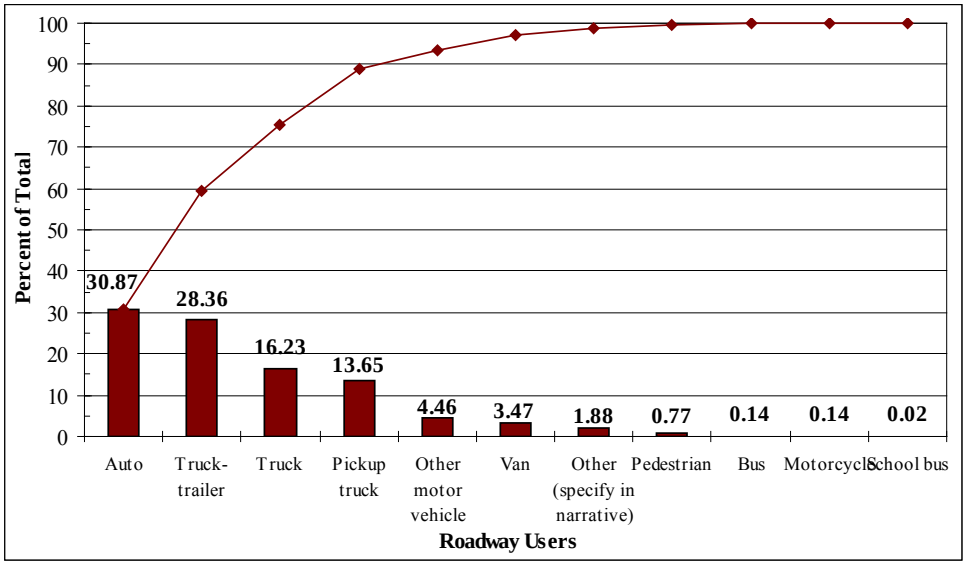
	Farm	Residential	Recreational	Industrial	Commercial	N/A	Total
0 to <10	87	69	6	**531**	10	528	1231
10 to <20	85	51	9	166	1	123	435
20 to <30	165	106	15	148	1	94	529
30 to <40	**228**	91	17	155	6	97	594
40 to <50	**366**	127	14	164	2	91	764
50 to <60	185	41	6	91	0	45	368
60 to <70	44	12	2	27	0	14	99
70 to <80	62	12	0	30	1	14	119
80 to <90	1	0	4	0	0	0	5
90 to <100	0	0	1	0	0	0	1
100 to 110	0	0	1	0	0	1	2
TOTAL	**1223**	509	75	**1312**	21	1007	4147

Source: USDOT FRA RAIRS Database, October 2007.

The data illustrate that more than 30 percent of private crossing incidents occur at industrial crossings, and more than 29 percent of incidents occur at farm crossings. Trends in the incident data, sorted by the type of development, roadway user, and train speed, indicate that the most frequent occurrences of private crossing incidents were recorded at industrial crossings and involved truck-trailers and low-speed rail equipment. In addition, truck, pickup truck, and truck-trailer incidents at private farm crossings accounted for the second-largest category of incidents at private farm crossings. The largest category of incidents at private farm crossings involved automobiles.

4.2.4 Roadway User

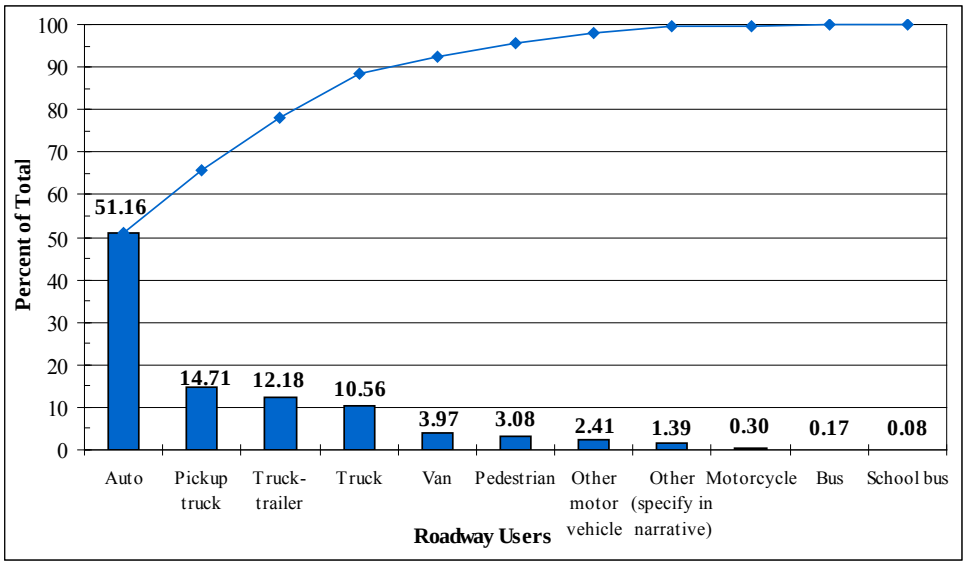
A brief overview of the types of highway vehicles involved in private crossing incidents between 1997 and 2006 shows that automobiles predominated, representing just more than 30 percent of the incidents (Figure 21). With only a slightly smaller proportion, truck-trailer combination vehicles accounted for just more than 28 percent of all private crossing incidents.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 21. Private Crossing Incident Proportion by Roadway User Type, 1997–2006

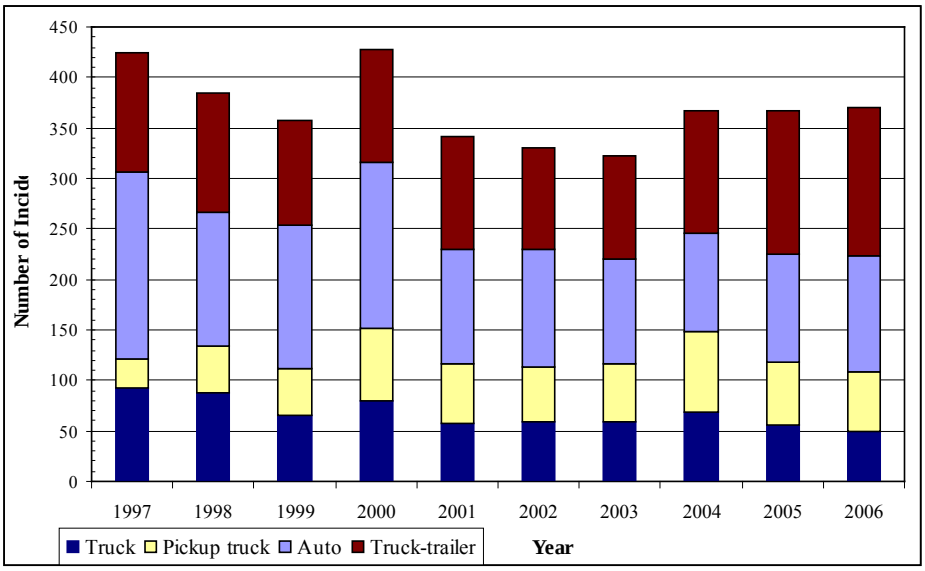
In comparison, automobile incidents accounted for more than half of all incidents occurring at public grade crossings during the same period (Figure 22). Furthermore, truck-trailer and truck incidents at public crossings, instead of nearly equaling the numbers involving automobiles, accounted for only about 23 percent of all public crossing incidents. The combined categories of truck-trailer and truck incidents accounted for a much higher percentage of private crossing incidents (44.6 percent) than public crossing incidents (22.7 percent).



Source: USDOT FRA RAIRS Database, October 2007.

Figure 22. Public Crossing Incident Proportion by Roadway User Type, 1997–2006

Sorting the incident data by the year of occurrence provided a look at potential motor vehicle incident trends. For the most part, since private crossing incidents between 1997 and 2006 generally involved automobiles, truck-trailers, trucks, or pickup trucks, analysis focused on these four groups (Figure 23). Historically, the highest proportion of private crossing incidents involved automobiles. During the period from 2003 through 2006, however, the number of truck-trailer incidents surpassed that of automobiles at private crossings. This phenomenon matches the national trend of increased commercial motor vehicle incidents over the same period. Additionally, truck-trailers and pickup trucks experienced on average an increase in the number of incidents during this period, whereas the other categories have held steady or declined.



Source: USDOT FRA RAIRS Database, October 2007.

Figure 23. Number of Private Crossing Incidents by Roadway User, 1997–2006

USDOT also examined the data to determine whether any interactions existed between the type of motor vehicles involved and the type of warning devices in place at the incident crossings and whether the experience at public industrial crossings differed from that at private industrial crossings. Between 1997 and 2006, the highest number of incidents at private industrial crossings involved stop signs (35.7 percent) and cross buck signs (30.4 percent) (Table 2). In almost every warning device category, however, truck-trailers accounted for the highest number of incidents: some 44 percent of incidents at cross buck-equipped private industrial crossings, 49 percent of incidents at stop-sign–equipped private industrial crossings, and 56 percent of incidents at gated private industrial crossings. The two categories of roadway users with the highest number of private industrial crossing incidents were truck-trailers (45.8 percent) and automobiles (17.5 percent); however, the number of truck incidents (17.1 percent) is similar to that of automobiles. Truck-trailers were involved in the highest individual category of incidents at private industrial crossings: 234 private industrial crossing incidents involved stop signs and truck-trailers (17.8 percent of total incidents), whereas 177 involved crossbuck signs and truck trailers (13.5 percent). In addition, the number of truck-trailer incidents at active (both gated and

flashing-light) private industrial crossings accounted for more than 50 percent of incidents at active private industrial crossings.

Table 2. Private Industrial Crossing Incidents by Roadway User and Warning Device, 1997–2006

	Gates	Cantilever or Standard FLS	Wig wags	Highway traffic signals	Audible	Crossbucks	Stop signs	Watchman	Flagged by crew	Other (specify in narrative)	None	Total
Auto	12	16	1	0	2	85	71	0	4	3	35	**229**
Truck	3	22	1	1	0	71	74	1	4	4	43	224
Truck-trailer	**28**	**50**	2	1	1	**177**	**234**	0	14	11	83	**601**
Pickup truck	4	9	1	1	2	42	51	1	2	5	24	142
Van	0	1	0	0	0	9	18	0	2	0	24	54
Bus	0	0	0	0	0	0	1	0	0	0	0	1
School bus	0	0	0	0	0	0	0	0	0	0	0	0
Motorcycle	0	0	0	0	0	0	0	0	0	0	0	0
Other motor vehicle	0	3	0	0	0	10	16	0	3	1	12	45
Pedestrian	1	0	0	0	0	1	1	0	0	0	0	3
Other (specify in narrative)	2	1	0	0	0	5	3	0	0	0	2	13
Total	**50**	**102**	5	3	5	**400**	**469**	2	29	24	223	1312

Sources: USDOT FRA RAIRS Database, October 2007.
USDOT National Highway Rail Crossing Inventory, November 2006.

The data at private industrial crossings sorted by roadway user illustrate that more than 66 percent of private industrial crossing incidents occurred at passive crossings equipped with stop or cross buck signs, and an additional 17 percent of incidents occurred at private industrial crossings with no warning devices. Incidents at industrial crossings involving truck-trailers accounted for approximately 46 percent of total private crossing incidents. Incidents involving trucks and pickup trucks accounted for an additional 28 percent.

Table 3. Public Industrial Crossing Incidents by Roadway User and Warning Device, 1997–2006

	Gates	Cantilever or Standard FLS	Wig wags	Highway traffic signals	Audible	Crossbucks	Stop signs	Watchman	Flagged by crew	Other (specify in narrative)	None	Total
Auto	**821**	**483**	5	17	3	**600**	116	0	13	4	10	2072
Truck	106	118	2	0	9	156	33	0	2	1	7	434
Truck-trailer	212	158	4	9	3	264	95	0	1	4	6	756
Pickup truck	160	138	1	2	2	180	39	0	1	0	5	528
Van	60	41	0	1	2	43	10	0	0	0	1	158
Bus	6	2	0	0	0	3	0	0	0	0	0	11
School bus	2	1	0	0	0	0	0	0	0	0	0	3
Motorcycle	2	3	0	0	0	4	0	0	0	0	0	9
Other motor vehicle	24	14	0	1	0	24	6	0	0	0	0	69
Pedestrian	**105**	10	0	0	0	1	1	0	0	0	0	117
Other (specify in narrative)	28	9	0	0	0	6	2	0	0	0	0	45
Total	1526	977	12	30	19	**1281**	302	0	17	9	29	4202

Sources: USDOT FRA RAIRS Database, October 2007.
USDOT National Highway Rail Crossing Inventory, November 2006.

In contrast, at public industrial crossings, the highest proportions of incidents involved automobiles at cross buck-sign–equipped crossings (19.5 percent) and automobiles at gated crossings (14.2 percent) (Table 3). At public industrial crossings, in fact, automobile-involved incidents account for the majority of incidents in almost all warning device categories, much as truck-trailer–involved incidents dominated at private industrial crossings. Truck-trailer incidents at public industrial crossings, regardless of warning device in place at the crossing, accounted for approximately 18 percent of all public industrial crossing incidents.

4.3 Data Review Summary

Because of the limitations of the private crossing data in the National Crossing Inventory, only rudimentary analysis of the characteristics present at or near the Nation's private grade crossings was possible. The incident data in RAIRS GXIR were more complete and provided the opportunity to learn about several aspects of private crossing incidents. Merging inventory records with incident records where possible enabled illustration of ways in which the crossing environments, trains, and roadway user characteristics may interact to increase the likelihood of incident occurrence.

The percentage of collisions at private crossings that were reported as having no traffic control devices in place (17 percent of all private crossing collisions) suggests that requiring a minimum suite of standard warning devices may help to improve safety at the Nation's private grade crossings. Given that the majority of incidents occurring at private crossings that had a warning device occurred at those equipped with a stop sign, however, it is not possible to say that the implementation of stop signs is a universal solution. Further study may be needed to determine the best approach for ensuring that private crossings are equipped with appropriate warning devices.

Incident data indicate that a high proportion of private crossing incidents involve work train, yard switching, light locomotive, maintenance, and inspection equipment traveling at speeds less than 10 mph. These incidents also tend to involve truck-trailers and to occur at industrial crossings. This confluence of factors may indicate that focusing safety improvement efforts on industrial sites may be an effective strategy for improving safety at private crossings.

Findings:

- Available data for public and private crossing incidents related to train speed at impact differ in magnitude, but the data illustrate peaks in the same speed regimes and are otherwise similar.

- The highest numbers of private crossing incidents between 1997 and 2006, where development type was known, occurred at industrial and farm crossings. The highest numbers of incidents at public crossings occurred at open space, commercial, and residential crossings (Figure 8).

- The highest numbers of incidents at private crossings involved truck-trailers and automobiles. During that same time period, the majority of incidents at public crossings involved automobiles.

- Given the large number of private crossings at which no warning device at all is placed, it seems clear that, in all likelihood, requiring a minimum suite of warning devices would be effective in reducing the annual number of incidents. However, the implementation of stop signs may not be a universal solution considering that the majority of incidents at crossings with a warning device occurred at those equipped with a stop sign.

- Data show that incident frequency does not increase uniformly with train speed. The proportion of incidents that involve either injury or fatality seems to grow as train speed increases. The trend is particularly notable at higher speed ranges. This may provide insight that will help to establish priorities, suggesting a risk-based approach that might reasonably focus initially on intercity passenger operations, commuter service, and major corridors where freight train speeds are relatively high.

- More than 30 percent of private crossing incidents occurred at industrial crossings and more than 29 percent at farm crossings. Trends in the incident data, sorted by the type of development, roadway user, and train speed, indicate that the most frequent occurrences of private crossing incidents were recorded at industrial crossings. With respect to private industrial crossing incidents, the majority involved truck-trailers and low speed rail equipment. Incidents at private farm crossings accounted for the second-largest category of private crossing incidents. Although a majority of private farm crossing incidents involved automobiles, trucks, pickup trucks, and truck-trailers were involved in a high percentage. Additionally, truck-trailers and pickup trucks experienced on average an increase in the number of private crossing incidents during this period, whereas the other categories of roadway users had numbers that held steady or declined.

- Incidents involving truck-trailers at private industrial crossings accounted for approximately 46 percent of total private industrial crossing incidents. Truck-trailer incidents at public industrial crossings, on the other hand, regardless of warning device in place at the crossing, accounted for approximately 18 percent of public industrial crossing incidents.

- The use of public funds to make improvements has played an important role in improving safety at public crossings. Except in very rare circumstances, however, public funding has not been and currently is not available for use at private crossings. As a result, the proportion of private crossings equipped with more effective warning devices, particularly active warning devices, is much lower than the proportion of public crossings so equipped. Improvements in safety (as reflected in the incident, fatality, and injury counts nationwide) at private crossings, therefore, have lagged behind the improvements seen at public crossings.

- In particular, current data are not sufficient to allow analyses of trends in either highway or rail traffic at private crossings. Assuming that exposure trends at private crossings are similar to those at public crossings in direction even if not in scale, it seems reasonable to believe that exposure at private crossings has risen somewhat during the past decade. Based on this assumption, incident, injury, and casualty rates at private crossings have likely fallen somewhat over the same time period; however, national rates are stagnant.

5. State and Local Authority

A review of State and local statutes, ordinances, and regulations specific to the safety and closure of private highway-rail grade crossings was conducted. The focus of the review was on State and local authority at the State level. FRA's *Compilation of State Laws and Regulations on Matters Affecting Highway-Rail Grade Crossings (Third Edition)*, State supplements to the MUTCD, and direct discussion with a limited number of State representatives provided the basis for the review.

Typically, the overall authority over safety of at-grade crossings resides with the State agency that has responsibility regarding transportation issues. However, in some States, this responsibility resides with regulatory bodies such as a State public utility commission, and in some cases, the responsibility is shared between two State agencies or a State agency and a local authority.

Summary Compilation of State Laws and Standards

Based on the review of FRA's *Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossings,* 22 States (44 percent) have some varying level of regulation granting some degree of authority over the safety and closure of private crossings. The other 28 States (46 percent) do not have specific regulatory authority over the safety or closure of private crossings.

The level of regulatory authority granted to States through legislation varies depending on the State. Some States have authority to regulate warning device installation at private crossings. For example, the State of Florida requires that signage at private crossings must comply with the Federal MUTCD. Another example is the State of South Carolina, which requires that private crossings be equipped the same as public crossings.

Other States have regulatory authority over the evaluation and creation of new private highway-rail grade crossings and the closure of existing private highway-rail grade crossings. Virginia appears to have the authority to forbid the creation of new private highway-rail grade crossings. Rhode Island appears to have the authority to close existing private highway-rail grade crossings. California appears to have the authority to close existing private highway-rail grade crossings through its environmental review process, which contains a dispute resolution component.

Table 4. State Authority over Private Crossings

State	Comments
Alaska	The State has acted to standardize responsibilities and treatments for private crossings.
California	The State may order that stop signs be placed at all farm and private crossings where no automatic gates exist unless the signs would constitute an additional safety hazard. The State has the authority to close private crossings and provides a resolution process for disputes.
Florida	The State requires cross buck signs at all private highway-rail crossings. The State requires all traffic control devices, including those signs and pavement markings on private property where the public is invited, to meet MUTCD standards.
Iowa	All unauthorized signs, signals, and markings are prohibited on public and private property.

