CHANGING THE FACE OF RESEARCH

Partnering with Industry and Academia at WisDOT

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Passage of the Intermodal Surface Transportation Efficency Act (ISTEA) of 1991 has helped expand the amount and kinds of research undertaken by many state departments of transportation. This change is certainly evident at the Wisconsin Department of Transportation, where ISTEA has had a profound affect on the department's Council on Research.

Before 1988, when the council was established, applied research at WisDOT fell under the aegis of the materials branch of the operations area of the Department of Highways. An advisory committee on engineering research coordinated research activities for all divisions, and the vast majority of that work was materials-based. Multimodal research was considered somewhat "alternative," and the department did not pursue it.

Funding for the department's research was for the most part inconsistent. Only about 5 percent of WisDOT's Highway Planning and Research (HPR) funding supported studies. The remaining 95 percent supported planning. The Federal Highway Administration indicated (informally) that it would like to see more HPR funds spent on research, but no significant change occurred until passage of ISTEA.

Under the act, 25 percent of ISTEA-mandated federal State Planning and Research funds (formerly HPR funds) must be used to support research. Consequently, some $1,300,000 is earmarked annually for this activity at WisDOT. But an increase in the amount of research is not the only change the act has wrought at the department. Because State Planning and Research funds are designated for multimodal research, rather than just highway research, WisDOT has broadened its focus to include transit, rail, harbor, freight, and other modal investigations. And because the funds can be used to support "soft" research, the department is no longer concentrating only on "hard/applied" engineering research, such as studies to enhance the durability of concrete pavement, but is also conducting management-related or cost-benefit research, such as examinations of the economic impact of highway systems on tourism.

Beyond expanding the focus and scope of the department's research, the broader use of federal funds has opened the door to the formal involvement of nonhighway organizations in the research. WisDOT has taken advantage of this opportunity, forming a partnership with the construction industry and academia that is helping the Council on Research pursue proactive, needs-based studies.

PARTNERING

While considered innovative in government practice, partnering has been common in private industry for some time. Described as a way to allow organizations to rise above the "'we/they' relationship aimed at independent success . . . [and promote] an 'us' relationship focused on mutual success" (*1*), partnering is an effective tool to minimize litigation and maximize efficiency and productivity. Partnering is also an excellent mechanism to foster long-term, mutually beneficial working relationships among entities that heretofore might have labeled their interaction as antagonistic and counterproductive—entities such as public transportation agencies, academia, and the construction industry.

The latter has long recognized the benefits of partnering. The authors of a 1989 report of the Construction Industry Institute Task Force advocate the practice, noting that new technologies, as well as "hostile takeovers, foreign competition, profit pressures, changing regulations and high investment risks are forcing the construction industry to shift away from traditional approaches

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and seek new ways of doing business: seek new ways to lower costs and . . . break from old patterns and prepare for change" (2). Recent statistics confirm the trend detected by the task force 8 years ago:

> Project partnering and mediation top the list of alternative-dispute-resolution (ADR) methods, according to a 1994 survey of approximately 2,400 attorneys, design professionals and contractors. . . . Partnering, a process through which parties discuss mutual goals, establish channels of communication and set up mechanisms for handling disputes before a project begins, was rated most effective by DPIC [Design Professionals Insurance Company] -insured design professionals and the AGC [Associated General Contractors of America] members (3).

WisDOT has also recognized that partnering can yield helpful input and minimize the emergence of problems as projects progress. When developing specifications for warrantees, the department solicited substantial input from constructors, whose skepticism about warrantees made incorporation of their ideas and concerns in the process logical. Such inclusive gestures have become increasingly common, and today they are a particularly critical element of the department's research efforts.

Dawn of Cooperative Research

As noted above, partnering is an effective tool to maximize productivity and foster mutually beneficial working relationships. Perhaps most important, the synergy generated by a group of individuals focusing attention on one project results in better products and solutions. A wide variety of perspectives and on-the-job experiences create a rich environment for doing research. In turn, collaborative research efforts provide a training ground for future leaders of the transportation industry.

