

AUDIT OF THE HIGHWAY-RAIL GRADE CROSSING SAFETY PROGRAM

*Federal Railroad Administration
Federal Highway Administration
Federal Transit Administration*

*Report Number: MH-2004-065
Date Issued: June 16, 2004*



Memorandum

**U.S. Department of
Transportation**

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** Report on the Audit of the Highway-
Rail Grade Crossing Safety Program
Report No. MH-2004-065

Date: June 16, 2004

From: Alexis M. Stefani 
Principal Assistant Inspector General
for Auditing and Evaluation

Reply to
Attn. of: JA-40

To: Federal Railroad Administrator
Federal Highway Administrator
Federal Transit Administrator

This final report presents the results of the Office of Inspector General's (OIG) second audit of the Department of Transportation's (Department) Highway-Rail Grade Crossing Safety Program. The report focuses on public highway-rail grade crossings, because these crossings experienced 89 percent (33,153) of all accidents and 90 percent (4,074) of all fatalities from 1994 through 2003, and funding provided under the Department's safety program is directed at public crossings. The audit was conducted at the request of Senator Joseph Lieberman, Ranking Member, Senate Committee on Governmental Affairs.

In September 1999, the OIG reported that the Department had made progress toward achieving its 10-year goal to reduce highway-rail grade crossing accidents and fatalities by 50 percent (fewer than 2,500 accidents and 300 fatalities) by the end of Calendar Year (CY) 2003.¹ We also reported that the Department had made progress addressing 23 of the 50 grade crossing safety initiatives in its 1994 Grade Crossing Safety Action Plan (1994 Action Plan). To further improve grade crossing safety, the 1999 OIG report recommended coordinating among the Operating Administrations on cost-effective safety strategies, monitoring the use of Federal grade crossing safety improvement funds, and establishing mandatory reporting requirements to improve the accuracy and completeness of national

¹OIG Report No. RT-1999-140, Report on Rail-Highway Grade Crossing Safety, September 30, 1999. After this report was issued, the Department began referring to its crossing improvement initiatives as the Highway-Rail Grade Crossing Safety Program.

grade crossing inventory and accident data. See Exhibit A for the status of our 1999 recommendations.

The objectives of this audit were to: (1) evaluate the progress the Department has made to improve grade crossing safety and meet its goal by the end of 2003; (2) assess the Department's 1994 Action Plan initiatives to improve grade crossing safety and actions to complete the 1999 OIG recommendations; and (3) identify best practices, research studies, and strategies that contribute to reductions in the number of accidents and fatalities at grade crossings. See Exhibit B for a full description of our audit scope, methodology, and prior audit coverage. Trespassing accidents and fatalities were not included in this audit.

In response to a congressional directive, the Department prepared a new national grade crossing safety action plan that was issued on June 15, 2004.² On February 2, 2004, we briefed the Department on our audit results and recommendations so it could use that information to further target safety improvements proposed in a draft of the new national action plan. See Exhibit C for additional background information on Department and state responsibilities for improving grade crossing safety.

RESULTS IN BRIEF

Under the 1994 Action Plan, the Department came close to meeting its goal of fewer than 2,500 accidents and 300 fatalities at the end of 2003.³ As shown in Figure 1, the number of grade crossing accidents fell 41 percent, from 4,892 at the end of 1993 to 2,909 at the end of 2003. During this same period, the number of fatalities decreased from 626 to 325 or by 48 percent.

²The Secretary of Transportation's Action Plan for Highway-Rail Crossing Safety and Trespass Prevention was issued on June 15, 2004.

³The 2003 accident and fatality statistics were obtained from the Federal Railroad Administration, as of March 9, 2004. Throughout this report, unless otherwise indicated, calendar year data are reported.

**Figure 1: Accident and Fatality Trends for
Public and Private Grade Crossings 1994 through 2003**

In CY 1993, there were 4,892 accidents and 626 fatalities.
 In CY 1994, there were 4,979 accidents and 615 fatalities.
 In CY 1995, there were 4,633 accidents and 579 fatalities.
 In CY 1996, there were 4,257 accidents and 488 fatalities.
 In CY 1997, there were 3,865 accidents and 461 fatalities.
 In CY 1998, there were 3,508 accidents and 431 fatalities.
 In CY 1999, there were 3,489 accidents and 402 fatalities.
 In CY 2000, there were 3,502 accidents and 425 fatalities.
 In CY 2001, there were 3,237 accidents and 421 fatalities.
 In CY 2002, there were 3,064 accidents and 355 fatalities.
 In CY 2003, there were 2,909 accidents and 325 fatalities.

Source: Federal Railroad Administration

While impressive, the Department's grade crossing accident statistics do not include all of the *rail transit* grade crossing accidents and fatalities, as the Federal Railroad Administration (FRA) had agreed to report in response to our 1999 recommendation. We found that FRA's grade crossing progress report statistics and accident database do not include light and heavy rail transit accidents and fatalities⁴ that occurred at grade crossings owned by transit authorities and funded by the Federal Transit Administration (FTA). However, commuter rail transit grade crossing accidents are included in FRA's grade crossing accident database⁵ and progress report statistics, because commuter rail transit trains⁶ share tracks owned by freight railroad companies, and all railroad accidents must be reported to FRA.

We determined that 708 of the 988 accidents (72 percent) and 24 of the 96 fatalities (25 percent) that occurred at *rail transit* grade crossings from 1999 through 2003 were not included in FRA's accident and fatality statistics. Although all of the 988 rail transit grade crossing accidents and 96 fatalities were reported to FTA, only 280 commuter rail transit accidents and 72 fatalities were also reported to FRA. Under the new action plan, without a complete record of rail transit accidents and fatalities, the Department will not be able to determine

⁴Transit grade crossing accidents and fatalities occurring on light rail transit systems, which usually transport passengers in single or two-car trains (streetcars or trolleys), and heavy rail transit systems that operate high speed, rapid acceleration, multi-car passenger trains (subways) are not reported to FRA.

⁵FRA maintains the national grade crossing accident database, which contains mandatory information provided by railroads on all grade crossing accidents and fatalities.

⁶Freight railroad companies are required to report all grade crossing accidents that occur on their tracks to FRA, including those involving commuter *rail transit* trains.

where additional grade crossing safety improvements may be needed on light and heavy rail transit systems.

The significant progress achieved under the 1994 Action Plan was largely attributable to closures of 41,070 public and private grade crossings, upgrades of 3,985 crossings with active warning devices⁷ (such as automatic gates, flashing lights, and highway traffic signals), and annual education campaigns by Operation Lifesaver,⁸ which reached millions of people. The Department's 1994 Action Plan addressed much of the "low-hanging fruit" through its initiatives to close grade crossings and to install automatic gates and flashing lights at public crossings with a high probability for accidents. As a result, it will be difficult for the Department to achieve the magnitude of reductions accomplished over the past 10 years without a careful analysis of accident trends and a plan that strategically targets remaining problem areas.

To determine where grade crossing accidents were occurring, we reviewed FRA's accident and fatality trend data for the 1994 Action Plan period, 1994 through 2003. Our analysis identified the following areas for targeting safety improvements:

- **Some states continued to have a large number of public grade crossing accidents.** Six states—California, Illinois, Indiana, Louisiana, Ohio, and Texas—had the most public grade crossings accidents. These six states accounted for 37 percent of the nation's public grade crossing accidents during the 10-year period. Additionally, about 1,810 public grade crossings had more than one accident a year, which ranged from 2 to 7 accidents per crossing. California, Indiana, Louisiana, Mississippi, and Texas had the most public grade crossings with multiple accidents. *Each of these states should develop an action plan that identifies specific solutions for crossings that continue to have accidents.*
- **Accidents continued to occur at public grade crossings equipped with active warning devices.** Nearly 17,000 or 51 percent of the public grade crossing accidents occurred at crossings already protected with automatic or active warning devices during the 10-year period. Of the 1,810 multiple accidents at public grade crossings, 1,055 or 58 percent occurred at crossings already equipped with active warning devices. Flexible traffic channelization devices, which in 2003 cost about \$15,000, can improve safety by 80 percent at gated crossings, according to an FRA report to Congress on the North Carolina

⁷Active warning devices are activated by approaching trains to warn motorists and pedestrians to yield to train traffic.

⁸Operation Lifesaver, Incorporated, is a nationwide, nonprofit public education program dedicated to improving safety at grade crossings and on railroad property. It receives funds from Federal, state, and private sources.

Sealed Corridor Project.⁹ As of March 2004, FRA's database reported 8 states—California, Minnesota, Oklahoma, Pennsylvania, Texas, Virginia, Washington, and Wisconsin—had installed flexible traffic channelization devices at 23 grade crossings, ranging from 1 to 10 crossings per state. *These devices or other cost-effective physical barriers should be installed at public grade crossings already equipped with active warning devices that continue to have accidents.*

- **Some public grade crossings with passive warnings continued to have accidents.** During the 10-year period, about 16,000 or 48 percent of public grade crossing accidents nationwide occurred at crossings with passive warnings,¹⁰ such as signs, pavement markings, and other non-train activated notifications. Passive warnings are installed at 755 or 42 percent of the public grade crossings that had multiple accidents. These grade crossings represent “low-hanging fruit” that could be targeted for additional safety improvements. *The over 82,000 public grade crossings with passive warnings should be monitored and active warning devices should be added to those crossings where multiple accidents have already occurred.*
- **Motorist behavior caused most public grade crossing accidents.** Risky driver behavior or poor judgment accounted for 31,035 or 94 percent of public grade crossing accidents and 3,556 or 87 percent of fatalities, during the 10-year period. With the exception of 22 train passengers and railroad employees, all of these fatalities were motorists. According to accident reports, motorists failed to stop at grade crossings or drove around activated automatic gates. Of the 10 states we visited, only Illinois had passed photo enforcement legislation to deter grade crossing traffic violations. Further, only 4 of the 10 states we visited—Illinois, Mississippi, Tennessee, and Texas—had imposed specific grade crossing penalties for motorists' violations. *Safety could be improved with enhanced education, legislation, and traffic enforcement to target motor vehicle drivers who violate grade crossing safety laws and warnings.*
- **Grade crossing closures continued to occur, but at a slower pace.** Without a goal for closing grade crossings in the 1994 Action Plan, closures continued to occur, but the pace slowed after 2000. A total of 41,070 grade crossings were closed during the 10 years the 1994 Action Plan was in effect. Prior to 2000, annual grade crossing closures averaged about 4,700. However, grade

⁹As stated in FRA's Report to Congress on Phase I of North Carolina's Sealed Corridor grade crossing safety improvement project, May 2002. The actual change in risk at any particular crossing might be different, depending on changes in variables, such as annual average daily traffic, train movements, or train speeds.

