U.S. Department
of Transportation

**Federal Railroad
Administration**

Administrator

**1120 Vermont Ave., NW.
Washington, DC 20590**

MAY 31 2006

The Vice President Richard B. Cheney
United States Senate
Washington, DC 20510

Dear Mr. Vice President:

Enclosed is the Federal Railroad Administration's (FRA) report entitled "Pilot Programs for Emergency Notification Systems (ENS) at Highway-Rail Grade Crossings," pursuant to section 301(a) of Public Law 103-440 (49 U.S.C. § 20152). The Congress directed FRA to conduct a pilot ENS project in at least two States to demonstrate the efficiency of such programs. The ENS report discusses the effectiveness of establishing a State toll-free 1-800 call-in system to report safety problems that may occur at a highway-railroad grade crossing.

In response to that directive, we are pleased to report our findings and recommendations to you. An identical letter has been sent to the Speaker of the House of Representatives.

Sincerely,

Joseph H. Boardman
Administrator

Enclosure

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**1120 Vermont Ave., NW.
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The Honorable J. Dennis Hastert
Speaker of the House of Representatives
Washington, DC 20515

Dear Mr. Speaker:

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Pilot Programs for Emergency Notification Systems at Highway-Rail Grade Crossings

Federal Railroad Administration

May 2006

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Executive Summary

Background

In 1983, Texas established the first toll-free call-in program for the public to notify a State call center of problems at highway-rail crossings (crossings) equipped with automated warning devices. The State Call Center in turn notified the railroad involved. The call-in system required that a sign be posted at the crossing with the crossing's unique identifying number under the U.S. Department of Transportation (DOT) National Crossing Inventory (Inventory), as well as a toll-free 1-800 telephone number. At the State's Emergency Management Center there was a dedicated computer with a modified inventory data base that facilitated the call recipient's identification of the relevant crossing and railroad. The Center operator then called the railroad and relayed the reported problem. Today, the Texas system handles more than 1,200 calls per month for the State's public and private crossings, even though only those crossings equipped with active warning devices are equipped with the signs containing the call center's toll-free telephone number.

Following the successful establishment of this program in Texas, at the urging of the Federal Railroad Administration (FRA) and the National Transportation Safety Board (NTSB), our Nation's major railroads have adopted similar systems for their crossings, sometimes including all crossings, i.e., not limited to just public crossings or to just those equipped with active warning devices. Currently, approximately 50 percent of all crossings are included in such a system.

Over 90,000 crossings belonging to our Nation's 600 short line railroads are not included, however. Most of these railroads do not have 24-hour operations, and most do not have the resources to establish such a call-in program.

In 1994, Congress directed FRA to conduct pilot emergency notification system (ENS) projects in at least two States to demonstrate the efficiency of such programs. Funding for this effort was provided in Fiscal Year 1997.

Initial efforts were spent in a cooperative effort with the Texas Department of Emergency Management evaluating the Texas system. Texas was designated one of the pilot States, and an extensive list of software, hardware, and operating improvements was developed. The FRA prepared and implemented new software on an upgraded system in 1999. After receiving comments and suggestions, further improvements were implemented in 2001 when the Texas call center operation was transferred to the Texas Department of Public Safety. This 2001 version was modified for use by a 911 center in Clinton County, Pennsylvania with the participation of eight short-line railroads. A 30-month demonstration program was initiated in November 2001.

In 2002, an agreement was reached with the Paducah & Louisville Railroad (P&L) to conduct an additional pilot project (the third). This is a regional railroad with 24-hour operations. The FRA modified the software to accommodate the railroad's needs, but implementation was delayed pending changing P&L management priorities and completion of a re-inventory of all of the railroad's crossings. The program is currently operational.

Main Findings

The pilot projects in Texas and Pennsylvania have resulted in independently and successfully operating ENS programs. Fielding more than 1,200 calls per week, the Texas ENS system has likely resulted in the prevention of numerous accidents, injuries, and fatalities. Developed on a much smaller scale, the program in Pennsylvania has demonstrated that it is possible to create emergency call systems through the development of agreements with multiple railroads. The Pennsylvania program also showed the value of including all crossings, not just those with train-activated warning devices.

The programs initiated and run by the major railroads have also provided valuable information, not only to the railroad which use it to focus maintenance efforts, but also to motorists seeking to notify railroads of problems. Because the crossings subject to these programs constitute the majority of crossings in the Nation, and because calls placed directly to 24-hour railroad operations centers are likely to be most effective in abating emergency situations, FRA does not believe that extending the Texas model to other States is necessary. The FRA notes that gaining the cooperation of a large number of additional State agencies would likely be very difficult, if not impossible.

Because of the multiplicity of programs, however, FRA notes that there is considerable variety in the size, configuration, and information contained on the notification signs. This may make the signs somewhat confusing or hard for a motorist to read. The FRA believes that there will be substantial benefit to motorists if signs compliant with the Manual on Uniform Traffic Control Devices (MUTCD) were used at new installations, or where signs are replaced.

Recommendations

Based on the findings of this report, the FRA recommends:

1. Class I railroads continue to implement, augment, and review the emergency notification programs they have initiated.

2. Smaller railroads, including commuter railroads, work cooperatively through the American Short Line and Regional Railroad Association, or another suitable organization or organizations, to establish emergency notification systems

serving member railroads. To facilitate such development, FRA would provide operating software and limited start-up funding.

3. Signs hereafter installed or replaced at crossings be displayed prominently (e.g., mounted on signal masts where practicable) and that the signage be in compliance with the guidance in the MUTCD.

4. Any program that does not currently include passive crossings be expanded to include, at minimum, all such public crossings where it is practicable to do so.

The FRA is taking specific actions to advance these recommendations that are described in the body of this report.

to local hospitals as a result of this accident.[6] In addition, between 1995 and 2004 Amtrak trains collided with 304 unoccupied vehicles that were reported as stalled or stopped on railroad tracks at crossings.[7]

Texas Initiative

With its vast territory and its extensive track mileage, the State of Texas has long had a significant proportion of the Nation's total count of grade crossings, and a correspondingly large share of the Nation's grade crossing accidents and casualties. In 1982, there were 857 crossing collisions involving motor vehicles in Texas, roughly 12.5 percent of the Nation's total; in those collisions, 89 people lost their lives, nearly 17 percent of the Nation's grade crossing fatalities. The State's proportion of public crossings, which numbered 14,631, however, did not entirely account for these high percentages, as they amounted to only about 7 percent of all public grade crossings. Recognizing a need for more aggressive action, in 1983 the Texas State Legislature enacted, and the Governor signed, the Railroad Crossing Safety Information Act, since codified in Chapter 471 of Texas' Transportation Code, establishing a State-wide toll-free "telephone service to report malfunctions of mechanical safety devices at crossings." (See appendix A).

This legislation provided a means for the public to notify authorities and railroads of malfunctioning warning devices at crossings. By enabling faster reporting of problems, and theoretically enabling repairs to be made sooner, the proposed notification system reduced the time during which the crossing warning devices were inoperable, thereby increasing the devices' credibility in the eyes of motorists. Note that not all grade crossings are equipped with train-activated warning devices such as gates or flashing lights (those so equipped are known as active crossings), and that the system as established did not address how to report trouble at those crossings lacking active devices (passive crossings). It was considered important to address problems at active crossings, however, because more than half of all accidents occurred at active crossings.

Under the Texas legislation, Texas Department of Public Safety (DPS) is charged with receiving telephone reports of crossing problems, malfunctions, and emergencies, and with relaying that information to the appropriate railroads. The DPS is further charged with maintaining a computerized list of all crossings noting the installed equipment and the crossing number. The Texas Department of Transportation (TXDOT) is tasked with providing a sign that displays "the telephone number, an explanation of its purpose, and the crossing number" for every public crossing that is equipped with active warning devices.

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[6]NTSB, *Collision of National Railroad Passenger Corporation (Amtrak) Train 59 With a Loaded Truck-Semitrailer Combination at a Highway/Rail Grade Crossing in Bourbonnais, Illinois*, available on the web at http://www.ntsb.gov/publictn/2002/RA$0201.htm adopted June 14, 2004.

