

Melinda L. McGrath
Deputy Executive Director/
Chief Engineer

Brenda Znachko
Deputy Executive Director/
Administration



Steven K. Edwards
Director
Office of Intermodal Planning

Willie Huff
Director
Office of Enforcement

Larry L. "Butch" Brown
Executive Director

P. O. Box 1850 / Jackson, Mississippi 39215-1850 / Telephone (601) 359-7001 / FAX (601) 359-7110 / GoMDOT.com

October 1, 2009

Mr. Andrew H. Hughes
Division Administrator
Federal Highway Administration
666 North Street, Suite 105
Jackson, MS 39202-3199

Dear Mr. Hughes:

SUBJECT: Research Division Peer Exchange Final Report

On September 22nd – 25th, MDOT's Research Division hosted a peer exchange in compliance with 23 CFR Part 420 Subpart B. Participants in this exchange included personnel from MDOT Research, West Virginia DOT, North Carolina DOT, Kansas DOT, FHWA Illinois Resource Center, FHWA Mississippi Division Office and Mississippi State University.

Attached for your information is a copy of the final report generated from this exchange.

Should you have any questions or comments related to this report, please contact at 359-7650 or jwatkins@mdot.state.ms.us.

Sincerely,

James C. Watkins, P.E.
State Research Engineer

Attachment

pc: Randy Battey, P.E.
Assistant Chief Engineer—Operations

Douglas MacDonald, P.E.
FHWA Mississippi Division Office





***Mississippi Department of Transportation
Research Peer Exchange 2009***

**Final Report
State Study 190**

Introduction

In accordance with 23 Code of Federal Regulations (CFR), Section 420, Subpart B, the Mississippi Department of Transportation Research Division hosted a research peer exchange in Biloxi, Mississippi, the week of September 22-25, 2009. Generally, a peer exchange is hosted by a state DOT, who invites other DOTs, Federal Highway Administration (FHWA), and possibly universities to discuss ideas for improvement of the hosting agency's research process. MDOT invited FHWA (one representative from the Mississippi Division office and one from the Resource Center near Chicago, Illinois), West Virginia DOT, North Carolina DOT, Kansas DOT, New York State DOT, and Mississippi State University.

Objectives

A peer exchange can discuss general research management, or the agency can focus on certain parts of the research process. MDOT chose to focus on four themes:

1. Current Research Organization
2. Identifying Improvements That Streamline the Research Program Development
3. Criteria Used to Evaluate a Researcher's Qualifications and Experience To Perform Research Studies for MDOT
4. Evaluation of Final Products from Researchers to Be Used as a Basis for Funding Additional Studies

Dr. Moy Biswas, the peer exchange chair, divided the discussion on each theme into Accomplishments, Opportunities, and General Observations to give MDOT ideas for improving our program development and evaluation criteria. The other state, university, and FHWA attendees also listed Take-Home Items that they thought useful for their own research programs.

The peer exchange was a success, and all attendees received the benefit of each other's experience and ideas. Attached are the discussion points that emerged for each theme and category.

Theme 1: General Research Organization

Accomplishments

- Getting maintained pavement program implemented was noted by other states as an accomplishment.
- MDOT Research Division has significant and challenging responsibilities that include pavement management and non-destructive testing, not just research.
- MDOT is proactive in helping themselves, undergoing training, developing special provisions, specifications, etc.
- MDOT has the ability to maximize available resources and limited staff and knowledge of where to go for help.
- MDOT is purchasing new library software, which will be OCLC compliant.

Opportunities

- MDOT needs to utilize FHWA Resource Centers more.
- MDOT needs to diversify the program, which is currently heavily invested in pavements, and see what upper management is focusing on.
- Because of diversity, MDOT has potential for high benefit/cost (example, the warranty), and could possibly ask for more money as a result.
- MDOT could contribute our catalog/library to OCLC since we can possibly get financial credit if we catalog.
- Library needs to be consistent with state library system, but MDOT is working with Mississippi Library Commission on this.
- We could do more marketing of research efforts, such as posting research reports or executive summary, a less technical summary with benefit/cost ratio for general audiences.
- Scan only those documents from the library unavailable on the internet.