¹⁰Passive warnings consist of crossbucks (x-shaped railroad crossing signs that warn motorists to yield to train traffic), stop signs, advanced warning signs, pavement markings, and other non-train activated warnings (flag-waving railroad or law enforcement personnel) that advise motorists of the presence of a grade crossing.

crossing closures continued at a much slower pace after 2000, averaging about 2,800 annual closures. *If states establish an annual goal for closing grade crossings, safety could be further enhanced.*

In addition, the Department will need to closely monitor initiatives implemented over the life of the new action plan to identify needed adjustments. Therefore, accurate and complete data on the characteristics of all public grade crossings will be required to monitor the new action plan's effectiveness. Although FRA agreed to develop and implement tools to create a comprehensive and accurate national grade crossing inventory database in response to our 1999 recommendation,¹¹ its database continues to contain inaccurate information. We found that FRA's inventory database did not accurately document grade crossing characteristics for 24 of 36 or 67 percent of the public grade crossings we visited. For example, the inventory database reported that 6 of the 24 public grade crossings we visited had warning signs or flashing lights, while we observed automatic gates. *Accurate and complete inventory data on the characteristics of grade crossings, particularly the type of warning devices, could help the Department better monitor whether states and grade crossings are improving under the new plan.*

Finally, it will become more important for the Federal Highway Administration (FHWA) to review annual evaluation reports on states' categorical expenditures of Federal safety improvement funds. Although states are required to report to FHWA the annual amount of Federal grade crossing safety improvement funds spent on the installation of protective devices versus elimination of hazards, we found that only 2 of the 10 states visited had submitted annual evaluation reports for 3 of the fiscal years covered in our audit. *These evaluation reports should contain essential information that could also help to direct scarce Federal funds to effective safety improvements.*

RECOMMENDATIONS

On February 2, 2004, we briefed Department officials on the report's audit results and recommendations so the information could be considered in drafting the new national grade crossing safety action plan. We noted that the Department's draft action plan addressed three of the areas targeted for improvement that are presented in the final action plan and this report. The new action plan encourages states to install flexible traffic channelization devices and other cost-effective physical barriers at grade crossings that are already equipped with active warning devices, but continue to have accidents. It also states that the Department will

¹¹FRA maintains the national grade crossing inventory database, which contains voluntary information from Federal, state, and railroad officials on the characteristics of grade crossings.

measure grade crossing safety in terms of accident rates, and assess progress by conducting a comprehensive evaluation of the plan's effectiveness.

In addition, we are recommending that the Department in implementing its new action plan for grade crossing safety:

1. Identifies the states that have the most grade crossing accidents year after year, particularly at crossings that have experienced multiple accidents. Each of these states should develop an action plan that identifies specific solutions for improving safety at those crossings that continue to have accidents.
2. Encourages states to enhance educational programs to increase safety awareness, develop legislation to modify risky driver behavior through photo enforcement, and increase traffic enforcement strategies, including imposing stricter penalties, to target motor vehicle drivers who violate grade crossing safety laws and warnings.
3. Encourages states to set annual goals for closing grade crossings and strengthen their financial incentives to local governments for closures.
4. Identifies a method for including FTA's data on light and heavy *rail transit* grade crossing accidents and fatalities in the new action plan's goals and statistics.
5. Promotes mandatory reporting requirements for railroads and states through rulemaking or legislation to improve the accuracy and completeness of FRA's national grade crossing inventory data, to identify high-risk crossings and strategies to mitigate risks. The data should also be used to monitor the effectiveness of the new action plan's strategies, identify needed changes, and make adjustments, as necessary. FRA and FHWA should work cooperatively to accomplish mandatory inventory reporting.
6. Ensures that states comply with the annual requirement to submit evaluation reports to FHWA on expenditures of Federal safety improvement funds, including the cost and safety benefits of crossing improvements.

We discussed this report with Department officials, and their written comments (attached as Appendices to this report) have been incorporated, as appropriate. The Department concurred with all six of our recommendations to enhance safety through its new national grade crossing action plan. The Department's proposed actions to encourage states to enhance educational programs, develop legislation, increase traffic enforcement strategies, and set annual goals for closing grade crossings were responsive to our recommendations. However, we are requesting

more details on the specific steps the Department will take and the time frames for completing the actions proposed for the following four recommendations. These proposed actions are to develop individual action plans for the states that continue to have the most accidents, include light and heavy *rail transit* accidents in the new plan's goals and statistics, improve the accuracy and completeness of the national grade crossing inventory data, and ensure that states submit annual evaluation reports on expenditures of Federal safety improvement funds.

RESULTS

Significant Progress Was Achieved Under the 1994 Action Plan

During the 10 years the 1994 Action Plan was in effect, the Department and states made substantial progress in improving grade crossing safety and came close to meeting the plan's goal of fewer than 2,500 accidents and 300 fatalities by December 31, 2003. The number of grade crossing accidents declined 41 percent from 4,892 at the end of 1993 to 2,909 at the end of 2003. During this same period, fatalities decreased by 48 percent, from 626 to 325. When considering train miles traveled during this period, the rate of accidents and fatalities fell by 51 percent and 57 percent, respectively. Table 1 shows the number and rate of accidents and fatalities that occurred under the 1994 Action Plan.

**Table 1: Public and Private Annual Grade Crossing Accidents and Fatalities^a
1994 through 2003**

CY 1993	Accidents 4,892	Accident Rate 7.97	Fatalities 626	Fatality Rate 1.02	Train Miles 613.9 Million
CY 1994	Accidents 4,979	Accident Rate 7.60	Fatalities 615	Fatality Rate 0.94	Train Miles 655.1 Million
CY 1995	Accidents 4,633	Accident Rate 6.92	Fatalities 579	Fatality Rate 0.86	Train Miles 669.8 Million
CY 1996	Accidents 4,257	Accident Rate 6.34	Fatalities 488	Fatality Rate 0.73	Train Miles 670.9 Million
CY 1997	Accidents 3,865	Accident Rate 5.71	Fatalities 461	Fatality Rate 0.68	Train Miles 676.7 Million
CY 1998	Accidents 3,508	Accident Rate 5.14	Fatalities 431	Fatality Rate 0.63	Train Miles 682.9 Million
CY 1999	Accidents 3,489	Accident Rate 4.90	Fatalities 402	Fatality Rate 0.56	Train Miles 712.5 Million
CY 2000	Accidents 3,502	Accident Rate 4.84	Fatalities 425	Fatality Rate 0.59	Train Miles 722.9 Million
CY 2001	Accidents 3,237	Accident Rate 4.55	Fatalities 421	Fatality Rate 0.59	Train Miles 711.6 Million
CY 2002	Accidents 3,064	Accident Rate 4.20	Fatalities 355	Fatality Rate 0.49	Train Miles 728.9 Million
CY 2003	Accidents 2,909	Accident Rate 3.89	Fatalities 325	Fatality Rate 0.43	Train Miles 748.6 Million
1994 Goal	Accidents 2,500		Fatalities 300		

Total Change 1994 through 2003

Accidents Reduced by 41 Percent

Accident Rate Reduced by 51 Percent

Fatalities Reduced by 48 Percent

Fatality Rate Reduced by 57 percent

Train Miles Increased by 22 Percent

Source: FRA.

^aFRA's accident database does not include information on all accidents between transit trains and motor vehicles.

^bRate equals number of accidents or fatalities times one million divided by train miles traveled.

Although the Department's progress in reducing the number of accidents and fatalities has been significant, FRA's grade crossing accident statistics have not included all *rail transit* grade crossing accidents and fatalities. Rail transit authorities are required to report all grade crossing accidents that occur on the systems they own and operate to FTA, but not to FRA. In contrast, commuter rail transit grade crossing accidents are reported to FRA because transit authorities

share tracks owned by freight railroad companies. FRA requires the railroad companies to report all grade crossing accidents to its accident database.

The 1999 OIG report recommended integrating FTA's *rail transit* grade crossing accidents into FRA's national accident database to ensure timely reporting of all grade crossing accidents and fatalities. FRA agreed to work with FTA to incorporate light and heavy rail transit grade crossing accidents and fatalities into the accident statistics of the 1994 Action Plan, but not into FRA's national database. However, we identified 708 of 988 (72 percent) rail transit grade crossing accidents and 24 of 96 (25 percent) fatalities from 1999 through 2003 that were not included in FRA's accident statistics. The Department's ability to target light and heavy rail transit grade crossings for additional safety improvements was restricted because complete historical accident, fatality, and inventory data on these crossings were not available under the 1994 Action Plan.

We also found that the 1994 Action Plan measured grade crossing safety progress in terms of the absolute number of accidents and fatalities, which makes it easier to identify trends. Under the Government Performance and Results Act (GPRA), the Department reports a grade crossing safety accident rate to Congress, which is based on millions of miles traveled by trains and trillions of miles traveled by roadway vehicles (automobiles, trucks, and buses). The Department intends to use the GPRA rate to measure progress under the new national action plan. However, the use of both measures may be the best way to monitor progress.

From Fiscal Year (FY) 1994 through FY 2003, Federal grade crossing safety funding remained fairly constant, averaging about \$153 million annually. States used at least half of these funds to install additional safety devices at public grade crossings. As a result, the total number of public grade crossings with active warning devices increased by 3,985 or 7 percent, from 59,456 or 35 percent at the beginning of 1994 to 63,441 or 42 percent at the end of 2003. The largest increase in active warning devices during this period was the addition of 8,293 automatic gates at public grade crossings. States also used Federal funds to close 41,070 grade crossings, separate 274 grade crossings from railroad tracks (grade separations), and eliminate hazards at grade crossings.

Other initiatives under the 1994 Action Plan enhanced safety and contributed to the significant reductions in grade crossing accidents and fatalities. These included modifying the Grade Crossing Safety Program to permit Federal incentive payments of \$7,500 per crossing to local governments for closures and providing guidance to states on installing active warning devices or signs at grade crossings to alert motorists of train traffic. In addition, Operation Lifesaver expanded public education and awareness of grade crossing safety by informing at least 14 million people annually about the potential dangers at grade crossings. A

complete listing of the 1994 Action Plan's 50 grade crossing safety initiatives is provided in Exhibit D, including the status of each initiative and actions taken.

Grade Crossing Trends Indicate Targeted Strategies Are Needed in the New National Action Plan

As the Department develops a new national action plan for grade crossing safety, it will be challenged to continue to achieve the significant reductions accomplished under the 1994 Action Plan. By closing grade crossings and installing automatic gates and flashing lights at public crossings with a high probability for accidents, much of the "low-hanging fruit" (safety initiatives that were the easiest to implement) was addressed under the 1994 Action Plan.

Further progress will depend on the Department's ability to target future efforts on states and public grade crossings that continue to have accidents and to deploy strategies that have proven most effective. Our analysis of FRA's grade crossing accident data, from 1994 through 2003, indicates the Department should take a more focused approach that targets states and crossings with the highest number of accidents.

Focus safety improvements on states and public grade crossings that continue to have the most accidents. During the 10 years that the 1994 Action Plan was in effect, six states—California, Illinois, Indiana, Louisiana, Ohio, and Texas—accounted for 37 percent of the nation's public grade crossing accidents and 41 percent of its fatalities. These states had the largest number of public grade crossings, which collectively comprised about 29 percent of the nation's total. As train and motor vehicle traffic increased within these states the probability of trains colliding with motor vehicles at crossings also increased. In 2003, the average daily vehicle traffic at public grade crossings that had accidents was 44 percent higher (3,849 motor vehicles) than at public crossings without accidents (2,145 motor vehicles). Figure 4 shows the number of accidents that occurred by state at the nation's public grade crossings during 2003.

