



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

RESEARCH PEER EXCHANGE

FINAL REPORT

[Prepare and submitted in accordance with 23 CFR 420.207(6)(b)]

MDOT Research Division
Jackson, Mississippi

June 18, 1998

FINAL REPORT

Mississippi Department of Transportation

RESEARCH PEER EXCHANGE

June 15-18, 1998

Introduction

Regulations contained in 23 CFR part 420 establish procedures under which the Federal Highway Administration (FHWA) may allow states increased flexibility for directing and controlling their program initiatives. These regulations set forth the minimum Federal requirements for carrying out RD&T activities using FHWA planning and research funds. One of these conditions stipulates that the state will agree to peer exchanges of its RD&T program and be willing to participate in the review of other states' programs. Each state is responsible for selecting and organizing the peer exchange team for its state exchange. The Mississippi Department of Transportation (MDOT) Research Peer Exchange was conducted June 15-18, 1998 in Jackson, Mississippi. The schedule for the exchange is given in Appendix A.

The **Peer Exchange** concept as used herein denotes a process of convening a team composed of invited research managers from other agencies. The team, together with the host agency, discusses and reviews their research management processes. Information from the host agency as well as the agencies represented by team members is exchanged with the intent to gaining insights that have the potential to improve the research management process of both the host agency as well as those of the peer exchange team members.

Peer Exchange Team

The research **Peer Exchange** team was composed of the following:

Richard C. Long, Chairman	Florida DOT
Richard L. McReynolds	Kansas DOT
Alan Meadors	Arkansas H&TD
Charles Niessner	Federal Highway Administration
David W. Pittman	U.S. Army Engineer Corps of Engineers Waterways Experiment Station

Additional information on the team members is given in an appendix.

Other participants in the **Peer Exchange** included:

Dr. K. P. George	University of Mississippi
Mr. Clyde Hare	Mississippi Division Office of FHWA
Mr. Norbert Munoz	Mississippi Division Office of FHWA
Alfred Crawley	MDOT Research Division Staff
Ms. Joy Portera	MDOT Research Division Staff
Gayle Albritton	MDOT Research Division Staff

Peer Exchange Focus Areas

The MDOT Research Division developed focus areas for the exchange as follows:

- Maintaining Adequate Resources for Research Activities
- Implementation of Research Results
- Outreach to Transportation Partners for Research Needs and Resources to Address Those Needs.

Peer Exchange Scope

The **Peer Exchange** was not conducted as an audit or process review. The team was asked to concentrate on the focus areas but was encouraged to pursue other pertinent issues as well.

The objective of the **Peer Exchange** was to engage in discussions of MDOT's research program management to promote information exchange that would be of benefit not only to MDOT also to the individual team members. The approach taken to achieve this objective was to interview representatives of various units of MDOT as well as two private sector organizations and two universities professors who conduct contract research for MDOT.

The following persons were interviewed by the team:

MDOT Top Management

<i>Kenneth Warren</i>	<i>Executive Director</i>
<i>James Kopf</i>	<i>Deputy Executive Director/Chief Engineer</i>
<i>Steve McMahan</i>	<i>Asst. Chief Engineer - Operations</i>
<i>Wendel Ruff</i>	<i>Asst. Chief Engineer - Preconstruction</i>

MDOT Division Representatives

<i>Edward Bailey</i>	<i>State Traffic Engineer</i>
<i>Jimmy Brumfield</i>	<i>State Materials Engineer</i>
<i>Gary Hillman</i>	<i>District Engineer-5th District</i>
<i>John Pickering</i>	<i>Roadway Design Engineer</i>
<i>Buddy Russell</i>	<i>State Construction Engineer</i>
<i>Judy Singletary</i>	<i>Right of Way/Environmental Coordinator</i>

University Representatives

<i>K. P. George</i>	<i>Professor of Civil Engineering - University of Mississippi</i>
<i>Jim Epps</i>	<i>Professor of Civil Engineering - Mississippi State University</i>

Private Industry Representatives

<i>Kevin Ramsey</i>	<i>Chemical Lime Co. - Business Development Manager</i>
<i>Tom Rosser</i>	<i>Executive Director - Mississippi Concrete Industries Association</i>

Team Member Observations

The team members were asked to note information gathered during the *Peer Exchange* that had specific connections with the focus areas identified by the MDOT Research Division. This section summarizes those observations.

General

- The MDOT Research Division is proactive in seeking out problem areas and seeking solutions.
- The MDOT Research Division is very innovative in their approach to getting things done. Resourceful dedicated employees.

