
Office of Inspector General

Audit Report

Rail-Highway Grade Crossing Safety

Federal Railroad Administration

Report Number: RT-1999-140
Date Issued: September 30, 1999





Memorandum

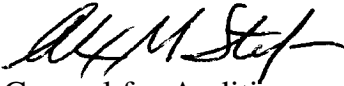
**U.S. Department of
Transportation**

Office of the Secretary
of Transportation

Office of Inspector General

Subject: ACTION: Report on Rail-Highway Grade
Crossing Safety
Federal Railroad Administration
Report No: RT-1999-140

Date: September 30, 1999

From: Alexis M. Stefani 
Assistant Inspector General for Auditing

Reply to JA-1
Attn. of:

To: Federal Railroad Administrator

We are providing this report for your information and use. Your September 29, 1999 comments to our September 15, 1999 draft report were considered in preparing this report. An executive summary follows this memorandum.

Except for the agency's position on monitoring state expenditures of funds for grade crossing safety, we consider the actions taken and planned to be responsive to the recommendations. Therefore, these recommendations are considered resolved, subject to the followup provisions of Department of Transportation Order 8100.1C.

We maintain our opinion on the importance of monitoring state expenditures to determine if funds are used to reduce grade crossing accidents and fatalities. A requirement to report detailed information on a project by project basis, however, could be construed as an unnecessary burden, and we have revised our report accordingly. As an alternative, accurate cost information, reported by category, rather than by project, would still be useful in determining whether funding for grade crossing safety is sufficient. Such information is also needed to undertake the cost-benefit analyses of grade crossing improvements as indicated in the agency's response. We therefore request the management response be reconsidered, and a reply provided us within 30 days of this report. We would appreciate information on when you will be completing the actions promised in the other five recommendations.

We appreciate the cooperation and assistance extended by you and your staff. If you have any questions, or require additional information, please contact me at (202) 366-1992 or Francis P. Mulvey, Deputy Assistant Inspector General for Rail, Transit, and Special Programs, at (202) 366-0477.

Attachment

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Rail-Highway Grade Crossing Safety

Federal Railroad Administration

Report No. RT-1999-140

September 30, 1999

Nearly 10 times each day a train and a motor vehicle or a person collide at a rail-highway grade crossing. Grade crossing accidents often have severe consequences. While 1 in 150 highway accidents results in a death, 1 in 10 train-motor vehicle collisions is fatal. In 1998, 1,008 people were killed in railroad accidents. This included 431 who died in crossing accidents, 536 killed while trespassing on railroad property, and 41 fatalities in other rail-related accidents and incidents. *Approximately half of the crossing accidents and fatalities occurred at crossings where gates, lights, or bells were in place to warn motorists of an approaching train.*

The Department of Transportation (DOT) has embarked on an ambitious plan to reduce crossing and trespassing accidents, and has made substantial progress in improving grade crossing safety during the past 5 years. Unfortunately, reckless driver behavior at grade crossings continues to cause hundreds of accidents and fatalities each year. Accidents involving large trucks are particularly serious, as demonstrated in a recent accident at Bourbonnais, Illinois. That accident resulted in 11 deaths and 49 injuries when an Amtrak train derailed after colliding with a truck hauling steel that is suspected to have driven around the gates at the crossing.

Objective

The objective of this review was to assess the progress made toward achieving DOT's 10-year goal to reduce accidents and fatalities by 50 percent, that is to no more than 2,500 crossing accidents and 300 crossing fatalities by 2004, as established by the Rail-Highway Grade Crossing Safety Action Plan.

Background

In 1994, the Secretary of Transportation announced an ambitious Rail-Highway Grade Crossing Safety Action Plan to reduce grade crossing accidents and fatalities by 50 percent over a 10-year period. The Plan contains 55 proposals for improving safety through increased enforcement of traffic laws, safety

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improvement reviews of rail corridor crossings, public education, private grade crossing safety, safety research, and trespass prevention.

Results in Brief

DOT's efforts have been successful in reducing both the *number* and *rate* of rail grade crossing accidents and fatalities during the first half of the Plan. Trespassing accidents and fatalities, however, have not been reduced, and are now the leading cause of railroad fatalities. Furthermore, while grade crossing accidents have been reduced, fatal accidents at crossings continue to occur. Additional improvements in grade crossing safety will become increasingly difficult to achieve because many of the most hazardous crossings have already been upgraded or closed.

To make further progress and reach its grade crossing safety goal in the second half of the Plan, DOT must focus on strategies that have proven effective. The strategies include:

- installation of flexible median barriers between opposing highway lanes at gated crossings to prevent driving around lowered gates (see figure 5),
- use of well-advertised photo enforcement to identify and subsequently fine motorists violating traffic laws at crossings, and
- imposition of stricter penalties to deter grade crossing violations.

In addition, the Federal Railroad Administration (FRA) and the Federal Highway Administration (FHWA) should track how the states spend federal funds available for improving grade crossing safety. This information is needed if DOT is to target funding to implement strategies that are shown to be effective. Further, DOT must ensure that the data used for setting the Plan's goal and monitoring progress are complete. The data used for the Plan do not include the approximate 800 annual grade crossing and trespassing accidents on the nation's 32 rail transit systems.

Principal Findings

Grade Crossing Accidents Have Been Reduced, But Serious Accidents Continue

DOT has made substantial progress towards achieving its goal for reducing grade crossing accidents and fatalities. However, despite the gains since 1994, serious accidents continue to occur as evidenced by recent collisions at

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Bourbonnais, Illinois, and Eagle Lake, Texas, where Amtrak passenger trains derailed after colliding with large trucks at railroad crossings. Achieving its goal will require DOT to evaluate which strategies are cost-effective in improving grade crossing safety and target resources accordingly. As the table below shows, during the first 5 years of the Plan, the *number* of accidents and fatalities at crossings decreased by about 28 percent and 31 percent, respectively. In addition, the *rate* of grade crossing accidents and fatalities fell even more dramatically, by 36 percent and 38 percent, respectively, because train traffic increased 11 percent over the period. On the other hand, the number of trespassing fatalities has remained relatively constant, at about 500 deaths per year.

Annual Grade Crossing and Trespassing Accidents and Fatalities

Year	No. of Crossing Accidents	Accident Rate ^a	No. of Crossing Fatalities	Fatality Rate ^a	No. of Trespassing Fatalities
1993	4,892	7.97	626	1.02	523
1994	4,979	7.60	615	0.94	529
1995	4,633	6.92	579	0.86	494
1996	4,257	6.34	488	0.73	471
1997	3,865	5.71	461	0.68	533
1998	3,508	5.14	431	0.63	536
Plan's Goal for 2004	2,500	b	300	b	c
Change 1993-1998	-28%	-36%	-31%	-38%	+2%

a/- Rate equals number of accidents or fatalities divided by train miles.
b/- No targets were established for rates because FRA did not forecast rail traffic.
c/- FRA did not establish a specific trespassing goal.
Source: Federal Railroad Administration

Further improvements in grade crossing safety will be increasingly difficult to achieve. According to one analyst, “Although the installation of active warning devices remains cost beneficial, the most hazardous crossings have already been upgraded. Today’s upgrades generate only 30 percent of the accident reduction impact of upgrades made 15 years ago.”¹ As a result of improvements and crossings already closed, the probability of an accident occurring at any particular one of the nation’s 159,000 public crossings has been greatly reduced,

¹ Andrew W. Kleine, internal DOT document titled Impact Evaluation of the Federal Rail-Highway Crossing Safety Program, August 1995.

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but there are still grade crossings with a high probability of an accident occurring, according to FRA's Accident Prediction System (see exhibit A).

Effective Strategies Can Reduce Grade Crossing Accidents

The most effective strategy to improve grade crossing safety is to simply close the crossing. Since the Plan went into effect in 1994, approximately 9,000 public crossings have been closed. However, not all of the nation's remaining 159,000 public crossings can be closed, neither is it possible to provide grade separation at all crossings. Accordingly, adequate safety measures are required at each crossing.

We identified proven strategies that DOT and the states could use to further reduce grade crossing fatalities. One recent North Carolina test demonstrated that grade crossing traffic violations were reduced by 77 percent at gated crossings through the use of flexible median barriers. Our analysis showed that the installation of such median barriers at the nation's 32,310 gated public crossings could eliminate more than 60 fatalities a year, almost half the reduction needed to meet the Plan's goal. The median barriers could be installed at a cost of about \$355 million and would have a life expectancy of at least 10 years.

Another strategy shown to dramatically reduce accidents is the use of well-advertised photo enforcement, supported by stiff penalties under vigorously enforced state laws. For example, in Los Angeles County's Metro Blue Line Grade Crossing Safety Program, photo enforcement reduced the number of violations at test crossings by 92 percent and the number of accidents by 72 percent.

Stricter penalties for motorists who violate warnings at grade crossings can also be an effective way to reduce grade crossing accidents and fatalities, as evidenced by the reduced number of violations for driving while intoxicated after states increased penalties for the offense. Furthermore, state penalties for violating warnings at grade crossings vary widely. Some states levy relatively low fines of \$25 or less while others specify fines to as much as \$500 for the first offense. In addition, some states provide for jail terms of up to 30 days.

Trespassing Fatalities Have Not Been Reduced

As grade crossing fatalities have declined, trespassing has become the leading cause of railroad fatalities. Trespassing can occur anywhere along the nation's 220,000 miles of railroad tracks and is difficult to address not only because of the diverse nature of the problem, but also because of the varied motives of trespassers. For example, railroad suicides are estimated to comprise as much as

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40 percent of trespassing fatalities, according to railroad and government organizations we contacted that monitor suicides, such as the Long Island Rail Road, Federal Transit Administration (FTA), and Transport Canada. Suicides are particularly difficult to address. In recognition of that difficulty, DOT must focus resources where they are most likely to be effective in preventing rail accidents and fatalities; consequently DOT should continue its emphasis on grade crossing safety.

We believe that trespassing problems are distinct from grade crossing problems and have different causes. Therefore, trespassing could be addressed more effectively by establishing a separate plan with realistic goals. To carry out such a plan, DOT would need to gather trespassing data identifying locations having a high incidence of trespassing deaths and suicides, so that preventive devices could be installed in those areas. As identified in Operation Lifesaver's Trespass Prevention Guide, preventive devices such as heavy gauge fencing, combined with greater community awareness, and increased public education, can help reduce trespassing.²

Better Tracking of States' Spending of Crossing Safety Funds is Needed

DOT provides crossing safety funds to the states primarily through FHWA. DOT's Rail-Highway Grade Crossing Program provided the states with over \$154 million for rail-highway grade crossing safety improvements in Fiscal Year (FY) 1998. In addition to these funds, specifically earmarked for crossing improvements, the states had available more than one half billion dollars that could have been spent on either grade crossing safety or other highway safety improvements, at the states' discretion. These funds included \$162 million from the Hazard Elimination Program, \$150 million under the Highway Safety Program administered by the National Highway Traffic Safety Administration (NHTSA), and \$205 million through Optional Safety funds provided by the Transportation Equity Act for the 21st Century.

Since 1991, however, FHWA has not collected data on state spending for specific railroad grade crossing projects, and while FRA's regional staff informally monitors state spending on crossing improvement, FRA does not systematically collect data on such spending. Therefore, DOT does not know the extent to which available funds have actually been spent for grade crossing improvements. DOT should track state spending for grade crossing projects to ensure funding is targeted to improving grade crossing safety and reducing crossing accidents and fatalities.

² Operation Lifesaver is a private, non-profit organization that receives grants from DOT for rail safety and education efforts.

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Plan Needs Comprehensive and Accurate Data

The data that DOT used for setting the Plan's goal and the data used to monitor progress were not comprehensive or accurate. For example, the approximate 800 annual grade crossing and trespassing accidents that occur on the nation's 32 rail transit systems are not integrated with FRA's statistics for the Plan. There are also discrepancies in the railroads' reporting of accident data to FRA compared to the accidents reported to DOT's National Response Center, and the national inventory of grade crossings is incomplete.

Recommendations

We recommend that FRA:

- Coordinate with FHWA, NHTSA, and FTA to focus on cost-effective strategies, such as the installation of flexible median barriers, the use of well-advertised photo enforcement, and the imposition of stricter penalties for grade crossing violations.
- Monitor, with FHWA, state expenditures of funds to determine whether the funds are used to reduce grade crossing accidents and fatalities.
- Develop a separate plan, with realistic goals, to address trespass and rail suicide prevention, using measures identified as effective by the Operation Lifesaver Trespass Prevention Guide.
- Coordinate with FTA to ensure the timely reporting of rail transit grade crossing and trespassing accidents and integrate this information with FRA's database.
- Periodically reconcile its database with National Response Center rail accident reports to ensure that all grade crossing and trespassing accidents are included.
- Establish mandatory reporting requirements with FTA for states, railroads, and rail transit operators to ensure an accurate and complete national inventory of grade crossings.

