Inside This Issue:

Refining the Operation

ORBP administrative team examines processes and structures, and then defines key initiatives to enhance MDOT's research programs.

Library Improvements

MDOT Transportation Library is an important resource for the research community. Full-time Librarian hired, upgrades proposed.

Technology Upgrades

Research database, library catalog system, project manager software, and contract software all proposed for upgrades.

Revised Research Administration Manual

New revision answers questions about SPR, Part II Program research and includes important administrative and process changes.

New Management Plan

New structure and processes for conducting research provide more administrative help while strategically identifying projects and focusing resources.

Changes Enhance Collaboration within Michigan's Transportation Research Community

Since MDOT's Office of Research and Best Practices (ORBP) was created in September 2005, Calvin Roberts, Engineer of ORBP, and his team have been examining practices, refining processes, and improving operations. They've come a long way in a short time.

"We're excited about the improvements made to the department's research programs," said Larry Tibbits, MDOT's chief operations officer. " We're looking forward to implementing plans and seeing results."

When the office was first formed, the ORBP team met with Tibbits several times to asses the status of the department's research programs. The meetings produced the following areas of focus:

- ORBP Administrative Team
- Research Management Plan
- MDOT's Transportation Library
- Information Technology

Between then and now, the ORBP has taken significant steps to address all areas.

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Building a Team and Learning from Peers

A team-building exercise completed in late 2007 helped the ORBP team solidify a clear mission for the office, and then articulate a vision to focus their energies on activities that would help them accomplish the mission. "In a nutshell, our mission is to recognize opportunities, communicate opportunities to our research partners and then work with our partners to convert each opportunity into results," Roberts explained. "Making the most of every opportunity is at the heart of everything we do."

Late last year, Roberts and his team sponsored a peer exchange conference to solicit customer input and advice from DOTs and universities in other states. Results of the team building and peer exchange efforts were summarized in the January 2008 issue of this newsletter.

An Improved Plan

Under MDOT's current research management plan, engineers in each specialty area take on management responsibilities for research projects as a fraction of their job duties. DOTs in other states typically have one full-time manager for every $1 million of research funding. MDOT's research program handles $8 million of research with no dedicated managers. "Managing research projects within each specialty area served the department very well for many years," Roberts said. "Today, as a result of staffing constraints and consolidations within the department, the process has become unwieldy. A few adjustments will improve it dramatically."

The ORBP team also noted that the existing plan did not include systems for identifying projects that had a high probability of being implemented, nor did it include procedures for gathering and reporting department-wide research information and statistics. As a result,

Collaboration (continued)

acquiring a "big-picture" view of research at MDOT and measuring the relevancy of research being done in relation to the strategic goals of the department was difficult. "The research community in Michigan has conducted and continues to conduct a great deal of excellent research, the results of which have been used all over the country," Roberts said. "To ensure that we continue to invest research dollars where they will provide the greatest benefit to the public we serve, we need to take a more strategic approach to the process."

Based on information and ideas generated through the peer exchange conference and meetings with universities and other research partners, Roberts and his team drafted a new plan for managing research (see *Improving MDOT's Practices: The Research Cycle* on Page 3). Under the new plan, the ORBP would have four dedicated project managers, which translates into one manager for every $2 million of SPR, Part II, program funding. The new plan also defines structures that will enable a more strategic approach to the entire research process.

"Restructuring our research management plan will ensure that we continue to identify research projects that have a high probability of implementation, our research partners continue to complete projects that are relevant and effective, and the public we serve will enjoy a multi-modal transportation system that is continuously improving, " Roberts explained. "Everyone will benefit."

Library Reborn

The MDOT transportation library was decimated by a fire in 2001. At the time, it was managed by the department's finance and administration group and was considered one of the finest transportation libraries in the nation. In 2005, administrative responsibility for the Library was assigned to the ORBP. Between the fire of 2001 and 2005, all surviving Library materials were packed into 1,100 boxes and stored in a warehouse. During that time the Library was maintained by a single Library Technician. Just prior to the Library moving to ORBP, the books were unboxed and re-shelved.

After assuming responsibility for the Library, the ORBP team determined that steps should be taken to restore it to previous levels of operation. "Before the fire, our Library provided much-needed support for MDOT staff and our state and national research partners," Roberts said. "Going forward, we recognize the library as a key piece of the ORBP operational puzzle."

In March 2007, MDOT hired Librarian Alexandra Briseno. Before coming to MDOT, Briseno worked as a document custodian and assistant project manager for IE Discovery, a legal discovery firm in Arlington, VA. "I'm excited to be working to return the Library to previous levels of operation," Briseno said. "We are already serving internal and external customers by finding the information they need, and we are developing new ways to enhance our level of service."

Briseno and the Library are part of a pooled fund study to enhance connectivity within and among transportation libraries in the U.S. The study involves 16 other state DOTs, two universities, the National Transportation Library, the Wisconsin Division of FHWA, and CTC & Associates, a technical communications firm from Madison, WI. "The goal of the study is to improve the sharing of information between state transportation libraries," Briseno

explained. "By participating we're expecting to put to immediate use best practices from other DOT libraries while leveraging funding to complete projects that will improve the information management and exchange technologies that we all use."