General Observations

- Mississippi has significant legal and administrative constraints on contracting.
- Diversity and inclusion of operational tasks are good but spread staff thin.
- For every research project, North Carolina has a steering committee and subcommittee. They sometimes implement findings while project is going on. People who are interested in the project usually already know, so NC may not want to have another step in the process.

Theme 1: General Research Organization

Take-Home Items

FHWA

- Looking for input and participation from FHWA Resource Center in Research Advisory Committee (RAC): Contact division office and submit request for RC participation

Mississippi

- Engage Resource Center/FHWA through our division office
- Consider partnering with another state agency to obtain research money

New York

- Considering the differences of each state's size, budget, and staffing, etc., we still have much in common and many challenges: "We do what we can do."
- We can possibly get money from other divisions, example, getting safety funds to buy skid truck.

North Carolina

- Web-enabled library software
- Scan all library documents, except TRB etc.
- Redo research manual
- Engage FHWA division office

Kansas

- Put one person in charge of pooled funds

West Virginia

- Develop ME Pavement Design Guide (MEPDG)
- Warranty/maintained pavements
- Staffing numbers—KS 22, NY 20, MS 12, WV 3, NC 9
- FHWA is clearinghouse for implementing
- Some groups diverse (include pavement management, etc.)

Theme 2: Identifying Improvements That Streamline the Research Program Development

Accomplishments

- Getting a champion is a good idea.
- Process is basically good; MDOT is just looking to improve it.

Opportunities

- Back up RAC meeting to before April 15 to allow us to have contracts in place before August 16 —This would help universities be able to allot graduate slots and allocate resources.
- Preparation of work program can be done after the RAC meeting and after the projects are approved. We can give upper management the executive summary and presentation, and then finalize the full-blown work program document.
- We could cut down 6 weeks from solicitation of proposals to turning them in since many wait until the last minute anyhow.
- Put a word limit on executive summaries.
- How to deal with federal FY beginning October 1—MDOT could possibly use leftover funds from 7/1 to 9/30, would have to work with FHWA division office.
- Perform a budget on existing projects going into the next FY.
- Tie payments to tasks on new projects.
- Once you approve a project, an agency should not have to go year by year. We need to talk to Budget Programming/FMD/upper management to see if this can be changed.
- Design an automated database/application to keep track of projects and progress reports. Talk to PennDOT. FHWA should be amenable to supporting this as a research project. NC has work program template.
- Present to Commission once in awhile. (Assistant Chief Engineer—Operations does this).
- Do not assume that upper management needs to always be part of the day-to-day research process. They need to be informed rather than down in the details.
- Bring other people into organization for ideas—MPOs, DOT people, FHWA, contractors, conferences, etc. Expand network of solicitation.
- Get internal ideas by engaging DOT people.
- Go to quarterly or per-task invoicing.
- Get research liaisons/partners in different divisions to see what trends are coming up and what is important.
- Engage intermodal and non-pavement-related parts of the DOT. Use personal approach, talk to them.
- Marketing, marketing, marketing!

General Observations

- Outside/inexperienced input on TAC can be helpful.

Theme 2: Identifying Improvements That Streamline the Research Program Development

Take-Home Items

Kansas

- Investigate billing options of quarterly or completed tasks.
- Update work program through year in database.

West Virginia

- Meet with division directors, and then go to researchers.
- Leave \$300,000 budget in case something else is needed.
- Having a champion would be good for obtaining funding.
- Evaluate alternate mowing regimens. This is a new study in Mississippi that WV may want to do.
- District engineers rotate on RAC every two years.
- Most research is in-state.
- Look at percent paid per task.
- Send a request to researcher to see status of research to use for planning.

New York

- Executive involvement in research process can cause delays.
- Use electronic means to streamline process.

North Carolina

- Participate in KDOT Roundabout Transportation Pooled Fund (TPF) study.
- Engage NCDOT using internal conferences.
- Automate and streamline document submittal.

Mississippi State University

- Have an annual meeting between universities and MDOT similar to the 2006 workshop so potential principal investigators (PIs) can see what is important to MDOT.

