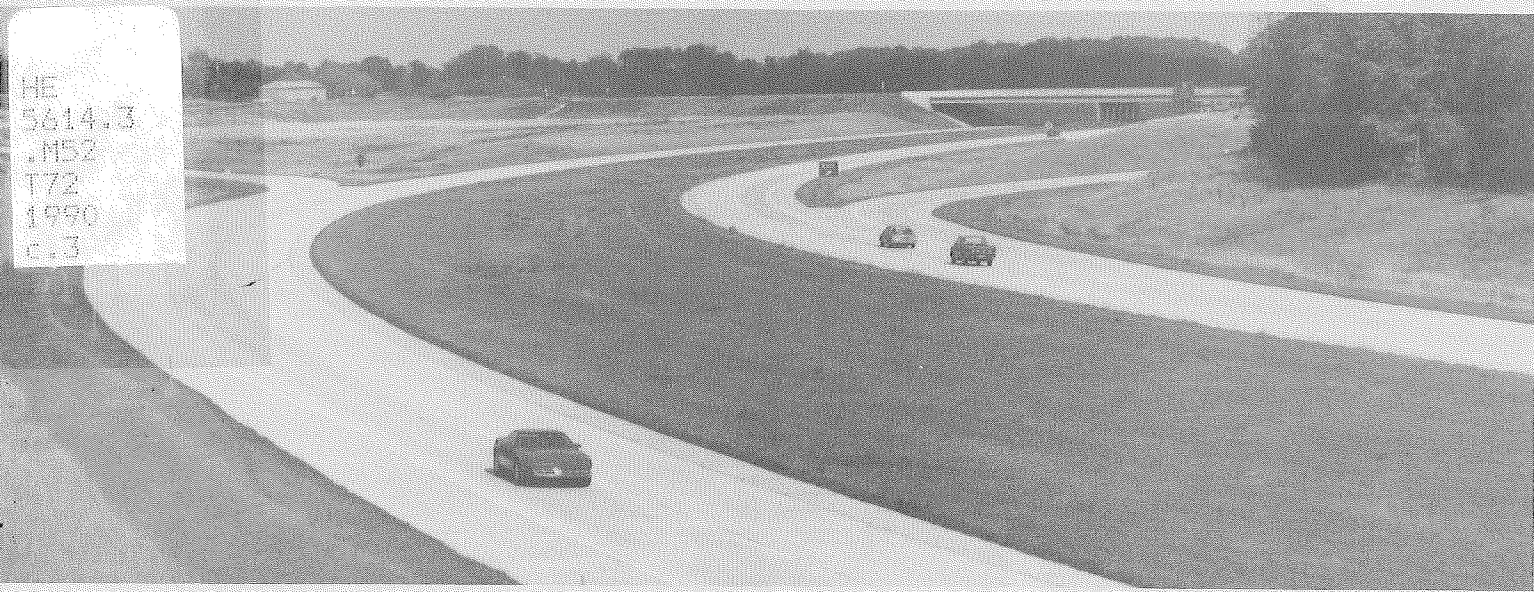


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Transportation Safety

IN MICHIGAN

1989 ANNUAL REPORT



TRANSPORTATION SAFETY IN MICHIGAN

ANNUAL REPORT 1989

MICHIGAN DEPARTMENT OF TRANSPORTATION

STATE TRANSPORTATION COMMISSION

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Vice-Chairman

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James P. Pitz

June 1990

TRANSPORTATION SAFETY IN MICHIGAN

ANNUAL REPORT 1989

TABLE OF CONTENTS

	PAGE
Executive Summary -----	4
Introduction -----	7
Highway Safety -----	9
Truck Safety -----	21
Railroad Safety -----	27
Air Safety -----	41
Public Transit Safety -----	47
Intercity Bus Safety -----	51

*Report prepared by
Traffic and Safety Division
Bureau of Highways*

EXECUTIVE SUMMARY

This Transportation Safety report is published in response to Transportation Commission policy 1100.77

The report addresses the safety implications of various transportation modes for which the Michigan Department of Transportation is responsible.

Highway Safety

The total statewide travel for 1989 is estimated at 79 billion annual vehicle-miles of travel. This is a 2.3 percent increase over 1988. The state highway system carried about 42 billion vehicle miles of travel in 1989, over half of the statewide total.

During 1989, 1,631 persons died in traffic accidents on Michigan highways. This represents a 4.3 percent decrease over 1988.

The Department of Transportation assures the safety of the state highway system through planning, design, construction, maintenance and operation of its roadways.

During fiscal year 1988-89, \$ 22.9 million dollars were spent for various safety improvements, including traffic control devices (signs, signals and pavement markings) and construction improvements.

In 1989, 150 miles of experimental raised pavement markers were installed. These will be periodically inspected to determine their durability and impact on safety.

Truck Safety

Truck related accidents increased by 64 percent from 1982 to 1988 while truck traffic increased 38 percent. Total truck accidents for eleven months of 1989 were 18,606.

The 19 recommendations developed by the Interagency Truck Committee passed by the Legislature and the Governor as the Michigan Truck Safety Legislation in late 1988 are being implemented.

The Commercial Drivers License (CDL) program was implemented on January 1, 1990. This should have positive long term effects on truck driver performance and safety.

The Michigan Truck Safety legislation created the 1st state Truck Safety Commission in the nation. The Governor appointed the commissioners with Transportation Commissioner, Rodger Young, being voted chairman. This commission will help improve truck driver education.

Railroad Safety

Highway grade crossing accidents continue to decrease. Deaths resulting from vehicle-train collisions numbered 29 in 1988. This is up from the 1987 count of 19, but lower than the recent 1985 high of 35. All track mileage within the state is inspected at least twice a year. In addition, all railroad/highway grade crossings are reviewed at least once every two years. Projects identified and selected based on that evaluation are implemented primarily using federal aid railroad safety funds of approximately \$5 million per year.

MDOT was recently asked by the *Michigan Railroad Association* to coordinate the *Operation Lifesaver* program in the state. New initiatives and new programs are being developed.

Air Safety

There were 65 aviation accidents in Michigan during 1989. Fifteen of them involved fatalities. Analysis of 1989 accidents indicate pilot error as the causal factor in 42 of the 65 total accidents.

The Bureau of Aeronautics (AERO) impacts aviation safety through sponsorship of pilot safety seminars, monitoring of air shows, tours, races, Dawn Patrols and individual counseling of pilots.

AERO also sponsors an annual super safety seminar with the FAA for pilots, mechanics, aviation operators and flight instructors, publishes *Michigan Aviation*, the *Michigan Aeronautical Chart* and the *Michigan Airport Directory*, and operates seven classified Very High Frequency Omni-directional Radio Range (VOR)/Distance Measuring Equipment (DME) stations and three Microwave Landing Systems (MLS) in Michigan. AERO also monitors tall structures and assists in local zoning plans.

Public Transit Safety

During fiscal 1989, over 100 million rides were provided to the general public with 2,428 buses on 15 urban transit systems, 88 specialized service systems, and 59 non-urban local systems.

Transit agencies rely on federal and state funds for general operating expenses. MDOT uses federal and state funds to provide and conduct safety training in driving, maintenance and accident prevention.

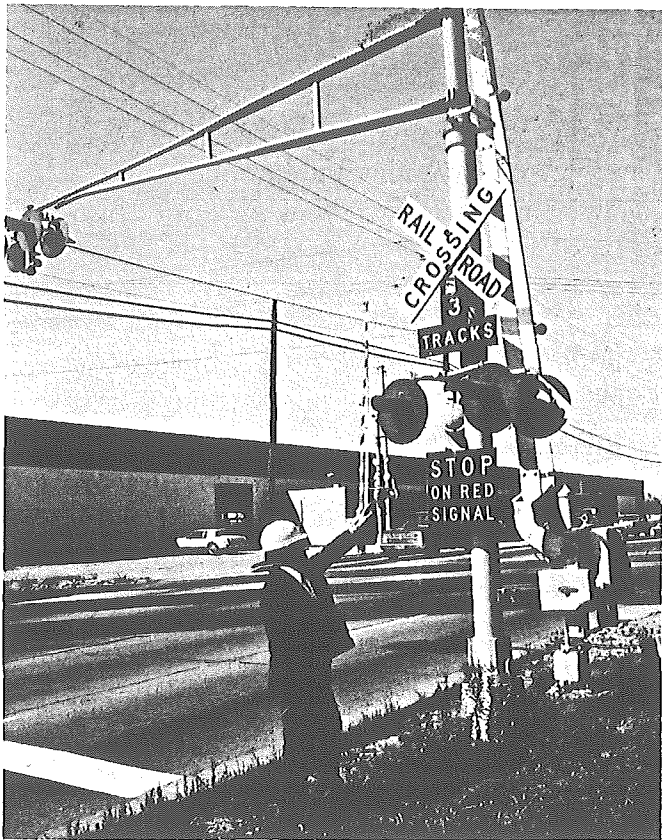
Intercity Bus Safety

During 1989, 4,734 privately owned and operated buses provided transportation throughout the state for tours, charters and regular scheduled service.

All buses operating in Michigan are required to be safety inspected annually. In addition, the department conducts random, unannounced safety inspections around the state without interfering with the traveling public.

Michigan is one of twelve states which meet or exceed federal safety inspection standards.

Safety is inherent in all MDOT programs such as continued pilot training and highway/railroad crossing inspection.



INTRODUCTION

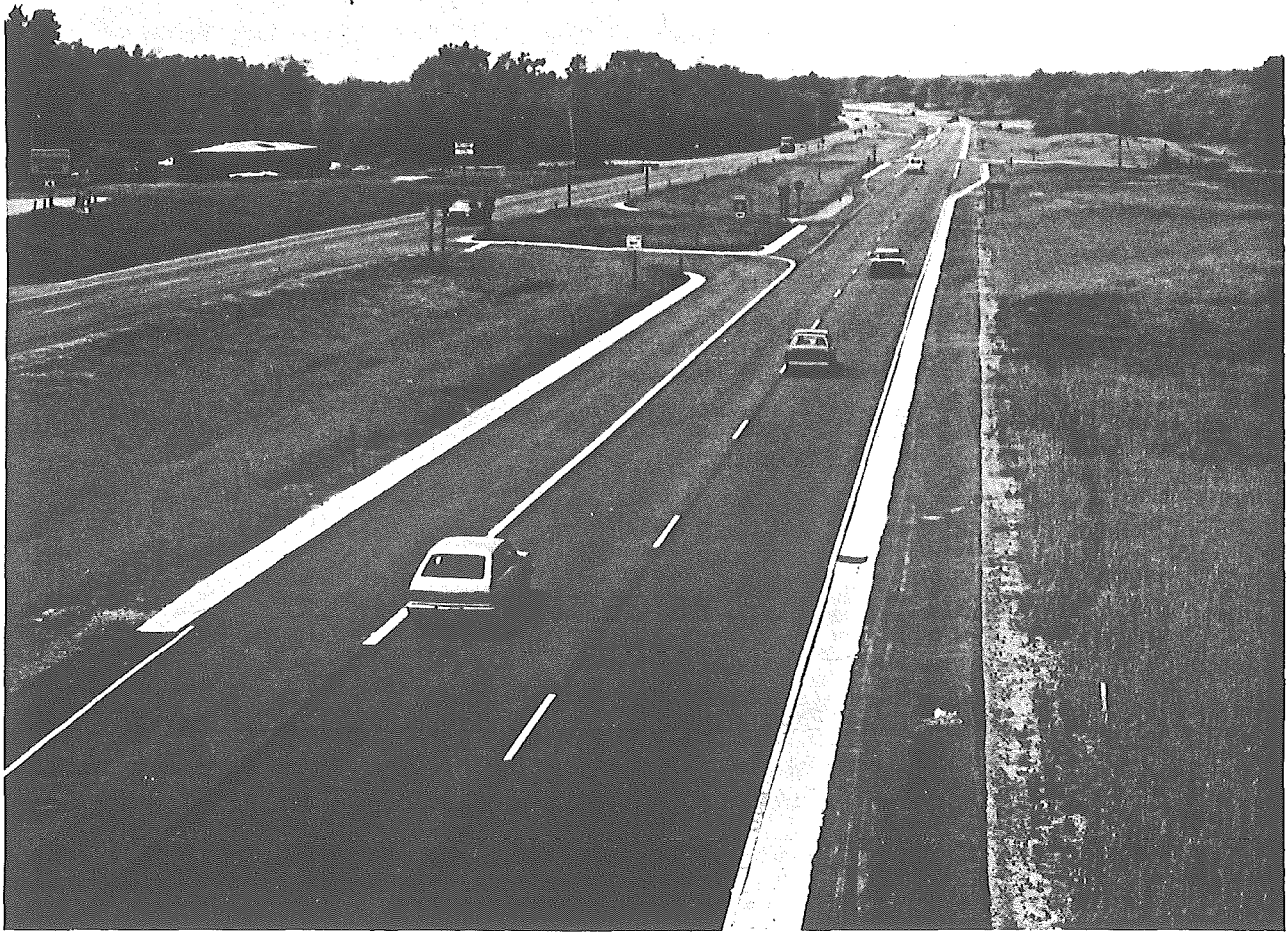
This is the second annual Transportation Safety Report developed in response to Transportation Commission policy 1100.77, dated April 22, 1987:

"All transportation modes under the authority of the State Transportation Commission or the Department should be regularly monitored to identify problems and facilitate operational safety.

