



# National Transportation Safety Board

Washington, D.C. 20594

## Safety Recommendation

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**Date:** August 27, 1999

**In reply refer to:** I-99-02 and H-98-33 (Reiteration)

Honorable Rodney E. Slater  
Secretary  
U.S. Department of Transportation  
400 Seventh Street, S.W.  
Washington, D.C. 20590

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About 4:31 a.m. central daylight time on June 18, 1998, a westbound Northern Indiana Commuter Transportation District (NICTD) two-car passenger train struck the second semitrailer of a long combination vehicle that consisted of a tractor pulling two flatbed semitrailers loaded with steel coils at a highway-rail grade crossing near Portage, Indiana. When the vehicles collided, the second semitrailer broke away from the first semitrailer and was dragged by the front of the train, while the single chain securing a steel coil to the second semitrailer broke. The released steel coil, weighing about 19 tons, entered the train through the front bulkhead of the lead car and moved into the passenger compartment. Three fatalities and five minor injuries resulted from the accident. Damages were estimated to total \$886,000.<sup>1</sup>

The National Transportation Safety Board determined that the probable cause of the collision between NICTD train 102 and a long combination vehicle (truck) at the National Steel Corporation's Midwest Steel grade crossing was ineffective action by Federal, State, and private agencies to permanently resolve safety problems at the Midwest Steel grade crossing, which they knew to be a hazardous crossing.

The various entities involved at the Midwest Steel grade crossing were aware that the crossing posed unusual hazards. The relatively high rate of vehicle and train traffic, as well as the number of long combination vehicles using the crossing, were hazard factors noted by NICTD and the other organizations connected with the crossing. Despite their consciousness of the dangers posed by the crossing, they took no effective permanent corrective action to ensure its safety. This lack of action in the face of known safety hazards raises serious concerns about the distribution of responsibilities for ensuring safety at a private grade crossing, such as the Midwest Steel grade crossing.

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<sup>1</sup> For additional information, read *Collision of Northern Indiana Commuter Transportation District Train 102 with a Tractor-Trailer, Portage, Indiana, June 18, 1998*, Railroad/Highway Accident Report NTSB/RAR-99/03 (Washington, D.C.: National Transportation Safety Board, 1999).

The primary difference between public and private grade crossings is roadway ownership, which affects the obligations and indemnification of the parties involved in the crossing activity. At a private crossing, roadway design and maintenance are usually the responsibility of the private entity that owns the roadway. The private entity may enter into a contractual agreement with the railroad(s) regarding the liability for any casualty incurred at the crossing due to any lack of specified maintenance.<sup>2</sup>

The crossing area of the Midwest Steel compound grade crossing consisted of two sets of double tracks, one set owned by the Consolidated Rail Corporation (Conrail)<sup>3</sup> and one by NICTD. The National Steel Corporation had contractual agreements with NICTD and Conrail specifying the National Steel Corporation's responsibility<sup>4</sup> to maintain the crossing signal lights, the gates, and the road surface. This agreement was fiduciary in nature, calling for the National Steel Corporation to furnish the funding for the maintenance of the roadway surface and any crossing signal lights and gates as specified by the respective railroad's division engineer. Should deficiencies in any of these identified areas cause an accident, the National Steel Corporation would be liable. But the contracts do not state that the National Steel Corporation is responsible for the overall safety of the crossing. Contracts governing private crossings often do not specify responsibility for all factors that could affect crossing safety. Because of the distribution of safety responsibilities for private crossings, some important safety factors are not addressed by any agency.

The Federal Railroad Administration (FRA) is responsible for railroad track, train, and signals safety at all grade crossings, whether private or public. The FRA's jurisdiction applies to rail operations only. The FRA oversees the gates, crossing lights, and track gauges for both public and private crossings, ensuring that they meet Federal standards. On the other hand, the Federal Highway Administration (FHWA) and the Indiana Department of Transportation (INDOT) have far fewer responsibilities for private crossings than for public crossings. Because it is a private crossing, neither the FHWA nor INDOT has jurisdiction over the highway component of the Midwest Steel crossing.

Consequently, key factors affecting the crossing's safety, such as what types of vehicles may use the crossing, the appropriate configuration of the storage area, and necessary signal timing considerations, are not overseen by any agency. Not only are significant safety elements not addressed by any private or government entity, but the complex interactions between rail and highway operations are not adequately coordinated.

To summarize, no single entity—not the crossing owner, or a railroad, or a Federal or State regulatory agency—was responsible for the safety of the entire Midwest Steel private grade crossing. Therefore, the safety-related developments that affected the Midwest Steel crossing over time, such as changes in vehicles using the crossing and in train and vehicle traffic levels,

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<sup>2</sup> Not all private crossings are covered by contractual agreements. In many cases, the owner of the private roadway is unknown.

