

A Statewide Highway Safety Program

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●**EMPHASIS NEEDS** to be directed to a very major segment of highway safety, the Statewide Highway Safety Program that each state must develop and implement if we are ever to achieve nationwide highway safety. This is a major element of the man, machine, and environmental system that, collectively, we call highway transportation. Actually, the safe and efficient transportation of persons and goods is the result of applying safety concepts to roadway engineering, extending improved vehicle safety design to all vehicles, and implementing the many related, driver-improvement programs.

We have a serious problem of death and injury on our highways that has exceeded all proportions of a major medical epidemic. There is little need to elaborate, for any technical audience, on the fact that in 1968 there were 55,500 motor vehicle deaths, more than 3.6 million serious personal injuries, and property damage costing from \$15 to \$25 billion, depending on the inclusion of indirect and unreported accident costs that we know do exist.

Although safety is still the name of the game, there is a new approach to it that is currently identified as one not wholly resulting from the "nut" behind the wheel. Rather, it is a safety program based on sound research directing its attention to scientific and rational solutions to the many problems comprising the total driving environment, namely, the road, the vehicle, and the driver and pedestrian.

A review of current activity in the road subsystem shows the Spot Safety Improvement Program of the state highway departments listing expenditures of more than \$1.2 billion aimed at eliminating hazards in high-accident locations. There is also heavy emphasis being directed toward TOPICS projects in urban areas showing a changing trend of federal dollars now being aimed at capacity and safety as well as road building. The AASHO Yellow Book on operational and safety design calls for a concept of clear roadsides, suggesting many improved impact-attenuation features such as 30 ft of 6:1 slopes where signposts are to be of a breakaway design and guardrails to have buried ends and be tied to bridge parapets for safer redirection of out-of-control vehicles.

In the vehicle subsystem, there are 35 new requirements for safety design in the manufacture of new cars, trucks, and buses and an additional 42 recently published in the Federal Register for comments or criticism. In addition to safety design standards, there are rules governing regrooved tires, importation of vehicles, and consumer information.

The driver and pedestrian subsystem is covered with 5 of the 16 highway safety standards being directly concerned with people, that is, drivers and pedestrians. The remaining 11 call for study and implementation of lifesaving features that indirectly affect people.

To put the subsystems into a truly effective action program, there needs to be a plan. In the Highway Safety Act of 1966, the first line of Section 402 calls for each state to have a highway safety program in accordance with uniform standards promulgated by the Secretary of the Department of Transportation. It is to be the governor's plan of action and will encompass all state highways, city streets, and county roads within the boundaries of the state. More importantly, it calls for a 40 percent expenditure at the local level where the implementation of the safety features must truly occur. Neither congressional mandate nor Washington directive will save lives—they can only provide authority, funding, and encouragement for local implementation, where the actual savings of lives can take place.

Any plan for safety must consider both state and local needs in a realistic time phasing of events. Engineers and traffic practitioners know the importance of plans and specifications where goals and objectives can be laid out in a logical sequence to produce a final product. Any management plan (and safety programming falls in this category) must similarly be scheduled in a logical sequence aimed at a final product: in this case, the reduction of death and injury resulting from traffic crashes. There is little payoff in "scatter-gun" programming, and guidelines have been issued by the National Highway Safety Bureau to assist states in the development of their plans. The development criteria, therefore, consist of implementing the 16 Highway Safety Program Standards through the governor's policies for implementing action.

A comparison of existing state activities against the standards will quickly show deficiencies and point out needed remedial action in all functional areas. If these actions can then be tagged with a priority and time-framed for implementation, a plan starts to emerge. Needless to say, there are serious problems to time-framing a program that is dependent on legislative action and annual funding, neither of which is predictable to any degree of accuracy. Even funding can be suppressed by legislative edict; nonetheless, the governor's coordinator should develop state safety needs, regardless of these constraints. The many thousands of dollars expended each year by individual state departments in highway safety activities become most important in the overall planning. To program a realistic plan of action and to project the state's attack on the highway safety problem, the coordinator should be very much aware of all sources of income for highway safety activities, not just the limited federal authorization for each fiscal year. This involves all of the other state department heads and points to the critical need for direct communications and close liaison with all of the state department heads and local political subdivisions that play a part in this important plan.

The plan should be estimated for at least 5 years for realistic projects, and perhaps longer for some of the long-range needs. When priorities and time-framing are established, a year's work program will quite naturally evolve. This could be exhibited in the form of a narrative description of projects including time and money and would probably be considered adequate documentation for eligibility of federal funding. What this amounts to is a year's work schedule similar to the annual work program developed for the 1 1/2 percent funds of the Bureau of Public Roads for highway planning and research. Actually, this is nothing more than a type of a block-grant that is currently very popular in federal funding programs.

When the first year's work is completed, the plan needs to be reevaluated and extended one year, and another annual work program developed for the coming year's activities. The evaluation of the program will involve a review of management performance as well as program performance. Management should be evaluated on project monitoring, progress of the project according to the approved schedule, and fiscal control procedures. In program performance, the evaluation must first determine if the goals and objectives have been met. Is the governor satisfied with the progress of the program? Is it a balanced program including an active participation from the local political subdivisions? Is there an information system capable of evaluating, reviewing, and redirecting activities based on current input?

The Statewide Highway Safety Program plays a cardinal role in the new direction for highway safety—a direction that is guided by the needs of the road, the vehicle, and the driver and pedestrian. Perhaps, it is time now to evaluate this new concept of highway safety to see if we are headed in the right direction. A very positive "yes" can be said about the scheme when one reviews the available death-rate statistics. In the 5 years prior to 1966, there was an average annual increase in the death rate of 6.4 percent; however, in the 2 years since passage of the Act, the average annual increase has been reduced to only 2.3 percent. These same statistics when related to motorcycle fatalities are even more outstanding. The average annual increase 5 years prior to 1966 was 24.5 percent, but 2 years later there was an average annual decrease of 6.1 percent, speaking very well for the current emphasis by states in motorcycle safety programs. These reductions all occurred when vehicle registration climbed 6.4 percent and the annual vehicle-miles of travel increased 8.6 percent.

Similarly, statistics related to the new vehicle safety standards are most encouraging. Studies show that there have been no fatalities or serious injuries to drivers in crashes up to 50 mph where the new collapsible steering posts were involved. A study in Sweden noted an 80 percent reduction in fatalities with the use of seat belts and shoulder harnesses. Comparable statistics in the United States, however, are not quite as encouraging because of the complacent American attitude with regard to seat-belt usage. The new air-bag restraint system now under consideration by the National Highway Safety Bureau requires no action on the part of vehicle occupants to make it effective, and it appears to offer great potential in minimizing deaths and injuries in the second collision. The new windshield design with improved strength characteristics shows a head injury rate 32 percent lower than that with windshields of the older design.

In the human factors analysis, it is more difficult to quantify and evaluate progress, but driver-improvement and driver-education programs play a most important role in the safety effort, and it would be difficult to disregard their need. Until cost-effectiveness studies show differently, they must continue to be in state plans. It is these driver-related programs that highlight the importance of the Statewide Highway Safety Program in the total highway safety movement. With more attention being paid to the state plan and commensurate federal funding to subsidize these operations, there is little doubt but that we can achieve a national goal of reducing motor vehicle fatalities to 45,000 deaths per year in the next 3 to 4 years.