	Railroads must construct and maintain private farm crossings when an entity owns farmland on both sides of the railroad or if the railroad cuts off access to farmland by running between farmland and a public roadway.
Kansas	A railroad is required by State law to build and maintain a private crossing on a rail line that runs through any farm upon request.
Maine	In a municipality where a private roadway is crossed by a railroad, municipal officers may act as agents of a railroad and collect maintenance and insurance charges from persons using a private crossing.
Maryland	The conversion of a private road grade crossing to a public highway grade crossing is a projection of a public highway over the railroad by the public authority taking jurisdiction of the private road.
Massachusetts	The State plays a supporting role in investigating private highway-rail grade crossings for closure upon request. The State cannot order a railroad to construct or maintain a private crossing without consent unless the railroad is liable by law or an agreement.
Michigan	A farm crossing shall be constructed and maintained by the railroad at the expense of the requesting party. Any unauthorized traffic control device or other sign or message placed on a highway right of way by a private organization must be removed.
Minnesota	The State shall adopt rules that establish minimum safety standards at all private railroad grade crossings in the State.
Missouri	If it is determined that a private crossing is utilized by the public to such an extent that it is necessary to protect the public safety, then the State may order the installation of crossing warning devices and apportion the cost among the parties according to the benefits accruing to each. If the orders are not complied with, the State may close the private crossing to public use.
Nebraska	The State has jurisdiction over all crossings outside of incorporated villages, towns, and cities, both public and private, across, over, or under all railroads in the State. Railroads are required to provide and maintain at least one adequate crossing for landowners with property on either side of the rail line. If petitioned, the State will conduct an investigation and issue orders as it deems necessary that may include grade separation, safety treatments, or relocation.
New Hampshire	When it is determined that a private crossing is being used to an extent that it may be considered a public highway, the State may require the grade crossing to be laid out as a public highway and constructed and equipped as such. The railroad will not be charged.
New Jersey	Railroads must provide and keep in good condition all private crossings and construct and maintain proper cattle guards at all such crossings.
New York	If a new private crossing is established, the State may prescribe the manner of the crossing; whether it is to be at-grade or separated; the location; the type of warning devices; and the apportionment of the responsibility for maintenance thereof. The State has the authority to close private crossings on rail lines with passenger service.
North Carolina	The State will close all private crossings where feasible and protect the ones that will remain open with cross bucks, automatic flashers, signals, and gates on federally designated high-speed corridors as the State develops the corridor.
Ohio	Landowners with 15 or more acres of land in one body that is intersected by a railroad in such a manner as to preclude freedom of movement to the land by the railroad can request a private crossing. If the railroad does not comply within 4 months, the landowner can construct his or her own crossing.
Oklahoma	A railroad, upon request, is required to build and maintain a safe causeway or other safe and adequate crossing for any entity that owns land on both sides of the rail line.
Oregon	The State has the authority to order a railroad to install and maintain warning devices at private crossings. The State has the authority to order the public roadway authority to install advanced warning devices. Private property owners are encouraged to conform to the MUTCD when installing devices.
Rhode Island	The State public utilities commission can require a railroad to install a new private crossing and may close a private crossing if it is deemed hazardous to safety.
South Carolina	The State is to protect private road crossings as the law requires it to protect public highways.
South Dakota	State law reserves the right to order railroads to construct and maintain a private crossing.
Utah	The State requires railroads to fence the right of way where the rail line passes through private property. The railroad may choose to provide gates at private crossings that are easily operated by private owners.
Virginia	The State forbids the construction of at-grade crossings of railroads and private roads. Such crossings must be grade-separated.

Anecdotal information provided by States and by representatives of the railroad industry suggests that very few States exercise their authority over private crossings.

Finding:

- With few exceptions, most public bodies at the State or local level are not vested with authority or responsibility for safety at private crossings.

6. International Perspective on Private Crossing Authority

In an effort to determine the state of private crossings internationally, a review of partnering nations' regulatory authority was conducted. The USDOT has memoranda of understanding with certain international countries that facilitate information sharing between those nations and the United States. These memoranda enabled staff to interview representatives of Canada and the United Kingdom to gain insight into their regulations or other authorities specific to safety and closure of private highway-rail grade crossings. The effort included an investigation of the present draft regulations in Canada and guidance specific to safety and closure of private highway-rail grade crossings provided in the United Kingdom.

6.1 Canada

On December 3, 2002, Transport Canada provided a notice that proposed to change crossing nomenclature of the Railway Safety Act from public and private highway-rail grade crossings to unrestricted and other than unrestricted highway-rail grade crossings. The full text of the draft regulations can be found in Appendix A.12.

The original nomenclature labeled any crossing whose road is opened or maintained for public use by a road authority, including pedestrian or bicycle paths, as a public grade crossing. Any crossing whose road is not a public road was considered a private crossing.

Under the new nomenclature, an unrestricted grade crossing refers to a public grade crossing or grade crossing whose road, trail, pedestrian path, or bicycle path is one of the following: (*a*) maintained by an organization, such as public parks that include snowmobile and hiking trails; (*b*) owned by a commercial or industrial establishment, including a business operated from a residential or farm property, that is used in connection with the establishment by persons other than employees of the establishment; (*c*) served three or more principal residences; (*d*) served three or more seasonal residences, access to which is not controlled by a gate equipped with a lock; (*e*) a private road that connects two public roads; or (*f*) a private road maintained by a natural resource company, such as a company involved in forestry or mining activities.

Unrestricted crossings would be similar to public highway-rail grade crossings in the United States, although the Canadian regulations as drafted include private roadways that are open for public use as described above, therefore allowing public access and use. These crossings would be required to be equipped with appropriate warning devices including signage, bells, lights, and gates. Where possible, the crossing would be designed in such a way to provide perpendicular highway/pathway access to the railroad (Figure 24).

Figure 24. Unrestricted Nonvehicular Grade Crossing (Pedestrian and Bicycle)

Restricted crossings or those other than unrestricted crossings provide access to a select, approved individual or individuals similar to private highway-rail grade crossings in the United States. These crossings would still fall under governmental jurisdiction regarding safety improvements, maintenance, operation, and closure; however, they would not permit use by the general public.

Railway companies, road authorities, private road owners, and governments of municipalities each have specific responsibilities pertaining to other than unrestricted [private] grade crossings as defined by the legislation.

The railway company is responsible for all aspects of the grade crossing, including sight lines, within the railway right-of-way. In addition, the railway company is responsible for the standard of construction of the road approach outside of the right-of way from natural ground level to the elevation of the track.

The other than unrestricted (private) road owner and road authority for any public road adjacent to the right-of-way are responsible for the standard construction, maintenance, and drainage of the road approaches and the traffic control devices on the road approaches.

The findings from the review of Canadian draft regulations indicate that a private highway-rail grade crossing that is openly used by the public is considered an "unrestricted" crossing and therefore falls within the purview of Transport Canada's *Road/Railway Grade Crossings: Technical Standards and Inspections, Testing, and Maintenance Requirements.*

6.2 United Kingdom

In September 2006, Her Majesty's Railway Inspectorate and Safety Policy Directorate published Rail Guidance Document, RGD-2005-03, entitled *Level Crossing to Which the Public Have Access—Guidance on Legislation and Enforcement.* The purpose of the document is to provide guidance on the appropriate legislation to be used when enforcing physical standards at level crossings in England and Wales. The following discussion paraphrases the document for FRA/Volpe review with regard to private highway-rail grade crossing safety and closure. The full text of the draft regulations can be found in Appendix A.13.

Historically, crossings in the United Kingdom have been categorized as public or private. This distinction has been fundamental to the way in which protection methods are specified and provided. Public crossings are defined as vehicular, bridleway, or footpath crossings that have been authorized under an Act of Parliament, Consent, or the Light Railway Order. For public crossings, the railway has a duty to ensure that the crossing is properly maintained, safe, and suitable for use.

A private crossing is defined as a vehicular, bridleway, or footpath crossing that was installed when the railway was built for the benefit of farmers and other individuals whose land was divided by the railway. Private crossings are considered either accommodation crossings, built to allow access to land divided by the railway, or occupation crossings, built to access private dwellings or buildings where a private access (occupation) road was crossed by the railway. For private crossings, the railway has a duty to provide certain protective facilities, but the authorized user has the greater responsibility to ensure that the crossing is used safely. Generally, the crossings are provided with signs and basic protective measures including hand-operated gates and occasionally telephones. Proper use of hand-operated gates and telephones is required of private crossing users. Private crossing users are required to use the telephones installed at the crossings to obtain clearance prior to using the crossing. Failure to comply with correct use is a punishable legal offense.

Private crossings that experience circumstances such as change of land use or the adoption of private roads by local authorities may become labeled "crossings to which the public have access." Some private crossings with limited protection that experience such circumstances are used by members of the public. The railway is expected to monitor these types of changes, asses the risk at the crossing, and review the existing protection methods.

In Great Britain, the railway is subject to requirements that do not exist in the United States. One such obligation is that the railway is obliged to fence itself along the whole right-of-way. Because of this requirement, there are physical barriers (fenced gates) exist at all private crossings and the private crossing owner is held liable for usage of the private crossing (Figure 25).

Figure 25. Private Highway-Rail Grade Crossing in Great Britain

Subsequently, in Northern Ireland in January 2007, a statutory rule entitled *The Private Crossings (Signs and Barriers) Regulations* was promulgated. The act authorized a railway crossed by a private road or path to specify the placement of crossing signs or barriers, prescribed by regulation, near the crossing. Any person failing to comply with requirements, restrictions, or prohibitions conveyed by a crossing sign lawfully placed can be fined up to the level 3 fine on the standard scale (£1,000). The full text of the regulation can be found in Appendix A.14.

The findings from the review of United Kingdom regulations indicates that a private highway-rail grade crossing that is openly used by the public is considered appropriate for public crossing warning device applications under the Railway Safety Act.

Finding:

- Partnering nations exercise some authority over private crossings. However, the U.S. legal requirements and responsibilities are different.

7. Public Meetings

USDOT conducted five public meetings throughout the United States to solicit comments from State agencies, industry, and the general public to obtain comments from as diverse and far-reaching a portion of the private crossing user population as possible. Each meeting was coordinated and conducted in conjunction with the respective State agencies for the localities in which the meeting was held.

In an effort to publicize the public meetings, FRA developed a database containing contact information for over 700 stakeholders. These stakeholders included State agencies, local agencies, railroads, rail industry, highway engineers, consultants, commercial and industry organizations, and academics (Appendix 10). Before each meeting, USDOT mailed a letter of invitation to each stakeholder providing information regarding pending meetings. In conjunction with this effort, FRA published press releases for each meeting locally and nationally.

The five cities in which meetings were conducted were Fort Snelling, MN; Raleigh, NC; San Francisco, CA; New Orleans, LA; and Syracuse, NY. The cities were selected from different regions of the Nation to reach as diverse a population as possible, to provide access to as great a portion of the population as possible, and to target the local agencies with unique experience handling private crossing safety issues.

At each public meeting, an informational packet was available. The information packets included the agenda for the meeting, the initial *Federal Register* notice that announced the initiation of FRA's safety inquiry, the *Federal Register* notice specific to the meeting, copies of presentations by FRA, and other information specific to the meeting.

Each public meeting was conducted in an organized, uniform format to provide consistency in information distribution and to provide all interested parties with an opportunity to speak. The following generic agenda was used:

- Call to Order
- Safety Briefing
- Introductions and Welcome from FRA and Respective State Agency(ies)
- Meeting Format and Rules of Conduct
- Prepared Statements
- Open Public Meeting
- Closing Remarks
- Adjournment

FRA provided a presentation detailing the background of safety at the Nation's private highway-rail grade crossings, including a historical perspective, current status, and statistics that compared private crossings to public crossings. This presentation was included in the Prepared Statements section of the meeting.

In addition to the FRA briefing, the Prepared Statements section included one or more presentations from a representative of the local agency or agencies in whose region the public meeting was held. This provided an opportunity for everyone to understand the intricacies that the local authority faces regarding private crossing safety in its State.

In an effort to ascertain as broad of a category of information as possible, the interactive open public meeting at each event was tailored to a specific topic. Topic-specific discussions were held in regions of the country that have demonstrated particular interest or advancement or have innovative procedures or authority to address concerns in that area. The topics included:

- Topical questions listed in the initial *Federal Register* notice (Fort Snelling, MN)
- Engineering (Raleigh, NC)
- Rights and Responsibilities (San Francisco, CA)
- Data needs and desires (New Orleans, LA)
- Policy considerations (Syracuse, NY)

Following the interactive, open discussion, the meetings were adjourned. FRA encouraged meeting attendees to continue participating with the safety inquiry by inviting them to attend subsequent meetings and by requesting submissions to the electronic docket submission system.

The following sections summarize the main points and comments from each of the public meetings. An official transcript of each meeting was recorded by a professional stenographer and posted on the electronic docket; it can be found in the appendices of this report [Appendix A1–A6].

7.1 Fort Snelling, MN: *Federal Register* Topical Questions

The first meeting was held in Fort Snelling, MN, on August 30, 2006, in conjunction with the Minnesota Department of Transportation (MNDOT). Four organizations provided prepared statements before the open public meeting discussion. As at the initial public meeting, the topic area for the open discussion portion focused on the 10 topical area questions that were included in the initial *Federal Register* notice.

Formal Statements

Four organizations provided prepared statements prior to the public meeting discussion. The following is a summary of the prepared statements.

MNDOT

Minnesota has between 2,000 and 2,500 private crossings and has State law that speaks to the appropriate crossing treatment at private crossings. The treatments for private crossings closely resemble what is expected at public crossings.

MNDOT feels that the definition of a private crossing is unclear. Currently, if the roadway on both approaches to a highway-rail grade crossing is maintained by a public agency, then the

crossing is considered public. If either roadway approach cannot be determined as public, then the crossing remains private.

AAR

In most cases, railroads have no authority to close or relocate private crossings or to condition the use of a private crossing based on the institution of appropriate safety measures. One case in which railroads have limited authority over a private crossing is when the crossing exists as the result of a deed granted when the railroad right-of-way was created. Another example is when a State requires a railroad to grant farmers "suitable and convenient crossings." In this case, the crossing may continue in existence regardless of the frequency with which it is used.

Over time, the nature of a private crossing might change without the analysis of safety implications. A crossing that was used by an individual landowner when first created could turn into a busy residential, industrial, or commercial crossing later. If the crossing was a public crossing, a diagnostic team might evaluate the consequences of the change in use and recommend appropriate safety enhancements. In the case of a private crossing, there is no mandate that such an examination take place. Typically, the users of private crossings would bear the cost of the safety improvements at the crossing for the benefit they receive from the crossing; however, it may be appropriate for public funding to be provided at private crossings that resemble public crossings or permit public access.

Brotherhood of Railroad Signalmen

The Brotherhood of Railroad Signalmen (BRS) feels that the Federal Government should prohibit the creation of new private crossings and work toward eliminating as many existing private crossings as possible. BRS also feels that if the creation of new private crossings is allowed, at a minimum they should have a set of flashing light active warning signals at the grade crossing. There should also be nationwide standards for warning devices and for intersection design at private crossings, utilizing proven technology and patterned after the standards contained within Part 8 of the MUTCD.

If this action is taken, the users of the private crossings will be conditioned to respond to the stimuli that they encounter at public crossings. This would provide the needed consistency in warning message regardless of the public or private nature of the crossing.

BRS feels that it is imperative that any private crossing serving an industry be held to the same warning signal system requirements and standards as public crossings. Because of the types of vehicles and cargo that they carry, the severity of an incident at an industrial crossing is greater than that of an incident between a car and a train.

BRS believes that a private crossing should be defined as one used by a sole landowner or lessee. Once any other individuals routinely use the crossing, it should be considered a public crossing.

BRS feels that maintenance costs should be split equally among State government, Federal Government, and the property owner; however, each case should be evaluated on its own merits.

There may be cases where the responsibility allocation should be adjusted, such as where a school bus or other public transportation entity utilizes the crossing. In this case, the State and Federal Government should split the cost of the crossing warning system.

BRS believes that the State and Federal governments should assume greater responsibility. FRA should request enactment of legislation to address private crossings. At a minimum, the legislation should include site-line distances, signage requirements, and grade crossing flashing light signals.

Citizens for Rail Safety

Citizens for Rail Safety stated that the rise in rail traffic that economists predict over the next decade will further put safety issues to the test at private crossings. They believe it is critical that the railroad industry find a solution to the growing safety concerns regarding private crossing safety. All private crossings are not created equal; some are used infrequently, whereas others are used so extensively that the term "commercial crossing" should be used instead.

Citizens for Rail Safety believes that there is a need to revisit a recommendation to treat private crossings the same as public crossings, with all the same safety regulations in place, and that there is also a need to explore public-private governmental partnerships to ensure that the most dangerous private crossings are protected with active warning devices. They believe that all stakeholders must work to actively eliminate the number of private crossings whenever possible.

Interactive Public Meeting: 10 Topical Areas

The following section summarizes the interactive discussion from the public meeting. The full text from the interactive discussion can be read in Appendix A1.

Question: *At-grade highway-rail crossings present inherent risks to users, including the railroad and its employees, and to other persons in the vicinity, should a train derail into an occupied area or release hazardous materials. When passenger trains are involved, the risks are heightened. From the standpoint of public policy, how do we determine whether creation or continuation of a private crossing is justified?*

- No nationwide decision-making process exists; each State may have unique statues, ordinances, and regulations regarding private crossings, and these are not always clearly known. Nationwide processes similar to established processes for prioritizing public crossing improvements are needed.
- Local jurisdictions are urged to keep new developments private to minimize the public burden imposed when crossings are converted from private to public.
- There may be no regulatory jurisdiction over private crossings, and it may be cost-prohibitive to close private crossings.
- In many cases, the railroads negotiate with private landowners regarding the agreement and installation of new private crossings.

- FRA needs to prohibit the creation of new private crossings and eliminate as many existing private crossings as possible. If new private crossings are created, there should be at minimum active flashing light signals.

Question: *Is the current assignment of responsibility for safety at private crossings effective? To what extent do risk management practices associated with insurance arrangements result in "regulation" of safety at private crossings?*

- In many cases, no legal documentation is available to provide a basis for negotiations to modify or close the crossings.
- In some cases, no legal documentation is available that formally acknowledges the existence of a private crossing.
- Insurance issues have not affected or restricted private crossing operation.

Question: *How should improvement and/or maintenance costs associated with private crossings be allocated?*

- The apportionment of maintenance costs varies depending on the State and on the legal agreement between the railroads and private landowners. In some cases, the cost is split by the railroad and private owner, whereas in other cases, the railroad is responsible for the cost of maintenance.
- No organization appears to want to assume the financial responsibility associated with maintenance of new private crossings.
- In most instances, the railroads must research ownership and negotiate directly with each landowner.

Question: *Is there a need for alternative dispute resolution mechanisms to handle disputes that may arise between private crossing owners and the railroads?*

A few States provide mediation support between railroads and private landowners, but the majority of cases are dealt with directly between railroads and private landowners. In extreme cases, this is handled through a court of law.

Question: *Should the State or Federal Government assume greater responsibility for safety at private crossings?*

- According to the State representatives present, most States lack the resources to address current requirements related to public crossings let alone the additional requirements inherent in private crossings.
- Some participants felt there should be more Federal involvement from all DOT agencies.

Question: *Should there be nationwide standards for warning devices at private crossings or for intersection design of new private grade crossings?*

- National standards would be beneficial.

- The first step would be to have an applicable national definition of a private crossing and possibly a means to differentiate between the varying types of private crossings.

Question: *How do we determine when a private crossing has a "public purpose" and is subject to public use?*

- A clear, national definition of private crossing is needed to determine whether a crossing has a public purpose and is subject to public use.
- In some cases, it may be difficult to ascertain a clear answer:
  - There may be unsolicited users such as delivery companies or trespassers.
  - There are instances where private crossings provide access to the public for commercial sites on private property.
  - The public may have to use a private crossing for seasonal or recreational access to a boat ramp or marina.
- The users of a crossing may vary, making it difficult to determine whether the public is using the crossing.

Question: *Should some private crossings be categorized as "commercial crossings" rather than as "private crossings"?*

A multitude of private crossing uses were discussed in great detail, with a list expanding beyond solely distinguishing commercial crossings (Table 5). Some categories of crossings, such as commercial, seasonal, and recreational crossings, can be heavily used by the public. Others, such as industrial or military crossings, may provide access for heavy trucks and hazardous materials. Each type or category may have a unique set of safety concerns.

