U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
PB80-141435

Highway Accident Report - Multiple Vehicle Median Barrier Crossover and Collision, Grand Central Parkway, New York, New York, June 8, 1979

(U.S.) National Transportation Safety Board, Washington, DC

21 Nov 79

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NTSB-HAR-79-8	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Highway Accident Report - Multiple Vehicle Median Barrier Crossover and Collision, Grand Central Parkway, New York, New York, June 8, 1979		5. Report Date November 21, 1979 6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
9. Performing Organization Name and Address National Transportation Safety Board Bureau of Accident Investigation Washington, D.C. 20594		10. Work Unit No. 2794 11. Contract or Grant No. 13. Type of Report and Period Covered Highway Accident Report June 8, 1979
12. Sponsoring Agency Name and Address NATIONAL TRANSPORTATION SAFETY BOARD Washington, D. C. 20594		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

About 11:05 p.m., June 8, 1979, a Buick sedan, with eight occupants, was westbound on the Grand Central Parkway in New York City. The Buick, while in the acceleration lane of the 188th Street westbound, parkway entrance ramp, passed another westbound vehicle at a high rate of speed. Upon re-entering the parkway through lanes, the Buick veered out of control to the left, vaulted the median guardrail, and collided with three eastbound passenger cars. Two passengers in the Buick and the drivers of two of the eastbound cars were killed; 10 persons were injured.

The National Transportation Safety Board determines that the probable cause of this accident was the Buick driver's loss of vehicle control which resulted from driver intoxication, excessive speed, and sharp steering maneuvers while passing another westbound vehicle. Contributing to the severity of the accident was the failure of the substandard median barrier system to contain the Buick which vaulted into the opposing lanes of traffic.

17. Key Words High speed, driver intoxication, median, median barrier, vaulting vehicle, loss of control, traffic records.		18. Distribution Statement This document is available to the public through the National Technical Information Service, Springfield, Virginia 22151	
19. Security Classification (of this report) UNCLASSIFIED	20. Security Classification (of this page) UNCLASSIFIED	21. No. of Pages 22	22. Price

NTSB Form 1765.2 (Rev. 9/71)

CONTENTS

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

HIGHWAY ACCIDENT REPORT

Adopted: November 21, 1979

MULTIPLE VEHICLE MEDIAN BARRIER CROSSOVER AND COLLISION GRAND CENTRAL PARKWAY NEW YORK, NEW YORK JUNE 8, 1979

SYNOPSIS

About 11:05 p.m., June 8, 1979, a Buick sedan, with eight occupants, was westbound on the Grand Central Parkway in New York City. The Buick, while in the acceleration lane of the 188th Street westbound, parkway entrance ramp, passed another westbound vehicle at a high rate of speed. Upon re-entering the parkway through lanes, the Buick veered out of control to the left, vaulted the median guardrail, and collided with three eastbound passenger cars. Two passengers in the Buick and the drivers of two eastbound cars were killed; 10 persons were injured.

The National Transportation Safety Board determines that the probable cause of this accident was the Buick driver's loss of vehicle control which resulted from driver intoxication, excessive speed, and sharp steering maneuvers while passing another westbound vehicle. Contributing to the severity of the accident was the failure of the substandard median barrier system to contain the Buick which vaulted into the opposing lanes of traffic.

INVESTIGATION

The Accident

About 11:00 p.m., e.d.t., 1/ on Friday, June 8, 1979, a group of young men between the ages of 16 and 20 years left Alley Pond Park, Queens County, New York City, in a 1971 Buick sedan. The driver and two passengers sat in the front, and five passengers sat in the rear; two rear seat passengers sat on the laps of those seated.

About 11:05 p.m., the Buick was westbound on the Grand Central Parkway at a high rate of speed. About 3 miles west of the park, in the vicinity of 188th Street, the driver drove into the acceleration lane of the 188th Street westbound. parkway entrance ramp to pass a westbound vehicle that was in the right lane.

1/ All times herein are eastern daylight savings time.

After the Buick passed the vehicle and re-entered the parkway through lanes, it veered out of control, crossed the westbound lanes, struck the raised center median, struck and vaulted the median barrier, entered into the eastbound lanes, and collided with three eastbound passenger cars: a 1972 Plymouth sedan occupied only by the driver, a 1973 Ford sedan occupied only by the driver, and a 1972 Opel occupied by the driver and three passengers. The drivers of the Plymouth and Ford were killed when the Buick, which was airborne, sheared the roofs from their vehicles and decapitated both drivers. The Plymouth and the Ford then mounted the center median; the Plymouth struck a light pole, vaulted the median barrier, and came to rest across the left westbound lane; the light pole fell into the westbound lanes. The Ford mounted the median barrier and came to rest with the left front wheel straddling the guardrail. The Buick and Opel came to rest on the south side of the eastbound lanes; the Buick had overturned, and two of its passengers were killed. (See Figures 1, 2, and 3.) A fourth eastbound car, a 1966 Ford Mustang, became involved when it was in a minor collision with one of the eastbound cars that had collided with the Buick.

The Buick driver stated that (1) he had two drinks of "vodka and sprite" on the evening of the crash; (2) he was westbound on the parkway at 50 to 55 mph when a car swerved in front of him, and he lost control trying to avoid it; and (3) he swerved to the left and then to the right but his car only responded to the left.

A passenger in another westbound car stated that he had seen the Buick before the crash and that it was traveling westbound on the parkway at about 90 mph. He said it came from an area to the right of the right lane and "cut off," nearly colliding with the car he was in and another car. The Buick then began to slide sideways, spun around, struck the "center divider," and became airborne. He then saw flying debris and smoke and heard the sounds of the impact. Other witnesses estimated the Buick's speed to be between 70 and 80 mph.

Estimates of the Buick's speed made by three of its passengers were "at least 60 mph," "over 60 mph," and "pretty fast, about 70 mph." One passenger also stated that the cause of the accident was "sudden movement changing lanes."

Witnesses in the eastbound lanes stated that the eastbound cars with which the Buick collided were traveling 50 to 55 mph when the Buick "came flying over the divider."

At the time of the accident, it was dark, the sky was partly cloudy, and the surface visibility was 5 to 7 miles, in haze; the highway was dry. The temperature was 68° to 70° F, and winds were from the south at 10 knots.