Figure 4: Number of Accidents at Public Grade Crossings by State in 2003

Alabama 83 Accidents	Alaska 1 Accident	Arizona 31 Accidents
Arkansas 67 Accidents	California 114 Accidents	Colorado 26 Accidents
Connecticut No Accidents	Delaware 6 Accidents	District of Columbia 1 Accident
Florida 88 Accidents	Georgia 106 Accidents	Hawaii No Accidents
Idaho 15 Accidents	Illinois 135 Accidents	Indiana 131 Accidents
Iowa 56 Accidents	Kansas 49 Accidents	Kentucky 70 Accidents
Louisiana 133 Accidents	Maine 8 Accidents	Maryland 16 Accidents
Massachusetts 15 Accidents	Michigan 99 Accidents	Minnesota 65 Accidents
Mississippi 84 Accidents	Missouri 56 Accidents	Montana 17 Accidents
Nebraska 38 Accidents	Nevada 1 Accident	New Hampshire 1 Accident
New Jersey 40 Accidents	New Mexico 8 Accidents	New York 33 Accidents
North Carolina 64 Accidents	North Dakota 22 Accidents	Ohio 113 Accidents
Oklahoma 62 Accidents	Oregon 20 Accidents	Pennsylvania 69 Accidents
Rhode Island 2 Accidents	South Carolina 62 Accidents	South Dakota 13 Accidents
Tennessee 77 Accidents	Texas 258 Accidents	Utah 18 Accidents
Vermont 2 Accidents	Virginia 37 Accidents	Washington 32 Accidents
West Virginia 30 Accidents	Wisconsin 66 Accidents	Wyoming 3 Accidents

Source: OIG analysis of FRA data.

More importantly, 1,810 public grade crossings experienced multiple accidents, ranging from 2 to 7 accidents per crossing each year, from 1994 to 2003. During the same period, California, Indiana, Louisiana, Mississippi, and Texas had the most public grade crossings with multiple accidents. Of the 1,810 public grade crossings with multiple accidents, we determined 1,055 or 58 percent had active warning devices and 755 or 42 percent had passive warnings. Each state identified as having the most public grade crossing accidents and multiple accidents from 1994 through 2003 should develop a state action plan that identifies specific solutions for crossings that continue to have accidents.

In addition, from 1994 to 2003, 15,938 or 48 percent of the public grade crossing accidents nationwide occurred at crossings with passive warnings, such as signs and pavement markings. In 2003, there were 82,328 public grade crossings with passive warnings. Safety could be improved by monitoring these grade crossings and installing active warning devices at the crossings that have already had multiple accidents.

Encourage states to install cost-effective physical barriers at public grade crossings that continue to have accidents, but are already protected with automated warning devices. Flexible traffic channelization devices and long gate arms installed at public grade crossings already equipped with active warning devices increase safety and are cost-effective. The use of these devices is

determined by a state's highway authority. From 1994 through 2003, 16,962 or 51 percent of the public grade crossing accidents occurred at crossings already protected with active warning devices. Of these accidents, 26 percent occurred at public crossings with automatic gates, 23 percent had flashing lights, and 2 percent were equipped with other types of active devices. In addition, we found that 1,017 or 56 percent of the multiple public grade crossing accidents occurred at crossings equipped with both flashing lights and automatic gates or flashing lights.

In 2003, we found that 2,368 or 93 percent of the 2,543 public grade crossing accidents and 242 or 83 percent of the 293 fatalities occurred because drivers engaged in risky behavior or exercised poor judgment at crossings with active and passive warnings. All of these fatalities were motorists, with the exception of one railroad employee. Motorists caused accidents by failing to stop at crossings, driving around activated automatic two-arm gates, driving through crossings, or stopping their vehicles on crossings, according to railroad accident reports submitted to FRA. In addition, 100 or 4 percent of the 2,543 public grade crossing accidents were attributable to vehicles being stuck, stalled, or abandoned on crossings. In the remaining 75 or 3 percent of these public grade crossing accidents, pedestrians were struck by trains or the causes of the accidents were unknown.

As shown in Figure 5, the use of flexible traffic channelization devices (a series of vertical panels mounted in the center of roadways near grade crossings) at public grade crossings already equipped with automatic two-arm gates help to mitigate risky driver behavior. FRA reported to Congress that these devices can increase safety at gated crossings by 80 percent, preventing motor vehicle drivers from weaving around activated gates. However, these devices, which in 2003 cost about \$15,000, have not been widely used by states. As of March 2004, FRA's database reported that 8 states—California, Minnesota, Oklahoma, Pennsylvania, Texas, Virginia, Washington, and Wisconsin—had installed flexible traffic channelization devices at 23 grade crossings, ranging from 1 to 10 crossings per state.

Figure 5: Picture of a Grade Crossing with Flexible Traffic Channelization Devices



Source: FRA.

Long gate arms, illustrated in Figure 6, extend across three-quarters of the roadway, discouraging motorists from driving around activated gates and increasing safety at grade crossings previously equipped with standard two-arm gates. According to FRA, these gate arms in 2003 cost, on average, about \$5,000, and can increase safety at a gated crossing by 75 percent. FRA officials were unable to provide information on the nationwide use of long gate arms.

Figure 6: Picture of a Grade Crossing with Long Gate Arms



Source: U.S. Department of Transportation.

Encourage states to enhance education, legislation, and traffic enforcement to target risky motor vehicle driver behavior. During the 10 years the 1994 Action Plan was in effect, we found that risky driver behavior or poor

judgment was the leading cause of grade crossing accidents. About 94 percent or 31,035 of the public grade crossing accidents and 87 percent or 3,556 of the fatalities were attributed to these causes. With the exception of 22 train passengers and railroad employees, all of these fatalities were motorists.

Enhancing education about grade crossing safety is one way to increase the awareness of motor vehicle drivers and pedestrians so they will be prepared to make safe decisions when approaching crossings. Operation Lifesaver, working with the Department, informs at least 14 million people annually about the dangers at grade crossings through safety presentations, public service announcements, and formal training programs.

In addition, the Department has encouraged states to make greater use of photo enforcement and stricter state/local penalties for grade crossing violations, but its efforts have not resulted in widespread application of these strategies. Although these strategies have been shown to mitigate risky driver behavior, they have not been widely used by states. Of the 10 states we visited, only Illinois had passed photo enforcement legislation to deter grade crossing traffic violations. However, the legislation limited the use of photo enforcement to demonstration projects in one county.

Stricter penalties for drivers who violate warnings at grade crossings can also be an effective way to reduce accidents and fatalities. Only 4 of the 10 states we visited—Illinois, Mississippi, Tennessee, and Texas—had imposed specific penalties for motorists' violations at grade crossings. In 2000, for example, Mississippi passed legislation that increased the maximum fine for violating grade crossing laws from \$250 to \$500. Mississippi's increased fines and other safety strategies were effective in reducing public grade crossing accidents and fatalities from 126 and 16 in 1999 to 84 and 9 in 2003, respectively. States could improve safety with enhanced education, legislation, and traffic enforcement that targets motor vehicle drivers who violate grade crossing laws and warnings.

Set goals for closing crossings and encourage states to strengthen their financial incentives to local governments to achieve goals. Research shows that closing grade crossings is the most effective way to prevent trains from colliding with motor vehicles or pedestrians. Closing grade crossings is less costly than grade separations (separating railroad tracks from roadways). The cost of closing grade crossings by removing or modifying pavement or installing a barricade and landscape ranges from \$6,000 to \$20,000 per crossing. In contrast, grade separations are costly highway construction projects, averaging from \$3 million to \$5 million per location. Figure 7 illustrates before and after views of a grade crossing that was closed. Figure 8 shows before and after views of a grade separation where the railroad tracks pass over the roadway.

Figure 7: Before and After Pictures of a Grade Crossing Closure



Before



After

Source: FRA.

Figure 8: Before and After Pictures of a Grade Crossing Separation



Before



After

Source: Irvine, California Department of Public Works.

Despite the safety benefits, closures are often difficult to achieve because of local community opposition linked to concerns about emergency response times, traffic delays, neighborhood impacts, and public convenience. In part, these concerns

caused the Department to fall short of a separate 10-year goal, established in 1991, to close 73,210 or 25 percent of the nation's crossings by 2001. FRA reported that a total of 40,325 public and private grade crossings were closed between 1991 and 2001—a reduction of 14 percent.

To encourage states to close more grade crossings, the 1994 Action Plan included initiatives for financial incentives to local governments. Prior to 2000, our analysis of FRA's grade crossing inventory data showed that annual closures averaged about 4,700. Although grade crossing closures continued after 2000, the pace was much slower. From 2001 through 2003, we determined that the average number of grade crossings closed dropped to about 2,800 a year.

Although Federal funds are available to states for closing crossings, Federal, state, and railroad officials told us that the \$7,500 financial incentive offered by the Department for each grade crossing closed and an equal match from the responsible railroad have proven insufficient to overcome local opposition to closures. States can supplement Federal incentives with state funds to further encourage crossing closures. For example, in September 2000, Illinois allowed the use of up to \$300,000 in annual state highway funds as an incentive for closing grade crossings and approved as much as \$35,000 for a single crossing closure. States could improve grade crossing safety by setting annual goals for closing crossings and strengthening their financial incentives to local governments for closing crossings.

The Department Needs Better Grade Crossing Inventory Data to Monitor the Effectiveness of the New National Action Plan

The Department will need to closely monitor the effectiveness of strategies implemented under the new national action plan to identify needed changes and make adjustments, over the life of the new plan. Accurate and complete inventory data on the characteristics of all public grade crossings will be needed to monitor the new action plan's effectiveness.

We found that 3,272 or 57 percent of the nation's 5,770 transit grade crossings were not recorded in FRA's inventory database in 2002 (the latest year for which FTA data were available). Further, we determined that the type of warning devices used at 2,435 or 51 percent of 4,797 new grade crossings that were opened from 1994 through 2003 were not in FRA's inventory database. We also visited 36 public crossings and found that 24 or 67 percent were not accurately documented in FRA's inventory database. For example, the inventory database reported that six of the public grade crossings we visited had warning signs or flashing lights, while we observed automatic gates. We also observed that four public grade crossings had been closed, but the inventory database reported them open and protected with warning signs. These issues are similar to those observed

by the National Transportation Safety Board (NTSB) in March 2000, when it reported that the Department lacked accurate and complete inventory data on grade crossings, which can be used to assess safety risks.

In addition, little progress has been made to include FTA's inventory of *rail transit* grade crossings in FRA's data because their database systems are not compatible and transit operators are not required to report to FRA. Accurate and complete inventory data on the characteristics of grade crossings are needed to better target safety improvements for states and grade crossings with the most accidents. We found that 2 of the 10 states we visited rely on FRA's inventory data to prioritize their grade crossings for safety improvements. Although the Department has the authority to require the mandatory reporting of grade crossing inventory data through its rulemaking process, Department officials told us that developing a rule that would be acceptable to states, railroads, and transit operators would be a long and difficult process.

FRA opted to pursue legislative authority to require states and railroads to report grade crossing inventory data, but FTA has not pursued similar legislative authority for *rail transit* grade crossings. In 1999 and 2002, FRA's legislative proposals seeking the authority to require mandatory grade crossing inventory reporting by states and railroads were not successful. In November 2003, the Senate passed the Rail Safety Reauthorization Bill, S. 1402, which contains a provision to mandate states and railroads to file initial reports and periodic updates to the Department's national grade crossing inventory database.