Customer Satisfaction

- The sense of quality and satisfaction within the MDOT of the work conducted by the Research Division is admirable, and no doubt results in getting the most “bang for the buck” from the Research Division’s efforts. This certainly improves the effectiveness of the research program by improving communication within the organization as well as with outside customers.
- The Research Division is well respected and considered an important function by top management of MDOT.
- The discussions provided a clear understanding that the Research Division is highly regarded by MDOT staff and are meeting the needs of agency staff with limited staff resources.
- Comments from each MDOT Department representative interviewed by the Peer Exchange Team were uniformly positive regarding the responsiveness and quality of interactions with the MDOT Research Division. This speaks well for the performance of the MDOT Research Division; the perception within MDOT is generally one of respect and satisfaction.
- The “hands-on” personal attention given to meeting research needs is clearly appreciated and valued by MDOT staff.
- An outstanding professional relationship has been developed with department employees.
- The Research Office is well respected within the Department and by the outside organizations that work with MDOT.
- Involvement of industry partners in the MDOT research effort is viewed by industry as open and receptive to new ideas and innovative technologies; this has facilitated a mutually productive partnering relationship.
- In addition to research, they have developed an exceptionally high ability to meet the operational needs of the Department with a small staff.
- The Research Division is relied upon to support day to day operations of many Divisions within MDOT.
- University Principle Investigators who work for the Department are pleased with the working relationship that has been established, the cooperation and attitude of the Department in meeting common goals.
- University faculty who work on MDOT projects are pleased with the research process and are generally providing results that benefit the agency.

Implementation

- Dissemination of research reports is accomplished without having a dedicated position in this area.
- Research conducted in a particular area is supported by the affected Division or District. This may lead to implementation before the project is completed.
- The implementation strategy used by the Research Division of using supplemental agreements on existing contracts to try new or innovative ideas appears to be effective, if somewhat cumbersome, and is a reflection of the trust between the various MDOT Divisions/Districts and the Research Division. Perhaps a more direct strategy of providing funding within the MDOT for these new ideas (particularly high-return-on-investment ideas) on an as-needed basis and evenly distributed throughout the districts, would be more effective in getting buy-in and result in the use of these ideas by MDOT.
- Efforts to participate in yearly meetings and conferences hosted by other Divisions, e.g., Maintenance and Construction, has effectively promoted research results and formulated new research initiatives.
- The second annual Mississippi Transportation Conference scheduled for this fall should lay the groundwork for transferring the technology developed within the Research Division to the entire MDOT and other transportation entities in Mississippi as well as improving communication among the various units of MDOT and between MDOT and the other Mississippi entities involved in transportation.
- Implementation of research results that address problems and/or improve MDOT procedures is occurring in most of the cases that were discussed because of the user-based source of the need.

Partnering

- Involvement of industry partners in the MDOT research effort is clearly beneficial to the overall mission of the agency.
- The Research Division appears to be further along than most at partnering with industry to conduct research of mutual benefit.

Research Program Content

- The use of a more formalized process for soliciting and prioritizing research needs from the various units of MDOT and industry trade groups, particularly such nontraditional groups as trucking or environmental groups, on an annual or semi-annual basis would help the research group focus its efforts on solving MDOT transportation problems in a more effective manner.

Resources

- The formal research program in MDOT is handled by a select few in the Research Division. In Arkansas, the formal program is spread out among all staff members that also have support functions.
- A large portion of the Research office staff and time is devoted to operational type activities.
- The Research Division is relied upon to support day to day operations of many Divisions within MDOT.

- Only four out of fifteen Research Division staff members are involved in research activities; the remainder of the units is involved in primarily operational activities, e.g., pavement management activities. The MDOT would benefit considerably by increasing the resources available to the Research Division, in terms of personnel and funds, to conduct research and thereby maximize the impact of research results on the MDOT activities.
- Staffing levels at MDOT are such that the use of experimental features or trials of other innovative techniques in future or existing construction projects may be affected.
- Interaction with local established pavement research groups on mutually beneficial research work could help both parties maximize effectiveness of research dollars.
- The presence of the Waterways Experiment Station in Mississippi offers an excellent opportunity for cooperative efforts.
- University research is conducted on an ad-hoc basis rather than a formal research program.
- Contract research is conducted on an as needed basis. No dedicated amount of funds is allocated for contract research in the budget.
- The talent/expertise at the State universities seems to have a limited interest in assisting and working with the Department to solve its problems.
- The University system does not do a very good job supporting the Department's research needs, most likely due to the fact there is no incentive for professors to seek "soft" funding.
- Much of the research needs and future MDOT personnel staffing needs could be met by establishing and maintaining a formal Transportation Research Program with the state's major universities. A sustained program of funding and collaboration, particularly in the area of research involving asphalt and concrete materials, would allow the development of improved pavement and bridge materials and construction practices, while simultaneously developing a much-needed pool of well-trained pavement engineers and technicians for possible employment with the MDOT.