Management Position

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FRA concurred with five of the six report recommendations and has taken or plans to take actions to address these recommendations. A summary of the corrective actions for each recommendation is highlighted below. FRA's complete response is included as the appendix to this report.

FRA concurred with the importance of encouraging strategies that will reduce collisions at rail grade crossings, and has actions underway to encourage implementation of the three strategies cited in our recommendation – the installation of flexible median barriers, use of well advertised photo enforcement, and stricter penalties for grade crossing violations. FRA also stated that it will use its resources to strongly promote the implementation of any strategies that have been shown to be a cost-effective means to enhance safety, and will perform benefit/cost analyses on these and any other strategies that may increase safety.

FRA concurred that a separate plan specifically addressing trespass prevention and pedestrian safety issues is needed. An intermodal ONEDOT plan with specific action items and goals is expected to be in place by May 2000. The plan will focus on engineering, public education, law enforcement, demographics, and community involvement as ways to reduce trespassing casualties and fatalities.

In addition, FRA agreed that Departmental rail grade crossing and trespassing statistics should reflect FTA data as well as data from FRA, and will work with FTA to incorporate rail transit data into the Plan's statistics. FRA also concurred with our recommendation to reconcile its database with National Response Center rail accident reports, and will establish procedures to review each rail-related National Response Center report to ensure that the corresponding report is received from the railroad under the reporting regulations. Furthermore, FRA and FTA will work together to develop and implement tools to create a comprehensive, accurate national inventory of grade crossings.

FRA and FHWA did not concur with our recommendation to monitor state expenditures of funds to determine if the funds are used to reduce grade crossing accidents and fatalities. FRA's response noted that states are required to have an FHWA-approved process for establishing priorities and implementing safety improvement projects. FHWA monitors the obligation of the Rail-Highway Grade Crossing funds and the legal requirement that at least half of these funds be used for installation of protective devices at crossings. In addition, FHWA believed that requiring additional reporting on a project-by-project basis would place an unnecessary extra reporting burden on the states.

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Office of Inspector General Comments

The OIG considers the actions taken and planned by the Operating Administrations to be responsive to the five recommendations that received concurrences. Therefore, these recommendations are considered resolved, subject to the followup provisions of Department of Transportation Order 8100.1C.

Although FRA and FHWA did not concur with the recommendation on monitoring expenditures, we maintain our position on the importance of monitoring state expenditures of funds to determine if the funds are used to reduce grade crossing accidents and fatalities. DOT needs to have accurate information as to the amount of funds spent by the states on crossing safety improvements, even if the expenditures are reported by category rather than by project (as originally proposed in our draft report). The amounts currently reported are for only one of four sources of funds that can be used for grade crossing improvement projects. We do not consider a requirement to report expenditures of these funds by category to be an unreasonable or unnecessary burden on the states.

In addition, recent congressional concerns have focused on whether funding requests to support grade crossing safety have been sufficient. Unless DOT has information on the states' spending of current funds available for grade crossing safety improvements, it would be difficult to determine whether funding is or is not sufficient. Such information is also needed if FRA is to undertake the cost-benefit analyses of grade crossing improvements indicated in its response. We therefore request that the management response to this recommendation be reconsidered and a reply provided us within 30 days of this report.

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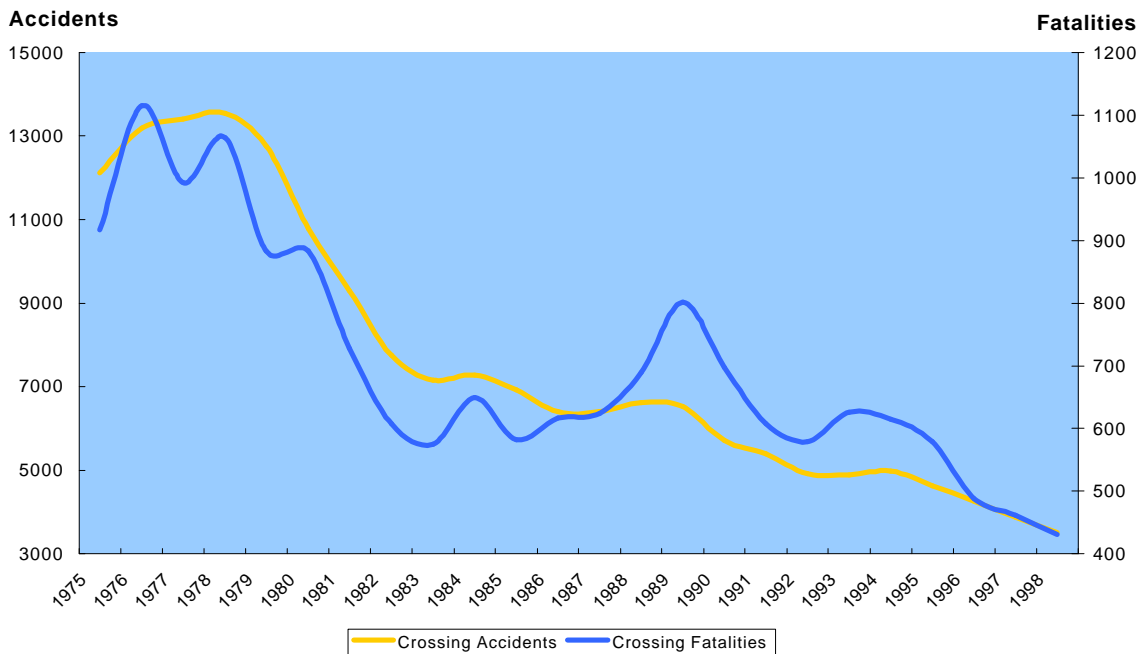
I. INTRODUCTION

Background

Nearly 10 times each day a train collides with a motor vehicle or a person at a railroad grade crossing where train tracks cross a public or private road, crosswalk or path. Approximately 9 of 10 fatalities involving trains occur at crossings or as a result of trespassing on railroad property. In 1998, 1,008 people were killed in railroad accidents. This included 431 who died in 3,508 grade crossing accidents, 536 killed while trespassing on railroad property, and 41 fatalities in other rail-related accidents and incidents. Moreover, approximately half of all grade crossing accidents and fatalities occurred at crossings that had gates, lights, or bells to warn motorists of approaching trains.

In 1973, Congress enacted the Highway Safety Act, which led to the establishment of the Rail-Highway Crossing Program in 1974. Under this program, DOT has worked with the states to improve railroad safety and has provided federal funds to improve safety at public crossings. The program was successful in reducing grade crossing accidents and fatalities in its first 10 years, when many of the most dangerous crossings were improved or closed, as shown in figure 1. After 1983, however, progress slowed.

Figure 1: Rail Crossing Accidents and Fatalities 1975 - 1998



Source: Federal Railroad Administration

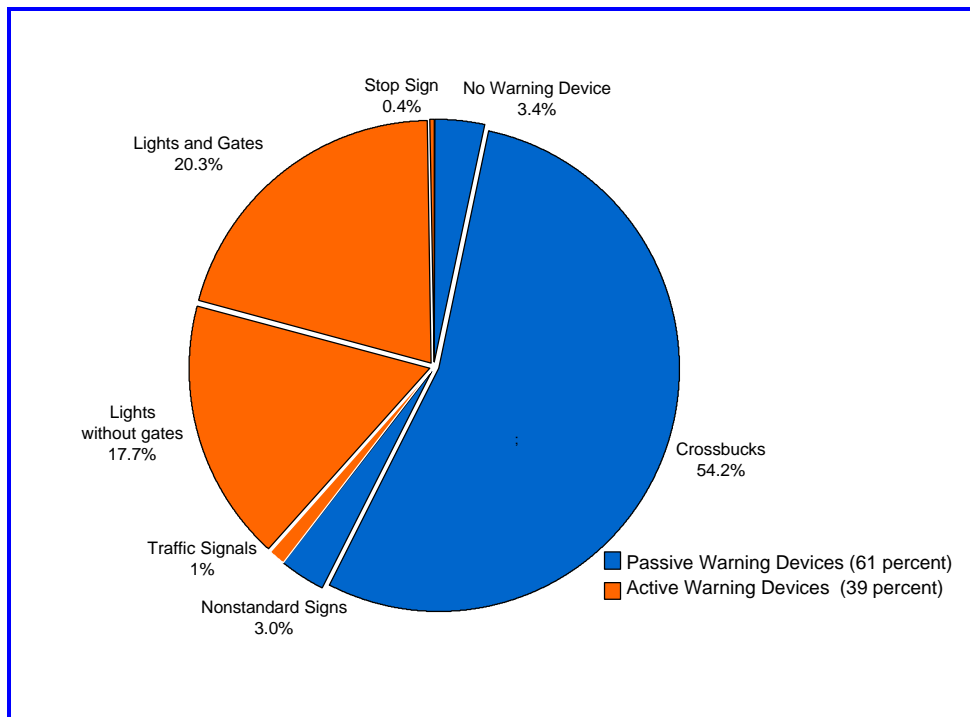
To build on the earlier accomplishments, the Secretary of Transportation directed FHWA, FRA, FTA, and NHTSA to collaborate in the development of an ambitious Rail-Highway Grade Crossing Safety Action Plan to address the grade crossing safety problem. In June 1994, the Plan was issued, setting a goal to reduce the 4,892 grade crossing accidents and 626 fatalities recorded in 1993 by about 50 percent to 2,500 and 300 or less, respectively, by 2004. By 1998, the number of grade crossing accidents had been cut to about 3,500 and fatalities had declined to 431.

Rail grade crossing safety demands considerable cooperation among federal, state, and local agencies, the railroads, and safety community organizations. At the federal level, DOT oversees grade crossing safety through FRA and FTA, administers Rail-Highway Crossing Program funding through FHWA, and funds highway education programs through NHTSA. These four Operating Administrations are working with Congress, states, and local governments, railroad and rail transit organizations, transportation associations, and Operation Lifesaver toward achieving the Plan's goal. Operation Lifesaver, a private non-profit organization, receives grants from DOT for rail safety and education efforts. Through its state chapters, Operation Lifesaver has provided education programs and public information in an effort to prevent grade crossing accidents and trespassing.

The nation has about 261,000 railroad grade crossings, of which 159,000 are public crossings. About 88 percent of grade crossing accidents and fatalities reported to FRA in 1998 occurred at public crossings. Warnings at crossings are provided by either "passive" devices, such as "crossbuck" railroad crossing yield signs, or "active" warning devices, such as flashing lights and gates that are automatically activated by approaching trains. The distribution of public grade crossings equipped with these warning devices is shown in figure 2.

The Plan identified 6 major initiatives encompassing 55 individual proposals to be implemented by the participating Operating Administrations. The initiatives were to: (1) increase enforcement of traffic laws at crossings; (2) conduct reviews to improve rail corridor crossing safety; (3) increase public education; (4) improve safety at private crossings; (5) undertake data collection and research; and (6) develop trespass prevention strategies.

Figure 2: Public Railroad Grade Crossings Categorized by Warning Device, as of April 1999



Source: Federal Railroad Administration

Objective, Scope, and Methodology

The objective of this review was to assess the progress made toward achieving DOT's 10-year goal to reduce accidents and fatalities by 50 percent, to no more than 2,500 crossing accidents and 300 crossing fatalities by 2004, as established by the Plan. The review was conducted from September 1998 through July 1999 in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States, and covered the Plan's activities since 1994. We reviewed DOT grade crossing and trespassing statistics from 1993, the year before the Plan began, through the final 1998 statistics that FRA issued. We also reviewed any available preliminary statistics for 1999.

We conducted our work at FRA, FHWA, NHTSA, and FTA headquarters and regional offices. We reviewed grade crossing programs in six states: Texas, Louisiana, Pennsylvania, Oklahoma, Mississippi, and Indiana. We selected these states because they reflected states with low as well as high grade crossing accident

rates. In each of the six states, we interviewed state officials responsible for rail safety, state police officials, and state Operation Lifesaver representatives. Also, we visited 1 of the 10 grade crossings in each state that was ranked as having the highest potential risk for accidents, as identified in the FRA Accident Prediction System. We interviewed officials of the railroad that owned the track at the crossings visited and examined site conditions at the grade crossings to determine whether safety improvements were underway. We also went to Phoenix, Arizona to visit the potentially most hazardous grade crossing in the country, as identified by the Accident Prediction System.