Injuries to Persons

Injuries	Drivers	Passengers	Others
Fatal	2	2	0
Nonfatal	2	8	0
Minor/None	1	0	0

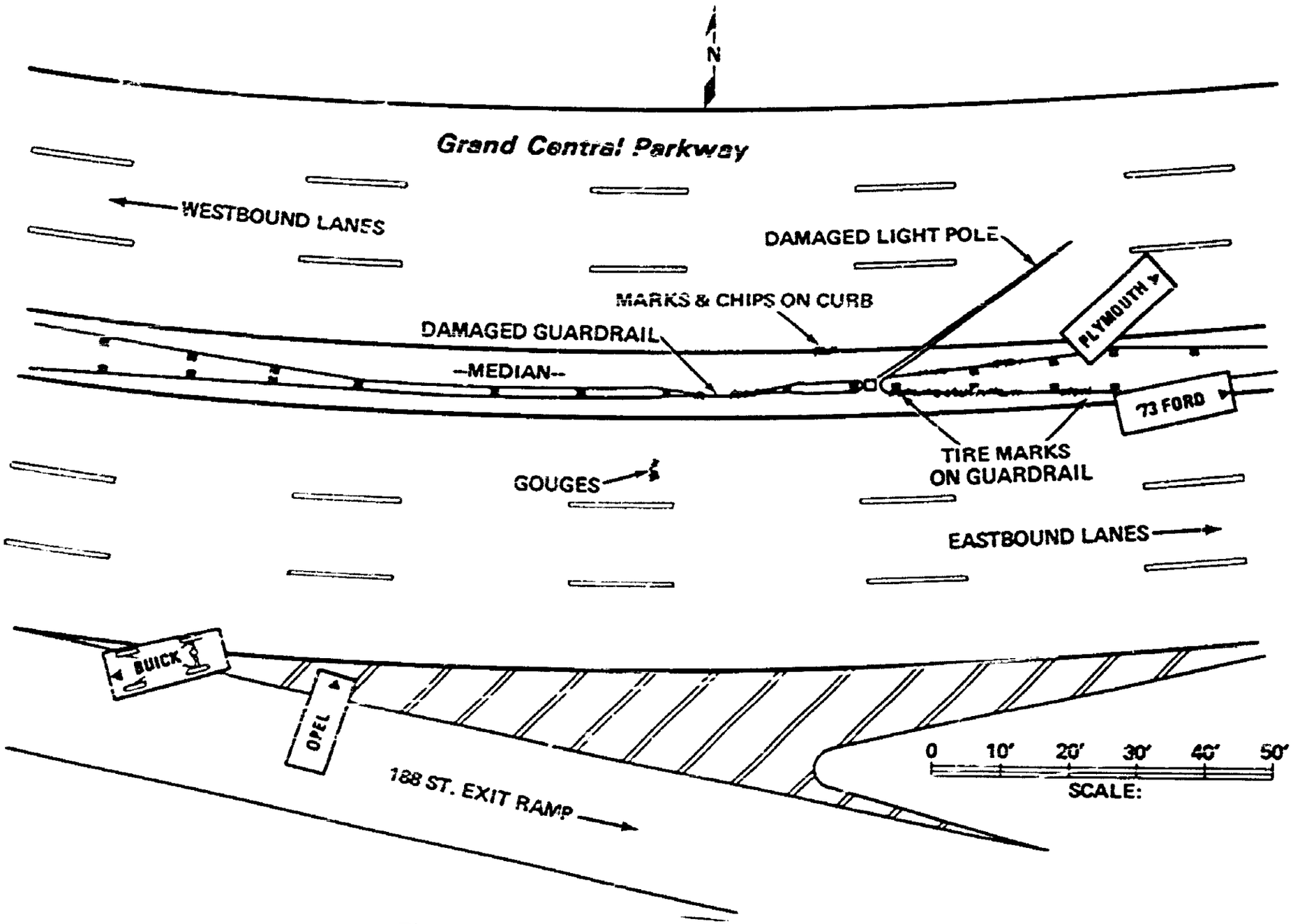


Figure 1. Accident site diagram.

Figure 2. Final position of 1973 Ford.
Note excessive vegetation on median.

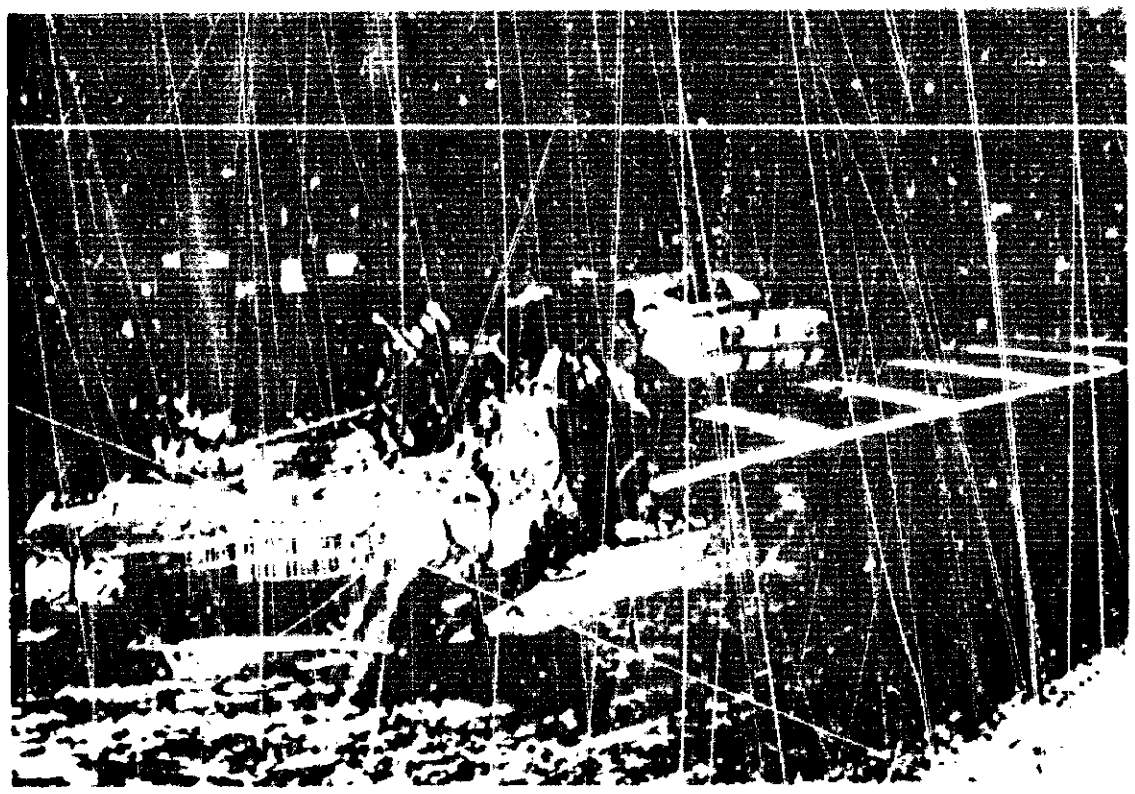


Figure 3. Final position of Buick.

Vehicle Information

The Buick was a six-passenger, 1971 "Electra 225," two-door sedan; vehicle identification number (VIN) 482371Y133899. It had a gold body and a black vinyl roof, and it was owned by the driver's mother. The odometer read 45,368 miles, and the curb weight was 4,450 lbs. The vehicle was powered by an eight-cylinder engine and equipped with power steering and automatic transmission. The service brakes were split system-power hydraulic, with disc-type brakes on the front wheels and drum-type brakes on the rear. A postcrash inspection did not reveal any mechanical deficiencies that could have caused the crash.

