DESIGNING A SAFER HIGHWAY

by

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Today much pressure is on both the highway designer and the auto manufacturer to upgrade their product. Probably no publication has had such a profound affect on our product as Mr. Nadier's book "Unsafe at Any Speed". As a direct consequence of this book design engineers over the country have examined their standards and procedures in an effort to determine if anything has been overlooked which would result in a safer highway. The auto manufacturers have done essentially the same thing. As a result we as highway designers have incorporated many new features safety wise in our methods and the auto manufacturers have added many new safety features to their products.

Much of Kentucky's highway mileage was built and is in service today for speeds and traffic volumes considerably lower than they are experiencing today. Once our standards for main arterial highways called for 18' of surface with 3' shoulders. Long sections of US 45, US 62, US 60, US 23 and US 119 constructed to this standard are in service today and are carrying considerably more traffic than they were designed for. Since these roads were constructed we have upgraded our standards to such an extent that our normal standards for a comparable two lane highway is now 24' of surface with 10' shoulders. Standards for curvature, grade and both horizontal and vertical sight distances have been updated accordingly.

This upgrading of our standards over the years has resulted in a safer and more efficient highway.

Our interstate highways and Toll Roads are designed to the highest standards possible. Here is an example of a truly safe highway which provides not only a high operating speed but a reasonable assurance that you will arrive at your destination.

Even here our technology is advancing. Like any science, Highway design is not static. Each year as more new studies are reported we find new and better ways to accomplish our purpose. Many of the recommendations of these studies have been incorporated in our design standards and we will incorporate more as they become available.

Studies have been made which indicated a critical area was the slope from the edge of the shoulder out. It was found that many accidents could be avoided if the driver who inadvertently drove off the shoulder could easily
regain the traveled way. This can be made easier by providing a flat slope. We are now providing a flatter slope than before as our standard interstate ditch slope. Whereas, previously this standard was an 8' ditch at a 3:1 slope these dimensions are now 11' at 4:1.

Studies are now being made by the Highway Department to determine just how far we can go with flatter fill slopes. We are, however, as a matter of course flattening many slopes which are border line cases according to our present standards.

At speeds of 70 mph and over, the driver who strikes the end section of a guardrail, built as we have until recently constructed our guardrail, stands little chance of surviving. We have recognized this and our standards have changed.

According to our current standards for guardrail approaching traffic calls for this end to be ground mounted in concrete and in some cases flared away from approaching traffic. Where guardrail is required within 200' of a cut section the guardrail begins at the cut.

An interchange in a rural area with the minor route a two lane facility creates a potential rear-end collision trap. We have for some time now provided a split roadway on all two lane roadways through the interchange. This allows shadow lanes in the median so that vehicles desiring to turn left are out of the way of the through lane.

We realize that any obstruction along the traveled way is a potential safety hazard. It is impossible in many instances to eliminate all obstructions. Our problem then is to minimize their danger. We have recently incorporated as our standard design for the center pier of bridges an earth berm constructed in such a manner to minimize the danger of collision with this pier.

Additional studies are under way to minimize the danger of collision with sign supports, light standards and pipe headwalls. As solutions to these problems present themselves they will be incorporated in our design.

We are currently designing to the highest standards commensurate with traffic and money available and as our technology advances and as our resources increase we will design and construct more and safer highways.