Keeping the Nation Out of the Mud

The Current Need for Research in Transportation Management, Administration, and Planning

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For several years, under the leadership of William A. Bulley, the Transportation Research Board's Group 1 Council has been concerned about the declining level of research in transportation management, administration, and planning. Committee members have voiced their difficulties in obtaining funds for management and planning research projects. A brief review of the budgets of funding agencies indicates the decrease in their support for projects in these areas, especially to universities. This in turn has reduced the level of support for graduate students and contributed to a decline in the number of graduate students majoring in transportation. Another indicator is the declining number of papers submitted to TRB for presentation at the Annual Meeting and publication.

Looking back over just the past few years, the significant events shaping transportation have included deregulation, opportunities for the creation of intermodal companies, institutional changes in the provision of services, and demographic shifts, as well as financial constraints. Some of these changes have improved overall transportation efficiency whereas others, such as increased truck weights and sizes, have caused even greater deterioration to the highway infrastructure. Free market forces are affecting the cost and service of air and other modal travel, and research is needed in both public and private management of transportation systems.

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TRB Group 1 Council Initiatives

During 1984 a subcommittee of Group 1 Council reviewed the Strategic Transportation Research Study (STRS) proposal to launch a major research effort about the problems of poor performance of asphalt, cement, concrete, and bridge deck materials. It was agreed that these were major problems of national scope that could dramatically affect the costs of building and maintaining the nation's highways. However, it was believed that no matter how much better highway products were made, if qualified people were not hired or employees were not properly trained, if better work procedures for utilizing the improved products were not developed, and if each step of the process was not managed, we would fall short of achieving the full benefits of the research. Better materials would be developed, but we would be faced with the same premature and costly failures because management skills were lacking.

At its July 1985 meeting, the Group 1 Council concluded that the decline of research in transportation, administration, and planning was too pervasive to be addressed individually by committees and task forces. It was decided to develop a research program addressing key issues affecting the development of transportation systems in the coming decade and to seek funding for the program. The council recognized the major achievement in the development of the Strategic Highway Research Program (SHRP) that resulted from STRS. It was strongly believed that a similar although more modest effort was needed in the area of administration and planning.

To develop the outline for such a program, the council created an Activity Identification Group (AIG) chaired by Edward Weiner of the U.S. Department of Transportation. In July 1985 AIG requested Group 1 committees and task forces to submit proposals of major re-

search needs in their respective areas of responsibility. In response to that request, 140 research proposals were received. These proposals were reviewed and integrated into a research program of major research areas, and a report entitled *Anticipating Transportation's Future: Critical Research Issues in Transportation Systems Planning and Administration* was presented to the Group 1 Council in January 1986.

At the TRB 1986 Annual Meeting, William Bulley invited chief administrative officers (CAOs) of state departments of transportation to discuss the research that is needed from their management viewpoint and how the transportation sectors could benefit from increased research emphasis. Three topics, mentioned by all of the speakers, stood out clearly at the top of the concerns expressed by the CAOs. The most frequently cited issue was financing transportation facilities—including defining needs, finding new funding sources, and managing financial resources. The second major issue mentioned was improving transportation management. The third topic was information systems and data bases to serve transportation managers.

Also at the 1986 Annual Meeting a report was given on the National Science Foundation's seminar, held at Northwestern University in March 1985, on the state of the art and research opportunities in transportation. The conference was aimed at obtaining primarily an academic perspective. Although seminar recommendations called for a more fundamental research approach, the problems identified were much the same as those listed by the CAOs.

Significant Research Issues

At the June 1986 mid-year meeting of the Group 1 Council, all the proposed research issues were consolidated into five major areas in the field of transportation systems planning and administration: economic development, productivity, human health and safety, fiscal responsibility, and societal scanning. Each of these areas will be described in more detail.

A special session on Research Needs in Transportation Management, Planning, and Finance, sponsored by Group 1 Council, was held at TRB's 1986 Annual Meeting. Panel members included *(left to right)* state DOT chief administrators from Texas (Mark Goode) and Minnesota (Richard Braun), and Richard D. Morgan, FHWA.