[7]Per information extracted from FRA's Railroad Incident Reporting System (RIRS) a/o May 18, 2004.

The legislation also provided important protections, sheltering State agencies, State political subdivisions, and railroads from lawsuits that might stem from the operation of the ENS. Sheltering the various entities from such litigation promoted the railroads' cooperation and participation with the program.

Implementation: TXDOT initially installed signs at the 2,002 crossings on the State-maintained highway system that were equipped with active warning devices. The DPS established the telephone number, obtained computer lists of crossings (provided by the State Department of Highways and Public Transportation (SDHPT)) and railroad contact telephone numbers, prepared a log, and had the system in operation by September 1983. Despite the fact that the State made no effort to inform the public of this call-in opportunity (other than the signs at the crossings), in the first 4 months of operation 589 calls were received for an average of slightly under 5 calls per day, or 148 per month. However, by late 1988, the call rate was over 13 per day, or 400 per month.

Experience in Delaware and Connecticut

In 1988, the State of Delaware contracted with the Consolidated Rail Corporation (Conrail) for the placement of signs at Conrail's 183 public crossings. The State provided a toll-free telephone number for reporting problems. This program was later subsumed by successor railroads when Conrail was partitioned.

In 1990, the State of Connecticut, with a small number of crossings (fewer than 400 public crossings), directed railroads to place signs at approximately 150 active crossings where trains operate at speeds over 25 miles per hour. The signs advise callers to report problems at the crossings by telephoning 911. The 911 operators notify local police, who in turn call the railroads.

As of 2004, there has been no assessment of either program.

FRA Actions

In the late 1980s, FRA contracted with the Texas Transportation Institute (TTI) for an evaluation of the Texas railroad notification program (the 1-800 Program). The evaluation deemed the program a success. According to the evaluation, the toll-free number was accepted and used by the public, and when railroads were notified about reported crossing problems, they responded. The evaluation further indicated that the program was of relatively low cost, and did not place an undue burden on the participants, and, as it led to timely correction of problems, the program did in fact improve grade crossing safety.[8]

[8]Lamkin, Jack T., Jr. and Richards, Hoy A., *An Evaluation of the Texas 1-800 Program* (TTI, College Station, TX), June 1989: p. i.

The evaluation made several suggestions for improving the program, e.g., broadening the coverage to all of Texas' active grade crossings rather than just those on the State highway systems, automating the crossing number lookup by providing a computer and databases (instead of hardcopy lists) to DPS, computerizing the log maintained by the DPS, and periodically providing summarized data to the SDHPT and the railroads. The evaluation opined that potential was lost by not using the logged data for program planning, maintenance, and upgrading.

The TTI determined that costs were in the range of "$125-252 per location for start-up, and $9-$10 per location for annual operation."[9]

Following review of this evaluation, FRA sought to promote the program to other States. The FRA republished the evaluation report, and a videotape presentation was prepared and distributed. The FRA continued to monitor the program. A second and more thorough evaluation was prepared in March 1992 that examined data through 1989;[10] the call rate had risen to nearly 15 calls daily. In its 1994 Action Plan,[11] DOT proposed a total automation of the system, but this effort was overtaken by action on the part of Congress.

Congressional Action

In 1994, Congress directed the Secretary of Transportation to:

> conduct a pilot program to demonstrate an emergency notification system utilizing a toll-free telephone number that the public can use to convey to railroad carriers, either directly or through public safety personnel, information about malfunctions or other safety problems at railroad-highway grade crossings. The pilot program, at a minimum--
>
> (1) shall include railroad-highway grade crossings in at least two States;
>
> (2) shall include provisions for public education and awareness of the program; and
>
> (3) shall require information to be posted at the railroad-highway grade crossing describing the emergency notification system and instructions on how to use the system. (See Appendix B, 49 U.S.C. 20152)

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[9] *Ibid*, p. ii.

[10] Richards, Hoy A. and Lamkin, Jack T., Jr., *Texas 1-800 Statistical Analysis* (TTI, College Station, TX), March 1992.

[11] *Rail-Highway Crossing Safety Action Plan Support Proposals* (USDOT, FRA), June 13, 1994: p. 17.

Based on this charge, FRA established the following five demonstration program goals:

1. Provide a means for the public to notify railroads and safety responders of emergencies, malfunctions, and problems at crossings.
2. Provide a means for the public to notify railroads and public authorities of suspicious activity on railroad rights-of-way.
3. Provide a database for safety analysis and generate reports regarding malfunctions and recurrent problems.
4. Improve highway-rail safety by responding to problems in a more timely fashion and thus improve the credibility of warning devices at crossings.
5. Fulfill the requirements of both the Congressional mandate and DOT's 1994 Action Plan.[12]

Subsequent Railroad Actions

NTSB Recommendation

On May 2, 1995, a collision with a truck tractor-semitrailer combination vehicle near Sycamore, South Carolina, derailed southbound Amtrak Train 81 injuring 33 passengers. The truck in question was towing a low-clearance trailer that became lodged on the tracks at a high-profile or "humped" crossing. Though the truck driver attempted for 35 minutes to dislodge the trailer, he did not notify the railroad or the police. There was no sign at the crossing indicating which railroad owned the track, no telephone number to report a problem, nor was the crossing's National Inventory identification number posted. In its report on the accident, NTSB stated that had "emergency notification information been posted at the accident crossing, the truck driver may have used it to notify the railroad, thereby avoiding the accident."[13] As a consequence of this conclusion, NTSB recommended that Class I railroads and railroad systems:

> Develop and implement, without delay, a 24-hour toll-free emergency notification telephone system for use by the public in promptly reporting emergencies at all your highway-rail grade crossings, both active and passive, and provide information at each crossing to inform the public of the 24-hour telephone system. (Class II, Priority Action)(R-96-3)[14]

FRA Letter of Agreement with CSX Transportation, Inc.

Following another Amtrak passenger train collision with an immobilized truck tractor-semi-trailer combination vehicle with low clearance at a crossing on October 9, 1997, CSX Transportation, Inc. (CSXT) executed a Safety Action Agreement with FRA. (See

---

[12] *Ibid.*

[13] *Highway/Rail Grade Crossing Collision near Sycamore, South Carolina, May 2, 1995, Highway Accident Report* (NTSB, Washington, DC), adopted March 11, 1996: p. 47.

[14] *Ibid*, p. 51.

Appendix C.) The CSXT agreed to place emergency notification signs with a "1-800 Telephone Number and Grade Crossing Identifier" at all crossings on the CSXT system. In addition, train dispatch center personnel were to be trained in the proper procedures to follow when receiving a call. This established a system-wide "1-800 Number System" on CSXT affecting nearly 24,000 crossings in 20 States.

Photos of 1997 Amtrak Passenger Train Collision with Immobilized Truck Tractor-Semitrailer Combination Vehicle

In addition, CSXT notified trucking companies about this initiative through Operation Lifesaver, Inc. presentations. Law enforcement agencies, fire departments, and schools were also advised. Additional staff was added at the CSXT train dispatch center. The CSXT estimated its initial costs at $125.00 per crossing.[15] A year later, their total system-wide cost to establish and operate the program was estimated at $4.7 million. The CSXT notes the system has paid for itself, e.g., 47 tractor-trailer trucks had been reported as "stuck on tracks,"[16] but collisions were successfully prevented.

[15]The Highway & Rail Safety Newsletter, April 1998: p. 8.

[16]Total cost and number of calls provided by CSXT based on project status and calls received through November 25, 1998.

Major Railroads Follow Suit

The CSXT experience and the efficacy of this program, along with the NTSB recommendation, were not lost on the other major (Class I) railroads. A poll conducted by FRA in late 1999 found that 56 percent of all public at-grade crossings would have a posted 1-800 Number by the end of 1999. For an additional 10 percent of all crossings, emergency telephone numbers were provided by the railroad to local emergency services organizations (e.g., police, fire, medical). These included crossings on the Burlington Northern and Santa Fe Railway Company, the Union Pacific Railroad Company, the Norfolk Southern System, the Illinois Central Railroad Company, and CSXT. This totaled 78 percent of all active crossings in the Nation. Some of the railroads were considering expanding their programs to include all public at-grade and private crossings.