Without accurate inventory data, it becomes more important for FHWA to review annual evaluation reports on states' categorical expenditures of Federal safety improvement funds. Although states are required to report to FHWA the annual amount of Federal grade crossing safety improvement funds spent on the installation of protective devices versus elimination of hazards, we found that only 2 of the 10 states we visited had submitted annual evaluation reports for 3 of the fiscal years covered in our audit. These evaluation reports should contain essential information that could also help to direct scarce Federal funds to effective safety improvements.

RECOMMENDATIONS

On February 2, 2004, we briefed Department officials on the report's audit results and recommendations so the information could be considered in drafting the new national grade crossing safety action plan. We noted that the Department's draft action plan addressed three of the areas targeted for improvement that are presented in the final action plan and this report. The new action plan encourages states to install flexible traffic channelization devices and other cost-effective

physical barriers at grade crossings that are already equipped with active warning devices, but continue to have accidents. It also states that the Department will measure grade crossing safety in terms of accident rates, and assess progress by conducting a comprehensive evaluation of the plan's effectiveness.

In addition, we are recommending that the Department in implementing its new action plan for grade crossing safety:

1. Identifies the states that have the most grade crossing accidents year after year, particularly at crossings that have experienced multiple accidents. Each of these states should develop an action plan that identifies specific solutions for improving safety at those crossings that continue to have accidents.
2. Encourages states to enhance educational programs to increase safety awareness, develop legislation to modify risky driver behavior through photo enforcement, and increase traffic enforcement strategies, including imposing stricter penalties, to target motor vehicle drivers who violate grade crossing safety laws and warnings.
3. Encourages states to set annual goals for closing grade crossings and strengthen their financial incentives to local governments for closures.
4. Identifies a method for including FTA's data on light and heavy *rail transit* grade crossing accidents and fatalities in the new action plan's goals and statistics.
5. Promotes mandatory reporting requirements for railroads and states through rulemaking or legislation to improve the accuracy and completeness of FRA's national grade crossing inventory data, to identify high-risk crossings and strategies to mitigate risks. The data should also be used to monitor the effectiveness of the new action plan's strategies, identify needed changes, and make adjustments, as necessary. FRA and FHWA should work cooperatively to accomplish mandatory inventory reporting.
6. Ensures that states comply with the annual requirement to submit evaluation reports to FHWA on expenditures of Federal safety improvement funds, including the cost and safety benefits of crossing improvements.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

A draft of this report was provided to the Office of the Secretary and five Operating Administrations on April 15, 2004. The Department concurred with our audit results and all six of our recommendations, and agreed to take corrective actions. FRA and FHWA provided written comments in response to our draft report on May 26, 2004, and FTA responded on June 10, 2004. These Operating Administrations are primarily responsible for implementing the new grade crossing safety action plan. Their comments are presented in Appendices I, II, and III to this final report. The Federal Motor Carrier Safety Administration (FMCSA) and National Highway Traffic Safety Administration (NHTSA) informed us that they had no significant comments.

Recommendation 1. FRA and FHWA concurred with our recommendation to work with those states that continue to have the most accidents to develop individual state action plans beginning in 2005. Specifically, FRA will select a state that has had the most grade crossing collisions year after year, and with that state will develop a pilot state action plan. The pilot state action plan will determine why collisions continue to occur, particularly multiple collisions. After developing a successful pilot state action plan, FRA will use it with other states experiencing similar problems. FRA stated that it will encourage states to optimize their resources for an effective state action plan, including transferring available surface transportation funds into crossing safety programs.

FHWA agreed to continue to encourage states to address highway safety efforts in a strategic manner to optimize effective solutions with limited Federal funding. In addition, when FRA initiates its pilot state action plan, FHWA stated that it will coordinate with FRA to provide support to the states to strategically identify and address solutions to enhance highway safety.

We consider the proposed actions by FRA and FHWA to be reasonable. However, we are concerned that FRA has only committed to begin to develop its pilot state program and has not provided specific dates to start the pilot or to reach a decision on expanding this pilot program to other states. We request that a more specific timetable for these actions be provided. Further, because FRA stated that 9 of its 16 grade crossing managers/assistants are either located in or adjacent to the 6 states that continue to have the most accidents, we suggest that FRA consider starting a pilot action plan in more than one state in 2005.

Recommendation 2. FRA and FHWA concurred with our recommendation to encourage states to increase grade crossing safety by enhancing their educational

programs and initiatives. The Department will continue to support and work with Operation Lifesaver to improve educational efforts. The new action plan makes a commitment to continue educational efforts and use new avenues, such as the Internet, to effectively reach more drivers. Additionally, FRA plans to study the effects current driving laws have on reducing grade crossing violations, including the amounts of monetary fines. In 2006, FRA will draw on this information to produce model legislation that states may use to develop laws to reduce risky driver behavior. In addition, because the Department continues to encourage photo enforcement to effectively reduce risky driver behavior at crossings, FRA has included the use of photo enforcement as a means of reducing risk in its December 2003 Interim Final Rule on the Use of Locomotive Horns. FHWA also agreed to continue to work with the states and Operation Lifesaver to increase grade crossing safety awareness and encourage the use of legislation and/or penalties to modify risky driver behavior.

We consider the actions proposed by FRA and FHWA to be responsive and this recommendation resolved.

Recommendation 3. FRA and FHWA concurred with our recommendation to encourage states to set annual grade crossing closure goals. The Department will continue to promote crossing closures and encourage states to strengthen their financial incentives to local governments for crossing closures, where appropriate. The new action plan commits FRA to issuing a revised Crossing Consolidation Guide by the end of 2004. FRA stated that its grade crossing managers and assistant managers will continue to work with appropriate entities to close unnecessary crossings.

FHWA will also continue to work with the states to strategically plan for crossing closures, and the corresponding measures required for such actions. To encourage states to close additional grade crossings, FHWA will continue to use the federally-funded incentive program for grade crossing closures established in FY 1997, under Title 23 of the United States Code (USC), Section 130(i).

We consider the actions proposed by FRA and FHWA to be responsive and this recommendation resolved.

Recommendation 4. FRA and FTA concurred with our recommendation to include light and heavy *rail transit* accident statistics in the new action plan's goals and statistics. FRA agrees that the Department's grade crossing collision statistics should reflect FTA light and heavy rail transit data, as well as data from FRA. Further, FRA stated that it is appropriate that the new action plan's statistics include both transit and conventional rail accidents and fatalities. To evaluate the effectiveness of the new action plan, FRA will continue to work with FTA to

integrate the statistics used by both FRA and FTA. FTA also concurred with this recommendation and agreed to provide FRA with grade crossing accident and fatality statistics from its National Transit Database, in accordance with the Department's new action plan. Starting in 2005, the new action plan's statistics will include accidents and fatalities for both FRA and FTA.

We consider the proposed actions by FRA and FTA to be reasonable. However, FRA did not implement our 1999 recommendation to ensure the timely reporting of all grade crossing accidents after it agreed to work with FTA to incorporate rail transit data into the 1994 Action Plan's statistics. Although FRA and FTA have agreed to start jointly reporting grade crossing accident and fatality statistics in 2005, there were not enough specifics as to how this proposed action would be achieved, or when it would happen in 2005. Consequently, we are requesting a more detailed plan with milestones describing the methods to be used and the time period covered.

Recommendation 5. FRA, FHWA, and FTA concurred with our recommendation to promote mandatory reporting requirements for railroads and states to improve grade crossing inventory data. FRA agrees that mandatory reporting of grade crossing inventory data by states and railroads is essential. It will continue to promote mandatory reporting to the national grade crossing inventory database, which it maintains. In May 2004, FRA's rail-safety reauthorization bill, which contains mandatory inventory reporting requirements, was presented to Congress for consideration. FRA stated that it will use this updated grade crossing inventory data to monitor the effectiveness of the new action plan's initiatives, and make any necessary adjustments.

FHWA will support FRA by encouraging states to voluntarily submit annual grade crossing inventory data. Specifically, FHWA plans to begin reminding states of their responsibility to voluntarily report this data no later than September 30, 2004.

FTA fully supports the efforts of FRA and the Department to improve the accuracy and completeness of FRA's national grade crossing inventory. FTA is considering seeking FY 2006 funds for its *rail transit* Grade Crossing Characteristics Inventory Database Project, which is an initiative in the new action plan. This project will allow FTA to design and promote initiatives intended to reduce light and heavy rail transit grade crossing accidents.

We consider the proposed actions by FRA, FHWA, and FTA to be reasonable. However, we are concerned about how this recommendation will be implemented if Congress does not include requirements for mandatory grade crossing inventory reporting for railroads and states in FRA's rail-safety reauthorization legislation. Therefore, we request that FRA and FHWA provide us with their alternative plans

if the legislative proposal is not successful. Further, FRA will need to provide a plan for how the updated inventory data will be used to monitor grade crossing safety, along with a completion date for fully implementing this recommendation. In addition, we plan to monitor FTA's actions to implement its *rail transit* Grade Crossing Characteristics Inventory Database Project.

Recommendation 6. FHWA concurred with our recommendation to ensure that states submit annual evaluation reports on expenditures of Federal safety improvement funds. FHWA agreed to reinforce the importance of its requirement for states to submit annual Highway Safety Improvement Program (HSIP) evaluation reports. FHWA told us that by September 30, 2004, it will initiate a specific action to ensure that states provide their HSIP evaluation reports in a timely fashion, as required by Title 23, and that these reports are made available when requested.

We consider the actions proposed by FHWA to be reasonable. When completed, please provide us details on the action taken to ensure that states submit annual HSIP evaluation reports on time.

ACTION REQUIRED

The Department's proposed actions to address recommendations 2 and 3 in this report are responsive. However, we are requesting additional information on the proposed actions and target dates for implementing or completing recommendations 1, 4, 5, and 6. In accordance with Department of Transportation Order 8000.1C, we would appreciate receiving your written response within 30 calendar days for these four recommendations.

We appreciate the courtesies and cooperation of FRA, FHWA, FTA, FMCSA, NHTSA, and other Department representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-1992 or Debra S. Ritt, Assistant Inspector General for Surface and Maritime Programs, at (202) 493-0331.

EXHIBIT A. STATUS OF FRA'S ACTIONS TO IMPLEMENT THE 1999 OIG RECOMMENDATIONS

Recommendation 1: 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.

Status: Partially Completed (Photo enforcement and stricter penalties have not been completed.)

Action Taken by the Department: The new national action plan includes initiatives encouraging states to use flexible traffic channelization devices and other cost-effective physical barriers at grade crossings that are already equipped with active warning devices, but continue to have accidents.

Recommendation 2: Monitor, with FHWA, state expenditures of funds to determine whether the funds are used to reduce grade crossing accidents and fatalities.

Status: Not Completed

Action Taken by the Department: FHWA records state expenditures by the category of safety improvement (installing protective devices and eliminating hazards). Thus, the cost of each grade crossing safety improvement project is not readily available.

Recommendation 3: 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.

Status: Not Completed (Outside scope of this audit.)