No outside body surfaces of the Buick escaped damage. The roof, trunk lid, hood, front and rear bumpers, grille, left, right, front, and rear fenders, both doors, and the undercarriage were damaged. The roof and right front end were damaged most severely. The roof had collapsed, and all window glass was broken. The right front fender, at the wheel well, was pushed in laterally; the right front tire was off the rim, and the rim was damaged. The right front lower control arm was bent down and to the left, the right wheel upper and lower ball joints were separated, and the right tie rod end was broken. Several beer containers were found both inside the overturned Buick and on the roadway nearby.

The Plymouth was a 1972 "Gold Duster," two-door sedan. It had a brown body and a gold vinyl roof, and its curb weight was 2,780 lbs. The roof was sheared off and pushed back and down onto the trunk lid; all window glass was broken. The back rest of the driver's seat had collapsed backward and down onto the rear seat. The left end of the front bumper was dented and pushed back toward the rear, and the front of the left front fender was dented. (See figure 4.)

The 1973 Ford "Torino," four-door sedan was tan-colored, and its curb weight was 3,719 lbs. Its left front fender had been dented on the top and side. Black scuff marks were found near the dents and on the left rear of the hood. The front windshield, roof, left rear door, outer skin of the left front door, back rest of the rear seat, trunk lid and deck, left rear fender, and the rear trunk bulkhead were torn away from the body. All window glass was broken, and the back rest of the front seat was collapsed down and back onto the rear seat. (See figure 5.)

The Opel, a 1972 "Manta," two-door sedan, was white, and its curb weight was 1,877 lbs. Its left side was heavily damaged. (See figure 6.) The left front fender and left side of the front bumper were pushed back. The side and top of the left front fender, cowling, hood, left door, and left rear quarter panel were dented and buckled. The left "A" pillar was pushed back and to the left, and all window glass was broken. Traces of gold paint and black smudges were found on the front bumper, cowling, hood, roof, left front fender, and "A" pillar. Glass was imbedded in the side of the left front fender, and pieces of fiberboard from the Buick's rear window shelf panel were wedged between the front of the left front fender and the bumper. Human hair was found wedged between the left front tire and wheel rim.

Driver Information

The Buick driver, age 20, weight 180 lbs, was a resident of Queens Village, New York City, and was employed as a computer technician. He held a valid

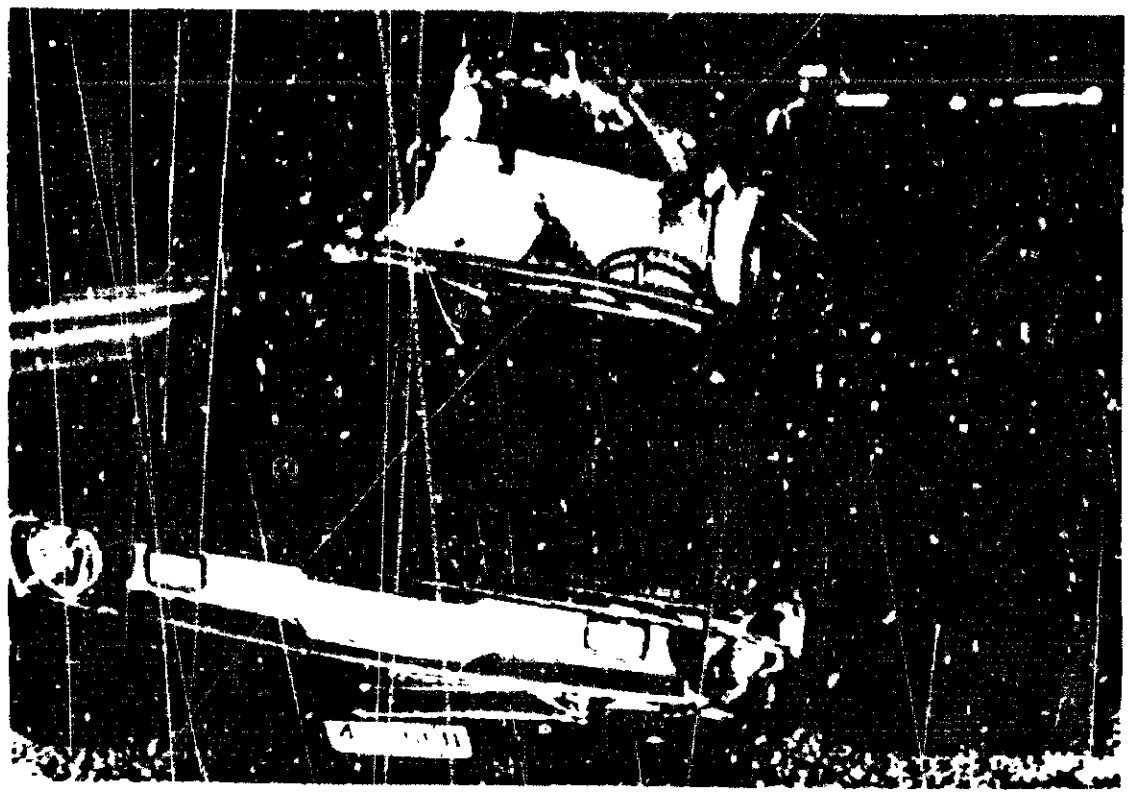


Figure 4. Front view of Plymouth at final position.

