

## Louisiana Weighs Trucks on the Run to Help Lengthen Life of Pavement

A research study aimed at finding a more durable road pavement for Louisiana's unique, rainy climate is under way by the Louisiana Department of Highways.

Researchers will use computerized equipment that can weigh vehicles while they are moving at normal speeds on the roadway to learn how heavy traffic affects the life of different pavements.

The study will be conducted on a 9-mile (14-km) test section that is under construction on US-167 and US-71 between Meeker and Chambers, south of Alexandria. The test section will have 14 areas composed of different thicknesses of pavement.

When the test highway is opened to traffic in mid-1976, the computer will record the weight of trucks using it while they are in motion. Only trucks will be recorded, for they are the greatest single influence on the life of any pavement, explained Lacey Glascock, coordinator for the research project.

"The main purpose of this study is to evaluate the criteria we are using to design highway pavements," Glascock said. "The criteria we are now using is based on national standards, but we feel that Louisiana's peculiar materials and moisture conditions may require some changes in the design procedure so that it will more accurately fit our conditions.

"The computerized weighing equipment is going to contribute greatly to this study because we must have accurate data on truck traffic to obtain the best criteria for designing highways. With the information provided by this study, engineers will be better able to design a highway pavement for any given amount of truck traffic," Glascock explained.

He said that engineers design highways primarily on the basis of the number and weight of trucks using it daily, because their weight is far greater than that of other vehicles.

The most common truck hauling freight in Louisiana, a 3-axle tractor with a 2-axle semitrailer, on the average is the equivalent of more than 4,600 cars in its wear and tear on pavement, Glascock said.

A project to test the accuracy of the computerized weighing equipment was recently completed on US-190 west of Port Allen. The computer was housed in a trailer beside the highway and connected to a signal box on the roadside. This box was wired to metal load plates and speed loop detectors in the westbound lane of traffic.

As trucks crossed the metal plates, signals were instantaneously transmitted to the computer, and numbers flashed on a screen telling the speed of the truck and the weight on each axle. A highway technician



*James Burt, a researcher with the Louisiana Department of Highways, tests a computerized system that weighs trucks while they are moving at normal highway speeds. The trucks are weighed by the use of metal load plates, which are placed in the surface of the highway and are connected by wires to the computerized equipment in a trailer by the roadside. Burt is radioing a permanent highway department weighing station about 5 miles (8 km) away to have the computer's data compared with the weight taken at the station. He served as co-principal investigator for a recently concluded project to test the equipment*

compared these weights by radio with those obtained at the highway department's weighing station located 5 miles (8 km) west of the test site.

The computer is programmed to record only vehicles with wheel weights of 1,500 lb or more so that cars will be eliminated from the experiment. In addition to recording individual wheel weights and speed, the computer also records the length of the truck, the distance between axles, and the total weight.

Preliminary results of the test program showed that the equipment was performing satisfactorily and in general was accurate by  $\pm 8$  percent of exact weight. This would indicate that the equipment is accurate enough for planning purposes, but probably not accurate enough for enforcement of weight limits. It could be used as a type of screen in enforcement by singling out trucks that seem to be overweight so that they could be stopped at weigh stations. The biggest advantage of the equipment is the large amount of data that can be collected without stopping vehicles.

Dennis Babin, the research engineer who was in charge of testing the equipment, said it could be important to future highway planning because of the amount and accuracy of data it can record on moving traffic.

"Now the highway department crews have to collect truck weight data with portable scales, and they have to stop each truck to weigh it," Babin said. "With this equipment, they can weigh trucks passing within 1½ seconds of each other, and for as long a period of time as desired."