

The 3R's of Highway Safety

In late summer 1987, a news conference and symposium were held by the National Academy of Sciences to announce the release of TRB's *Special Report 214—Designing Safer Roads: Practices for Resurfacing, Restoration, and Rehabilitation*. The report was the result of an investigation conducted by the Committee for the Study of Geometric Design Standards for Highway Improvements requested by Congress as part of the 1982 Surface Transportation Assistance Act. Committee cochairman Peter G. Koltnow, counselor to the president of the American Trucking Associations (who shared the chairmanship with Herbert Richardson, deputy chancellor and dean of engineering at Texas A&M University), gave an overview of the report. Robert E. Skinner, TRB's director for special projects, discussed its findings and recommendations. The University of Notre Dame's associate dean of engineering, James I. Taylor, TranSafety's president, Roy W. Anderson, and TRB's senior program officer, Harry S. Cohen, responded to questions from the audience.

In the Federal-Aid Highway Act of 1976, Congress had permitted a change in existing practice that enabled state and local highway agencies to use federal aid for resurfacing, restoration, and rehabilitation (RRR) projects on federal-aid highways. Up until that time, federal highway funds for the program could be used only to construct new highways or undertake the complete reconstruction of existing ones. RRR projects, besides pavement and other repairs, can also include modification of highway geometry to help improve road safety. Critics of state and local repair programs have charged that many highway programs stress pavement repair at the expense of larger safety modifications.

In response to the call from Congress, a committee of 16 members specializing in highway administration, design, and safety was formed. The committee met

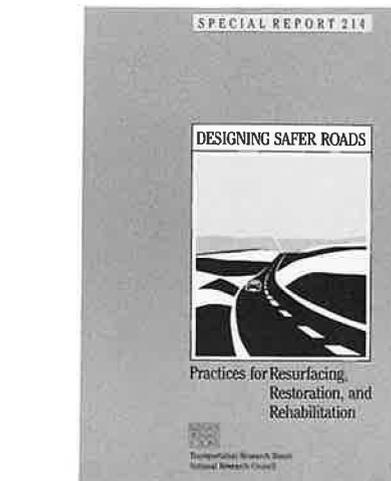
to review current RRR practices, assess the relationship between geometric design standards and safety, and analyze the cost and safety aspects of geometric improvements to highways. The federal-aid highway system accounts for 20 percent of the nation's highway mileage but carries more than 80 percent of all traffic. The committee was concerned with all of the system except Interstate highways; two-lane rural highways make up most of the remainder of these roadways.

The findings show that, although there has been increased attention paid to safety on highways, safety shortcomings are still evident and RRR funds could be more effectively directed toward correcting them.

Five major reasons were given for safety deficiencies: (a) RRR design practices vary widely—some agencies practice high standards of safety, others fall short; (b) RRR projects are initiated primarily to address pavement repair and rehabilitation requirements. Safety decisions are often delayed until little time remains to accommodate geometric improvements that require more time for design or acquisition of right-of-way; (c) federal-aid RRR projects often widen lanes and shoulders but seldom reconstruct sharp curves or replace bridges with narrow decks, areas where accidents occur more frequently and where improvements could be more safety cost-effective; (d) the benefits from safety improvements are not sufficiently known or determined ahead of time to play a useful part in planning; and (e) engineers who administer state traffic and safety programs often do not take part in designing RRR projects, even though they are usually the most qualified to do so.

As a result of the study, the committee made recommendations in the following areas:

1. Safety-conscious design process:



Copies of TRB Special Report 214—*Designing Safer Roads: Practices for Resurfacing, Restoration, and Rehabilitation* are available from the Transportation Research Board, 2101 Constitution Avenue, N.W., Washington, D.C. 20418; telephone 202-334-3214.

Existing conditions should be assessed from a safety viewpoint; the scope of the project should be determined; the design process should be documented; and designs should be submitted for review by traffic and safety engineers.

2. Design practices for key highway features: Minimum RRR geometric design standards would help determine which geometric features should be upgraded as part of an RRR project when the following conditions are taken into account: the evaluation of trade-offs between safety and performance versus cost; setting standards that direct RRR expenditures toward more safety cost-effective geometric improvements; and ensuring that standards simplify the design process and FHWA approval procedures, thereby freeing funds to be used for the analysis of site improvements not covered by numerical standards.

When these conditions are met, as in lane and shoulder widths on two-lane rural highways, minimum values are recommended. When they are not met, for other key features or types of high-



Committee cochairman Peter G. Koltnow, Counselor to the President of the American Trucking Associations, addresses the news conference held at the National Academy of Sciences to announce publication of TRB's report on designing safer roads.



Robert E. Skinner, TRB's Director for Special Projects, discusses the findings and recommendations of the committee's report at the symposium.



Participants in the news conference and symposium presentation (from left): Harry S. Cohen, Senior Program Officer, TRB; Roy W. Anderson, President, TranSafety; James I. Taylor, Associate Dean of Engineering, Notre Dame University; and Robert E. Skinner, TRB.

ways, other design practices are recommended as conditions warrant.

3. Other design procedures and assumptions: Highway agencies may vary in their design of RRR projects, even when conditions are the same. Procedures for the design of traffic volume, speed, design values, and design exceptions should be specified.

4. Planning and programming RRR projects: Pavement repair needs will determine RRR projects, but safety considerations should be taken into account earlier.

5. Safety research and training: A special safety task force should be set up to determine highway safety engineering needs and how they are to be met. The FHWA should establish a compendium of current data on safety effects of improvements in highway design features and see that this information is circulated. The FHWA, AASHTO, and other public works professional organizations should give support to training programs to ensure that design engineers are exposed to current safety information.

CALL FOR ARTICLES

Professionals in the transportation community are invited to submit topical articles on innovative or state-of-the-art aspects related to all transportation modes for publication in *TR News*. Articles that highlight the role played by research are preferred. Feature articles should be 1,500 to 3,000 words in length and accompanied by appropriate, high-quality illustrations and corresponding captions. Short items for the News Briefs section are also invited.

Readers are encouraged to submit letters to the Editor that offer comments on the information and views expressed in published articles, or in general discuss issues or raise questions related to transportation research or to TRB activities.

All articles and letters received are subject to review by the Editorial Board of *TR News* for suitability for publication and to editing for purposes of style, clarity, and length. For further guidelines on submitting full-length articles or news items, see Information for Contributors on the inside back cover.



Sponsored by five committees of the Transportation Research Board—Inland Water Transportation, Ports and Waterways, Intermodal Freight Transportation, Intermodal Freight Terminal Design, and International Trade and Transportation—the 12th Annual Conference on Ports, Waterways, Intermodal Terminals, and International Trade Transportation Issues was held in Norfolk, Virginia, this past summer. For the third consecutive year, the conference was cosponsored by the AASHTO Standing Committee on Water Transportation. The conference attracted more than 100 participants.

These conferences are always held at a coastal or inland waterway port city to provide the opportunity for local technical presentations and field trips; the 1987 Conference in Norfolk included luncheon presentations by the Virginia Port Authority and the U.S. Army Corps of Engineers and technical tours of the Newport News Shipbuilding Yard, Dominion Coal Terminal, Norfolk Harbor, and the container yards including two new 50-container-per-hour dual-hoist cranes at Norfolk International Terminals. A summary of the proceedings of the technical sessions follows.

Two new double cranes at the Norfolk International Terminals will double the terminals' unloading capacity. The cranes will each be able to unload 50 containers per hour.