

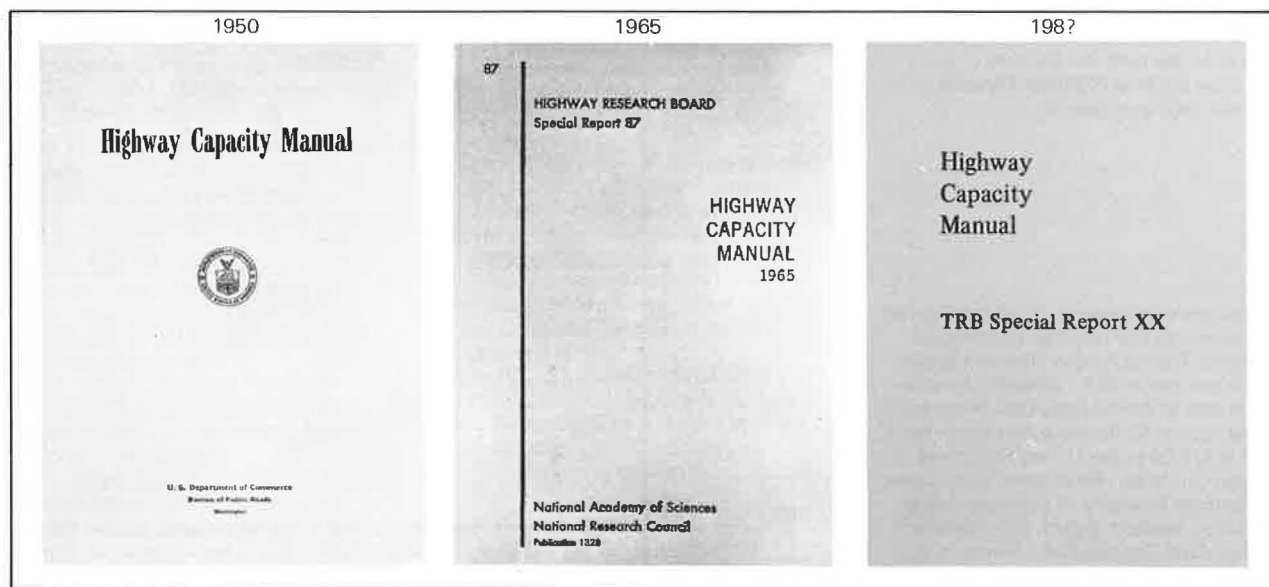
The Next Highway Capacity Manual

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A question often heard in recent months, and especially in TRB offices and meetings, is, When will the next edition of the Highway Capacity Manual be ready? For the past several years, that question has had a prominent place on the annual and midyear meeting agenda of the TRB Committee on Highway Capacity and Quality of Service. As any user of this manual can attest, however, development of the next edition must be viewed as a complex and monumental effort that could tax the resources of well-funded agencies and that would not even be approachable by a timid group of volunteers.

Historically, the two earlier editions in 1950 and 1965 benefited immeasurably from the strong, dedicated support of the U.S. Bureau of Public Roads (now the Federal Highway Administration), although extensive contributions by volunteers from the TRB Committee on Highway Capacity were acknowledged in both cases. The use of the first and second editions is indicated by the sheer number of copies produced: Some 26 000 copies of the 1950 manual and 30 000 copies of the 1965 manual have been distributed. The 1965 manual is now in its seventh printing, and demand for it remains steady.



In view of the amount of effort involved in producing each new issue, the publishing schedule of 1950, 1965, and early 1980s seems reasonable. Some argue, however, that 15 years is indeed too long between updates and that some process permitting more frequent updating would be desirable. TRB agrees that, as soon as it is available in usable form, each new advance should be woven into practice through revision of this popular guidebook. To this end, TRB will give serious consideration to production of the new edition in some form of loose-leaf, loose-chapter, or loose-section binding. This will facilitate the orderly introduction of new or revised material and avoid the difficult problem of trying to select the most opportune time to reissue the entire book.

A loose binding also has disadvantages. Such binding is expensive, and it seems impractical to maintain mailing lists of owners so that revisions can be sent. More likely, a general announcement of revisions as they become available will be widely distributed so that manual holders can order the new material. Periodic publication by TRB of the latest contents, by date of issuance, will also be useful to users to ensure that they are working with the latest procedures.

Other administrative questions will have to be answered as we approach publication. How big should the book be? Some users long for the thin, small 1950 edition, but the trend seems to be toward adding more material to the 1965 edition. How much can be excised from the present text without harm? Should appendixes and sample problems be included? published separately? published at all? Many other questions will surely surface and demand attention.

Recently, A. D. May, Jr., chairman of TRB Group 3 Council, observed that the next edition would likely serve through the remainder of this century before being substantially or completely rewritten: a sobering thought, indeed. In fact, the changes certain to take place in individual transportation vehicles and systems by 2000 because of energy, environmental, and other factors might mean that the next edition is the last edition for transportation as we know it today!