Economic Development

A sound transportation infrastructure is essential for maintaining a strong economy, supporting economic growth, and enhancing our competitiveness in international markets. The transportation system provides the means for businesses to access employees and for the distribution of goods and services. However, many elements of the U.S. transportation system are reaching the end of their useful life and need to be upgraded or replaced. In addition, new capacity is needed in selected locations where development has outgrown the capacity available.

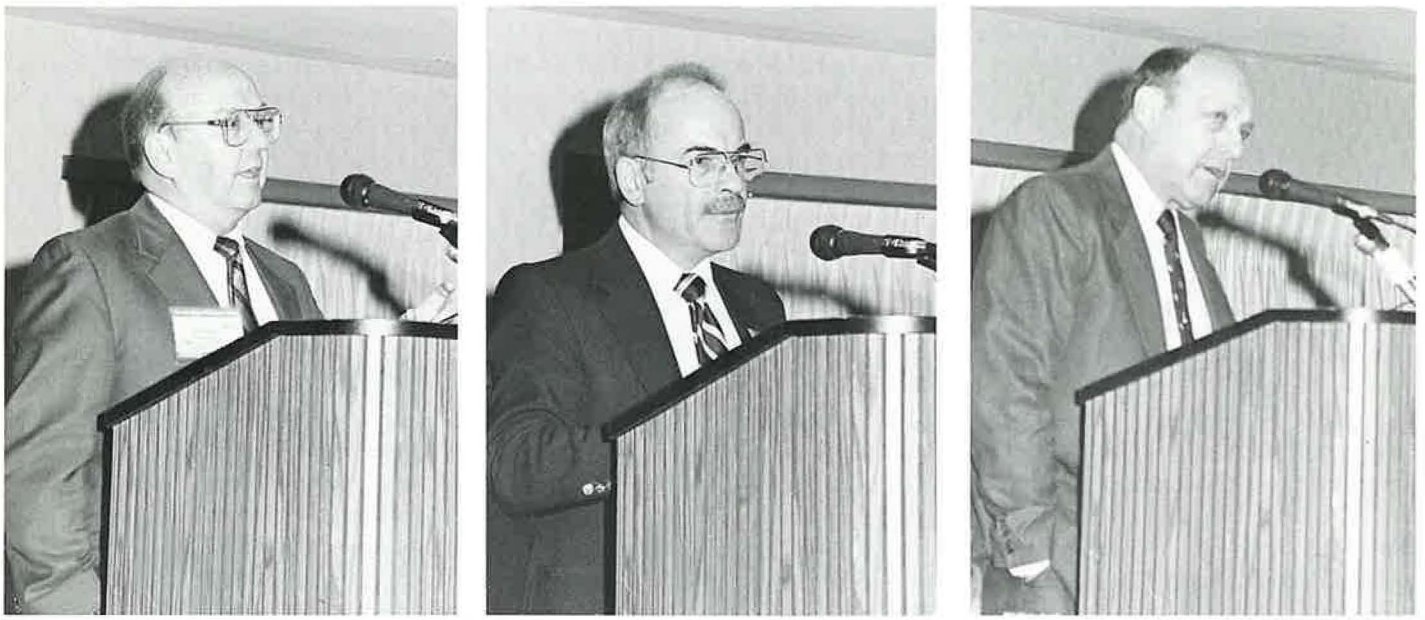
Changes in the transportation system have affected the location, intensity, and type of land development and economic activity. Development is located partially in response to the type and quality of transportation service. When development outstrips the ability of the transportation system to serve it, the resulting delays reduce the effectiveness of the areas functioning and increase costs for everyone. A better understanding of this process would contribute to the more effective use of resources to serve and shape the demand for transportation.

Productivity

The need for the public sector to become more efficient in the delivery of services and to operate in a more businesslike manner is increasing. With declining budgets in recent years, transportation agency staffs have been reduced while work loads have been increasing.

To continue to carry out their missions in an effective manner, transportation agencies are seeking ways to improve their productivity, reduce costs, and increase organizational efficiency. The practice of contracting out to private providers is increasing as one means of performing work where current staffs are not adequate.