In addition, we analyzed information from FRA's database of accidents and fatalities, and the National Highway-Rail Crossing Inventory. We visited FRA's database contractor to determine the validity and reliability of computer-processed data by testing the effectiveness of general and application controls. We also obtained a 1-month sample of railroad accident reports maintained by DOT's National Response Center. To test the completeness of the FRA database, we compared the sample against accidents listed for that month in the FRA database. In addition, we obtained cost estimates from the contractor that supplied median barriers for an FRA-sponsored test, and used the estimates to develop the cost of installing such median barriers at public crossings nationwide.

We also interviewed representatives from Operation Lifesaver, and more than 30 other organizations, including states and local government agencies, police, railroads, and transportation organizations and associations. In addition, we met with Canadian officials regarding that nation's crossing safety plan, which is similar to the DOT plan. We observed a pilot trespassing prevention project in Canada that was based on Operation Lifesaver's Trespass Prevention Guide, which was developed in partnership with FRA. We also accompanied National Transportation Safety Board and FRA investigators during their on-site investigation of the grade crossing accident in Bourbonnais, Illinois, that, on March 15, 1999, resulted in 11 fatalities.

Government Performance and Results Act

Under the Government Performance and Results Act, DOT's Performance Plans for FYs 1999 and 2000 include goals to reduce the rate of grade crossing crashes and rail-related trespasser fatalities. The performance plans also outline activities and initiatives that DOT and the four Operating Administrations participating in the Plan have established to accomplish the reductions.

Prior Audit Coverage

In 1995, the U.S. General Accounting Office (GAO) noted that the greatest reductions in grade crossing accidents and fatalities were achieved in the 1970's, when improvements were made to many of the nation's most hazardous crossings.³ The progress made in reducing grade crossing accidents and fatalities since that time has been much more limited. GAO concluded that attaining the goal of the Rail-Highway Grade Crossing Safety Action Plan will depend on how well DOT coordinates the efforts of the states and railroads in implementing the Plan's proposals, and how successfully DOT determines the Plan's costs, arranges for financing, and evaluates the effect of actions taken. In August 1995 when the GAO report was issued, DOT was still in the process of gaining congressional approval and implementing the initiative phase of the Plan.

³ U.S. General Accounting Office, Railroad Safety - Status of Efforts to Improve Railroad Crossing Safety, (GAO/RCED-95-191, August 3, 1995).

II. FINDINGS AND RECOMMENDATIONS

Finding A. Grade Crossing Accidents Have Been Significantly Reduced, But Serious Accidents Continue

DOT has made substantial progress in improving rail grade crossing safety and meeting the Plan's goal for 2004. During the first half of the Plan, significant gains were made in reducing both the *number* and *rate* of grade crossing accidents and fatalities. Achieving the goal will require DOT to determine which proposals are most cost-effective and target resources accordingly.

Reckless driver behavior at crossings, however, continues to cause accidents and fatalities. *About half of the 1998 grade crossing accidents occurred at crossings where active warning devices such as gates, lights, or bells were in place.* As many of the most hazardous crossings have already been improved with active devices or have been closed, additional reductions in serious accidents will be increasingly difficult to achieve in the remaining 5 years of the Plan. To meet the goal for 2004, we identified proven strategies that DOT could implement to help achieve the additional reductions.

Additionally, since 1991 FHWA has not collected data on how states spend federal funds on specific railroad grade crossing projects, and FRA has not formally collected data on funds spent for improvement of grade crossing safety. Consequently, DOT cannot adequately monitor whether the states are targeting these funds toward reducing grade crossing accidents and fatalities.

Reductions in Grade Crossing Accidents and Fatalities

FRA recorded significant reductions in grade crossing accidents and fatalities between 1993 and 1998. During that time, the *number* of accidents and fatalities at crossings decreased by about 28 percent and 31 percent, respectively. Based on FRA's data, grade crossing accidents decreased from 4,892 in 1993, the year before the Plan was issued, to 3,508 in 1998. Grade crossing fatalities fell from 626 in 1993 to 431 in 1998. In addition, the *rate* of accidents and fatalities at crossings declined even more—36 percent and 38 percent, respectively, as train traffic grew 11 percent over the same period.

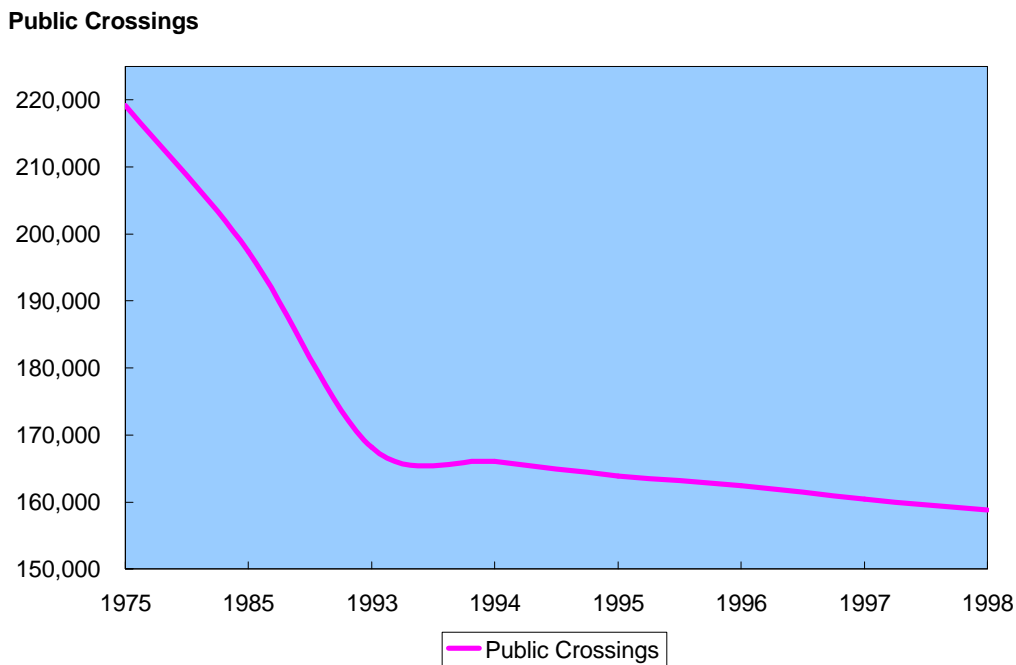
Difficulties in Continuing to Achieve Grade Crossing Safety Progress

Additional reductions in grade crossing accidents and fatalities will become increasingly difficult to achieve. One analyst concluded, "Although the installation of active warning devices remains cost beneficial, many of the most hazardous crossings have already been upgraded. Today's upgrades generate only 30 percent

of the accident reduction impact of upgrades made 15 years ago.”⁴ Those improvements have resulted in a low probability of an accident occurring at any one of the nation’s 159,000 public crossings, based on the FRA Accident Prediction System. Considering a crossing’s physical characteristics, traffic volume, and history, this system uses a mathematical formula to project the probability of an accident occurring at that particular crossing. Exhibit A lists the 10 crossings ranked most dangerous according to the FRA Accident Prediction System. Of the 10, only one grade crossing in the nation, in Phoenix, Arizona, has a greater likelihood of an accident occurring than of not occurring in a given year.

Safety improvements that have been added include installation of warning lights and/or gates activated by approaching trains, or the closing of hazardous crossings, the surest way to eliminate rail grade crossing collisions. More than 53,000 public crossings were closed between 1975 and 1994 (see figure 3). Since the Plan went into effect in 1994, approximately 9,000 additional public crossings have been closed. Attempts to close additional public crossings often evoke community opposition, as it becomes increasingly difficult to reroute traffic around closed crossings.

Figure 3: Reduction in Public Crossings Since 1975



Source: Federal Railroad Administration

⁴ Andrew W. Kleine, internal DOT document titled Impact Evaluation of the Federal Rail-Highway Crossing Safety Program, August 1995.

Serious Grade Crossing Accidents Continue

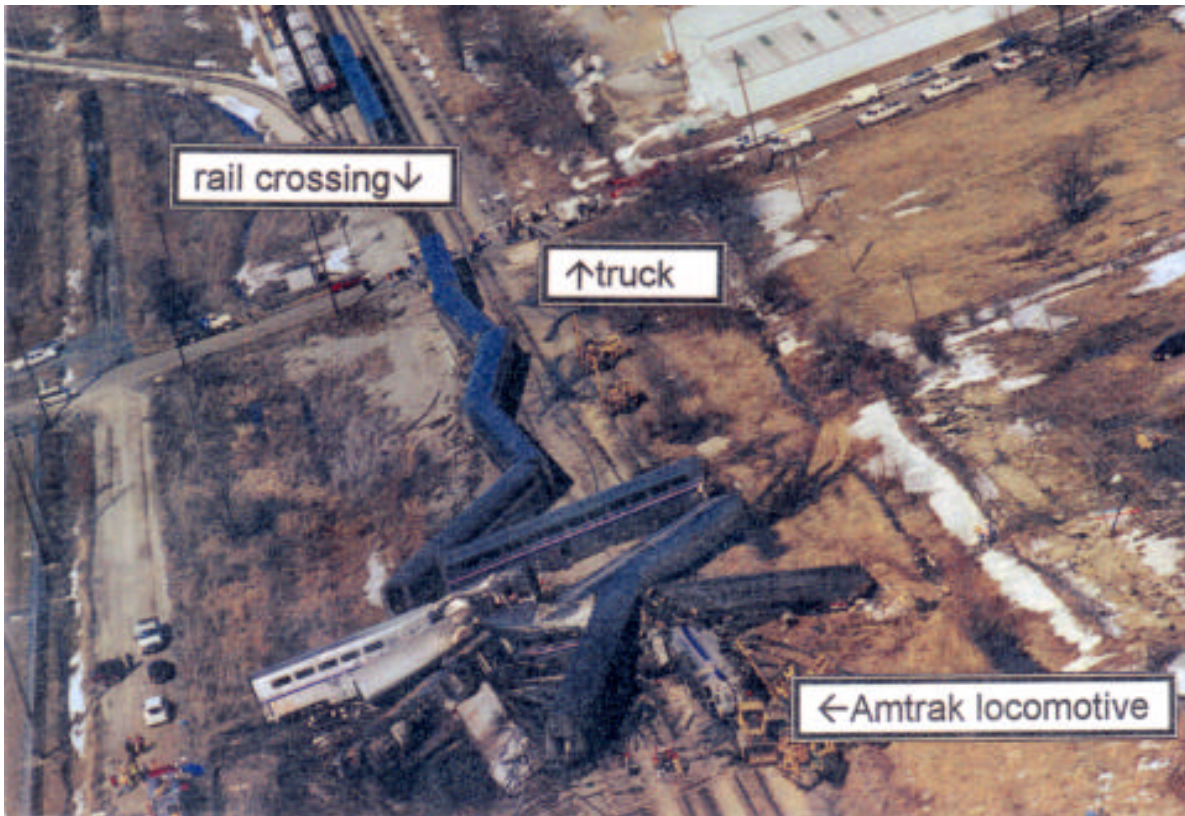
Although railroad grade crossing accidents have declined, they continue to occur. For example, during the weekend of August 14-15, 1999, six people were killed as the result of two collisions between trains and automobiles. In one of the collisions, a 117-car CSX freight train hit a car at a grade crossing in Mississippi, killing all three occupants in the vehicle. In the second collision, an Amtrak passenger train struck an automobile at a grade crossing in Alabama, killing the three passengers in the car. Both Mississippi and Alabama rank among the top 10 states in having the highest number of deaths at grade crossings.

In 1998, 431 people died in grade crossing accidents. In that same year, about half of the 3,508 accidents at grade crossings occurred where gates, lights, or bells were installed and functioning properly. Most of these accidents were caused by reckless drivers ignoring crossing warning devices.⁵ FRA's preliminary statistics for 1999 show that grade crossing accidents and fatalities were down 6 percent and 21 percent, respectively, from January through May compared to the same period in 1998. Nevertheless, serious accidents continue to occur.

While most accidents are caused by private passenger cars, those involving large trucks are particularly serious as these trucks can cause trains to derail. From January through May 1999, 21 accidents occurred involving trucks driven around or through crossing gates. The National Transportation Safety Board is investigating reckless driving as the suspected cause of the March 15, 1999 accident at a grade crossing in Bourbonnais, Illinois, involving the collision of an Amtrak passenger train and a truck carrying a shipment of steel bars. The resulting derailment killed 11 passengers and injured 49 others. Figure 4 shows the crossing and the extensive damage at the accident site.

⁵ FRA's Acting Director for the Highway Rail Crossing and Trespasser Division told us that accidents due to failures of crossing warning devices were extremely rare.

