

end piers, too close undercrossing piers, poor delineation, low bridge railing and high bridge railing, and unpaved, narrow medians.

I believe that we could all agree that some standards should be developed that would cure the evils caused by those things that we have seen.

I also believe that most of the things we have seen will meet our present AASHO standards, which, of course, were not written in enough detail to cover all of the things that we have seen.

It is my opinion—and I agree with one of the gentlemen to my right, who said that we should have a design system that will include the entire road, including the bridges—it should be a system that connects the rail from the bridge to the road, a system that carries the median continuously across the bridge, wherever practical or possible, you might say.

Such design standards, in my opinion, should be formulated through AASHO being composed of the member States.

It is my opinion from contacts I have had with design engineers from a great many of the States, they subscribe to the standards set forth in the new yellow book, and are willing to turn to them for the solution of many of the problems we have seen here on bridges and other things.

I would like also to comment on some of the things that perhaps were not expressed in the discussions here today and yesterday. One is the width of the bridge.

It has been noted we should run the shoulders entirely across the bridge. There is no mention made as to how wide the shoulders should be.

If there is an acceptance of the 10-foot shoulder on the right and the 6-foot shoulder on the left, on our highways that are carrying vehicles where 85 percent are driven at 70 to 75 miles an hour, it is my opinion those shoulders are not proving to be wide enough, particularly the one on the left-hand side of the road, which is, as all laymen know, carrying the fastest stream of traffic. We are making those 6 feet wide, whereas those on the right we make 10 feet wide.

Of course the shoulder has two purposes. One is to clear fast traffic, particularly the traffic that gets out of control. The other is for refuge for broken-down cars; that is the reason for putting it on the right.

I believe protection to fast traffic is becoming just as important, and perhaps even more important, than the traffic clearance on the right-hand side. How wide these ought to be, I must admit, I do not know.

The widths that were selected, I believe, were selected on the basis of the subjective ideas of the people in AASHO who developed the Interstate standards back in 1956, and I must say that I was on the working level of the group that selected those.

They appeared to be wide enough then, but with faster automobiles and more powerful automobiles, I think such things as shoulder width and all of these other things should be taken up immediately, and the minimum standards raised to take care of the conditions we have now, which may not even be comparable to what they will increase to in the next 15 to 20 years.

I also noted in the successive stages of the projects that have been built, they are making improvements, perhaps not fast enough, but