The Department shall prepare and submit to the State Transportation Commission an annual report on transportation safety programs and activities. This report shall also be distributed to other agencies and organizations dealing with transportation safety."

Safety is inherent in all Michigan Department of Transportation (MDOT) programs. Planning, design, construction, maintenance, traffic operations, and research are several examples of MDOT activities which impact transportation safety.

Safety cannot be defined in terms of individual programs, projects or activities. A safe transportation system requires the awareness, commitment, and cooperation of the entire Department of Transportation.



Each governmental agency in Michigan is responsible for safe and convenient travel.

HIGHWAY SAFETY

Responsibility

The Michigan Department of Transportation, under the direction of the Michigan Transportation Commission, is responsible for a number of safety programs, including monitoring and responding to accidents on the state highway system in Michigan. Responsibility and authority for this activity is mandated and detailed in state law, federal regulations and Department of Transportation policies, procedures and operating instructions. Michigan Compiled Laws 691.1420 states, in part:

Responsibility for safe roads is found in federal, state, department and transportation commission policy.

"Each governmental agency having jurisdiction over any highway shall maintain the highway in reasonable repair so that it is reasonably safe and convenient for public travel."

Applicable federal regulations are outlined in United States Highway and Transportation Acts of 1966, 1973, 1978, and 1982, as defined in United States Code Title 23. Further state authority for highway system safety is defined by Michigan Transportation Commission Policy 1100.12 which provides for the safe operation of the state trunkline system, and Commission Policy 1100.17, which directs the department to provide an annual safety report to the Transportation Commission.

System Description

Michigan's highway system includes 117,995 miles of state and local roads. Mileage distribution by jurisdiction is: state - 9,541 (8 percent), county - 88,634 (75 percent), city - 19,820 (17 percent).

During 1988, over 77 billion miles of travel was carried on Michigan roads, streets, and highways.

State trunkline highways carry over half of all state traffic on only 8 percent of the total road mileage.

The state highway system carried 41 billion miles of travel, more than half of the statewide total. Eighteen percent of state highways are classified as freeways. They carry about 45 percent of all state highway travel.

The county road system carried over 23 billion miles of travel in 1988, approximately one-third of the statewide total. The 19,820 miles of city streets carried 13 billion annual miles of travel in 1988, 17 percent of the state total.

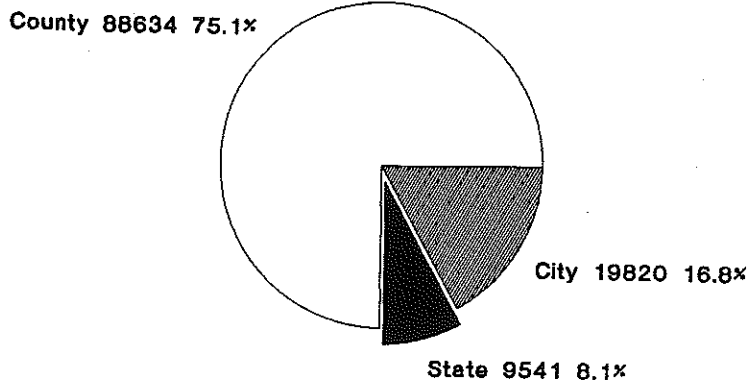
Total travel for 1989 is estimated at 79 billion miles of travel.



MICHIGAN ROAD MILEAGE BY JURISDICTION

1989

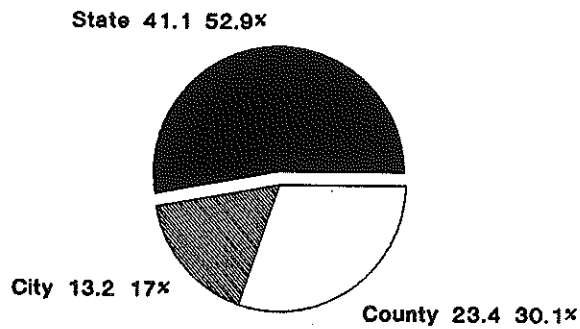
117,995 Total Miles



MICHIGAN TRAVEL BY JURISDICTION

1988

77.7 Billion Total Vehicle-Miles of Travel

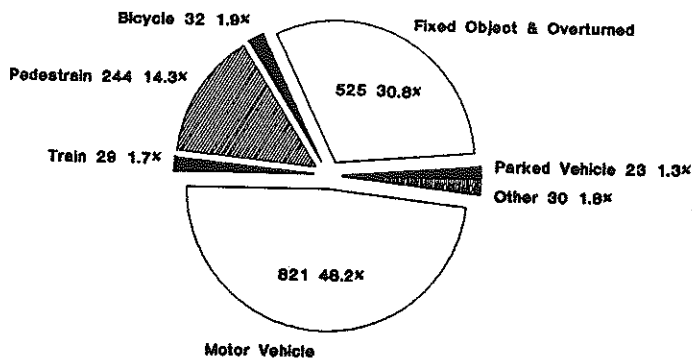


Accident Data

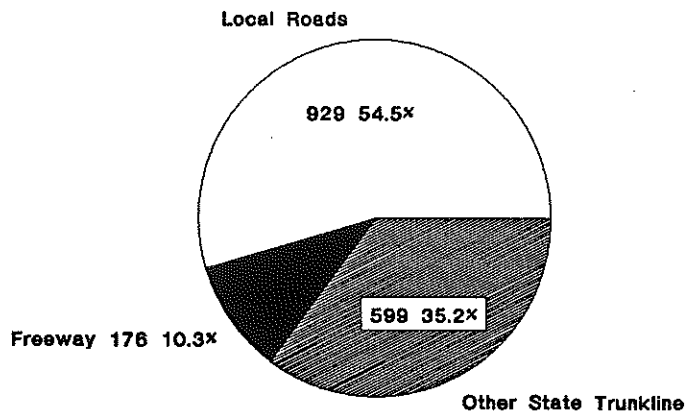
During 1988, 1,704 persons died in traffic accidents on Michigan highways. This is 72 above the 1632 killed in 1987. Due to the increase in travel, the death rate decrease 1.4 percent to 2.19 deaths per 100 million vehicle miles of travel. Total accidents increased 3.3 percent from 397,224 to 410,437. Injuries decreased 0.4 percent from 156,318 in 1987 to 155,713 in 1988.

During 1989, 1,631 persons died in highway accidents. This is a Department of State Police provisional total with final numbers pending. Total accidents for 1989, are estimated to be 408,500, with 150,400 occurring on the state highway system. Total injuries for 1989, are estimated at 153,400, with 58,660 occurring on the state highways.

FATALITIES - 1988
Statewide

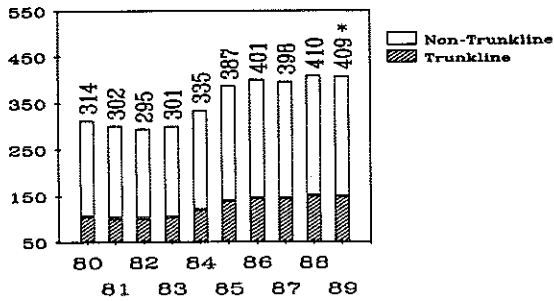


FATALITIES - 1988
Roadway Type



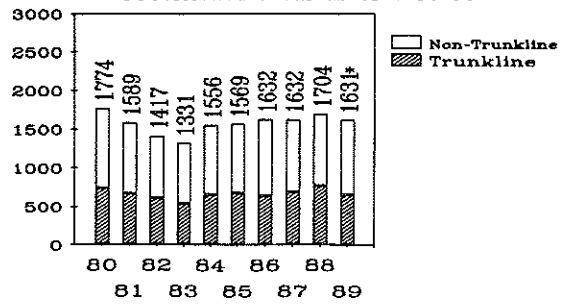
TOTAL ACCIDENTS

Thousands of Accidents
* - Estimated



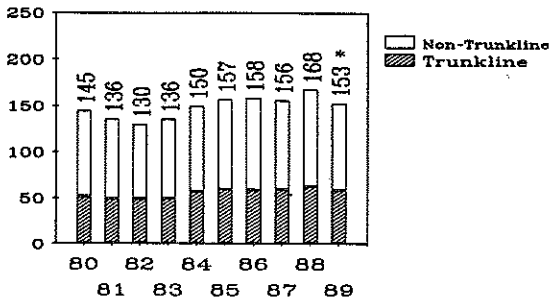
FATALITIES

Number of Fatalities
* - Provisional Total as of 5-30-90



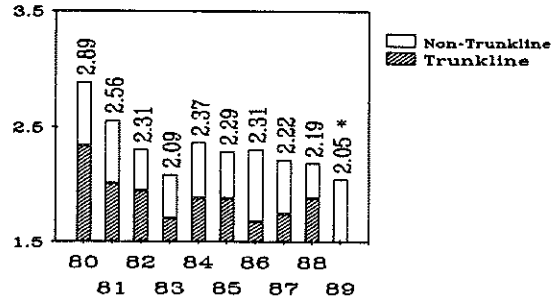
INJURIES

Thousands of Injuries
* - Estimated



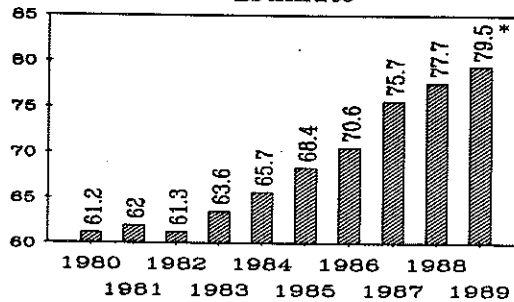
FATALITY RATE

Deaths/100 Million Vehicle Miles
* - Provisional Total as of 5-30-90



ANNUAL MILES OF TRAVEL

Billions of Vehicle Miles
* - Estimate



Highway Safety Programs

The Department of Transportation's Bureau of Highways manages a number of programs designed to assure the safety of the state highway system under its jurisdiction.

New Roadways

All new roadways are constructed with the most modern design standards, including the roadside environment where flat side slopes, clear recovery areas, breakaway sign supports, state-of-the-art guardrail, crash cushions, and other features are provided to minimize injury to the occupants of out of control motor vehicles.