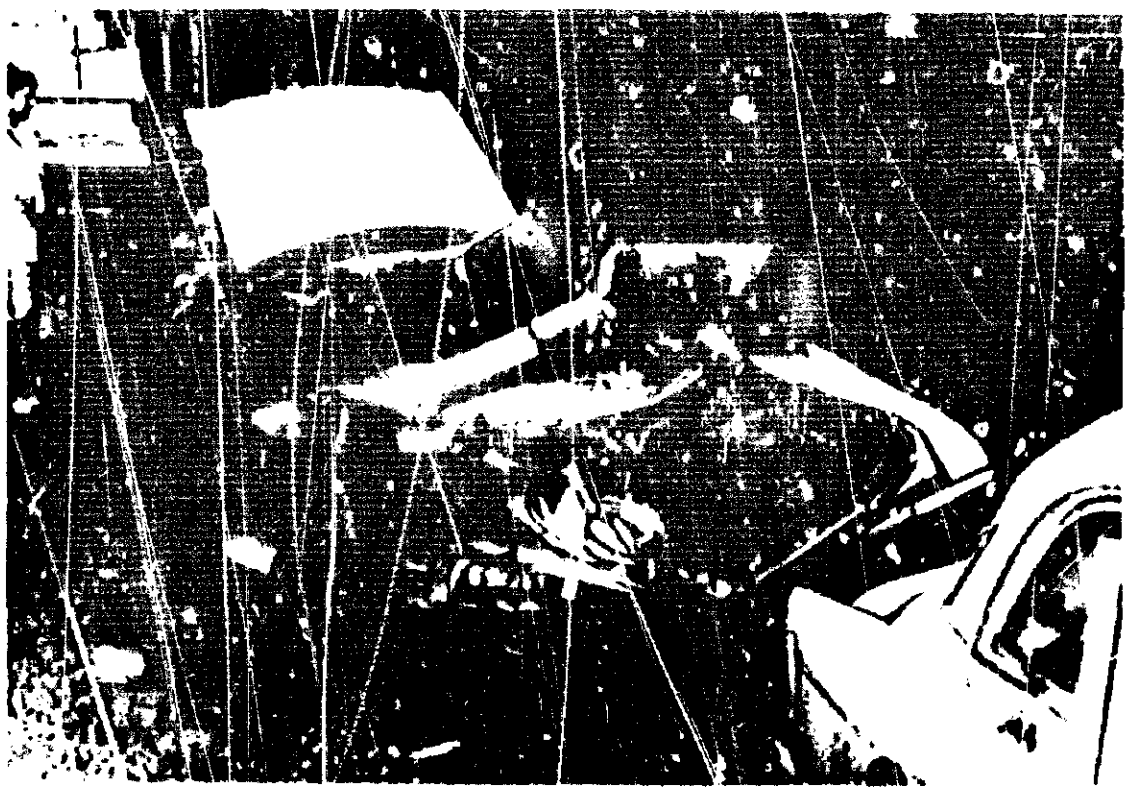


Figure 5. Rear view of 1973 Ford.

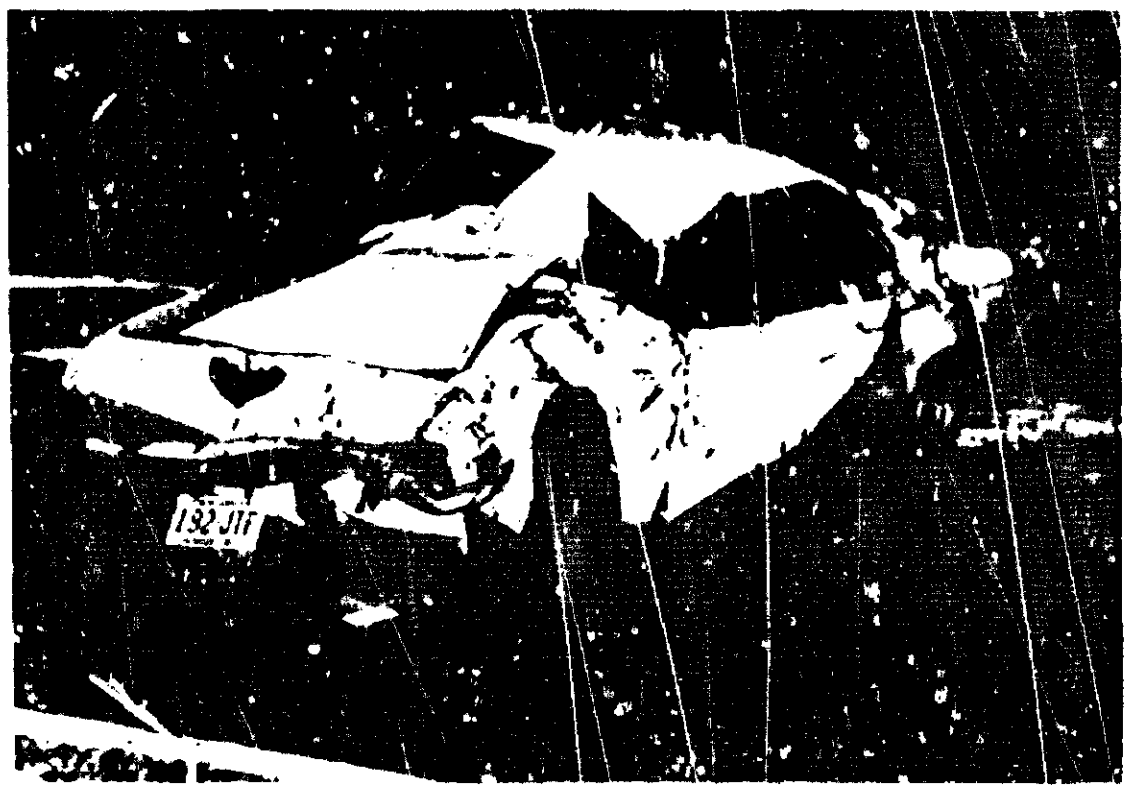


Figure 6. Front and left views of Opel.

New York State operators license with no restrictions. His license was issued in 1975, and a check of his driving record revealed no traffic violation convictions and one accident in March 1976.

A postaccident analysis of the driver's blood, taken about 2 hours after the accident by the New York City Medical Examiners Office, revealed a 0.12 percent blood alcohol level. 2/ The New York State Vehicle and Traffic Law states, "No person shall operate a motor vehicle while he has a 0.10 percent or more by weight of alcohol in his blood as shown by chemical analysis of his blood, breath, urine, or saliva . . . ." 3/

The drivers of the other involved vehicles all possessed valid driving licenses except for the driver of the 1966 Ford, whose license had been suspended for failure to answer traffic summonses.

2/ Highway Safety Program Standard 8, Alcohol in Relation to Highway Safety, NHTSA, requires each State to have a specification with respect to alcohol offenses:....."B. (1) The blood-alcohol concentration, not higher than 0.10 percent by weight, which defines the terms "intoxicated" or "under the influence of alcohol."

3/ New York State Vehicle and Traffic Law, Section 1192, Subdivision 1.

Roadway Information

The Grand Central Parkway is an arterial highway 4/ in Queens County, New York, and is about 16.5 miles long. It links the Triborough Bridge in the northern section of Queens to the Queens-Nassau County line in the east. This highway is designated as a Federal-aid primary and is part of the State highway system.

The accident site, located 4.5 miles west of the Queens-Nassau County line, was reconstructed in the early 1960's to then-existing standards. The six-lane divided highway had a posted 50-mph speed limit; commercial vehicles were prohibited. The road surface was concrete. The westbound roadway was 36 feet wide and was delineated by broken white lane lines into three 12-foot lanes which curved right at 4°20' (1,322-foot radius) and descended at a 2-percent grade. The curve had a superelevation of .04 foot per foot. The eastbound lanes were similar except for curvature and grade. The right shoulder of the westbound roadway consisted of mountable concrete curbing and a 10-foot-wide dirt shoulder adjacent to a 26° upward dirt slope. The right side of the eastbound lanes consisted of a paved, diagonally white-striped safety zone that separated the parkway through lanes from the eastbound 188th Street exit lane. The acceleration lane of the westbound entrance ramp from 188th Street ends about 400 feet east of the crash site.

The opposing lanes were separated by a 10-foot raised grass median that was bordered by an 8-inch barrier-type concrete curbing. A median barrier system 5/of weak post, W-beam guardrail was installed on top and in the center of the median. At the time of the accident, the median was heavily overgrown with vegetation that exceeded the height of the guardrail; the vegetation has since been cut down. The design height of the guardrail was 27 inches, but because of a 4- to 6-inch excess accumulation of soil on the median, the height of the guardrail was reduced to 21 to 23 inches. (See figure 7.)

