

Mr. WILKES. The early highway research showed that if you provide a side clearance of 6 feet you would not reduce the capacity of the main lanes. I expect that this is the source of many of our practices today, and we have not sufficient clearances for the out-of-control vehicle.

We fail to really appreciate the volume and magnitude of the hazard—of the frequency of this type accident.

Mr. CONSTANDY. You suggest along with Mr. Huff that this is an area which should be looked into? The adequacy of the present standard?

Mr. WILKES. Yes.

Mr. CONSTANDY. Mr. Ricker?

Mr. WILKES. Let me make one more comment. The photographs we saw of the Utah project illustrate the use of this shoulder as a recovery area where the vehicles were either undecided or deliberately rode through this.

They saw they had a clear lane and did not merge into the left as perhaps the previous signs had instructed. So this did provide some measure of safety to these vehicles through indecision or deliberate effort on their own. And I think that that is an important element in the design of the gore of the highways.

Mr. CONSTANDY. Thank you, Mr. Wilkes. Mr. Ricker?

Mr. RICKER. Could we be going back to the first picture of Utah showing the shoulder problem there while I am discussing other things?

The matter of closing off the shoulder at an entrance ramp has been controversial for many years, and we discussed this a number of places.

The Illinois tollway people told us that they had no evidence of problems because of that design, although it existed on all of their entrance ramps. So the opinion is not clear.

On the other hand, when we look at the reason why we have shoulders on this type of highway—a vehicle breaks down; the driver needs to get to a refuge point immediately, and if there is a long stretch such as this where he cannot get off on the shoulder, he cannot get to his refuge. And when he is ready to start up again, he needs an unobstructed path to speed up on the shoulder and get back to the travel lanes.

I am looking for the first picture of your last series. This is a very dramatic picture showing what happens when you pave the main roadway with the same material as the shoulder. Someone has tried to change the impression that that is the main roadway, to make it a gore or a shoulder; but the pavement itself clearly tells you that if you are going straight ahead, you follow the straight-ahead path and do not pay attention to the paint lines.

This happens in other areas as well, where joints in concrete pavement do not match up with the intended lane alignment and the paint lines cannot be strong enough to overcome them.

I think the answer would be to change the texture of that shoulder pavement so that it is clearly a different use.

Mr. CONSTANDY. Thank you, Mr. Ricker. The last element we have to discuss is slopes.

Mr. PRISK. We have a few pictures of slopes on each one of the projects that I am going to run through rather quickly.