With these considerations in mind, WisDOT created the Wisconsin Cooperative Transportation Research Initiative and in 1994 signed a partnering agreement with the Wisconsin Road Builders Association. The purpose of the agreement was to identify and formalize the membership of the Transportation Engineering Technical Committee, which along with the Transportation Research Projects Committee, implements partnering efforts to increase the efficiency of the department's research process. The two committees, composed of representatives from the department, FHWA, academia, and industry, review and recommend highway and multimodal transportation research projects to the Council on Research. The council then determines which projects best meet the department's needs and thus receive funding.

WISCONSIN CONCRETE PAVEMENT ASSOCIATION

Staff from Wisconsin Concrete Pavement Association, Wisconsin Department of Transportation, and University of Wisconsin–Madison study impact of graded aggregate on durability of Portland cement concrete.

Of the 77 research proposals submitted by state DOTs, FHWA, academia, consultants, and entrepreneurs to the Transportation Engineering Technical Committee during WisDOT's 1996 fiscal year, 5 were approved by the council. Four of the five projects selected for funding are in highway research: enhancing the durability of portland cement concrete pavements, investigating more cost-effective pavement designs, analyzing the relationship between laboratory and field tensile-strength-ratio results for asphalt pavements on the one hand and pavement performance on the other, and assessing the economic development impacts of public transportation investments. The fifth project is in the planning area: developing performance-based guidelines and indicators for bridge decks. Total 1996 funding for these new projects ranged between $200,000 and $300,000.

As of 1996, 23 in-depth research projects were under way: 18 involve research conducted by Wisconsin's universities, and 5 involve research conducted by WisDOT staff. Currently, the department has a commitment of approximately $860,000 for these and other smaller-scale research projects. In addition, the department is involved in 23 pooled-fund projects, to which several states, including Wisconsin, contribute a portion of their federal State Planning and Research dollars.

Council on Research

The Council on Research receives broad guidance from WisDOT's division administrators and Secretary's Office but functions as a self-directed work team, with the authority to review the progress of projects and participate in reviews of other states' projects. The council is composed of 10 members representing the department's divisions of highways, planning, and transportation assistance as well as FHWA. Research approved by the council is carried out by the department, a private-sector consultant, or any of four major engineering schools in Wisconsin: Marquette University, University of Wisconsin–Madison, University of Wisconsin–Milwaukee, and University of Wisconsin–Platteville. Construction industry associations may provide data collection services and various kinds of expertise to the universities performing this research.

A technical oversight committee is appointed to develop a detailed work plan for each project. The committee reviews the project and approves the final report on project findings, which is forwarded to the council for acceptance and distribution.

WisDOT's Office of Engineering Operations supports the council by organizing meetings and performing project and budget monitoring. In addition to serving as the link between the council and technical managers on the one hand and all WisDOT divisions on the other, the office also functions as the council's day-to-day liaison with funding sources, the research projects and engineering technical committees, and project technical managers. The office supports the council on specific research projects by collecting project data, tracking performance measures, providing financial management, and assisting in the coordination of technology transfer and the monitoring of implementation.

Focus on Needs-Based Research and Funding

This year is a transition year for the Council on Research. It will attempt to better define WisDOT's research needs, ensuring that the department's portfolio of studies not only addresses existing problems but also is proactive, that is, meets emerging or anticipated needs. The council will also increase its role in reviewing requests for participation in pooled funds as well as national requests for project ranking.

To develop a needs-based research portfolio that results in practical applications, the council is working to ensure that research projects are conceived at the lowest working levels and managed in a manner conducive to attaining goals set forth at the outset. In general, the projects approved are aimed at preserving and extending the life of Wisconsin's existing transportation systems or developing future transportation systems that enhance public safety, convenience, and comfort. An additional objective is to increase the cost-effectiveness of transportation by investigating improvements in planning, construction, materials, operation, maintenance, and administration.

To provide adequate financial support for research, the council is working to ensure that each WisDOT division provides appropriate levels of state matching funds. When support needs exceed available funding, innovative financing options, such as soft match funds, private funds, pooled funds, and grants, may be pursued.