Action Taken by the Department: FRA has not completed a plan to address trespassing prevention. However, FRA has started collecting demographic data to better identify the trespassing population. After the population is identified, FRA plans to produce targeted education, outreach, and law enforcement efforts to reduce trespassing.

Recommendation 4: Coordinate with FTA to ensure the timely reporting of rail transit grade crossing and trespassing accidents and integrate this information with FRA's database.

Status: Not Completed

Action Taken by the Department: FRA provided FTA with software for incorporating transit accidents into the FRA accident database. However, software incompatibilities have not been resolved.

Recommendation 5: Periodically reconcile the FRA accident database with the National Response Center rail accident reports to ensure that all grade crossing and trespassing accidents are included.

Status: Completed

Action Taken by the Department: FRA reconciles the FRA accident database with the National Response Center's rail accident reports, on a monthly basis, to ensure that all grade crossing and trespassing accidents are included in FRA's accident database.

Recommendation 6: Establish mandatory reporting requirements with FTA for states, railroads, and rail transit operators to ensure an accurate and complete national inventory of grade crossings.

Status: Not Completed

Action Taken by the Department: FRA's efforts to impose mandatory reporting requirements on states, railroads, and rail transit operators have been unsuccessful. In 1999 and 2002, Congress did not pass proposed legislation to mandate state and railroad reporting. FRA awaits action on its 2003 proposal, which does not include transit operators.

EXHIBIT B. SCOPE, METHODOLOGY, AND PRIOR AUDIT COVERAGE

Senator Joseph Lieberman, Ranking Member, Senate Committee on Governmental Affairs asked us to: (1) evaluate the progress the Department has made to improve grade crossing safety and meet its goal by the end of 2003; (2) assess the Department's 1994 Action Plan initiatives to improve grade crossing safety and actions to complete the 1999 OIG recommendations; and (3) identify best practices, research studies, and strategies that contribute to reductions in the number of accidents and fatalities at grade crossings.

To evaluate the progress the Department has made to improve grade crossing safety and meet its 10-year goals to reduce accidents and fatalities, we analyzed FRA's accident and inventory data from 1993, the year before the 1994 Action Plan began, through the final 2001 statistics reported by FRA. We also analyzed available preliminary accident statistics for 2002 and 2003. For each year from 1994 to 2003, we identified the states where accidents most frequently occurred and grade crossings that had more than one collision. To further assess progress, we analyzed FRA's inventory data to identify the number of grade crossings closed and opened each year from 1994 to 2003. We also interviewed state highway officials about recently completed and planned grade crossing safety improvement projects.

To assess the results achieved by the Department's 1994 Action Plan, we conducted audit work at the headquarters offices of FRA, FHWA, FMCSA, FTA, and NHTSA. We also contacted all of the FRA Regional offices and conducted work at 17 FHWA Division offices. Our audit work covered the actions each Operating Administration had taken to address the 50 grade crossing safety initiatives and the Department's actions to implement the 1999 OIG recommendations. To further assess progress, we obtained the views of railroad and state officials responsible for grade crossing safety about the Department's efforts to improve safety. We also discussed Federal and state efforts to improve grade crossing safety with the NTSB. Exhibit E contains a list of organizations contacted and sites visited.

To identify best practices, research studies, and strategies that are contributing to reductions in the number of accidents and fatalities at grade crossings, we used a statistical probability proportional-to-size sample to select 10 states. We reviewed grade crossing safety programs in Delaware, Florida, Georgia, Illinois, Kentucky, Louisiana, Mississippi, Tennessee, Texas, and Virginia. During our visits, we interviewed FRA, FHWA, and state highway officials responsible for grade crossing safety, and visited selected crossings.

We interviewed responsible FHWA and state highway officials about the improvements made at the identified crossings. We also interviewed representatives of the major railroad companies, the Association of American Railroads, and Operation Lifesaver, to identify best practices and strategies that had helped to reduce grade crossing accidents and fatalities. Further, we reviewed research studies provided by the Volpe National Transportation Systems Center that focused on improving grade crossing safety.

We conducted this audit between February 2002 and March 2004, in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States.

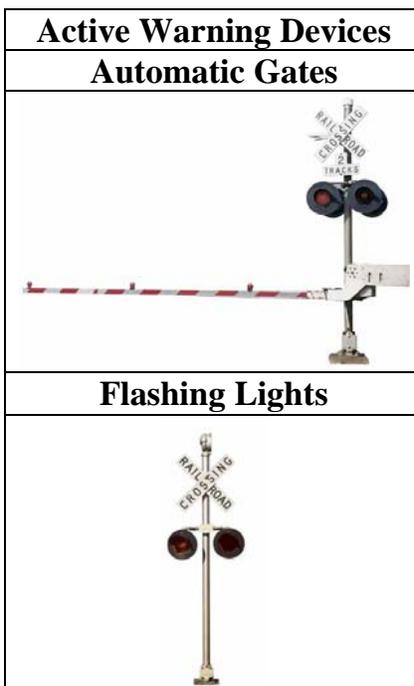
Prior Audit Coverage

On September 30, 1999, the OIG report on Rail-Highway Grade Crossing Safety, Report No. RT-1999-140, disclosed that the Department's efforts had reduced the number and the rate of grade crossing accidents and fatalities during the first half of the 1994 Action Plan. However, to make further progress, the OIG recommended that FRA focus on proven cost-effective strategies, improve the program's accident and inventory data, and better monitor state spending of Federal funds. Exhibit A provides the status of the 1999 OIG recommendations.

EXHIBIT C. BACKGROUND

Nationwide, there were 247,232 grade crossings in 2003, of which 151,346 or 61 percent were maintained by public transportation authorities (public) and 95,886 or 39 percent were on roadways owned by private companies or citizens (private). Typically, public grade crossings are protected by a combination of active warning devices, passive warnings, or both. Active warning devices—automatic gates, flashing lights, highway traffic signals, and other automatic devices—are activated by approaching trains and warn motorists and pedestrians to yield to train traffic. Passive warnings consist of crossbucks, stop signs, advanced warning signs, pavement markings, and other non-train activated warnings (flag-waving railroad or law enforcement personnel) that advise motorists of the presence of a grade crossing. Some of the warnings commonly installed at grade crossings are shown below.

Pictures of Types of Warning Devices Commonly Installed at Grade Crossings



Source: Operation Lifesaver.



Source: Operation Lifesaver.

The Department provides set-aside funding to states for grade crossing safety improvements, primarily through FHWA, under Title 23, USC, Section 130, also known as the Section 130 program. For public grade crossings, states are required to use at least half of the Section 130 set-aside funds to install protective devices (automatic gates, flashing lights, and warning signs). Although the remaining funds can also be used to install protective devices, these funds are often used for crossing closures, roadway and railroad track separations, or other projects that eliminate hazards at crossings. Annual set-aside funding for crossing safety improvements remained at about \$155 million from FY 1999 through FY 2003, under the Transportation Equity Act for the 21st Century (TEA-21). In addition to the Section 130 funding set-aside, states may spend other Federal surface transportation funds to eliminate hazards and improve highway and grade crossing safety, and enhance education and law enforcement efforts.¹² Further, working with Operation Lifesaver, the Department promotes educating the public on railroad safety, disseminating information on new engineering technology, and increasing law enforcement at grade crossings.

FRA and FHWA oversee grade crossing safety, but the responsibility for improving crossings and eliminating hazards rests primarily with the states. States are required to develop and implement, on a continuing basis, a highway safety improvement program with the overall objective of reducing accidents and decreasing the potential for accidents on all roadways.¹³ To predict the likelihood of an accident occurring at

¹²Funding under the Hazard Elimination Program (Title 23, USC, Section 152) is used to eliminate hazardous conditions on highways, public roads, and at grade crossings. Under Title 23, USC, Section 402, funds are provided through NHTSA and can be used for approved grade crossing safety categories, such as educational activities.

¹³Under Title 23 of the Code of Federal Regulations, Part 924, states are responsible for all highway safety improvements.

any one grade crossing, the Department requires each state to use a mathematical formula to develop a priority listing of crossings having a high probability for trains colliding with motor vehicles or pedestrians. The formulas differ because state safety officials include variables considered relevant to identifying high-risk grade crossings in their states, such as accident history, average daily train and motor vehicle traffic, train speeds, number of tracks, and types of warning devices installed. Some states consider additional factors, such as the number of school buses and trucks transporting hazardous materials that drive over grade crossings.

EXHIBIT D. STATUS OF 1994 ACTION PLAN SAFETY INITIATIVES

FHWA Safety Initiative 1: Checklist

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Completed

Action Taken by the Department: 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 devices, site improvements options, and consolidation of crossings. The checklist was provided to FRA and FHWA field offices in May 1995.

FHWA Safety Initiative 2: Commercial Driver's License

Major Strategy Category: Enhance Enforcement of Traffic Laws at Crossings

Status: Completed

Action Taken by the Department: FHWA and the American Association of Motor Vehicle Administrators sought to elevate grade crossing violations to “serious” traffic violations for commercial driver’s license holders, as required by 1995 legislation. FHWA issued a notice of proposed rulemaking in March 1998. FHWA issued the final rule, which became effective on October 4, 1999.

FHWA Safety Initiative 3: Corridor Review Participation

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Terminated

Action Taken by the Department: This initiative would have established an incentive program for state and local governments to participate in corridor reviews. A Department bill was offered in 1994, but was not considered by Congress.

FHWA Safety Initiative 4: Distribution of Funds

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Completed

Action Taken by the Department: The Department proposed revising the distribution formula in FY 1996 and FY 1997 for grade crossing safety improvements 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.

FHWA Safety Initiative 5: Incentives for Crossing Consolidation - Cash Payments

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Completed

Action Taken by the Department: The Highway-Rail Grade Crossing Program (Section 130) was modified to allow using \$7,500 per crossing from Surface Transportation Program funds for incentive payments to local governments for grade crossing closures.

FHWA Safety Initiative 6: Incentives for Crossing Consolidation – Eligibility for 100 Percent Federal Funding

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Completed

Action Taken by the Department: Under legislation requested by the Department, closure projects are eligible for 100 percent Federal funding. The necessary legislation was included in the Department’s FY 1997 Appropriations Bill, and the Highway-Rail Grade Crossing Program was modified to allow grade crossing closures be eligible for 100 percent Federal funding.

