

Safety research

Crash tests measure guard rail strength

A passenger bus smashes into a bridge guardrail at 60 mph. The 33,000-pound bus leans precariously, inside wheels off the pavement, as it slides along the rail. Metal screeches. Steel rail posts snap and fly through the air.

Prevented by the rail from going off the "bridge" into a "river bed" below, the bus grinds along to the



The Texas Transportation Institute...

end of the rail, topples onto its side and skids to a stop.

As the dust settles, technicians shut off high-speed movie cameras and data recording equipment, and converge on the site to assess the rail's behavior.

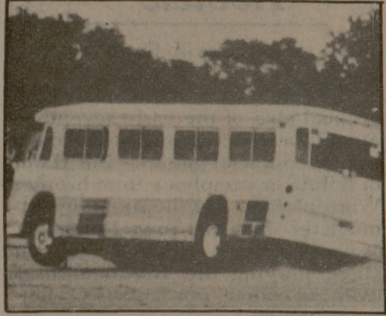
No one was killed or injured. The bus was loaded with bags of sand to simulate passengers' weight and two instrumented dummies rode in the driver's and front seats.

The bus was guided along a one-mile track to the impact point by remote control, from a chase vehicle. The planned "accident" took place at the Texas A&M University Research and Extension Center at Bryan, under supervision of engineers and technicians of the Texas Transportation Institute.

Five cameras, running up to 500 frames of film per second, recorded the impact. Ultra-slow motion movies were obtained from the bus, from an overhead pole and three points on the ground.

Accelerometers in the dummies' "heads" and " chests" recorded the wrenching jerk of the bus slamming into the rail. Forces measured by the devices determine whether fatal, serious or minor injuries would have been suffered by people aboard the bus.

Life-saving data will be taken from the film, frame by frame, analyzed and evaluated by personnel under Drs. Gene Buth, Hayes Ross and Teddy Hirsch. It will be added to other data from a previous crash test



conducts this crash test...

series and two more to follow. From combined results, another rail will be designed and constructed, for a fifth test series.

"Our goal is to develop guidelines for design of new bridge rails that will safely contain and redirect vehicles that run into them," Buth said. The first test series used a school bus.

Materials and rail geometry will

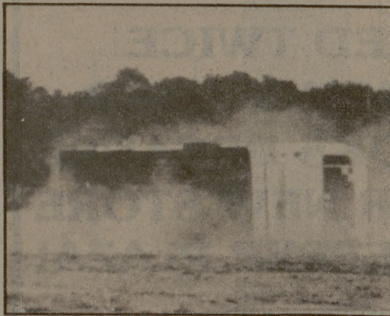
be varied from test to test. Steel, aluminum and concrete, normally used or readily available for highway hardware, will be employed.

Buth, Ross and Hirsch, civil engineering professors at Texas A&M, specialize in dynamic impact testing. "From the tests, we learn what loads imposed on the structures and what size posts, bolts and rails, and heights are required to do the job," Buth said.

Previous designs were engineered to contain autos and smaller vehicles. A design system to restrain semi-trailer or concrete trucks is a probable future project.

"Ultimately, we must provide a roadway system that forgives impact loads from 1,800 pounds to 80,000 pounds," he said.

Research at the TTI proving grounds, formerly runways at Bryan Air Force Base, has led to numerous life-saving features on highways throughout the United States. The work is funded by the Federal Highway Administration, Texas Department of Highways and Public Transportation and TTI.



to determine bridge rail safety.

3 A&M seniors Rhodes nominees

Three Texas A&M University seniors have been nominated for Rhodes Scholarships to Oxford University in England.

They are: Stephen R. Horn, son of Mr. and Mrs. S. R. Horn of 910 Clearven in San Antonio; Karen L. Hoermann, daughter of Mr. and Mrs. Harvey G. Hoermann of P.O. Box 6 in Refugio, and Thomas W. Paterson, son of Mr. and Mrs. Alex Paterson of Route 9 in Silver City, N.M.

Eight Texas A&M students were interviewed for the three nominations. The national Rhodes Scholarship Selection Committee will choose 34 students from across the United States.

In the past, three Texas A&M students have been named winners of

the prestigious award. Paul T. Hasse, class of 1976, is the most recent winner.

This year's winners will enter Oxford in October 1979. Candidates must be unmarried American citizens between the ages of 18 and 24. A grade point average of 3.75 or better, and a record of unusual achievement in some outside activity is also required.

The scholarships, awarded for two years, cover tuition, some assistance for travel and a maintenance allowance amounting to about \$4,400 a year, he noted.

If successful at the campus level, a candidate is interviewed at state and regional levels in December. Four scholarships will be granted to the six-state region that includes Texas.

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