Small Railroads

However, this individual railroad approach does not provide universal coverage. The smaller short line railroads, especially those without 24-hour operations and/or without central dispatch centers, are precluded. Only the Texas model, a State-based approach, includes all railroads. Unfortunately, other States were not receptive when approached and encouraged by FRA to consider an emergency notification system based on the Texas model.

The FRA held brief discussions with some of the major railroads regarding the possibility of including small railroads in their systems. Under this approach, the short line railroads' crossing inventory data would be included in the larger Class I railroad's database. The larger railroads' dispatch center would receive incoming toll-free calls and pass on the alert to the smaller railroads based on the inventory look-up. This approach was rejected outright by the major railroads based on significant liability concerns.

FRA Response

The Congressional mandate for "ENS" pilot programs prompted a rethinking and change of approach from the 1994 Action Plan initiative (total automation of the system) started by FRA earlier that same year. The FRA concluded that total automation (incoming toll-free calls answered by a computer) was not compatible with either Congress' or the public's perception of how an "emergency" call should be handled, and decided that the Texas model merited further consideration.

However, development of a universal system based on the Texas model would have failed to take advantage of the railroad-based systems already in place or then being developed by the major railroads. In order to fulfill the Congressional mandate for demonstration projects in at least two States while at the same time not preempting on-going railroad efforts, FRA planned a four-pronged approach:

1. Continue to encourage the major railroads to post their own signs at all of their crossings (public and private, active and passive) and to handle toll-free calls through their own 24-hour dispatch centers.
2. As a demonstration, review and modernize the Texas program.
3. As a demonstration, establish a regional collective program involving multiple local short line railroads.
4. As a demonstration, assist a medium size regional railroad (one with operations 24-7) to establish a program.

Modernizing the Texas System

By 1998, the Texas system had been operational for 15 years. The Texas DPS was handling, on average, more than 35 calls per day. Unfortunately, no funds were available for upgrading or even keeping the hardware, software, and files current. Though the system worked, there was no ability to address the program deficiencies identified during its 15 years of experience. A June 1998 joint review of the Texas system by FRA and the Department of Emergency Management (DEM) noted numerous opportunities for improvement. Following completion of this review, the Texas DPS expressed "enthusiastic" support for participating in the development of improved procedures and software as a demonstration for other States and railroads.[17]

In response to the deficiencies noted in the June 1998 review of the Texas system, a completely new system and software package was developed based on new computers and a current operating system. For example:

1. Procedures were established for periodic downloading of State Inventory data from the National database via the FRA's Office of Safety Web site and importing the data into the local ENS database.
2. The new ENS software operates using Microsoft Windows 2000 and Windows XP Professional operating systems running Microsoft Access 2000 as its database. (While originally designed to operate with Windows 95 and 98, FRA and its contractor no longer support either Windows 95 or 98 because they do not meet DOT's security access control requirements.)
3. Based on caller-provided information, the new system allows for using county, city and/or street name/number to search for a crossing within the database.
4. Written logs are no longer required or maintained. All incoming calls reporting a problem at a railroad crossing are logged and time-stamped by the ENS software as the data are entered by the operator. Similarly, outgoing calls to the appropriate railroads are also time-stamped by the ENS operator when the call is completed.

[17]Millwee, Tom, State Coordinator, DEM, Texas DPS, letter to Mr. Thomas P. Woll, Highway Rail Crossing Safety Engineer, FRA, dated July 14, 1998.

5. The ENS software now has the optional capability to send a facsimile problem report directly to the railroad. (This requires the computer itself to have a fax modem and a direct telephone line available.)
6. A data entry field is now available to the ENS operator to note actions attempted (e.g., calls made to the railroad but not answered, or being placed on hold by the railroad). An operator can quickly redisplay any problems awaiting communication or resolution with the railroad at any time for further action.
7. The new ENS has an integrated map display for each State that shows the locations of the crossings and rail lines overlaid on a street map. Crossings identified within ENS can easily be shown on the appropriate map display. Likewise, selecting any crossing on the map will display the crossing identification number and additional information about the type of crossing, its ownership, and warning devices installed at the crossing.

A prototype system was installed at the Texas DPS in December 1999. After receiving comments regarding operation of the prototype system and concurrent with a change in venue, a revised and yet again improved system was installed in DPS' Special Police Operations in June 2001.

Results - Review of 30 months' data

Dispatcher Operating the ENS Software

During the 30-month period beginning on July 1, 2001, and ending on December 31, 2003, Texas DPS ENS logged 37,549 calls. The average number of calls per month was 1,252 for 62 individual railroads out of a total of 69 railroads operating in the State of Texas. Interestingly, 10 of these railroads received 96 percent of the calls. Table 1 presents a summary of the calls received by DPS for the 30-month period. Callers reported problems at 4,798 crossings on 62 different railroads. Significantly, of the 4,798 crossings reported, 48 specific crossings each were the subject of 50 or more calls. These 48 crossings accounted for 3,331 calls, nearly nine percent of all calls received. Thirty-seven of these crossings, which generated 2,610 calls, belong to one railroad. Texas DPS discussed the reports with the railroad involved; FRA does not know the results of these discussions.

Table 1. Summary of ENS calls received between July 2001 and December 2003			
Number of Calls	**Number of Railroads**	**Number of Crossings**	**Monthly Call Average**
37,549	62	4,798	1,252

Each caller identified a crossing location and stated a problem. Other data were entered when appropriate, or automatically generated based on the crossing number selected. Table 2 lists the data captured. The resulting database provides sufficient information to assess trends and issues affecting crossings.

Table 2. Data recorded as a result of an ENS call	
Caller supplied data	**Automatically generated data**
Crossing ID number	Call date and time
Caller type	Location (State, County, and City)
Location	Railroad
Problem type	Railroad milepost

As mentioned above, 48 crossings were the subject of 50 or more calls each. Data from the ENS system were analyzed to shed light on the problems at these crossings, as shown in Table 3.

Table 3. Reported problem types for crossings that were the subject of more than 50 calls				
Number of Calls	**Number of Crossings**	**Problem Type Cited**		
		Signals	**Trains**	**Other**
Over 50	48	77%	18%	5%
Over 60	29	76%	18%	6%
Over 75	12	71%	25%	5%

As suggested by this quick analysis, the ENS databases can be used to identify problem areas that could be effectively addressed. Highway and railroad officials may also use the databases to guide and schedule their program and/or site reviews, or prioritize crossing maintenance and upgrades. Further examples of analyses that these data can be used to produce are contained in Appendix D.

Regional Collective Program

Memorandum of Understanding (MOU) As noted previously, one of FRA's intended responses to address the Congressional requirement for demonstration projects was to develop a regional collective program involving multiple local short line railroads. In the autumn of 2000, an agreement was reached and signed (September 20, 2000) "to conduct a pilot program to demonstrate an emergency notification system using a toll-free telephone number for the public to report malfunctions and/or other safety problems at highway-rail grade crossings." The pilot project was to span 30 months (see Appendix E) and began on October 15, 2001. The following parties were signatories:

- Susquehanna Economic Development Authority Council of Governments' Joint Rail Authority (SEDA-COG's JRA)
- North Shore Railroad and Affiliated Companies (NSRAC)
- Clinton County Board of Commissioners
- Pennsylvania Department of Transportation (PennDOT)
- FRA

The project involved the following eight short line railroads:

- Juniata Valley Railroad (JVRR)
- Lycoming Valley Railroad (LVRR)
- Nittany and Bald Eagle Railroad (NBER)
- North Shore Railroad (NSHR)
- Shamokin Valley Railroad (SVRR)
- Stourbridge Railroad (SBRR)
- Union County Industrial Railroad (UCIR)
- Wellsboro and Corning Railroad (WCOR)

The first five railroads are part of SEDA-COG JRA, and the latter three belong to NSRAC. The eight short line railroads included in this pilot program operate over approximately 251 railroad miles throughout central and northeastern Pennsylvania.

Funding, Signing, Inventory, and Call Center A budget plan for the 30-month demonstration called for expenditures of $222,500 either in direct funding or in-kind services (e.g., installing signs). Appendix F shows a breakdown of these expenditures. The Project Plan called for an MUTCD-compliant sign (white text on a blue background with a white border, all reflective) with the following message:[18]

[18]SEDA-COG Joint Rail Authority, *FRA Progress Report I*, May 1, 2002, p. 4.