The American Association of State Highway and Transportation Officials (AASHTO) "Guide for Selecting, Locating, and Designing Traffic Barriers," page 110, states, "In some cases, the effective rail height will be decreased due to an accumulation of dirt, pavement overlays, etc. Of course, dirt should be removed, if feasible, to return the barrier to its correct height."

The AASHTO 1973 edition of "A Policy on Design of Urban Highways and Arterial Streets," page 357, states that "....Barrier curbs should not be used on freeways and are considered undesirable on other high speed arterials." It further states on page 394 that "Curbs, dikes, sloped shoulders and stepped medians can cause errant vehicles to vault a barrier or to strike it so that a vehicle overturns. Optimum barrier system performance is provided by a relatively level surface in front of the barrier."

4/ A general term denoting a highway primarily for through traffic, usually on a continuous route.

5/ In this system, the resistance to impact is due in most part to the tensile forces developed in the W-beam. The rail tears away from the support posts upon impact, the posts thus offer negligible resistance in the impact zone but are essential to control lateral deflection.

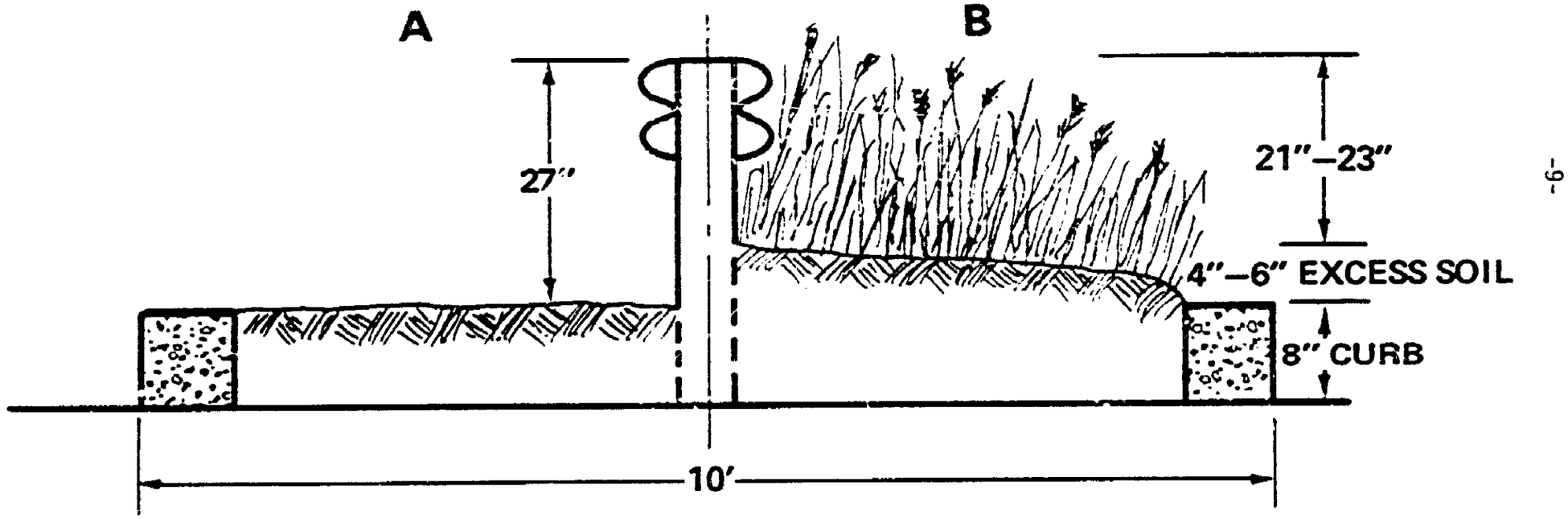


Figure 7. Cross section of median. A - Plan design and
B - Condition at time of crash

Where the Buick vaulted the median, the barrier guardrail was double-faced, steel W-beam mounted on Z-shaped posts that are 12 1/2 feet apart. The guardrail was installed in the center of the median, 4 1/2 feet from the curb face.

Concerning the lateral relationship between the guardrail and curb, the AASHTO "Guide for Selecting, Locating, and Designing Traffic Barriers," page 103, states, ". . . the face of the curb should be no closer to the traveled way than the face of the rail."

The Plymouth vaulted the median about 14 feet east of where the Buick vaulted. At this point, the W-beam guardrail was flared because it had once enclosed a sign support pole; the pole had been removed before the crash.

Highway lighting was provided by overhead, sodium vapor street lights which were installed along the shoulders and on the median. The lights on the median were about 135 feet apart and were installed on breakaway supports; they were not enclosed by a median guardrail. At each light pole installation on the median, the guardrail terminated and then resumed after an approximate 26-inch gap in which the light pole was installed. At the gaps, the ends of the W-beam guardrail were covered by a rounded mall barrier terminal end (bullnose). A U.S. Department of Transportation handbook, "Handbook of Highway Safety Design and Operating Practice," page 84, states:

> "Generally, breakaway or frangible supports should be provided whenever the support is exposed to traffic. An exception would be a situation where a greater hazard would be created by the pole falling on the roadway. This can occur with installations in narrow medians where the pole can fall on the opposite roadway. Under these conditons, where an alternate location is not feasible, proper guardrail should be provided."

Physical evidence found at the crash site included two chipped areas and a tire scuff mark on the concrete median curb adjacent to the westbound lanes. A 30-foot section of guardrail, starting opposite the tire scuff mark, was deformed laterally toward the south. There were tire scuff marks on the north face of the guardrail. The guardrail was deflected 14 1/2 inches at the point of maximum deformation. Numerous tire scuff marks were found on the south face of the guardrail, opposite the eastbound lanes, beginning shortly before the flared section of guardrail and continuing intermittently onto the flared section for a distance of 48 feet. (See figure 1.)

Other Information

To determine the number of median crossover accidents in the vicinity of the crash, the New York State (NYS) and New York City (NYC) Departments of Transportation (DOT), the division office of the Federal Highway Administration (FHWA), and the New York City Police Department (NYCPD), were contacted. Officials of the NYS and NYC DOT indicated that computerized accident data

were not available for any location within New York City after 1976. New York City DOT did supply a computer printout of accidents that occurred on the Parkway from 1973 through 1976 from data obtained from computer tapes supplied by the Aided and Accident Section of the New York City Police Department (NYCPD).

The division office of the FHWA supplied a computer printout of accidents on a 4-mile segment of the parkway that includes the crash site from January 1975 to June 1979. FHWA obtained the printout from the New York State Department of Motor Vehicles, but it was incomplete because it did not include any property damage accidents.