Table 5. Private Crossing Categorization by Use: Minnesota Public Meeting

1	Agricultural/farm	7	Government/public facilities
2	Industrial	8	Military
3	Commercial	9	Railroad internal facility
4	Residential	10	Recreational
5	Nonvehicular (e.g., pedestrian/bicycle)	11	Seasonal
6	Institutional (e.g., university)	12	Temporary (e.g., jogging, construction)

Question: *Are there innovative traffic control treatments that could improve safety at private crossings on major rail corridors, including those on which passenger service is provided?*

- The implementation of any safety warning devices, particularly where there are currently none, would be beneficial.
- Proven warning devices currently in use are preferable to unproven, innovative technologies.

7.2 Raleigh, NC: Engineering

The second public meeting was held in Raleigh, NC, on September 27, 2006, in cooperation with NCDOT. North Carolina was selected as a meeting location because NCDOT has extensive experience with engineering treatment and design at private highway-rail grade crossings

through its ongoing Sealed Corridor Program. The knowledge and experience provided a basis for a discussion on engineering design and treatments.

Formal Statements

Four organizations and one private citizen provided prepared statements prior to the public meeting discussion. The following is a summary of the prepared statements.

NCDOT

North Carolina does not have direct authority over private crossings, nor is the State seeking increased responsibility or authority. It just wants the tools needed to improve safety.

The State has been able to partner with all crossing stakeholders to improve safety by consolidating redundant and unnecessary crossing through the implementation of the Sealed Corridor Program. Through this program, NCDOT has utilized the off-the-shelf, clear-minded solutions approach used for public crossings and applied it to private crossings, emphasizing closure, alternate access, the signalization of high-volume crossings, signage, and even new mandates and laws. In NCDOT's experience, innovative treatments have not provided reduced cost or adequate safety improvements and as such do not justify their use for any but experimental institution in controlled test environments.

Private agreements and deeds to private crossings may involve multiple parties over many years. NCDOT feels that resources to maintain an accurate inventory of private crossings in a comprehensive manner are not available at the State level. Additionally, it feels that the categories used in the National Crossing Inventory need to be reviewed. NCDOT believes there needs to be differentiation between potential traffic volumes and service to single versus multiple users at recreational, commercial, industrial, and residential crossings. Varied types of private crossings provide public use, including residential, farm, industrial, plant-to-plant, railroad, residential development, business, recreational, and golf-cart crossings.

NCDOT feels that all stakeholders, through the American Public Transportation Association (APTA), need to collaborate to develop a consistent approach such as was done with the Crossing Technical Work Group document that was developed through the Institute of Transportation Engineers (ITE). Stakeholders will eventually need to develop a methodology to share costs associated with grade crossing safety treatments, construction, and maintenance based on local conditions and users.

Railroads engage in interstate commerce. NCDOT believes that dispute resolution should be considered for handling at the Federal level. It also believes there is merit in the development of an unbiased committee to determine the outcome of a dispute. Currently, disputes are handled through local courts that can be biased against the landowner.

NCDOT feels that nationwide Federal guidelines should be considered for development through the American Association of State Highway and Transportation Officials (AASHTO), the American Railway Engineering and Maintenance-of-Way Association (AREMA), APTA, and

the National Committee on Uniform Traffic Control Devices (NCUTCD). This would allow all parties to work through the process incrementally and learn accordingly. It also feels that innovative and cost-effective approaches should be encouraged, researched, and tested for the common good.

The State feels that a technical working group with identified stakeholders should be considered to develop guidelines or criteria that distinguish between a true private crossing and one with a public purpose. This technical working group could also contribute guidance for warning device selection and application for private crossings.

Gannett Fleming

Gannet Fleming is a consulting engineering, construction, and management services firm that was contracted by NCDOT to provide technical support to the State's Sealed Corridor Program. During the course of the North Carolina Sealed Corridor Program, Gannett Fleming gained extensive experience with the evaluation and implementation of safety treatments at private crossings.

During the evaluation of private crossings on a 313-mile section of the corridor, 25 private crossings had no written agreement recorded in the public land records. Copies of the agreements were obtained through Norfolk Southern Railroad.

Private Citizen

A private citizen spoke about how she is currently affected by improvements on the railroad. Her property borders a railroad with a prescriptive easement contained within the railroad right-of-way. The house on the property was erected in the 1900s. Upon investigation, there was no recorded legal access. Legal counsel advised that the prescriptive easement allows continued access even though it was unrecorded. The land adjacent to the private citizen is undergoing a change in use to an industrial park, and she has concerns about her rights and options.

Interactive Public Meeting: Engineering

The interactive public meeting was structured as a set of questions and topics posed to the meeting attendees for discussion. The following section summarizes the interactive discussion from the public meeting. The full text from the interactive discussion can be read in Appendix A2.

Question/Topic: *Would it be valuable for a group to establish a base line parameter consisting of minimum engineering and warning device requirements?*

- A baseline parameter would be valuable and is needed.
- Outreach would need to be made to as many stakeholders as possible. A list of organizations that should be involved was drafted (Table 6).

- The USDOT Highway-Rail Grade Crossing Technical Working Group[6] released a guidance document for the selection of traffic control devices in 2002 and planned to revisit the work in 2007 (on the 5-year anniversary). The 2002 Technical Working Group had diverse audience participation because it held meetings at regional conferences.

Table 6. Organizations Required for a Technical Working Group

AASHTO
FHWA
FRA
Railroads
Planning associations
Track maintenance
Federal Motor Carrier Safety Administration (FMCSA)
ITE (2002 Technical Working Group)

Question/Topic: *Developing groupings of private crossings based on characteristic such as passive crossing categorization?*

- Private crossing categories were discussed in conjunction with the list created at the Fort Snelling, MN, public meeting. New categories were discussed, and the list was expanded (Table 7).
- Another means of differentiating private crossings is through use of the subcategories, i.e., annual average daily traffic (AADT), and types of traffic.

Table 7. Private Crossing Categorization by Use: North Carolina Public Meeting

1	Agricultural/farm	8	Government/public facilities
2	Industrial (plant and access)	9	Military equipment
3	Low-density	10	Military nonequipment
4	Commercial (AADT criteria)	11	Railroad internal facility
5	Residential	12	Recreational
6	Nonvehicular (e.g., pedestrian/bicycle)	13	Seasonal
7	Institutional (e.g., university)	14	Temporary (e.g., jogging, construction)

Question/Topic: *Data collection: what is the best method, and who should be responsible?*

- North Carolina collects information designating commercial, industrial, residential, recreational, and institutional crossing categories.
- According to North Carolina, the States are in the best position to collect data regarding private crossings; however, there are safety concerns with entering private property.

Question/Topic: *Distinguishing public crossings from private crossings*

[6] The USDOT Highway-Rail Grade Crossing Technical Working Group was headed by the FHWA, FRA, FTA, and HTSA. The Technical Working Group released a guidance document intended to provide guidance on the selection of traffic control devices or other measures at highway-rail grade crossings. http://safety.fhwa.dot.gov/media/twgreport.htm#1r

- Changing from private to public status can be confusing and cause funding issues.
- The best approach may be to create subcategories for private crossings.
- A private crossing with public access and no active warning could be perceived as allowing public use.
- Currently, the ownership of the land, not the volume of vehicle use, determines the designation of a crossing.

Question/Topic: *Engineering design suggestions*

- Currently, no uniformity in signage has been implemented.
- No proven Intelligent Transportation Systems technologies are available to address the issue.
- Current safety treatments range from installing stop signs at private crossings to some Class I railroads installing their own warning signs. Stop signs provide an opportunity for drivers to stop and look for an approaching train, whereas yield signs allow movement through the crossing without stopping.
- Crossing closure would be the best scenario although it is not usually an option.
- There are difficulties with the geometrics, as well as the construction standards used on roadways approaching private crossings. Each location must be evaluated, but many private crossings often follow their own geometry. Because private crossings are frequently not constructed in accordance with engineering standards used at public roadways, their roadways can prove inadequate, should traffic levels or types change or should a locality wish to convert the crossing to a public crossing.
- Developers should be required to follow some standard.

Question/Topic: *Treatment options by crossing type*

Currently implemented engineering safety treatments utilized at public crossings were discussed by type as passive or active.

- Passive crossings can have various signage, including unique railroad company signs, "look" signs, yield signs, and stop signs (Figure 26).
- Some passive crossings have lockable gates.

Active crossings can have humped crossing signs and agreements regarding vehicle type.

Figure 26. Examples of Signs at Private Crossing

Question/Topic: *How can the railroad ask for limited access?*

It was believed that the State of New York has the authority to deny usage of a private crossing on its high-speed rail line.

7.3 San Francisco, CA: Responsibility

The third public meeting was held in San Francisco, CA, on October 26, 2006, in conjunction with the California Department of Transportation (Caltrans) and the California Public Utilities Commission (CPUC). California was selected as a meeting location because it has unique legal authority to close private crossings and a documented dispute resolution process. This State's experience provided a basis for a topical discussion on responsibility. FRA Deputy Administrator Clifford C. Eby addressed the meeting with introductory remarks.

Formal Statements

Two organizations provided prepared statements prior to the public meeting discussion. The following is a summary of the prepared statements.

CPUC

CPUC believes that a major problem with private highway-rail grade crossing safety is that the private property owners do not participate in public proceedings. Private property owners need to be heard, to participate, and to take responsibility for a lot of the private crossings on the railroad. The agencies granting authority to new developments have a responsibility to address railroad safety. CPUC exercises rail safety oversight over railroads in California under the California Public Utilities Code and under the State Participation Program with FRA. CPUC has exclusive jurisdiction over highway-rail crossings in the State. Specifically, in regard to private crossings, CPUC has the authority to determine the necessity for any private crossing and the place, manner, and conditions under which the crossing shall be constructed and maintained and to fix and assess the costs and expenses of that crossing.

CPUC General Order 75(D) contains administrative rules governing the standardization and use of warning devices at highway-rail crossings and includes an entire regulation directed at warning devices at private crossings. It requires a minimum of a stop sign and a private crossing sign to be posted on each approach to the private crossing. General Order 75(D) also requires that a written agreement be developed to authorize the crossing between the parties.

Any time there is a probability that the public may be exposed to harm by a private crossing, it becomes a public safety issue requiring diagnostic review and special consideration. In such cases, State government oversight of the crossing is appropriate. The railroads and private crossing rights owners share the liability for safety at private crossings. Because there are few controls at most private crossings, assuring usage only by authorized parties, the use of the private crossings can change over time. There is no confidence that the identification of such change in use is conducted in a timely manner and addressed by the railroad or the landowner.

CPUC recommends some mechanism whereby the State or local government identifies a change in use and the dynamic effects it has to the highway-rail grade crossing. CPUC believes that the best time to determine an increase in motor vehicle, bicycle, or pedestrian usage at a railroad crossing is when a developer seeks approval of new commercial or residential projects.

For the past 3 years, the CPUC has been reviewing proposed developments and concerns regarding potential impacts on public safety under the California Environmental Quality Act (CEQA). Under CEQA, the lead agency for the proposed development is required to respond to public comments concerning a project. There are many instances where CPUC is unaware of private crossings and therefore cannot make specific recommendations. Generally, allocation of improvement and maintenance costs is agreed to by the landowner and railroad as parties entering into the legal instrument establishing the private crossing. CPUC feels this to be appropriate. When the landowner and railroad disagree, CPUC may apportion the costs.

CPUC allows for administrative legal review by public hearing in crossing matters. Administrative law judges hear crossing cases and prepare proposed decisions for consideration by the CPUC. The commission has its own alternative dispute resolution mechanism. Most private crossing issues involve property rights, contract law, and the safety responsibility for the traveling public, all of which have traditionally been the State's responsibility.

CPUC strongly recommends keeping the responsibility of the safety of private crossings with the States because of the nature of the contractual agreements. The Federal Government may issue guidelines and provide recommended language for laws and regulations for the benefit of States that do not have laws on this subject; however, CPUC contends that public and private crossing safety regulation is too dependent on State law and real property and contract law and is too focused on regional issues and concerns to permit Federal preemption of the topic.

In California, private crossing design is generally specified between the railroad and the landowner in the crossing agreement. When a private crossing is used by the public or trains carrying hazardous material or passenger trains, existing guidelines for public crossings are used. Where crossings allow unfettered access of passage and routinely invite the general public to use the crossing, a public purpose has been established and CPUC feels that guidelines for public crossing treatments should be used. In other cases, CPUC recommends that FRA invite a group of experts to develop guidelines for the design of private crossings, similar to the highway-rail grade crossing technical working group that issued the guidance on traffic control devices at public highway-rail grade crossings.

It is extremely difficult to police the usage of each private crossing. Financial liability for private property owners does not provide the needed incentive. Private-property owners must be given incentive to upgrade the warning devices at the crossing when usage changes. Any guidelines on private crossings considered for adoption should address the changes in use over time and provide for reevaluation.

California contends that existing protections, particularly under State law, are sufficient to protect the traveling public, provided that appropriate criteria for warning devices are used for both public and private crossings. CPUC recommends that the Federal Government assist in the

formation of a technical working group to prepare general guidelines for identifying dangerous private crossings and recommend guidelines to be considered in upgrading or designing such crossings.

Caltrans

Caltrans provides inner-city rail service to more than 4.5 passengers per year on three different routes. Caltrans has a highway-rail grade crossing improvement program with different funding sources: 23 U.S. Code § 1103(c) funds for crossing improvements and high-speed rail corridors from the FHWA Highway Trust Fund but administered through FRA, Federal Section 130 funds from and distributed by FHWA for improvements on public crossings, and State § 190 funds for grade separation. These programs provide more than $35 million a year for safety improvements at grade crossings; however, California does not have specific financial aid programs for improvements at private crossings. The State has used Federal 1010 and 1103 funding for high-speed rail corridor to consolidate and close private crossings. In most cases, the railroads and private crossing owners have shared the cost of improvements at private crossings.

Most private crossings in California do not have train-activated warning devices, have poor crossing surfaces, and have poor approach surfaces. The State has limited funding for private crossing improvements; however, when Caltrans upgrades State-owned track, it replaces and upgrades the cross buck signage at private crossings. State funds have not been used to pay directly for these improvements; contracts and agreements are structured so that funds do not go through the railroad or private crossing owner.

Caltrans believes that some Federal agency should take a leadership role in developing standards or guidelines for crossing protection, consolidation, and clear, safe operation at private crossings. These guidelines should be similar to those that are put forth in the MUTCD. In addition, Caltrans feels there is a need to investigate low-cost warning devices and that the Federal Government should take a more proactive approach to providing funding for improvements at private crossings, such as through §§ 1010 and 1103.

Interactive Public Meeting: Responsibility for Private Crossings

The interactive public meeting section was structured in the form of case studies and hypothetical scenarios that were proposed to the meeting attendees for discussion. The following section summarizes the interactive discussion from the public meeting. The full text from the interactive discussion can be read in Appendix A3.

Case Study Question: *What rights are assigned to the holder of a long-established prescriptive easement? Does the developer/railroad have responsibilities toward the affected crossing holder? If so, what? Do State governments (outside the court systems) bear a responsibility for crossings created via prescriptive easements?*

The State of California does not permit crossings by prescriptive rights; it is addressing crossing issues through the environmental document process, which provides a dispute resolution forum and procedure.

Case Study Question: *Who bears responsibility for safety at the crossing: the developer, the homeowner, or the railroad? If a city or county chooses to convert it to a public crossing, who is responsible for reporting this to the State and railroad? Who will know, and when, regarding land development?*

- California is the only State that appears to be addressing this issue.
  - Public hearings are held for zoning changes; however, experience has shown that cities and towns do not consider the impact on the crossing.
  - California has been requesting additional funding and staff in an effort to increase involvement in the process and meet with local planners to address rail safety.
  - There is a strict timeline for response within which the State must respond and the environmental team must evaluate and comment on impacts of crossings (new and upgrades).
  - Currently, it is illegal to widen crossings and not the roadway approaches, resulting in bottlenecks.
- Many stakeholders learn of crossing issues when there is an incident or a complaint.

Case Study Question: *If a private crossing is converted to a public crossing, who is notified?*

- Both California and Washington State have similar, formal processes that must be followed.
  - In California, CPUC can approve an application without a hearing.
  - Washington State uses its process to diagnose and evaluate crossings for elimination.
- In most States, the railroad is not notified.

Case Study Question: *Is there a process for identifying the crossing holder? Can the crossing be closed by the railroad? Are there statutory or regulatory restrictions that govern this situation?*

- Currently in most States, the only processes used for identifying the crossing holder through historical record searches and posting notification of closure at a crossing.
- In California, there is a well-defined regulatory process for posting a closure notice.

Hypothetical Scenario/Question: *What if the USDOT establishes a requirement that every private crossing have a standard formal agreement? Crossings for which an agreement cannot be found or created will be closed.*

- The State of California requires a written agreement for private crossings.
- This requirement would be expensive for the railroad companies.
- There are legal issues with changing existing deeds.

Hypothetical Scenario/Question: *Standard formal agreements could be customized. Who would maintain agreements?*

- Any deed or formal agreement should be filed in the county records office, and a copy should be held by both parties in the agreement.

- There are issues with trying to close private crossings used by landlocked property with no other access.
- Control should be left to the State, not the Federal Government.

Hypothetical Scenario/Question: *What if a new, independent Federal agency (similar to the Surface Transportation Board) were created to oversee the resolution of private crossing disputes?*

- Federal recommendations or guidelines would assist States that do not currently have a dispute resolution process; however, local interests will not want to deal with the Federal Government. Currently, in California, the State has to threaten private owners with crossing closure to obtain owner involvement.
- Currently, California has a dispute resolution process in place. This control needs to be left with the States, not the Federal Government.

Hypothetical Scenario/Question: *What if the USDOT provided guidance or standards on crossing design and warning device implementation at private crossings?*

- The Federal Government should use the same guidelines for public crossings at private crossings.
- The minimum signage requirement at a private crossing should be a stop sign and a private crossing sign as mandated in California.

Hypothetical Scenario/Question: *Stop signs and private crossing signs are standard at most private crossings across the United States (default). How do we feel about stop versus yield signs as the default signage requirement?*

- NCUTCD is currently discussing the use of signage for private roadways with public use (e.g., shopping centers).
- The MUTCD states the minimum requirements when Federal funds are used on public roadways. The MUTCD should be followed for private crossings.
- The cost-effectiveness of any implementation needs to be investigated regarding resource expenditure versus measurable safety improvement.

Hypothetical Scenario/Question: *What if organizations such as AASHTO, AREMA, or the FHWA (with regard to salient documents such as the MUTCD and the Grade Crossing Handbook) were to include sections on private crossings in all existing guidance and standards documents?*

- The inclusion of additional guidance for private crossing safety in existing guidance and standards documents would be beneficial; however, increased funding is required.
- Guidance should be based on usage of the crossing and the frequency and speed of trains that traverse the crossing.
- Specialty guidance could be used to establish minimum guidelines for low-volume/specialty crossings.

- If a private crossing has gone through a change in use to serve the public that has not been recognized, there is a potential increase in safety risk if the safety treatments are based on its previous private crossing characteristics.

Hypothetical Scenario/Question: *What if the railroads were to require all private crossing holders to obtain liability insurance?*

The railroads do not always have the legal right to require private crossing holders to obtain liability insurance. This right depends on the contract or agreement between the railroads and the private holders, and it is not easy to get these types of liability policies.

Hypothetical Scenario/Question: *What if a Federal agency (FRA or other) established a process governing the creation, evaluation, and improvement of private crossings?*

- There is a fear that this is the formula for preemption and is not the answer.
- The Federal Transit Administration (FTA) has the State safety oversight process. If a State does not have a process, it must adopt the Federal process.
- If a Federal agency (FRA or other) establishes a process, it is not going to improve safety at private crossings.

Hypothetical Scenario/Question: *What if the ultimate responsibility for safety at private crossings resided with State agencies?*

- California and Washington believe that the responsibility currently resides with State agencies and should remain that way; however, there needs to be additional guidance and incentives for closure and improvements.
- The Federal Government's role is in consolidation and closure policy.