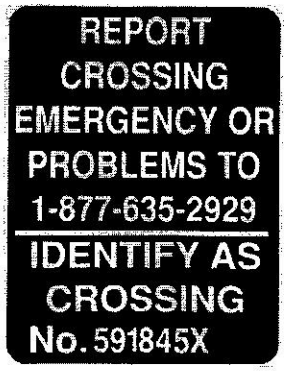

Figure 1. MUTCD-Compliant Sign

The signs for public crossings were to be paid for by PennDOT using Section 130 grade crossing improvement funds. The FRA was to pay for signs at private crossings at an average cost of $19 per sign, including delivery.[19] The railroads agreed to pay for installation, which averaged $148 per crossing.

The Project Plan noted that "[i]t is extremely important that there is complete and accurate data available for all crossings which are covered under a 1-800 ENS system."[20] As with Texas' ENS, the National Crossing Inventory retained by FRA provided the crossing data incorporated in the ENS database. Participants, therefore, conducted field surveys to ensure that the National Inventory was updated appropriately. The field surveys resulted in a determination that the number of at-grade crossings on the eight railroads was 414, of which 119 were equipped with train-activated signals.[21] Only 320 crossings (229 public and 91 private) were actually signed. The remaining 94 were not signed "for various reasons, including public access restrictions, usage limitations and geographical isolation." Most of the unsigned crossings were restricted to "farm use, while others were for seasonal access to dwellings, or it was determined that the risk/cost of vandalism to ENS signs was prohibitive."[22]

Participants determined that the most efficient implementation involved partnering with an existing 911 Call Center.[23] The Clinton County Communications Center in Lock Haven, Pennsylvania, agreed to participate in the program. The FRA agreed to defray start-up costs to include all computer and telephone connection hardware and software. The NSRAC agreed to underwrite the Communication Center's on-going service costs by providing up to $100 monthly,[24] with FRA covering the excess. (Over the first 6 months service fees totaled $2,700 or $450 per month.)[25]

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[19] *Ibid*, FRA *Progress Report I*, p.4.
[20] *Ibid.*, FRA *Project Plan*, p. 7.
[21] Numbers compiled from the National Crossing Inventory as of June 9, 2004.
[22] *FRA Pilot Project Emergency Notification System for Shortline Railroads in the Commonwealth of Pennsylvania, Progress Report II Summary*, undated: p. 1-2.
[23] *Ibid.*, FRA *Project Plan*, p. 7.
[24] *Ibid.*, FRA *Project Plan*, p. 10-11.
[25] *Ibid.*, SEDA-COG Joint Rail Authority

Results - Review of data

The demonstration officially started October 15, 2001. In the following 19 ½ months, through 31 May 2003, the Clinton County Communications Center received 124 calls. In the first 3 months they received four calls. In the last 3 months they received 22. It was "anticipated that the system would receive approximately six to eight calls per week...."[26] It should be noted that three of the railroads (with 90 crossings, 22 signalized) did not participate during the first year.

During a 6-month period of the demonstration project, information was sought from the railroads regarding their follow-up. Of the 30 calls where signal malfunctions were cited, the railroads reported that the warning devices were functioning, but no train was present in 19 instances. Six of the 30 calls reported that signals had failed to activate when a train was present; at two of these, testing found no problem, while at four others, it was found that the signals were indeed out of service, and that railroad flagmen were on hand. In three of the 30 cases, damaged equipment was found. Two calls were determined not to be credible.

Regional Railroad Demonstration Project

Paducah and Louisville Railroad (P&L)

On April 9, 2002, the P&L provided a letter outlining its agreement to establish an ENS pilot project using the system and software developed by FRA for the States of Texas and Pennsylvania. The FRA modified the software to meet the needs of a single railroad user. The P&L declined, for liability reasons, to include other short line railroads in the project.

Due to various P&L management priorities, little progress was made until spring 2004, when P&L reaffirmed its interest in moving forward with the project. In the ensuing months, P&L performed a total re-inventory of all its passive and active public and private crossings. This was completed in December 2004. The FRA made further changes to the software to accommodate the request of P&L management to provide a street address for each crossing as well as hard copies of the data. Texas has also expressed an interest in the street address option. With the inventory complete and the system hardware in place, FRA re-installed the ENS Software and retrained the staff on February 15, 2005, making the entire P&L Railroad ENS System operational.

The P&L currently has signs at signalized crossings (self-adhesive signs on signal cabinets) advising the public of a crossing's number and presenting a toll-free number to call. (No records of calls are kept.) The P&L has approached the Commonwealth of Kentucky's Department of Transportation regarding funding for procurement and installation of signs conforming to MUTCD requirements.

[26] *Ibid.*, FRA *Project Plan*, p. 6.

Conclusions

The purpose of a railroad ENS is to enhance highway and rail safety by providing the motoring public the means to conveniently and efficiently notify the proper public and railroad authorities of problems at crossings. The pilot programs, both in Texas and Pennsylvania, have done this and more. Not only is the general public afforded a quick and easy means of alerting railroad officials of problems, but also commercial motor vehicle operators and public officials (police, school districts, city, county, and State employees) have made calls. The preponderance of calls have reported broken or malfunctioning warning devices, but other calls have reported trains blocking crossings, rough roadway surfaces, obstructions on tracks (often vehicles that are stuck,) fires, vandalism, trespassers, etc. Trains have been slowed or stopped to avoid obstructions. Warning devices have been repaired more quickly because railroads have been provided more timely notifications that problems existed.

One key element to the success of both the Texas ENS and the regional collective program in Pennsylvania has been incorporation of data from a current and accurate National Inventory. With accurate National Inventory information, call recipients have been able to correctly identify the railroad involved, and to determine important characteristics of the crossing, including the presence of warning devices and expected traffic levels.

The protection from litigation that the Texas legislature established for its ENS was also beneficial. The railroads involved in Texas were reluctant to participate in the program because of concerns that such participation might increase their liability exposure. Explicitly protecting ENS-related data, therefore, ensured the participation of the railroads (see Appendix A, Texas Transportation Code, §471.1003(f), 1995.)

The two pilot projects in Texas and Pennsylvania have resulted in independently and successfully operating ENS programs. Fielding more than 1,200 calls per week,Texas ENS system has likely resulted in the prevention of numerous accidents, injuries, and fatalities. Developed on a much smaller scale, the program in Pennsylvania has demonstrated that it is possible to create emergency call systems through the development of agreements with multiple railroads. The Pennsylvania program also showed the value of including all crossings, not just those with train-activated warning devices.

The programs initiated and run by the major railroads have also provided valuable information, not only to the railroads that use it to focus maintenance efforts, but also to motorists seeking to notify railroads of problems.

Because of the multiplicity of programs, however, FRA notes that there is considerable variety in the size, configuration, and information contained on the notification signs. This may make the signs somewhat confusing or hard for a motorist to read. The FRA believes that there will be substantial benefit to motorists if MUTCD-compliant signs are used at new installations, or where signs are replaced.

Recommendations and FRA Actions

Based on the findings of this report, FRA makes the following recommendations and will encourage implementation of those recommendations as follows:

- **Recommendation:** Class I railroads should continue to implement, augment, and review the emergency notification programs they have initiated.

  FRA Actions: The FRA will continue to work through its Railroad System Oversight Managers to encourage those railroads that have not provided signage for all crossings to do so. The FRA regions will also be asked to verify with Amtrak and commuter railroads that lines which they own and maintain are included in emergency notification systems and that proper signage is displayed.

- **Recommendation:** Smaller railroads, including commuter railroads, should work cooperatively through the American Short Line and Regional Railroad Association, or another suitable organization or organizations, to establish emergency notification systems serving member railroads.

  FRA Actions: To facilitate such development, FRA would provide operating software. In addition, FRA would consider provision of limited start-up funding for a combined ENS center serving small railroads. It is emphasized, however, that such a function would benefit the participating railroads and should be swiftly transitioned to fee-based cost recovery.

- **Recommendation:** Signs hereafter installed or replaced at crossings should be displayed prominently to crossing users (e.g., mounted on signal masts where practicable); and that signage should be in compliance with MUTCD guidance.