Figure 4: Aerial View of Bourbonnais Accident



Source: National Transportation Safety Board

Effective Strategies Can Reduce Railroad Grade Crossing Accidents

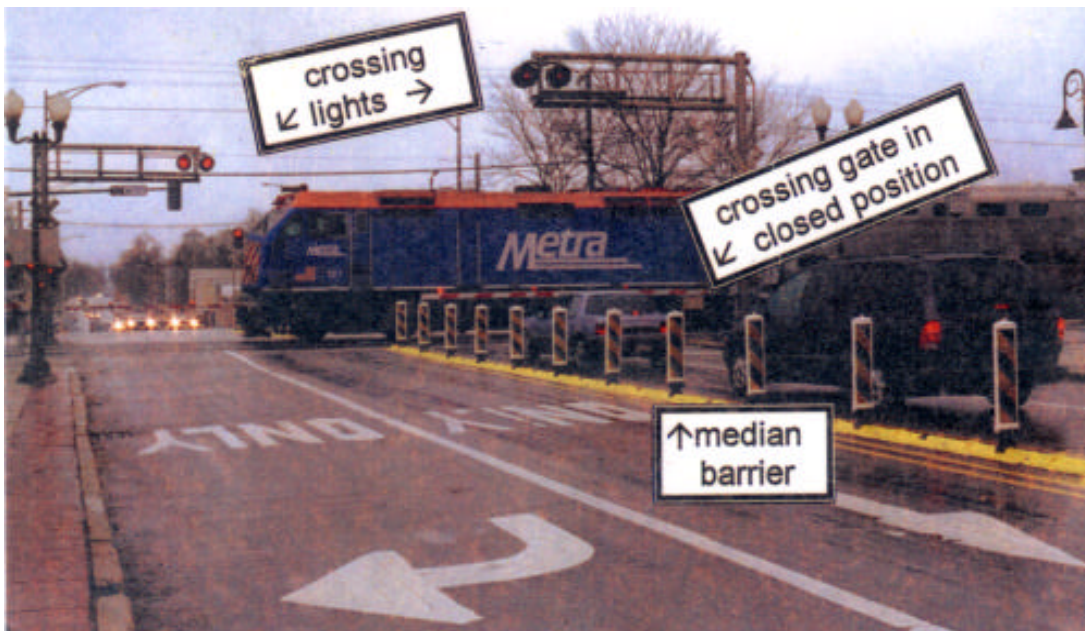
Continued reductions in grade crossing accidents can be accomplished if DOT focuses on effective grade crossing safety strategies. We identified some proven strategies that DOT could promote to further reduce grade crossing fatalities. Effective ways to prevent motorists from violating crossing warning devices include:

- installation of relatively low-cost flexible median barriers to prevent motorists from driving into the opposing traffic lane to go around lowered crossing gates,
- use of well-advertised photo enforcement to photograph and fine traffic violators at crossings (being considered by Congress for a pilot program), and
- imposition of stricter penalties for motorists, particularly truck drivers, who violate crossing warning devices.

Median Barriers Increase Effectiveness of Crossing Gates

Installation of flexible median barriers at gated crossings is an effective measure that can help prevent grade crossing accidents. In 1996, the North Carolina Department of Transportation, with funding from FRA and FHWA, completed a test of flexible median barriers at crossings, including a 20-week test in conjunction with a conventional two-gate system (see figure 5).⁶ At a cost of about \$11,000 per crossing, the median barriers deterred motorists from driving around closed gates, resulting in a 77-percent reduction in crossing violations at gated crossings.

Figure 5: Flexible Median Barrier Installed at Gated Crossing



Source: Photograph provided by test contractor

Extrapolating from the North Carolina test, 68 grade crossing fatalities each year could be prevented by installing median barriers at the nation's 32,310 gated public crossings, at a cost of about \$355 million.⁷

⁶ North Carolina Sealed Corridor Project No. TIP-3419, Paul Worley, July 1996.

⁷ Based on results from the Los Angeles County Metropolitan Transit District's Blue Line Photo Enforcement study, FRA believes that reductions in grade crossing violations yield a less than proportionate decrease in crossing accidents. FRA has estimated that every percentage point in reduced violations would reduce accidents by 0.78 percent. In 1998, 113 grade crossing fatalities occurred at gated crossings. Applying the accident reduction rate and proportionate lower effect on accidents and fatalities to the 1998 fatalities yields a potential annual reduction of 68 fatalities (.77 x .78 x 113).

Photo Enforcement Effectively Reduces Crossing Violations

The use of well-advertised photo enforcement has also proven to be an effective means to reduce violations at grade crossings. For example, in Los Angeles County, the Metro Blue Line Grade Crossing Safety Program showed that photo enforcement reduced the number of violations at grade crossings by 92 percent and the number of accidents by 72 percent. In another example, Metrolink, a southern California commuter railroad, started photographing motorists who drove around closed crossing gates and mailing them fines of \$271. During a 3-week period in March 1999, the photo enforcement system recorded 145 violations at one test crossing alone. States can use DOT crossing safety improvement funds for photo enforcement, and Congress is considering establishing a pilot program that would help expand the use of photo enforcement.

Stricter Penalties Needed to Deter Crossing Violations

Grade crossing safety can be improved significantly through increased enforcement to obtain motorist compliance with crossing warning devices. DOT needs to ensure that the penalties associated with reckless driver behavior are in proportion to the risks that motorists, particularly truck drivers, take by ignoring warnings of approaching trains. Because of the potential danger to occupants of motor vehicles and to train passengers and crew, it is important that the size of the penalty be sufficiently high to be an effective deterrent to driving around lowered gates or entering a grade crossing after warning signals have activated.

State penalties for violating crossing warning devices vary widely. Some states levy relatively low fines of \$25 or less while others specify fines as high as \$500 for first offenses. In addition, some states provide for jail terms of up to 30 days.

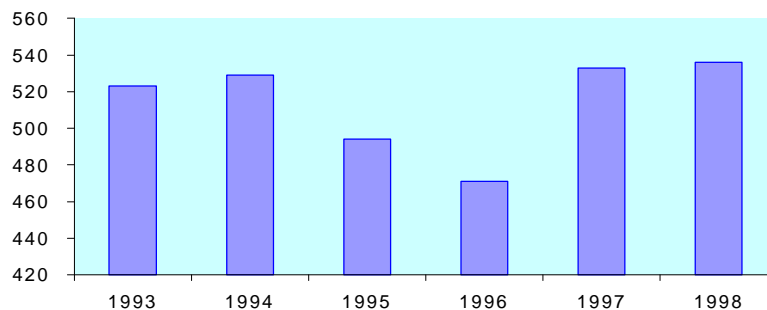
Since DOT is now reviewing and revising the Rail-Highway Grade Crossing Safety Action Plan, DOT should take this opportunity to target resources to those initiatives that are most effective. To help improve grade crossing safety, in 1994 FRA received authority to hire eight crossing and trespass prevention managers—one for each region. In 1999, FRA received authority for eight additional regional positions. FRA should identify strategies that cost-effectively contribute to achieving the goal, and focus its resources, including the new regional positions, on implementing these strategies through its revised Plan.

Trespassing Fatalities Have Not Been Reduced

The Plan did not specify a goal for trespass prevention, but did include five proposals to prevent trespassing fatalities. The Plan states a broad goal to reduce all

accidents and fatalities by at least 50 percent by 2004, and FRA officials indicated that this goal also applies to trespassing. However, if the goal was intended to include trespassing, then it is unattainable, as the causes of trespassing fatalities are much less amenable to technical fixes and involve more complex behavioral changes. Trespassing fatalities have been relatively constant at about 500 per year, as shown in figure 6, despite DOT having completed four of the five trespassing proposals in the Plan. For example, one completed proposal calls for the creation of model legislation for the states to enact for trespass prevention. In 1997, the model legislation was completed and distributed to the states. However, as of August 1999, only one state, Iowa, had enacted the legislation.

Figure 6: Trespassing Fatalities



Source: Federal Railroad Administration

Trespass prevention is difficult to address because of the diverse nature of the trespass problem and diverse motives of trespassers. Trespassing can occur anywhere along the nation's 220,000 miles of railroad tracks. People taking shortcuts, fishing from rail bridges, or hitching rides on freight trains are part of the problem. Railroad suicides may comprise as much as 40 percent of trespassing fatalities, according to railroad and government organizations we contacted that track suicides, such as the Long Island Rail Road, FTA, and Transport Canada, and are particularly difficult to address.⁸ In recognition of the difficulties in addressing trespassing, DOT must target its resources where they are most likely to be successful in preventing rail accidents and fatalities. Therefore, we conclude DOT should continue to focus its primary efforts on grade crossing safety, as long as

⁸ Suicides currently are not included in FRA's database. If included, the actual number of trespassing fatalities would be substantially higher.

dollars spent on grade crossing safety are more likely to save more lives than dollars spent on trespass prevention.

If DOT wants to address trespass prevention, it should be done through a separate plan with realistic goals. DOT should begin to collect trespassing data on where trespassing fatalities and rail suicides occur, and promote installation of preventive devices in those areas. For example, Operation Lifesaver's Trespass Prevention Guide identifies preventive devices, such as heavy gauge fencing, combined with increased community awareness and public education that can help reduce trespassing.

Better Tracking of States' Spending of Grade Crossing Safety Funds is Needed

DOT provides crossing safety funds to the states primarily through FHWA. DOT's Rail-Highway Grade Crossing Program provides states with funds specifically for rail-highway grade crossing safety improvements. In addition to funds earmarked for grade crossing improvements, the Highway Safety Program and the Hazard Elimination Program provide states with funds that may be spent for either grade crossing safety or highway safety improvements, and educational and law enforcement measures, at the states' discretion.

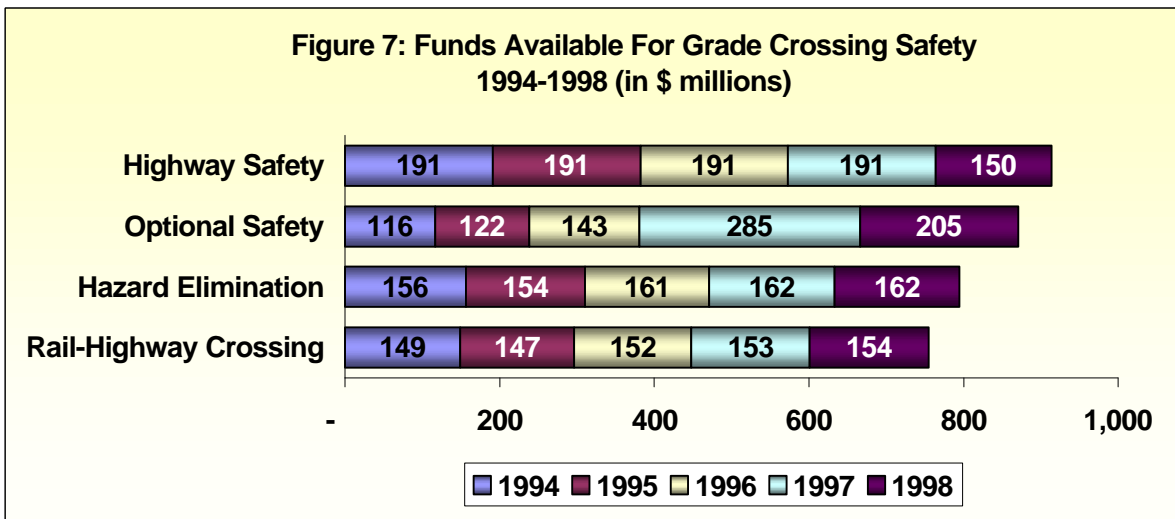
FHWA and FRA, however, do not maintain information on states' spending of DOT funds that is needed to determine whether the funds are spent in a cost-effective manner to reduce grade crossing accidents and fatalities. Although there is a requirement for FHWA to submit an annual summary report that includes the Rail-Highway Grade Crossing Program and Hazard Elimination Program, states have not always provided the required information to FHWA. FRA's regional staff informally monitors state spending on crossing improvement by personal contact with state DOT representatives, and by reviewing FHWA's monthly reports on the status of funds, which provides summary data by state. Since 1991, FHWA has not collected data on funding for specific railroad grade crossing projects, and while this level of detail may no longer be needed, reporting on spending, even if by categories, would still be useful for DOT to know the extent to which available funds have been used for grade crossing improvements.

The distribution of funding available for crossing safety has remained relatively stable since the Plan went into effect, as shown in figure 7. Since FY 1994, DOT provided the states with more than \$750 million in rail-highway crossing funds. DOT provided an additional \$2.6 billion in funds that the states have discretion to spend to improve either grade crossing safety or highway safety.

- Rail-Highway Grade Crossing Program. These funds are provided specifically for improving grade crossing safety. States and localities spend these funds to

plan, select, and design grade crossing projects, with railroads operating and maintaining the warning devices at the crossings. In FY 1998, Congress appropriated \$154 million for the Rail-Highway Grade Crossing Program.