Hypothetical Scenario/Question: *What if the ultimate responsibility for safety at private crossings resided with the railroads?*

The railroads do not have the ability to control crossing usage and have no regulatory authority at crossings.

Hypothetical Scenario/Question: *What if a private crossing were categorized based on traffic levels and type of use?*

- Basing categorization on traffic levels and type of use is not a good idea.
- It would be extremely difficult to develop a threshold and remain committed. How would a threshold be calculated?
- Categorization based on traffic level and type of use would hinder crossing consolidation.

Hypothetical Scenario/Question: *What data should be collected to support analysis? How should such data be collected?*

- Most States do not have the resources to collect public crossing information.

- There are no resources to collect private crossing data.

Hypothetical Scenario/Question: *How do we simplify the problem (e.g., survey form for locomotive engineers, satellite data, or use of geographic information systems [GIS] to collect information)?*

- FRA should consider new funding similar to § 130 funding for private crossing improvements.
- There should be specific, well-defined criteria to meet and address information regarding private crossings.
- The applicability of global positioning systems and aerial photography may be limited.

7.4 New Orleans, LA: Data Elements

The fourth public meeting was held in New Orleans, LA, on December 6, 2006, in conjunction with the Louisiana Department of Transportation and Development (LADOTD). Louisiana has a unique local legal system, conditions, and issues related to private highway-rail grade crossings.

Formal Statements

Six organizations and one private citizen provided prepared statements prior to the public meeting discussion. The following is a summary of the prepared statements.

LADOTD

Louisiana defines a private crossing as a crossing where the property on one or both sides of the railroad track is private property. The State has no authority over private crossings. Louisiana has a revised statute, 48:390.1, that grants LADOTD the authority to close existing public crossings on non-State-maintained highways.

Louisiana Operation Lifesaver

Operation Lifesaver (OLI) is a nonprofit international continuing public education program established in 1972 to end collisions, injuries, and fatalities at highway-rail grade crossings and along railroad rights-of-way. OLI educates the general public on safety at all highway-rail grade crossings independent of the highway owner.

Rio Grande Pacific Corporation and New Orleans and Gulf Coast Railroad

Christovich and Kearney is counsel to the New Orleans and Gulf Coast Railway Company (NOGC), a subsidiary of the Rio Grande Pacific Corporation. NOGC is a shortline railroad that operates in and around New Orleans, and Rio Grande Pacific Corporation is a railroad holding company that owns four shortline railroads. The Rio Grand Pacific Corporation is having difficulty dealing with the closing of private crossings.

In 1999, NOGC had 276 at-grade crossings on its 24-mile rail network. The company created its own inventory list defining the use of all crossings on its network: private, industrial, commercial, and multifamily residential. There are limited or no-access issues along much of the network as a result of the rail line's proximity to the Mississippi River. There is high resistance from local landowners to agree to consolidate crossings or enter into agreements. In some cases, landowners approach the local government to have private crossings declared public, voiding all the agreements made about signage and passive controls. NOGC feels that there is a lack of Federal standards and regulations addressing this issue.

During the past 2 years, the Rio Grande Pacific Corporation has spent roughly $600,000 in legal costs to battle the emergence of undocumented and illegal private crossings that continue to be created by private landowners. The local courts continually favor private landowners and disregard the railway's rights. For a small railroad with high traffic in hazardous materials, resources are scarce and could have been applied more efficiently elsewhere. The only private crossing holders with high levels of cooperation are large commercial entities that are willing to close private crossings.

The Rio Grande Pacific Corporation feels that it is imperative to recognize railroads as interstate highways of commerce and that this has been confirmed by many years of Interstate Commerce Commission and Federal Communications Commission doctrine. Railroads should be granted the responsibility and authority via safety mandate from the Federal Government to control what happens over, under, around, and through their railroad rights-of-way. No one should be able to build or alter the track structure without railroad company consent and permission, as is currently being done in Louisiana.

NCUTCD

The NCUTCD Railroad and Light Rail Transit Technical Committee (the Committee) has the responsibility to comment to the FHWA on Parts 8 and 10 of the MUTCD. Private crossings continue to be one of the topics debated within the technical committee. Private crossings are a unique issue within NCUTCD because the MUTCD is a document established to deal with public travel and addresses issues relative to such travel. NCUTCD deals with roads open to public travel, a term that is not defined in the Code of Federal Regulations. NCUTCD has convened a task force to address traffic control devices on private property and develop guidelines for these devices.

The Committee believes that the real issue is the public's expectation of access: does the public have the expectation of access to the crossing, to the intersection within a mall, or to whatever the facility might be where there's some traffic-control-device requirement? This issue extends beyond private crossings to areas with malls, shopping centers, businesses, or business parks where a significant number of publicly operated vehicles access the private property.

The Committee believes that the Federal Government should give consideration to the need for a third classification of crossing called semipublic. Semipublic crossings would be specifically narrowed to highway-rail grade crossings that are owned by an entity other than a public agency but to which the public expects free access. Examples would be shopping centers and various

commercial establishments, such as fast-food restaurants and convenience stores. In general, semipublic crossings could fall into categories such as industrial, commercial, recreational, and multiunit residential. If the public has access, the Committee believes in standardization, including the use of traditional cross buck and supporting advance warning signage.

The Committee feels there is a need for a methodology to be able to apply standardized traffic-control devices and implement the diagnostic process as defined in Part 8 of the MUTCD. A semipublic crossing would go through a permitting-type process with oversight provided by FRA. Part of this permitting process would be to define the responsibility for access over the crossing. If the responsible agency failed to fulfill its goal to install or maintain devices, surface access, vegetation, and all the items that are considered issues at crossings, then the crossing should automatically be closed. The Committee feels there should be no recourse other than to have the crossing closed.

The Committee encourages FRA to move forward with regulation with sufficient authority to provide some form of control so that local authorities can provide a level of enforcement to persons wishing to create a private or semipublic crossing over a railroad.

Former Chair, Rail Section of American Trial Lawyers Association (Now Known as the American Association for Justice)

This individual believes the issue with highway-rail crossings is caused by allowing interaction between the rail network and the highway network. The solution to crossing safety issues is positive train separation. NTSB has published and advocated positive train separation for many years. By implementing positive train separation, highway users are not permitted to interact with trains.

Expensive overpasses at every crossing are not required to accomplish positive separation. Physical barriers and inexpensive ditches or bridges could also be used.

Private Citizen

A private citizen spoke regarding an issue that he is currently dealing with regarding private crossings that provide access to the land that he works. The citizen is employed as a farmer and works land owned by four different landowners along a Union Pacific rail line. On July 7, 2005, in accordance with the rules and regulations of the Federal Government, the railroad posted signs at all the private crossings along the breadth of the property that he works, declaring the closure of the crossings. Only one crossing was not posted, and that crossing is believed to be a public road. The closure of the crossings poses a major problem to this citizen's farming operation and a major safety concern to highway users in the area. The citizen must now move his farm equipment along highway roads to reach the only open crossing.

The citizen attempted to negotiate with the railroad in an effort to allow the crossing to remain open to alleviate his limitations; however, the railroad refused to negotiate. The crossings that were closed were used seasonally; however, in season, they were heavily utilized. The railroad

places great emphasis on safety in its operation, and the citizen offered to gate the private crossings and assume personal responsibility for the crossings if they were to be reestablished.

Interactive Public Meeting: Data Needs

The interactive public meeting section was structured in the form of case studies and hypothetical scenarios that were proposed to the meeting attendees for discussion. The following section summarizes the interactive discussion from the public meeting. The full text from the interactive discussion can be read in Appendix A4.

Hypothetical Scenario/Question: *Currently, most of the data available pertain to public crossings and are used in prioritizing safety treatments and funding allocation. NTSB and other sources have suggested additional data fields for the crossing inventory forms, including sight distance, presence of curves on the roadway and track, angle of intersection, presence of nearby intersections, and latitudinal and longitudinal coordinates. What data elements would be beneficial to collect?*

- The typical class of vehicle using crossings should be identified and included.
- The approach grade and sight distance should be identified.
- A new classification system, possibly the semipublic and private depictions described by NCUTCD, should be used.
- The railroads feel it is difficult to collect data such as AADT for private crossings because of roadway conditions, for example, traditional roadway counting devices could not be utilized on dirt roads.

Hypothetical Scenario/Question: *In addition to desired data, what about the methods for data collection, such as FRA proxy options?*

- Statistical sampling as opposed to complete data collection should be considered.
- Some railroads currently collect latitudinal and longitudinal information for all crossings and use GIS to map the railroads.
- Most of the existing private crossing information is collected and submitted by the railroads; FRA needs to seek alternative ways of collecting data.
- FRA should improve the existing crossing inventory forms to make them more user-friendly and create electronic inventory submission.
- There is concern regarding legal issues with submitting crossing information to FRA crossing inventory. Some information should remain private and not be made public, and there may be issues with the Department of Homeland Security.
- The focus should be on closing public crossings and consolidating private crossings.

Hypothetical Scenario/Question: *What if FRA in partnership with the FHWA developed a secure website where States and railroads could log in to input data?*

- Highway-rail crossing issues should be viewed as a one DOT system.
- AAR is committed to the current crossing inventory and feels that if the current inefficiencies are addressed the process will improve.

- There is concern about how secure the supplied data will be and how the USDOT will protect the data.
- There is concern about legal action taken as a result of information being made public; many feel this information should be used for engineering applications only.
- States and railroads have not motivation to collect and submit data. Until data submission is made mandatory, it will remain a low priority.

Hypothetical Scenario/Question: *What if the State supplied information on high-speed rail corridor ID, county map reference number, latitude (lat), longitude (long), and lat/long source [Blocks 21–25 on the USDOT Crossing Inventory Forms] that was used in conjunction with a GIS platform to locate and map private crossings?*

- Some States currently have limited GIS information; however, there is concern that access to private property may be required for States to collect data regarding private crossings. Many private crossings are only accessible by private property. There is a trespass issue with anyone trying to physically access these private crossings.
- Many railroads currently have these data; however, it is a large and expensive administrative job to submit the data.

Hypothetical Scenario/Question: *What if States were required to collect the data?*

This is not a good idea because of trespassing concerns with private property.

Hypothetical Scenario/Question: *What if railroads were required to collect the data?*

This would be a monumental burden and too great of a responsibility, with no benefit to the railroad.

Hypothetical Scenario/Question: *What if the Federal Government created a team to collect the data?*

- There are currently huge discrepancies among existing private crossing data that the Federal Government, State governments, and railroads have.
- Currently, the railroads submit the data to the States and the Federal Government; the reason for the disconnect is the current inventory process.
- If the Federal Government were responsible for collecting the data, there would be uniformity because a single entity would be collecting data.

Hypothetical Scenario/Question: *What if track geometry cars were used to automate data collection?*

- Some railroads already have precision information from their equipment for all roads.
- Some railroads use automated data collection, but the quantity and quality of the data collected is limited.

Hypothetical Scenario/Question: *What if, in the course of responding to a mandate on private crossing agreements, the railroad is required to assign a crossing ID number and update the USDOT crossing inventory?*

- Some feel that FRA should use track inspectors to collect data when it is conducting inspections in the field.
- Others feel that the railroads posses the ability to collect the data and are the holders of the data.
- If FRA imposed a restriction or deadline, it could force the railroads to prioritize data collection.
- The use or requirement of permitting crossings with serious legal consequences for violations is another option.
- Some States need Federal requirements because the local jurisdiction often acts in favor of private landholders.
- Engineering alone is not the solution because of financial limitations.

7.5 Syracuse, NY: Policy Considerations

The fifth and final public meeting was held in Syracuse, NY, on July 26, 2007, in conjunction with the New York State Department of Transportation (NYSDOT). NYSDOT has the authority and process to close private crossings on rail lines that carry passenger rail traffic. This unique authority provided an additional perspective to one of the major issues with private crossings. The discussion during the interactive public session of the meeting focused on FRA possible policy considerations.

Formal Statements

Two organizations provided prepared statements prior to the public meeting discussion. The following is a summary of the prepared statements.

NYSDOT

In 1994, the New York State legislature first granted authority for the NYSDOT to address private highway-rail grade crossing safety. There are two key safety factors that take priority when assessing risk at private crossings. The first such factor is an increase in public safety risk as a result of change in use of a private crossing. If the use of a private crossing has evolved to provide public use without a commensurate change in legal classification, typically national standards for warning device systems at public crossings are not followed. The second factor is the risk to passenger train operation. Private crossings along a passenger rail corridor have the potential to cause events with greater severity to the public.

New York State has the largest commuter rail and transit operations in the United States, with ridership of more than 1.3 billion passengers per year. The Empire Corridor, from New York City to Albany and on to Buffalo, is a designated high-speed rail corridor where trains have operated along portions at speeds of up to 110 mph since 1980. A high-speed rail corridor refers to a natural grouping of metropolitan areas and markets that, by proximity and configuration,

lend themselves to efficient ground transportation service that is time-competitive with air and automobiles for trips in the 100-to-500-mile range. A designated high-speed corridor utilizes a series of technologies involving trains traveling at top speeds of 90 to 300 mph.

According to FRA's National Crossing Inventory, there are currently 2,878 public crossings and 2,900 private crossings in the State of New York. Approximately 400 of these private crossing locations fall under New York's regulatory jurisdiction. Through state and federally funded programs, New York has equipped over 70 percent of the public crossings with active warning devices. However, it is estimated that less than 1 percent of private crossings have any form of active warning devices. Signage at private crossings is and private crossing road profiles are often very poor.

NYSDOT feels that FRA National Crossing Inventory has significant inaccuracies with regard to private crossing locations. In addition, there are no national standards to provide guidance on safety enhancements that should be utilized consistently at private crossings, including passive signs, and there are limited public funding sources that can be used for safety improvements at private crossings.

Railroads of New York, Inc.

Railroads of New York (RONY), Inc., represents the freight railroad industry in New York State, including the four Class I railroads, CSX Transportation, Inc., Canadian National, Canadian Pacific, and Norfolk Southern, and about 30 shortline and regional railroads. RONY has established a Regulatory Review Committee to identify State and local laws and regulations applicable to rail freight that should be eliminated, reformed, or made more cost-effective.

Railroads' experiences differ by the type of territory within which they operate. Each railroad may encounter different issues in terms of design, function, and safety aspects of private crossings. In New York State, there are typically three types of crossings. The first type is deeded crossings that can cover something that was agreed to at the time that the railroad acquired the property or right-of-way, usually in the nature of a covenant or an easement. In some cases, these agreements may be more than 150 years old and difficult to locate, or they may no longer exist. The second type of crossing is a licenses or license agreement. These crossings are more limited and are fairly rare in RONY's experience. The last type of crossing falls under Section 52 of the New York State Railroad Law, which mandates, under certain highly limited circumstances, that a private farm or timber extraction crossing must be granted by the railroad.

Interactive Public Meeting: Policy Considerations

The following section summarizes the interactive discussion from the public meeting. The full text from the interactive discussion can be read in Appendix A5.

Rights and Responsibilities

- Most States indicated that they have little or no jurisdiction to affect decisions about creation of private crossings or, except in fairly limited ways, even to determine the traffic control devices placed at such crossings. Railroads are often powerless to induce private landowners to make needed improvements.
- Crossing benefits, in fact, fall almost entirely to the holder of the right to cross.
- There is no process in place to help the parties involved make decisions, to justify crossing creation or continuation, or to consider safety issues at private crossings. The railroads generally lack the authority to close or relocate private crossings or even to require appropriate safety measures. Many private crossing holders perceive the current methods for addressing crossing closure to be unfair, giving them little or no input into how their property would be affected.
- Some railroads indicated a preference for Federal policies and recommendations instead of regulations. Others advocated more uniformity in decision making through use of a permitting process overseen by FRA, and others opted for regulations, indicating that policies or other nonregulatory guidance could be used against railroads in court cases. Some States, such as California and Washington, are concerned that Federal preemption might damage existing protections at the State level.
- In many cases, there is no documentation available of assigning rights and responsibilities. Such legal documents often provide a basis for negotiations to modify or close a crossing, and their absence could render negotiations impossible.
- There was little agreement among attendees on the issue of improvement and maintenance cost allocation. Currently, the allocation of costs varies according to State and any existing agreements between the railroads and crossing holders. In many cases, States and local authorities lack the funds and/or the staff to assume responsibility for the maintenance of private roadways. There are no State or Federal funds available for improvements at private crossing, with the exception of the limited application of Federal funding through the High-Speed Rail Program. The stakeholders should develop a methodology to share the costs associated with grade crossing safety treatments, construction, and maintenance.
- In most States, disputes must be solved through direct interaction between the railroad and the crossing holder, a process that is cumbersome and fraught with difficulties for both parties. Local courts may be biased in favor of the crossing holder, and the lack of Federal standards has made it difficult for railroads to establish jurisdiction in Federal courts. Because of the legal issues involving property rights and contract law, responsibility for dispute mechanisms should remain with the States. Federal guidelines or recommendations could assist States that do not currently have dispute resolution processes.

Crossing Categorization

- There is a long list of various ways in which crossings could be categorized. It would be difficult to revise the current FRA National Crossing Inventory to encompass all possible types of crossings, and overspecifying crossing categories may make it more difficult to arrange crossing consolidations and closures.

- A category known as public use, in which a crossing where the roadway is owned by an entity other than a public agency but to which the public has an expectation of free access, is one alternative.
- Land-use change is a major issue. As land is developed, a farm field-to-field crossing can become access to a large residential development or even a commercial establishment like a shopping center. In most States, there is no mechanism for alerting the railroad or the State to any such change in use at a private crossing. Some feel that the best time to identify land-use changes is when a development is undergoing the planning and permitting process. For this reason, involving local permitting authorities is strongly recommended. Even where land use is not changing, it is important to identify existing private crossings with public use.

Design and Signage Standards

- The development and application of national standards, both for crossing engineering design and for placement of traffic control devices at private crossings, would be beneficial. Some States and individual railroads have developed unique, independent standards. The appropriate guidelines should be developed through partnership with AASHTO, AREMA, APTA, and NCUTCD.
- The development of less expensive warning devices could be beneficial; none exist that provide enough cost reduction or safety improvement to justify their use on a system wide basis. Railroads cannot use non-fail-safe options because of liability considerations.

Data Collection

- The existing National Crossing Inventory coverage of private crossing data is largely inadequate for most analyses as well as for resource allocation. Safety at private grade crossings would benefit from enhanced or improved data collection.
- Requiring railroads to collect additional data would impose a substantial burden. The States do not have resources to conduct an inventory, nor in many cases would they be allowed to spend public monies on inventorying private property. Many private crossings are in remote or unsafe neighborhoods, and data collectors may face some personal risk.

Legislation

- Numerous issues would need to be resolved, including those pertaining to identification of crossing users, establishment of crossing agreements, funding, and national security issues, before FRA should draft legislation.
- Some parties strongly encouraged FRA to seek such legislation to gain enough authority to control safety issues through a permitting process resulting in increased safety.

Question: *Should there be additional funding, and if so, where should it come from? Should it come from the railroad? The property holder? The public purse? The public purse at the Federal, State, or local level? How do we make this happen?*

- The railroads have gone beyond what is required under public law for improvements. They have contributed millions of dollars to improvements, crossing consolidations, and areas that

they feel have been to their benefit as good corporate citizens of the area where the crossings exist.