  FRA Actions: The FRA worked with FHWA to identify appropriate MUTCD-compliant signage for this purpose, and FRA will communicate through dissemination of this report and other means the importance of utilizing this signage as signs are replaced and as additional signs are installed.

- **Recommendation:** Finally, FRA recommends that any program that does not currently include passive crossings be expanded to include, at minimum, all such public crossings where it is practicable to do so.

  FRA Actions: The FRA will encourage all railroads to fill out their ENS programs with appropriate signage at public crossings and private crossings providing public access (e.g., to industrial parks, shopping centers, residential developments).

Appendix A

Chapter 471 of Texas' Transportation Code

TRANSPORTATION CODE

SUBTITLE Z. MISCELLANEOUS ROADWAY PROVISIONS

CHAPTER 471. RAILROAD AND ROADWAY CROSSINGS

§ 471.001. DUTY TO MAINTAIN CROSSINGS.

(a) A railway company shall maintain the part of its roadbed and right-of-way that is crossed by a public street of a Type B general-law municipality in proper condition for use by travelers.

(b) A railway company that does not make needed repairs before the 31st day after the date the municipal marshal gives written notice to the section boss of the section where repairs are needed is liable to the municipality for a penalty of $25 for each week the railway company does not make needed repairs. The municipality may sue to recover the penalty.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.002. SIGNS AT CROSSINGS.

(a) A railway company shall place at each place where its railroad crosses a first or second class public road a sign with large and distinct letters giving notice that the railroad is near and warning persons to watch for railroad cars. The sign must be high enough above the road to permit the free passage of vehicles.

(b) A railway company that does not erect a sign required by Subsection (a) is liable for a resulting injury to a person or resulting damage to property.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.003. TELEPHONE SERVICE TO REPORT MALFUNCTIONS OF MECHANICAL SAFETY DEVICES AT CROSSINGS.

(a) The Department of Public Safety shall maintain a State-wide toll-free telephone service to receive a report of a malfunction of a device, including a signal or crossbar, placed at an intersection of a railroad track and a public road to promote safety.

(b) At each intersection of a railroad track and a public road that is maintained by the State or a municipality and at which a mechanical safety device is placed, the Texas Department of Transportation shall affix on the crossbars of the device the telephone number, an explanation of its purpose, and the crossing number. At each intersection of a railroad track and a public road that is maintained by a political subdivision other than a municipality and at which a mechanical safety device is placed, the political subdivision shall affix on the crossbars of the device the telephone number, an explanation of its purpose, and the crossing number. The Texas Department of Transportation shall

provide to the political subdivision the sign or label displaying the telephone number. A railway company shall permit personnel to affix the telephone number on the company's property as required by this subsection.

(c) The Department of Public Safety shall notify the identified railway company of each report of a malfunction received under Subsection (a).

(d) The Department of Public Safety shall maintain a computerized list of each intersection of a railroad track and a public road and of the railroad crossing safety equipment located at each intersection, using crossing numbers compiled by the Texas Department of Transportation.

(e) Not later than the fifth day after the date it places railroad crossing safety equipment in operation at an intersection subject to this section, a State agency or a political subdivision of the State other than a municipality shall notify the Department of Public Safety of:

(1) Location and type of the equipment installed; and

(2) Date it was placed in operation.

(f) The State, an agency or political subdivision of the State, or a railway company is not liable for damages caused by an action taken under this section or failure to perform a duty imposed by this section. Evidence may not be introduced in a judicial proceeding that the telephone service required by this section exists or that the State or railway company relies on the service.

(g) Except as provided by Subsection (d), a State agency is not required to make or retain a permanent record of information obtained in implementing this section.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.004. WARNING SIGN VISIBILITY AT RAILROAD GRADE CROSSINGS.

(a) The department shall develop guidelines and specifications for the installation and maintenance of reflecting material at each unsignaled crossing. The material shall be affixed to the back and support post of each crossbuck in a manner that reflects light from vehicle headlights to focus attention on the presence of the unsignaled crossing.

(b) The department shall pay the cost of initial installation of reflecting material from money appropriated to the department to maintain grade crossing warning devices. The department or the local jurisdiction responsible for maintaining the roadway at each grade crossing shall pay the maintenance costs of the material.

(c) The State, an agency or political subdivision of the State, or a railway company is not liable for damages caused by an action taken under this section or failure to perform a duty imposed by this section. Evidence may not be introduced in a judicial proceeding that reflecting material exists or that the State or railway company relies on the material.

(d) The department shall adopt rules governing the installation and maintenance of reflecting material at grade crossings.

(e) A railway company shall permit department personnel to affix the reflecting material on the company's property.

(f) In this section:

(1) "Active warning device" means an automatically activated warning device, including a bell, flashing light, gate, or wigwag.

(2) "Crossbuck" means a standard grade crossing warning sign designated as Number R 15-1 and described in the Manual of Uniform Traffic Control Devices issued by the United States Department of Transportation, Federal Highway Administration.

(3) "Department" means the Texas Department of Transportation.

(4) "Grade crossing" means the intersection at grade of a railroad and a roadway constructed and maintained with public money.

(5) "Reflecting material" means material that reflects light so that the paths of the reflected light rays are parallel to those of the incident rays.

(6) "Unsignaled crossing" means a grade crossing not protected by active warning devices.

(7) "Warning device" means a traffic control sign, including an active warning device or crossbuck, the purpose of which is to alert motorists of a grade crossing.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.005. DISMANTLING OF WARNING SIGNALS AT RAILROAD GRADE CROSSINGS; OFFENSE.

(a) A person may not dismantle a warning signal at a grade crossing on an active rail line, as defined by rule of the Texas Department of Transportation, if the cost of the warning signal was originally paid entirely or partly from public money unless the person:

(1) Obtains a permit from the governmental entity that maintains the road or highway that intersects the rail line at the grade crossing; and

(2) Pays that governmental entity an amount equal to the present salvage value of the warning signal, as determined by the governmental entity.

(b) The governmental entity shall grant the permit if:

(1) Payment is received; and

(2) The entity finds that removal of the warning signal will not adversely affect public safety.

(c) Money received under Subsection (a)(2) shall be deposited in the State treasury.

(d) This section does not apply to a Class I or Class II railroad, as defined by Inter-State Commerce Commission regulations.

(e) A person commits an offense if the person violates this section. An offense under this section is a Class C misdemeanor.

(f) The Texas Department of Transportation may adopt rules necessary to administer this section.

(g) In this section:

(1) "Grade crossing" has the meaning assigned by Section 472.004(f).

(2) "Warning signal" means a traffic control device that is activated by the approach or presence of a train, including a flashing light signal, an automatic gate, or a similar device that displays to motorists a warning of the approach or presence of a train.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.006. USE OF BELL AND WHISTLE OR SIREN AT CROSSINGS; OFFENSE.

(a) A railway company shall place on each locomotive:

(1) A bell weighing at least 30 pounds; and

(2) A steam whistle, air whistle, or air siren.

(b) The engineer in charge of the locomotive shall ring the bell and blow the whistle or siren at least one-quarter mile from the place where the railroad crosses a public road or street. The engineer shall continue to ring the bell until the locomotive has crossed the road or stopped.

(c) The railway company is liable for any damages sustained by a person because of a violation of Subsection (a) or (b).

(d) The engineer in charge of the locomotive commits an offense if the engineer violates Subsection (b). An offense under this subsection is a misdemeanor punishable by a fine of not less than $5 or more than $100.

(e) Notwithstanding Subsections (a) and (b), the governing body of a municipality having a population of at least 5,000 may regulate by ordinance the ringing of bells and blowing of whistles and sirens within its limits. Compliance with the ordinance is compliance with those subsections and a sufficient warning to the public at a crossing the ordinance affects.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

§ 471.007. OBSTRUCTING RAILROAD CROSSINGS; OFFENSE.

(a) A railway company commits an offense if a train of the railway company obstructs for more than 10 minutes a street, railroad crossing, or public highway.

(b) An offense under this section is a misdemeanor punishable by a fine of not less than $100 or more than $300.