Who needs a new highway capacity manual? Which agencies have an interest in it, and to what extent are those interests compatible? Users can be categorized as planners, designers, and operators. Some will argue that today use by planners and designers is minimal, since we are not planning, designing, and building new facilities to the extent that we once did. These same people suggest that the emphasis should be on operation uses to help us realize the greatest utility from our existing physical plant. However, we will undoubtedly continue to plan, replan, design, and build some new facilities and modify others, and the needs of the planner cannot be ignored. Similarly, we will likely redesign and reconstruct existing facilities for many years to come, and thus designers will still find HCM guidance desirable. Certainly, some added emphasis on operation is also justified.

Should the next edition be designed for use interna-

tionally? Will U.S. practice be transferable to Australia? India? South America? Mexico? Canada? Africa? The 1950 and 1965 editions were widely translated and used in other countries, perhaps more literally than was actually justified, for driver characteristics, vehicle characteristics, vehicle mixes, roadway geometry, traffic control devices, and other pertinent capacity influences vary widely throughout the world. Therefore, the general feeling is that the user perspective will remain as it was in the mid-1960s and that no attempt will be made to produce a manual that is universally applicable—quite likely an impossible task in any event. The focus of the design of the next HCM will be largely U.S. and Canadian audiences, although others will be free to use it as they do at present.

TRB must consider many viewpoints and interests as the next edition is being prepared. Under past chairman R. C. Blumenthal and present chairman James H. Kell, the committee wants to continue its leadership role in reviewing and approving the elements of text as they are developed and brought together into a final manuscript. TRB is encouraging the committee to do just that. Committee members are also developing text material for an expanded chapter on transit and a new chapter on pedestrians.

Interest within the Federal Highway Administration is manifested by major research funding being supplied in areas in which there are still gaps in knowledge. Major research projects are under way or planned to bring together what has been learned about capacity of freeways since 1965, especially with regard to ramp junctions and weaving. Further, an extensive research project is planned for urban arterials and intersections, identified by the TRB Committee on Highway Capacity and Quality of Service as one of the large remaining gaps in our knowledge of capacity. These efforts will surely produce results that will greatly influence the next HCM; in the case of intersections, it may actually provide the only basis for major revision of present chapter 6 procedures. Other recent work, notably on intersection delay, is also considered useful to the next edition.

Through its funding of the National Cooperative Highway Research Program (NCHRP), the American Association of State Highway and Transportation Officials (AASHTO) has committed financial resources toward development of inputs to the next edition. The objectives of the first phase of this project, which got under way this year, are to assemble recent research results that can be used to update the 1965 manual and to develop a phase 2 and a phase 3 research plan for devising new manual procedures where needed. Funding has been provided to carry out the latter research. Other NCHRP projects have also contributed new knowledge of effects on capacity of trucks and grades, weaving, ramp usage, signals, and signal systems, all of which will be considered as the next HCM text is drafted. Many HCM users, of course, are employed by the member states of AASHTO.

The Institute of Transportation Engineers (ITE) has also expressed considerable interest in contributing to the

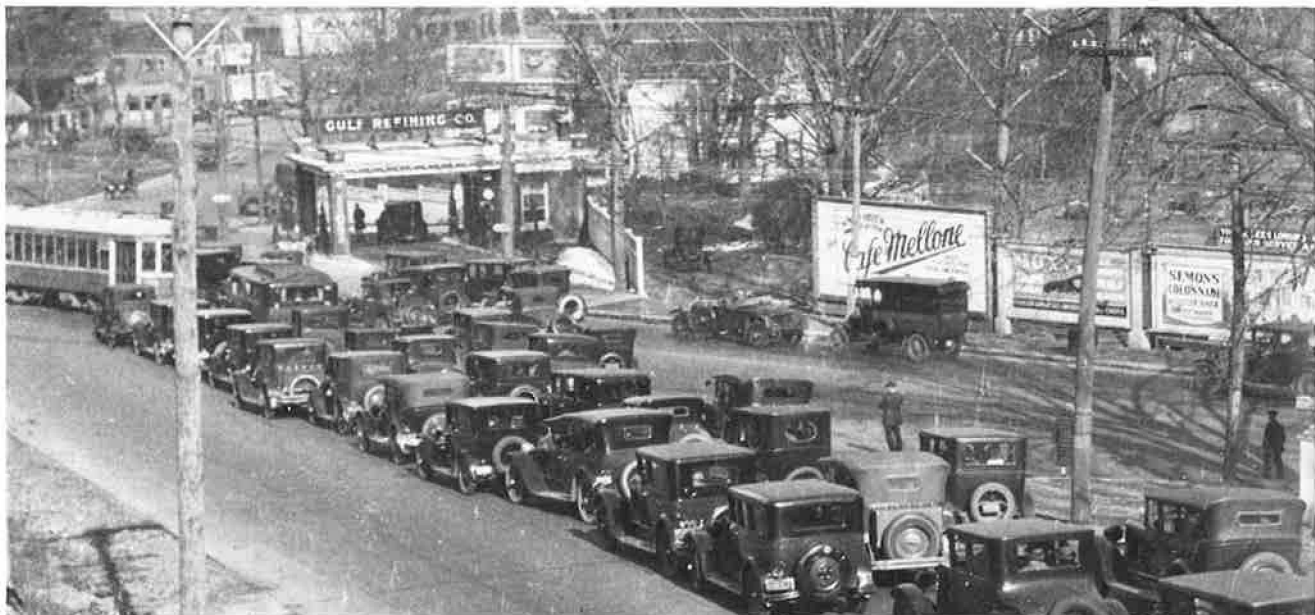
1 Rural two-lane roads are still very much with us and assume greater importance as traffic carriers as we build fewer and fewer replacements for them. Tools are needed to permit more accurate estimates of capacity as such roads are modified and upgraded.