<sup>3</sup> At the time of the accident, Conrail operated the northern portion of the Midwest Steel crossing. As of June 1, 1999, the Conrail operation in this area was taken over by the Norfolk Southern Corporation.

<sup>4</sup> Depending on the contractual situation, PreCoat Metals, rather than the National Steel Corporation, could be responsible.

were not reviewed by a single entity, and effective steps were not taken to resolve these recognized safety problems. Several organizations involved in the crossing, including the National Steel Corporation, NICTD, and the FRA, were aware that safety was being compromised at the Midwest Steel crossing, but no entity had or assumed the responsibility to act to solve the problems. Therefore, the Safety Board concluded that the lack of clear delineation of oversight responsibility for the safety of the Midwest Steel private grade crossing undermined its safety.

The private classification of a crossing can affect still other important factors concerning its safety. For instance, funds distributed to the States by the FHWA for making crossing improvements will not, in most States, be available to improve safety at a private crossing. In addition, individual State policy establishes whether existing guidelines and standards for safe crossing design must be applied to both public and private crossings. As noted, the State of Indiana does not have jurisdiction over private crossings; hence, INDOT does not have clear authority to require the same level of design safety at both public and private crossings.

In Indiana and other States, Federal guidelines for the appropriate design and placement of warning devices at grade crossings, as codified in the *Manual on Uniform Traffic Control Devices* (MUTCD), are required to be applied at public crossings.<sup>5</sup> Because of many States' (including Indiana) lack of jurisdiction, however, adherence to the MUTCD guidelines cannot be required at private crossings. Consequently, private crossings in Indiana are not required to meet any standards for signage, pavement markings, or other elements of traffic safety and control.

Following the 1995 Fox River Grove accident,<sup>6</sup> in which a school bus stopped at a grade crossing extended into the path of a train, the Safety Board made the following safety recommendation to the FHWA:

H-96-40

Develop guidelines and amend the MUTCD to provide methods to delineate the area (zone) that a train, or its cargo, or both, may occupy on the track or tracks of a railroad grade crossing so motorists have visual reference points that enable them to ascertain whether their vehicle is encroaching on the travel path of the train, or its cargo, or both.

In a letter dated March 13, 1997, the FHWA stated

The [FHWA] has begun developing delineation and signing guidelines for the recommended zone at railroad grade crossings. The FHWA has worked with the Illinois Department of Transportation (IDOT) in determining a signing and delineation method which will comply with the requirements of the MUTCD. The

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<sup>5</sup> The MUTCD provides guidelines for sign, signal, and pavement marking design, as well as for appropriate placement. MUTCD guidelines become State law when each State adopts them; all States are required to adopt the MUTCD or a State manual that conforms to the MUTCD.

<sup>6</sup> National Transportation Safety Board, *Collision of Northeast Illinois Regional Commuter Railroad Corporation (METRA) Train and Transportation Joint Agreement School District 47/155 School Bus at Railroad/Highway Grade Crossing in Fox River Grove, Illinois, on October 25, 1995*, Highway/Railroad Accident Report NTSB/HAR-96/02 (Washington, D.C.: National Transportation Safety Board, 1996).

IDOT will begin using the method in early 1997. The FHWA has assigned a number and title to a[n] IDOT request for a change to the MUTCD for inclusion of the proposed delineation and signing method; Request VIII-43 C—Roadway Rail Pavement Marking and Signing Plan. The FHWA will consider the IDOT method and other submitted methods and will request public comments through the publication of a Notice of Proposed Amendments to the MUTCD regarding recommended guidance which may be included in the MUTCD as discussed in the above safety recommendation.

In a letter dated May 21, 1997, the Safety Board stated

The Safety Board understands that the FHWA has begun developing delineation and signing guidelines for such zones at railroad grade crossings. The FHWA has worked and will continue to work with the [IDOT] in determining a signing and delineation method that will comply with the design requirements of the MUTCD. Pending amendment of the MUTCD to meet the intent of this recommendation, Safety Recommendation H-96-40 will be classified 'Open—Acceptable Response.'

Recent contact with the FHWA indicates that a Notice of Proposed Rulemaking will be issued in December 1999 to amend the MUTCD to address this recommendation.

Signage of the type specified in Safety Recommendation H-96-40 might have warned the driver of a long combination vehicle of the special hazard the Midwest Steel crossing posed. Therefore, the Safety Board concluded that the use of the MUTCD at private as well as public crossings may help ensure that certain hazardous situations at all grade crossings receive appropriate attention before an accident occurs.