(c) An officer charging a railway company for an offense under this section shall prepare in duplicate a citation to appear in court and attach one copy of the citation to the train or deliver the copy to an employee or other agent of the railway company. The citation must show:

(1) The name of the railway company;

(2) The offense charged; and

(3) The time and place that a representative of the railway company is to appear in court.

(d) It is a defense to prosecution under this section that the train obstructs the street, railroad crossing, or public highway because of an act of God or breakdown of the train.

(e) The hearing must be before a magistrate who has jurisdiction of the offense in the municipality or county in which the offense is alleged to have been committed.

(f) An appearance by counsel complies with the written promise to appear in court.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995. Amended by Acts 1999, 76th Leg., ch. 1023, § 1, eff. Sept. 1, 1999.

§ 471.008. FRANCHISE TO OBSTRUCT STREET CROSSING.

(a) The governing body of a municipality by ordinance may grant a franchise to a railway company to obstruct a street crossing, other than a crossing of a designated State highway, by a passenger train for the purpose of receiving or discharging passengers, mail, express, or freight for a longer period than specified by Section 472.007.

(b) Section 471.007 does not apply to a street crossing named in an ordinance granting a franchise under this section.

(c) This section does not apply to a municipality having a special charter unless it amends its charter to adopt this section.

Acts 1995, 74th Leg., ch. 165, § 1, eff. Sept. 1, 1995.

Appendix B

Title 49, U.S. Code, Sec. 20152, "Emergency Notification of Grade Crossing Problems," As Amended

TITLE 49--TRANSPORTATION
SUBTITLE V--RAIL PROGRAMS
PART A--SAFETY
CHAPTER 201--GENERAL
SUBCHAPTER II--PARTICULAR ASPECTS OF SAFETY

Sec. 20152. Emergency notification of grade crossing problems

(a) Pilot Programs.--The Secretary of Transportation shall conduct a pilot program to demonstrate an emergency notification system utilizing a toll-free telephone number that the public can use to convey to railroad carriers, either directly or through public safety personnel, information about malfunctions or other safety problems at railroad-highway grade crossings. The pilot program, at a minimum--

(1) shall include railroad-highway grade crossings in at least 2 States;

(2) shall include provisions for public education and awareness of the program; and

(3) shall require information to be posted at the railroad-highway grade crossing describing the emergency notification system and instructions on how to use the system.

The Secretary may, by grant, provide funding for the expense of information signs and public awareness campaigns necessary to demonstrate the notification system.

(b) Report.--The Secretary shall complete the pilot program not later than 24 months after November 2, 1994, and shall submit to Congress not later than 30 months after November 2, 1994, an evaluation of the pilot program, together with findings as to the effectiveness of such emergency notification systems. The report shall compare and contrast the structure, cost, and effectiveness of the pilot program with other emergency notification systems in effect within other States. Such evaluation shall include analyses of the safety benefits derived from the programs, cost effectiveness, and the burdens on participants, including railroad carriers and law enforcement personnel.

(Added by Pub. L. 103-440, title III, Sec. 301(a), Nov. 2, 1994, 108 Stat. 4626; amended by Pub. L. 104-287, Sec. 5(50), Oct. 11, 1996, 110 Stat. 3393.)

Amendments

1996--Subsec. (b). Pub. L. No. 104-287 substituted ``November 2, 1994" for ``the date of enactment of this section" and ``November 2, 1994, an evaluation" for ``that date an evaluation".

Appendix C

Safety Action Agreement Executed with CSX Transportation, Inc.

SAFETY ACTION AGREEMENT

On October 9, 1997, an Amtrak train operating on track owned by CSX Transportation – (CSX) near Savannah, Georgia collided with a truck hauling a "lowboy" trailer (which has unusually low clearance between its underside and the ground) at a grade crossing. The truck had become stuck on the crossing. Prior to the collision, local police contacted CSX police, who alerted the CSX dispatching center in Jacksonville, Florida. The information concerning the stuck trailer reached the dispatcher of a nearby parallel line in the area, who saw no imminent risk because of an absence of rail traffic on this line. Unfortunately, the information did not reach the dispatcher of the line on which the lowboy trailer was actually stuck. Because the crew of the Amtrak train was not notified of the trailer's presence by the dispatcher and was not able to stop the train in time once it became visible, the Amtrak train collided with the trailer.

While the investigation of the accident is at this time still in its early stages, the best information currently available supports certain preliminary conclusions. Information concerning the presence of the truck on the crossing was conveyed to CSX prior to the collision, but either that information was not sufficiently descriptive of the location of the incident or the information was not conveyed to the appropriate dispatcher, or both.

Accordingly, in order to prevent the recurrence of such accidents, the Federal Railroad Administration (FRA) and CSX have agreed to the following terms, effective immediately:

Restricted Speeds in Zones Where a Highway-Rail Crossing Collision May be Imminent

- CSX will issue an order requiring that, as soon as credible information concerning a possible crossing collision is received by the railroad, all trains within the zone of the hazard will be required to proceed at restricted speed and able to stop before any highway-rail grade crossing until such time as such restriction is specifically lifted. Until there is absolute and precise identification of the crossing where the danger exists, the zone will encompass all crossings that may possibly be affected. CSX, in consultation with FRA, will define that zone precisely in its order.

Precise Identification of Highway-Rail Crossings and Immediate Notification of Hazards

- CSX has committed to a substantial effort to install at grade crossings on its property appropriate signage that precisely identifies the crossing and provides a toll-free emergency notification number. The number used to identify the crossing in FRA's grade crossing inventory is the most likely identifier, but this number may be used in conjunction with other descriptive information.

- No later than October 16, 1997, CSX will present FRA with its plan for the installation of such signs. The plan will make rail lines that carry any passenger traffic and/or large

quantities of hazardous materials the highest priorities; CSX will complete installation on those lines within 180 days of this agreement. The plan will call for completion of installation on all lines no later than 18 months from the date of this agreement. In setting priorities, the plan will take into account the maximum permissible train speed on each line. The plan will indicate the criteria used by CSX to establish the schedule and the target dates for each phase. CSX will consult with FRA in preparing its plan.

Safety Briefing for CSX Dispatchers and Supervisors on This Accident Scenario

- CSX will present a safety briefing for all of its dispatching personnel, including supervisors, on the apparent accident scenario that occurred on October 9. The briefing, which can be done individually or in large groups, will be completed no later than October 15. The focus of the briefing will be on emphasizing safety priorities, on what may have gone wrong in terms of conveying the information, and on how to comply with the order, referred to above, that CSX will issue.

Operational Testing of CSX Dispatchers and Supervisors on New Order

- In order to ensure that the order referred to above is fully understood and will be properly administered, CSX will conduct operational tests of all of its dispatching personnel no later than October 31. The testing will determine whether each of these employees and supervisors understands and knows how to apply the order so as to avoid any possible collisions while the precise location of an obstruction or other hazard at a rail-highway grade crossing is being determined. Testing of this type will be incorporated into CSX's permanent program of operational testing.

Continued Emphasis on Education of Truckers

- Many highway-rail grade crossing accidents involve trucks, and many of those accidents involve lowboy trailers getting stuck at crossings. As part of its comprehensive Grade Crossing Action Plan, the Department of Transportation, including FRA, has been actively promoting measures to educate truckers as to the dangers they face and present in crossing rail lines. FRA, on behalf of the Department, commits to placing special emphasis on these issues, especially the hazards of lowboy trailers and how to avoid them, in its grade crossing educational efforts.