Describing the ORBP's vision for the Library, Roberts said, "The Library should and can be a resource for the entire international transportation research community and for our best practices section as technology, processes and procedures are increasingly shared worldwide. We're looking forward to identifying and implementing the management structures and knowledge technologies that will allow our Library to operate at its full capacity."

Technology Bridges the Gaps

Operational changes and improvements within the ORBP and throughout the research management process have made obvious the need for technological changes and upgrades. Managing information and improving communication are the motivating factors for all changes and upgrades.

A central research database is at the top of the technology wish list for the ORBP team. Such a tool would allow MDOT and all research partners to track projects from initiation through completion to implementation of results. "A research database will improve communication among partners during projects and will help maintain strategic direction by providing a broad view of past, present, and future projects," Roberts explained.

Other software tools the ORBP is hoping to enhance to better meet their needs include the Library's catalog system, MDOT project manager software and MDOT contract software.

The Ins and Outs of Making Research Happen: MDOT's Research Administration Manual

MDOT's Research Administration Manual is the first stop for investigators, project managers and others looking for quick answers on State Planning and Research (SPR), Part II, Program research at MDOT. The Department's Office of Research and Best Practices (ORBP) directs SPR, Part II, Program research and will publish the latest edition of this manual this summer.

A Look Inside

Engineer of ORBP Calvin Roberts describes the manual as "the what, when, how and who of SPR, Part II, Program research at MDOT. Our office is happy to answer any phone call or e-mail," says Roberts, "but we hope researchers can find what they need when they need it in the Research Administration Manual."

The manual provides valuable information and resources on the research process:

- **The first two chapters** provide a broad view of MDOT's SPR, Part II, Program, including ORBP's mission, vi-

sion, values and strategic plan. These chapters describe the MDOT executive and advisory committees that provide strategic guidance, as well as the project management committees that get the work done on the ground. In these early chapters, the manual clearly defines ORBP's key functions in the research process.

- **Chapters 3, 4 and 5** provide details on how the research program is developed on a two-year funding cycle and how individual projects are selected and managed. The manual provides program time lines, clearly defines responsibilities for all individuals involved in the research project, and gives step-by-step procedures for common research activities (such as work plan development, contracting, invoicing, reporting, and revisions in scope and cost).
- **The final chapter** focuses on implementation: how to put the results of applied research to work for MDOT and the taxpaying public. MDOT pursues research that has the potential to make a difference, and the manual describes the process of evaluating research results and implementing them in the field.

Meets a Federal Requirement

The U.S. government matches Michigan's SPR, Part II, Program research dollars 4-to-1 with federal funds. These matching funds are tied to federal regulations, among which is a requirement for Michigan to document its management processes and procedures for selecting and implementing research, development and technology transfer activities. MDOT's Research Administration Manual serves the critical purpose of keeping MDOT in compliance with federal regulations to ensure funding.

What's New

MDOT's research program has seen significant changes in the years since the department published its previous manual in July 2003. Chief among these is the formation of the Office of Research and Best Practices in 2005 to direct and administer SPR, Part II, Program research. ORBP has also used the manual revision as an opportunity to put into place key administration and process changes, starting with the fiscal year 2010-2011 funding biennium that kicks off with a Research Summit on Oc-

tober 1, 2008. ORBP has held meetings both internally and with its university research partners from across Michigan to explain the most significant changes and to collect input and feedback.

Figure 1: In February, MDOT provided university research partners from across the state a preview of the new process for managing SPR, Part II, Program research. The process is described in detail in a revised Research Administration Manual, due out this summer.

Next Steps

Stakeholders have responded to ORBP's requests for comments, and ORBP has carefully considered all input and suggestions that it has received. In revising the Research Administration Manual, ORBP has drawn from valuable input provided by experienced MDOT project managers. ORBP has also incorporated best practices suggested by other state DOT research directors. As a next step, ORBP is responding to a request from its university partners by giving them the opportunity to comment on the draft manual before it is finalized.

After ORBP completes the revised manual and secures approval within MDOT, the office will distribute the final version statewide, including providing copies to the Federal Highway Administration's representatives in Michigan, and will make the document available to the public on MDOT's Web site.

Improving MDOT's Practices: The Research Cycle

Michigan DOT plans and conducts its SPR, Part II, Program activities according to a biennium, or two-year cycle. Each biennium officially begins on October 1 of odd-numbered years (synchronized with the start of Michigan's fiscal year), but in reality work begins much earlier. Planning has already begun for the FY 2010-2011 research biennium, which officially begins on October 1, 2009.

A diagram of MDOT's SPR, Part II, Program research cycle shows how the program brings about improvements to MDOT's practices to benefit users of Michigan's transportation system (see Figure 2 on Page 4).