- **Highway Safety Program.** These funds are provided through NHTSA and can be spent for improving grade crossing safety at the states' discretion if the use falls under an approved program category, such as educational activities for reducing accidents involving school buses or improving law enforcement services in motor vehicle accident prevention. Since FY 1994, DOT has made available to the states more than \$900 million for the highway safety program. Congress appropriated \$150 million for the Highway Safety Program in FY 1998.
- **Hazard Elimination Program.** The Hazard Elimination Program provided nearly \$800 million since FY 1994 for either identifying and improving hazardous road locations or for improving grade crossings. Congress appropriated \$162 million in FY 1998 for this program.
- **Optional Safety.** These funds were originally provided by the Intermodal Surface Transportation Efficiency Act, and are currently provided by the Transportation Equity Act for the 21st Century. The optional safety funds can be spent for either the Rail-Highway Grade Crossing Program or the Hazard Elimination Program. Since FY 1994, more than \$870 million from these funds has been made available for rail grade crossing safety improvements.



Source: Federal Highway Administration

In addition to the funding provided by these programs, DOT has provided small amounts for crossing safety, such as the recently announced \$7 million in financial assistance to improve grade crossings in eight high-speed rail corridors, and \$1.7 million from the Highway Trust Fund for grants to Operation Lifesaver between 1994 and 1998.

DOT Should Identify and Target Resources to Effective Proposals

DOT has not systematically evaluated which proposals of the Rail-Highway Grade Crossing Safety Action Plan have been effective in reducing grade crossing accidents and fatalities, nor estimated the cost of implementing the proposals. DOT should take this opportunity at the midpoint of the Plan to establish procedures for assessing progress, identify proposals that are effective in increasing grade crossing safety, and target resources to them.

The Plan's 50 crossing proposals address a wide variety of grade crossing safety needs. Proposals DOT has already completed include:

- Revising a compilation of state laws regarding grade crossing safety;
- Establishing guidelines and strategies for grade crossing consolidations (including incentive payments of \$7,500 to communities per crossing closure); and
- FHWA issuing a notice of proposed rulemaking in March 1998 to elevate grade crossing violations to "serious" traffic violations for holders of a commercial drivers license. The final rule was published September 2, 1999.

DOT also has on-going and in-progress proposals. For example:

- DOT established a technical working group to determine the appropriate traffic control treatments (such as use of crossbuck warning signs, flashing lights, or grade separation) for different categories of grade crossings.
- A major nationwide campaign, entitled "Always Expect a Train," is underway to increase public awareness of the hazards at rail crossings.

FRA is also proposing rules to allow communities to enforce whistle bans as an exception to the Swift Rail Development Act of 1994 which requires the sounding of train whistles at every crossing. FRA is considering the circumstances under which it would allow a whistle ban, because the sounding of the train whistle greatly improves safety at crossings. For example, FRA found that collisions from drivers deliberately driving around lowered gates occurred 128 percent more often at crossings where whistle bans were in effect. FRA is also considering the use of four-quadrant gate systems, which fully block highway traffic in all lanes from

entering the grade crossing when the gates are lowered, and well-advertised photo enforcement as alternatives to the sounding of train whistles for communities with whistle bans.

DOT has work underway that supplements the Plan, including work performed by the Department's Grade Crossing Safety Task Force. The task force, established following a fatal accident involving a school bus at a rail grade crossing, made 24 recommendations to improve crossing safety. One recommendation calls for DOT to identify "high profile" crossings (those with steep inclines) that could cause trucks having limited ground clearance to become caught on the crossing. DOT is to develop measures to route such trucks around grade crossings posing a risk. In addition, in 1997, 35 additional recommendations were made in response to one of the Task Force recommendations.

Because the Plan is at its midpoint, DOT should establish processes to measure the expected contributions from the 19 completed and 27 on-going and in-progress grade crossing proposals. In addition, DOT should incorporate all its efforts into a cohesive plan with well defined evaluation criteria and a clear definition of costs. With the revised plan, DOT will be in a better position to determine how to use future resources to reduce grade crossing accidents and fatalities, and to ultimately meet the Plan's 2004 goal.

Recommendations

Now that the Plan is at its midpoint, we recommend that FRA:

- Coordinate with FHWA, NHTSA, and FTA to identify and focus on strategies that are cost-effective in helping to achieve the accidents and fatality reduction goal, such as by installing median barriers, using well-advertised photo enforcement; and imposing stricter penalties for grade crossing violations.
- Monitor, with FHWA, state expenditures of funds available for grade crossing improvements to determine whether the funds are used to reduce grade crossing accidents and fatalities; and
- Develop a separate plan, with realistic goals, to address trespass prevention, using the measures identified in the Operation Lifesaver Trespass Prevention Guide, such as installation of heavy gauge fencing, greater community involvement, and increased public education.

Management Position

FRA concurred with our recommendations to develop cost-effective strategies to reduce crossing fatalities and to develop a separate plan to address trespassing, and has taken or planned actions to address these recommendations. FRA has emphasized the importance of assisting in initiating strategies that will reduce the number of collisions that occur at rail grade crossings, and with DOT, has already undertaken steps to encourage implementation of the three strategies cited in our recommendation. For example, FRA has participated in studies regarding the use of traffic channelization devices, such as the flexible median barriers discussed in our report, and has actively promoted these devices as supplemental measures to increase safety at rail grade crossings.

In addition, FRA's Office of Chief Counsel is preparing model legislation for use by States that are interested in passing legislation to enable the use of photo enforcement. This package should be available in January 2000. FRA has also been an advocate for the active enforcement of existing traffic laws pertaining to rail grade crossings. Furthermore, DOT has proposed, in both its Motor Carrier Safety and Rail Safety bills now before Congress, that DOT develop and make available to State and local governments model State legislation providing for civil or criminal penalties, or both, for violations of rail grade crossing signals.

FRA concurred with our recommendation that a separate plan is needed to specifically address trespass prevention and pedestrian safety issues. An intermodal plan with specific action items and goals is expected to be in place by May 2000. The plan will be part of a coordinated Departmental effort (ONEDOT) dealing with trespass prevention on railroad and light rail transit rights-of-way. In addition, the plan will allow FRA, FHWA, FTA, and NHTSA to focus efforts on improving safety at authorized crossings of both conventional and light rail trackage, at rail stations, and at recreational trails near rail and transit corridors. The plan will target engineering, public education, law enforcement, demographics, and community involvement as ways to reduce trespassing casualties and fatalities. Details of these and other actions taken and planned in response to our recommendations are provided in FRA's complete response, which is included as the appendix to this report.

FRA and FHWA did not agree with our recommendation to monitor state expenditures of funds to determine if the funds are used to reduce grade crossing accidents and fatalities. FRA's response noted that states are required to have an FHWA-approved process for establishing priorities and implementing safety improvement projects. FHWA monitors the obligation of the Rail-Highway Grade Crossing funds and the legal requirement that at least half of these funds be used for installation of protective devices at crossings. In addition, FHWA believed that

requiring additional reporting on a project-by-project basis would place an unnecessary extra reporting burden on the states.

Audit Comments

The OIG considers the actions taken and planned by FRA for the first and third recommendations of this finding to be responsive to the recommendations. Therefore, these recommendations are considered resolved, subject to the followup provisions of Department of Transportation Order 8100.1C.

Although FRA and FHWA did not agree with the second recommendation of this finding, we maintain that it is important for DOT to have accurate information on state expenditures of funds for grade crossing safety improvements, even if the information is reported by category rather by project (as originally proposed in our draft report). The amounts currently reported are for only one of four sources of funds that can be used for rail crossing improvement projects. We do not consider a requirement to report expenditures of these funds by category to be an unreasonable or unnecessary burden on the states.

Furthermore, in its response to the first recommendation in this finding, FRA stated that:

FRA will use its resources to strongly promote the implementation of any strategies that have been shown to be a cost-effective means to enhance safety...FRA will perform benefit/cost studies on these, and any other strategies that may increase safety.

However, FRA will need accurate information on the costs of these strategies, if it is to undertake these cost-benefit analyses.

In addition, recent congressional concerns have focused on whether funding requests to support grade crossing safety has been sufficient. Unless DOT has information on state spending of current funds available for grade crossing safety improvements, it would be difficult to determine whether funding is or is not sufficient. We therefore request that the management response to the second recommendation in finding A be reconsidered and a reply provided us within 30 days of this report.

Finding B. Plan Needs Comprehensive and Accurate Data

The data that DOT used to establish the goal of the Rail-Highway Grade Crossing Safety Action Plan and now uses to monitor the progress of the Plan should be more comprehensive and accurate. Most importantly, grade crossing and trespassing accident and fatality data for the nation's 32 rail transit systems are not integrated into FRA's database, and are therefore not monitored under the Plan. We are concerned that all grade crossing accidents and fatalities might not be reported by the railroads, or might not be entered into FRA's database. For example, 12 of 97 railroad grade crossing and trespassing accidents reported to DOT's National Response Center during September 1998 were not in FRA's database. Furthermore, portions of FRA's National Highway-Rail Crossing Inventory of 261,600 railroad crossings were not up-to-date and did not include the nation's almost 500 rail transit crossings. It is difficult to fully monitor progress toward reducing accidents and fatalities because FRA's current grade crossing and trespassing statistics are not complete.

Rail Transit Accidents Should Be Part of Plan

Because the Plan is intended to "...represent a comprehensive Departmental effort..." it should reflect FTA grade crossing and trespassing data not in FRA's accident database. FRA statistics do not include accidents that occurred on the nation's 32 rail transit systems. These transit systems fall under FTA jurisdiction, which maintains its own database. For example, the Plan noted that the Los Angeles Metro Blue Line experienced a significant number of accidents and fatalities and the transit agency had established a Grade Crossing Safety Program. This program evaluated various means to discourage illegal movements by motor vehicles at crossings and evaluated improvements available to reduce train-pedestrian accidents. The Blue Line had 94 grade crossing accidents, with 12 fatalities between 1997 and 1998, but this information was not a part of FRA's database and therefore not monitored by the Plan.

It is important that the Plan include newly constructed rail-highway grade crossings. Although the nation's rail transit systems have only about 500 crossings, 1,587 grade crossing and trespassing accidents were reported to FTA in 1996 and 1997. FTA has acknowledged difficulties in getting all rail transit systems to report comprehensive data, and should continue efforts to ensure the FTA accident database is complete. In addition FRA should work with FTA to incorporate rail transit data into the Plan's statistics because the Plan is meant to be a "ONE DOT" effort.

FRA Accident Database is Incomplete

DOT measures the Plan's progress using FRA's railroad accident database. Although FRA has adequate controls over the computer input and processing of grade crossing and trespassing accident and fatality data received from railroads, FRA does not verify that all reportable accidents are included in its database. A readily available source for such verification would be the rail accident reports that the DOT National Response Center routinely provides to FRA. However, FRA does not reconcile its database against information in the National Response Center database.⁹

Our review of the accident submissions that the National Response Center made to FRA for the month of September 1998 showed that of the 97 accidents reported to the Center during that month, 12 accidents were not found in FRA's database. (See exhibit C.) Each of the accidents was associated with an injury or fatality, and although no grade crossing fatalities were omitted from FRA's database, the 12 accidents included 6 trespassing fatalities. FRA confirmed that the 6 trespassing fatalities should have been reported in its database. FRA was able to trace some of the omissions to railroads that called in accidents to the Center, but did not also report them to FRA, as required. If FRA's statistics are not complete, monitoring progress toward reducing grade crossing accidents and fatalities will be more difficult. Periodic reconciliation of National Response Center rail accident information with the information in the reports that the railroads provide to FRA would be useful as a cross-check to ensure that FRA's grade crossing and trespassing database is complete.

Crossing Inventory is Incomplete

An accurate National Highway-Rail Crossing Inventory is critical for FRA, the states, and the railroad industry to help identify potentially hazardous crossings and prioritize funding for grade crossing safety improvements. Information from the inventory is also used in research programs, safety and economic analyses, and program management and assessment. However, states and railroads submit inventory information on a voluntary basis and FRA recognized in the Plan that the lack of universal and consistent updating has resulted in an incomplete grade crossing inventory.

To test the accuracy of FRA's inventory, we contacted the 5 largest freight railroads, which FRA reported as having 100,311 crossings. We found discrepancies between

⁹ FRA officials stated a previous attempt was made to perform a verification with the National Response Center, but that attempt was not successful. However, FRA stated it would explore having its current database contractor perform the verification.

FRA's inventory and the records maintained by each of those freight railroads. For example, CSX reported 509 more crossings in its inventory than reflected in FRA's inventory. Discrepancies in inventory data were not limited to freight railroads. They also occurred in records for passenger railroads. For example, Southern California Regional Rail Authority's Metrolink, a commuter railroad, reported having 339 public crossings; that was 90 more than the 249 public crossings that the FRA inventory showed.

