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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: May 17, 1978

Forwarded to:

Mr. Calvin G. Grayson
Secretary
Kentucky Department of
Transportation
Frankfort, Kentucky 40601

SAFETY RECOMMENDATION(S)

H-78-35 through -39

About 9:30 a.m., on September 24, 1977, an Usher Transport, Inc., cargo tank-semitrailer transporting 8,200 gallons of gasoline was traveling southbound about 30 m.p.h. on Kentucky Route 11 in Beattyville, Kentucky. While the truck descended a 12.6 percent, 720-foot-long grade and rounded a sharp curve, railroad flashers activated; the truck crossed the L&N railroad tracks immediately in front of an approaching train and struck a nearby building. The tank overturned onto a vehicle and slid to its final resting position. Gasoline, released from the damaged cargo tank-semitrailer, ignited.

Seven persons died and 6 persons were injured as a result of this accident; 6 buildings were burned beyond repair, and 17 vehicles and 11 other buildings were damaged.

Dual-mounted "Hill" signs were located 500 feet before the crest of the hill, and a railroad advance warning sign was visible from the crest of the hill. The speed limit was reduced from 35 m.p.h. to 25 m.p.h. as indicated by a sign located 300 feet down the 12.6 percent grade. There was no turn warning sign.

The driver of the truck had traveled on this road weekly in the 3 months preceding the accident but had previously encountered the approaching train only twice. As soon as the driver perceived the railroad track ahead by means of the advance railroad warning or the flashers, he should have been prepared to stop. Federal Law (Title 49-Chapter III, Subpart B 397.10) and State Law (KRS 189.565) requires that trucks transporting hazardous materials stop at railroad crossings with this type of activated device. In the last 2 years, there have been two other train-related accidents at this location.

If the vehicle had been traveling at a slower speed, the driver might have been able to negotiate the restrictive geometry of the roadway, which suggests that a problem existed in communicating to the driver the degree of hazard created by the restrictive geometry and the approaching train. More positive guidance should be provided to a motorist before he reaches the crest of the hill. Other steep downgrades in Kentucky should also be analyzed to determine if critical information is available to motorists before they begin to descend steep grades.

At the request of the National Transportation Safety Board, the State of Kentucky has conducted locked wheel skid tests on this segment of road. From the test results, it was deduced that an average skid number of 29 (tested at 40 m.p.h.) would exist on the hill. Kentucky classifies this as a slippery road at higher speeds. At 40 m.p.h. the Federal Highway Administration recommends a minimum interim skid number of 31 where the mean traffic speed is 30 m.p.h.; no recommended value is cited below this speed. A higher skid value is desirable where complex geometric conditions exist.

At the request of the Safety Board, Kentucky conducted a topographic survey. This survey indicated a fluctuating superelevation in the curve. At one location in the curve the superelevation 1/ was negative. A fluctuating superelevation with a negative bank would decrease the vehicle's capabilities to negotiate a curve and should therefore be eliminated.

During its investigation of the accident, the Safety Board found tire marks which indicated that, as the gasoline truck traversed the crossing, it was displaced sideways. The railroad crossing was extremely rough. Trucks barely cleared the tracks with their trailer landing gears and gouge marks were apparent that could have been attributed to contact with landing gears. A new railroad crossing surface would improve this condition.

A new alignment for KY 11 is proposed to be constructed in the next 2 to 3 years, and the new roadway may pass through the area of the demolished buildings. As provided for in Federal Highway Programs Manual (FHPM) 7.7.5.1.b, the State should coordinate immediately with the public and private interests whose buildings were damaged in this accident, and are likely to be affected by the realignment

1/ Superelevation is the banking of a curve to allow a vehicle to negotiate the curve at higher speeds.

of KY 11 to avoid undue delays in construction of the new project. The completion of this project, which should enhance safety, could be expedited if rebuilding of the destroyed buildings were restricted or discouraged. This might be accomplished by prompt acquisition of this land if this area is to be affected by the proposed alignment.

The Board understands that the State placed a series of signs intended to warn drivers of the hill ahead in September 1977. On December 15, 1977, after the signs had been placed and the road was "grooved" a truck loaded with dry board descended the same hill, went out of control, and struck three vehicles; no one was injured, and the pavement was dry. On February 2, 1978, another truck loaded with lumber descended the same hill and overturned; no one was injured, and the pavement was dry. After this accident, "STOP" signs with flashing red beacons were placed before the hill.

The Safety Board's investigation of these accidents is continuing and the probable cause will be determined upon its completion. However, the Safety Board believes that these highway-related aspects warrant your immediate attention.

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

Place an activated advance railroad warning sign, extend the 25 m.p.h. zone, determine through application of current technology the safest traversable speed for the curve, and then post a turn sign and an advisory speed plate, before the crest of the 12.6 percent grade on KY 11. (H-78-35) (Class I, Urgent Action)

Improve the surface of the rail/highway grade crossing, the skid resistance properties of the hill, and, simultaneously, the super-elevation of the curve. (H-78-36) (Class II, Priority Action)

Develop a policy to prohibit parking adjacent to roads where restrictive geometric conditions exist. (H-78-37) (Class III, Longer-Term Action)

Review similar downgrades to assure that the most restrictive features on or adjacent to steep downgrades are indicated before the descent begins. (H-78-38) (Class III, Longer-Term Action)

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Work jointly with Beattyville to ban all parking on the west side of KY 11 from the L&N Railroad tracks to Main Street and to expedite acquisition of land in the area of the demolished buildings if the new alignment is to pass through this area.
(H-78-39) (Class I, Urgent Action)

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

for By: *Francis W. McAdams*
James B. King
Chairman