FHWA Safety Initiative 7: Integrated Intermodal Transportation Planning**Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Completed**Action Taken by the Department:** 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.**FHWA Safety Initiative 8: Signs, Signals, Lights and Markings - Manual on Uniform Traffic Control Devices****Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed**Action Taken by the Department:** The Millennium Edition of the Manual on Uniform Traffic Control Devices (MUTCD) was published in December 2000. The Millennium Edition of the MUTCD included several changes to part 8 – Traffic Controls for Highway-Rail Grade Crossings.**FHWA Safety Initiative 9: National Highway System – Plan upgrade or eliminate crossings****Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Ongoing**Action Taken by the Department:** FHWA Division offices work with states to ensure that grade crossing issues are considered in the planning process. FHWA encourages the states to focus on eliminating crossings or installing active warning devices at National Highway System grade crossings, particularly at intersections with principal rail lines.**FHWA Safety Initiative 10: National Highway-Rail Crossing Inventory – Promote Updating****Major Strategy Category:** Improve Data and Research Efforts**Status:** Ongoing**Action Taken by the Department:** The National Inventory Database is a computer-based inventory of all grade crossings in the United States and is maintained by FRA. FHWA periodically encourages the states to keep their crossing inventory current, as required by 23 CFR 924. The most recent reminder was a memo that was sent to field offices on March 8, 2002.**FHWA Safety Initiative 11: Operation Lifesaver Matching Funds****Major Strategy Category:** Expand Public Education and Operation Lifesaver Activities**Status:** Terminated**Action Taken by the Department:** The Department proposed increasing funds to Operation Lifesaver with a non-public match required, but the Department's 1994 Appropriations Bill did not enact the proposal.**FHWA Safety Initiative 12: Promote Stop Signs****Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Completed**Action Taken by the Department:** FHWA published "Guidance on Traffic Control Devices at Highway-Rail Grade Crossings" in November 2002. This publication includes guidelines on installing stop signs at grade crossings.**FHWA Safety Initiative 13: Signs, Signals, Lights and Markings - Signs and Signals****Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed**Action Taken by the Department:** The MUTCD included a new requirement for retroreflective materials on the backs of crossbucks and on the front and back of their support posts.**FHWA Safety Initiative 14: Truck and Bus Involved Accidents – "Trucker on the Train" Program****Major Strategy Category:** Expand Public Education and Operation Lifesaver Activities**Status:** Completed**Action Taken by the Department:** FHWA, FRA, American Trucking Associations, and Operation Lifesaver developed this program. In November 1994, Operation Lifesaver began hosting trucking executives on locomotives to view dangerous rail crossings first hand. In 2001, Operation Lifesaver held 8 "Trucker on the Train" events.**FHWA Safety Initiative 15: Truck and Bus Involved Accidents – Advisory Bulletin****Major Strategy Category:** Expand Public Education and Operation Lifesaver Activities**Status:** Completed**Exhibit D. Status of 1994 Action Plan Safety Initiatives**

Action Taken by the Department: In February 1994, FHWA sent a bulletin to trade press about grade crossing safety.

FHWA Safety Initiative 16: Truck and Bus Involved Accidents - National Safety Organization

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Ongoing

Action Taken by the Department: FHWA communicated grade crossing safety issues to industry and law enforcement officials. The National Safety Council published pamphlets in 1995 and 1997. Operation Lifesaver produced two videos in 2000 and one in 2002, and continues to educate truck, bus, law enforcement, and emergency responders.

FHWA Safety Initiative 17: Truck and Bus Involved Accidents - On-Guard Notice

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Completed

Action Taken by the Department: 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.

FHWA Safety Initiative 18: Truck and Bus Involved Accidents - On-Site Compliance Reviews

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Ongoing

Action Taken by the Department: A memorandum encouraging continued discussion and distribution of rail safety materials was sent in December 1994. Currently, FMCSA reminds motor carriers about the risks at grade crossings during compliance reviews.

FHWA Safety Initiative 19: Truck and Bus Involved Accidents - Operation Lifesaver

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Ongoing

Action Taken by the Department: Operation Lifesaver educates truck and bus drivers annually. For example, in 2003, Operation Lifesaver educated 133,492 school bus and professional drivers and a total of 1.3 million people attended school bus and "Trucker on the Train" events.

FHWA Safety Initiative 20: Truck and Bus Involved Accidents - Public Service Print Advertisements

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Completed

Action Taken by the Department: 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.

FHWA Safety Initiative 21: Update Highway-Rail Crossing Handbook

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Ongoing

Action Taken by the Department: FHWA was updating the 1986 version of the handbook and the revision was expected to be completed in 2000. However, the update was put on hold until the MUTCD was completed. A contractor continues to work on the publication and completion is expected in 2005.

FHWA Safety Initiative 22: Upgrade Signs and Markings – Improve conspicuity

Major Strategy Category: Enhance Rail Corridor Crossing Reviews and Improvements

Status: Completed

Action Taken by the Department: FHWA has sought to make signs and markings more conspicuous at crossings through use of long-lasting reflective materials. The MUTCD and "Guidance on Traffic Control Devices at Highway-Rail Grade Crossings" (published in November 2002) require the use of retroreflective materials. The states continue to update their signage.

FHWA Safety Initiative 23: Vegetation Clearance**Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Ongoing**Action Taken by the Department:** FHWA's Guidance on Traffic Control Devices at Highway-Rail Grade Crossings addresses sight distance as one of the three essential elements required for "safe" passage through at-grade crossings. In addition, FHWA continues to periodically encourage states to clear vegetation around grade crossings.**FRA Safety Initiative 24: 1-800 Computer Answering System****Major Strategy Category:** Improve Data and Research Efforts**Status:** Ongoing**Action Taken by the Department:** Class I railroads (U.S. freight railroads with operating revenue in excess of \$272 million a year) have rail systems covering about 70 percent of the grade crossings in the United States. FRA has changed its emphasis to developing software that the small and medium size railroads will be able to use. The software will allow one centralized call-in center to handle calls from all the participating railroads. The software is being assessed in three pilot projects and will be made available for use by states and railroads.**FRA Safety Initiative 25: Compilation of State Laws and Regulations on Matters Affecting Highway-Rail Crossing****Major Strategy Category:** Enhance Enforcement of Traffic Laws at Crossings**Status:** Completed**Action Taken by the Department:** FRA, working with FTA, NHTSA and FHWA, updated the 1983 edition of state laws and regulations and distributed this second edition in August 1995. Another update has been completed and was published in January 2000. The new edition is available on the FRA website.**FRA Safety Initiative 26: Crossing Consolidation and Closure Case Studies****Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Completed**Action Taken by the Department:** FRA set forth guidelines and strategies based upon 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 (AASHTO) also published a report in March 1995. In November 2002, FHWA issued Guidance on Traffic Control Devices at Highway-Rail Grade Crossings, including a section on crossing closures.**FRA Safety Initiative 27: Define Categories****Major Strategy Category:** Increase Safety at Private Crossings**Status:** Ongoing**Action Taken by the Department:** FRA is defining categories and minimum standards for private crossings. Statistics and comments from previous safety inquiries are being reviewed. FRA plans to address the issue of private crossings upon completion of the "Use of Locomotive Horns at Highway-Rail Grade Crossings" rule.**FRA Safety Initiative 28: Host Research Roundtables/ Workshops - Defense Conversion Fair****Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed**Action Taken by the Department:** As part of the Department's 1995 Technology Fair, FRA hosted an exchange program to familiarize defense firms with industry needs.

FRA Safety Initiative 29: Innovative Technology - Automated Video Image Analysis**Major Strategy Category:** Improve Data and Research Efforts**Status:** Ongoing

Action Taken by the Department: Automated video image analysis technology was demonstrated through the Ideas Deserving Exploratory Analysis program and FRA served on the steering committee. Video imaging technology was used on a trial basis to determine the proper functioning of automatic warning devices and vehicle detection at crossings. The feasibility of using this technology to signal an approaching train of a vehicle stopped on the track was tested in Florida. In April 2002, a report was issued finding that this technology "is an important experimental platform that can be used to explore future uses of video and real-time communications to improve crossing safety."

FRA Safety Initiative 30: Locked Gate at Private Crossings**Major Strategy Category:** Increase Safety at Private Crossings**Status:** Ongoing

Action Taken by the Department: FRA and FHWA will demonstrate gates with controlled locks at private highway-rail crossings. Demonstrations are planned in New York, which has received a \$275,000 grant, and Oregon, which has selected a demonstration site. Neither project has announced an installation date.

FRA Safety Initiative 31: National and Community Service**Major Strategy Category:** Expand Public Education and Operation Lifesaver Activities**Status:** Terminated

Action Taken by the Department: 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.

FRA Safety Initiative 32: Principal Railroad Lines**Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Completed

Action Taken by the Department: FRA defined a national system of principal railroad lines, developed maps, and encouraged comprehensive engineering reviews of these lines and their crossings.

FRA Safety Initiative 33: Host Research Roundtables/Workshops - Research Workshops**Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed

Action Taken by the Department: The Department's National Transportation Systems Center held a workshop in April 1995 to discuss current and projected research needs. A report was issued on the proceedings.

FRA Safety Initiative 34: Resource Allocation Procedure**Major Strategy Category:** Improve Data and Research Efforts**Status:** Ongoing

Action Taken by the Department: FRA proposed to recalculate the accident prediction formula and rebuild the accident prediction model. During peer review of proposed new procedure, it was decided to retain the original. The accident prediction formula was statistically analyzed in 1999 and compared to a re-estimated model developed by the researcher. It was determined that the existing formula was just as valid as the re-estimated formula and that there would not be any added value in changing the existing formula. The current formulas are updated every several years.

FRA Safety Initiative 35: Responsibilities for Selection and Installation of Signal Devices at Public Crossings**Major Strategy Category:** Enhance Rail Corridor Crossing Reviews and Improvements**Status:** Completed

Action Taken by the Department: The MUTCD states that the responsibility for the design, placement, operation, maintenance, and uniformity of traffic control devices is the public agency or the official having jurisdiction. FHWA published "Guidance on Traffic Control Devices at Highway-Rail Grade Crossings" to further assist engineers in selecting traffic control devices at grade crossings.

FRA Safety Initiative 36: Rules of Evidence**Major Strategy Category:** Enhance Enforcement of Traffic Laws at Crossings**Status:** Completed**Action Taken by the Department:** 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.**FRA Safety Initiative 37: Safety Inquiry (Defining Minimum Safety Standards at Private Crossings)****Major Strategy Category:** Increase Safety at Private Crossings**Status:** Ongoing**Action Taken by the Department:** FRA plans to hold an informal safety inquiry about standards for certain private crossings upon completion of the "Use of Locomotive Horns at Highway-Rail Grade Crossings" rule.**FRA Safety Initiative 38: Safety Inquiry (Enforcing Railroad Operating Rules)****Major Strategy Category:** Enhance Enforcement of Traffic Laws at Crossings**Status:** Ongoing**Action Taken by the Department:** FRA continues to evaluate whether or not to hold informal meetings about standing rail equipment near grade crossings. Inspection, testing, and maintenance regulations (49 CFR Part 234) prohibit placing rail equipment where it will interfere with the operation of automatic warning devices.**FRA Safety Initiative 39: Signs, Signals, Lights and Markings - Train Horns****Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed**Action Taken by the Department:** FRA published the Interim final rule "Use of Locomotive Horns at Highway-Rail Grade Crossings" on December 18, 2003.**FRA Safety Initiative 40: Signs, Signals, Lights and Markings - Locomotive Conspicuity****Major Strategy Category:** Improve Data and Research Efforts**Status:** Completed**Action Taken by the Department:** FRA developed standards and rules for alerting lights on locomotives. Regulations required that all locomotives be equipped by December 1997. Further, the MUTCD includes changes to improve signage at highway-rail grade crossings. Changes include the application of reflectors to front and back sides of the post for the crossbuck signs, the standardization of four-quadrant gate automatic warning devices, and the inclusion of an emergency notification sign.**FTA Safety Initiative 41: Innovative Technology - Radar Activation System for Light-Rail Crossing Warning Devices****Major Strategy Category:** Improve Data and Research Efforts**Status:** Terminated**Action Taken by the Department:** FTA sought to evaluate and demonstrate the feasibility of a radar-based system to detect trains and approach speed. Administrative and contract problems delayed the demonstration. A substitute project was initiated to assess 4-quadrant gates using video on the Massachusetts Bay Transportation Authority's new Old Colony Line.**FTA Safety Initiative 42: Light-Rail Accident Statistics****Major Strategy Category:** Improve Data and Research Efforts**Status:** Ongoing**Action Taken by the Department:** FTA broadened its Safety Management Information System in January 2002, to collect additional data on transit and highway-rail grade crossing accidents. FTA and FRA continue to work on ways to incorporate light-rail accident data into FRA's accident database.