MDOT uses the most modern standards when building new highways.

Reconstruction of Existing Roadways

MDOT is engaged in aggressive reconstruction, resurfacing restoration, and rehabilitation (3R/4R program) of about 500 miles of state highways each year.

MDOT's rehabilitation program involves reviewing projects for safety improvements.

All federal aid 3R/4R projects are reviewed by the Traffic and Safety Division to assure that any developing concentrations of accidents are identified and all appropriate safety enhancements are included as part of the projects.

Last year, 106 project plan reviews were completed involving 79 bridges and approximately 275 miles of roadway. A significant quantity of guardrail, guardrail end sections, and bridge rail were upgraded to current design standards in conjunction with this activity.

Statewide Accident Surveillance

In addition to incorporating safety into all phases of the MDOT's annual \$300 million construction program, the Traffic and Safety Division manages an accident surveillance program which identifies and corrects developing accident patterns on the state highway system, and on some local roads utilizing a federal traffic engineering assistance grant.

MDOT's Accident Surveillance program investigates and corrects high accident locations.

This system uses computer programs to isolate intersections and roadway sections with developing accident patterns.

The accident data is then analyzed further and justified corrective countermeasures are identified and implemented. If construction is required, projects are programmed using federal Hazard Elimination Safety (HES) or State (M) funds.

The statewide accident surveillance program relies on the cooperation of many divisions in addition to accident records. This includes pavement friction test data provided by the Materials and Technology Division, traffic volume and speed surveys conducted by the Bureau of Transportation Planning, and the photolog, traffic signal inventories, sign plans, and other data maintained in the Traffic and Safety Division and other divisions in the Bureau of Highways.

Guardrail Improvement Program

In addition to guardrail upgrading accomplished in conjunction with other construction activities, MDOT currently manages two other specific guardrail improvement programs.

Two specific programs address guardrail upgrading.

1. A five-year program funded up to \$700,000 per year to replace deteriorated wood posts on standard guardrail. This program funding was terminated in October 1989.
2. A ten-year, \$500,000-per-year program to upgrade outdated cable and other non-standard guardrail.

As an option, guardrail can be eliminated under any of these programs where it would be more cost-effective to modify the element protected by the guardrail, such as fill to flatten steep side slopes adjacent to the highway.

Additional guardrail is routinely upgraded by work authorization to department maintenance forces or to contract counties.

Interchange Upgrading Program

The Michigan Department of Transportation includes interchange improvements as part of its overall capital outlay program.

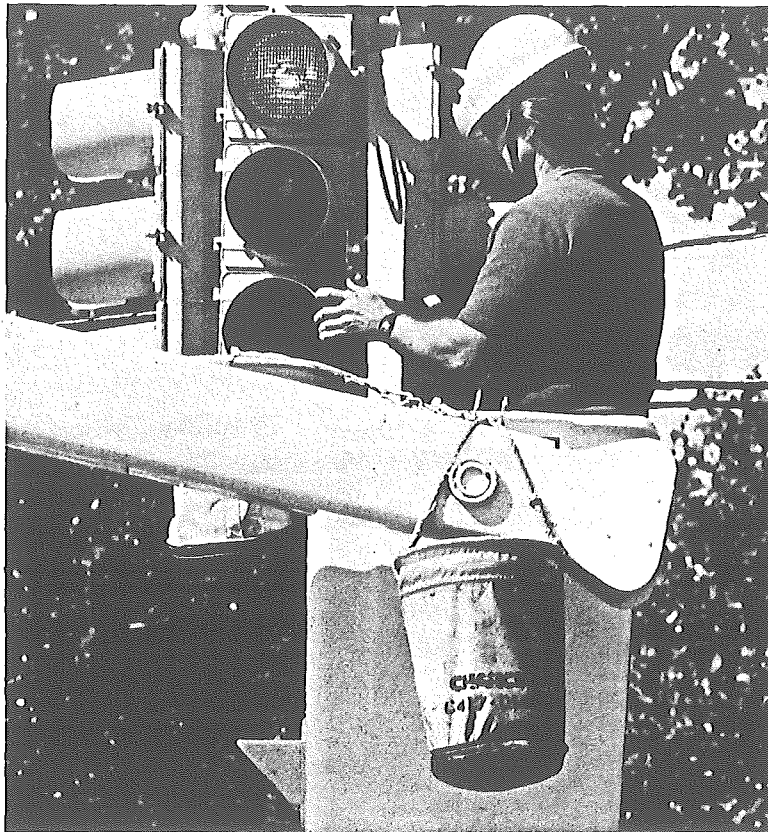
Freeway interchange improvements are part of MDOT's capital outlay program.

The Traffic and Safety Division manages a program which identifies interchanges with concentrations of various accident types. Each location is reviewed with district personnel to determine those factors contributing to the accidents. Corrective, cost-justified counter-measures are then recommended for implementation.

Traffic Control Devices

The Traffic and Safety Division is responsible for authorizing all traffic control devices (signs, signals, and pavement markings) on the state highway system. These devices are installed in accord with criteria and standards detailed in the Michigan Manual of Uniform Traffic Control Devices.

Traffic controls are installed in compliance with state and national standards.



Highway Safety Program Funding

Safety is an integral part of all department activities, including its capital outlay construction program, which in 1989 totaled \$460.9 million.

Management of the specific capital outlay safety programs previously discussed is largely the responsibility of the Traffic and Safety Division. Funding of those programs and projects is initiated by the Traffic and Safety Division as part of MDOT's annual "Call for Projects" process. The table below summarizes the division's "Call for Projects" submittal for fiscal years 1989 through 1991:

<u>Signing:</u>	FY89 (Mil)	FY90 (Mil)	FY91 (Mil)
Interstate Freeway Signing Contract	\$ 2.0	\$ 2.0	\$ 1.9
Non-Interstate Freeway Signing Contract	1.0	1.0	1.8
Non-Freeway Signing Contract	2.0	2.0	2.0
Work Authorizations (all systems)	<u>1.0</u>	<u>1.7</u>	<u>1.8</u>
Subtotal	6.0	6.7	7.5
<u>Pavement Markings</u>	5.2	5.6	7.3
 <u>Signals</u>			
Signal Installation	1.5	1.7	2.2
Installation by Work Authorizations	1.5	1.5	2.0
Signalized Intersection Improvement	<u>1.0</u>	<u>1.0</u>	2.0
Subtotal	4.0	4.2	6.2
 <u>Safety Programs</u>			
HES (All Federal)	3.41	3.4	3.5
Non-Federal Safety Improvements (MS)	1.35	1.6	1.7
Safety Work Authorizations	0.4	0.4	0.5
Guardrail Improvements	0.5	0.5	4.0
Interchange Improvements	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>
Subtotal	7.66	7.9	12.2
TOTAL	\$ 22.86	\$ 24.4	\$ 33.2

Other Actions Required to Improve Safety and Future Safety Activities

Governor's Safety Conference

The 1987 Governor's Conference on Traffic Safety developed recommendations for the future direction of highway safety. MDOT actively participated in this conference and has continued to help implement various recommendations. The recommendations covered issues affecting both the driver and roadway and included:

- Increased penalties for violation of passenger restraint requirements.
- Increased penalties for impaired driving and walking.
- Increased commitment to roadway improvements and traffic control.
- More stringent commercial vehicle operator qualifications.
- Improved coordination and planning among highway safety agencies.
- Improved data resource management between highway and accident information agencies.
- Improved public education and marketing of highway safety.

MDOT continues to implement the recommendations from the recent governor's safety conference.

Safety Commission

MDOT is a member of the State Safety Commission. The commission meets monthly to discuss significant safety issues. MDOT is also represented on the Steering Committee and now chairs the Information Council of the commission. The Steering Committee identifies specific safety issues for review by the commission and the Information Council develops and disseminates public information and educational materials.

MDOT is a member of many inter-departmental safety committees and councils.

Traffic Records

The department is extensively involved as part of the Michigan Traffic Accident Records System (MTARS) committee. Work group tasks include determining the direction and character of improvements to the state's accident records system. We are involved in defining needs, processing/output, and systems development. This committee is unique in that it crosses department lines and has focused attention on a records system which will meet the needs of all users of accident records, in both public and private agencies, for years to come.

MDOT participates with other state agencies in improving the existing accident reporting system.

Raised Reflective Pavement Markers

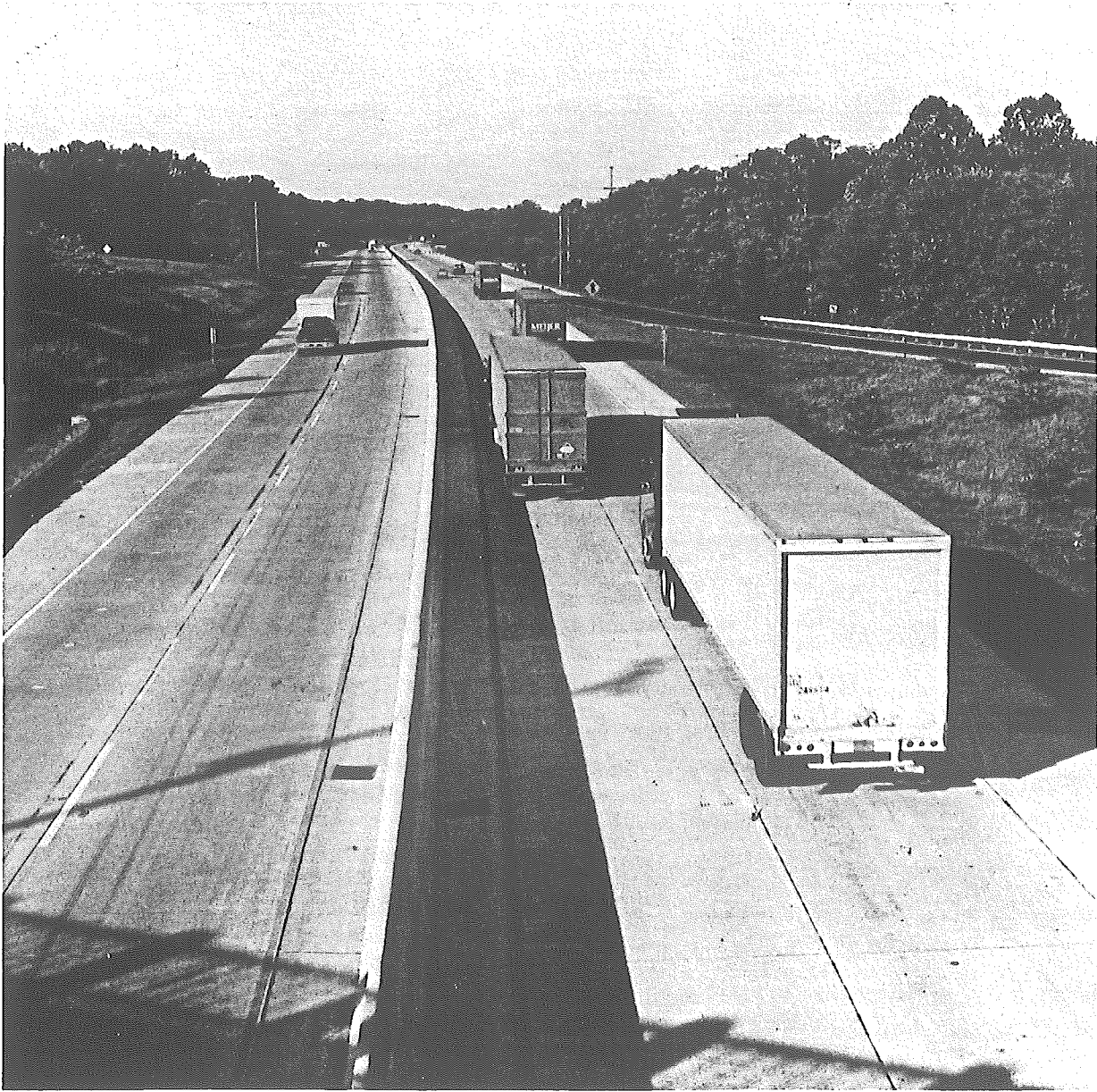
Approximately 150 miles of experimental raised pavement markers were installed during the summer of 1989. These markers were placed in District 7 and 8 on two-way, two lane rural and a limited number of freeway locations. The reflectors will be inspected periodically to determine their durability to winter maintenance and general traffic exposure. An accident study will be conducted to determine if the reflectors impact accidents.

