HIGHWAY SAFETY THROUGH TRAINING

Louis B. Stephens, Jr.

Both the size of the highway safety problem and the number and types of efforts under way to attack that problem are staggering. There are 146 million drivers on 3.8 million miles of streets and highways, driving a total of 1510 billion vehicle-miles a year. There are more than 7 million police-reported accidents, 4 million injuries, and 51 000 deaths a year. The problem is multifaceted: it involves the public at large (at least 146 million people) the vehicle (from mopeds to tractor-trailers), law enforcement (involving thousands of jurisdictions), and the roadway (farm-to-market roads to Interstate highways). All levels of government are involved, as are public-interest groups, businesses, trade associations, professional groups, and individuals. Disciplines include engineering, law, medicine, education, manufacturing, construction, and many others. All of these organizations, groups, and professions are engaged in various programs and research related to highway safety. The dissemination and evaluation of information and the implementation of effective methods and technology are serious problems.

The National Highway Institute (NHI) of the Federal Highway Administration (FHWA) is working on one important part of the problem: the training of employees of state and local highway agencies. The training function is part of FHWA's formal Technology Transfer Program, designed to speed the processing of new technology from research to implementation in the field. The NHI is involved in training in all aspects of highway planning, design, construction, maintenance, and management—not just safety. The emphasis of this article, however, is on the NHI highway safety training efforts.

Safety training is supported by the NHI in a variety of ways. Scholarships and fellowships are offered annually to employees of state and local highway agencies (and many of the recipients choose to study in the safety area). In response to a special need, a graduate-level program equivalent to one academic quarter was developed at Northwestern University. That program was held at Northwestern four times under the sponsorship of the NHI. The last session was an orientation session for university-level instructors from 20 institutions around the country. The purpose of this effort was to upgrade the highway safety engineering coverage in engineering and transportation undergraduate and graduate courses. Along the same line, the Northwestern material and all of the NHI short-course material have been furnished to dozens of colleges and universities. Many of the students of these programs are already employees of state and local highway agencies and many more are future employees.

NHI publishes a monthly Education and Training Information Exchange Bulletin and maintains a sizable training aid lending-library service. Both services are offered free of charge. The Bulletin is distributed to government agencies, universities, and private organizations to exchange information about short-course offerings by universities, professional organizations, and others. Special information that would be helpful to educators and trainers is also published in the Bulletin series from time to time, such as the NHI audiovisual lending library listing.

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Highway Safety Improvement Program (FHPM 8-2-3)

- Planning
- Implementation
- Evaluation

Training session in progress.

Currently the NHI has 50 films, slide-tapes, and videotapes that deal with highway safety.

Another major service offered by NHI in highway safety training is the short-course program. As training needs among state and local highway agencies are identified, NHI responds with a short course when it is appropriate. Short courses are designed for a variety of audiences, such as technicians, engineers, and top-level managers. Typically, short courses are available for a limited time frame—they are designed to fulfill a specific training need. Because the number of available courses is usually not sufficient to satisfy the demand, NHI encourages that others pick up the training. To encourage this, all short courses are developed with an instructor's guide, which includes lesson plans, teaching objectives, workshop materials, visual aid instructions, etc. These guides, visual aids, and other materials are available from the NHI. The NHI-sponsored short courses and all training materials are available to public highway agencies free of charge. The typical responsibility of the host agency is to provide the training facility and projection equipment and to coordinate the attendance. The NHI will provide the instructors, visual aids, and course materials.

Program-Related Courses

- ***Highway Safety Improvement Program (HSIP)***

This 3.5-day course was developed by and is taught under a contract with Goodell-Grivas, Inc. It addresses how to implement a highway safety improvement program that matches an agency's roadway system characteristics, size, resources, and management goals, as well as how to comply with intent of the Federal-Aid Highway Program Manual requiring an approved HSIP. The HSIP structure consists of three components: planning, implementation, and evaluation. Local agencies interested in establishing systematic procedures for identifying highway safety problems and programming their correction would find this course useful, as would the states. Presentations of this course are available through FY 1982.