FTA Safety Initiative 43: Signs, Signals, Lights and Markings - Light-Rail Crossing Gates for Left Turn Lanes

Major Strategy Category: Improve Data and Research Efforts

Status: Completed

Action Taken by the Department: FTA investigated safety devices for crossings where there are streets running parallel to light-rail transit, or railroad tracks where motorists were permitted to make left turns across the tracks. The final report, "Use of Left Turn Gates at Highway Railroad Crossing on the Los Angeles Metro Blue Line," was issued in December 2002.

NHTSA Safety Initiative 44: Accident Severity

Major Strategy Category: Improve Data and Research Efforts

Status: Completed

Action Taken by the Department: NHTSA completed a study on accident severity statistics in February 1995. A memorandum report was prepared but not published.

NHTSA Safety Initiative 45: Demographics

Major Strategy Category: Improve Data and Research Efforts

Status: Completed

Action Taken by the Department: NHTSA published a study of fatality statistics for grade crossing accidents in November 1994.

NHTSA Safety Initiative 46: Driver Training Materials

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Completed

Action Taken by the Department: NHTSA and the American Association of Motor Vehicle Administrators developed a new model driver's license manual in 1998, with a section describing common grade crossing warning signs, such as the crossbuck.

NHTSA Safety Initiative 47: Marketing Materials Plan

Major Strategy Category: Expand Public Education and Operation Lifesaver Activities

Status: Ongoing

Action Taken by the Department: NHTSA, FHWA, FTA, FRA, and Operation Lifesaver continue to work together to develop programs and materials to promote rail safety.

NHTSA Safety Initiative 48: Outreach to Judiciary

Major Strategy Category: Enhance Enforcement of Traffic Laws at Crossings

Status: Ongoing

Action Taken by the Department: Articles have been published in the National Traffic Law Center newsletter. Outreach presentations were made at a Traffic Court Judges Seminar. FRA published and distributed the "Partnering in Safety: Judicial Outreach" brochure in 1998, and in 2000, FRA participated in the making of "It's Your Call," which is a video specifically targeting the judicial community.

NHTSA Safety Initiative 49: Police Officer Detail

Major Strategy Category: Enhance Enforcement of Traffic Laws at Crossings

Status: Ongoing

Action Taken by the Department: FRA employs one part-time law enforcement liaison, who conducts extensive outreach activities to both the law enforcement and judicial communities in Texas and other states in Region 5. Regional programs were established to permit additional law enforcement officers to work with FRA across the nation; however, emphasis on security and budgetary restraints has limited officer availability. In coordination with Operation Lifesaver, FRA distributed over 1,000 copies of a new professional education video entitled "Roll Call" to law enforcement entities across the United States.

NHTSA Safety Initiative 50: Section 402 Funds (23 USC)

Major Strategy Category: Enhance Enforcement of Traffic Laws at Crossings

Status: Ongoing

Action Taken by the Department: States can request Section 402 funds to promote targeted public education, engineering, and law enforcement strategies within a comprehensive program approach to increase grade crossing safety. In 2002, 7 states obligated Section 402 funds for grade crossing safety.

EXHIBIT E. ORGANIZATIONS CONTACTED OR SITES VISITED

FEDERAL RAILROAD ADMINISTRATION

Associate Administrator for Safety

FRA Regional Offices

California	Georgia	Illinois	Massachusetts
Missouri	Pennsylvania	Texas	Washington

FEDERAL HIGHWAY ADMINISTRATION

Office of Highway Safety

Federal Highway Division Offices

Arizona	California	Connecticut	Delaware
Florida	Georgia	Illinois	Indiana
Kentucky	Louisiana	Michigan	Mississippi
Missouri	Tennessee	Texas	Virginia
Washington			

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION

FEDERAL TRANSIT ADMINISTRATION

STATE DEPARTMENTS OF TRANSPORTATION

Arizona	California	Connecticut	Delaware
Florida	Georgia	Illinois	Indiana
Louisiana	Michigan	Mississippi	Missouri
North Carolina	Tennessee	Texas	Virginia
Washington			

OTHER STATE AGENCIES

California Public Utilities Commission

Kentucky Transportation Cabinet

RAILROADS CONTACTED

Burlington Northern Santa Fe

Canadian National

CSX Transportation

Kansas City Southern Railway Company

National Railroad Passenger Corporation (AMTRAK)

Norfolk Southern

Union Pacific

OTHER ORGANIZATIONS CONTACTED

American Association of State Highway and Transportation Officials

Association of American Railroads

National Transportation Safety Board

Operation Lifesaver, Incorporated

 Connecticut Operation Lifesaver

 Indiana Operation Lifesaver

Volpe National Transportation Systems Center

EXHIBIT F. MAJOR CONTRIBUTORS TO THIS REPORT

THE FOLLOWING INDIVIDUALS CONTRIBUTED TO THIS REPORT.

<u>Name</u>	<u>Title</u>
Debra S. Ritt	Assistant Inspector General for Surface and Maritime Programs
Michael E. Goldstein	Program Director
Brenda R. James	Project Manager
Wendy M. Harris	Senior Auditor
Nathaniel K. Adusei	Auditor
Josephine E. Bates	Auditor
Hillary H. Larson	Analyst
Mark A. Stiglitz	Analyst
Petra Rose	Senior Statistician
Harriet Lambert	Writer-Editor

APPENDIX I. FEDERAL RAILROAD ADMINISTRATION COMMENTS



U.S. Department
of Transportation

Federal Railroad
Administration

Memorandum

Subject: ACTION: FRA Comments to the Draft Report
on Audit of the Highway-Rail Grade Crossing
Safety Program- Project No. 02M3006M000

Date: MAY 26 2004

From: 
Allan Rutter
Administrator

Reply to

Attn. of: JA-40

To: Alexis M. Stefani
Principal Assistant Inspector General for Auditing and Evaluation

The FRA has reviewed the draft audit report prepared by the Office of Inspector General entitled, "Audit of the Highway-Rail Grade Crossing Safety Program." As stated in the report, the Department has made significant strides to accomplish the tasks in the 1994 Rail-Highway Safety Action Plan. We have made the reduction of casualties caused by collisions at highway-rail grade crossings and trespasser incidents one of our highest priorities. Each year, 95 percent of all rail-related fatalities can be attributed to grade crossing collisions and trespasser fatalities. Along with the modal administrations, railroads, rail labor, State and local governments, and Operation Lifesaver, Inc., FRA has worked to reduce grade crossing fatalities by 48 percent since 1994.

We will continue our efforts to reduce these needless casualties. An updated Action Plan will soon be delivered to Congress and will be used by the Department as a means to continue the reduction of grade crossing fatalities. The audit team from the Office of Inspector General made several recommendations that are a part of the updated Action Plan. FRA looks forward to working with all of its partners to improve safety at the Nation's highway-rail grade crossings and on railroad rights-of-way.

The following are our responses to the OIG recommendations.

FRA Response to Recommendations

OIG Recommendation 1: Identify the states that have the most grade crossing accidents year after year, particularly at crossings that have experienced multiple accidents. Each of these states should develop an Action Plan that identifies specific solutions for improving safety at those crossings that continue to have accidents.

FRA Response: We concur with the recommendation. The Department recognizes the importance of a planned program in reducing the number of motor vehicle incidents, including collisions between motor vehicles and trains.

In 2005, FRA will begin development of a pilot action plan with one of the States that has the most grade crossing collisions year after year to determine why collisions continue to occur, particularly at crossings that have experienced multiple collisions. A successful pilot will then be used with other States with similar problems. States will be encouraged to optimize their resources for an effective State Action Plan including flexing available surface transportation funds into crossing safety programs.

The Department recognizes that the same States have the most grade crossing collisions each year. These States lead the Nation in the number of grade crossings, train traffic, and average daily highway traffic over the crossings, and therefore have the greatest exposure to the risk of crossing collisions. Nine of FRA's sixteen grade crossing managers and assistant managers are either located in, or directly adjacent to, the seven States identified as having the highest number of collisions at public crossings in 2003. These managers work closely with the appropriate State agencies, railroads, cities, Operation Lifesaver, and other groups to improve crossing safety. The allocation formula for Section 130 funds also provides higher funding levels to these States.

OIG Recommendation 2: Encourage States to enhance educational programs to increase safety awareness, develop legislation to modify risky driver behavior through photo enforcement, and increase traffic enforcement strategies, including imposing stricter penalties, to target motor vehicle drivers who violate grade crossing safety laws and warnings.

FRA Response: We concur with the recommendation. The Department has long recognized the importance that education of drivers has in improving crossing safety. The Department will continue to support and work with Operation Lifesaver to improve educational efforts. The new Action Plan makes a commitment to continue educational efforts and to look towards new avenues, such as the Internet, to effectively reach more drivers.

FRA and FHWA have efforts underway to study the effects that current driving laws, including fine amounts, have on reducing crossing violations. This information will be used in 2006 to produce model State legislation that maybe used by States to develop legislation to reduce risky driver behavior.

As part of the first Action Plan, model legislation for photographic enforcement was published in the National Cooperative Highway Research Program Legal Research Digest. The Department continues to encourage the use of photo enforcement as an effective means of reducing risky driver behavior at crossings. FRA has included the use of photo enforcement as a means of reducing risk in its Interim Final Rule on the Use of Locomotive Horns.

OIG Recommendation 3: Encourage States set annual goals for closing grade crossings and strengthen their financial incentives to local governments for closures.

FRA Response: We concur with the recommendation. The Department recognizes the value of encouraging states to close crossings as a means to reduce the number of crossing collisions. The closure of redundant crossings and directing traffic to crossings that have better warning devices is an important means to improving crossing safety.

The Department will continue to promote crossing closures and will encourage States to strengthen their financial incentives to local governments for crossing closures where appropriate. The new Action Plan commits FRA to issuing a revised Crossing Consolidation Guide by the end of 2004. FRA's crossing managers and assistant managers actively promote crossing closures and will continue working with appropriate entities to close unnecessary crossings.

OIG Recommendation 4: Identifies a method for including FTA's data on light and heavy rail transit grade crossing accidents and fatalities into the new Action Plan's goals and statistics.

FRA Response: We concur with the recommendation. As with the similar recommendation in the previous audit, FRA agrees that departmental highway-rail grade crossing collision statistics should reflect FTA light- and heavy-rail transit data, as well as data from FRA. It is appropriate that both transit and conventional rail incidents be included in the Action Plan's statistics. FRA will continue to work with FTA to integrate both agencies' statistics for evaluating the effectiveness of the Action Plan. The Action Plan's statistics will be combined starting in 2005.