Other Safety Related Activities

Safety is inherent in all Department of Transportation programs. Managing the safety of traffic through construction zones, winter snow and ice removal, the development of new products and techniques, the administration of federal aid funds to the local road system, and long range planning of roadway improvements are several examples of other activities which MDOT manages which have a significant impact on highway safety.

Safety is inherent in all MDOT activities.

The commitment, cooperation, and awareness of all Department of Transportation staff is required to assure the safety of all users of the highway system in Michigan.



Truck related accidents have been recently decreasing.

TRUCK SAFETY

Responsibility

The Michigan Department of Transportation has basic responsibility for design, construction, operation, and maintenance of the state highway system. This system, along with municipal streets and county roads, assists the motor carrier industry with the movement of goods and commerce. It is MDOT's responsibility to assure that the highway system is built to adequate standards to allow safe and efficient use by trucks and other large vehicles. MDOT is also responsible to issue overweight and oversize permits based on the highway system capability. Additional truck safety activities are the responsibility of other state agencies. These include:

MDOT cooperates with other departments to monitor and control trucking.

- Motor Carrier Division of the Department of State Police, which is responsible for driver and vehicle safety as well as weight enforcement.
- Michigan Public Service Commission of the Department of Commerce, which is responsible for route and rate authority based, in part, on safety considerations.
- Michigan Department of State which is responsible for commercial driver testing and licensing and vehicle licensing.

Truck Accident Data

Statewide Truck-Related accidents increased dramatically through the mid-1980's and have been decreasing slightly but steadily since late 1986. Accident data accumulated through mid 1989 indicates an average daily rate of 58 truck-related accidents per day. This is well below the peak rate of 65 truck-related accidents per day reached three years earlier, but still considerably above the rate of about 37 truck-related accidents per day that was common in the first three years of the decade.

Truck accidents increased during the mid-1980's

One reason for the decrease in accidents may be the mild winters that Michigan has experienced in recent years. None of the last three winter periods, 1986-87, 1987-88, or 1988-89, show a peak in the truck-related accident rate per day; such peaks were common for the previous winters.

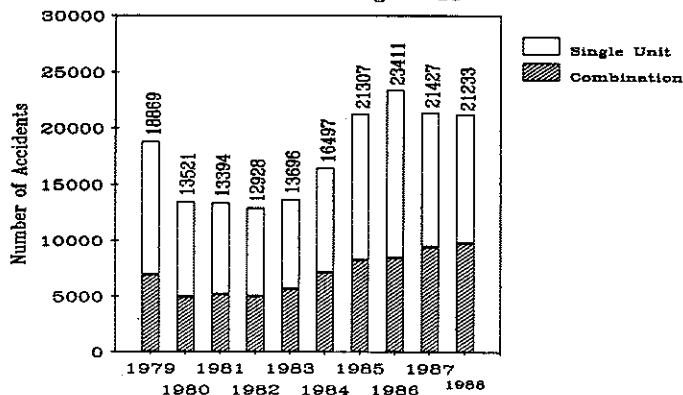
Recently, truck accidents have been decreasing.

Truck-Related accidents in Michigan have been decreasing in recent years, both in numbers of accidents and in comparison to all accidents. This is encouraging. However, the cause of this is difficult to determine. Weather, economic factors, changes in truck volumes, long-term or national trends, or safety-related activities on the part of state agencies and the trucking industry may all play a part. Further improvement is necessary. Truck-related accidents still occur at a rate of about 2 1/2 per hour in Michigan, a frequency about 50 percent higher than a decade earlier.

Three out of four truck-related accidents involve a collision with another vehicle, cyclist, or pedestrian. As these tend to be the most severe type of accidents, with a high percent fatal, future truck safety efforts should concentrate on helping trucks and cars share the highway safely with each other

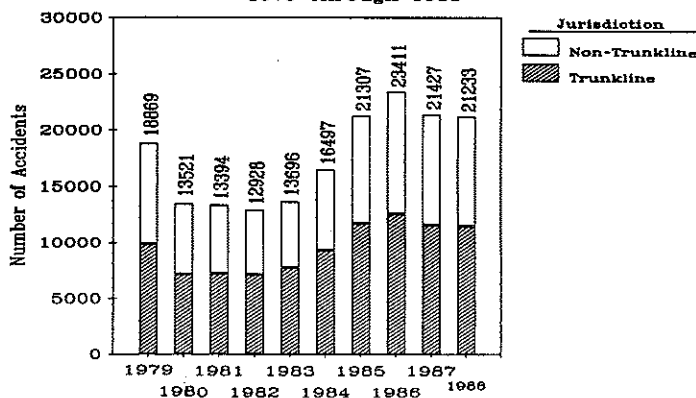
MICHIGAN TRUCK-INVOLVED ACCIDENTS

1979 Through 1988



MICHIGAN TRUCK-INVOLVED ACCIDENTS

1979 Through 1988



Truck Safety Programs

The Michigan Department of Transportation and the State Transportation Commission are encouraged with the downward trend of truck related accidents. The efforts of the past few years must be continued to push the accident rate further downward. The Interagency Truck Committee played a key role in the coordination of state level activities to develop the truck safety legislative package passed in 1988. This committee includes all state agencies having motor carrier responsibilities. Committee members, in addition to MDOT, include the Department of State Police Motor Carrier Division and Office of Highway Safety Planning, Michigan Public Service Commission, Department of State, and Department of Treasury.

MDOT working with the Interagency Truck Committee helped implement the 1988 Truck Safety Package.

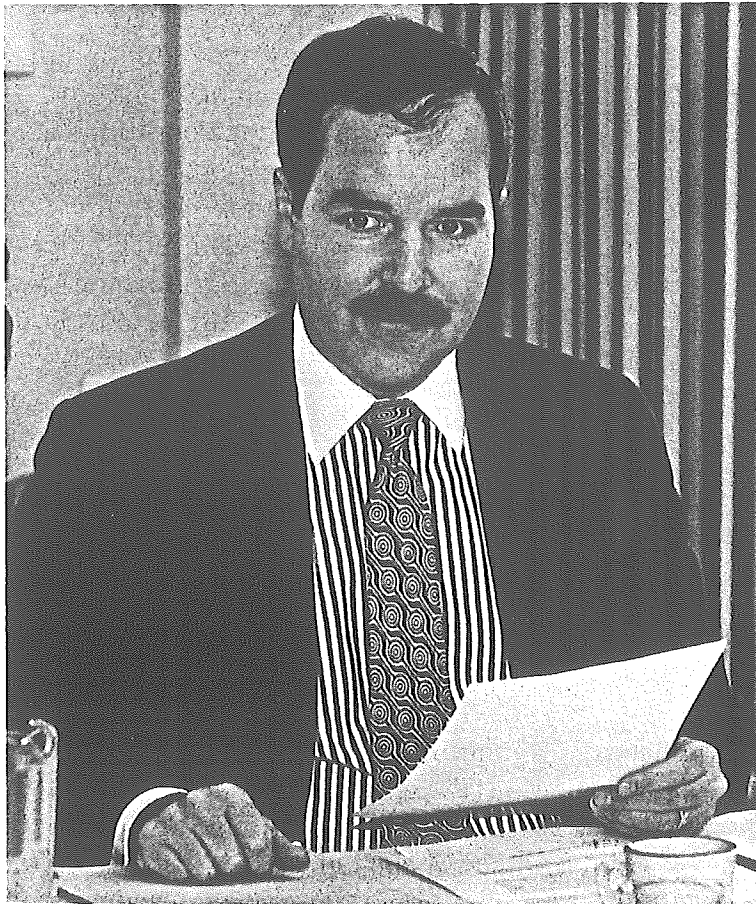
The components of the truck safety package, passed in 1988, are in place and working to make our highways safer for all users. Since passage of the package MDOT has published the annual Michigan Trucking Manual which includes information on Michigan laws, and licensing procedures as well as safety messages for free distribution to the trucking industry. In 1989, over 19,000 booklets were distributed.

MDOT published the first Michigan Trucking Manual.

January 1, 1990 the Secretary of State implemented the new Commercial Drivers License (CDL) program in Michigan. The CDL will have positive long term effects on the skills and professionalism of truck drivers all over the nation.

The 1988 legislation gave the Governor authority to appoint the first state Truck Safety Commission in the U.S.

The Michigan Truck Safety legislation created the first state Truck Safety Commission in the nation. This commission is unique in that it has its own funding sources. The commissioners were appointed by Governor Blanchard in October 1989. MDOT transportation commissioner Rodger Young was voted chairman of the Truck Safety Commission. One of the major functions of the Truck Safety Commission is to improve truck driver education.



Transportation Commissioner Rodger Young was voted chairman of the recently appointed Truck Safety Commission.

Other Actions to Improve Safety and Future Safety Activities

In addition to the legislative initiatives outlined above, MDOT is also:

- Analyzing locations with concentrations of truck accidents. Corrective actions are implemented, where appropriate.
- Providing funding for State Police Motor Carrier Division (MCD) enforcement. This amounts to over \$4 million annually - 50% of MCD's budget.
- Working with a consultant to study overall weight enforcement.
- Working with the Department of State Police to improve the truck accident data base.
- Assisting the National Governor's Association Motor Carrier Task Force efforts to promote uniformity of registration and taxation procedures.



Safe and efficient railways help promote Michigan's industry and growth.

RAILROAD SAFETY

Responsibility

Railroad Inspections and Regulation

By Executive Orders 1975-10 and 1982-7, certain railroad regulation functions were transferred from the Michigan Public Service Commission to the Michigan Department of Transportation. The Railroad Safety and Tariffs Division is responsible for discharging the department's duties and responsibilities, as prescribed by Michigan statutes, in regulation of common carrier railroad companies. Responsibilities include public safety at grade crossings, track structural safety, other safety factors, qualification of certain railroad employees, railroad services and rates, tariffs and contractual agreements. The division also functions as part of the Federal Railroad Administration's State Participation Program, as authorized by Section 206 of the Federal Railroad Safety Act of 1970.

Federal and state statutes define MDOT's responsibility to inspect and regulate crossings, track, rates and tariffs.

Highway Grade Crossings

Federal and state grade crossing improvement funding programs are administered jointly by MDOT's Engineering Services and Local Services Divisions. MDOT Design Division, Traffic and Safety Division and district offices cooperate and assist in this effort.

The Engineering Services Division administers funding for state highway railroad crossing safety improvements. The division is a liaison between the department and the railroad industry. The staff conducts field reviews, data collection and analysis in addition to administering the state highway portion of federal and state railroad safety improvement programs. This requires coordination of crossing improvements with MDOT's construction and maintenance programs. The Local Services Division administers federal and state railroad crossing improvement funding programs on behalf of cities and counties for projects on their roadways.

MDOT administers federal grade crossing funds for both trunkline and local jurisdictions.

Michigan Operation Lifesaver

MDOT was recently asked to coordinate the statewide Operation Lifesaver program.

The Michigan Railroads Association asked the Michigan Department of Transportation to coordinate the Michigan Operation Lifesaver program beginning January 1, 1990. The purpose of the Operation Lifesaver program is to enhance public awareness of the dangers associated with railroad grade crossings. The program will be coordinated by the Executive Division of the Bureau of Administration.