In the Rail-Highway Grade Crossing Action Plan, FRA acknowledged the need to make its inventory more accurate, and has encouraged railroads to electronically update the information in a timely manner. As part of its effort to improve the inventory, FRA must require and ensure that accurate safety statistics and grade crossing inventory information are provided during and after railroad acquisitions and mergers. The Conrail acquisition and the merger of Canadian National and the Illinois Central railroads together affect 74,487 crossings, or 29 percent of the nation's crossings. Based on problems experienced with the Union Pacific merger in 1996, potential difficulties in integrating the different railroads' reporting systems could create additional weaknesses and discrepancies in the reporting of safety and inventory information.

Recommendations

We recommend that FRA:

- Coordinate with FTA to ensure that reporting of rail transit grade crossing and trespassing accidents is timely, and that this information is integrated with FRA's database.
- Establish procedures to periodically reconcile its database with National Response Center rail accident reports to ensure that all U.S. grade crossing and trespassing accidents are included in the database.
- Establish mandatory reporting requirements with FTA, for states, railroads, and rail transit operators to ensure an accurate and complete national inventory of grade crossings.

Management Position

FRA concurred with the recommendations made in this finding, and has taken or planned actions to address all three recommendations. FRA agreed that Departmental rail grade crossing and trespassing statistics should reflect FTA data as well as data from FRA, and will work with FTA to incorporate rail transit data

into the Plan's statistics. This effort will be consistent with FTA's work in addressing agencywide data requirements in support of the ONEDOT Flagship Initiative on Data Collection. FTA's Safety Task Force is preparing recommendations regarding the best means of improving uniformity and accuracy in reporting safety data, and has identified FRA's accident reporting system as a model.

FRA also concurred with our recommendation to reconcile its database with National Response Center rail accident reports, and will establish procedures to review each rail-related National Response Center report to ensure that the corresponding report is received from the railroad under FRA's reporting regulations. FRA will investigate any reports not received from the railroads and will perform a comparison of the National Response Center reports with the FRA database at least every 3 months. In addition, FRA is amending its guide for reporting accidents to improve reporting of railroad accidents and require maintenance of a log to permit FRA inspectors to do quality audits.

Furthermore, FRA and FTA will work together to develop and implement tools to create a comprehensive, accurate national inventory of grade crossings. FRA has awarded a contract to revise the current manual for using the inventory and also established a website to provide greater accessibility of inventory information. The proposed rail safety and the motor carrier safety bills include provisions for states and railroads to submit periodic updates to the national inventory. FRA and FTA will also consult on the adoption of a requirement for rail transit operators and states to file inventory reports for intersections of roads with tracks exclusively used by rail transit operators.

Details of these and other actions taken and planned as a result of the recommendations in this finding are provided in FRA's complete response, which is included as the appendix to this report.

Audit Comments

The OIG considers the actions taken and planned by FRA to be responsive to the recommendations in this finding. Therefore, these recommendations are considered resolved, subject to the followup provisions of Department of Transportation Order 8100.1C.

Crossings Ranked Highest for Predicted Collisions

RANK	PREDICTED COLLISIONS ^a	RAIL ROAD	STATE	CITY	CROSSING LOCATION	NUMBER OF COLLISIONS				
						'97	'96	'95	'94	'93
1	1.28	BNSF	AZ	Phoenix	35 th Avenue	2	4	1	3	4
2	0.87	KCS	LA	Bossier City	Alfred Lane	3	0	0	0	0
3	0.82	IHB	IN	East Chicago	Dickey Road	2	1	3	3	1
4	0.81	NS	IN	Muncie	East Wysor	2	1	1	0	6
5	0.79	BNSF	MS	Olive Branch	Highland St	1	1	2	1	0
6	0.72	KCS	AR	Mena	Highland St	1	4	1	2	2
7	0.66	SOO	IL	Wood Dale	Irving Park Rd	0	1	1	3	5
8	0.65	BNSF	AZ	Glendale	55 Ave & Missouri	2	1	3	0	1
9	0.60	UP	TX	Laredo	Sanchez	1	0	2	2	1
10	0.58	CSX	AL	Atmore	Martin Luther	1	1	2	2	1

a/- The predicted collisions column identifies the probability of an accident occurring at any particular crossing. For example, the chance of an accident at the Phoenix, Arizona, grade crossing is greater than 100 percent in a given year, whereas the chance of accidents at the other grade crossings listed is less than 100 percent.

RAILROAD LEGEND:

BNSF: Burlington Northern Santa Fe Railway
KCS: Kansas City Southern Railway Company
IHB: Indiana Harbor Belt Railroad Company
NS: Norfolk Southern Corporation
SOO: Soo Line Railroad Company
UP: Union Pacific Railroad Company
CSX: CSX Transportation

Source: Federal Railroad Administration

Railroad Crossing Action Plan Proposals
Description and Status as of May 1999

The following 19 proposals have been completed:

Rules of Evidence: The Transportation Research Board researched state laws for traffic cases and published the article, "Photographic Traffic Law Enforcement," in the December 1996 National Cooperative Highway Research Program Legal Research Digest. This proposal was concerned with providing information to states that would allow traffic citations to be issued and enforced based on photographs or video images from unmanned cameras.

Compilation of State Laws and Regulations on Matters Affecting Highway-Rail Crossing: FRA, working with FTA, NHTSA and FWHA, updated the 1983 edition of the state laws and regulations and distributed it in August 1995. In an additional effort by FRA, a newer 1999 edition is under development and will be available in print and on the Internet.

Principal Railroad Lines: FRA defined a national system of principal rail lines, developed maps, and encouraged comprehensive engineering reviews of these lines and their crossings.

Research Workshops: DOT's National Transportation Systems Center held a workshop in April 1995 to discuss current and projected research needs. A report was subsequently issued.

Host Research Roundtables/Workshops -- Defense Conversion Fair: As part of the 1995 DOT Technology Fair, FRA hosted an exchange program to familiarize defense firms with industry needs. Several proposed projects are pending approval, such as use of radar to detect obstacles at crossings.

Signs, Signals, Lights and Markings -- Locomotive Conspicuity: FRA developed standards and rules for placing alert lights on locomotives. Regulations require that all locomotives be equipped as of December 1997.

Incentives for Crossing Consolidation -- Cash Payments: DOT requested direct payments of \$7,500 per grade crossing from Surface Transportation Program funds are available to communities for closing crossings. The Rail-Highway Grade Crossing Program was modified to include using funding for the incentive payments of grade crossing closures.

Incentives for Crossing Consolidation -- Eligibility for 100 Percent Federal Funding: Under legislation requested by DOT, closure projects are eligible for 100 percent federal funding. The necessary legislation was included in DOT's FY 1997 Appropriations Bill, and the Rail-Highway Grade Crossing Program was modified to include rail-highway grade crossing closure to be eligible for 100 percent federal funding.

Checklist: FHWA, with assistance from FRA, developed a checklist of items to be considered when performing engineering reviews of rail corridors. Included in the checklist are items such as warning device, site improvement options, and consolidation of crossings. The checklist was provided to FRA and FHWA field offices in May 1995.

Truck and Bus Involved Accidents -- On-Guard Notice: FHWA published an On-Guard notice about grade crossing safety in February 1994. The notice was mailed to 270,000 interstate motor carriers to alert the truck and bus industry of dangers at crossings. Another notice on high-profile crossings was issued in February 1996.

Truck and Bus Involved Accidents -- Advisory Bulletin: In February 1994, FHWA sent a bulletin to trade press about grade crossing safety.

Truck and Bus Involved Accidents -- Public Service Print Advertisements: FHWA developed print public service announcements and distributed them to the trade press in January 1994. The articles were targeted to reach state and local trucking association newsletters.

Driver Training Materials: NHTSA and the American Association of Motor Vehicle Administrators developed a new model drivers' license manual, with a section on crossings.

Demographics: NHTSA published a study of fatality statistics for highway-rail grade crossing accidents in November 1994.

Accident Severity: NHTSA completed a study on accident severity statistics in February 1995. A memorandum report was prepared but not published.

Distribution of Funds: FHWA and FRA, through DOT, proposed revising the distribution formula in 1996 and 1997 for grade crossing safety improvement funds in new funding legislation. The proposed formula would have taken into account factors such as the number of crossings and accidents, but the proposal was not adopted by Congress.

Integrated Intermodal Transportation Planning: FRA and FHWA conducted nine outreach meetings with Metropolitan Planning Organizations and railroads in Texas, Colorado, Pennsylvania, Missouri, Massachusetts, Washington, California, Georgia, and Illinois. The last meeting was held in 1995.

Commercial Driver's License: FHWA and the American Association of Motor Vehicle Administrators sought to elevate grade crossing violations to "serious" traffic violations for commercial drivers license holders, as required by 1995 legislation. FHWA issued a notice of proposed rulemaking in March 1998. The comment period for the proposed rule closed in May 1998, and FHWA issued the final rule on September 2, 1999, to become effective on October 4, 1999.

Signs, Signals, Lights and Markings -- Signs and Signals: FHWA is researching new traffic control and warning devices. A final report was recently completed.

The following 27 proposals are ongoing or in progress:

National Highway System: FHWA will encourage states to include upgrades or elimination of crossings on the National Highway System in their state planning processes. DOT's Strategic Assessment plan includes "continued safety improvements."

Upgrade Signs and Markings: FHWA has sought to make signs and markings more conspicuous at crossings through use of long-lasting reflective materials. FHWA issued a memorandum in December 1994 to encourage use of higher-quality material.

STOP Signs: FHWA, with FRA, have promoted STOP signs as a traffic control device alternative, as detailed in a July 1993 memorandum issued to FRA and FHWA field offices. The National Transportation Safety Board recommended that states install STOP signs at all passive crossings unless a traffic engineering study recommends otherwise.

Truck and Bus Involved Accidents -- "Trucker on the Train" Program: FHWA, FRA, American Trucking Associations, and Operation Lifesaver, Inc., worked on this program. Operation Lifesaver, Inc., hosted trucking executives on locomotives, beginning in November 1994, to view dangerous rail crossings firsthand. Future joint rail-truck industry meetings and events are under consideration.

Truck and Bus Involved Accidents -- Operation Lifesaver: FHWA has facilitated meetings between Operation Lifesaver and trucking companies to discuss the dangers present at railroad crossings.

Truck and Bus Involved Accidents -- National Safety Organizations: FHWA has communicated grade crossing safety issues to industry and law enforcement officials. The National Safety Council published pamphlets in 1995 and 1997. Operation Lifesaver produced a video in 1996.

Truck and Bus Involved Accidents -- On-Site Compliance Reviews: During compliance reviews conducted by the Office of Motor Carriers, FHWA has reminded motor carriers about the risks at crossings. A December 1994 memorandum encourages discussion and distribution of materials.

Section 402 Funds (23 U.S.C.): NHTSA and FHWA have promoted state funding for public education and law enforcement efforts. In FY 1998, states were authorized \$149.7 million for highway safety efforts.

Marketing Materials Plan: NHTSA, FHWA, FTA and FRA are working together to develop programs and materials to promote public and youth awareness. The “Always Expect A Train” public awareness campaign on grade crossing safety and railroad trespassing was aired and distributed in print in major markets. Review of current materials and development of a 5-year marketing strategy is continuing.

Light-Rail Accident Statistics: FTA is broadening its Safety Management Information System (SAMIS) to identify grade crossing accidents. New data was first published in the 1995 SAMIS Annual Report. Process is under review.

Police Officer Detail: FRA employs a law enforcement liaison, the fourth officer to work at FRA under the program. The officer conducts outreach activities to both law enforcement and judicial communities. Regional programs are being established.

Outreach to Judiciary: Articles have been published in the National Traffic Law Center newsletter. An outreach presentation was made at the Traffic Court Judges Seminar. FRA has published and distributed the “Partnering in Safety: Judicial Outreach” brochure.

Safety Inquiry: FRA has not made a decision on holding an informal safety inquiry about standing rail equipment near crossings. 49 CFR Part 234 prohibits placement of rail equipment where it will interfere with the operation of automatic warning devices. DOT’s technical working group will study standing equipment near passive crossings and create safety guidelines for all categories of crossings.

Responsibilities for Selection and Installation of Signal Devices at Public Crossings: FRA, with FHWA, reviewed the present system of allocating responsibility for selection and installation of signal devices at public crossings. The need for and the appropriate type of warning devices were being reviewed. Regulatory action was terminated in August 1997, but use of national standards as an alternative is being considered.

Crossing Consolidation and Closure Case Studies: FRA established guidelines and strategies based on case studies in its July 1994 publication, "Highway-Rail Grade Crossing: A Guide to Consolidation and Closure." The American Association of State Highway Transportation Officials also published a report in March 1995. The second report that will recommend options to increase closures is in draft.