Team Member Take Home Ideas

While the primary objective of the *Peer Exchange* is to satisfy the expectations and concerns of the host state, an equally important intent of the exchange is for all participants to formulate ideas that can be discussed and applied to their agency. The team members were asked to list ideas/issues discussed during the *Peer Exchange* that have potential for application in their organizations. This section summarizes those ideas.

Partnering

- A renewed interest to make industry contacts to discuss mutual areas of concern and to partner on research initiatives.
- Increased input from trade and industry groups into our research efforts would improve our ability to conceive and develop more effective pavement solutions.

Operational Issues

- The use of videotape or video cameras for collecting pavement condition surveys could improve the cost-effectiveness and record-keeping of airfield evaluations, as well as improve the ability of using "tele-engineering" concepts for pavement evaluations.
- Advise staff of integrated certification training program used in Arkansas.

- Advise State Bridge Engineer that MDOT uses a profilograph based bridge deck smoothness specification.

Value of Peer Exchange

- The peer exchange meeting presented an opportunity to meet a number of MDOT staff both in research and other operating Divisions.
- The exchange provided a better understanding of how the research programs in the participating states operate.
- Reconfirmed that the peer exchange is a viable process to improve the overall management of state research programs.
- The concept of a peer exchange versus a peer review and evaluation allows a freer and perhaps more honest exchange of ideas.

Resources

- Development of a long term Master Contract to facilitate the initiation of research projects.
- Investigate better utilization of discretionary funding opportunities such as the Priority Technology Program.
- The use of consultants to investigate problems can be very beneficial.
- The dependency on outside contract personnel for conducting pavement research within an agency can have positive benefits for relieving temporary shortages in in-house labor versus workload, but should be balanced with the need to maintaining long-term continuity in expertise and capabilities.

Technology Transfer/Implementation

- Explore installation of TRB preprint CD-ROM and possibly others on intranet server.
- Include implementation line on research idea form to get ideas for Project Manager and Principal Investigator to include in proposal.
- Share information about I-20 whitetopping project with agency staff.
- Explore distributing copies of technical summary page with distribution list rather than circulating reports to staff with Technology Transfer Engineer. This works well at MDOT and staff appreciates less paper.
- Advise Geotechnical Unit of lime research on going at MDOT.
- Information exchange between research agencies is critical for optimizing the effectiveness of research. Improving communication and interaction between state and federal agencies with common research goals, particularly in the exchange of research results, is a good idea and serves to benefit all parties involved.
- Place emphasis on networking more with intra-departmental meetings and conferences.

Research Program Management

- Include implementation line on research idea form to get ideas for Project Manager and Principal Investigator to include in proposal.
- Consider involving university personnel in the discussions that prioritize the annual research program.

- Include description of pooled fund projects in work program.
- Research contracting at MDOT can occur at any time during the year. Other agencies may want to investigate the feasibility of such a system for contracting “hot projects”.
- The formal research program in MDOT is handled by a select few in the Research Division. In other states, the formal program is spread out among many other staff members that also have support functions.
- Research Contracts may be awarded by MDOT to a specific principal investigator without going through a competitive bid process. This allows contract awards to occur in a shorter time frame.
- Florida’s practice of making annual visits with all interested university staff may be an excellent way to improve relations with the universities that are not familiar with highway agencies.
- Kansas’ set aside of funds for projects yet to be identified in the budget may be of interest to other states.

Acknowledgments

MDOT is particularly indebted to the Peer Exchange Team for their time and talent shared with the MDOT Research Division during the **Peer Exchange**. Their efforts to satisfy our expectations were consistent and faithful.