Finally, a manual search was made of police accident reports prepared for accidents that occurred during the first 6 months of 1979 on an approximate 3 1/2-mile segment of the Parkway which includes the crash site. The manual search also included the fatal accident reports prepared since 1977.

The accident data gathered from all sources revealed that since 1973, in a 3 1/2- to 4-mile segment of the Parkway which includes the crash site, there were 32 crossover accidents in which vehicles traveling in opposite directions collided. This figure does not include this accident or property damage accidents in 1977 and 1978 for which data were not available. Of the 32 accidents, 11 were property damage only, and the remaining 21 resulted in 3 fatalities and 43 injuries. Five of the accidents occurred during the first 6 months of 1979.

During this investigation, the Safety Board learned that currently the sole source of New York City accident data is the Aided and Accident Section of the NYCPD which processes between 150,000 and 160,000 accident reports annually. Data from these reports are stored on computer tapes which are distributed to NYC and the NYS DOT. Inquiries made at the Aided and Accident Section in August 1979 revealed that the latest tapes available were 1976, and at that time, the section was processing 1978 and 1979 accident reports. Processing of 1977 accident reports was being deferred until the section "caught up" with current 1979 cases. The backlog of cases was attributed to a lack of sufficient resources to process the accident reports.

There are two National Highway Traffic Safety Administration (NHTSA) Highway Safety Program Standards that are relevant to this situation: Highway Safety Program Standard (HSPS) No. 9 -- Identification and Surveillance of Accident Locations, and Highway Safety Program Standard (HSPS) No. 10 -- Traffic Records. HSPS No. 9 requires that each State in cooperation with county and local governments, shall have a program for identifying accident locations and for maintaining surveillance of those locations having high accident rates or losses. HSPS No. 10 states that each State, in cooperation with its political subdivision, shall maintain a statewide traffic records system which shall include data regarding drivers, vehicles, accidents, and highways and which shall be compatible for the purpose of analysis and correlation. Systems maintained by local governments shall be compatible with and capable of furnishing data to the State system.

Both Standards call for a periodic evaluation by the State with an evaluation summary to the FHWA (HSPS No. 9) and NHTSA (HSPS No. 10). In compliance with HSPS No. 10, the NYS DOT issued a 1978 Annual Evaluation Report — Highway Safety Improvement Program which stated:

> "It (the report) documents New York's most recent efforts in minimizing the part the highway facility plays in accident causation and severity. . .Problem identification is one of the best developed aspects of New York's HSIP (highway safety improvement program). Our accident surveillance system pinpoints suspect locations according to recorded accident histories."

The report further stated,

> "The purpose of an Accident Surveillance System is the systematic identification of specific locations or sections of streets and highways which have high or potentially high accident experience. This is a critical first step in determining the role the highway plays in accident causation and in developing appropriate countermeasure programs. This system was proposed by New York in 1973 under Highway Safety Program Standard 9. 'Identification and Surveillance of Accident Locations,' and has expanded New York's capabilities for identifying accident locations on both State and local highways."

From fiscal year 1967 to May 1979, New York State received $13,426,000 in Federal funds from the NHTSA to support HSPS No. 10. Of this amount, $2,164,000 was obligated since fiscal year 1977. 6/

ANALYSIS

The Accident

Because of a lack of physical evidence, such as tire marks in the roadway, it was not possible to reliably compute the precrash speed of the Buick. Based on the testimony of several witnesses, the Safety Board concludes that the Buick's speed was considerably in excess of the 50 mph speed limit. After using the acceleration lane of the 188th Street westbound, parkway entrance ramp to pass a westbound vehicle that was in the right lane, the driver apparently lost control of the vehicle when he steered sharply back into the through lanes. The combination of the Buick's speed and turning radius caused the Buick to yaw 7/ out of control. Although about 400 feet, or 4 seconds, were available to the driver from the end of

---

6/ Highway Safety Data, A Report to the Secretary of Transportation by the National Highway Safety Advisory Committee. DOT HS 804 788, July 1979, Appendix B.

7/ Movement of a vehicle in a direction other than that in which it is headed, sidewise motion produced when centrifugal force exceeds traction forces.

the acceleration lane to the crash site, his intoxicated condition may have precluded any chance for a successful recovery. As a result of striking the 8-inch median curb, the Buick bounced upward and continued across the median at a shallow angle. The upward trajectory of the vehicle was such that as it vaulted the median only the wheels struck the top of the guardrail and the Buick became an uncontrollable airborne missle that ultimately was halted by a series of crashes with passenger cars going in the opposite direction. See appendix A for AASHTO barrier guide data on bumper trajectory.

If the face of a barrier is even with the face of the curb, an errant vehicle will not likely vault the barrier. Alignment of the marks and chips on the median curb with the location in which the Buick came to rest indicates that the maximum angle that the Buick could have vaulted the median was about 25°. Since the three collisions with the other cars would have influenced the final resting point of the Buick by deflecting it in an easterly direction, the encroachment angle was probably less than 25°.

Damage to the vehicles indicates that the crash sequence with the eastbound cars began when the airborne Buick crashed through the windshield of the Plymouth, struck the driver, tore across the top of the car diagonally, and pushed the roof back onto the trunk lid. The Buick then collided with the Ford, striking it at the left side and left corner of the windshield. Since the Buick was descending, it penetrated deeply into the passenger compartment of the Ford and tore away the roof, back seat, trunk compartment, left rear door, and left rear quarter panel. As the Buick separated from the Ford, it rotated and rolled; when it collided with the Opel, it was probably overturned and moving backward. As the Opel and Buick crashed, the left front of the Opel apparently penetrated the rear window of the Buick and came in contact with one or more of the Buick's passengers, as evidenced by the hair found on the Opel's left front wheel. (See figure 8.)

The Driver

The Buick driver's blood alcohol level of 0.12 percent indicates that he had consumed more than "two drinks." An estimate based on the driver's weight and his blood alcohol level indicates that when the driver's blood was analyzed, it contained 2.9 ounces of absolute alcohol, which is equivalent to 5 1/2 - 12 ounce cans of beer or 5.8 ounces of 100 proof whiskey.

A book published by the Traffic Institute, of Northwestern University 8/ states that,

> "Among the first nerve activities to be numbed or depressed by very low concentrations of alcohol are those restraining or inhibitory functions which impel us to behave like civilized adult individuals. . . . Reactions to various stimuli are slowed very early in alcohol intoxication. . . . Regardless of the normal reaction time, low concentrations of alcohol in the blood produce a definite lengthening of

8/ Donigan, R., "Chemical Tests and the Law," pgs 286-287, 294.