CSX Transportation, Inc. — Date 10/9/97

Federal Railroad Administration — Date 10/9/97

Appendix D

Samples of Texas ENS Data Analysis

Problem Type	Problem Subtypes
Accident	Auto/Auto Auto/Train Pedestrian/Train Other
Bridge	Not Safe
Debris/Trash	On/Near Crossing On/Near Tracks
Derailment	of Train
Fire	Grass Equipment
Flooding	of Tracks
Information	request for
Obstruction	On Tracks On Crossing
Other/Miscellaneous	
Road Surface	Rough Crossing (Planks or Holes) Defective Track Hump Crossing Other
Sign	Crossbuck Sign Broken/Down/Missing Other Warning Sign Broken/Missing
Signals	Activated - No Train Broken Damaged Defective Not Activated by Train Other Road Blocked
Track	Rails Ties Spikes
Train	Blocking Crossing Passing Train Equipment Problems Sparks Produced by Train Cars Other

Problem Type	Problem Subtypes
Trespasser	on Tracks
Vehicle (Hwy)	Stalled/Stopped on Tracks
Wires/Cables	Hanging Down Across Tracks
View Blocked	by Parked Railroad Cars by Vegetation
Warning Needed	at Crossing

Table 1. Highway-Rail Crossings in the State of Texas
Source: FRA's *National Highway-Rail Crossing Inventory* a/o Feb. 2003

Description	Number
"At-Grade" (level) Crossings	17,929
Public	11,780
Private	6,116
Pedestrian	33

Table 2. Summary of ENS Received Calls between July 2001 and December 2003

Description	Number
Calls	37,549
Unique Railroads	62
Unique Crossings	4,798
Average Calls per Month	1,252
Ten Railroads Account for 96% of all Calls	36,218

Table 3. ENS Call Record Data

Data Provided by Caller	Generated Data
Crossing Number	Call Date and Time
Caller Type	State, County and City
Location (address, road, etc.)	Railroad
Problem Type	Mile Post

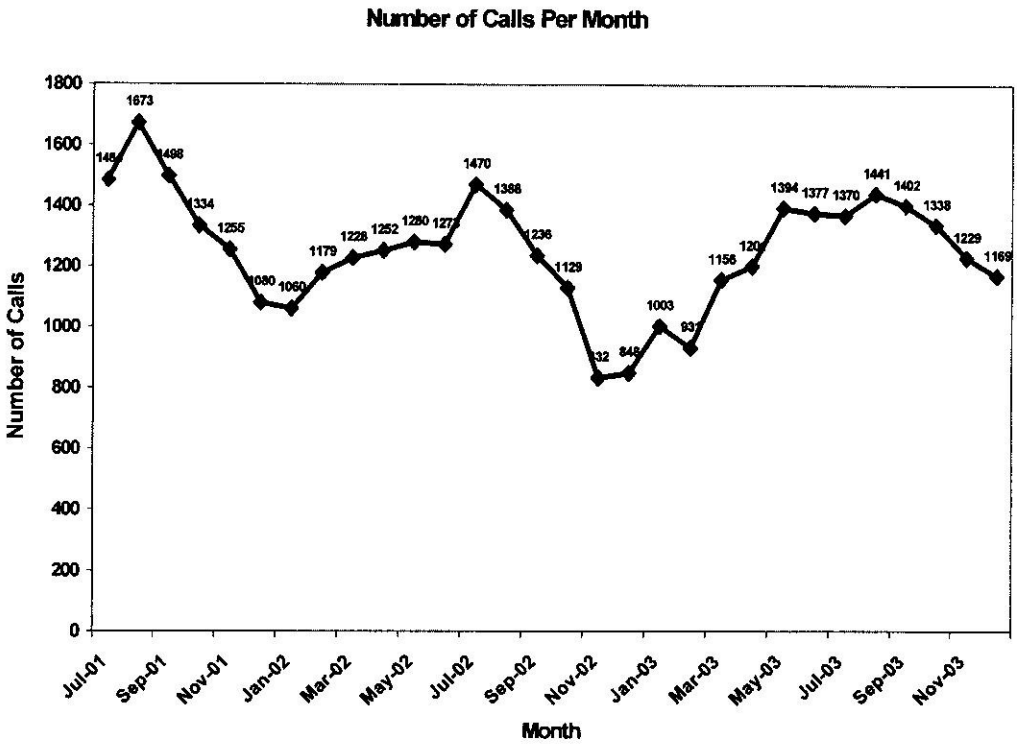

Figure 1. Number of Calls to ENS System per Month, July 2001–December 2003 (Texas)

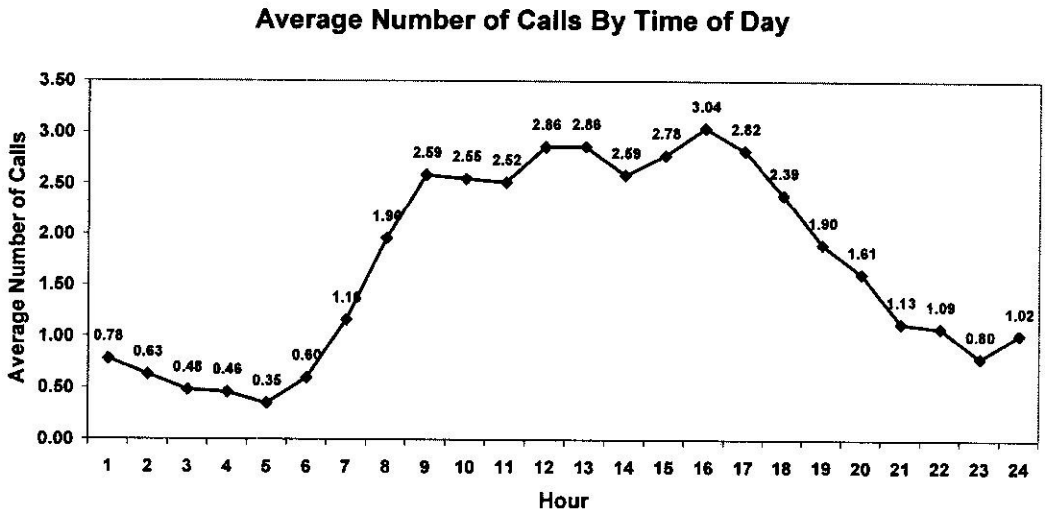

Figure 2. Average Number of Calls over a 24-Hour Period (Texas)

Table 4. Caller Types

ID	Type	ID	Type
1	City Employee	5	Public
2	County Employee	6	Railroad
3	Law Enforcement	7	School District
4	Other	8	TXDOT

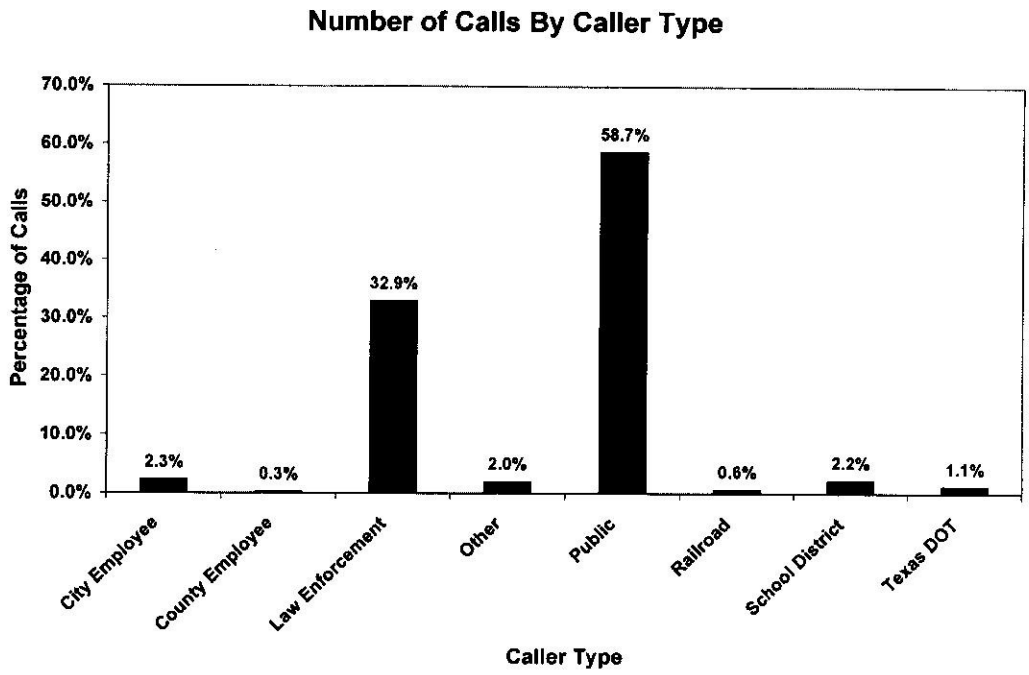

Figure 3. Number of Calls by Caller Type (Texas)

