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NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

*Valley View*

ISSUED: January 12, 1978

Forwarded to:

Honorable David L. Weir  
Director  
Ohio Department of Transportation  
25 South Front Street  
Columbus, Ohio 43215

SAFETY RECOMMENDATION(S)

H-77-38 and 39

On August 20, 1976, a tractor-semitrailer leased to the Long Transportation Company (Long) of Detroit, Michigan, went out of control while descending a steep 10-percent grade on State Route 17 in Valley View, Ohio, and collided with 10 automobiles that were stopped at a traffic signal at the bottom of the grade. Eight of the 27 occupants died and 15 were injured. 1/

A post-accident examination of the tractor indicated that it was not equipped with front wheel brakes and that the bogie axle brakes were improperly adjusted. An examination of the brake system on the semitrailer showed that the brake drums were badly scored with significant lips at the drum openings. The four brake shoe anchor pins on the rear tandem axle brakes were rusted or otherwise corroded and were inoperable. This condition prevented any rear tandem axle brake application. The left front-axle wheel bearing was not lubricated. All of the slack adjusters were well beyond the point where they should have been readjusted. Of the eight brakes available on this combination vehicle two were inoperable and the other six were marginal.

1/ For More information about this accident read: "Highway Accident Report--Long Transportation Company Tractor-Semitrailer Collision With Multiple Vehicles, Valley View, Ohio, August 20, 1976," (NTSB-HAR-77-3).

The truckdriver stated that at the top of the grade he was in fifth gear. Witnesses estimated the truck speed halfway down the grade at 45-50 mph. As the vehicle speed exceeded the 31 mph maximum speed for fifth gear, the driver would have to select a higher gear to avoid damaging the tractor engine. After the accident the tractor's transmission was found in neutral and the engine was not damaged internally. It is assumed that in shifting, the driver moved the shift lever into neutral en route to another gear but then due to the increase in speed he was unable to synchronize the transmission input and output shafts into another gear ratio, leaving the transmission in neutral. Such a series of events would have removed any available engine braking capability and left the vehicle's deceleration completely dependent on the defective braking systems.

The existing advance "HILL" warning signs provided no information to the driver concerning the length and steepness of the downgrade ahead. There is no advance signing to warn the driver of the signalized intersection at the foot of the grade.

The curves, trees, and vegetation impeded the truckdriver's perception of the actual roadway conditions. The 4,200 feet of varying downgrades from the crest through the curve to the left did not indicate to the truckdriver that the grade was about to change sharply. Since this was his first trip over this route he probably was not aware of the full magnitude of the 1,600-foot-long 10 percent downgrade until he was nearly upon it.

Trees and bushes close to the edge of the road in the arc of the right curve near the bottom of the downgrade effectively blocked the truckdriver's view of the intersection, the traffic signals, and vehicles stopped at the traffic signal until he was within approximately 500 feet of the intersection, and 200 feet from the rearmost stopped vehicle.

Had the truckdriver been made aware sooner through more informative and pertinent signing to advise of the sharp increase in grade and the presence of the signalized intersection, he may have taken some evasive action rather than maintaining a course along the center of the roadway. Without any advance warning signs to inform him of the intersection and signals, he could have assumed that Granger Road continued on without intersecting roads.

Following this accident, all truck traffic was banned from this section of State Route 17 and rerouted around the steep grade. Such action should preclude the recurrence of future truck accidents involving the loss of braking capability and erroneous transmission manipulation. However, the Valley View Police Department reported that only 35 percent of the average of 68 accidents per year on the Granger Road downgrade involved trucks. Because 65 percent of the accidents involved vehicles other than trucks, it is apparent that a further reduction in accidents might result if all vehicle drivers who are unfamiliar with this road had the benefit of informative advance signing in the area of this accident.

Neither the Ohio Manual on Uniform Traffic Control Devices for Streets and Highways or the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), promulgated by the Federal Highway Administration (FHWA) address the issue of giving more descriptive advice about the length and steepness of grade. Some States use signs which give length and percent of grade information.

Following its investigation of a truck accident at Bishop, California 2/ which involved a loss of braking capability on a long, steep grade, the Safety Board recommended that the FHWA:

"Establish in its adopted Manual on Uniform Traffic Control Devices for Streets and Highways, provisions which require the presentation of critical roadway characteristic information to drivers of commercial or other large vehicles at long/steep grades, and insure application of these provisions through the authority contained within Highway Safety Program 13, Traffic Engineering Service."

The FHWA agreed that some changes were needed in the MUTCD and referred the recommendation to its National Committee. Proposed changes were referred to a task force which is currently considering action to comply with the recommendation. The Safety Board has urged the FHWA to expedite its action in developing and disseminating the necessary changes to provide needed critical roadway information to drivers of heavy vehicles approaching and negotiating long, steep grades.

That section of Granger Road leading up to the point of collision traverses two jurisdictions, namely Garfield Heights and Valley View. The downgrade starts in Garfield Heights about 1 mile east of the Valley View Corporate Limit and ends at Canal Road 1,200 feet west of the corporate limit. The signing with the exception of route and guide signing, is the responsibility of the separate jurisdictions. Neither jurisdiction employs a professional traffic engineer; both primarily depend upon their police to provide signing in conformance with the Ohio Manual on Uniform Traffic Control Devices. This is in compliance with Section 4511.11(A) of the Ohio Revised Code which states:

"Local authorities in their respective jurisdictions shall place and maintain traffic control devices in accordance with the Department of Transportation manual and specifications for a uniform system of traffic control."

Although the traffic signal at the intersection of Granger and Canal Roads is visible for the minimum distance recommended in the Manual on Uniform Traffic Control Devices, it should be noted the minimum

2/ "Highway Accident Report--Francisco Flores Truck/Pickup Truck Collision, U.S. Route 395, Bishop, California, June 29, 1974," (NTSB-HAR-75-5).

distances specified do not consider the steepness or length of the downgrade of the approach. The long and steep approach at this location, combined with the horizontal curvature, are significant geometric conditions which require warning about the length and degree of steepness of the grade and the presence of the signalized intersection well in advance.

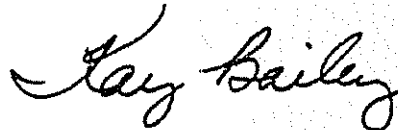
Additional signing concerning the length and steepness of the grade would have to be installed by the city of Garfield Heights. The dynamics of the accidents occurring on this section of road are such that the occurrence initiates on the first part of the grade in Garfield Heights and culminates in Valley View. It would appear that the State of Ohio could better insure that adequate warning signing were installed along such major routes. The State already maintains route markers and guide signs throughout the State highway system and it would appear that a matter as important as hazard signing should be given equal weight. It is recognized that State laws would have to be altered to accommodate the changes.

Therefore, the National Transportation Safety Board recommends that the State of Ohio:

Conduct, in cooperation with the city of Garfield Heights and the Village of Valley View, a traffic survey and analysis of that part of State Route 17 (Granger Road), extending from the approach to the hill crest in Garfield Heights to Canal Road in Valley View, to determine and install needed advance warning signs which will provide drivers of all types of vehicles information relating to the length and steepness of the grade and the presence of the signalized intersection. (Class II, Priority Action) (H-77-38)

Consider amending State laws to allow the Director of Transportation to place and maintain traffic control devices that conform to its manual and specifications upon all extensions of State highways through local jurisdictions. (Class II, Priority Action) (H-77-39)

BAILEY, Acting Chairman, McADAMS, HOGUE, and KING, Members, concurred in the above recommendations.



By: Kay Bailey  
Acting Chairman