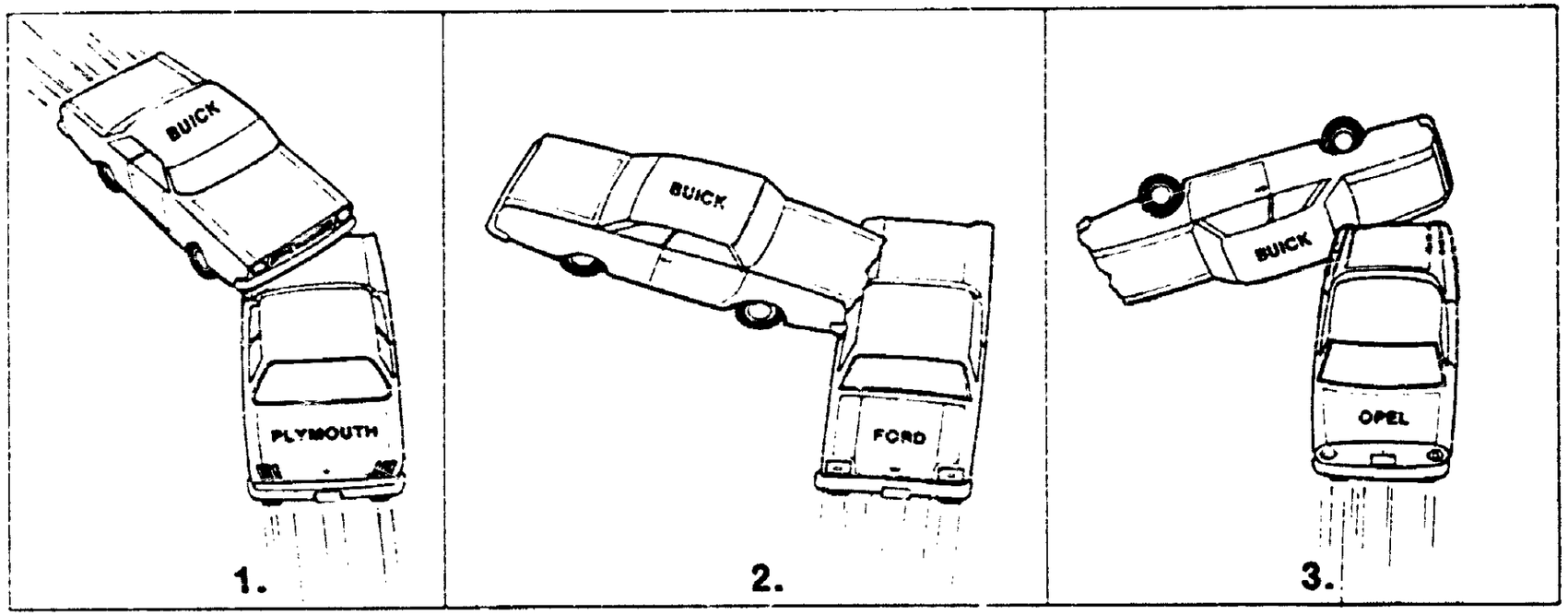


Figure 8. Crash sequence and approximate vehicle attitudes.

reaction time. Thus 0.05 percent of alcohol in the blood may produce a doubling of the reaction time, while 0.10 percent alcohol in the blood could cause a quadrupling of the normal reaction time.

"Along with the slowing of reaction time, special sense functions are impaired. Vision becomes blurred, especially at the edges of the visual field. . . .

> "Early in alcohol influence (at blood alcohol concentrations of 0.04 -0.08 percent) nerves which control coordinated activities of muscle groups become partially paralyzed. The resulting incoordination is seen in uncertain steps of the individual, slurred or "thick" speech, and clumsy manipulative efforts to use the fingers. . . .It is quite apparent that there is little question that ability to operate a motor vehicle safely is definitely impaired by the time the blood alcohol level reaches 0.10 percent."

The New York State Vehicle and Traffic Law establishes a statutory presumption that a driver with a blood alcohol level of 0.10 percent or more is under the influence of alcohol. This conforms with the Uniform Vehicle Code, of the National Committee on Uniform Traffic Laws and Ordinances.

The driver's violation-free driving record is not reflected in the driving behavior exhibited just before the crash: excessive speeding, using an entrance ramp lane to pass other vehicles, and loss of vehicle control. It is, however, consistent with the often observed behavior of the intoxicated driver: loss of inhibitions, poor judgment and coordination, and an increased willingness to take risks. Although the Safety Board cannot determine precisely to what degree alcohol influenced this crash, the circumstantial evidence suggests that driver intoxication was clearly a factor that contributed to this crash.

Roadway

Although the median and median barrier met established design standards when it was constructed, it does not conform with current design standards published in the AASHTO "Guide for Selecting, Locating and Designing Traffic Barriers." Improper placement of barrier guardrail in relation to curbing, insufficient barrier guardrail height, gaps in the barrier guardrail to accommodate breakaway light poles, and excessive vegetation and dirt accumulation on the median were substandard conditions that facilitated rather than deterred errant vehicles from vaulting the median into the opposing lanes. The AASHTO guide suggests that where a barrier system is judged to be substandard, the barrier should be modified or replaced.

To condemn the inadequacy of the median barrier solely using the vaulting Buick as an example would be unjustified because of the vehicle's excessive speed. However, two other vehicles involved in this crash, the eastbound Plymouth and the 1973 Ford, also mounted the median -- the Plymouth vaulted the barrier guardrail

and the Ford straddled it. Since their estimated precrash speed of about 50 to 55 mph was reduced after being struck by the Buick, an adequate median barrier system probably would have retained and redirected these vehicles. Additionally, the 32 crossover accidents in this area involving vehicles entering opposing lanes is sufficient to indict the barrier system and should have alerted city and State officials. However, the lack of a local adequate accident record system to supply essential, accurate, and timely information in a usable format to identify hazardous locations, precluded effective action by responsible officials.

Although the NYS DOT Annual Evaluation Report to NHTSA states that there is a statewide operational system on both State and local highways with respect to HSPS No. 9 -- Identification and Surveillance of Accident Locations, the Safety Board's investigation indicated that the program is not current in New York City. If the New York State accident records system had been functioning properly - as indicated in the Annual Report and required by HSPS Nos. 9 and 10 - New York City probably would have been alerted to the accident prone area and the need for corrective action.

Locations with sharply increasing accident histories cannot be identified in a timely manner with data that is 2 1/2 years old. The current backlog denies management any knowledge of the severity and frequency of recent accident associated with the design deficiencies of the median barrier. Further, the computerized accident records system currently being established by the NYS DOT is not scheduled to be fully implemented until October 1980 or sometime in 1981. Also, this system will include only those accidents that occur after the system is activated. Therefore, there is an urgent need for the NYCPD and the NYS DOT to cooperate to update the accident records' system and reduce the existing backlog.

Since over $13 million in Federal funds has already been spent during the past 12 years in the development of the New York traffic records system, the NHTSA should oversee the improvement of the records systems. Furthermore, the NHTSA should investigate New York State's implementation of HSPS No. 10, particularly with regard to New York City.

CONCLUSIONS

Findings

1. The Buick driver lost control of the vehicle because he attempted too sharp a turn for the speed at which he was traveling.