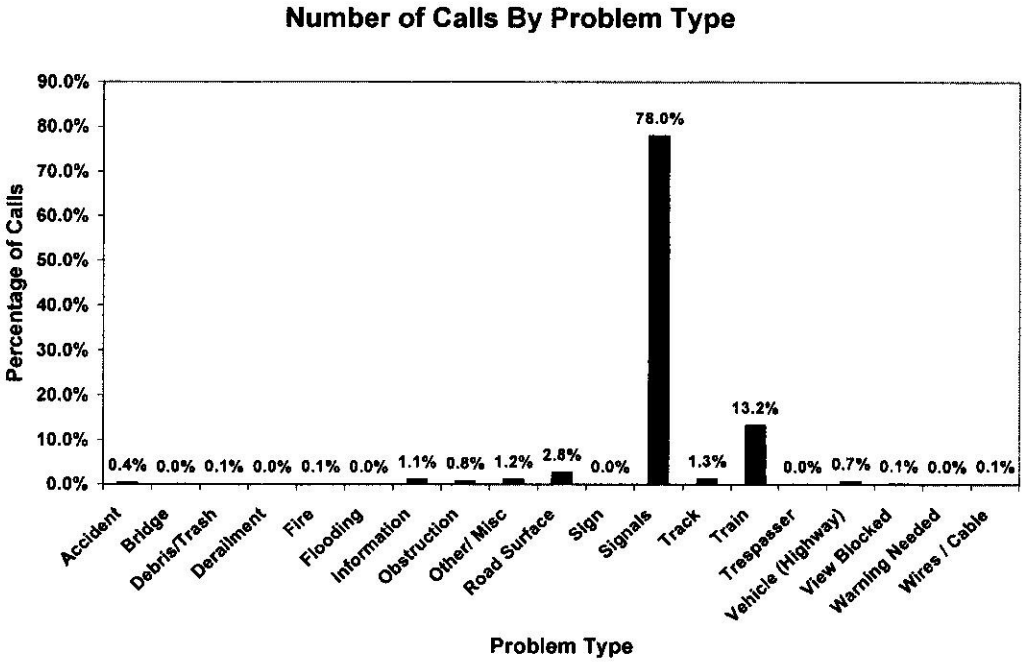

Figure 4. Calls Based on Problem Type (Texas)

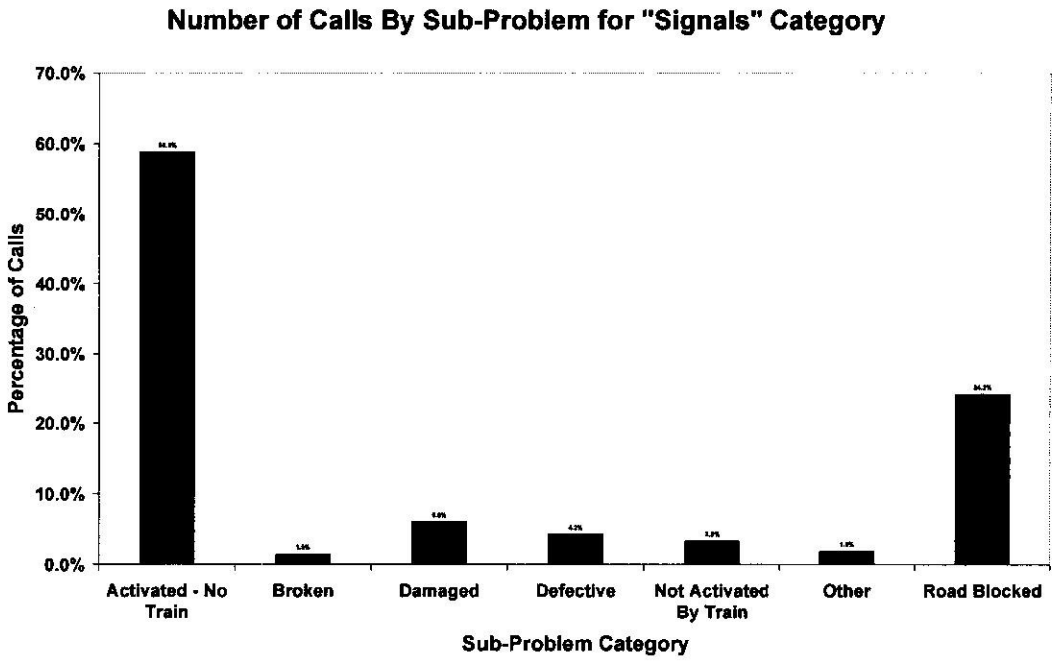

Figure 5. Sub-divisions of Signal Problem Type (Texas)

Table 5. Reported Problem Type for Crossings with more than 50 Calls

Number of Crossings	Total Calls	Signals	Trains	Other
48	**>50**	77%	18%	5%
29	**>60**	76%	18%	6%
12	**>75**	71%	25%	5%

Appendix E

Memorandum of Understanding, September 20, 2000, between SEDA-COG JRA, NSRAC, Clinton County Board of Commissioners, PennDOT and FRA

Memorandum of Understanding

September 20, 2000

The Congress of the United States, by legislation entitled the "1994 Swift Rail Development Act" (Pub. L. 103-440, Title III, § 301(a), 49 U.S.C. § 20152), has instructed the Federal Railroad Administration to conduct a pilot program to demonstrate an emergency notification system using a toll-free telephone number for the public to report malfunctions and/or other safety problems at highway-rail grade crossings.

The following organizations and companies are in agreement to jointly participate in a 30 month pilot project for a 1-800 Toll-Free Emergency Notification System for Shortline Railroad Highway-Rail Crossings in the Commonwealth of Pennsylvania in accordance with the attached plan.

9/22/00
Larry Maynard (Date)
Chairman
SEDA-COG Joint Rail Authority

10-23-00
Richard Robey (Date)
President
North Shore Railroad and Affiliated Companies

10/25/00
Dean M. Bottorf (Date)
Chairman
Clinton County Board of Commissioners

12/1/00
Larry M. King (Date)
Deputy Secretary for Planning
Pennsylvania Department of Transportation

12/13/00
George Gavalla (Date)
Associate Administrator for Safety
Federal Railroad Administration

Appendix F

Supplementary Information on the Pennsylvania Regional Collective Program

Budget Breakdown for 30-Month Demonstration

Source	Amount	Purpose
FRA	$65,000	For private crossing signs, communications center start up, monthly operations support, report preparation.
FRA's Contractor	$87,500	Modify Texas version of software, procure and install computers, briefing and training for communications center, update operator documentation, provide system and software support.
PennDOT (from Section 130)	$60,000	For signs at public crossings.
SEDA-COG	$3,000	Prepare evaluation reports.
Railroads	$4,500	Support communications center operations, report preparation
Clinton County Communications Center	$2,500	House equipment, make personnel available for training, provide data for evaluation reports, answer the telephone.
TOTAL	$222,500	

SEDA-COG Highway-Rail Crossings

Description	Number	Signed*
"At-Grade" (level) Crossings	414	320
Public	229	229
Private	178	91
Pedestrian	7	0
*Not all private crossings were signed.		

SEDA-COG Breakdown of Crossing Calls by Railroad or Railroad System

Railroad	Total Level Crossings	Signalized Crossings	Number of Calls*
Juniata Valley Railroad Company (JVRR)	32	9	5
Lycoming Valley Railroad Company (LVRR)	52	11	19
Nittany and Bald Eagle (NBER)	104	27	12
North Shore Railroad (NSHR)	80	28	50
Stourbridge Railroad Company (SBRR)	28	7	0**
Shamokin Valley Railroad Company (SVRR)	56	22	26
Union County Industrial Railroad Company (UCIR)	33	11	0**
Wellsboro and Corning Railroad Company (WCOR)	29	4	0**
Consolidated Rail Corporation (CR)	1,554***	266***	5
Delaware and Hudson Railway Company, Inc. (DH)	70***	26***	1
Norfolk Southern Railroad System (NS)	2,021***	603***	4
TOTAL Involved	414	119	122

*Two callers did not provide a crossing number.
**Three railroads did not participate during the first year of the project.
***Denotes railroads and/or railroad systems that were not part of the project but for which calls were received.