Positive Signs

The results of WisDOT's 3-year collaboration with industry, academia, and FHWA are not easily quantifiable; it is clear, however, that by introducing a variety of perspectives to the research process, the collaboration is leading to useful findings and products. Financial support from the private sector

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Collaboration Benefits—One University's Perspective

Universities play an important role in the research conducted under the auspices of the Wisconsin Department of Transportation, providing faculty, facilities, and expertise in research methodology, such as data collection and analysis. In turn, universities benefit from their collaboration with industry, receiving research ideas and services, such as assistance with data collection and the advice of technical and field staff.

Collaboration with public transportation agencies and the construction industry is a way of life at the University of Wisconsin–Madison. When the university's Department of Civil and Environmental Engineering sought to hire a new professor in construction materials, the search committee asked industry professionals from the the U.S. Department of Transportation, the Federal Highway Administration, and construction industry associations to interview the candidates and make recommendations. The industry professionals were happy to assist because it was to their benefit that the university hire a knowledgeable candidate capable of initiating projects relevant and responsive to industry needs. Today the department's research program is geared toward meeting these needs and thus those of the public. While providing implementable research results, the department is also training future leaders in the transportation industry.

Call for Abstracts

Conference on Transportation Planning

TRB's Committee on Transportation Planning Needs and Requirements for Small- and Medium-Sized Communities is seeking quality papers or presentations for the 6th national conference on this subject. Sponsored by TRB in cooperation with the Federal Highway Administration, the Institute of Transportation Engineers, the Idaho Department of Transportation, and the Washington Department of Transportation, the conference will be held September 16–18, 1998, in Spokane, Washington.

Topics include technology sharing, decision making for a multimodal transportation system, integrated transit planning, the planning process, public involvement/public information, highway and corridor studies, keeping small- and medium-sized communities livable, coordinating transportation and land use planning, finance strategies, and small agency management. Other topics will also be considered.

The deadline for abstracts is November 14, 1997. Accepted papers will be published in the conference proceedings.

Those interested in making a presentation or preparing a paper should submit a one-page abstract to:

Linda Wilshusen
Executive Director
Santa Cruz County Regional Transportation Commission
1523 Pacific Avenue
Santa Cruz, CA 95060-3911
Phone: 408/460-3213
Fax: 408-460-3215 or 408-471-1290
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General questions about the conference may be directed to:

Jerry Schultz
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TRB Publications Index on Internet

An index of the Transportation Research Board's publications is now available on the Internet at http://www.nas.edu/trb/about/pubindex.html.

The index contains more than 17,000 annotated citations for all Transportation Research Board and Strategic Highway Research Program publications starting in the mid 1970s until present. TRB publications include Transportation Research Records, Special Reports, Conference Proceedings, Circulars, *TR News*, and NCHRP and TCRP Reports and Syntheses of Practice. Individual papers in these publications are indexed. Author, title, series, date, or keyword searches can be made by in the title, abstract, conference title, or index term fields. The retrieved material can be displayed in table format as a bibliographic citation or as a full record with abstract.

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for the department's research is a significant indicator of the research's relevance.

Changing the way business is done is not easy and takes time, but WisDOT is moving in the right direction. The department and its partners remain committed to fostering an environment of openness and teamwork. Despite the difficulties of coordinating schedules and growing accustomed to sharing information and resources, they are working together to produce a cost-effect, flexible, and functional transportation system.

References

1. Connolly, Keith, Bruce E. Hess, William A. Hoberg, Thomas C. Pingel, and Robert K. Russell, Jr. Partnering for Success: An Overview of Customer/Supplier Partnering. *IEEE Communications*, October 1994, pp. 46–51.
2. Construction Industry Institute Task Force. Partnering: Meeting Challenges of the Future.
3. Partnering and Mediation Gaining Widespread Acceptance, Says Survey. *Civil Engineering*, Vol. 65, No. 5, pp. 28–30.

AUTHORS' NOTE: *Between the time this article was prepared and organization of publication, much of the Wisconsin Department of Transportation was restructured. As the new organizational structure continues to evolve, the department is developing a stronger commitment to research.*