- ***Highway Safety Engineering Studies***

This 4-day course was developed and is taught by Goodell-Grivas, Inc. The planning component of the HSIP is expanded on in sufficient detail to enable participants to investigate hazardous locations, identify feasible countermeasures, and select projects on a systematic basis. This course is a "stand-alone" presentation or can be presented in a series with the HSIP course. Presentations are available through FY 1982.

- ***Highway Safety Evaluation***

This is the third in the HSIP series of courses. A 4-day course, it was also developed and is taught by Goodell-Grivas, Inc. This course expands on the evaluation component of the HISP. The course deals with accident-based project evaluation, non-accident-based project evaluation, and program and administration evaluation. Presentations of this course are available through FY 1982.

- ***Highway Safety Engineering Statistics***

The need for a statistics course dealing with highway safety and traffic engineering is addressed with this course, developed for NHI by Statistica, Inc. It uses a self-teaching guide, along with a reference text, designed to be completed within 40 h of individual study. This is a rather rigorous approach to statistics that requires serious study. It is intended for civil engineers with little or no background or training in statistics. This material will be available in January 1982. The material could be used in group study or a classroom environment.

Design-Related Courses

- ***Safety Design and Operational Practices for Streets and Highways***

This 4.5-day course presents an excellent overview of design considerations for highway safety. This course has proven especially effective as an introduction for relatively new engineers to the highway design field. This course was originally developed by the Texas Transportation Institute, then later revised, and is now being taught by the firm of Byrd, Tallamy, MacDonald and Lewis. There are only a limited number of presentations available, but the materials for the course can be obtained from NHI.

- ***Railroad-Highway Grade Crossing Improvement Programs***

The Texas Transportation Institute developed and taught this 2-day course for NHI. It deals with both programming and design aspects of the railroad-highway grade crossing problems. The course uses the Railroad-Highway Grade Crossing Handbook, published by FHWA, as a text. Although presentations of this course are no longer available from NHI, both the instructional material and student material are available on request.

- ***Selecting, Locating, and Designing Traffic Barriers***

This 2-day course was also developed and taught by the Texas Transportation Institute. The course uses the American Association of State Highway and Transportation Officials' (AASHTO) Guide of the same title as a student text. An eight-module slide-tape package is available as an aid to agencies that wish to do their own training. The course is no longer available, but the instructor's guide, slide-tape packages and student handouts can still be obtained from NHI. The AASHTO Guide can be purchased from that organization.

- *Skid Resistance Measurement and Design*

Byrd, Tallamy, MacDonald and Lewis developed this 2-day course, which discusses the skidding accident problem and how to deal with it. Although this course is not available for presentations, NHI does have visual aids, instructor's guides, and participant notebooks available in limited numbers.

Construction and Maintenance-Related Courses

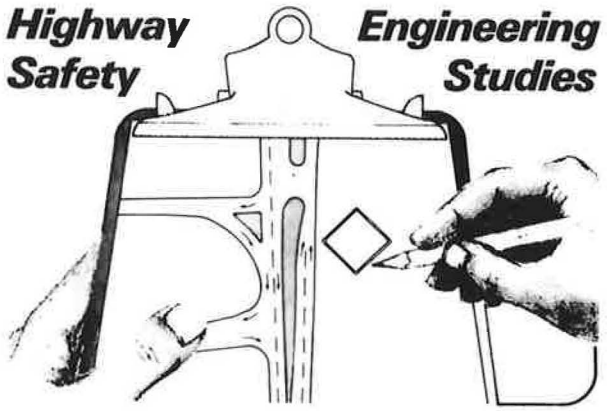
- *Traffic Control for Street and Highway Construction and Maintenance Operations*

This course has been presented in a variety of formats since 1975: 5 days, 3 days, and a 2-day train-the-trainer presentation. It was developed and taught 146 times by Byrd, Tallamy, MacDonald and Lewis. It is now available in a 3-day version, presented by FHWA instructors. Condensed 1- and 2-day formats are also available from NHI. The train-the-trainer course is no longer available. Because of the large size (estimated at between 100 000 and 200 000) of the target audience, NHI has actively promoted the teaching of this course by all state and local highway agencies. Student and instructional materials are available to support those efforts. Presentations will be available from the NHI through FY 1982.