- The FHWA Section 130 program has had an enormous positive impact on improving safety at public crossings. A major concern that some railroads have is that the money available for crossing improvements may not be unlimited, and diluting the Section 130 program by enlarging the number of crossings to include private crossings is a concern. An increase in mandate without an increase in funding will have a dilutive impact on the overall prospects for the usefulness of that program.
- There is no difference between a public grade crossing and a private grade crossing to the public. Every crossing is a significant crossing that deserves the same consideration as a highway-to-highway crossing. One recommendation is for speeds over 25 miles per hour, to adopt a physically separated network similar to that of the interstate highway concept through grade separation.
- The United Transportation Union (UTU) feels that every agency, State government, and the U.S. Congress have to take action. Legislation is needed. UTU encourages FRA and the NYDOT to work together to find a model for State legislation that will give the authority and funding to address the problem.
- FRA needs to find a way to broaden the coalition of people who are interested and to declare this as a number-one public safety problem.
- The New York State legislature passed laws that gave NYSDOT authority over private crossings on intercity rail lines and commuter lines. New York State and Long Island Railroad have closed over 50 percent of private crossings that existed on intercity lines and commuter corridors since legislative authority was granted. However, the U.S. District Court for the Northern District of New York recently issued a decision in *Island Park v. CSX Transportation*, in which it found that Federal law preempts New York State authority to close grade crossings.
- Many feel that the issue is so significant it must be dealt with nationally, not State by State. It takes national legislation to address this problem.
- State and local authorities may have conflicting priorities with regard to the issue and need to take railroad safety considerations into account. For public crossings, the State sets warning system requirements and tells railroads what type of warning system is required at a crossing based on use. This does not happen for private crossings. The railroad is put in a position of making the determination of what the appropriate level of warning system at a private crossing should be, and it assumes all the risk should an incident occur at that location. Governments and State organizations need to take responsibility to determine appropriate warning systems and apply them uniformly.
- There are other USDOT modes interested in this issue that may or may not have specific relevant authority, including the FHWA, National Highway Traffic Safety Administration, and FMCSA.

Question: *Does FRA need a new charter from Congress that would more carefully define the expectations of all stakeholders?*

- Private-sector railroads could do the job if they were empowered.
- Federal involvement through regulation would be beneficial.

- There is a need for broad performance standards that do not microprescribe the implementation process and policy to preempt defective local level authority. Legislation is desirable as opposed to policy because policy can be detrimental.
- In New York State, the law prevents the creation of new private crossings until an administrative law hearing is conducted.
- Public safety concerns need to be considered, with a focus on passenger train lines. Rail lines with passenger operations should be put into the public use category.

Open Commentary

The following is a summary of the general commentary and discussion.

- NYSDOT is currently developing standards for private crossing signage. These standards are in draft form at present, with approval being coordinated in conjunction with the Metropolitan Planning Associations.
- Caution is needed with the term public use to define crossings. There are many different fact patterns and situations that require extensive examination. California currently designates publicly used private crossings after the CPUC has concluded a factual determination.
- Education of the general public's responsibilities at private crossings is missing. There needs to be some level of driver education at the State or local level, possibly through driver education courses or new requirements similar to commercial driver training. This could be used to target higher-risk drivers.
- The Brotherhood of Locomotive Engineers and Trainmen (BLET) generally concur with FRA findings and support an approach that involves all relative stakeholders to ensure that the policy developed is thorough. Although the BLET feels that FRA can produce a national success through policy and guidance, it favors policy and legislation.

Findings:

- Absence of a cohesive policy or regulatory structure has led to the existence of private crossings that are redundant, inadequately designed, and/or poorly maintained.

- In most States, there are no publicly sanctioned engineering criteria for private crossings. Accordingly, users of those crossings may encounter a variety of signage, road surface conditions, and other engineering attributes.

- No process currently exists that predicates the creation of new private crossings or the continuation of existing crossings on considerations of public safety or necessity.

- For most private crossings in the Nation, there is no agreement in place specifying the responsibilities of the railroad and the holder. Disputes must typically be resolved through direct interaction between the railroad and the crossing holder or, failing that, through litigation.

- In general, local planning and zoning authorities do not regularly take into account the impacts of the development decisions that they oversee on interstate rail transportation.

- The contribution of education and awareness programs to safety at private crossings is not documented, but safety knowledge and awareness would appear relevant to private crossing safety, provided that engineering arrangements present suitable cues to facilitate safe traversing of the intersection.

- Because State laws applicable to public roadways do not apply at private crossings, and because most users of private crossings are likely authorized users, law enforcement does not appear to be a useful strategy for improving safety at private crossings.

- The level and type of highway use—that is, whether the public has an expectation of free access to a crossing—is a key factor affecting safety at that crossing.

- Population increases, changes in land use, and both recent and projected growth in rail and highway traffic suggest that exposure to incident risk at private crossings is likely to continue to increase. Accordingly, the number of opportunities for incidents, and therefore for casualties, will also increase unless new initiatives for improving private crossing safety are not identified and are effectively implemented.

- Railroads lack the authority to control roadway design or traffic control device selection and placement. They also lack the authority to control the highway usage of a given crossing.

- Railroads have made significant efforts to close or improve private crossings. However, they are often hampered by common law and, in some cases, by statutory law, which may not recognize the degree to which private crossings threaten the safety of road users, railroad employees, and potentially other members of the public in the vicinity.

- Effective solutions to improving safety at the Nation's private highway-rail grade crossings will require active collaboration between the parties involved. These parties include but may not be limited to:

  - Private crossing holders
  - Railroads
  - Local public planning and zoning authorities
  - State agencies that enforce crossing design standards
  - Professional and/or industry organizations responsible for developing standards
  - USDOT

8. Additional Outreach

In an effort to reach the professional transportation research community, a panel discussion session on safety at private highway-rail grade crossings was held at the Transportation Research Board's (TRB) 86th Annual Meeting. The TRB Annual Meeting attracts roughly 10,000 transportation professionals from around the world, including policymakers, administrators, practitioners, and researchers and representatives from industry, academia, and government.

TRB Panel Discussion

The panel discussion was hosted by TRB's Highway-Rail Grade Crossing Committee, AHB60, on January 23, 2007, in Washington, DC. Six panel members provided prepared statements, followed by an open discussion. The panel members were Miriam Kloeppel, Office of Safety, FRA; Guan Xu, Office of Safety, FHWA; Paul Worley, NCDOT; Richard Campbell, Railroad Controls Limited and NCUTCD; William Browder, AAR; and Aidan Nelson, RSSB, United Kingdom.

Formal Statements

The following is a summary of the prepared statements provided by the panel members.

FRA

The prepared statement delivered by FRA provided a brief overview of the safety inquiry, followed by summaries of the discussions held at the previous public meetings.

FHWA

FHWA has regulatory and statutory authority over public highway-rail grade crossings based on Sections 130 and 646 of Title 23 of the United States Code. These regulations afford authority over highway-rail grade crossings and Federal aid programs funded through transportation bills, such as the current SAFETEA-LU, which authorized $220 million per year for FY 2006–2009. Under this bill, States can request and receive funding to address safety warning devices at public highway-rail grade crossings. This limitation on the types of grade crossings that are eligible for Federal funding is the basis for FHWA's limited role with respect to safety concerns at private highway-rail grade crossings.

In 1999, FHWA proposed a section to the MUTCD that contained a definition, standard, and guidance for traffic control devices at private crossings. FHWA eventually withdrew the proposal because of railroad industry opposition challenging the agency's lack of statutory authority and the economic impact that enactment of the proposal would place on the industry. A number of States also opposed the inclusion of private crossing standards because of State laws that limit the exercise of their jurisdiction over private roadways.

NCDOT

Following the Sealed Corridor Project in North Carolina, NCDOT realized a need to address private crossings. Through the Sealed Corridor approach, NCDOT implemented off-the-shelf technologies in different ways, emphasized the use of corridor diagnostic teams, and implemented closures and alternative access whenever possible to improve safety. NCDOT even signalized private crossings with high traffic volumes and public use. North Carolina is one of the few States to pursue private crossing safety projects and updating of the private crossing inventory data. It has done this through a $1.9 million grant from FRA's Next Generation High-Speed Rail Program by virtue of the State's having a federally designated high-speed rail corridor, the Southeast High-Speed Rail corridor.

NCDOT first conducted a comprehensive diagnostic study of all 47 private crossings on its high-speed rail corridor to verify and update inventory data for accurate decisionmaking. It found a lot of inaccuracies in inventory data and sparse coverage of private crossings. NCDOT believes that the best strategy has been to use the corridor diagnostic approach and to inventory all crossings, public and private, in a particular area. Currently, resources to maintain an accurate inventory of private crossings are not present at either the State DOT or the railroad level. Although crossing inventory data remain fairly important, resources for collection are not well staffed or well funded.

Typically, by the time that private crossings present themselves as issues at the State level, they are politically charged. NCDOT has tried to encourage private individuals to keep talking with the railroads and to try to negotiate a win-win situation. A State DOT has to partner with the owning and operating railroads to find comprehensive and innovative approaches. There is a significant need to collect, correct, and update private crossing inventory data. All stakeholders, including Federal and State agencies, local government, transit authorities, railroads, and private crossing owners, may eventually need to develop some kind of methodology to share costs. This cannot all be put on the public side or shouldered by the railroads.

In addition, there is no dispute resolution process. There needs to be some kind of model legislation. National guidelines should be considered for development by stakeholders. National standards for warning devices at private crossings are also needed. NCUTCD is currently researching this issue.

NCUTCD

Private crossings are unique because they are largely considered private matters of interest between a railroad company and a private landowner. In many cases, there are no documents that serve to establish the relationship between a railroad and a landowner. To bring some degree of standardization to private crossings, the first thing that needs to be developed is a comprehensive private crossing inventory. The existing crossing inventory has traditionally focused on public crossings.

FHWA and FRA will have to work closely together to develop a relationship that will allow the establishment of standardized traffic control devices and definitions for private crossings to achieve an effective cooperative effort.

The MUTCD does not specifically define public roadways separately from private roadways. A public roadway is defined as being any road or street under the jurisdiction of and maintained by a public agency and open to public travel. The MUTCD deals only with traffic control devices on public roadways or roadways open to public traffic. FHWA, through the regulatory amendment process, has attempted to more clearly define the term "open to public travel" through 23 Code of Federal Regulation (CFR) 655; however, the MUTCD lacks a definition of other than a public road, and there is a clear need for definition of a private roadway.

A third category, "semipublic" roadway, was presented to the Edit Committee of NCUTCD. This category refers to any road or street under the jurisdiction of and maintained by a private entity and open to public travel. This provides for a unique classification of crossings that are clearly on private rights of way but are open to public travel. The creation and use of the semipublic crossing category could allow the discretionary use of public funding for traffic control devices or other types of improvements at publicly used private crossings.

MUTCD-recommended traffic control devices at highway-rail grade crossings are developed through a process using a group known as a diagnostic team. A diagnostic team is defined in 23 CFR 646 as a group of parties of interest in a highway-rail grade crossing matter. The same diagnostic team could be used to evaluate the need for Federal funds for semiprivate crossings.

NCUTCD encourages FRA to consider rulemaking that would provide some degree of authority through FRA or a State DOT to regulate the establishment of private crossings and to provide for an accurate private crossing inventory. The private crossing inventory should include information on maintenance responsibility, surface, traffic control devices, and other data specific to all crossings, including semipublic ones.

AAR

AAR is a standards practices organization maintaining a number of different standards. It comprises and represents Class I railroads and other organizations in North America. The views expressed were those of William Browder and not the AAR's espoused position.

Railroads derive absolutely no benefit from highway-rail grade crossings. Railroads are not the experts on treatments at highway-rail grade crossings; rather, the expert is the Highway Authority. Railroads do not have a large force of individuals to design and promote crossing safety; they have to do it within their own engineering departments or through contractors. 49 CFR Part 234 requires railroads to conduct an onsite inspection of every active warning device crossing. There are more than 65,000 such crossings equipped with active warning devices in the United States. Roughly 1,000 of the more than 94,400 private crossings have active warnings, most of which were equipped for the sake of safety because the railroad insisted.

The railroads have to establish relationships with 50 different State DOTs. The nature of these relationships varies, but there are some similarities in terms of safety. We commend the NCUTCD's suggested semipublic term for private crossings that provide public access. There is no one-size-fits-all solution.

RSSB, United Kingdom

RSSB was established in April 2003 to lead and facilitate the railway industry's work to achieve continuous improvement in the health and safety performance of the railways in Great Britain.

RSSB believes that the first priority is to keep an updated and accurate account of the ownership and change in use of private crossings. This is a considerable challenge to the railway. In Great Britain, it has become a far greater challenge in recent years, with the planning rules being altered to permit development and to encourage agricultural properties to increase employment in rural areas. The authorized user is responsible for ensuring that its visitors understand the rules of engagement for the private-level crossing. In practice, most users do not do this.

RSSB is now producing informational leaflets about the safe use of private crossings in a multitude of languages as a result of an incident involving non-native-English-speaking individuals. One of the obligations of the railway is to equip a crossing with a sign stating the arrangements of its use. This takes the form of a sign indicating that the crossing is private and a statement describing the penalty for abuse.

In Great Britain, the railway has an obligation to fence itself. There is a five-bar gate on either side of private crossings. This is not the safest form of railroad crossing because, if it is to be used properly, the individual must exit the vehicle and open the near-side gate, traverse the crossing and open the far-side gate, traverse the crossing to retrieve the vehicle, drive the vehicle through the crossing, exit the vehicle and traverse the crossing to close the far-side gate, and traverse the crossing for the fifth time to reach the vehicle. Often, a crossing will be left open for the return trip, in which case the situation changes from a passive-user work crossing with a distinct barrier to indicate the presence of the railway to a passive open crossing. With passive open crossings, risk is actually increased.

At private crossings with a high volume of use, RSSB has installed miniature warning lights to indicate whether the rail line is clear or if there is a train coming. The installation of such warning devices only converts the crossing from a passive open crossing to an active open crossing.

Ireland has taken a radical approach and sought to reduce the number of private crossings, buying the agricultural land adjacent to rail lines from farmers who have land on both sides of the railway and then selling it to other farmers in an effort to consolidate the land holding on one side of the railway. This removes the need for access crossings. Ireland has also recognized that it can separate an agricultural crossing for far less money than a railway engineer's estimate. By building user-appropriate grade separation rather than standard public grade separation, Ireland has managed to provide grade separation at a fraction of the cost of traditional separation structures.

A dilemma arises when a private crossing becomes a public crossing. The consequence of declaring a crossing public is that it has to be upgraded to a public space crossing. In Great Britain, at a minimum, public space crossings are active open crossings, with all associated costs falling to the railway.

Great Britain has nonstatutory planning guidance stating that the planning authority should consult with the railway on any development likely to have a material impact on the use of the level crossing. A similar statutory obligation should be mandatory in the United States to address this issue.

General Discussion and International Views

Following the prepared statements, Phil Poichuk of Transport Canada provided a statement on the status of highway-rail grade crossings in Canada. Ray Lewis of the West Virginia Department of Transportation provided a summary of the crossing situation in West Virginia. The following section summarizes the statements and interactive discussion, including questions posed by the audience, from the open-discussion portion of the panel discussion. (The full text of the interactive discussion can be found in Appendix A6.)

Transport Canada

Currently, Canadian standards are departing from the traditional definition of private highway-rail grade crossings Canada traditionally had two categories of private crossings: statutory (by right) and nonstatutory (by grace). Statutory private crossings were created in the late 1800s when the railway severed land and therefore had the obligation to provide crossings and maintain them. Nonstatutory crossings were created when a landowner whose land had not been initially severed later needed a crossing for another purpose. The landowner would enter into an agreement with the railroad and usually pay the associated cost of the crossing. The agreement typically dealt more with rights and financial aspects, such as maintenance of the crossing, than it did with the safety responsibility.

Canada's new grade crossing standards move away from traditional definitions relative to ownership. The national grade crossing manual, *RTD 10*, does not use the terms public or private. Canada now requires safety amenities based on whether or not a crossing is restricted or unrestricted relative to public use.

West Virginia Department of Transportation

West Virginia tries to control access across rail lines through permitting. Everyone has a right to access the highway system from their property. However, the conditions of public use can be set. West Virginia requires driveway permits for private roadway access to the public highway system, and there is a fairly extensive manual for driveway permits. If a new or existing driveway crosses a rail line and is going to involve a change in use of the land, then the rules and regulations require the landowner to obtain a new permit to reflect the updated change. If a railroad is involved, the State asks for an agreement even if the crossing is deeded.

Question: *Of the over 94,400 private crossings, what percentage are semipublic as defined by NCUTCD?*

- This is difficult to estimate because private crossings are not currently inventoried to the same extent as public crossings with regard to usage, AADT, surface conditions, and warning devices. A rough estimate is 10 percent or less.
- Some private crossing information is in the National Crossing Inventory; however, the information for most data categories is not.
- A category designating whether or not there is public access was added to the inventory in November 1999.
- Some States have not updated their private crossing inventory in the last 6 years.
- The resource for most of the private crossing information in FRA's inventory is the railroads. Some railroads have fairly extensive information in their private inventories. Unless a significant safety value is identified, it is a burden on the railroad's daily operations to collect and provide this information to FRA.

Question: *Would a crossing that led to a trucking company's facility that was used by delivery trucks of a few customers be considered a private or a semiprivate crossing?*

Under the NCUTCD proposed usage, a private crossing with delivery truck access would still be considered a private crossing because it provides access to a private business, which has control over its employees. Although there is access by external drivers, such as delivery companies, those individuals generally possess a commercial driver's license and have had additional safety training in highway-rail grade crossings.

Question: *How does the industry currently deal with situations where a crossing is owned by an authority that believes the crossing is private and is not subject to FRA regulations?*

- This is among the issues that have to be considered. Currently, if a crossing is listed in FRA inventory as a private crossing, then it is considered private.
- A motorist does not know if a roadway and crossing are open to the public unless the crossing is specifically signed, gated, and identified.

Question: *What is the panel's opinion on the need for regulations, guidance, or standards on engineering design characteristics? Should such an effort come from the States that administer and possibly have jurisdiction over private crossings? From a DOT-wide task force that includes all stakeholders, such as FRA, FHWA, FMCSA, and FTA? Or should it be left to the local authorities to determine?*

- There is a need for more pilot projects through both public and private partnerships around the country to attain experience with different approaches for closures, and with appropriate warning devices and other treatments for private crossings. Ultimately, a diagnostic team process headed by the State authority that has experience with crossing safety issues would be the best solution. The local diagnostic team can truly deal with all of the individual issues and address them onsite.

- There is a need for general Federal-level guidelines where Federal funding for private crossings is involved. States have a lot of power to define details. One reasonable way to have the Federal Government involved is through development of a process that leaves control in the hands of the States and local diagnostic teams.
- In the United Kingdom, most private crossings are well run; however, there are still problems. In most instances, private landowners exercise their responsibilities and work with the railway. Issues such as a change in use where development has been allowed on one side of the railway without taking into account the impact on the railway is usually a matter of public policy. Once this sort of development is created, it should require a new form of agreement to recognize the new circumstances.

Question: *Should regulations and standards or guidance be developed, and how would they interface with existing private agreements between the railroad and the landowner? Will regulations supersede that private agreement?*

- If FRA were to develop regulations, one of the factors that would have to be considered is the interface with private crossing agreements. Some crossing agreements are based in deeds. There are situations where private-property rights might not apply, and rights would have to be negotiated. Pilot programs to gain experience with the different scenarios might be beneficial.
- The view of RSSB is that there should be a statutorily defined user interface for public highway crossings, public pedestrian crossings, and private level crossings. Everything else should be included within the standards of the railroad concerned.

Question: *Only 22 States seem to have statutes addressing private crossings. We have heard that the authority over private crossings should be held at a State level. How can the Federal Government now step in to help States that have statutes and those that do not to manage the safety of private crossings?*

- Intrusion into the relationship between the property owner or licensee on the crossing and the railroad may create the situation of a taking.
- Most private crossings never cause trouble. Private crossings that undergo a change in use have the greatest potential for problems. There is a need for a mechanism through State law or Federal regulation that would permit an existing deed to be rolled into a standard private crossing agreement.
- The private crossings with issues are the ones that have free and unrestricted public access; they may require some additional treatment.
- Monitoring crossing usage by AADT may be beneficial to regulation. If the change in AADT of a crossing exceeds a set percentage or fixed amount, a review of the use of the crossing could be prompted.
- One necessary task with regard to land-use planning and smart growth is to convey information to land-use planners at county and municipal levels with regard to railroads. Information about the railroad must be considered by everyone involved in land-use planning.