There is a need to improve management information for use in making better-informed decisions. The integration of information resources with the ongoing operations can improve the ef-



Taking part in the Annual Meeting session focusing on major transportation management, planning, and finance issues are *(left to right)* Richard Braun, Charles Miller, Arizona Department of Transportation and William Bulley, H. C. Lochner, Inc.

ficiency and productivity of transportation agencies. Statistical data bases need to be updated to account for the effects of changes in transportation systems, regulation, and institutional arrangements.

Human Health and Safety

A large number of safety initiatives are under way throughout the nation to reduce the frequency and/or severity of accidents on the transportation system. On the highway system, there is growing concern about the safe operation of large trucks. Similarly, there are safety concerns about the airways, the operation of the rail network, the pipeline system, and other transportation components.

Concurrently, the public is demanding a secure transportation system, free from the risk of excess vandalism, crime, and dangers from the transportation of hazardous materials.

Vast sums of money are expended annually on safety and security programs by all levels of government. There is, however, a lack of information available to management on the cost, benefits, and effectiveness of these programs.

Over the past 25 years the transportation sector has been forced, largely as a result of federal law, to take into consideration environmental and energy conservation issues as they relate to planning, management, design, and operation of transportation facilities. Transportation agencies continue to meet tight controls, but they are in need of improved solutions that address the strict requirements.

Fiscal Responsibility

Permanent, predictable, and adequate funding for state and local transportation purposes is a continuing issue facing governments. Although all levels of government have been adjusting their tax and user-fee schedules to gain the needed resources to maintain existing transportation systems and to fund needed improvements and expansion in the transportation systems, stable and reliable funds sufficient to meet these needs are still lacking.

Many transportation agencies are reviewing their role in financing transportation improvements. To meet these needs, transportation agencies are seeking a redistribution of responsibilities within the government sector and between the public and private sectors. In addition to increasing traditional funding approaches, transportation agencies are seeking new sources of revenue through innovative funding mechanisms and private-sector contributions. Agencies are looking for techniques to reduce the cost of transportation improvements and new techniques are needed to assess requirements and to set priorities.

Societal Scanning

Many factors external to transportation affect the demand, supply and service characteristics, costs, availability of public funding, and usage of transportation systems. These may be factors over which government has little or no control. Nevertheless, to anticipate needed changes and impending crises, it is important that decision makers anticipate the future through strategic planning and other techniques. Socioeconomic trends such as demographic changes, world economic conditions, energy supplies, and available new technologies will all affect the demand and supply of transportation systems and the resources necessary to build and maintain them. Such future scenario building must be based on sophisticated research into

analyzing data and public aspirations and on building analysis techniques.

NCHRP Project To Develop Research Program on Transportation Management, Administration, and Planning

The research program was presented to a special Group 1 Council task force in July 1986. Several options were discussed with regard to obtaining funding for such a research program. It was concluded that a proposal be submitted to the AASHTO Select Committee on Research (SCOR) requesting funds to more fully develop the program that would contain specific research projects that can be carried out.

At the September meeting of SCOR, $125,000 was allocated from the fiscal-year-1988 National Cooperative Highway Research Program (NCHRP) for the purpose of developing a research program in areas of need and interest to top management in transportation agencies. The plan to be developed under an NCHRP project will serve as a comprehensive framework for research in these areas and will try to gain the support of various sponsors.

A panel has been appointed under the chairmanship of Charles L. Miller, Director of the Arizona Department of Transportation, to oversee the development of the study and to monitor its progress. The panel includes four additional CAOs and members from FHWA, the private sector, and universities. The panel is planning to hold its first meeting in early December to begin the process of identifying research needs in areas such as management, administration, and policy-level planning. This effort will re-emphasize the important role of research in the administration of transportation and renew interest in sponsoring such research.

Acknowledgments

William Bulley, serving as Group 1 chairman, was one of the principal driving forces in this effort. Edward Weiner is chairman of the Subcommittee on Research Needs and Roland Ouellette was chairman of a special Group 1 task force to help find an implementation strategy. Group 1 committee chairman and members provided invaluable help defining research needs in their special areas of competence. W. Campbell Graeub, secretary of Group 1 Council, and Stephen Blake, Kenneth Cook, Elaine King, and James Scott contributed as TRB staff members.