OIG Recommendation 5: Promotes mandatory reporting requirements for railroads, states, and transit operators through rulemaking or legislation to improve the accuracy and completeness of FRA's national grade crossing inventory data, to identify high-risk crossings and strategies to mitigate risks. FRA, FHWA, and FTA should work cooperatively to accomplish mandatory inventory reporting. The data should also be used to monitor the effectiveness of the new Action Plan's strategies, identify needed changes, and make adjustments, as necessary.

FRA Response: We concur with the recommendation. FRA agrees that mandatory reporting of crossing inventory data by States and railroads is essential. FRA has been and will continue to promote mandatory reporting by States and railroads to the national grade crossing inventory, which FRA maintains. A rail-safety reauthorization bill that contains such

mandatory reporting requirements is currently pending action in Congress. FRA's Interim Final Rule on the Use of Locomotive Horns at Public Crossings will require periodic updating of crossing inventory information for crossings located within quiet zones. FRA will use this updated data to monitor the effectiveness of the Action Plan initiatives and make any necessary adjustments.

Regarding rail transit crossings, FRA agrees it would be useful for FTA to pursue mandatory reporting of crossing inventory data by States and transit operators.

OIG Recommendation 6: Ensures that states comply with the annual requirement to submit evaluation reports to FHWA on expenditures of Federal safety improvement funds, including the cost and safety benefits of crossing improvements.

FRA Response: To be provided by FHWA.

Safety is the top priority at FRA, and the reduction of crossing-collision and trespasser casualties is one of our major goals. We appreciate the opportunity to review this document and provide comments.

APPENDIX II. FEDERAL HIGHWAY ADMINISTRATION COMMENTS



Memorandum

Subject: INFORMATION: FHWA Response to OIG Draft Report On
Audit of the Highway–Rail Grade Crossing Safety Program

Date: May 26, 2004

From: 
Michael J. Vecchietti
Associate Administrator for Administration

In Reply Refer To: HSA-10

To: Alexis M. Stefani
Principal Assistant Inspector General
For Auditing and Evaluation (JA-40)

The FHWA appreciates the opportunity to review this document and provide comments. Safety is a top priority for the FHWA and is one of our three Vital Few goals. The FHWA will continue to encourage transportation agencies at the State, regional, and local levels to enhance safety at highway-rail grade crossings. Federal-aid safety funds are provided to the States (under 23 USC 130) to facilitate the decrease of incidents at grade crossings. The FHWA is working with States to utilize this funding source. The Federal share may be up to 100 percent of the project cost; however, other funding opportunities are also available to the highway authorities and railroads to allow a “buy-in” interest in safety.

The Federal Railroad Administration (FRA) has also provided comments that reflect the collaborative efforts of our agencies. Additionally, I have included further comments on the FHWA-related audit recommendations.

Recommendation 1: That the Department ensures its new action plan for national grade crossing safety “identifies the states that have the most grade crossing accidents year after year, particularly at crossings that have experienced multiple accidents. Each of these states should develop an action plan that identifies specific solutions for improving safety at those crossings that continue to have accidents.”

Response: The FHWA concurs with this recommendation. The Department has been working with transportation-related stakeholders to encourage the use of various tools to enhance safety in an efficient and effective manner. The FHWA will continue to encourage States to address highway safety efforts in a strategic manner to optimize effective solutions with limited funding. Additionally, once the FRA initiates their pilot action plan, the FHWA will coordinate with FRA to provide support to the States to strategically identify and address solutions to enhance highway safety.



Recommendation 2: That the Department ensures its new action plan for national grade crossing safety “encourages states to enhance educational programs to increase safety awareness, develop legislation to modify risky driver behavior through photo enforcement, and increase traffic enforcement strategies, including imposing stricter penalties, to target motor vehicle drivers who violate grade crossing safety laws and warnings.”

Response: The FHWA concurs with this recommendation. The Department has recognized that driver behavior is a significant contributing factor for incidents on America’s highways. Activities, such as outreach and education, strengthen the communication of grade crossing safety. The FHWA will continue to work with the States and Operation Lifesaver to increase awareness of the dangers at grade crossings, and to encourage the appropriate use of legislation and/or penalties for road users who operate in a risky manner.

Recommendation 3: That the Department’s new action plan for national grade crossing safety “encourages states set annual goals for closing grade crossings and strengthen their financial incentives to local governments for closures.”

Response: The FHWA concurs with this recommendation. The Department has encouraged crossing closures; however, there has been some resistance to close additional crossings in some communities. The FHWA will also continue to work with the States to strategically plan for crossing closures, and the corresponding measures required to take action. Through the Department of Transportation and Related Agencies Appropriations Act of 1997 (Public Law 104-205), a federally-funded incentive program was established for grade crossing closures. This program has been incorporated in Title 23 of the United States Code, Section 130(i). The FHWA, FRA, and States have been working together to resolve the local municipalities’ concerns on crossing closures, and will continue to assist with this effort.

Recommendation 5: That the Department ensures its new action plan for national grade crossing safety “promotes mandatory reporting requirements for railroads, states, and transit operators through rulemaking or legislation to improve the accuracy and completeness of FRA’s national grade crossing inventory data, to identify high-risk crossings and strategies to mitigate risks. FRA, FHWA, and FTA should work cooperatively to accomplish mandatory inventory reporting. The data should also be used to monitor the effectiveness of the new action plan’s strategies, identify needed changes, and make adjustments, as necessary.”

Response: We concur with this recommendation with FHWA in a support role to FRA in its rulemaking process. The FHWA will also provide support by encouraging the States to submit crossing inventory data to the FRA annually. This effort to remind States of their reporting responsibilities will begin no later than September 30, 2004.

Recommendation 6: That the Department’s new action plan for national grade crossing safety “ensures that states comply with the annual requirement to submit evaluation reports to FHWA on expenditures of Federal safety improvement funds, including the cost and safety benefits of crossing improvements.”

Response: The FHWA concurs with this recommendation. The Highway Safety Improvement Program (HSIP) Report provides the information necessary to provide the focus and direction States need to strategically and efficiently utilize funds to enhance highway safety. The FHWA is concerned about the level of responsiveness in providing this information to the OIG as indicated in this report. After a brief follow-up review in April 2004, nine (9) of the ten (10) States interviewed in this report have submitted their HSIP evaluations to the FHWA. To reinforce the importance of this reporting requirement, the FHWA will initiate a specific action by September 30, 2004, to ensure that States provide their HSIP evaluation reports in a timely fashion as required by 23 USC 130(g) and 152(g), and that these reports are available when needed in the future.

For additional information on highway-rail grade crossing safety efforts within FHWA, please feel free to contact our point of contact, Debra (Dee) Chappell, on x60087, or email her at Debra.Chappell@fhwa.dot.gov.

APPENDIX III. FEDERAL TRANSIT ADMINISTRATION COMMENTS



U.S. Department
of Transportation
**Federal Transit
Administration**

Administrator

400 Seventh St., S.W.
Washington, D.C. 20590

JUN 10 2004

INFORMATION MEMORANDUM TO THE PRINCIPAL ASSISTANT INSPECTOR GENERAL FOR AUDITING AND EVALUATION

From: *Robert D. Dennis for*
Jennifer L. Dorn, Administrator, Federal Transit Administration
Ext. 64040

Prepared by: Gregory B. McBride, Deputy Chief Counsel, Federal Transit Administration
Ext. 64063

Through: Michael Taborn, Acting Director, Transit Safety and Security
Ext. 63526

Re: Draft Report, Audit of the Highway-Rail Grade Crossing Safety Program,
Federal Railroad Administration, Project No. 02M3006M000

SUMMARY

This draft report presents the results of the Office of Inspector General's (OIG) second audit of the Department of Transportation's (Department) Highway-Rail Grade Crossing Safety Program. The report focuses on public crossings, since they experienced 89 percent (33,153) of all highway-rail crossing accidents and 90 percent (4,074) of all fatalities at crossings from 1994 through 2003; moreover, Federal Railroad Administration (FRA) funding is directed at public crossings. The audit was conducted at the request of Senator Joseph Lieberman, Ranking Member, Senate Committee on Governmental Affairs.

BACKGROUND

FTA's Office of Chief Counsel and Office of Transit Safety and Security have reviewed the report and concur with OIG's recommendations 4 and 5; however, we provide some clarification below regarding the stark differences between grade crossings in the railroad industry and those in the rail transit environment.

OIG'S RECOMMENDATIONS

4. Identifies a method for including FTA's data on light and heavy rail transit grade crossing accidents and fatalities in the new action plan's goals and statistics.

FTA concurs. FTA's National Transit Database includes "grade crossing" accidents and fatalities. As the OIG has recommended, FTA will provide these data in accordance with the Department's new action plan. However, it is important to recognize the distinctions among the three types of rail transit systems: commuter rail, rail rapid transit, and light rail.

FTA-funded commuter railroads (also known as heavy rail) share track with freight rail systems. As “railroads” within the meaning of the Federal railroad safety laws, commuter railroads report accident and fatality data to FRA for inclusion in its database just as freight railroads do. Rapid transit systems (e.g., WMATA, CTA, NYCT, MARTA, BART) operate within dedicated rights of way that preclude highway grade crossings (except in New York and Chicago, which have two such crossings each). Since commuter railroad grade crossing data are already included in FRA’s database and rapid transit systems have virtually no highway grade crossings, the remaining issue is reporting of light rail grade crossing data.

Light rail systems generally operate on streets along with motor vehicle traffic. As such, the street crossings of these urban, low-speed, light-weight transit systems are wholly dissimilar from the highway-rail grade crossings of railroads. The higher speed and massive weight of railroads, and the relative infrequency of their crossings of highways at grade, make for a significant threat to the safety of highway vehicles. On the other hand, the movement of light rail systems alongside automobile movements on and across city streets presents a traffic safety, not a highway-rail grade crossing, issue.

Some years ago, Congress recognized that there was no Federal program for addressing the safety of local rail transit systems not subject to FRA’s safety jurisdiction. Given the increasing development of such systems across the country, Congress addressed the safety of light rail systems in the Intermodal Surface Transportation Efficiency Act of 1991, requiring that FTA issue a regulation placing responsibility for the safety of light rail systems on the states in which they operate. Those states were required to establish a state safety oversight program. 49 U.S.C. 5330. FTA’s implementing regulation, which appears at 49 CFR part 659, requires the establishment of state rail safety oversight agencies, which in turn are required to develop and adopt system safety program standards. Thus, Congress has now provided for the safety oversight of railroads by FRA and light rail transit systems by state agencies. FTA’s role is one of guidance and assistance; indeed, FTA is specifically prohibited by statute from regulating the transit systems it funds.

- 5. Promotes mandatory reporting requirements for railroads and states through rulemaking or legislation to improve the accuracy and completeness of FRA’s national grade crossing inventory data, to identify high-risk crossings and strategies to mitigate risks. FRA and FHWA should work cooperatively to accomplish mandatory inventory reporting. The data should also be used to monitor the effectiveness of the new action plan’s strategies, identify needed changes, and make adjustments, as necessary.**

FTA concurs and fully supports FRA’s and the Department’s efforts to improve accuracy and completeness of FRA’s national grade crossing inventory. FTA is considering seeking Fiscal Year 2006 funds to undertake its rail transit Grade Crossing Characteristics Inventory Database Project.