

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

Log H-3/3

ISSUED: August 13, 1982

Forwarded to:

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Louisiana Department of Transportation  
and Development  
P.O. Box 44245  
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SAFETY RECOMMENDATION(S)

H-82-26 through -29

About 10:25 p.m., on August 27, 1981, a tractor-semitrailer loaded with steel pipe was traveling eastbound across the Calcasieu River Bridge, a 1 1/4-mile long, four-lane divided highway bridge on Interstate 10 at the city limits of Lake Charles, Louisiana. As the truck was descending the east side of the bridge, the tractor's left side fuel tank was struck and penetrated by a dislodged bridge repair plate that had been used to cover a hole in a pavement expansion joint. As a result of about 75 gallons of diesel fuel leaking onto a 1/2-mile section of the bridge, 26 vehicles were involved in a series of skidding collisions. Three persons were killed, and 18 persons were injured; there were no fires. 1/

The expansion joints on the bridge and the joint, which the repair plate was part of, had experienced a long history and increasing frequency of problems that were known to or easily seen by Louisiana Department of Transportation and Development (LADOTD) maintenance personnel. Other irregularities were found during a detailed inspection of the joint and the steel plate repair. The hole in the expansion joint was produced by the loss of three steel "fingers" from a section of fingers that intermix with a neighboring section of fingers and form the basic expansion joint. The Safety Board concluded that the fingers were breaking off because they were raised above their support beam and fatiguing from this support configuration that was not intended by design. The natural movement of the bridge or rebound from traffic loads could have been the mechanisms to raise the expansion joint fingers, and debris from a broken-up pavement patch at the joint could have been the mechanism to lock the fingers in a raised position. General vertical misalignment of the fingers and extra welds during fabrication of the just-replaced finger section may have played a role in raising and locking some fingers.

The Safety Board concluded that a number of commonsense mistakes were made in "designing" the repair of the hole and less than optimum welding practices were used by the noncertified welder of the LADOTD maintenance crew that repaired the joint. From a quality standpoint, the repair plate was inadequate because it did not provide the best possible repair of its type, which was especially appropriate since the joint and finger section had a known history of recurring problems, and the cause(s) of these problems had

1/ For more detailed information, read Highway Accident Report—"Truck Engine Fuel Tank Puncture by Bridge Repair Plate, Diesel Spill, and Multiple Vehicle Skidding Collisions, Interstate 10, Lake Charles, Louisiana, August 27, 1981" (NTSB-HAR-82-4).

not been determined. However, the repair held for 4 months, long enough to be considered an adequate temporary repair, and it should have provided sufficient lead time to have done something more permanent about the recurring problems at this joint.

The Safety Board understands that the LADOTD does not require its maintenance personnel to be certified welders because of an inability to pay and keep certified welders. Also, LADOTD headquarters and district maintenance personnel reported personnel and budget limitations that may have reduced their ability to do something more permanent at this joint and other repair sites of relatively high priority. The Safety Board is concerned that there may be similar problems throughout Louisiana and nationwide at bridges and all other repair sites. Therefore, the Safety Board believes that the LADOTD should address the State issues and has recommended that the Federal Highway Administration (FHWA) address the national issues related to this problem and assist in its resolution.

The LADOTD and the FHWA are currently developing a contract to install a television surveillance system on the Calcasieu River Bridge. The proposed system may have allowed earlier official confirmation of driver reports about the diesel spill and more rapid decisions on police patrol response and sign message changes for the remote control traffic signs located on each side of the bridge. Therefore, the Safety Board supports the use of a television system at the bridge, especially given the high State accident rate, the lack of shoulders for vehicle breakdowns, and the high and increasing maintenance activity. The Safety Board has recommended that the FHWA continue to assist the State of Louisiana in this project.

State police representatives said that experience has shown that drivers do not consistently obey the remote control sign messages. A public information program may be necessary to improve their overall effectiveness. Another potential improvement would be to provide a median opening(s) on the bridge for emergency use in order to reduce police response time and clear the bridge in emergencies. Further evaluation by the LADOTD is necessary to determine if this is structurally and operationally feasible and cost-effective.

As a result of this investigation, the National Transportation Safety Board recommends that the Louisiana Department of Transportation and Development:

Advise maintenance personnel of the circumstances of this accident and emphasize the need for repair designs at bridges and all other repair sites that consider operational problems, repair personnel qualifications, and the need for timely followup to temporary repairs. (Class II, Priority Action) (H-82-26)

Establish a program to upgrade maintenance welder qualifications through certification in accordance with performance standards promulgated by the American Welding Society. (Class II, Priority Action) (H-82-27)

Conduct a study to determine if it is structurally and operationally feasible and cost-effective to provide a median opening(s) on the I-10 Calcasieu River Bridge for emergency use. If the study determines that the median openings are structurally feasible and cost effective, immediately provide such an opening on the bridge. (Class II, Priority Action) (H-82-28)

Publicize the purpose of and need for compliance with the I-10/210 electronic, changeable message sign system through local media. (Class II, Priority Action) (H-82-29)

BURNETT, Chairman, and McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations. GOLDMAN, Vice Chairman, did not participate.

  
By: Jim Burnett  
Chairman