State Owned Railroads

MDOT acquires, maintains and rehabilitates state owned railroad rights-of-way.

The Bureau of Urban and Public Transportation's Freight Division is responsible for acquisition, rehabilitation, and improvement of state-owned rail freight facilities. This division negotiates and monitors the state's service continuation agreements with private railroad companies operating on state-owned right-of-way. Financial requests for privately-owned rail freight infrastructure improvements are analyzed by the division in accordance with guidelines provided by the State Transportation Commission's *Rail Freight Policy*.

Intercity Rail Passenger

The Rail Passenger Section of the Intercity Division of UPTRAN is responsible for developing, monitoring, and analyzing rail passenger service in Michigan. The section has no specific safety responsibilities when viewed from a regulatory standpoint, but is involved in a variety of safety related undertakings.

Railroad System Description

Private & Public Owned Railroads

In 1988 the state assessor reported there were 4,410 mainline miles of railroad right-of-way in Michigan. This includes 2,157 miles of class I railroads and 2,253 miles of regional and shortline operations.

Of the 4410 miles of railroads in Michigan, the state owns 872 miles.

The state owns 872 miles of railroad right-of-way. MDOT has service agreements with five railroad companies to operate over 712 miles; the remaining 160 miles of state-owned right-of-way are not in operation.

Highway Grade Crossings

There are 6,837 public at-grade railroad crossings in the State of Michigan. There are 387 crossings on the state trunkline system and 685 crossings on state owned railroad right-of-way.

Intercity Rail Passenger

Working closely with Amtrak, the Rail Passenger Section oversees three Michigan routes. The Chicago-Detroit-Toledo route is 337 miles long and connects the Midwest's two largest urban centers. The "Pere Marquette" route, which provides daily service between Grand Rapids/West Michigan and Chicago, is 175 miles in length. The "International" route, which provides daily service between nine Michigan communities, Chicago and Toronto, is 500 miles in length. There are 19 rail passenger stations within the state that serve approximately 500,000 passengers annually.

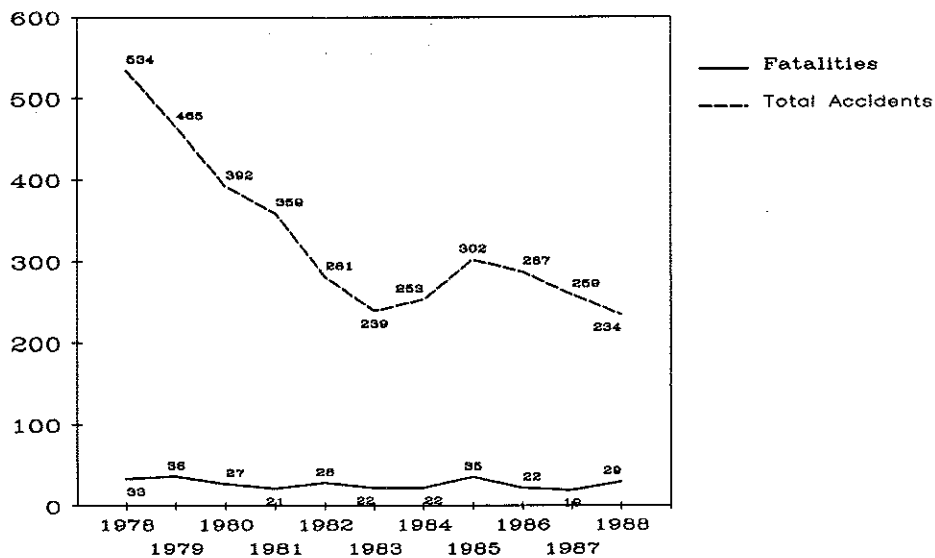
There are three major rail passenger corridors serving Michigan.

Railroad Accidents

Highway Grade Crossings

Highway grade crossing accidents continue to show a downward trend in all categories (see graph). During 1985 accidents rose but have been decreasing since that time. As with motor vehicle accidents, the year with the lowest number of reported accidents was 1983. Automobile travel in that year was also low.

PUBLIC RAILROAD CROSSING ACCIDENTS



Intercity Rail Passenger

Michigan's Amtrak services have accumulated an enviable safety record, having served approximately eight million Michigan users since 1971 with not one passenger fatality occurring during this nearly 18-year period. During 1989, two grade crossing accidents occurred in the Detroit-Toledo Amtrak corridor. No injuries occurred.

Railroad Safety Programs

Railroad Inspections and Regulation

The Safety and Tariffs Division is responsible for:

- Administering the department's railroad safety and service program and coordinating this program with the Federal Railroad Administration, Interstate Commerce Commission, road authorities, other government agencies, the public, school officials, commercial industry, and railroads. The Safety Section, Track Safety Section, Compliance Section, and Administrative Support Section carry this out within the division.
- Investigation of safety conditions affecting employees.
- Investigation, approval, or denial of requests for maintenance of less-than-standard clearances adjacent to or over railroad tracks.
- Inspection of railroad trackage and identification of defects especially on passenger train lines or track carrying high tonnage and hazardous materials.
- Investigation and determination of need for, feasibility of location, and safety requirements at all public highway railroad grade crossings.
- Responsibility for rates, tariffs, and contractual agreements for intrastate commerce.
- Investigation of service complaints of shippers and the general public.
- Preparation of proposed and final department orders relative to safety improvements and requests for new crossings.
- Development and presentation of the department's case in quasi-judicial and judicial challenges to its railroad orders.

MDOT's Safety and Tariffs Division investigate grade crossings, track, employee working conditions, requests for substandard clearances and tariffs.

RAILROAD SAFETY AND TARIFFS DIVISION ACTIVITIES

<u>Activities</u>	<u>Number of</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Formal inspections responding to requests from the priority improvement program of public grade crossings.	Inspections	150	249	127	124	202	258
On-site review of grade crossings approximately every two years.	Reviews	3576	3230	5148	3142	2999	1147
Orders issued for improvement in safety condition at crossings and grade separations.	Orders Issued	156	63	79	53	38	69
Deficiencies identified and given to railroads and road authorities for correction.	Deficiencies Identified	*	*	7051	5137	5014	3111
Inspections in response to requests for less-than-standard clearances and employee complaints regarding working conditions.	Inspections	48	51	49	30	25	23
Inspection of railroad trackage, especially that carrying passenger and hazardous material trains.	Miles	13309	12349	12849	13845	12700	10306
Inspections of track inspection records.	Records	5676	3732	4473	5281	5552	4196
Inspections of turnouts.	Turnouts	5664	7182	6204	7510	7082	6443
Inspections of railroad-to-railroad crossings	Crossings	*	*	*	322	282	218
Inspections of derail devices	Derails	3	49	43	72	111	69
Defects on trackage identified for correction by carriers.	Defects	3937	5003	2507	3093	3003	2596
Tariffs reviewed and processed.	Tariffs	*	*	3900	2911	*	*

* - Records not maintained for these activities for these years.

The department functions under a cooperative agreement with the Federal Railroad Administration (FRA) for monitoring and inspecting railroad trackage, roadbed, drainage structures, and carrier inspection records. MDOT and FRA inspects all trackage within the state at least twice a year. These inspections are directed to both state-owned and privately-owned track. More frequent inspections are scheduled for rail lines carrying passenger trains, hazardous materials, or heavy tonnage.

The Railroad Safety Section endeavors to review or inspect each of the state's railroad/highway grade crossings at least once every two years. On the basis of recommendations resulting from these inspections, the Railroad Safety and Tariffs Division pursues actions to install warning devices or other crossing improvements.

Highway Grade Crossings

The Railroad Safety and Tariffs Division initiates grade inspections through:

Grade crossings are inspected by MDOT inspectors.

- a. Complaints regarding the safety of the crossing.
- b. Public or local agencies.
- c. Railroad companies.
- d. Private industries.
- e. Railroad Safety and Tariffs Division.

Formal crossing safety inspections are performed by an inspector from the Railroad Safety Section with representatives of the railroad company, road authority, and other interested local agencies. The Safety and Tariffs Division reviews safety conditions at the crossing and develops recommendations for improvements.

Projects are identified and selected for funding by the Engineering Services and Local Services Divisions. The Engineering Services Division administers state trunkline projects and the Local Services Division those on the local system.

Michigan Operation Lifesaver

The Executive Division, Bureau of Administration, will be responsible for:

- Developing and coordinating implementation of a program to inform the general public of the dangers of highway/railroad grade crossings.
- Developing programs to improve highway/railroad grade crossing safety.

MDOT Bureau of Administration coordinates Operation Lifesaver.

- Developing and maintaining media contracts in order to disseminate information to the public.
- Coordinating the development of programs working with other state agencies and Michigan railroads.
- Maintaining an inventory of Operation Lifesaver materials.
- Coordinating programs intended to reduce car/train accidents.
- Providing assistance to Michigan Operation Lifesaver Committees in planning and carrying out projects.
- Representing Michigan Operation Lifesaver at state, regional, and national meetings.

State Owned Railroads

Three indicators are used to assess the relative safety of track segments. Two of these, "excepted track" miles and "slow ordered" track miles, are indicators of the condition of the track structure. The third indicator, number of annual carloads containing hazardous materials, reflects the potential risks associated with train operations. Indicator ratings are closely reviewed prior to establishing track rehabilitation project priorities.

As with privately-owned rail lines, state-owned rail facilities are inspected by the Safety and Tariff Division to identify and resolve any existing or potential safety hazards.

Intercity Rail Passenger

The Rail Passenger Operating Section is involved in numerous rail passenger safety-related programs including Operation Lifesaver, which promotes grade crossing safety to the motoring public.

In FY 1987-88 and 1988-89 the section, in conjunction with other

Track conditions, speed and car loadings help indicate track safety.

MDOT bureaus, invested in the improvement of crossing protection at 140 crossing locations along the Detroit-Chicago passenger rail corridor.

The department is also providing funds to improve lighting, walkways and waiting room areas at stations in Holland and Lapeer.

Railroad Safety Program Funding

Highway Grade Crossings

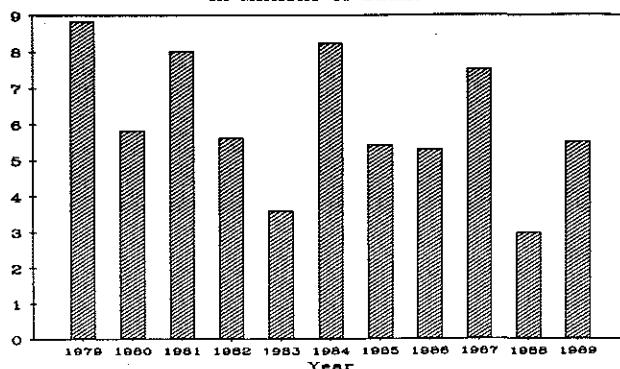
Two funding programs directly impact railroad grade crossing safety. The federal aid railroad safety program has been in effect for many years. This program provides approximately \$5 million per year for a wide variety of safety improvements at railroad highway grade crossings on all road systems. Eligible improvements include installation and improvement of flashing light signals, half roadway gates, signs, pavement marking, crossing surface reconstruction, crossing removals, and intersection realignment. During the past five years, \$25.2 million of such improvements have been implemented through this program. Ninety percent of the cost of these projects is financed by federal funds, and ten percent is the responsibility of the road authority having jurisdiction over the highway. Special projects such as railroad consolidations and separations have also been accomplished with these funds.

Grade crossing improvements use federal and state funds.

