Traffic Engineering and Traffic Safety

A. L. Hutchison
President, Institute of Traffic Engineers
Los Angeles, California

INTRODUCTION

What is traffic safety? Or more to the point, what is traffic engineering? How are we going to get the two together?

Right now traffic safety is an "in" word in all areas of political activity. Much is being done on every level of government in terms of words and to some degree action.

In 1965, 49,000 persons were killed as a result of motor vehicle accidents of one type or another. In 1966 this number will probably rise above 50,000.

However, we rationalize by pointing out that the accident rate or the fatality rate per 100 million vehicle miles has either gone down or shown very little increase. If even half this number of American citizens were being killed in Viet Nam, there would be tremendous pressure to win the war or end the war.

There can be no excuse for killing this many of our citizens on the streets and highways each year. There may be and undoubtedly are reasons for this slaughter, but there is no excuse.

ALLEGED REASONS FOR HIGHWAY SLAUGHTER

First, the vehicle. Much is being said about the inadequacy of vehicle design. Some of the charges are undoubtedly true. On the other hand, much of the alleged lack of vehicle safety may be boiled down to an abuse of the vehicle, faulty maintenance, over-driving lights, too much speed for the type of vehicle, or the driver's ability.

Second, the driver. Most accidents are caused—they don't just happen. It is claimed by many that the driving task has become too complex for too many drivers. Again, the number of accidents might bear this out, but when one thinks of the billions of accident-free miles that are driven each year, it is probable that the driving task per se is not a primary problem. The primary problem with respect to this may lie in our inability to screen out or regulate the types of driving
that are limited to the abilities of the particular drivers. You better believe it—the concept that “driving is a privilege” is fast going by the boards.

Third, the roads. It may be that we are working against ourselves. True, the freeway-expressway system (interstate or non-interstate) has resulted in a “paper” saving of thousands of lives. This savings is real only so long as one accepts the premise that the same total vehicle miles would have been generated without these superior highway systems. The “super highway” is needed, but it is not and cannot be the total answer. Remember, no one has a planned origin or destination on a freeway.

Too, there have been many great advances in design criteria in the past 20 years, but occasionally faulty designs of 20 years ago are built into new highways. Why? Is it cheaper to build an approved design and correct it later than to re-design and build a little less now? Probably not.

**TRAFFIC ENGINEERING AND TRAFFIC SAFETY**

Traffic engineers, including designers, must assume more responsibility in providing the best (safest) design. It is not enough to adhere to the minimum standards in design. Traffic and design engineers must be creative.

It is necessary that new construction must be adequate, but there are tens of thousands of miles of existing surface streets that can be helped. What is meant by “helped”? Start with an irrefutable premise, a tranquil (no turbulence) flow of traffic is a safe flow. How is it achieved? It is not too easy nor is it completely attainable, but it is approachable.

*Take Positive Action*

First, determine to do something. A program has been going on for years in many localities and now is being given real support by the federal government. It is called “spot improvement.”

Use your accident records, information from your enforcement people, or any other source of information that would indicate a location of high accident frequency and then do something. If that something doesn’t work, try something else, but don’t conclude that nothing can be done.

*Make Best Use of Existing Controls*

Second, use existing controls to the best of your ability. Maybe the only way to get signals to perform properly is to install an electronic
monster—but it is not likely. Each individual having a responsibility for traffic signal control could, with some effort, improve the flow of traffic through better use of existing equipment. Many times the removal of a control will result in a much better operating segment of the street system than formerly existed.

Control Traffic Operations

Third, take every advantage of legal authority to control operations:

A. Turning restrictions. These can result in a tremendous improvement in traffic operation on a system without unduly penalizing the total traffic move. At some locations a restriction would be completely out of place due to local circumstances, but in general much improvement in intersection accident record will result from left turn prohibitions.

B. Parking restrictions. In this context provision for curb turnover is not considered but the elimination of marginal friction is. In many instances even though the prohibition of parking or stopping may not result in an additional lane of traffic, the elimination of this friction will result in a much smoother flow and, as a consequence, in the reduction in accidents on a street system.

C. Control of other types of marginal interference. This would include the location of driveways as it relates to intersections and to turning movements into and out of the driveway. This action, again, could smooth out the flow on the street system.

D. Control densities of development. In many instances, irritation, aggravation and turbulence in the traffic stream have resulted from a permissive development that overtaxes the capacity of the street systems serving the area. Traffic engineers should be in a position to work with the planners to limit land-use densities to those which can be adequately served by the transportation system.

E. Control of detractions to drivers. Much is being done at the state and federal levels with respect to outdoor advertising primarily on the basis of roadside beautification or the preservation of natural vistas. But a more serious situation exists. In many areas, including Southern California, billboards and other types of signing are being located adjacent to freeways and other high-capacity facilities in such a manner as to detract or, more positively, attract the driver’s eye from the serious business of driving an automobile. Much can be done to improve this situation.

Pedestrian Controls

Fourth, try to do something for the pedestrian. Why is the mere suggestion appalling? Simply because when one invades this area, he
is infringing upon the individual's rights to do as he pleases. Yet much can be done to reduce pedestrian fatality rates, particularly in urban areas, by putting more positive control on the pedestrian.

Pedestrian signals, properly enforced, will result in greatly improved operation of a signalized intersection. The prohibition of pedestrian crossings at certain locations again will reduce the unexpected pedestrian-vehicle exposure. With both of these controls a rigid policy of enforcement is necessary.

The separation of the pedestrian and the vehicle can work wonders. I have yet to know of an incident where a pedestrian, using a separation, was hit by a motor vehicle. I have, however, seen a situation where pedestrian overcrossings were available on a busy highway, and of a total of 1,800 crossings in an eight-hour period, only four crossings were made on the separated facility. It was necessary to fence the highway to protect the pedestrian from his own willfulness.

Participate in Traffic Research

Fifth, become actively interested in research and participate in it. In too much of what has been produced by research, the answers have never been verified by operational checks. Too much has been done by “experts” without any real knowledge of the operating problems.

I have outlined several avenues of action that I think can result in a reduction in the tremendous traffic toll of this nation.

SUMMARY

One must assume that the automobile or some other form of individualized transportation is here to stay. One must recognize that there will not be any great change in driver or pedestrian behavior in the near future.

Therefore the traffic engineer must work harder than ever, not only to correct those conditions that presently exist that result in poor operation, but also to prevent the establishment of any other conditions that will hinder good operation in the future.