9. Private Highway-Rail Grade Crossing Reported Incidents

FRA conducted a series of incident investigations to provide current field data on selected private crossings. In addition to collecting the data required for a grade crossing investigation, FRA inspectors collected information specific to the incident-involved private crossing. The additional data included information about the frequency and types of rail and highway traffic, some data about the geometric configuration present at the crossing, signage present, and any ownership or maintenance agreement information available. The following section contains summaries of nine incident investigations completed during the course of this study.

9.1 Incident Number: HQ-2006-40, Jackson, MI

At about 1 p.m. on May 30, 2006, Amtrak train No. 350 struck an empty gravel truck at a private highway-railroad grade crossing near Jackson, MI. The train was traveling at about 74 mph with cab car 90218 in the lead when the truck entered the crossing in front of the train. One train crew member and 15 passengers received minor injuries; the truck driver sustained fatal injuries. Damages reportedly totaled $97,000 for railroad equipment and $3,000 for the highway vehicle.

The private road at the incident crossing is used by an excavating company and two residences. On average, fewer than 30 highway vehicles and a dozen trains, eight of them Amtrak trains, traverse the crossing daily. The crossing was built in approximately 1948; there is no record of any maintenance contract between the business owner and Norfolk Southern Railway, the track owner.

Figure 27. Private Crossing, USDOT ID No. 545296H, Jackson, MI

- USDOT ID #: 545296H
- Incident history? One prior incident, on October 24, 1999.
- Does Amtrak or another passenger rail service operate over this crossing? Yes; Amtrak eight trains per day.
- Is the primary use of this crossing commercial or industrial? Commercial
    - If so, are there other access routes to the facility? No
    - What if any grade crossing safety training have motorists at this facility received? None
- Is this crossing being utilized at all by the public? No, with the exception of traffic due to two residences nearby.
- What if any types of hazmat shipments are transported over this crossing either by train or motor vehicle? Minimal amount (four to five shipments daily) handled by the NS Railroad.
- What are the daily train and highway traffic counts? Four trains and roughly six highway vehicles.
- Is the motorist's sight distance limited in any quadrant? No
- What is the crossing surface material, and what condition is it in? Gravel; in good condition.
- How wide is the roadway (how many traffic lanes)? One lane—10 feet
- How many tracks are at this crossing? One main track
- Does the crossing have a high vertical profile (hump crossing)? No
- Who maintains the roadway approaches? NS Railroad and owner of property
- Identify signage present, with measurements: height above ground, distances from nearest rail and from roadway edge, dimensions of signs. Stop sign, 6 feet in height; 75 feet from roadway to south rail of main track
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? No formal arrangement
- Is there an agreement in place between the private property owner and the railroad? No

9.2 Incident Number: HQ-2006-42, Axis, AL

On June 1, 2006, at 11:40 a.m. Central Daylight Time (CDT), a southbound Norfolk Southern Railway (NS) struck a westbound truck-trailer at a private highway railroad grade crossing near Axis, AL. The impact caused the locomotive and the first through fifth railcars to derail. The truck-trailer, loaded with sulfuric acid, became separated from the tractor and lodged under the front of the locomotive, but there was no release of the hazardous cargo. The fuel in the truck-trailer ignited as a result of the collision, and the truck-trailer and portions of the locomotive were involved in the fire, which was quickly extinguished by local fire personnel. Damages were reported in the amounts of $53,800 for railroad equipment, $8,000 for track and structures, and $120,000 for the highway vehicle.

- USDOT ID #: DOT 727807V
- Incident history: No previous incident history recorded.
- Does Amtrak or another passenger rail service operate over this crossing? No
- Is the primary use of this crossing commercial or industrial? Industrial
    - If so, are there other access routes to the facility? No
    - What if any grade crossing safety training have motorists at this facility received? Plant personnel participate in training conducted by the railroad every 3–5 years.

- Is this crossing being utilized at all by the public? No
- What if any types of hazmat shipments are transported over this crossing, either by train or motor vehicle? Plant: sulfuric acid, carbon disulfide, sulfur chlorides, monochloracidic acid; railroad: chlorine, caustic soda, carbon disulfide, sodium hydrosulfide, sulfuric acid, fuel oil, aniline, anhydrous ammonia, isopropyline alcohol, propyline alcohol, isobutyldehybe, dipropylaminp, benzel, coke, sulfur chlorides, monochloracidic acid
- What are the daily train and highway traffic counts? Railroad: eight trains; highway: approximately 250–300 vehicles.
- Is the motorist's sight distance limited in any quadrant? Yes; cars located in a siding on the east side of the main track south of the crossing restrict the sight distance of vehicles leaving the plant. The railroad has green marks painted on the rail 100 feet from the crossing.
    - If yes, is the limitation likely to be seasonal? No
- What is the crossing surface material, and what condition is it in? Asphalt, fair-to-good condition
- How wide is the roadway (how many traffic lanes)? Two lanes
- How many tracks are at this crossing? Two: main track and siding
- Does the crossing have a high vertical profile (hump crossing)? No
- Who maintains the roadway approaches? Plant
- Identify signage present, with measurements: height above ground, distances from nearest rail and from roadway edge, dimensions of signs. There are advance warning signs placed 125 feet from the tracks for westbound traffic and 500 feet for eastbound traffic. All signage is standard dimension with a height of 6 feet from ground to top, including crossbucks with flashing lights.
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? The road was once a public road, Salco Road, before the plant was built.
- Is there an agreement in place between the private property owner and the railroad? Yes.
    - If yes, does the agreement include maintenance of crossing and/or warning devices present? Yes, the plant is invoiced on an annual basis by the railroad for maintaining the crossing signals. The invoice references an agreement date of September 8, 1967, but the plant has been unable to locate its copy of the agreement.

9.3 Incident Number: HQ-2006-50, Boutte, LA

On June 14, 2006, at 12:55 p.m., a westbound Amtrak train, the Sunset Limited, struck a tractor-trailer at a private highway-railroad grade crossing near Boutte, LA. The driver of the tractor-trailer sustained no injuries, but one member of the train crew reported minor injuries and four train passengers sustained minor-to-moderate injuries. Damages were reported in the amount of $100,000 for railroad equipment and $11,765 for the highway vehicle.

- USDOT ID #: 758008B
- Incident history: Nonfatal incidents occurred on June 16, 1989, and October 14, 1990; a two-fatality incident occurred on December 11, 1993; and a single-fatality incident occurred on February 23, 1999.
- Does Amtrak or another passenger rail service operate over this crossing? Yes
- Primary crossing uses: Industrial (well service company)
- What types of hazmat shipments are transported over this crossing? Diesel fuel oil (in amounts less than 200 gallons)
- What are the daily train and highway traffic counts? 14 trains
- Is the motorist's sight distance limited in any quadrant? Yes, but not for a vehicle stopped at crossing.
    - If yes, is the limitation likely to be seasonal? Yes, foliage
- What is the crossing surface material, and what condition is it in? Concrete, new
- How wide is the roadway (how many traffic lanes)? Two lanes
- How many tracks are at this crossing? One main track
- Does the crossing have a high vertical profile (hump crossing)? No
- Traffic control devices: Stop signs on both approaches and advance warning signs mounted on same mast. Cross bucks on additional masts. Nonstandard warning signs reading "Stop look both ways before crossing railroad" also on both approaches. Masts and cross bucks for active gates and flashers installed, but active signal installation not complete and signals not functional at time of incident.

9.4 Incident Number: HQ-2006-53, LeMont, IL

At about 7 p.m. (6:52) on June 21, 2006, Metra Train No. 921, traveling south at a recorded speed of 79 mph, struck a truck-trailer traversing a private grade crossing near Lemont, IL. A piece of the trailer became wedged under the snow pilot of the locomotive, and the locomotive derailed at the crossing. The driver of the tractor-trailer was not injured. There were 170 passengers aboard the train: five claimed minor injuries and were treated and released. No train crew members reported any injury. Damages reportedly totaled $75,000 for railroad equipment, $8,000 for track and structures, and $3,000 for the highway vehicle.

This crossing serves two commercial facilities to which there is no other access. Roughly 28 trains and fewer than 30 highway vehicles use this crossing daily. The crossing is maintained by Canadian Northern, but there is no formal agreement.

Figure 28. Private Crossing, USDOT ID No. 309452U, Lemont, IL

- USDOT ID #: 309452U
- Incident history: No previous incident history recorded.
- Does Amtrak or another passenger rail service operate over this crossing? Amtrak; six trains daily.
- Is the primary use of this crossing commercial or industrial? Commercial
  - If so, are there other access routes to the facility? None
  - What if any grade crossing safety training have motorists at this facility received? None
- Is this crossing being utilized at all by the public? No
- What if any types of hazmat shipments are transported over this crossing either by train or motor vehicle? Canadian National Railway reports approximately six per day.
- What are the daily train and highway traffic counts? Canadian National Railway: 16 freight trains; Amtrak: 6 trains. Highway traffic is estimated at 25 vehicles.
- Is the motorist's sight distance limited in any quadrant? Yes, the motorist view's is obscured on approach to the crossing.
- What is the crossing surface material, and what condition is it in? Bituminous asphalt; in good condition.
- How wide is the roadway (how many traffic lanes)? Two lanes, 16 feet
- How many tracks are at this crossing? Two tracks
- Does the crossing have a high vertical profile (hump crossing)? No
- Who maintains the roadway approaches? Canadian National Railway
- Identify signage present, with measurements: height above ground, distances from nearest rail and from roadway edge, dimensions of signs. Stop signs (6 feet in height) located both north and south of the crossing approximately 8 feet from the nearest rail.

- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? No formal agreement
- Is there an agreement in place between the private property owner and the railroad? No

9.5 Incident Number: HQ-2006-62, Castle Rock, WA

At about 4:40 p.m. on July 3, 2006, southbound Amtrak Train No. A507-03 struck a passenger vehicle at a private crossing near Castle Rock, WA. According to the Amtrak engineer, the incident occurred when the motorist entered the crossing after a northbound Union Pacific train cleared it. Train crew and passengers sustained no injuries, but all four motor vehicle occupants sustained fatal injuries. Damages reportedly totaled $38,541 for railroad equipment and $8,000 for the highway vehicle.

The road leading to this crossing is a county road, but county maintenance ends shortly before the crossing, and the private road that extends beyond the crossing dead-ends after serving 11 residences. About 60 trains daily traverse this crossing. It is not known when this crossing was created, and no maintenance contract has been located for it.

Figure 29. Private Crossing, USDOT ID No. 092479W, Castle Rock, WA

- USDOT ID #: 092479W
- Incident history: One previous incident, on 12/13/88
- Does Amtrak or another passenger rail service operate over this crossing? Yes
- Primary crossing uses: Residential
- Is this crossing used at all by the public? Yes
- What types of hazmat shipments are transported over this crossing? Many types via freight train
- What are the daily train and highway traffic counts? 60 trains, 65 highway vehicles

- Is the motorist's sight distance limited in any quadrant? Yes, but not for a vehicle stopped at the crossing
    - If yes, is the limitation likely to be seasonal? Yes, foliage
- What is the crossing surface material, and what condition is it in? Concrete, in good condition
- How wide is the roadway (how many traffic lanes)? 21 feet wide (two lanes)
- How many tracks are at this crossing? Two main tracks
- Does the crossing have a high vertical profile (hump crossing)? No
- Who maintains the roadway approaches? Eastbound approach maintained by county, westbound approach maintainer unknown.
- Traffic control devices: stop signs and rectangular private crossing signs on both approaches 12 to 15 feet from nearest rail. East of the crossing, there is an advance warning sign 183 feet from the nearest rail. Also east of the crossing, there is a rectangular sign reading "End of County Road" approximately 17 feet from the nearest rail.
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? Initially listed in FRA National Crossing Inventory as a public crossing, the crossing's designation was updated in 1998 to indicate that it was private.
    - Is there an agreement in place between the private property owner and the railroad? None was found.

9.6 Incident Number: HQ-2006-73, Rome, NY

On August 16, 2006, at 6:29 p.m. a westbound CSX freight train collided with an automobile at a highway-rail grade crossing near Rome, NY. Of the five motor vehicle occupants, one sustained serious injuries, three sustained critical injuries, and one sustained fatal injuries. Members of the train crew sustained no injuries. Damages reportedly amounted to $100 for railroad equipment and $10,000 for the highway vehicle.

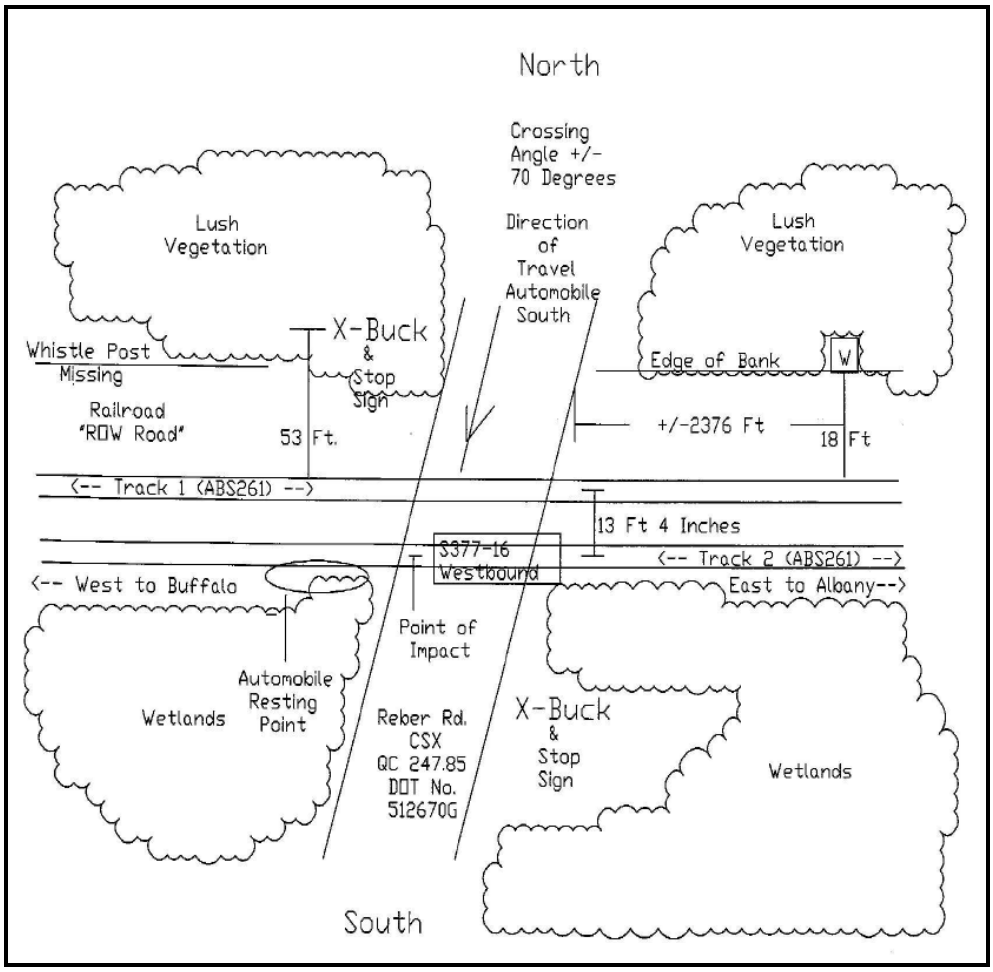


Figure 30. Private Crossing, USDOT ID No. 512670G, Rome, NY

- USDOT ID #: 512670G
- Incident history: Nonfatal incidents on September 21 and 24, 1978, and March 20, 1996
- Does Amtrak or another passenger rail service operate over this crossing? Yes
- Primary crossing uses: Residential
- Is this crossing used at all by the public? No, with the exception of nearby residences
- What types of hazmat shipments are transported over this crossing? Hazmat shipments occur via rail. Only occasional shipments of heating oil are transported over the crossing by highway vehicles.
- What are the daily train and highway traffic counts? 55–65 freight trains, 8 passenger trains, and 18 highway vehicles daily
- Is the motorist's sight distance limited in any quadrant? Yes, northwest and northeast quadrants (incident vehicle's approach quadrants)
    - If yes, is the limitation likely to be seasonal? Yes, dense foliage
- What is the crossing surface material, and what condition is it in? Asphalt, in good condition
- How wide is the roadway (how many traffic lanes)? Two lanes
- How many tracks are at this crossing? Two main tracks
- Does the crossing have a high vertical profile (hump crossing)? No

- Who maintains the roadway approaches? Reports suggest road is owned and maintained by the City of Rome, NY.
- Traffic control devices: Standard MUTCD-compliant advance warning signs, cross buck signs, and stop signs. The mast for the cross buck signs on the south side of the crossing was 35 feet from the nearest rail, while the cross buck mast on the northern approach was 53 feet from the nearest rail. The stop sign on the approach used by vehicle in the incident was almost completely obscured by foliage. There were no advance warning pavement markings or stop lines.
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? The crossing was established by Deed Covenant dated 1820 and passes by part of deed instrument with any transfer of ownership.
- Is there an agreement in place between the private property owner and the railroad? Yes.
    - If yes, does the agreement include maintenance of crossing and/or warning devices present? Deed holds rail carrier responsible for maintenance of crossing surface only. Local municipality is responsible for maintenance and upkeep of passive signage.

9.7 Incident Number: HQ-2006-76, Wayne, MI

On September 8, 2006, at 7:58 a.m., westbound Amtrak Train No. 351 struck a motor vehicle at a private highway-rail grade crossing at the entrance to a railyard in Wayne, MI. The driver of the motor vehicle, an employee of the railroad, sustained serious injuries as a result of the collision. Damages reportedly amounted to $2,000 for railroad equipment and $15,500 for the highway vehicle.

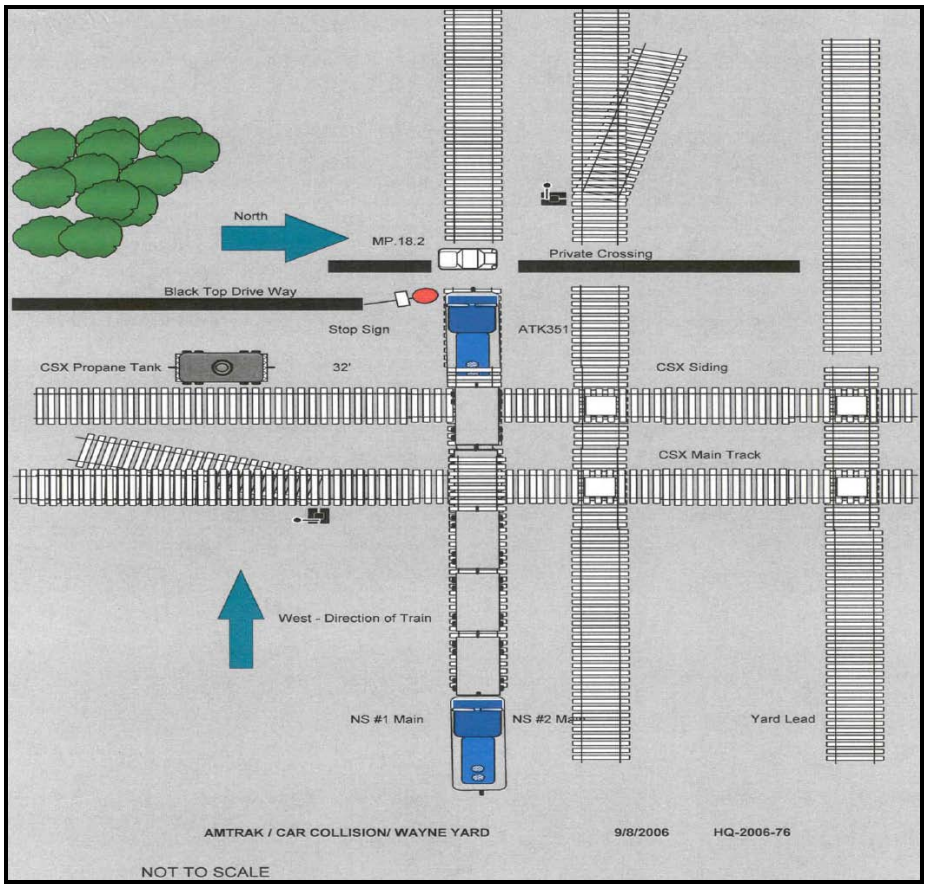


Figure 31. Private Crossing, USDOT ID No. [unknown], Wayne, MI

- USDOT ID #: Unknown
- Incident history: Unknown
- Does Amtrak or another passenger rail service operate over this crossing? Yes
- Primary crossing uses: industrial—rail yard
  - If industrial or commercial, are there other access routes to the facility? Yes
  - What if any grade crossing safety training have motorists at this facility received? Unknown
- Is this crossing used at all by the public? Unknown
- What types of hazmat shipments are transported over this crossing? Unknown
- What are the daily train and highway traffic counts? Unknown
- Is the motorist's sight distance limited in any quadrant? No
  - If yes, is the limitation likely to be seasonal?
- What is the crossing surface material, and what condition is it in? Asphalt, good
- How wide is the roadway (how many traffic lanes)? Two lanes
- How many tracks are at this crossing? Two main tracks (possibly one more track)
- Does the crossing have a high vertical profile (hump crossing)? No
- Who maintains the roadway approaches? Norfolk Southern Corporation
- Traffic control devices: One stop sign and private crossing sign mounted on a moveable post
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? Unknown

- Is there an agreement in place between the private property owner and the railroad? Railroad is the private crossing owner

9.8 Incident Number: HQ-2006-21, Sledge, MS

On April 23, 2007, at 7:50 a.m. Central Standard Time (CST), southbound Amtrak passenger Train No. 59 collided with a pickup truck pulling a fuel trailer at a private farm crossing near Sledge, Mississippi. This private road crossing is protected by cross bucks.

