BACKGROUND

An estimated 23 million public school students ride over 400,000 school buses twice daily to go to and from school. Additionally, it has been estimated that another 1-2 million students ride school buses to and from school-related activities each day. In the course of a school year, school buses transport students over 4 billion miles.

The safety of pupil transportation is of significant concern to Federal, State and local governments, school districts, school administrators, parents, and the general public. To help ensure the transportation safety of students on school buses, the National Highway Traffic Safety Administration (NHTSA) established and enforces a series of Federal Motor Vehicle Safety Standards governing the safety performance and manufacture of school buses. NHTSA also conducts a defects investigation program to identify safety defects in motor vehicles, including school buses, and requires manufacturers to recall and remedy defective vehicles free of charge. In addition NHTSA's Guideline #17, "Pupil Transportation Safety" establishes minimum recommendations for a pupil transportation safety program, including the identification, operation, and maintenance of buses used for transporting students; training of passengers, pedestrians, and bicycle riders; and administration.

Within the school transportation industry itself, there is a long history of significant efforts to make school transportation safe and efficient. Pupil transportation programs date back to the earliest years of the 20th century. By 1910, thirty states had pupil transportation programs in place. **(Iowa passed legislation in 1897 which provided for transportation to rural students.)** The first "vehicles" used to transport students were nothing more than horse-drawn carts which were borrowed from local farmers. With the development of automobiles and trucks with gasoline-powered engines, the school "wagon" was replaced with the school "truck." During the 1920's and 1930's, the nation's roadway system was expanding, especially in rural communities. This led to a greater need for vehicles to transport school children and the formation of an industry of manufacturers of school buses.

SAFETY GUIDELINES ESTABLISHED

As the number of school buses operating on the roadways increased, there came the inevitable problems. Several serious tragedies occurred involving school buses, which caused school officials to think seriously about developing safety guidelines for school buses. Over the years NHTSA has responded to the safety concerns of the school transportation industry and has issued several guidelines dealing with highway safety. The most notable to school transportation is NHTSA Guideline #17.

Unfortunately, isolated school bus safety problems continue to persist throughout the United States. One of these problems was recently identified as a contributing factor in a tragic crash that occurred on October 25, 1995, in Fox River Grove, Illinois. On that day, a commuter train hit a school bus that was stopped at a highway-railway grade crossing. The school bus driver had taken all of the appropriate actions prior to crossing the railroad tracks, but unknowingly failed to completely clear the railway track while the school bus was stopped at a red traffic light. The commuter train struck the rearmost side of the school bus.

At the conclusion of its investigation of the crash, the National Transportation Safety Board identified one of the factors contributing to the crash as an inadequate school district routing and hazard marking system. The Safety Board noted that the substitute school bus driver operating the bus that day was unaware of the hazard at the highway-railroad crossing because **"the methods employed by the school district to identify route hazards were ineffective."**

As a result of the recommendations from the Safety Board, NHTSA provided a grant to the National Association of State Directors of Pupil Transportation Services to research the issue of school bus route hazard and route hazard marking systems. The grant called for the development of guidelines that school transportation officials could utilize in developing a system for identifying school bus route hazards that meets the needs of their locality. The study also was designed to include suggestions for reasonable and appropriate means of informing school bus drivers of potential school bus route hazards so as to educate them on how to deal with any route hazards that can not be avoided. Finally, the study was to suggest methods to disseminate the information developed during this project to the school transportation community.

PROJECT RESULTS

What is a School Bus Driving Route Hazard

While it is possible to develop a list of the potential hazardous locations/situations that a school bus driver could encounter in the course of driving a school bus route or activity, it is **NOT** possible to develop a definitive list of **every** potential driving hazard. Therefore, regular review of the route hazards list must take place locally in order to keep the document accurate and permit the addition of "yet-to-be-discovered" hazards. **(See "List of Potentially Hazardous Locations/Situations on School Bus Routes" attached.)**

Some potential school bus driving hazards can be considered as **"fixed,"** in that the situation or condition exists (such as a railroad crossing), can be identified, and drivers can be informed and educated about the potential hazard. Other potential driving hazards occur without advanced warning **("non-fixed")** including; (1) inclement weather conditions such as fog, dirt or sand storms, blinding sunlight, snow storms, etc.; (2) conditions that result from such weather conditions as flooded roadways, fallen trees, downed power lines; and (3) accident locations**. This inservice session will focus primarily on potential school bus driving hazards that are of a "fixed" nature.**

ESTABLISHING A LOCAL SCHOOL BUS ROUTE HAZARD IDENTIFICATION PROGRAM

An effective school bus route hazard identification program need not be elaborate or complicated**. IT JUST NEEDS TO HAPPEN!** There are three major components to an effective program:

(1) Develop a list of potential driving hazards (Sample List Attached).
(2) A specified procedure/schedule for conducting on-site reviews of school bus routes & activities. (Sample "School Bus Route Evaluation" form attached).
(3) An efficient and effective means of informing school bus drivers (regular and substitute) of potential route hazards.

