

Programming Hazard-Reducing Improvements

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ABRIDGMENT

•GUIDELINES developed for programming highway safety improvements represent a synthesis of existing practices: accident reporting and hazard identification, accident analyses, spot improvement programs, safety values in regular improvement programs, and management and research. The guidelines are not conceived as a list of requirements that a highway department must meet completely for an effective accident-reduction program. However, individual states perhaps will find portions helpful in upgrading their efforts to define hazards and program safety improvements.

Considerable attention is being given in some states to the problem. Efforts are being made to improve accident reporting, by getting both more complete coverage and more precise definition of the locations at which accidents occur. Some examples of what are and can be done are as follows:

1. Cooperation of investigating officers may be encouraged by having highway department field personnel establish and maintain personal contact with officers in their area, and by having the chief highway administrator direct communications to officers soliciting their cooperation.

2. The highway department can evaluate ratios of total reported accidents to fatal accidents, make correlations between department-employee reports, news reports and operator reports, and use the results to inaugurate campaigns to inform officers and the public of apparent inadequacies of accident coverage.

3. Highway departments can see that report forms and instructions specify needed location-defining data. These should include the unit and accuracy of measurement to reference points, preferably miles to hundredths or feet to nearest 50 feet. Reference points, such as mileposts, structure markings and utility pole numbers, can be suggested.

4. Mileposts or other log-mile markers can be placed at regular intervals and at bridges, culverts and other structures to provide accurate and easily identifiable reference points. Their use can be encouraged by informing investigators that data provided on reports will be valuable in making engineering assessments for the correction of hazardous situations.

5. Furnishing mileage logs to investigating officers facilitates consistent referencing of accident locations and eliminates subsequent matching of accident locations with log points.

Uses of electronic data processing (EDP) showing real promise for much wider application in the establishment of hazardous locations include the following:

1. EDP can provide a list of accidents by location as defined by log miles and/or road section. Listings can be run for different accident-experience time periods. Short interval, current listings may be helpful in pinpointing critical, newly developed hazards. Longer periods of time generally will be necessary to establish accident concentrations with statistical reliability.

2. EDP can compute and print accident rates for road sections based on accident report data. The rates can be computed in 0.01-mile increments of route mileage if reports are made to this accuracy, or in accumulations of 0.01-mile increments if

desired to obtain greater statistical reliability. If accident data are reported less accurately than to a 0.01 mile or simply to road sections, rates can be computed and print-outs made to fit.

3. EDP can relate current accident data with previous time periods by having comparative data included in the print-out or by side-by-side comparison of current and past experience listings.

4. EDP can provide analyses which show the numbers and percentage of accidents of different types and develop incidence and rate values by location for different types of accidents.

5. EDP analyses of accident data can be correlated with data processing records for highway information developed as part of other statistical and inventory processes. This permits analyses of accidents in relation to highway geometrics and other record information.

6. Establishing critical rates and confidence limits, using statistical quality control techniques, will enhance the use of accident rate data developed in computer programs. The critical rates may be set up as an overall rate for a route or section or on a state-wide rate. The computer program then will indicate by symbol in the print-out the rates which exceed the critical rate by a statistically valid amount.

Spot safety improvement programs are being given special attention through legislative or administrative provisions:

1. A specific amount may be provided in the budget—by legislative action in states where the budget is subject to legislative approval or appropriation of funds, or by administrative action where the highway department has authority to program its funds—for spot improvements by contract construction and state-force maintenance and betterments.

2. A highway department policy may be established to define the character and magnitude of spot improvement programs. A specific amount of funds may be set aside by policy to be programmed for spot improvements and for defining the types of improvements to be undertaken.

3. A department policy may be established that no specific amount of money will be earmarked for hazard-reducing spot improvements but specific safety improvements when defined and justified will be given priority consideration for inclusion in the programs for construction and maintenance.

4. A department policy may be established to define the responsibility within the department and to indicate criteria for developing spot improvement programs.

5. A routine within operating units, such as traffic engineering and maintenance, may be established to report potentially hazardous situations and initiate investigation for corrective action. This may result in programming an improvement project or performing corrective actions as a maintenance function.

These efforts by state highway departments are encouraging but, viewed in total, leave much to be desired. In many states, there is an urgent need for department policy in this area. There is need for specific assignment of responsibility to an organizational unit, the setting of objectives for that unit, and the provision of personnel and facilities to carry on research and program development.