Define Categories: FRA is defining categories and minimum safety standards for private crossings. Statistics and comments from previous safety inquiries are being reviewed.

Safety Inquiry: FRA plans to hold an informal safety inquiry in the year 2000 regarding standards for certain private crossings.

Locked Gate at Private Crossings: FRA and FHWA will demonstrate gates with remotely controlled locks at private crossings. Demonstrations are planned in New York, which has received a \$275,000 grant, and Oregon, which has selected a demonstration site. An installation date has not been set for either state.

Signs, Signals, Lights and Markings -- Train Horns: FRA published a report in April 1995 on the impact of train whistle bans. An analysis of wayside horns was published in June 1998. A notice of proposed rulemaking is forthcoming.

Innovative Technology -- Automated Video Image Analysis: FRA is investigating the potential for live video monitoring of crossings. Tests will be conducted in New York and California. Proposals are being solicited through the Ideas Deserving Exploratory Analysis (IDEA) program.

1-800 Computer Answering System: FRA is working with railroads to develop systems whereby motorists can call a toll-free number to report malfunctioning railroad signals. An automated telephone answering and message forwarding system would be developed for this purpose. Software is being developed for small- and medium-sized railroads to enable 1-800 notification. 1-800 signs are now posted at most crossings with active warning systems.

Resource Allocation Procedure: FRA proposed recalculating the accident prediction formulas and rebuilding the accident prediction model that is used to help determine allocation of grade crossing resources. During peer review, it was decided to retain, but update, the original formulas.

Highway-Rail Crossing Handbook: FHWA is updating the 1986 version of the handbook. Preliminary draft material has been received, with an estimated completion date of April 2000.

Signs, Signals, Lights and Markings -- Manual on Uniform Traffic Control Devices: FHWA, FRA and FTA sought to amend the manual to address such issues as high-speed rail, temporary closure of crossings, multi-track signs, and work zones. In January 1997, the high-profile crossing (humped crossing) warning sign was approved for use. An amended notice of proposed rule making will be issued in December 1999 which will include a number of proposed highway-rail grade crossing signs.

National Highway-Rail Crossing Inventory: This computer-based file serves as an inventory for all crossings in the nation. FHWA and FRA have promoted voluntary updating by states and railroads. In December 1994, FHWA issued a memorandum on the subject to its field offices. The Update Manual was published in December 1996. FRA introduced new data and a Year 2000 format in 1998. A safety inquiry about the need to display grade crossing numbers to identify crossings will be held in the future.

Signs, Signals, Lights and Markings – Light-Rail Crossing Gates for Left Turn Lanes: FTA is investigating safety devices for crossings where there are streets running parallel to light-rail transit or railroad tracks, and motorists are permitted to make left turns across the tracks.

Vegetation Clearance: FHWA encourages states to clear vegetation, an issue also being addressed by a joint FHWA-FRA Working Group.

The following 4 proposals were terminated:

National and Community Service: FRA sought to support Operation Lifesaver State Coordinators through assigning national service participants under the Service Trust Act of 1993. However, Americorps funding was not sufficient to include this program.

Corridor Review Participation: This proposal would have established an incentive program for state and local governments to participate in corridor reviews. A DOT bill was offered in 1994, but was not considered by Congress.

Operation Lifesaver Matching Funds: DOT proposed increasing funds to Operation Lifesaver, with a non-public match required, but the 1994 DOT appropriations bill did not enact the proposal. However, FRA's 1996 grant to Operation Lifesaver increased to \$300,000, and the FY 1997 DOT Appropriation Bill increased Operation Lifesaver funds to \$600,000. In addition, the Transportation Equity Act for the 21st Century provides \$500,000 to Operation Lifesaver annually from FHWA.

Innovative Technology -- Radar Activation System for Light-Rail Crossing Warning Devices: FTA sought to evaluate and demonstrate the feasibility of a radar-based system to detect trains and approach speed. Interminable administrative and contract problems delayed the demonstration. A substitute project is assessing 4-quadrant gates using video on the Massachusetts Bay Transportation Authority's new Old Colony Line.

Accidents Reported by National Response Center But Not in FRA Database

September 2, 1998:

-A Union Pacific train hit a vehicle at a grade crossing protected by flashing lights in Roseville, California. The driver was injured in the collision.

-A Union Pacific train struck and injured a trespasser on railroad right-of-way in Oroville, California.

-An Amtrak train struck a dump truck at a grade crossing in Strauss, New Mexico. The truck driver was injured in the collision.

September 5, 1998:

-An Illinois Central train struck and killed a trespasser while switching cars on a siding. The engineer recalled hitting something but did not find anything during his search. The trespasser's body was found 1 hour later by the crew during a follow-up search.

September 6, 1998:

-A Conrail train struck and killed a trespasser in Middletown, Ohio. The engineer reported hitting 2 trespassers, but only one body was found.

-A passenger was killed jumping from a moving Amtrak passenger train in Homesburg, Pennsylvania.

September 8, 1998:

-An Amtrak train hit and killed a trespasser in Burlington, North Carolina.

September 20, 1998:

-A Union Pacific crew discovered a fatally injured trespasser alongside of tracks in Las Vegas, Nevada. It is believed that the trespasser fell from a train.

September 25, 1998:

-A Union Pacific train struck and injured a trespasser walking on track right-of-way in Chico, California.

September 26, 1998:

-A CSX train struck and killed a trespasser on track right-of-way in Brooklyn, Alabama.

-A Union Pacific train hit and injured a trespasser in Johnston City, Illinois. According to the railroad report, the accident occurred at a grade crossing.

-An Amtrak train struck and injured a pedestrian at a road crossing in Geyer Springs, Arkansas.



U.S. Department
of Transportation

Federal Railroad
Administration

Memorandum

Date: September 29, 1999

Reply to Attn of:

Subject: **RESPONSE: Report on Rail-Highway Grade Crossing Safety**
Report No. 8V3-020-V000

From: Jolene M. Molitoris
Administrator

A handwritten signature in black ink that reads "Jolene M. Molitoris".

To: Kenneth M. Mead
Inspector General

Attached is the response of the Federal Railroad Administration (FRA) to the draft report dated September 15, 1999 on Rail-Highway Grade Crossing Safety.

We appreciate and agree with the conclusions of the Office of Inspector General (OIG) that DOT's efforts have been successful in reducing both the number and rate of rail grade crossing accidents and fatalities during the past 5 years. We are proud of the success the Department has achieved in these areas, yet, like the OIG, we are not satisfied with these successes. We intend to build upon them to further achieve the goals of the Secretary's 1994 Rail-Highway Grade Crossing Safety Action Plan (Action Plan).

Inasmuch as the Action Plan and the OIG's recommendations involve other modal administrations in addition to FRA, we have forwarded the draft report to the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) for their review and comment. Our responses to your recommendations necessarily reflect the short time frame available to us after coordination with other modes.

##

Attachment:

**FEDERAL RAILROAD ADMINISTRATION RESPONSE TO
DRAFT REPORT OF THE OFFICE OF INSPECTOR GENERAL ON
RAIL-HIGHWAY GRADE CROSSING SAFETY**

Introduction

The Office of Inspector General (OIG) provided the Federal Railroad Administration (FRA) with a draft report on Rail-Highway Grade Crossing Safety. The objective of the report was to assess the progress made toward achieving DOT's 10 year goal to reduce accidents and fatalities by 50 percent, to no more than 2,500 crossing accidents and 300 crossing fatalities by 2004, as established by the Rail-Highway Crossing Safety Action Plan.

We appreciate and agree with the conclusions of the Office of Inspector General (OIG) that DOT's efforts have been successful in reducing both the number and rate of rail grade crossing accidents and fatalities during the past 5 years. We are proud of the success the Department has achieved in these areas, yet, like the OIG, we are not satisfied with these successes. We intend to build upon them to further achieve the goals of the Secretary's 1994 Rail-Highway Grade Crossing Safety Action Plan (Action Plan).

As stated in its Executive Summary, the Action Plan "presents a multi-faceted, multi-modal approach for improving safety at our Nation's highway-rail crossings and for the prevention of trespassing on the rights-of-way of our Nation's railroads." Each of the operating administrations with an interest in crossing safety, the National Highway Traffic Safety Administration (NHTSA), the Federal Transit Administration (FTA), the Federal Highway Administration (FHWA), and the Federal Railroad Administration (FRA) can be justifiably proud of the recent accomplishments of the Department. While FRA is proud of its own contribution to these efforts, we are only one of four partners in this ONE DOT effort. Because of that partnership, soliciting input on OIG's report from all interested modes, rather than solely from FRA (which has been incorrectly cast as the "lead Operating Administration"), might provide a more accurate and comprehensive review of your report.

Recommendations

The report makes six recommendations to FRA "as lead Operating Administration for the Secretary's Rail-Highway Grade Crossing Safety Action Plan". The following are specific responses to the OIG recommendations.

Finding A. Grade Crossing Accidents Have Been Significantly Reduced, But Serious Accidents Continue

OIG Recommendation: Coordinate with FHWA, NHTSA, and FTA to focus on cost-effective strategies, such as the installation of flexible median barriers, use of well-advertised photo enforcement, and the imposition of stricter penalties for grade-crossing violations.

RESPONSE: FRA understands the importance of promoting new ideas in the areas of engineering, law enforcement, and education to achieve greater safety at the Nation's highway-rail grade crossings. As new concepts evolve, FRA will evaluate their effectiveness and recommend the implementation of promising ideas to its safety partners. ONEDOT partnerships will enable all of the various modes to recommend, and assist in the initiation of, strategies that will reduce the number of collisions that occur at highway-rail grade crossings.

FRA and the Department have already undertaken steps to encourage the implementation of the three strategies mentioned in this recommendation. The use of traffic channelization devices (e.g., median curbs) at highway-rail grade crossings was studied at Sugar Creek Road in Charlotte, North Carolina, by Norfolk Southern Railroad and the North Carolina Department of Transportation utilizing funding for crossing safety improvements on high speed rail corridors (Section 1010 under ISTEA and Section 1103(c) under TEA-21). This funding source is being used for a study currently underway in the State of Washington which is utilizing "Kwik Kurb" medians at three crossings in the Seattle area. FRA has also participated in studies that use median curbing as supplemental safety measures to enhance safety in connection with "quiet zones."

FRA has been actively promoting the use of traffic channelization devices at national and regional meetings concerning crossing safety issues such as the Standing Committee on Railroad Transportation of the American Association of State and Highway Traffic Officials The Department's Technical Working Group (TWG) that is addressing the creation of warrants for traffic control devices at all types of grade crossings will include the application of traffic channelization devices. The literature review that was conducted by Brian Bowman, Ph.D., Auburn University, for the TWG specifically looked into current standards for the use of median barriers.

FRA and FTA monitored a photo enforcement effort undertaken by the Los Angeles County Metropolitan Transit Authority on the corridor shared by the Blue Line and the Union Pacific Railroad. The program reduced violations by 92% and collisions by 72% at test crossings that were the subject of a highly publicized enforcement effort. Another photo enforcement

effort has also been initiated in Orange County, California. Other grade crossing photo enforcement demonstrations are in progress in North Carolina on the designated high speed rail corridor and on three crossings in Illinois.

FRA's Office of Chief Counsel is preparing model legislation that can be used by States that are interested in passing legislation that will enable the use of photo enforcement. This package should be available in January 2000. Secretary Slater sent a letter to all of the governors following the Bourbonnais, Illinois Amtrak collision which encouraged the governors to promote crossing safety and specifically mentioned the use of photo enforcement. Additionally, the Department's Motor Carrier Safety bill includes provisions for a photo enforcement pilot demonstration project to determine whether increased enforcement, using photography or other imaging technology, will increase compliance with traffic safety laws and lead to fewer vehicle crashes. This study would help address the effectiveness of photo enforcement to reduce crossing collisions.

FRA has been an advocate for the active enforcement of existing traffic laws pertaining to highway-rail grade crossings. FRA Headquarters staff and the regional crossing managers have been working with law enforcement organizations, judges, governors' highway safety representatives, Operation Lifesaver, and others promoting the necessity for active and effective enforcement efforts. A traffic law enforcement officer has been detailed to FRA Headquarters for the last five years with one of the major duties being advocating the strict enforcement of traffic laws. FRA plans to supplement this effort with the creation of eight regional liaison positions that will work one week every month on enforcement issues.

The Department realizes the importance of having traffic laws that will promote safety at the Nation's crossings. The Department has proposed in both its Motor Carrier Safety and Rail Safety bills now before Congress that DOT develop and make available to State and local governments model State legislation providing for civil or criminal penalties, or both, for violations of highway-rail grade crossing signals. This will promote the creation of consistent and effective traffic laws at grade crossings.

