

# Pennsylvania Corridor Highway Safety Improvement Program

JOHN J. ZOGBY, THOMAS E. BRYER, AND JAMES TENAGLIA



Enhanced emergency medical service improves probability of surviving severe accidents.



In its publication on national transportation policy, *Moving America: New Directions, New Opportunities*, the U.S. Department of Transportation states that safety is its top priority. President Bush also emphasized safety when he called for the United States to reduce the highway fatality rate by 1992. The goal is to cut the fatality rate to 2.2 fatalities per hundred million vehicle miles, down from 2.3 in 1988 and 3.3 in 1978.

The greatest number of transportation-related accidents in the United States occurs on streets and highways. Although the death rate in traffic accidents declined from 1978 through 1988, highway deaths could total more than 60,000 a year by early next century if current patterns persist.

In response to national policy guidelines, innovative safety improvements and prac-

tices are being implemented. The Federal Highway Administration and the National Highway Traffic Safety Administration (NHTSA) are jointly pursuing three promising programs, including the Corridor Highway Safety Improvement Program.

All states have long sections of arterial highways, or corridors, that have severe accident problems. Nationwide, approximately 50 percent of the fatalities and 30 percent of the injuries occur on these arterials. Many problem corridors are characterized as free-access, high-volume facilities that have traffic speeds of at least 40 miles an hour and are adjacent to commercial strip developments. Safety problems often cannot be resolved by replacing the existing free-access highway with an expressway or freeway because of major financial, environmental, or social impacts.

The Corridor Highway Safety Improvement Program, designed to reduce severe accidents on highway corridors, integrates highway improvements, driver perfor-

mance and vehicle characteristics, and emergency medical service initiatives in a comprehensive approach to highway safety.

While several state highway agencies have been considering similar approaches, the Pennsylvania Department of Transportation (PennDOT) has developed and is now implementing a comprehensive safety initiative. The program's objective is to reduce accidents, particularly fatalities, on specific high-accident highway corridors.

## Corridor Selection

Fifty-five corridors in Pennsylvania were selected for the safety initiative. The average length of each corridor is about 16 miles, totaling 880 miles of highway. During the

John J. Zogby is deputy secretary for safety administration, Thomas E. Bryer is director, Center for Highway Safety, and James Tenaglia is corridor safety coordinator. All are with the Pennsylvania Department of Transportation.

past five years more than 700 people died in accidents on these corridors, and accident costs averaged \$2.2 million a mile. Although these fatalities amounted to only 7 percent of the total, these sections of highway had the highest concentration of severe accidents per mile of highway in the Commonwealth.

Total reconstruction or the replacement of a free-access facility with a freeway-type facility would provide the maximum reduction of severe accident potential. However, the magnitude of funds required to reconstruct or replace even a single corridor, coupled with scarce available resources, led to a strategy of applying low-cost safety improvements on all corridors. This strategy was considered to have the greatest potential for significant accident reduction in these corridors.

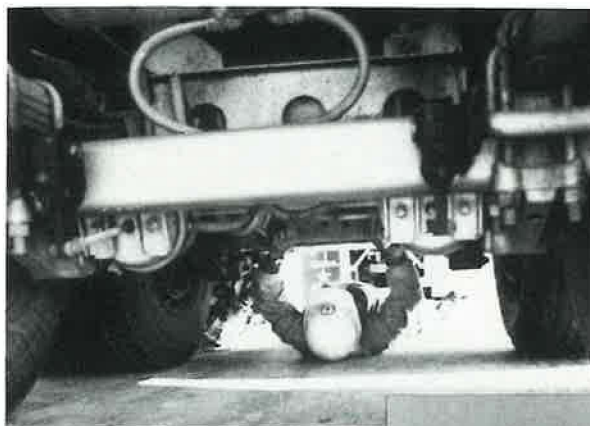
The safety-related improvements targeted for the corridors had the following general characteristics: they were low cost; there was no need for lengthy design enhancements, major right-of-way acquisition, or environmental studies; and the improvements could be implemented within two years. Because the improvements are applied over long sections of highway and not over spot locations, they have a compounding effect on overall highway safety for the length of the corridor.

The Corridor Highway Safety Improvement Program requires the combined efforts of three Pennsylvania agencies: PennDOT, the Department of Health, and the state and local police. Funding has been provided by the FHWA, NHTSA, and the state.