2 The urban intersection of yesteryear with peak recreational traffic flow may still suffer the same congestion today. Better analysis tools are needed to let transportation managers predict the effects of improvements on capacity.

3 No capacity problems in view at this time of day, but this type of urban arterial with signalized intersections still holds many unknowns for those who wish to predict its capacity with confidence.



2



next edition through the technical committees in its Technical Council. Many HCM users are, of course, counted among the active members of ITE.

Research reports from Canada and the Organization for Economic Cooperation and Development suggest that there is strong interest in HCM procedures outside the United States. The Canadian work, especially because of obvious similarities, will likely be useful.

The somewhat special interests in and desires for the next HCM of these diverse groups add considerably to the difficult coordination and scheduling effort required for the next edition but also make distinct and perhaps unique contributions, without which a new HCM is not likely.

Table 1 gives a comparison of the 1950 and 1965 HCM chapter titles that appeared in the July 1966 *Traffic Quarterly*. The Committee on Highway Capacity and Quality of Service is currently working toward a new grouping of related chapters into the four sections given in Table 2. These sections facilitate present subcommittee work, but are by no means final choices. Neither is the wording for

the section and chapter titles final at this point. Notably absent in Table 2 is the name of Chairman Kell, who is nonetheless heavily involved in coordinating the subcommittee efforts and in providing liaison with other interest groups. Chairman Kell has also announced his intention to use noncommittee members in subcommittee work that volunteers may be able to contribute to; any who are interested in such work are invited to communicate directly with Chairman Kell or K. B. Johns of TRB staff.

In the preceding discussions, emphasis has been on conducting research needed to fill knowledge gaps and on synthesizing research findings into new or expanded texts. It appears obvious to some, if not most, that a major technical writing effort must also be mounted if we are to publish a cohesive, interlocking text and not just an assemblage of independent contributions in several writing styles. Few of the parts of a new HCM will stand independent of the other chapters; they must be carefully cross referenced. This, along with a technical review and approval, is likely to represent the last major effort before editing and printing, even though some advance work

toward this end is envisioned under phases 1 and 3 of the NCHRP project.

It will be obvious to many readers that in a number of areas we have learned enough to permit an immediate updating of the 1965 HCM. It will be equally obvious to those who have ever prepared a major text for publication that at some point a line must be drawn and a decision

all agencies capable of contributing and at the same time give strong encouragement to a continuation of the efforts by volunteers. TRB hopes to draw on the talents and resources of all highly motivated and interested individuals, groups, and agencies to the end that the best possible new HCM can be published within the shortest practical time period.

3



Table 1. Chapter Content of the 1950 and 1965 Manuals.

1950	1965
Introduction	Introduction
Definitions	Definitions
Maximum Observed Traffic Volumes	Traffic Characteristics
Fundamentals of Highway Capacity	Capacity of Level of Service
Roadway Capacities For Uninterrupted Flow	Factors Affecting Capacity and Service Volumes
Signalized Intersections	At-Grade Intersections
Weaving Sections; Unsignalized Cross Movements	Weaving
Ramps and Their Terminals	Ramps
Relating Hourly Capacities to Annual Average Volumes and Peak Flows	Freeways and Expressways
	Streets and Highways Without Access Control
	Bus Transit

made to publish what is known now rather than wait for complete knowledge, which can never be attained. The best judgments tell us that new research has great potential for filling major remaining gaps in knowledge. Therefore, to proceed at once with an HCM update would forgo the value of the version possible in the early 1980s that would reflect the findings of this new research. Hence, the decision has been made to do all possible to stimulate the needed research as quickly as possible by

Table 2. Proposed sections of new Highway Capacity Manual.

Section	Name	1965 HCM	Responsible Subcommittee
1	Basics	Chapters 1 through 5	Jack Schlaefli, chairman, Don Berry, R. C. Blumenthal, Joel Leisch, Fred Rooney
2	Rural highways	Part of chapter 10	Fred Rooney, chairman, Arthur Carter
3	Freeways	Chapters 7, 8, and 9	William McShane, chairman, Joseph Hess, Jerry Kraft, Joel Leisch, Louis Pignataro
4	Urban streets		
	At-grade intersections	Chapter 6	Jack Hutter, chairman, Don Berry, R. C. Blumenthal, Gerald Skiles
	Urban arterials	Part of chapter 10	Ed Lieberman, chairman, Don Berry, R. C. Blumenthal, Gerald Skiles
	Transit	Chapter 11	Thomas Jordan, chairman, Herbert Levinson
	Pedestrians	None	Jeffrey Zupan, chairman, Arthur Carter