The actual implementation of any of these strategies will be at the discretion of parties other than the FRA and the Department. FRA will use its resources to strongly promote the implementation of any strategies that have been shown to be a cost-effective means to enhance safety. While there is not at this time enough data to conclusively determine the long-term effectiveness of these methods in reducing collisions, FRA will perform benefit/cost studies on these, and any other strategies, that may increase safety. FRA feels that these strategies can be effective tools in conjunction with other

methods to provide an all encompassing approach to reducing crossing collisions.

OIG Recommendation: Monitor, with FHWA, state expenditures of funds to determine if they are spent efficiently and effectively for reducing grade crossing accidents and fatalities.

RESPONSE: States are required to have a Federal Highway Administration approved process for establishing priorities and implementing safety improvement projects. Currently FHWA monitors the obligation of the Surface Transportation Funds safety set-aside for highway-rail projects on a monthly basis. FHWA also monitors the legal requirement that at least one-half of the funds be used for installation of protective devices. While FHWA understands the intent of the recommendation to further monitor State spending, FHWA believes that requiring additional reporting on a project-by-project basis would place an unnecessary extra reporting burden on the States. Such detailed reporting is not required for the other highway safety programs. We note that requiring State reporting in this area may have the unintended result of States spending less money for crossing projects than for other projects which do not require State reporting. FRA notes that it has no resources to obtain, nor does it have legal authority to require such reporting directly to FRA.

OIG Recommendation: Develop a separate plan, with realistic goals, to address trespass and rail suicide prevention, using measures found effective in FRA's Salem demonstration project.

RESPONSE: FRA concurs that a separate plan that specifically addresses trespass prevention and pedestrian safety issues is needed. The plan will be part of a coordinated Departmental effort (ONEDOT) dealing with trespass prevention on railroad and light rail transit rights-of-way, pedestrian safety at authorized crossings of both conventional and light rail trackage, pedestrian safety at stations, and safety of recreational trails near rail and transit corridors. The intermodal plan will have specific action items and goals, and it will be in place by May 1, 2000.

The plan will use a wide variety of safety strategies to achieve its goals. Engineering, public education, law enforcement, demographics, and community involvement are methods that will be employed in the plan. The Salem demonstration project, which was based on Operation Lifesaver's Trespass Prevention Guide which was developed in partnership with FRA, utilized a multi-faceted campaign to prevent trespassing. FRA is committed to promoting a "Safe Communities" concept in attacking this important safety issue.

FRA has already taken steps to improve the trespass prevention efforts on the Nation's railroads. FRA developed and made available to State and local governments "model State legislation providing for civil and criminal penalties for trespassing on a railroad owned or leased right-of-way. 49 U.S.C. § 20151(c). The Secretary sent legislative packages to the National Governors' Association, the Council of State Governments, the National Conference of State Legislatures, the U.S. Conference of Mayors, the National League of Cities, the National Association of Counties, The National Association of Regional Councils, and various members of Congress. FRA's regional crossing managers work with law enforcement officials, railroads, communities, schools, Operation Lifesaver, and other safety partners to promote means to reduce trespassing incidents. FRA was a major contributor to Operation Lifesaver's "Trespass Prevention Guide." FRA's casualty reporting requirements were expanded in January 1997 which allows the capture of greater detail on the locations where trespassing casualties are happening. Counties with the highest incidences of trespassing casualties within a state can be located using FRA's safety web page. This allows railroads, Operation Lifesaver, and others to geographically target trespass prevention efforts. FRA's outreach to law enforcement and judges that was mentioned in recommendation #1 includes emphasis on trespass prevention.

FRA has committed to doing a demographic analysis of those involved in trespassing. Using railroad arrest/contact reports and demographic software, descriptors will be developed that will enable the identification of population groups that are involved in trespass activities. This information can then be used to tailor outreach and educational efforts to effectively communicate the importance of not trespassing on railroad property.

FRA is also conducting a project in Pittsford, New York that will utilize video imaging to detect trespass activity on a railroad bridge over the Erie Canal. When a human image is detected trespassing, notification will be sent to the local law enforcement agency so that the activity can be interdicted. This project should start in the first quarter of FY 2000. An intermodal effort is also underway to provide "best practices" for recreational trails that are on or adjacent to railroad rights-of-way. These guidelines will address a variety of safety issues that must be addressed when considering Rails-with-Trails along active rail trackage. FRA also facilitated a project between the Burlington Northern Santa Fe Railroad (BNSF) and the Fort Peck Indian Reservation in Montana which provided the means for train crews to directly report trespassing incidents to tribal police force. Engineering solutions for two locations where large numbers of trespassers have been seen have also been proposed.

The Department is committed to improving safety along and near railroad and transit rights-of way. An intermodal plan that

addresses trespass prevention, pedestrian safety, passenger safety at stations, and recreation trails near rail and transit operations will allow FRA, FHWA, FTA and NHTSA to focus their efforts to reduce this needless source of casualties.

Finding B. Plan Needs Comprehensive and Accurate Data

OIG Recommendation: Coordinate with FTA to ensure timely reporting of rail transit grade crossing and trespassing accidents and integration with FRA's database.

RESPONSE: FRA agrees that Departmental highway-rail grade crossing and trespassing statistics should reflect FTA grade crossing and trespassing data as well as data from FRA. In its report, OIG states that ". . . FRA should work with FTA to incorporate rail transit data into the plan's [Rail-Highway Grade Crossing Safety Action Plan] statistics because the plan is meant to be a 'ONE DOT' effort." FRA agrees, and will work with FTA to incorporate rail transit data into the plan's statistics. However, incorporation into the plan's statistics is vastly different from the integration of FTA's transit data into FRA's database as formally recommended by OIG. These separate databases provide resources to each mode which would be rendered less effective if each database were to have data from reporting entities not subject to the mode's authority. We believe that retaining separate underlying databases while combining relevant data for Plan purposes would be appropriate.

This recommendation is consistent with ongoing FTA efforts addressing agency-wide data requirements and in support of the ONEDOT Flagship Initiative on Data Collection. The FTA Administrator's Safety Task Force is finalizing recommendations regarding the best means of ensuring enhanced uniformity and accuracy in reporting of safety data and has identified the FRA and FAA accident/incident reporting systems as models. Actions under consideration include revising the National Transit Database (NTD) reporting requirements and the possible establishment of a stand-alone safety data collection system requiring reporting of rail and bus accident data by transit authorities. These proposals address concerns about the impact on timeliness of safety data caused by FTA's SAMIS (Safety Information Management System) having to rely on NTD data.

OIG Recommendation: Periodically reconcile its database with National Response Center rail accident reports to ensure all U.S. grade crossing and trespassing accidents are included.

RESPONSE: We concur in the recommendation. Procedures will be established to review each rail-related National Response Center (NRC) report and ensure that the corresponding report is

received under the reporting regulations. All of the 1999 rail related NRC reports will be reviewed. The railroads will be contacted and asked to explain why the reports were not part of their monthly submission; there may also be additional FRA investigation of the reporting problems. In the future, at least every three months the FRA will perform a comparison of the NRC reports with the FRA database to ensure complete reporting.

The FRA will also amend the FRA Guide for Reporting Accidents and Incidents. The Guide currently requires that an Internal Control Plan (ICP) be prepared by the railroad. The ICP currently requires that "claims, medical and/or other departments engaged in collecting and reporting accident and incident information" report to the safety officer. The wording implicitly includes departments that would make calls to the NRC. The Guide will be amended to explicitly include wording that would state that the ICP will include "Telephonic Reports" under 49 CFR 225.9.

The FRA is very concerned that accident/incident reporting be accurate and timely. FRA's Operating Practices inspectors do periodic checks of railroads' accident/incident reporting. Within the last year, most of the nation's major railroads had a special audit performed on their reporting of accidents and incidents. FRA recently revised extensive portions of its Accident/Incident Regulations (49 CFR 225) (January 1, 1997). The requirement for railroads to develop ICP is meant to improve the reporting of railroad accident/incidents and to require maintenance of a log of non-reportable cases to permit FRA inspectors to do quality audits.

FTA will look forward to working with FRA to implement this recommendation. It is fully consistent with ongoing FTA initiatives addressed in the prior response.

OIG Recommendation: Establish mandatory reporting requirements, with FTA, for states, railroads, and rail transit operators to ensure an accurate and complete national inventory of grade crossings.

RESPONSE: FRA and FTA will work together to develop and implement optimum tools for a comprehensive, accurate, national inventory of grade crossings. The Clinton Administration's rail safety reauthorization bill and its motor carrier safety bill contain three identical provisions to advance highway-rail crossing safety, including a provision that would require that states and that railroad carriers subject to FRA's safety jurisdiction submit initial reports and periodic updates to the national highway-rail crossing inventory (Inventory). (See, e.g., the attached copy of title V of the Federal Railroad Safety Enhancement Act of 1999, especially section 503.) The Secretary of Transportation transmitted these bills to the Congress in late July.

In early August, the Administration's rail safety reauthorization bill was introduced by request as H.R. 2683 and S. 1496; about the same time, the Administration's motor carrier safety bill was introduced by request in the House as H.R. 2682, and Sen. Lautenberg introduced the motor carrier safety bill in the Senate as S. 1559. The bills have been referred to the appropriate Congressional committees. The Senate Subcommittee on Surface Transportation and Merchant Marine has called a hearing for September 29 regarding motor carrier safety. The Department of Transportation's witnesses, the Assistant Secretary for Budget and Programs and the Federal Highway Administrator, plan to discuss the Administration's motor carrier safety bill, including its provision (section 204) mandating that states and railroad carriers subject to FRA's safety jurisdiction file initial and updated reports with the Inventory.

Turning to the rail transit aspect of the OIG's recommendation, FRA will consult with FTA on whether rail transit operators and states should be required to file reports with the Inventory regarding intersections of roads with tracks exclusively used by rail transit operators. FRA and FTA will discuss whether adoption of such a requirement would be appropriate and, if so, what action to take to pursue that objective. FRA notes that a rail transit operation is outside the scope of FRA's delegated safety jurisdiction if it is not connected to the general railroad system of transportation. See 49 CFR 1.49 and, e.g., 49 U.S.C. 20102, 20103. FTA has safety jurisdiction over rail transit operations not connected to the general railroad system. The dividing line between FRA's jurisdiction and FTA's jurisdiction is discussed in greater detail in a proposed joint statement of agency policy issued by FRA and FTA and published May 25, 1999, which is attached.

Meanwhile, FRA is working hard in other ways to improve the accuracy and completeness of the Inventory. Each year the Inventory receives approximately 80,000 updates. To make this updating effort easier for states and railroads, FRA's data processing and computer program development contractor has converted the previous "GX" software to a Windows-based operating system. Now called "GX32" (Grade Xing 32 bits), this new software Inventory data collection computer program, which is used to update Inventory records, will provide for a significantly more powerful and efficient system for updating data. Both "GX" and "GX32" are provided to the railroads and states at no charge. When an update is submitted by the railroad or state, the entity receives the new Inventory for the organization with all updates. In addition, the new program, which was released in October 1998, provides for the Inventory to be expanded by 32 additional data elements, which include latitude/longitude, interconnection/preemption, high profile crossing, whistle ban in effect, Amtrak operations, four-quadrant gate installation, and others.

In addition, FRA has established a site on the World Wide Web for access to Inventory and accident history data. The greater accessibility of the information will help improve its accuracy, by allowing for it to be widely and readily reviewed.

Further, FRA has also awarded a contract to revise and rewrite the current *Highway-Rail Crossing Inventory Instructions and Procedures Manual* to provide states and railroads with the most current procedures, instructions, and information for updating the Inventory. This became necessary because of significant changes that have taken place and will take place in the Inventory and updating process.

Finally, a contract has also been awarded to identify and resolve all mismatched data (erroneous information) between the Inventory and FRA's accident data files. The Accident Prediction Model, which is the basis of the PC Accident Prediction System ("PCAPS") Computer Program, uses data from both the Inventory and the accident files. The PCAPS program is made available at no charge to states, railroads, local law enforcement officials and the general public with the expectation that this will become an impetus to update the Inventory and increase awareness and law enforcement at crossings with the highest risk of crossing collisions. When erroneous or non-current data are submitted or exist in either of these files, field elements do not match, and the accident record is then not used in the Accident Prediction Model. This problem must be resolved to preserve the integrity and accuracy of the accident prediction calculations.

Attachments:

- (1) Title V of the Federal Railroad Safety Enhancement Act of 1999-Bill Text, Section-by-Section Analysis, and Letter Transmitting the Bill to Congress
- (2) Proposed Joint Statement of Agency Policy Concerning Shared Use of the General Railroad System by Conventional Railroads and Light Rail Transit Systems (64 Fed. Reg. 28238)