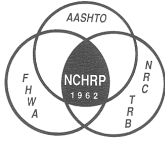


RESEARCH PAYS OFF



The Highway Capacity Manual *Development and Application*

Problem

The major problems facing motorists on today's highways are congestion, accidents, and costs—too many automobiles traveling to the same place at the same time; too many automobiles, trucks, buses, bicycles, and pedestrians attempting to use the same space; too many motorists losing time unnecessarily; too many accidents occurring; and too many decisions being made on highway improvements without adequate analytical tools.

From these problems comes the need to quantify congestion and highway operations in such a way that rational solutions can be determined. For more than 35 years, the *Highway Capacity Manual* has been used extensively for this purpose. However, much has changed in the years since the earlier editions were published, regarding both travel characteristics and improved procedures for capacity analyses. Travel characteristics have changed because of a shifting mix in both the driver and vehicle populations, and also because operational changes have occurred, such as the 55-mph speed limit and the right-turn-on-red regulations. Research by many individuals, private organizations, and public agencies has led to new understandings and insights, which, in turn, have resulted in procedural revisions and new techniques in

highway capacity analysis. The combined effect of these changes created a pressing need for a revised manual.

Solution

In the early 1970s the National Cooperative Highway Research Program (NCHRP) and the Federal Highway Administration (FHWA) initiated major research efforts to study various aspects of highway capacity analysis. Final preparation of the 1985 *Highway Capacity Manual* was accomplished by the Transportation Training and Research Center of the Polytechnic Institute of New York with the assistance of the Texas Transportation Institute of Texas A&M University. The research team performed massive editing of source materials in order to provide a uniform approach, philosophy, and style. Some procedures underwent additional development, while others were only slightly modified. All of this work was done under the guidance of the Transportation Research Board Committee on Highway Capacity and Quality of Service.

More than 60 professionals directly participated in substantive reviews of the procedures through the TRB committee and its several subcommittees. More than 30 NCHRP panel and TRB committee meetings were held during

the 8 years of development. Each of the 14 chapters of the 500-page manual went through at least three drafts and cycles of review and revision, and was submitted to at least 32—and as many as 200—reviewers. More than 750 pages of reviewers' comments were received. This effort culminated in the publication of the third edition of the *Highway Capacity Manual* by TRB in August 1985.

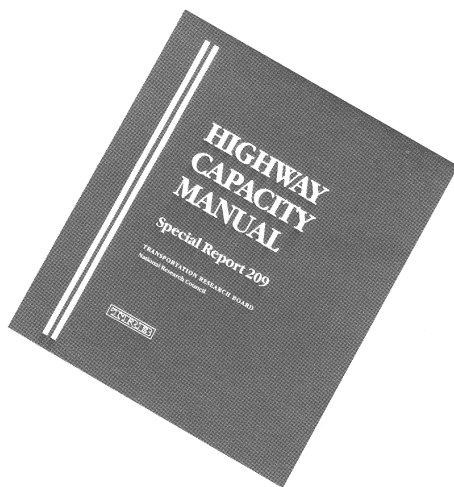
Application

The 1985 *Highway Capacity Manual*, a collection of procedures and methodologies for calculating highway capacity and level of service, neither constitutes nor attempts to establish legal standards for highway construction. It provides methods for analyzing in advance the quantity of service a highway can provide as well as the quality of that service. In particular, the 1985 manual will change the way analysts consider service quality and will provide greater flexibility in adapting procedures to actual conditions. Designed for use in planning, design, and operational analyses, the manual is particularly relevant to the current concerns of maximizing the utility of existing streets and highways.

Unlike previous editions, the *High-*



During TRB's Annual Meeting in January 1986, Executive Director Thomas B. Deen (right) presented Carlton C. Robinson, Chairman of the TRB Committee on Highway Capacity and Quality of Service, with an inscribed copy of TRB Special Report 209: Highway Capacity Manual in appreciation of his efforts.



TRB'S 1985 Highway Capacity Manual is a best-seller; more than 20,000 copies have been purchased by transportation professionals throughout the world.

way Capacity Manual will be updated continuously on a chapter-by-chapter basis, so that users may benefit from the latest research as soon as it is practicable. To permit this continual updating, the 1985 manual was published in loose-leaf form.

Because of the complexity of some of the new analysis methods, there was a need for microcomputer software. The FHWA responded by developing microcomputer software to provide an official set of programs and greater uniformity in their application. The FHWA is also developing a set of training materials for use in short courses. Many universities have been using the new Highway Capacity Manual since September 1985 in both short courses and undergraduate and graduate curricula.

Benefits

The 1985 Highway Capacity Manual represents the latest approach to making major decisions about highway construction and operational improvements. Quantifying the benefits of a better approach is practically impossible; however, even without looking at numbers, it is clear that, with the most conservative estimates of savings, an impressive benefit-cost ratio exists for the research that led to the new manual.

Even less quantifiable but equally important are benefits in the form of consistency, reliability, and recognized credibility. With nearly 20,000 copies of the publication already in use, decisions will not only be better, they will be more consistent from project to project, from city to city, and even among

different countries. Furthermore, people with limited technical training will be better able to conduct technical analyses, and will be able to do so even more easily with introduction of the new software. Finally, in an age in which the availability of a recognized set of credible procedures is a requirement in convincing the courts that acceptable techniques are being used, the manual has proved to be a valuable tool with significant benefits to the highway profession.

To obtain a copy of the 1985 Highway Capacity Manual, published as TRB Special Report 209, contact the Business Office, Transportation Research Board, 2101 Constitution Avenue, N.W., Washington, D.C. 20418 (telephone: 202-334-3218) (price: \$40.00). The FHWA computer programs can be ordered from the McTrans Center, 512 Weil Hall, University of Florida, Gainesville, Fla. 32611 (telephone: 940-392-0378) (price: \$50.00). Information on the FHWA training courses can be obtained from Dennis Lee, FHWA, HTO-31, 7th and D Streets, S.W., Washington, D.C. 20590 (telephone: 202-366-1993).

Suggestions for "Research Pays Off" articles are welcome. Contact Nancy A. Ackerman, Editor, TR News, Transportation Research Board, 2101 Constitution Avenue, N.W., Washington, D.C. 20418 (telephone 202-334-2972).