## Background

The Corridor Highway Safety Improvement Program began with a pilot corridor (US-322, Delaware County, Pennsylvania). This five-mile roadway is a two- and four-lane, high-volume (more than 20,000 in average daily traffic), high-speed highway. Twenty-five percent of traffic volume on this highway is heavy truck traffic.

Because an accident on this corridor resulted in multiple fatalities, Pennsylvania's Governor Robert P. Casey requested that PennDOT develop a plan to reduce



**Low-cost highway safety improvements such as concrete barriers reduce frequency of severe accidents.**



accidents. A multidisciplinary team was assembled that included the department's chief safety engineer, a traffic engineer, a maintenance engineer, and local elected and police officials.

The team recommended a 14-point improvement program, including signing and pavement-marking enhancements, reduced speed limits, increased local police enforcement, concrete-median barrier installation, placement of anti-skid pavement surfaces, and establishment of an area for heavy-truck inspections. The plan was fully implemented six months following its development, at a cost of approximately \$600,000.

## Program Expansion

Because of the success of the program in rapidly identifying and implementing highway and enforcement safety initiatives that had the potential for significantly enhancing safety, Pennsylvania accident data were examined in order to define additional corridors with severe accident histories and recommend improvement strategies. Potential sites were also identified by dis-

**Targeted motor-carrier safety inspections reduce frequency of unsafe truck operations.**

trict offices and by information from public hearings conducted across the state by the Transportation Commission. Each of the 55 corridors selected for the initiative was assessed, and improvements were implemented on the basis of four components.

## Program Components

### Highway Design

Analyzing safety problems on roadways involves locating areas of accident cluster, identifying roadway deficiencies and contributing factors, and developing roadway improvements.

Highway improvements include upgrading intersections through the use of protected left-turn lanes and dual center-turn lanes; improving signing and pavement markings, skid resistance, and signal systems; installing median barriers; establishing inspection sites for heavy trucks; and removing fixed objects.



### Driver Performance

Accident data were analyzed to determine driver performance failures associated with specific accidents.

Driver performance initiatives involve educational and media programs that promote safe driving practices, enforcement measures, and safety blitzes (concentrated, simultaneous surveillance by several police departments). Safety belt usage, drinking and driving, speed reduction, unsafe driving practices, and pedestrian actions were among the topics covered by the media program. Selective police enforcement increased the effectiveness of the educational initiatives, as did federal grants to state and local police to purchase such traffic enforcement equipment as speed timing devices used to conduct safety blitzes.

### Vehicle Performance

Data were used to identify corridors with truck safety problems. Commercial truck safety inspections were performed along these corridors. Motorists were informed of dangerous vehicle alterations and were encouraged to be aware of their vehicle's operating condition at all times.

### Emergency Medical Services

Activities in this area concentrated on increasing the probability of survival of accident victims by improving emergency medical services. Improvements include enhanced communications for quicker response time and training for personnel. Selected equipment, ranging from basic life support systems to advanced life support, or paramedic, systems were upgraded. The effective use of trauma centers, effective patient triage, and transfer of patient from accident scene to appropriate medical facility were also addressed.

### Program Replication

The U.S. DOT has identified corridor safety as one of the three major safety initiatives to be implemented nationwide. These initiatives were selected on the basis of their potential to reduce the number of fatal accidents on the nation's highways. Because Pennsylvania has a corridor safety initiative under way, the FHWA has requested that PennDOT present a description of Pennsylvania's Corridor Highway Safety Improvement Program to other states interested in implementing a similar program.

### Program Evaluation

Pennsylvania's program is still in its early stages. PennDOT plans to evaluate the effects of program components as the program is expanded and implemented on additional corridors. These studies will include determining the effect of public information and education programs on driver performance, evaluating improved emergency medical services, and conducting studies of corridor accident data before and after the program is implemented.

Innovative programs present many challenges, particularly those that involve several agencies. Some of the more complex tasks include coordinating program development among agencies, ensuring cooperation, and incorporating driver performance initiatives into the engineering plans of technically oriented PennDOT district offices.

The Corridor Highway Safety Improvement Program is considered successful. The program has generated cooperation by its interdisciplinary approach to solving highway safety problems. In addition to the involvement of various agencies, major support has come from community leaders, municipal officials, and media members in areas adjacent to the corridors. Communication and cooperation between neighboring municipalities have increased, resulting in improved relations between PennDOT and local municipalities.



Publicized enforcement campaigns and media programs to increase driver awareness improve compliance with laws.