Top Down—The Executive Perspective

A team of top executives at MDOT, including the chief operating and administrative officers, bureau heads, a regional office representative and the engineer of ORBP, will meet this summer to help define MDOT's needs and strategic priorities for the upcoming biennium. This team is the Research Executive Committee, and the guidelines it will develop for the FY 2010-2011 biennium will help ensure that MDOT's research program is aligned with the department's high-level needs and long-term vision.
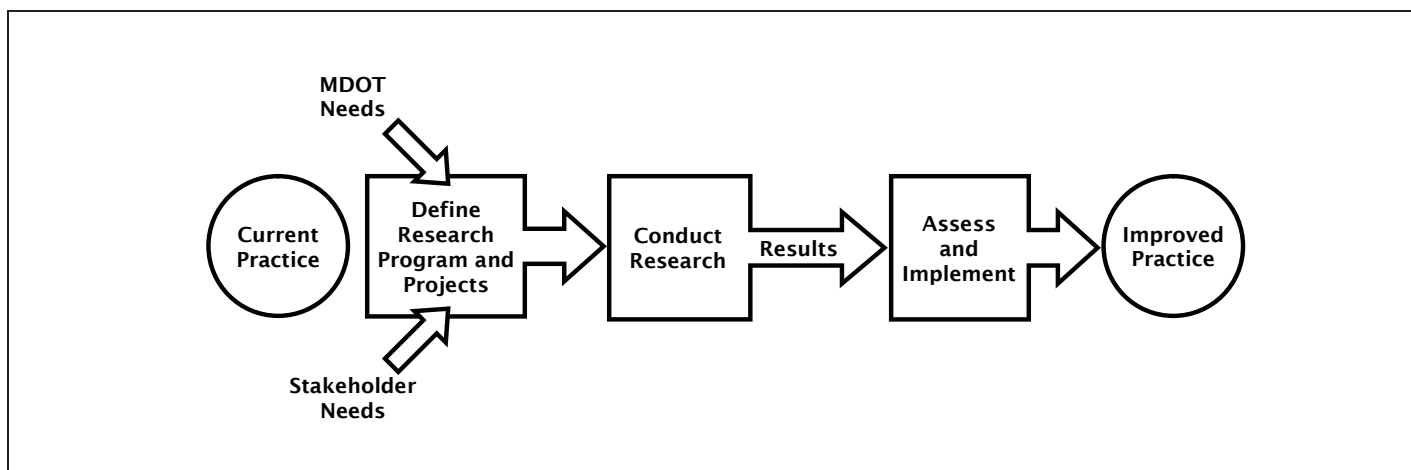
Figure 2: Michigan's biennial program combines "top down" and "bottom up" planning approaches.

Research Cycle (continued)

Bottom Up—The Stakeholder Perspective

Transportation stakeholders such as MDOT employees, university researchers, private companies and even the public help assess needs in Michigan and look for tangible ways for MDOT to better deliver its services. If they see ways to address needs through applied research projects, they are encouraged to submit their ideas to ORBP at any time.

The primary players in research, MDOT and university investigators, are constantly in dialogue, and they will formally come together in October 2008 for a Research Summit. Taking into account the focus areas determined by the Research Executive Committee, Research Summit participants will discuss research needs and start formulating problem statements to help address them. More details on the Research Summit will be available on ORBP's Web site later this year.

Launching the Program

Following procedures laid out in the newly revised Research Administration Manual (see *The Ins and Outs of Making Research Happen* on page 2), MDOT will consider any problem statement that has a department "champion," someone who considers the work to be valuable and likely to produce results that can be implemented. This department champion will commonly become the project manager if the statement becomes a funded research project.

As described in the manual, current MDOT processes will be followed during the first half of 2009 to collect and rank problem statements, to select projects, and to assign university investigators. Starting with the FY 2010-2011 research biennium, MDOT will use a qualifications-based selection process to award contracts for a limited number of research projects.

The planning process will be repeated on a smaller scale, with slightly different administrative steps, for the second year of the biennium. This is designed to help MDOT address changing and emerging needs, and it will allow the department to initiate new short-term projects in October 2010.

Putting Results to Work

Tapping one of Michigan's great resources, its research universities, MDOT will collect and synthesize results from a wide range of projects. As results come in, MDOT's paramount interest will be whether and how research findings can be put to use "on the streets." If research results point to opportunities to improve current practices, the department may choose to implement changes on a limited, small-scale basis or a larger statewide basis. Successful implementation of research can result in permanent changes to department procedures or state regulations.
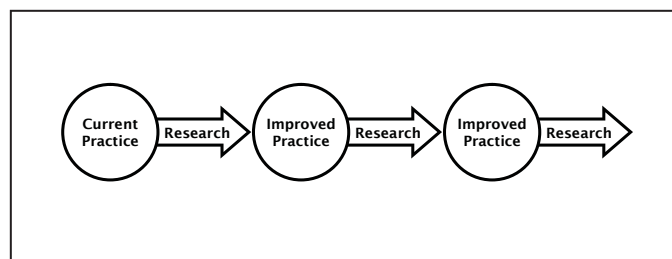

Figure 3: Continuous improvement through research.

MDOT strives to continually improve how it does business and how it serves its customers. The research cycle described here starts with current practices, ends with improved practices, and then—recognizing that there is always room to do better—starts anew.

MDOT
Michigan Department of Transportation