In addition to these programs, a special project to improve safety and passenger rail operations at 140 crossings on the Detroit-Chicago Corridor is continuing. This is a cooperative program between MDOT'S Bureau of Highways and the Bureau of Urban and Public Transportation to utilize \$4.56 Million of Comprehensive Transportation Fund (CTF) monies for this special purpose. A formal agreement between the department, Conrail and the National Railroad Passenger Corporation (Amtrak) has been executed. Eighty-nine crossings are expected to be completed in the 1990 construction season.

A second rail corridor improvement project is in the development stage with Grand Trunk Western Railroad. This project will improve crossing safety at 29 crossings on the Pontiac to Durand corridor.

FEDERAL RAIL HIGHWAY FUNDS OBLIGATED
In Millions of Dollars

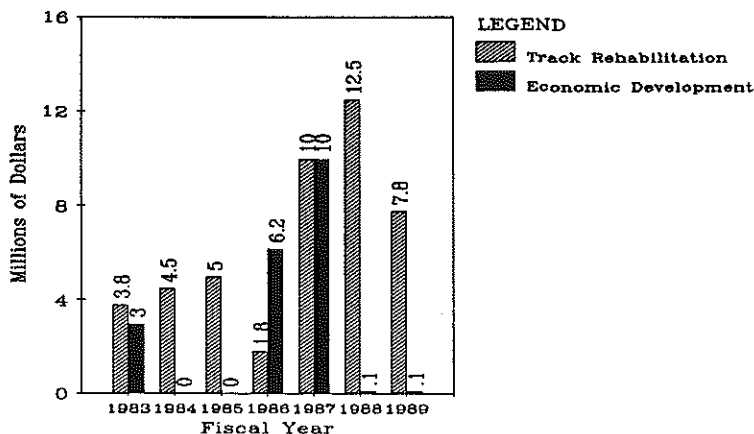


State Owned Railroads

In addition to work performed on the properties by the designated operators, the department ensures safe, efficient operations over state-owned property through rail rehabilitation and improvement projects funded primarily by the Comprehensive Transportation Fund. The attached table displays funding trends for rehabilitation and economic development projects between 1983 and 1989.

MDOT uses CTF money to improve state owned rail right-of-way.

RAIL FREIGHT PROJECTS FOR TRACK REHABILITATION AND ECONOMIC DEVELOPMENT



Other Actions Required to Improve Safety and Future Safety Activities

Highway Grade Crossings

The department recently committed obligational authority equal to the annual total federal apportionment for the federal railroad safety program. An additional \$1 million of obligational authority to utilize carry-forward apportionment will significantly increase the federal aid railroad crossing safety program.

Increased federal obligational authority and a state grade crossing program should provide more money to improve crossings.

Also, a program has been developed in response to legislation providing for a new state grade crossing account. This program makes available up to \$3 million per year to improve, install and retire new or existing safety devices. The program provides 65 percent of the cost for eligible projects. Twenty-five percent of project costs are borne by the affected railroad company and 10 percent by the appropriate road authority.

Railroad Grade Crossing Coordinating Committee

The Engineering Services Division chairs the standing committee to coordinate railroad crossing issues between various bureaus and divisions involved with Michigan railroads (MDOT Railroad Grade Crossing Coordination Committee). This committee also assists in allocating the new \$3 million grade-crossing account and coordinating rail crossing issues with the Federal Railroad Administration and Federal Highway Administration.

Michigan Operation Lifesaver

Michigan Operation Lifesaver will step up it's effort to educate the general public about hazards at crossings and responsibilities of the motorist. To accomplish this a number of programs will be improved or initiated. These will include developing and testing a pilot driver education program, involving railroad industry personnel

Operation Lifesaver will initiate new education and enforcement training programs.

in law enforcement training programs conducted at all police academies in the state, developing a video about motor vehicle/train accidents which can be used by all law enforcement agencies during "roll call" and developing several programs to reach the public through the media.

State Owned Railroads

Recent commission plans will direct future state rail activities.

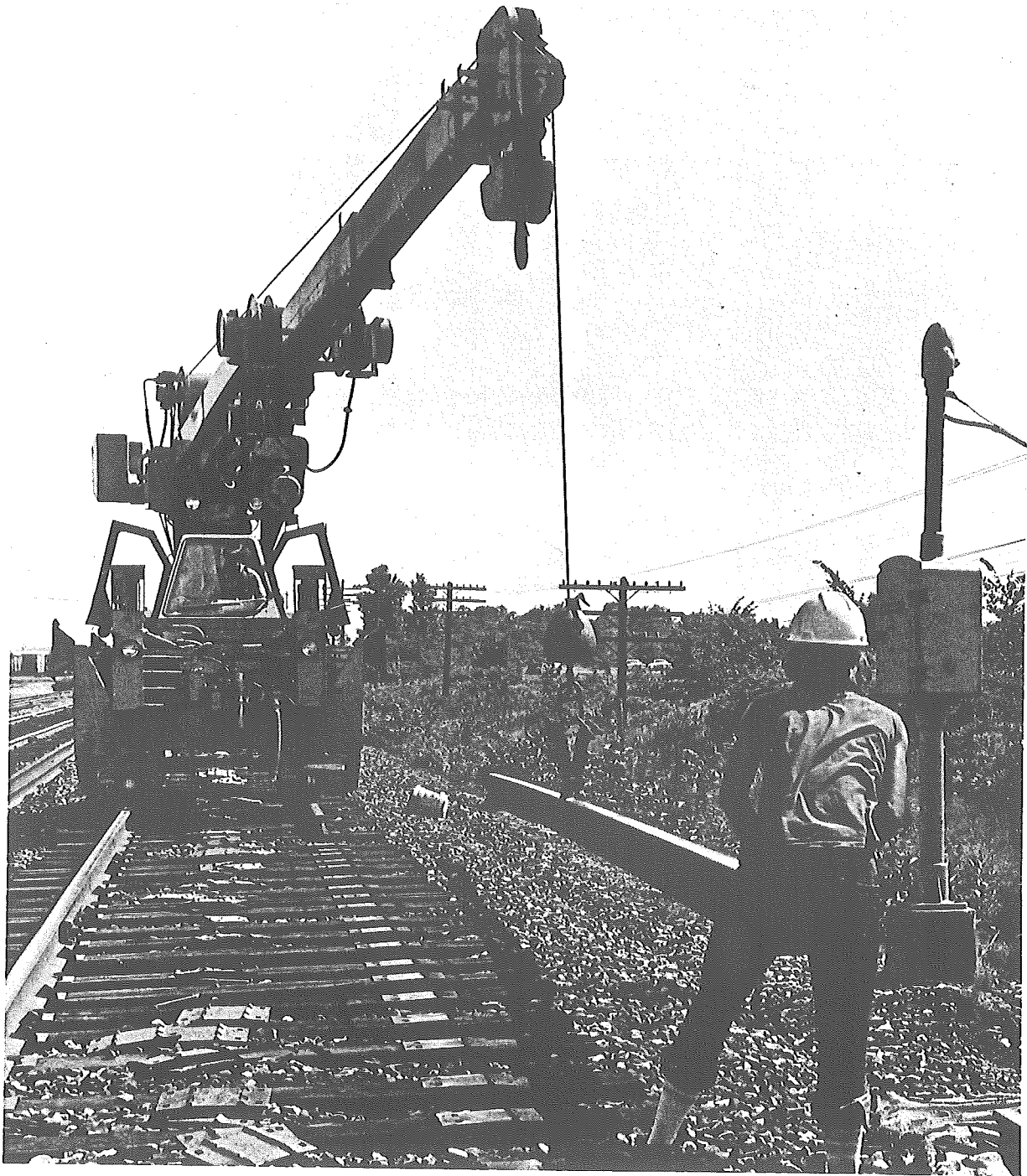
The State Transportation Commission's *Rail Freight Policy* and *State-Owned Facilities Implementation Plan*, establishes an aggressive program for preserving, improving, and expanding Michigan's rail freight infrastructure. Specific to state-owned right-of-way, those lines transporting hazardous commodities are targeted for improvements to increase operating efficiency and safety. With all state-owned lines, safety factors remain a primary criteria for identifying, programming, and implementing projects.

Intercity Rail Passenger

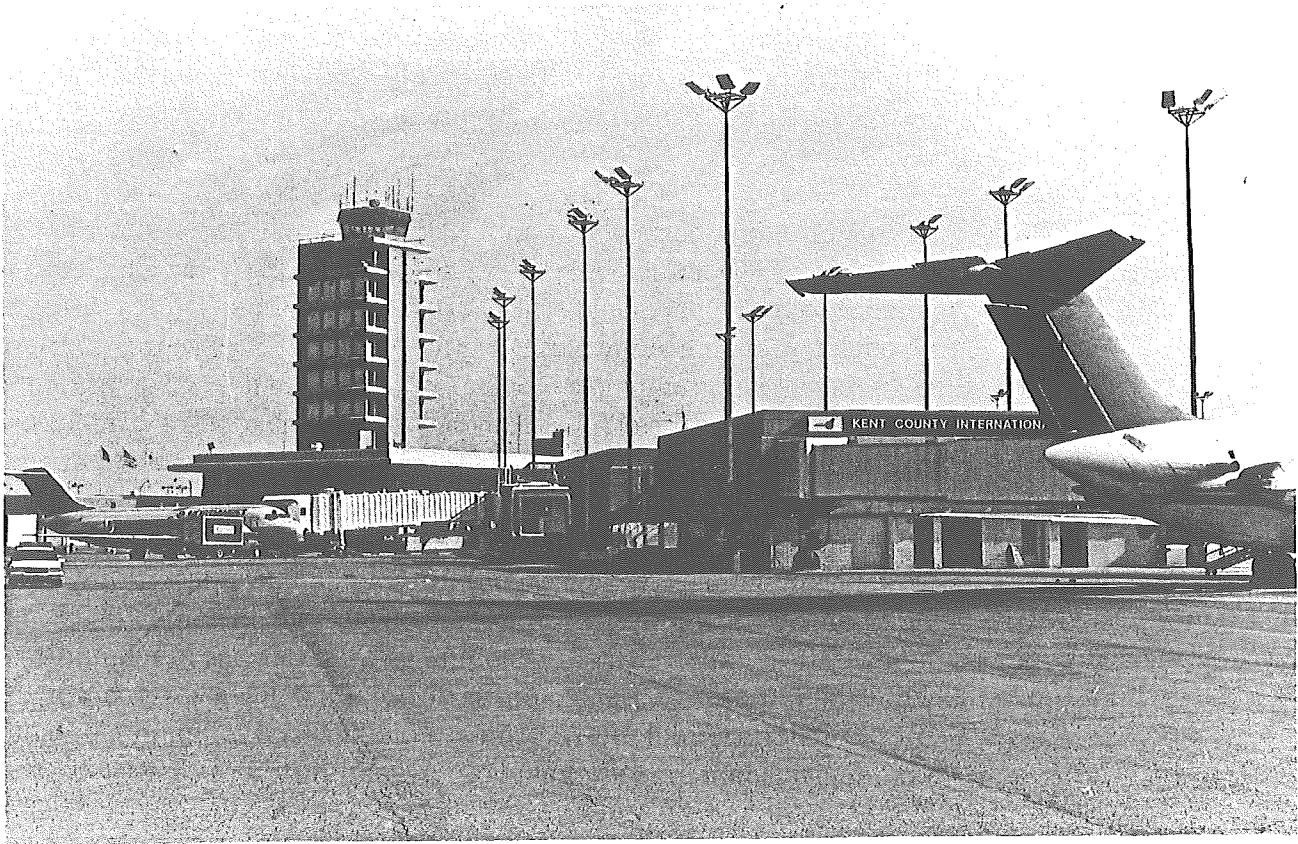
The department will invest \$ 1.5 to \$ 2 million to improve the efficiency, reliability, and safety of the passenger railroad infrastructure during FY 1989-90.

MDOT will continue to improve grade crossings in passenger corridors and passenger services at terminals.