2. The Buick vaulted the median barrier after it struck the 8-inch median curb.

3. The Buick's encroachment angle into the opposing lanes was less than 25°.

4. The Buick driver was driving while under the influence of alcohol.

5. The median and median barrier were substandard and poorly maintained.

6. The accident records and accident surveillance systems of New York State are not functioning as they should in New York City, and therefore, highway transportation officials are not being supplied essential information in a timely manner.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the Buick driver's loss of vehicle control which resulted from driver intoxication, excessive speed, and sharp steering maneuvers while passing another westbound vehicle. Contributing to the severity of the accident was the failure of the substandard median barrier system to contain the Buick which vaulted into the opposing lanes of traffic.

RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board made the following recommendations:

— to the New York State Department of Transportation:

"Replace substandard median barrier on the Grand Central Parkway with an operational system that conforms to current standards. (Class II, Priority Action) (H-79-48)"

— to the New York City Department of Transportation:

"As an interim measure, remove soil buildup from the median on the Grand Central Parkway and from similar locations in the City where an accumulation of soil has reduced the effective height of the guardrail. (Class II, Priority Action) (H-79-49)"

— to the Governor, New York State:

Expand the New York State traffic records system so that it complies with Highway Safety Program Standard 10 (Traffic Records) and provides managers of the motor vehicle transportation system of New York City with essential information that is accurate, timely, and in a usable format. (Class II, Priority Action) (H-79-50)"

— to the National Highway Traffic Safety Administration:

"Investigate the level of implementation by New York State of Highway Safety Program Standard 10 (Traffic Records) particularly with regard to New York City. (Class II, Priority Action) (H-79-51)"

— to the Police Commissioner, New York City Police Department:

"Until such time that New York State implements a centralized accident records system, provide necessary resources so that current accident data in New York City will be available to highway transportation officials. (Class II, Priority Action), (H-79-52)"

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES B. KING
Chairman

/s/ ELWOOD T. DRIVER
Vice Chairman

/s/ FRANCIS H. McADAMS
Member

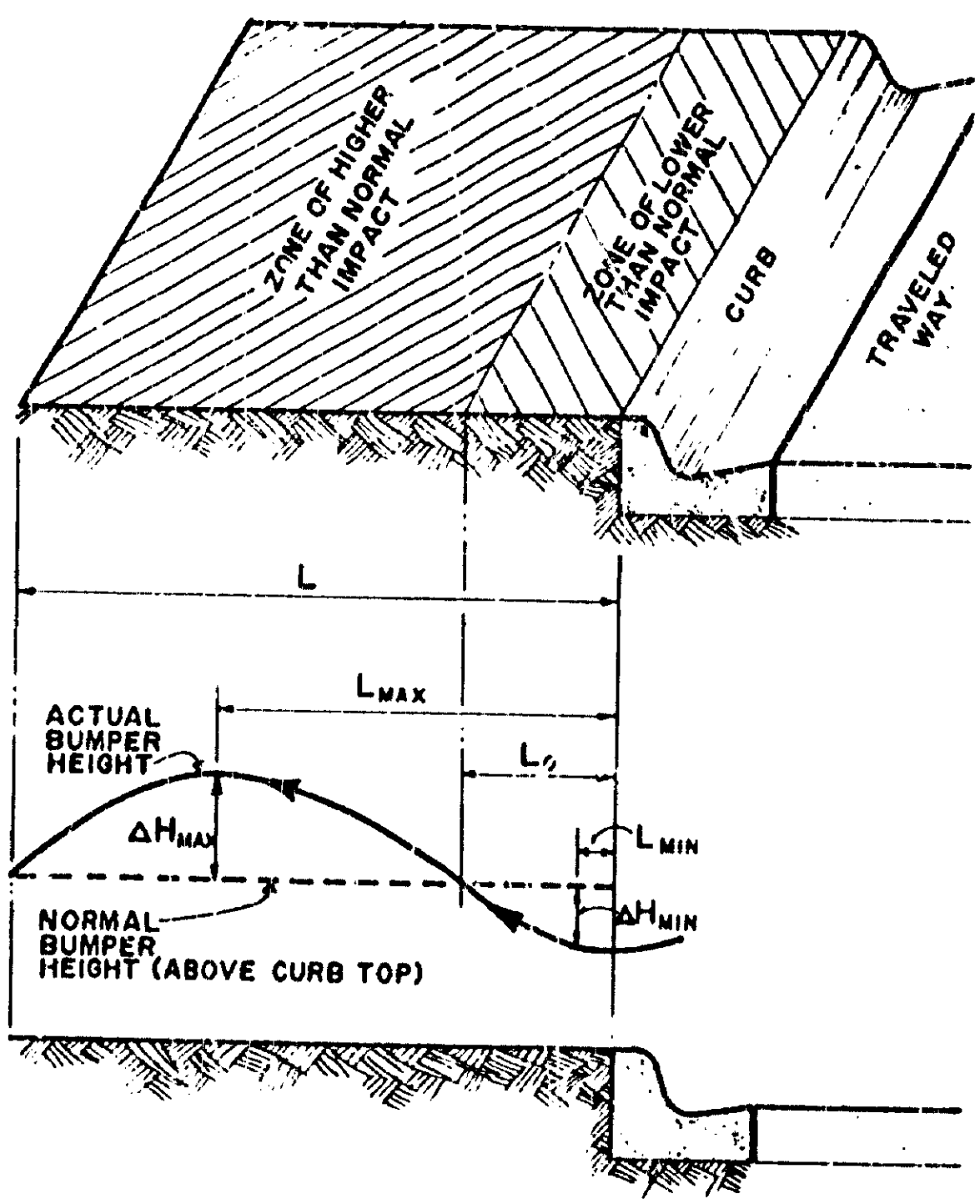
/s/ PATRICIA A. GOLDMAN
Member

/s/ G. H. PATRICK BURSLEY
Member

November 21, 1979

APPENDIX

BUMPER TRAJECTORY DATA



ΔH_{MIN} = MAXIMUM HEIGHT BUMPER BELOW NORMAL HEIGHT

ΔH_{MAX} = MAXIMUM HEIGHT BUMPER ABOVE NORMAL HEIGHT

FIGURE F-14. DESIGN PARAMETERS FOR VEHICLE ENCROACHMENTS ON CURBS.

BUMPER TRAJECTORY DATA -- 8-INCH TYPE A CURB

FULL SIZE CAR

ENCROACHMENT CONDITIONS		ΔH_{min}	L_{min}	L_o	ΔH_{max}	L_{max}	L
SPEED(MPH)	ANGLE(DEG)	(IN.)	(FT.)	(FT.)	(IN.)	(FT.)	(FT.)
40	10	VEHICLE REDIRECTED UPON IMPACT WITH CURB					
40	15	9.0	1.0	1.7	8.0	2.5	3.3
60	10	VEHICLE REDIRECTED UPON IMPACT WITH CURB					
60	15	9.0	1.0	2.4	25.0	6.6	9.5

[a] ANGLE BETWEEN VEHICLE HEADING AND TANGENT TO TRAVELED WAY