The pickup truck towing a trailer was traveling west on a private road, and the driver was the only occupant of the vehicle. The trailer contained a plastic tank loaded with 1,000 gallons of diesel fuel. Amtrak Train 59 was traveling southbound at 81 mph when the locomotive struck the center of the trailer, igniting the diesel fuel. The driver of the pickup truck was taken to Quitman County Hospital, where he was examined and released. There were no injuries to the train crew or passengers. Damages reportedly amounted to $85,000 for railroad equipment and $10,000 for the highway vehicle.

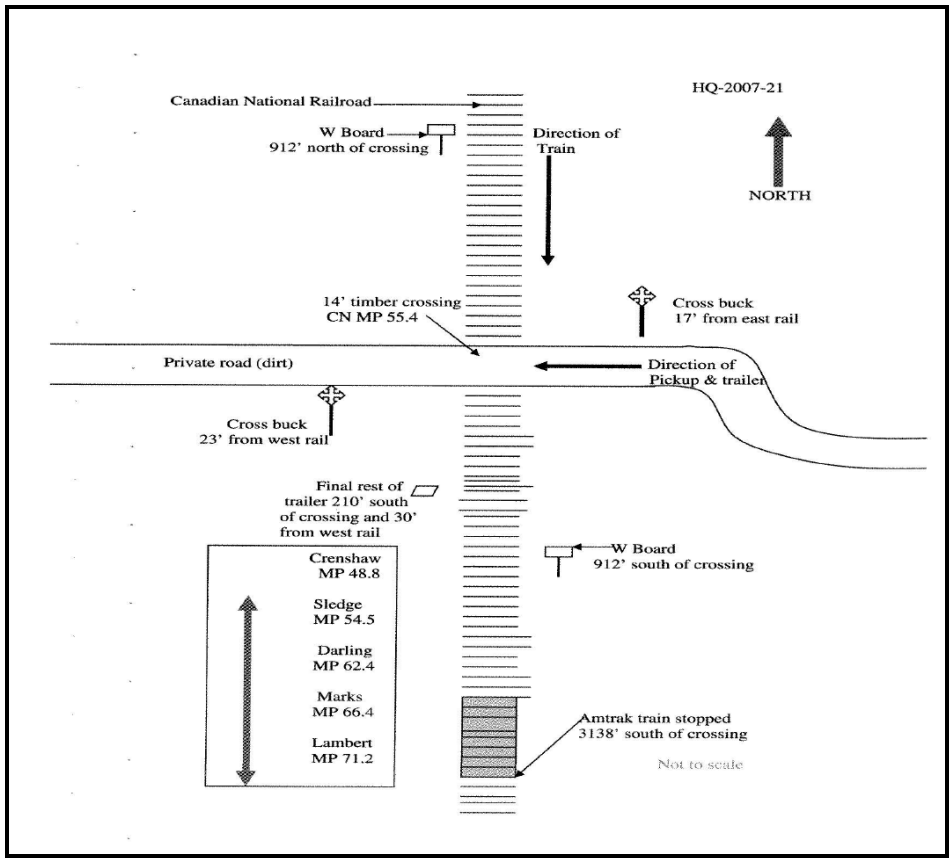


Figure 32. Private Crossing, USDOT ID No. 300586M, Sledge, MS

- USDOT ID #: 300586M
- Incident history: None recorded
- Does Amtrak or another passenger rail service operate over this crossing? Yes
- Is the primary use of this crossing commercial or industrial? Private farm crossing

    - If so, are there other access routes to the facility? No, the road leading to the crossing also serves as a turn row for the bean field.
    - What if any grade crossing safety training have motorists at this facility received? None
- Is this crossing also being utilized at all by the public? No
- What if any types of hazmat shipments are transported over this crossing either by train or motor vehicle? Diesel fuel is the only hazmat transported by motor vehicle. Trains transporting hazmat tank cars operate over this track daily.
- What are the daily train and highway traffic counts? There are 2 passenger trains and 24 freight trains on this track daily. During planting and harvesting season, there are about 8 trucks or tractors on most days; at other times of the year there is very little traffic.
- Is the motorist's sight distance limited in any quadrant? There is at least a 350-feet sight distance in all directions.
    - If yes, is the limitation likely to be seasonal?
- What is the crossing surface material, and what condition is it in? Timber, in good condition
- How wide is the roadway (how many traffic lanes)? 14 feet, 1 lane
- How many tracks are at this crossing? One
- Does the crossing have a high vertical profile (hump crossing)? Yes
- Who maintains the roadway approaches? Canadian National
- Identify signage present, with measurements: height above ground, distances from nearest rail and from roadway edge, dimensions of signs. Cross bucks, 17 feet from the nearest rail on the east side of the track and 23 feet from the nearest rail on the west side. Both cross bucks are 9 feet above the ground.
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? No record of date, but Mississippi law dating back to 1892 states that railroads will make and maintain plantation roads.
- Is there an agreement in place between the private property owner and the railroad? No

9.9 Incident Number: HQ-2007-43, Plant City, FL

On July 17, 2007, at 3:15 p.m. Eastern Standard Time (EST), southbound Amtrak train No. PO92 collided with a flatbed truck at a highway-rail grade crossing in Plant City, FL. The flatbed truck was completely destroyed, and the truck driver was fatally injured. The train's two locomotives and nine passenger cars derailed but remained upright. The locomotive engineer and the assistant conductor sustained moderate injuries and were transported to a local hospital for treatment. Four onboard service attendants and 16 passengers sustained minor injuries. They were taken to local hospitals, where they were treated and released. Damages reportedly totaled $875,000 for railroad equipment, $75,000 for track and structures, and $20,000 for the highway vehicle.

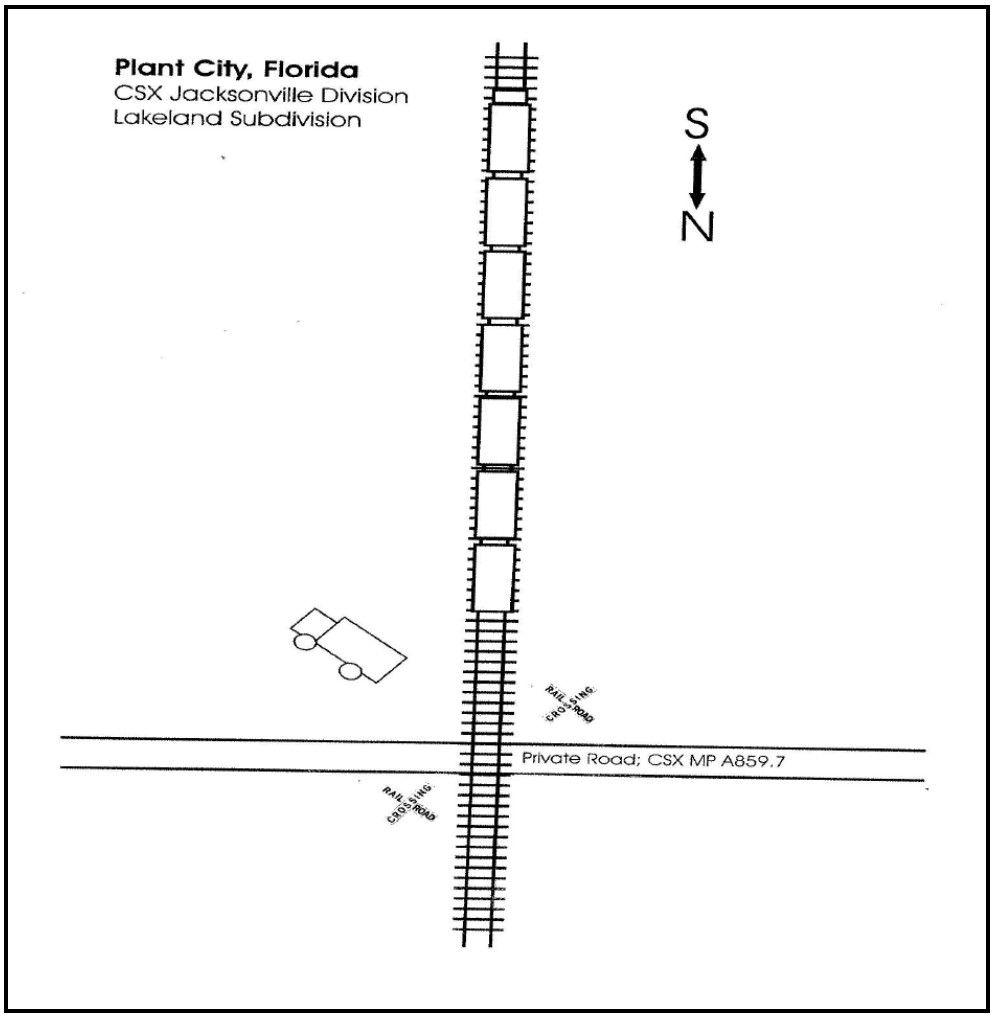


Figure 33. Private Crossing, USDOT ID No. 624310U, Plant City, FL

- USDOT ID #: 624310U
- Incident history: None recorded
- Does Amtrak or another passenger rail service operate over this crossing? Yes, two southbound trains and two northbound trains. Trains No. 91 and 92 operate southward over the crossing, turn at Tampa, FL, and operate over the crossing northbound.
- Is the primary use of this crossing commercial or industrial? Industrial
    - If so, are there other access routes to the facility? No
    - What if any grade crossing safety training have motorists at this facility received? None
- Is this crossing being utilized at all by the public? No
- What if any types of hazmat shipments are transported over this crossing either by train or motor vehicle? Propane and acetone transported by motor vehicle.
- What are the daily train and highway traffic counts? There are 9 freight trains, 4 passenger trains daily, and 50 to 60 tractor-trailers Monday through Friday. Also, 35 employees working in the two industries use the road crossing to cross the railroad track Monday through Friday.

- Is the motorist's sight distance limited in any quadrant? No, tangent track both north and south for about one mile.
    - If yes, is the limitation likely to be seasonal? N/A
- What is the crossing surface material, and what condition is it in? Asphalt, in good condition
- Identify signage present, with measurements: height above ground, distances from nearest rail and from roadway edge, dimensions of signs. Cross bucks are on both sides of the crossing. The crossbuck on the approach from the industry is located 5 feet to the right of the pavement and 11 from the rail. The height above ground to the center of the crossbuck is 11 feet. The cross buck on the other side of the crossing is located 7 feet from the roadway edge and 10 feet from the rail, and the height from the ground to the center of the crossbuck is 9 feet. The cross buck arms are 9 inches wide by 4 feet long. A stop sign is mounted 3.5 feet from the ground to the center of the sign on the cross buck on the approach leading into the industrial area.
- When and how did this crossing come into being? For example, was there a formal creation? Was it created through a prescriptive easement (squatters' rights)? The road crossing was built in 1956 through a prescriptive easement.
- Is there an agreement in place between the private property owner and the railroad? The road crossing crosses over the CSX main track and is on CSX property. The owner of the private property pays CSX for use of the crossing.
    - If yes, does the agreement include maintenance of crossing and/or warning devices present? Yes, CSX maintains the crossing and warning devices.
- What if any State laws govern private crossings? Florida law requires crossbucks but not stop signs at private crossings.

9.10 Summary

Between May 2006 and July 2007, inspectors from five of FRA's Regional Offices completed nine targeted investigations on a series of accidents occurring at private crossings. These investigations provided detailed information about the accidents and the local conditions present at a small set of private crossings. Although the data from the accident investigations are not adequate for statistical analysis, nevertheless they provide sometimes dramatic illustrations of safety issues that can exist at private crossings.

For example, just as at public crossings, the accident set included incidents that involved a wide range of severities, from those where one or more persons sustained minor injuries, through those involving fire, hazardous materials releases, and multiple fatalities. These injuries were sustained by highway vehicle occupants, train crew members, and train passengers. In all, the nine exemplar accidents resulted in 54 injuries and six fatalities, and property damages amounted to over $200,000 in highway vehicle damage, $91,000 in railroad infrastructure damage, and over $1.3 million in railroad equipment damage.

Many of the nine incidents also share similar characteristics. Five of the crossings have some form of sight obstruction and six of the crossings were equipped with stop signs. In addition, six of the incidents involved trucks (truck trailer, flatbed, or pickup) and eight of the crossings investigated are subject to hazardous materials shipments, either via rail or roadway. With these characteristics the risk and severity of an incident becomes elevated.

These incident summaries emphasize some of the issues raised in the course of the other activities conducted as a part of this safety inquiry. As was noted in discussions at many of the public meetings, for the majority of the crossings in the incident sample, no agreement, deed, or other documentation establishing responsibilities was available. Further, the signs present at and on the approach to the crossings varied greatly; there was no standard suite of signs at all crossings. A number of the incidents investigated involved commercial vehicles and/or commercial or industrial crossings. Finally, the fact that most of the incident crossings were traversed by Amtrak trains or freight trains that sometimes carried hazardous materials shipments highlighted the need to consider the safety needs, not only of the motorists using the crossings, but also of rail passengers and neighborhood inhabitants. All of these findings support NTSB's recommendation (Section 2 Background) for the USDOT, in conjunction with the States, to determine governmental oversight responsibility of private crossings and to eliminate differences between public and private crossings with regard to funding and implementation requirements for safety improvements at crossings.

Findings:

- Motorists represent only a portion of the populations at risk because of incidents at private crossings. The risks of collision and of derailment mean that the train crews, train passengers, and others in the vicinity of the crossing may be exposed to derailing equipment or hazardous materials releases.

- Whether a crossing is public or private is immaterial in determining the calls of track (i.e., train speeds), the operation of passenger service through the crossing, or the transport of hazardous materials through the crossing.

- On the basis of the data analysis for roadway user incidents at private crossings as shown in Section 4.2.4, Figure 21, approximately 58 percent of incidents involve trucks (truck trailer, flatbed, or pickup) and therefore trucks are heavily represented in the nine incidents discussed above.

- Passenger train service operates through crossing regardless of whether hazardous material is transported through the crossing.

- Ownership of crossings, public or private, is sometimes uncertain and difficult to determine (e.g., Rome, NY). Formal agreements were available for only three of the nine crossings investigated.

- Because crossing signage is inconsistent and can vary greatly depending on crossing, it is evident that a minimum standard is necessary.

10. Summary of Public Comments

A wealth of information was solicited from private crossing stakeholders and the general public during the course of the safety inquiry. Although many different topics were discussed, certain topics recurred frequently. Areas of particular interest and need for further consideration are listed as follows:

- Private crossing definition
- Identification of crossing categories
- National Crossing Inventory requirements/Data collection
- Notification of change in use of property
- Public education and enforcement
- Stakeholder Involvement
- Design and signage standardization
- National guidelines
- Funding sources
- Rights and responsibilities
- Legislation

10.1 Private Crossing Definitions

A clear, national definition of private crossings is not currently available. Most authorities apply the MUTCD's definition of a public roadway to determine whether a crossing is a public crossing. The MUTCD defines a public roadway as any road or street under the jurisdiction of and maintained by a public agency and open to public travel. If either approach to a crossing does not qualify as a public roadway, then the crossing is typically classified as a private crossing regardless of whether the crossing is open to public travel or provides public access.

A crossing that provides public access but is classified as a private crossing, based on the existing definition, typically does not go through the established evaluation process and is not eligible, with few exceptions, for public funds to install the proper safety treatments.

10.2 Private Crossing Categorization

In addition to the need for a clear definition of private crossings, meeting participants identified a variety of private crossing uses or types. Each crossing type has unique characteristics that pose unique safety concerns, some greater than others. Participants argued that identification of private crossings by type may provide help to identify high risk private crossings, something that is needed because funding for improvements is virtually nonexistent except for §1103(c) funding.

Discussions led to the identification of as many as fourteen possible categories of private crossing type. Further elaboration, however, led to the proposition that crossings should perhaps be classified according to whether the roadway was used by the public. The term semipublic was used to define a private crossing that provides public access. It was posited that identifying

private crossings that provide public access would facilitate the accurate establishment of crossing improvement prioritization. Further, participants suggested that private crossings that were identified as having public use might become eligible for public funding of any safety improvements.

10.3 Data Collection

Currently, data submission to the National Crossing Inventory for private crossings is voluntary, with most information being provided by the railroads in coordination with States. The inventory was initially created to capture public crossing data, not to address private crossing data; however, a limited subset of data has been collected for private crossings. Unfortunately, for numerous reasons, including the voluntary nature of the update process, as well as a lack of resources at States and railroad companies, much of the available private crossing information has not been updated for many years. Therefore the accuracy and completeness of the National Crossing Inventory private crossing data is unknown; it is, however, the only national database available.

As mentioned, the information requested for private crossings is limited in comparison to that of public crossings. Most sections of the National Crossing Inventory form are only requested for public crossings. Figure 1 depicts the USDOT National Crossing Inventory form with the subset of private information requested highlighted in blue. In addition, the existence of private crossings may be unknown to the railroads and States or the conditions at a private crossing may be such that the crossing does not lend itself to data collection.

FRA relies on the States and railroads to provide crossing data from the National Crossing Inventory. In many instances, these organizations have limited resources to collect information for public crossings, let alone the additional burden of private crossings.

The data currently stored in the National Crossing Inventory for private crossings are inadequate for most basic analyses and insufficient to support effective resource allocation. Current data are not sufficient to analyze trends in highway or rail traffic at private crossings.

No clear method to obtain the necessary data was determined. In many instances, access to private crossings is provided via private property or from the railway. Trespassing and safety issues were raised when the States or contractors were asked to provide additional private crossing information.

Most stakeholders agreed that the overall safety at private highway-rail grade crossings would benefit from improved data collection.

10.4 Change in Use

The continual growth in population has fueled the change in use of many properties located near or adjacent to rail lines, including those properties accessed by private crossings. The nature of use and the volume of private crossing users are changing with the development of open land. Changes in use include conversion of crossings from agricultural or other low traffic volume

uses to commercial, industrial, and higher density residential crossings. In most instances, there is no process or safeguard in place that alerts the railroads, States, or Federal Government when a change or shift occurs.

In general, most local planning and zoning authorities do not take into account the effect of development on the safety of highway-rail grade crossings. Experience has demonstrated that the ideal time for crossing stakeholders to get involved is during the planning phase of such developments. Meeting participants indicated that there is a need for some process to ensure this communication.