It is acknowledged that each state transportation agency is unique and operates under rules, regulations and priorities that make it impossible to make direct comparisons between agencies. In spite of this fact, there are many innovative ideas that can be successfully transferred from state to state if the effort is made to gather the information. The following areas that were discussed during the **Peer Exchange** have great potential for improving the management and effectiveness of the MDOT research program and will receive strong attention:

- Either enlarge the MDOT Research Advisory Committee to include all Districts and Divisions or establish technical advisory committee that includes these units to improve the process of identifying research needs.
- Establish action plan to focus efforts of MDOT on maintaining a strong research program.
- Explore potential of using universities to train employees to meet certification requirements and learn other skills.
- Investigate the possibility of funding the purchase of Superpave equipment at state engineering schools to facilitate the implementation of Superpave.
- Investigate the benefits of establishing a highway research center at a state university.
- Pursue strong relationships with state universities.
- Establish annual visits to state universities to share information about MDOT applied research program.
- Investigate potential of transferring deflection analysis function to another unit of MDOT.
- Discuss with MDOT and industry groups the possibility of making periodic van or bus tours to inspect pavements on the state system.
- Continue to seek active partnerships with industry.

APPENDIX A

PEER EXCHANGE SCHEDULE MISSISSIPPI DEPARTMENT OF TRANSPORTATION June 15-18, 1998

Monday, June 15th

MDOT Administration Building

- 2:30 - 5:00 P.M. Meet with Research staff
Al Crawley - Research Engineer
Joy Portera – Asst. Engineer Administrator/Pavement Management
Gayle Albritton – Research Administration & Studies
- 6:00 - 7:00 P.M. Social Hour (Eagle Ridge Conference Center)
- 7:00 - 8:00 P.M. Group Dinner (Eagle Ridge Conference Center)
Presentation about Waterways Experiment Station by David Pittman

Tuesday, June 16th

Eagle Ridge Conference Center

- 8:30 - 10:00 A.M. Top Management
Kenneth Warren – Executive Director
James Kopf – Deputy Executive Director/Chief Engineer
Ms. Brenda Redfern – Director - Administrative Services
Steve McMahan – Asst. Chief Engineer-Operations
Wendel Ruff – Asst. Chief Engineer-Preconstruction
- 10:00 - 10:20 A.M. Break
- 10:20 - 11:15 A.M. Jimmy Brumfield – State Materials Engineer
- 11:15 - 12:00 P.M. Ed Bailey – State Traffic Engineer
- 12:00 - 1:00 P.M. Group Lunch
- 1:00 - 2:00 P.M. John Pickering – Roadway Design Engineer
- 2:00 - 3:00 P.M. Judy Singletary – Right of Way/Environmental Coordinator
- 3:00 - 3:20 P.M. Break
- 3:20 - 4:00 P.M. Buddy Russell – State Construction Engineer
- 4:00 - 4:45 P.M. Gary Hillman – District Engineer-5th District
- 7:00 P.M. Group Dinner

Wednesday, June 17th

Eagle Ridge Conference Center

8:30 - 9:15 A.M.	Tom Rosser – Executive Director-Mississippi Concrete Industries Association
9:15 -10:00 A.M.	K. P. George – Professor of Civil Engineering-University of Mississippi
10:00 - 10:20 A.M.	Break
10:20 - 11:00 A.M.	Kevin Ramsey – Chemical Lime Co. – Business Development Manager
11:00 - 12:00 P.M.	Jim Epps – Professor of Civil Engineering – Mississippi State University
12:00 - 1:00 P.M.	Group Lunch
1:00 - 2:00 P.M.	Work Session for Final Report Input
2:00 - 5:00 P.M.	Free Time

Thursday, June 18th

MDOT Administration Building

8:30 - 9:00 A.M.	Team Review of Final Report
9:00 - 9:30 A.M.	Team Report to MDOT Top Management and Feedback
9:30 - 10:00 A.M.	Team Closeout and Adjourn

APPENDIX B

PEER EXCHANGE TEAM MEMBERS

Alan Meadors
Staff Research Engineer
Planning and Research Division
Arkansas H&TD
P. O. Box 2261
Little Rock, AR 72203
(501) 569-2380, FAX (501) 569-2400

Richard C. Long
Director, Research Center
Florida DOT
605 Suwannee St. MS-30
Tallahassee, FL 32399-0450
(904) 488-8572, FAX (904) 487 3403

David W. Pittman
Chief, Airfields and Pavements Division
CEWES-GP
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
(601) 634-3304, FAX (601) 634-3020

Charles Niessner
Office of Operations & Support R&D
Federal Highway Administration
6300 Georgetown Pike
McLean, VA 22101
(703) 285-2100

Richard L. McReynolds
Engineer of Research
Kansas DOT
2300 Van Buren
Topeka, KS 66611-1195
(785) 296-7410, FAX (785) 296-2526

Dr. K. P. George, *Coordinator*
Professor of Civil Engineering
The University of Mississippi
University, MS 38677
(601) 232-5365, FAX (601) 232-7191