

(The document referred to, illustrations omitted, follows:)

HIGHWAY SAFETY AS RELATED TO DESIGN INVOLVING FIXED OBJECTS

Over the past year, the topic "Highway Safety" has received considerable attention by automobile clubs, law enforcement agencies, automobile manufacturers, civic groups, service clubs, and even the National Administration. The U.S. Congress has recognized the problem by passage of the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966. Therefore, the program this afternoon is both timely and in accord with this growing awareness of the problem.

My discussion is concerned with only one phase of the over-all accident record, those involving fixed objects. However, it also represents one of the fields in which we, as highway engineers, can exercise the most influence. We can exert only a limited control over pedestrian movements or animals encroaching upon the roadway. We have even less control over a driver's actions and reactions. We can, however, remove fixed impediments or render them safer so that the errant driver has a chance to recover control of his vehicle and return uninjured to the travelway.

During 1966, fixed object accidents in the State of Texas accounted for 14.5 per cent of the total rural traffic fatalities. Although this percentage is small compared to the total record, the number of people represented thereby is not. In human statistics, this percentage reflects a total of 500 people killed in our rural areas as a result of fixed object accidents. It is, therefore, obvious that such features deserve our immediate attention.

As has been the case since its very inception, the American Association of State Highway Officials has taken the initiative in this matter and in February of this year published a report entitled "Highway Design and Operational Practices Related to Highway Safety." The Special AASHO Traffic Safety Committee which compiled the report is to be commended for a job well done. It is my fervent hope that the findings and recommendations contained therein will gain immediate acceptance by the highway profession. This publication covers, in detail, the topic which I am to discuss; however, I would like to cover several features which, over the years, have been of great concern to the Texas Highway Department and, I trust, other highway agencies.

BRIDGES AND SEPARATION STRUCTURES

With the advent of the Interstate Highway System, we began an accelerated program involving, among other things, the construction of thousands of bridges and grade separations. These improvements have enabled us to reduce the potential hazards associated with at-grade crossings; however, they introduced fixed objects in the way of piers and wingwalls which have, unfortunately, taken their toll of drivers. In 1966, Texas recorded just over 1,000 rural accidents involving bridge ends or piers.

The construction of minimum length underpasses with short spans have introduced piers adjacent to the shoulders which are entirely too close to give the driver any possibility of error. In order to protect the sense of openness afforded by our modern highway section, the driver should experience no constriction when passing beneath a structure. The center or outside piers should be eliminated entirely or set back at least thirty feet from the edge of the main lane pavement. This would be an ideal arrangement; however, it must be recognized that such an arrangement is not always possible or practical.

Where this is the case and piers must be located nearer than thirty feet from the traveled way, they should be protected by an adequate length of guardrail, anchored on the ends so that it may develop its full ribbon strength. The Texas Highway Department has been using such installations for several years and we are quite encouraged by the accident record associated with the same.

Attenuation devices consisting of energy absorbing material may eventually prove to be the best means of protection. Several different types of devices are currently being considered such as honeycomb masses of aluminum, forests of posts and large polyethylene containers filled with water. Bales of hay such as are used at the Grand Prix race represent a fairly effective although somewhat primitive attenuation device. As most of you are aware, Texas has developed breakaway sign supports; however, the elimination of the hazard imposed by fixed sign supports is of little value if the sign is backed up by a pier.