- *Functional Requirements of Highway Safety Features*

A great deal of success has been achieved by the highway industry in researching, developing, and designing highway safety hardware and other roadside features. There has been a growing concern, however, that in many cases these features are rendered ineffective because they were not installed or maintained properly. This concern was heightened by the 1978 FHWA Safety Review Task Force report, which documented many instances of field "fixes" that made an otherwise forgiving feature extremely hazardous. This problem is not because of the negligence of field construction and maintenance forces but rather because the purposes of safety features, how they work, and their functional requirements are not fully understood by the field forces.

This 3-day course, developed and taught by the Texas Transportation Institute, is a nuts-and-bolts course designed to fill that training void. It is aimed at the field senior technician level. Like the traffic control course, the target audience is much too large to be effectively reached by normal NHI training efforts. State and local governments must use their own resources to conduct the training on a systematic basis. Recognizing that fact,



this NHI course is designed to train the participants to use the knowledge obtained and training materials available from the NHI to conduct this training themselves. The NHI has several presentations of this course available through FY 1982.

Although FHWA has made proposals to elimate categorical funding of highway safety projects, the federal emphasis on safety has certainly not diminished. This is reinforced by the fact that highway safety is one of the official FHWA program emphasis areas for FY 1982. A major accomplishment indicator for this emphasis area is the number of safety training courses to be conducted for state and local personnel. It is recognized that the trend in public highway agencies is to reduce personnel and budget cuts, but the safety problem remains. It is increasingly important, therefore, that the public employee be as efficient and as effective as possible. This suggests that training in today's climate is a critical key to successful accomplishment of the goal of reducing accident frequency, rates, and severity. The NHI represents a valuable resource to public agencies to that end.

The National Highway Institute is proud of the highway safety training opportunities it has available. The student aid program for university-level study, sharing of educational and training material with universities, and short-course programs have been effective and highly successful. Those interested in obtaining more information should contact the Federal Highway Administration Division Office in their state, or Federal Highway Administration, National Highway Institute, Washington, DC 20590.

On-Street Parking Management Programs

Raymond H. Ellis

Many cities throughout the country are confronted with the problem of developing an integrated, coordinated on-street parking management program that can accommodate high levels of automobile use within the constraints of safety standards and limited municipal budgets. Effective parking management, a goal in itself, has the added dimension of providing a significant non-tax source of revenue to cities in financial crisis.

Recent experiences in several cities have demonstrated that a comprehensive and well-managed parking program results in (a) significant reductions in parking violations, (b) substantial increases in on-street parking space availability, and (c) major increases in parking-related revenues. By integrating and coordinating their parking management and enforcement activities, these cities have improved parking conditions and increased mobility in downtown areas, and they have also collected significant additional revenues from parking meters and parking fines that were previously unpaid. (See Figure 1.)

Elements of Effective On-Street Parking Management Program

An effective on-street parking management program comprises nine major elements:

- regulation of on-street parking supply
- residential parking permit program
- parking meter management
- ticket writing
- booting
- towing
- parking ticket processing system
- parking ticket collections
- parking ticket adjudication

Although many communities operate enforcement programs with only some of these elements, the experiences to date clearly demonstrate that on-street parking management programs are most effective when all nine elements are integrated into a highly visible program with mutually reinforcing components. For example, consistent parking enforcement is essential to obtaining significant revenues from parking meters or to implementing a residential parking permit program. Simply issuing parking tickets will not reduce violations unless there is back-up from a parking ticket processing system (and related mechanisms) that ensures collection of fine revenues. Thus, these nine elements cannot be considered in isolation. A well-organized program comprising all nine elements will produce the greatest impacts on reducing violations and generating revenues.

Regulation of the on-street parking supply is the first step in implementing an on-street parking management

Figure 1. Why a city should implement an on-street parking management program.

An On-Street Parking Management Program Will:

- Provide Significant Transportation Benefits:
  - Increase On-Street Parking Availability for Short-term Parkers
  - Reduce Traffic Congestion
  - Decrease Transit Travel Time
  - Decrease Illegal Parking
- Provide Significant Financial Benefits
  - Significant Net Income After All Costs
  - Low Start-up Costs
  - Manageable Operating Costs
- Provide Other Benefits:
  - Improve Quality of Life in Neighborhoods
  - Improve Safety
  - Improve Air Quality
  - Conserve Energy
- Facilitate Expansion of Activity Centers

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