Throughout the United States, roadway ownership establishes whether a grade crossing is classified as public or private. The classification does not take into account the impact each privately owned crossing may have on the safety of the members of the general public who also use it.

The Midwest Steel grade crossing involves more public presence than its designation as a private crossing would imply. About 4,300 public highway vehicles and 132 trains traverse the Midwest Steel grade crossing on an average day. Of the 132 trains, about 14 are Amtrak and 26 are NICTD passenger trains, all carrying members of the public. In addition, during this investigation, the Safety Board found that the Midwest Steel grade-crossing storage area is owned by NICTD (a public agency) and that the collision occurred on publicly owned land.

The Midwest Steel crossing is not the only private grade crossing in the United States with significant public involvement. Many private crossings provide access to public facilities, such as parks or municipal dumps. In addition, many crossings throughout the Nation are traversed by the public riding on passenger trains. The members of the public using these private crossings are entitled to the same level of safety as is required on public grade crossings. Nevertheless, because of differentiations in how private and public crossings are overseen, funded, and regulated, a lower level of safety may be tolerated on private crossings than on public crossings. The Safety Board concluded that the current method of classifying grade crossings

based solely on whether the roadway involved is publicly or privately owned does not provide a uniform level of safety at all grade crossings.

During the Portage investigation, the Safety Board also considered the means used to determine hazard levels at grade crossings. At public grade crossings in Indiana, INDOT uses a formula developed by the U.S. Department of Transportation (DOT) to determine the relative likelihood of accidents occurring at the grade crossing. Those public crossings found to be hazardous under this formula are listed and addressed, in priority order, as crossings requiring safety improvements.

INDOT does not use this hazard index formula to evaluate private crossings, so INDOT never applied the formula to the Midwest Steel grade crossing. However, even if INDOT had evaluated private grade crossings, the hazard index formula used would not have included data on the special characteristics that make the Midwest Steel crossing particularly hazardous.

The DOT-based index employed by INDOT basically considers the volume of vehicular traffic using the crossing, the number of trains traversing the crossing, the types of warning devices at the crossing, and the number of accidents that have taken place at that location. The formula would not take into account the fact that about 30 percent of the trains traversing the Midwest Steel grade crossing are passenger trains. (Systemwide, NICTD reportedly carries 11,000 to 12,000 commuters each weekday.) Nor would the formula consider that, of the 4,300 motor vehicle crossings that take place daily, about 1,800 are made by heavy trucks. Despite the obvious safety problems identified during the Portage investigation, under the limited INDOT hazard criteria, the Midwest Steel crossing would not have been classified as a particularly dangerous crossing, largely because it had experienced only one accident in the past 5 years. The Safety Board therefore concluded that an accurate evaluation of the accident risk at the Midwest Steel grade crossing could not be made using the current hazard index formula because the formula does not reflect the presence of passenger trains and the prevalence of tractor-semitrailers using the crossing.

In its 1998 passive grade crossing safety study, the Safety Board issued the following safety recommendation to the DOT:

H-98-33

Develop a standardized hazard index or a safety prediction formula that will include all variables proven by research or experience to be useful in evaluating highway-rail grade crossings, and require the States to use it.

In the same letter of December 23, 1998, in which the DOT responded to Safety Recommendation H-98-32, the DOT failed to respond to Safety Recommendation H-98-33. Therefore, in a letter dated February 8, 1999, the Safety Board stated

[Safety Recommendation] H-98-33 asked the DOT to develop a standardized hazard index or a safety prediction formula that will include all variables proven by research or experience to be useful in evaluating highway-rail grade crossings, and

require the States to use it. Because no response was provided for H-98-33, the Board has classified this recommendation 'Open—Await Response.'

Therefore, based on the foregoing information, the National Transportation Safety Board makes the following safety recommendation to the U.S. Department of Transportation:

Eliminate any differentiations between private and public highway-rail grade crossings with regard to providing funding for, or requiring the implementation of, safety improvements. (I-99-02)

To ensure that the hazard formula used to establish the relative danger posed by a grade crossing is as accurate as possible, the Safety Board reiterates the following safety recommendation to the U.S. Department of Transportation:

H-98-33

Develop a standardized hazard index or a safety prediction formula that will include all variables proven by research or experience to be useful in evaluating highway-rail grade crossings, and require the States to use it.

Also, the Safety Board issued safety recommendations to the Federal Railroad Administration, the Federal Highway Administration, the Indiana Department of Transportation, the National Steel Corporation, the Norfolk Southern Corporation, and the Northern Indiana Commuter Transportation District.

Please refer to Safety Recommendations I-99-02 and H-98-33 in your reply. If you need additional information, you may call (202) 314-6437.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: Jim Hall  
Chairman