(1) Developing the Route Hazards List

All transportation employees (supervisors, route managers, schedulers, mechanics & drivers) should begin the process as a group. The first task of the group should be to develop a list of school bus route hazards that, if present along any route, should be recorded and made available to every regular route or activity driver or substitute driver of school district buses. (A sample list is attached as a starting point.)

(2) Developing a School Bus Route Evaluation Procedure

a. The "Check List". A systematic process including a "School Bus Route Check List" should be developed by school administrators and school bus drivers to evaluate all school bus routes and activity site locations to determine whether any potential hazards exist. The route hazards list developed in step (1) above can serve as the basis for such a checklist. (A Sample "School Bus Route Evaluation" form is attached.)

b. Determine how and when route evaluations will take place. It is generally recommended that an initial school bus route evaluation be conducted prior to the start of school each year using the "check list" to identify existing or potential hazards. Each hazard and its location should be clearly identified along with any suggestions for eliminating, avoiding or safely dealing with the hazard.

c. Ongoing and periodic route evaluation is essential to maintain the route hazard information up to date. Route hazards can develop over-night and must be related, preferably in writing, by drivers to the transportation or route supervisor so that the information can be used to update the route or activity files.

d. The district must establish a method by which drivers can easily and effectively report route hazards to school authorities. This can be a separate route hazard form designed by the district and copies maintained in the driver's handbook or log on the bus. Or a specified location in the transportation facility where these forms are located and available for completing by the drivers. There should be a specified location in the transportation facility where these route hazard notices are placed after completion by the drivers so that each will receive the appropriate attention of school authorities.

(3) Developing a Driver Notification Plan

Once the route hazard list is developed and checked against all existing routes and activity trip locations, there must be some means for making sure all drivers have access to this information. Some typical ways of accomplishing this are:

a. Route files maintained in the transportation office and available to drivers daily.
b. Route folder or notebook maintained current and placed in each vehicle.

ROUTE HAZARD ELIMINATION VS ACCOMODATION MEASURES

We must realize that not all route hazards can be totally eliminated. When and where this occurs, the district and school bus drivers have but two options; (1) avoid the hazard through route adjustment, or (2) make certain that every driver is aware of the potential hazard and is provided information or acquires the skills necessary to reduce the potential hazard to an acceptable safety level.

A word of caution, however, is in order. Route adjustments to avoid a hazardous situation may cause slight delays or result in additional cost to the school, but when it comes to the safety of the children transported the extra precaution can pay big safety dividend in the end.

LIST OF POTENTIALLY HAZARDOUS LOCATIONS/SITUATIONS ON SCHOOL BUS ROUTES

Railroad Grade Crossing

- Number of tracks
- Visual obstructions to determine type and travel speeds of trains
- Train schedules (consider unscheduled trains also)
- Presence or absence of grade crossing controls
- Unique characteristics or operation of crossing controls (frequent malfunction, erratic operation)
- Size of queuing area before and after the tracks (not enough space between multiple tracks to stop or between tracks and intersection or parallel roadway)
- Expected traffic conditions at various times during the day
- Roadway design near the grade crossing

Dangerous Intersections and Roadway Locations

- High frequency crash locations as defined by state transportation and/or law enforcement officials
- Uncontrolled intersections
- Curves and intersections with limited sight distances
- Areas with no shoulders
- Visibility of traffic control signals
- Coordination of traffic control signals with others in the immediate area

Bridges, Tunnels and Overpasses

- Weight capacity
- Height and/or width clearances
- Lane width

Queuing/Storage Areas

- Short acceleration/deceleration lanes (freeway/multi-lane highway entrances)
- Limited median areas crossing multi-lane highways

Industrial Intersections and Construction Zones

- Areas where heavy vehicles/equipment operate on a regular basis, and may be entering, exiting, or crossing the roadway

Steep Downgrades

- Mountainous areas where brake condition and braking operations are important
- Location of run-off-areas

Areas of Significant Speed Differential Between Vehicles

- On-off ramps to high-speed roads
- Farm vehicle areas, including non-motorized vehicles on the road
- Mountain terrain

Other Conditions Identified in Local Areas

- Unique roadway locations; for example:
    - - roadways without guardrails that are next to rivers, lakes, etc.
    - - dirt or gravel roads that could affect braking
    - - soft spots or wash out areas caused when frost goes out or that erodes with heavy rains
- Areas with problems related to right-turn-on-red laws
- Areas with visibility problems due to air quality/industrial smoke/agricultural chemicals, etc.

Pedestrian Areas

- School bus loading/unloading zones
- Narrow streets with parked cars – children darting between cars
- Private roadways, housing developments, trailer courts
- Congested shopping and business areas

Other Areas Identified Locally