Numerous safety improvements to rail passenger service within the state are being considered, such as cab signaling in locomotives, which would enhance the safety of train operations, and Automatic Train Stop (ATS). Additional grade crossing improvements in the state are also likely and improved or new station facilities, with enhanced safety features, are an ongoing priority.



Rail rehabilitation is a key element to railroad safety.



Michigan Supports 240 airports, 6,946 aircraft and over 15,000 pilots.

AIR SAFETY

Responsibility

The Bureau of Aeronautics (AERO) manages a number of safety activities in support of general aviation and air carrier service in Michigan. Responsibility for aviation safety is divided between AERO and Federal Aviation Administration (FAA). AERO works closely with the FAA Accident Prevention Program, sponsoring and presenting aviation safety programs throughout Michigan.

The Bureau of Aeronautics and the FAA share the responsibility for air safety.

System Description

During 1989, AERO licensed 240 airports, 240 airport managers, 89 assistant managers, inspected and licensed 87 flight schools and 102 aircraft dealers. Two new airports were opened while four airports and one seaplane base were closed. AERO registered 6,946 airplanes, helicopters, gliders and balloons during 1989. Michigan has over 15,000 pilots. During 1989, 24.9 million passengers traveled from Michigan's 22 air carrier airports.

Accident Data

AERO supplements data compiled by the FAA and National Transportation Safety Board (NTSB). In addition, AERO receives information pertaining to ultra-light aircraft accidents which are not tabulated by the NTSB or FAA.

There were fifteen fatal accidents resulting in 26 fatalities and 65 total accidents in Michigan during 1989. These totals indicate a slight increase in accidents and fatalities 1988 figures. During 1988, 7 fatal accidents resulting in 53 fatalities and 51 total accidents occurred. In 1987, 6 fatal accidents resulting in 174 fatalities and 47 total accidents were reported.

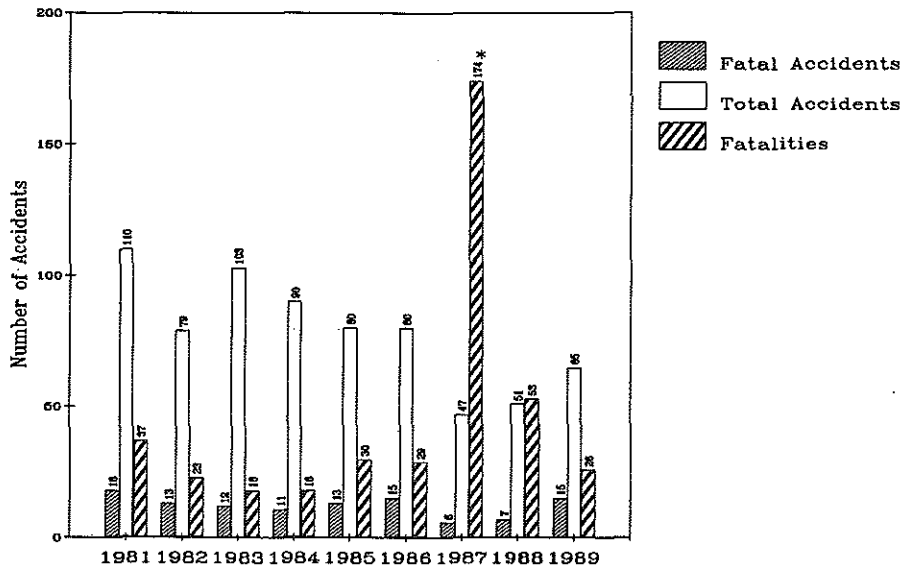
In 1989 there were 65 total air accidents with 15 fatal accidents resulting in 26 fatalities.

Analysis of 1989 accidents indicate pilot error as the causal factor in 42 of the 65 total accidents. Pilots were on personal flights during 47 of the 65 accidents and 43 of the mishaps occurred during take-off or landing.

MICHIGAN AIR ACCIDENTS

1981 Through 1989

* Includes 154 fatalities of Northwest Flight # 255



Air Safety Programs

AERO impacts safety through pilot safety seminars provided by AERO staff, advisory and/or monitoring of air meets, shows, tours, races, Dawn Patrols and individual counseling of pilots by AERO employees who are FAA accident prevention counselors.

AERO sponsors safety seminars for pilots and monitors various air activities.

AERO provides aviation safety seminars for pilots, mechanics, aviation operators and flight instructors. These seminars were attended by more than one thousand nine hundred pilots. AERO conducts training for airport managers and an annual engineering conference designed to increase safety awareness for airport personnel and engineers. AERO staff also completed research on recurrent flight training for pilots. It was discovered that 29 percent of all pilots participate in the FAA Pilot Safety Program yet account for only one and a half percent of total accidents.

The bureau's bi-monthly safety bulletin, *Michigan Aviation*, is published and sent to over 17,000 pilots and other interested citizens in Michigan. It is also distributed to businesses that provide services to pilots and to flight schools for distribution to student pilots. *Michigan Aviation* includes safety related articles directed at varying levels of pilot skill, from student pilot to flight instructor to the airline transport pilot.

AERO publishes a bi-monthly aviation publication.

The Federal Aviation Administration contracts with AERO to inspect and verify existing conditions at 195 of the 237 public-use airports. Fifty additional airports, not included in the federal contract, are inspected to insure conformity with state licensing requirements. Three heliports, three seaplane bases and four prospective airport sites were inspected. The inspections assure a consistent level of safety and standardization of all public use airports in Michigan.

AERO inspects airports for the FAA.

Twenty-four thousand copies of the *Michigan Aeronautical Chart* and 7,000 copies of the *Michigan Airport Directory* were printed and distributed during 1989. The directory is free to aircraft owners and the chart is available to pilots at no charge. These publications, updated annually, furnish pilots with current information for safe navigation of Michigan airspace, including airport and navigational data.

AERO distributes charts and directories for pilots in the state.

There are 36 "Enroute Navigation and Non-Precision Approach Aids" facilities in Michigan. The state owns and operates seven classified Very High Frequency Omni-directional Radio Range (VOR)/Distance Measuring Equipment (DME) stations. The state-owned VOR/DME facilities are located at Bad Axe, Gaylord, Houghton Lake, Manistique, Mt. Pleasant, Newberry, and West Branch.

The state owns three Microwave Landing Systems (MLS), the new international standard for precision all weather approaches. Cadillac, the world's first public unrestricted MLS, was commissioned in 1984. The MLS located at Bellaire is scheduled for commissioning in late 1990. The location for the third MLS is currently under study.

The state owns and operates many state of the art landing aid systems at various airports.

Both the enroute and approach facilities provide navigational aids for pilots who travel to areas where aids to navigation are limited. The approach facilities enable the safe descent of aircraft to an airport during inclement weather.

AERO monitors tall structures to protect air space.

In an effort to protect Michigan's airspace, the Tall Structures Act was passed into law in April 1987. This Act requires all communication companies to report to the Bureau of Aeronautics any proposed construction of tall structures in the vicinity of an airport. The intent is to protect the airspace around an airport to make air travel as safe as possible and to maintain the utility of the airport.

AERO helps communities develop zoning plans to protect airport airspace and noise sensitive areas.

In addition, AERO is currently working with five communities to develop zoning plans for their airports. The plans include drawings depicting areas in the vicinity of airports that need to be protected as well as plans for implementation. Forecasted noise contours are depicted on the surrounding communities to highlight noise-sensitive areas for future land use control.

Aviation Funding

Michigan received a record \$31.9 million of federal funds in 1988/89.

Airports in Michigan received a record \$31.9 million of federal funds during 1988/89 fiscal year. Thirty two Michigan airports received funds to improve runways, taxiways, approach lighting systems, aircraft parking areas, terminal facilities, and safety/security equipment.

Aviation does not use general fund money.

No general funds are used to support the state's aviation programs. The Michigan Aeronautics Fund is totally derived from aviation. Income is derived from an aviation fuel tax, aircraft registration fees and interest accrued by maintaining a positive balance in the fund.

Other Actions to Improve Safety and Future Safety Activities

Because aviation safety is dependent on up-to-date pilot skills and knowledge, AERO plans to expand safety seminars for general aviation pilots, especially in areas where FAA safety seminars are limited. Expansion of safety presentations for airport managers and sponsoring of flight instructor refresher courses and other important aviation seminars are planned. Additional staff involvement in researching specific accidents to determine cause and utilize information in aviation safety programs is also planned.

AERO plans on expanding pilot safety seminars.

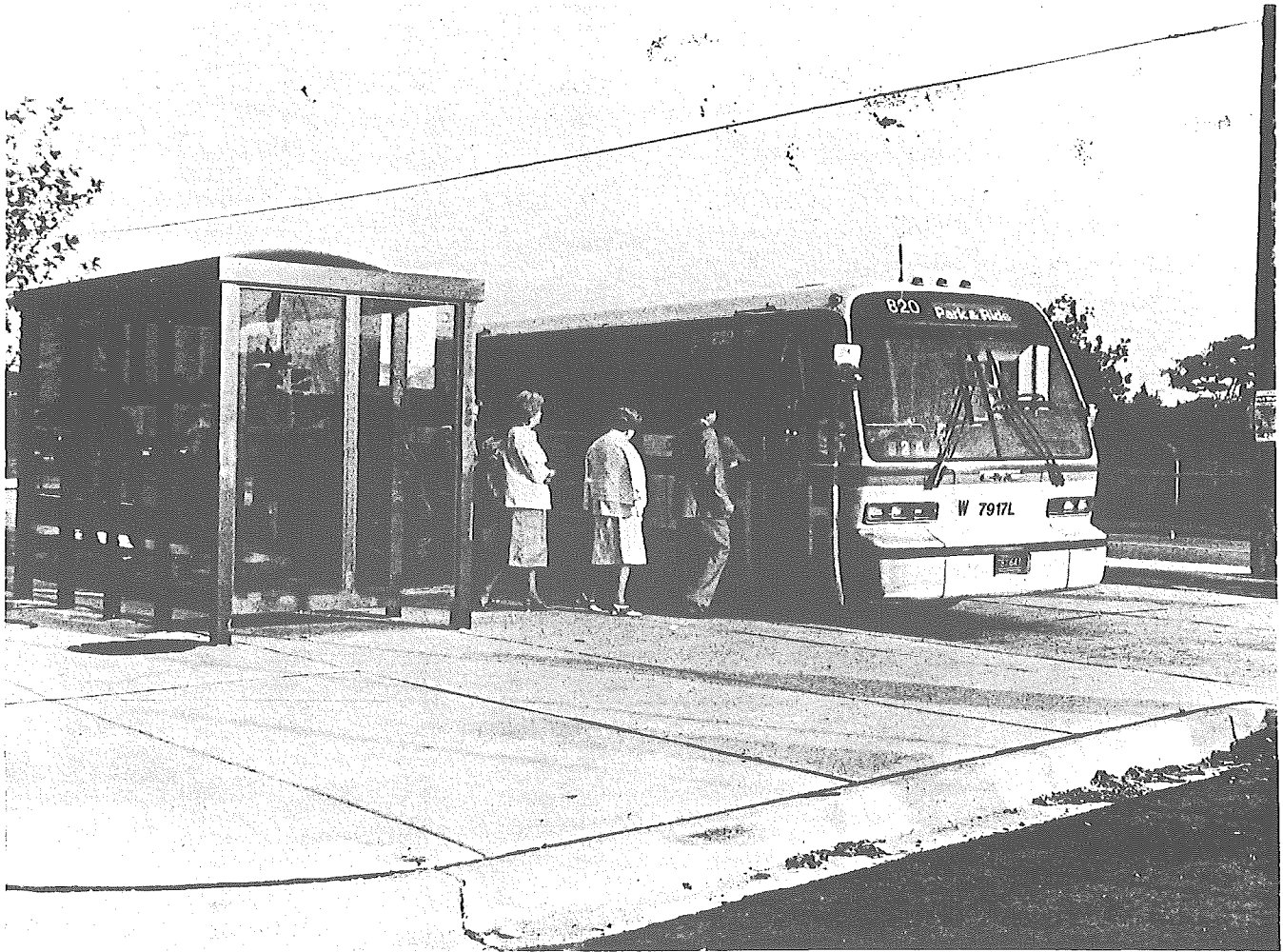
AERO efforts have attracted an increasing number of national clubs and associations into Michigan for their annual meetings. AERO organizes safety seminars for these groups on a variety of safety topics.