10.5 Public Awareness and Education

The dangers associated with private highway-rail grade crossings in many cases are not limited to the authorized private crossing users and the railroads. These users represent only a portion of the populations potentially at risk because of an incident at a private crossing. The risk of a collision and derailment mean that the train crews, train passengers, and others in the vicinity of the crossing may be exposed to derailing equipment or hazardous materials releases.

The improvements to safety at crossings have been partially credited to the continuation and advancement of educational and awareness efforts, such as those of OLI. These programs are designed to educate the public regarding all highway-rail grade crossings; however it has not been documented as to whether these educational efforts have been effective in improving private crossing safety. It is unclear if the general public is aware of their responsibilities at private crossings.

10.6 Stakeholder Involvement

There is a need for active involvement and collaboration amongst all of the stakeholders to attain effective solutions for improving safety at the Nation's private crossings. Currently, many stakeholders are not present or represented on the national level.

Required stakeholders include but are not limited to: private crossing holders of the right to cross, railroads, local planning and zoning authorities, local and State agencies that enforce crossing design standards, professional and/or industry organizations responsible for developing crossing standards, and the appropriate Federal agencies.

10.7 Design and Signage Standards

Traffic control device selection and highway design for public roadways must conform to standards spelled out in the FHWA MUTCD and the *AASHTO Green Book: A Policy on Geometric Design of Highway and Streets*. The standards required for public roadways apply to public highway-rail grade crossings. By requiring this, the signage and crossing design at any public crossing is uniform and consistent with respect to signage and design of any other public crossing. Unfortunately, private crossings do not follow the same convention, and in most States, there are no publicly sanctioned engineering criteria for private crossings.

As a result of this lack of standardization, private crossing users encounter a variety of signage, road surface conditions, and other engineering attributes, depending on the private crossing they are using. This puts the crossing users in a situation where they must interpret and react, in many cases with no familiarity, at each crossing. Figures 34, 35, and 36 provide examples of signage at different private crossings.

Figure 34. Private Crossing Unique Signage Examples

Figure 35. Additional Private Crossing Unique Signage Examples

Figure 36. Additional Private Crossing Signage Example

10.8 National Guidelines

There are many guidelines currently in use that assist highway-rail grade crossing stakeholders in the review, analysis, and design of public crossings. Guidance documents such as the FHWA MUTCD and the AASHTO *Green Book: A Policy on Geometric Design of Highway and Streets*, fifth edition, are extensive resources for stakeholders. However, these guidelines are limited to public crossings and are not typically applied to private crossings.

Most States lack the authority and responsibility for implementing the needed safety improvements at private crossings. Aside from the needed authority, most States do not have procedures in place, or the funding, to conduct an evaluation, design, or implementation of safety improvements at private crossings. In addition, with the exception of a few States, there are no dispute resolution processes to address disputes between private crossing rights holders and railroads.

Meeting participants discussed the need for applicable national guidelines regarding private crossings extensively. Many argued that safety concerns at private crossings are no different from safety concerns at public crossings. They indicated, however, that desired guidelines should be general enough to accommodate existing procedures within individual States they exist.

10.9 Public Funding

Publicly funded improvements play a significant role in improving the overall safety of the nation's highway-rail grade crossings. However, with few exceptions, public funds are unavailable for safety enhancements at private crossings. As a result of public funding limitations, the total number and percentage of private crossings equipped with more effective warning devices, particularly active warning devices, is much lower than that of public crossings.

The lack of safety improvements to private crossings has contributed to an overall safety improvement record that has lagged behind that of public crossings.

The private ownership by companies, and in many cases individual private citizens, typically prohibits the use of public funds for safety improvements at private crossings. Because of the cost of most safety improvements, private owners are not always able to fund the desired safety improvements. In addition to the funding required to maintain the warning devices is a resource burden most private crossing holders can not sustain.

There are a few exceptions where public funds can be utilized for safety improvements at private crossings. Federal funds are available for closure and improvements of private crossings on designated high-speed rail corridors. In addition, some States have used public funds when addressing safety concerns at private crossings through specific rail programs.

In addition to the need for public funding, there is a need for a process to prioritize and distribute funds. The use of a diagnostic team similar to that used for public crossing fund allocation was suggested as a viable option.

10.10 Rights and Responsibilities

The lack of authority and jurisdiction to affect decisions about safety improvements and crossing closure by most States poses a problem in addressing safety issues at private crossings. In addition, the railroads often encounter difficulty when trying to address safety issues through the local authority.

Nationally, for most private crossings, there is no documented agreement in place that specifies the current responsibilities of the parties involved. In some cases, the nature of the crossing has changed with time and a new agreement was never created.

Currently, most disputes must be settled by direct communication between the railroad and private crossing holder. With the lack of a dispute resolution process in most States, many disputes are only resolved through lengthy and expensive litigation.

10.11 Legislation

Participants were divided on the desire for legislation and the level of legislation that would be adequate to address safety concerns at private crossings. Additionally, many participants felt that any legislation implemented should preferably have no adverse affects on existing State authority and processes such as those currently being implemented in California.

Many issues were identified that require resolution before the implementation of new legislation. The identification of private crossing owners and users, the establishment of crossing agreements, and the funding sources for safety improvements were all discussed as issues that would require remediation. Nevertheless, other parties, railroads included, strongly encourage legislation that provides a level of authority permitting the safety issues at private crossings to be addressed.

11. Summary of Findings

The following section summarizes significant findings extracted from the information gathered during the course of the safety inquiry. The findings capture the ideas and suggestions solicited from private crossing holders, railroads, and other interested parties on issues related to the safety at private highway-rail grade crossings. The findings addressed crossing categories, characteristics, and data, national policy, State and railroad authority and enforcement, risk, change in use, ownership and agreements, stakeholder involvement, education, and funding.

Crossing Categories, Characteristics, and Data

- The level and type of highway use, i.e., whether the public has an expectation of free access to a crossing, is a key factor affecting the safety at that crossing.

- Based on data analysis for roadway user incidents at private crossings shown in Section 4.2.4, Figure 21, approximately 58 percent of incidents involve trucks. This high percentage of truck involvement is represented in the incidents investigated.

- Partnering nations exercise some authority over private crossings. However, the U.S. legal requirements and responsibilities are different.

- Available data for public and private crossing incidents related to train speed at impact differ in magnitude, but the data illustrate peaks in the same speed regimes and are otherwise similar.

- The highest numbers of private crossing incidents occurring between 1997 and 2006, where land-use categories were known occurred at industrial and farm crossings. The highest numbers of incidents at public crossings occurred at open space, industrial, and residential crossings (Figure 8).

- The highest numbers of incidents at private crossings between 1997 and 2006 involved truck-trailers and automobiles. During that same time period, the majority of incidents at public crossings involved automobiles.

- Given the large number of private crossings at which no warning device at all is placed, it seems clear that, in all likelihood, requiring a minimum suite of warning devices would be effective in reducing the annual number of incidents. However, the implementation of stop signs may not be the universal solution considering that the majority of incidents that occur at a private crossing equipped with a warning device occur at private crossings equipped with a stop sign.

- Trends in the incident data sorted by the type of development indicate that the most frequent occurrence of private crossing incidents were recorded at private industrial crossings (more than 30 percent). The majority of these incidents involved truck trailers and low speed rail equipment.

- Trends in the incident data sorted by the type of development indicate that the second most frequent occurrence of private crossing incidents sorted by type of development were recorded at farm crossings (more than 29 percent). Although a majority of private farm crossing incidents involved automobiles, truck, pickup truck, and truck trailers were involved in a high percentage of these incidents.

- During the 10-year period 1997–2006, truck-trailers and pickup trucks have experienced on average an increase in the number of incidents while the other vehicle categories have observed a steady or declining state.

- Incidents involving truck-trailers account for approximately 46 percent of total private industrial crossing incidents. Truck-trailer incidents account for approximately 18 percent of all public industrial crossing incidents.

- The data currently stored in the National Highway-Railroad Crossing Inventory for private crossings are generally not current and not suited for most analyses and were historically not intended to support effective resource allocation.

- In particular, current data are not sufficient to allow analyses of trends in either highway or rail traffic at private crossings. Assuming, however, that exposure trends at private crossings are similar in direction to those at public crossings, even if they are not similar in scale, it seems reasonable to believe that exposure at private crossings has risen somewhat over the past decade. On the basis of this assumption, incident, injury, and casualty rates at private crossings have likely fallen somewhat over the same time period. National totals of incidents, injuries, and fatalities are stagnant, however.

National Policy

- The safety at private crossings is a long-standing priority, one which the government has only recently been able to begin addressing.

- Absence of a cohesive policy or regulatory structure has led to the existence of private crossings that are redundant, inadequately designed, and/or poorly maintained.

- In most States, there are no publicly sanctioned engineering criteria for private crossings. Accordingly, users of those crossings may encounter a variety of signage, road surface conditions, and other engineering attributes.

- No process currently exists that predicates the creation of new private crossings or the continuation of existing crossings on considerations of public safety or necessity.

- Because crossing signage is inconsistent and can vary greatly depending on crossing, it is evident that a minimum standard is necessary.

State and Railroad Authority and Enforcement

- With few exceptions, no public bodies at the State or local level are vested with authority or responsibility for safety at private crossings.

- Railroads lack the authority to control roadway design or traffic control device selection. They also lack the authority to control the highway usage of a given crossing.

- Railroads have made significant efforts to close or improve private crossings. However; they are often hampered by common law and in some cases statutory law, which may not recognize the degree to which private crossings threaten the safety of road users, railroad employees, and potentially other members of the public in the vicinity.

- Because State laws applicable to public roadways generally do not apply at private crossings, and since most users of private crossings are likely authorized users, law enforcement does not appear to be a useful strategy for improving safety at private crossings.

Risk

- Although incident frequency does not increase uniformly with train speed, the proportion of private crossing incidents that involve either injury or fatality seems to grow as train speed increases. The trend is particularly notable at higher speed ranges. This may provide insight that will help to establish priorities, suggesting a risk-based approach that might reasonably focus on inner-city passenger operations.

- The public or private nature of a crossing is often not considered when determining the calls of track (i.e., train speeds), the operation of passenger service through the crossing, or the transport of hazardous materials through the crossing.

- Motorists represent only a portion of the populations at risk due to incidents at private crossings. The risks of collision and of derailment mean that the train crews, train passengers, and others in the vicinity of the crossing may be exposed to derailing equipment or hazardous materials releases.

- Whether a crossing is public or private is immaterial in determining the calls of track (i.e., train speeds), the operation of passenger service through the crossing, or the transport of hazardous materials through the crossing.

Change in Use

- In general, local planning and zoning authorities do not regularly take into account the impacts on interstate rail transportation of the development decisions that they oversee.
- Population increases, changes in land use, and both recent and projected growth in rail and highway traffic suggest that exposure to incident risk at private crossings is likely to continue increasing. Accordingly, the number of opportunities for incidents, and therefore for

casualties, will also increase unless new initiatives for improving private crossing safety are not identified and effectively implemented.

Ownership and Agreements

- Ownership of crossings, public or private, is sometimes uncertain and difficult to determine (e.g., Rome, NY). While conducting a series of private crossing incident investigations during the course of this safety inquiry, FRA discovered that formal agreements were available for only three of the nine crossings that were subject to incident investigations.

- For most private crossings in the Nation, it appears that there is no agreement in place specifying the current responsibilities of the railroad and the holder. Disputes must typically be resolved through direct interaction between the railroad and the crossing holder or, failing that, through litigation.

Stakeholder Involvement

- Within USDOT, FRA is the only agency with statutory authority directly relevant to the subject matter. However, in the interest of effectively serving the multimodal populations at risk, other USDOT surface modes should participate in program development.

- Effective solutions to improving safety at the Nation's private highway-rail grade crossings will require active collaboration between the parties involved. These parties include but may not be limited to:

    - Private crossing holders
    - Railroads
    - Local public planning and zoning authorities
    - State agencies that enforce crossing design standards
    - Professional and/or industry organizations responsible for developing standards
    - USDOT

Education

- The contribution of education and awareness programs to safety at private crossings is not documented, but safety knowledge and awareness would appear relevant to private crossing safety, provided that engineering arrangements present suitable cues to facilitate safe travel over the crossing.

Funding

- The use of public funds to make improvements has played an important role in improving safety at public crossings. Except in very rare circumstances, however, public funding has not been and currently is not available for use at private crossings. As a result, the proportion of private crossings equipped with more effective warning devices, particularly active warning devices, is much lower than the proportion of public crossings so equipped.

Improvements in safety (as reflected in the incident, fatality, and injury counts nationwide) at private crossings, therefore, have lagged behind the improvements seen at public crossings.

12. Options Presented for Discussion

Prior to the Syracuse public meeting, FRA made available for discussion a draft of two options for action to improve safety at private crossings. The text of those options is reproduced below.

Suggested Course of Action

Option 1: National Policy

FRA proposes to publish new national policy to include the following:

- A clear declaration that new private crossings are disfavored, except where clearly necessary after evaluation of all reasonable alternatives.

- A declaration that every private crossing should have a recorded agreement addressing, at a minimum, safety-related factors.

- Establishment of an enhanced private crossing classification scheme for inclusion in the National Grade Crossing Inventory, and for use by diagnostic teams, that resembles the following:

    - Private crossings with private use (where there is not a perception that the general population is invited or allowed access)
        - Residential driveways (fewer than four units)
        - Farm field-to-field crossings

    - Private crossings with public use
        - Large residential driveways
        - Commercial crossings where the public access is expected (shopping centers, business parks, medical offices, parking lots, sports arenas, other recreational sites)
        - Industrial crossings (dependent on traffic count, design vehicle)

- **Note:** In determining public use, the type of train traffic should also be a factor taking into consideration the impact of a collision on passengers on the train or on nearby facilities.

- A declaration that States should establish programs for review of existing private crossings, and publication of exemplar State legislation for those States that do not currently exercise jurisdiction over safety at private crossings.

- A declaration that States should establish or identify a process whereby they are notified of land use changes that might affect safety at a private grade crossing, and publication of exemplar State legislation for those States that do not currently exercise jurisdiction over safety at private crossings.

- A declaration that States should establish or identify a process for notifying affected railroads of any land use changes that might affect safety at a private grade crossing, and publication of exemplar State legislation for those States that do not currently exercise jurisdiction over safety at private crossings.

- Establishment of guidelines or thresholds of exposure or other factors affecting safety, to determine when those new private crossings or those crossings at which land use changes affect safety, when they are deemed necessary, should be subject to a risk-based evaluation by a diagnostic team.

- Establishment of guidelines for diagnostic teams that promote a Nationally consistent approach to making improvements at private crossings, to include the following:

    - Risk levels should be calculated for each private crossing. Analysis should be performed to determine the appropriate risk remediation treatments. Risk above a certain threshold should trigger use of AASHTO roadway design standards.

    - Diagnostic teams should consider crossing closure before considering any other treatment option.

    - Where possible, diagnostic teams should consider consolidating crossings. This may be accomplished by providing access either to a nearby public crossing or to a nearby private crossing that can be adequately upgraded to improve safety.

    - Where closure or consolidation proves infeasible, diagnostic teams should examine the possibility of implementing inexpensive grade separations.

    - Should the preceding options prove infeasible, determination of the appropriate treatment should be predicated in part on whether the private roadway is open to public travel, and on whether there are access restrictions.

    - Crossings at which there is an expectation of public use should be treated in a manner consistent with the guidelines in the MUTCD.

FRA would also pursue the following pilot project:

- A study of the feasibility of using diagnostic team approach on private crossings in a corridor.

- A study of the effectiveness or applicability of new low cost solutions.

- Study methods of using best available technology for transmitting private crossing data to inventory.

Option 2: Legislation

USDOT would seek legislation providing explicit authority to be vested in the Secretary, supplementing the Railroad Safety Laws, for regulation of safety at private highway-rail grade crossings. The legislation should be sufficiently broad to enable the following:

- Adopt a clear declaration of national policy that new private crossings are disfavored, except where clearly necessary after evaluation of all reasonable alternatives.

- Require that a Statement of Essential Need be provided to the railroad before any new private crossing is created (whether public use, agricultural, or other) or change in use changes (e.g., light residential to commercial or industrial).

- Require that the Statement of Essential Need specify the intended use (volume, type of traffic, nature of permission to use), and why alternative access is not available or is not suitable.

- Provide a procedure for the railroad, State agency, or FRA to challenge the statement or propose alternative access.

- Establish that no new private crossing may be opened for traffic or subjected to a change in use, until equipped with necessary safety improvements.

- Require that the railroad and private crossing holder enter into an agreement with specified elements where the crossing cannot be closed.

- Specify the responsibilities of the crossing holder and the railroad. Where use of the crossing is determined by the holder, place a clear responsibility on the holder to participate in making necessary improvements at the crossing.

- Provide a mechanism for the railroad(s) using the rail line to challenge the continued necessity for the crossing.

- Provide one or more mechanisms for alternative dispute resolution when a dispute arises regarding the opening, closing, or improvement of a private crossing. (Shared cost, railroad, and private crossing holder.)

- Provide a mechanism for dispute resolution, available only where alternative dispute resolution has failed. (Public cost.)

- Provide a means of certifying any State agency capable of handling private crossing issues.

    - Certification would be based on substantial conformity with the policies adopted at the national level, provision of legal opinion that the State agency is authorized to undertake the function, and periodic affirmation by the State agency that it is funded at a level permitting it to show progress in addressing the issue.

- Classify private crossings by use, providing suitable objective definitions.

- Require treatments based on private crossing classifications, as follows:

    - All private crossings:
        - Specify minimum signage to consist of a crossbuck, supplemented by a stop or yield sign, and, in the case of non-public use crossings, a standard plate stating, "Private Crossing - Authorized Users Only." Require replacement of existing signage as needed, not to exceed 7 years from date of final rule.

    - Private crossings with public use:
        - Provide that public use crossings shall conform to the MUTCD.
        - Make public use crossings eligible for improvement under Section 130 funding; however, require a documented statement of public benefits before funds are expended.
        - Except where a quiet zone is in effect, require use of the train horn at public use crossings under the same rules as public crossings.
        - Provide risk-based regulatory requirements for improvements at public use crossings and other private crossings (except agricultural seasonal and crossings; see below), including sight distance requirements as applicable. Consider factors such as road traffic, rail traffic, presence of rail passenger service, maximum train speeds, etc.
        - After a period of progressive work to improve these crossings, require that they be closed if not equipped according to requirements.

    - Private crossings with seasonal or agricultural use:
        - Specify use of locked gates or minimum signage (above) for agricultural crossings on tracks where the maximum authorized train speed exceeds 25 mph.
        - Specify a requirement for railroad dispatcher approval to traverse the crossing where maximum authorized train speed exceeds 49 mph, except where some form of active warning is provided.

- Improve the National Highway-Rail Grade Crossing Inventory with respect to private crossings:

    - Require railroads to populate private crossing data fields in the inventory, providing updates not less frequently than once every 3 years.
    - Add data elements as needed for analysis.
    - Permit railroads to estimate information not directly available.

Abbreviations and Acronyms

AADT	annual average daily traffic
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
BLET	Brotherhood of Locomotive Engineers and Trainmen
BRS	Brotherhood of Railroad Signalmen
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulation
CPUC	California Public Utilities Commission
DOT	Department of Transportation
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GIS	geographic information system
ITE	Institute of Transportation Engineers
LADOTD	Louisiana Department of Transportation and Development
MNDOT	Minnesota Department of Transportation
MUTCD	Manual on Uniform Traffic Control Devices
NTSB	National Transportation Safety Board
NCDOT	North Carolina Department of Transportation
NCUTCD	National Committee on Uniform Traffic Control Devices
NOGC	New Orleans and Gulf Coast Railway Company
NYSDOT	New York State Department of Transportation
OLI	Operation Lifesaver
RONY	Railroads of New York
RAIRS	USDOT FRA Railroad Accident and Incident Reporting System
RSSB	Rail Safety and Standards Board, United Kingdom
USDOT	United States Department of Transportation
UTU	United Transportation Union
Volpe	Volpe National Transportation Systems Center