

is that this is a preferable situation than to have an exposed end, as is the normal practice, even though it is flared.

Mr. CONSTANDY. Don't we have to keep this in mind, when we install a guardrail or median rail, we are attempting to choose the lesser of the two evils; and that frequently we find that the thing that has been chosen as a protective device is really a compromise anyhow. You can't find the ultimate, in any event.

Mr. SKEELS. I would like to add two other thoughts. One, a guardrail should be used only as a last resort. An impact with the guardrail is an accident. And if you can eliminate the guardrail or eliminate the need for the guardrail, this is a much preferable solution.

Mr. CONSTANDY. I might add, we have developed, or structured these hearings on the same premise, that it would be desirable, although somewhat uneconomic and unfeasible, if an automobile could leave the traveled portion of the roadway at any point and allow sufficient room for a driver to regain control. That would be desirable. It is not going to happen in our time.

But that initial objective, while it is unattainable, does have some features which should be utilized, in some circumstances, to provide flat, wide, runoff areas.

There are some devices, such as signs, which are installed for the protection of the motorist, by giving information to prevent him from being confused, and if they are mounted where he can use them, they can present a hazard. The next step is to try to lessen the severity of the accident, involving things that need to be near the roadway, hazards of light standard or signposts.

We will have additional testimony of developments that lessen hazards of light standards or signposts.

Another category consists of things that cannot be removed from the shoulder of the highway, such as bridge abutments, bridge piers, rivers, canyons, ravines, other natural phenomena, from which the driver must be protected. There we find ourselves in a situation where we should install a guardrail; while it is not ideal, it is better than the alternative. Mr. Skeels?

Mr. SKEELS. One other quick comment. I agree with Mr. Huff on the length of guardrail he talks about. At General Motors we are using as much as a 500-foot lead-in guardrail at the bridge pier.

Mr. CONSTANDY. 500 feet?

Mr. SKEELS. As much as 500 feet.

Mr. CONSTANDY. You have made reference several times to General Motors. I wonder if you might mention to the committee what it is you have, in Michigan, that has given you this experience?

We will, incidentally, later on, get into this in greater detail with other witnesses.

Mr. SKEELS. The General Motors Proving Ground at Milford, Mich., has 75 miles of road of all types designed to operate at all feasible speeds. And the practice of the corporation, of course, is to make the plant in which the employees work as safe as possible for these employees.

At the proving ground, the plant in which our employees work is a road system. Hence we got into the problem of making our road system as safe as engineering knowledge would allow.

Mr. CONSTANDY. I see.

Mr. SKEELS. This is how we got into this business.