AERO offers safety seminars to organizations meeting in Michigan.

With input and coordination of AERO, the Aviation Caucus meets to discuss and act upon aviation safety issues. The caucus consists of state senators and legislators with aviation experience and an interest in aviation safety. The Aviation Caucus meets several times annually and has been a catalyst for change of some Michigan aviation rules and regulations.

AERO coordinates and works with the Aviation Caucus.

Increased communication and exchange between state agencies is essential to the progress of safety. AERO is an active participant in the National Association of State Aviation Organizations (NASAO).



One Hundred million people used some form of Michigan public transit in 1989.

PUBLIC TRANSIT SAFETY

Responsibility

The Bus Transit Division of the Bureau of Urban and Public Transportation is involved with the safety of the general public bus ridership throughout the State of Michigan. Buses are purchased with state and/or federal funds for all eligible public transit providers. The Bus Transit Division also assists transit operators with the purchase of capital items.

Transit systems use federal and state funds to purchase buses.

Transit agencies use federal and state operational funds for day to day expenses. The Bus Transit Division uses additional federal and state funds to provide and conduct safety training in driving, maintenance and accident prevention.

MDOT uses additional federal and state funds to conduct safety training.

The authority and funding for these activities comes from the Michigan "Act 51" and from the Urban Mass Transportation Act of 1964, Sections 3, 9, 9b, 16b2, and 18

Transit funding comes from state "Act 51" and the federal government.

System Description

During fiscal 1989, over 100 million rides were provided on public transportation buses. A total of 2,428 buses were employed to carry passengers statewide on 15 urban transit systems, 88 specialized service systems, and 59 non-urban local systems.

In 1989, 2,428 buses carried over 100 million riders.

Public Transit Safety Programs

Transit safety focuses on driver training and licensing.

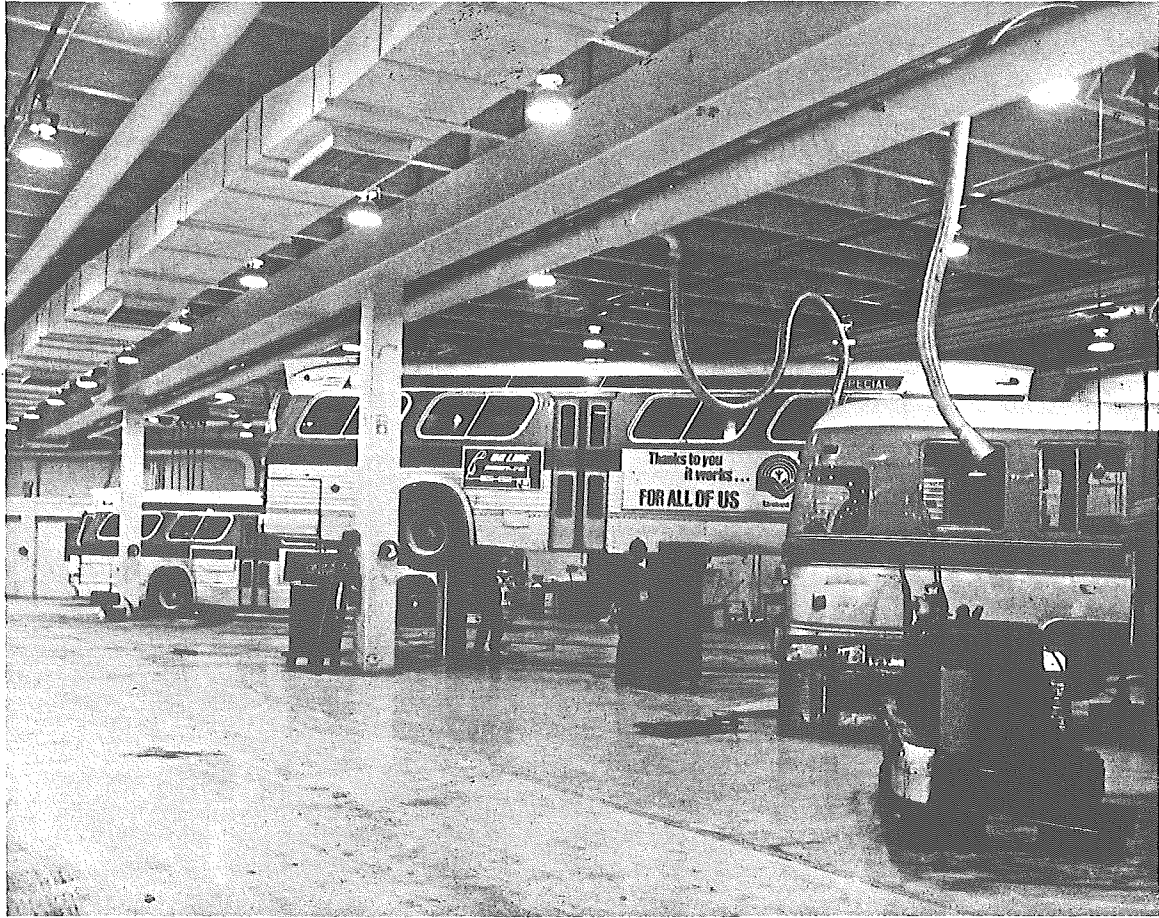
Driver training and driver licensing continue to be the main focus of public transit safety. Vehicle maintenance is the second most important element. The Bus Transit Division concentrates technical efforts towards these two areas and provides both direct and indirect training. Safety training aids are constantly being researched and explored for new innovations that can improve bus safety.

Other Actions to Improve Safety and Future Safety Activities

The Bus Transit Division supports other actions and future programs such as:

- Increased driver training efforts to accommodate new technology.
- Increased maintenance training.
- Continued updating of new vehicle specifications that will enhance safety features. Transit vehicles now are equipped with safety belts and flame retardant materials. 143 new vehicles were purchased in 1989.
- Implementation of the new federal Commercial Driver License Program for commercial driver licensing.
- Additional highway improvements that will enhance bus safety. Many gravel and unpaved roads accelerate deterioration of buses which compromises bus safety equipment.

Future transit safety activities should include expanded driver and maintenance training, implementing the new national licensing regulations, updating vehicle safety features and improving road surfaces.



Continued bus maintenance training is essential to transit safety.



Vehicle inspection is the key safety function in the intercity bus program.

INTERCITY BUS SAFETY

Responsibility

The Intercity Division of the Bureau of Urban and Public Transportation, in support of the private intercity motor bus industry, is responsible for regulating intrastate passenger motor carriers. They discharge the department's duties and responsibilities as prescribed by Michigan statutes. Responsibilities include issuing operating authorities, monitoring operator insurance levels and conducting annual safety inspections of all buses. This division also participates in the Motor Carrier Safety Assistance Program (MCSAP) and the Federal Motor Carrier Safety Information Network funded by the Federal Highway Administration.

MDOT is directly responsible for issuing authority to operate, monitoring insurance coverage and inspecting vehicles for safety.

System Description

During 1989, 4734 buses were operated by private bus companies. These companies provided transportation of large groups of passengers traveling throughout the state in tours, charters and regular scheduled service.

Safety Inspection Data

During 1989, bus inspections resulted in an average count of 4.0 violations per bus with 21 percent of all buses inspected being removed from passenger service due to defects. Brake defects accounted for 28 percent of the out-of-service vehicle violations discovered.

In 1989 MDOT discovered 4.0 violations per bus and removed from service 21 % of all buses inspected.

Intercity Bus Safety Programs

Bus inspections require high standards of safety.

The Regulatory Affairs Section is responsible for assuring the health, welfare, and safety of the traveling public is protected by requiring high safety standards for all buses operating on state highways. In addition, they insure that all motor carriers maintain proper liability insurance. These duties require:

Buses are inspected annually.

Inspections are random and unannounced.

MDOT cooperates with a national safety information network.

MDOT monitors levels of insurance coverage.

- Conducting or certifying inspection of all safety related items and identification of any defects which require correction. This inspection and certification is required of all buses being operated in the state annually, upon acquisition and before being placed in revenue service by new bus companies entering the business. Safety inspections performed by MDOT personnel meet or exceed federal safety standards.
- Conducting random, unannounced safety and compliance inspections at major sports events and tourist attractions which draw large numbers of groups traveling by motorcoach. Some of these inspection activities are in conjunction with FHWA, the Interstate Commerce Commission, and the Michigan State Police Motor Carrier Division.
- Participating in the Motor Carrier Safety Information Network funded by the Federal Highway Administration to track safety compliance of all motor carriers nationwide.
- Monitoring insurance certificates of all Michigan motor carriers of passengers to ensure compliance of the required minimum levels of passenger and property protection.
- Issuing authorities to motor carriers who prove that they are fit, willing and able to provide safe and dependable passenger transportation service.

- Training maintenance personnel in a complete preventative maintenance program. This includes identifying the proper criteria and using the correct procedures to determine the condition of safety related items. This program adds to the life of the vehicle, makes it more reliable and makes it safer.
- Providing safe and dependable new or improved intercity vehicles by lease to qualified carriers on scheduled routes.

Mechanics are trained in preventative maintenance.

Intercity Bus Safety Funding

Comprehensive Transportation Funds are used to fund this program. The private intercity carriers pay back the CTF through fees for bus registration, authority applications and modifications.

Other Actions to Improve Safety and Future Safety Activities

During 1989, legislation was passed to update the Motor Bus Transportation Act. This legislation will improve the administration of the act and increase safety of intercity buses operating over the highways of the state. The legislation also gives MDOT responsibility to regulate additional vehicle types used for the transportation of passengers for hire.

New safety related items in the new act include:

- A person leasing a vehicle for the transportation of passengers will be informed of the requirements of this safety act by the lessor.

Recently authorized MDOT responsibility comply with new federal motor carrier safety regulations.

- All buses must pass the required annual safety inspection before the vehicle may be operated over the public highways of this state.
- A penalty is added for not completing the annual required inspection.
- Allows the department to conduct an audit of company safety related records to determine that the carrier has complied with state and federal laws.
- Adoption of federal motor carrier safety regulations for:
 - A. Qualification of Drivers
 - B. Driving Motor Vehicles
 - C. Parts and Accessories Necessary for Safety
 - D. Drivers Hours of Service
 - E. Inspection, Repair, and Maintenance
- Enforcement coordination.

Plans for 1990 call for:

New legislation will help provide funding for inspections.

- Developing and implementing administrative rules to carry out the new act.
- Include bus inspection in the State Enforcement Plan to access MCSAP funding for bus safety inspections, safety reviews and compliance reviews
- Complete staff training needed to receive federal funding.

Beginning July 1, 1990, a new federal law will require that all private commercial buses operated by intercity bus carriers be inspected once annually for safety if operated in interstate or foreign

commerce. States in which the vehicles are domiciled are required to have an inspection program in place to accommodate this mandate. Michigan's safety inspection program is in an excellent position because we are one of twelve states which meet or exceed federal standards for motor bus safety.

It is expected that the increased emphasis in these areas will reduce commercial motor bus highway accidents, death, injury and property damage.



MDOT's inspection program is one of 12 states which meet or exceed federal standards.