Theme 3: Criteria Used to Evaluate a Researcher's Qualifications and Experience To Perform Research Studies for MDOT

Accomplishments

- Criteria sheet presented by Bill Barstis is a good start.
- It is good that MDOT has recognized need for establishing criteria for evaluating prospective researchers.

Opportunities

- Opportunity to develop something other states would be interested in; can possibly present at RAC meeting.
- NC uses DOT people to chair steering committees. They prepare a standard agenda for kickoff and closeout meeting for newer chairs. Project manager (PM) will guide new chair. PM is from the Research office staff.
- MDOT could mentor new faculty or PI—tell them what expectations and deliverables are.
- We could use master agreement or small contract, technical assistance work order for lab work or other studies.
- Give more lead-time for universities to make adjustments as they also have limited resources.
- Interact with potential researchers (consultants and faculty).
- MDOT can put on RFP that performance will be looked at.
- Be sure who is actually doing the work; if necessary, question why, for example, so many are involved and what tasks will be for each one.
- Be aware of DBE, HBCU, and audit requirements—include disclosure requirements in master agreements and contracts.

General Observations

- Usually research projects go well, but improvement is incremental. The problem is not huge at this point.
- Tier 1 (top 25 research universities in country) universities require junior faculty to prove themselves independently, so senior faculty may not always need to get involved in a study.
- DOT research is generally focused, 1-2 year jobs, so we do not always need many researchers.
- Collaboration vs. competition--Make sure that a partnership between universities or consultants is necessary and cost-effective. Sometimes competition results in a better product rather than collaboration.

Theme 3: Criteria Used to Evaluate a Researcher's Qualifications and Experience To Perform Research Studies for MDOT

Take-Home Items

Kansas

- Add PI qualification module to process.

West Virginia

- Use quick turnaround contract/80-hr jobs.
- WV has open-ended \$80,000 contract with asphalt expert, which has worked out well.
- Test project idea is good, give researcher small projects first.
- Accountability should go both ways—hold PIs and DOT PMs accountable.
- Pre-qualification process—WV has small pool of researchers, so could pre-qualify for area of expertise.
- Amount of current workload is important.
- When putting RFP criteria on the street, list scoring criteria but do not list points or weighting.

New York

- Dedicated pool of PMs—reduce or eliminate variability in PM performance
- Have an interview process for PIs close in score or for major projects.
- Let PIs know that performance will be considered in selection process.
- We have to treat researchers as we do other contractors.

North Carolina

- Use National Science Foundation (NSF) Curriculum Vitae (CV) as part of proposal. This abbreviated CV shows only research that is current, timely, and relevant to the project proposal.

FHWA

- Use National Science Foundation (NSF) Curriculum Vitae (CV) as part of proposal.

Mississippi State University

- Communication with DOT and FHWA has been beneficial for the university.

Theme 4: Evaluation of Final Products from Researchers to Be Used as Basis for Funding Additional Studies

Accomplishments

- MDOT has recognized need for evaluating final product as well as presentation for further research.
- Holding the peer exchange was a good idea.
- MDOT's Consultant Service Unit's performance evaluation form is a good start. This is already required on professional services, engineering services, and master agreement contracts.

Opportunities

- MDOT could require and/or put extra money for editor or journalism/English major in proposal to make sure that reports are grammatically correct and formatted well.
- Let faculty member or other PI know that responsibility, performance, timely responsiveness and accountability will be considered. Communicate what your expectations are as far as updates, deadlines, etc.
- Recognize that there is a supervisory hierarchy. You may have to talk to PI's supervisor to let him/her know that your study is a priority and will impact their unit.
- We can get away from long time extensions; for example, West Virginia does not allow any no-cost time extensions longer than four months.
- Steering and Implementation Committees (STICs) are used in North Carolina. They have continual meetings to ensure that good progress is being made and to head off any problems.
- You can go to contract/grant part of the university instead of the dean or department head because sometimes the department head may not be meeting deadlines.
- We might consider using consistent accounting line items between DOT and universities.
- Use implementation plan—"Begin with the end in mind," one of the *Seven Habits of Highly Effective People*. This might be in the form of a specification or procedure.

General Observations

- Strategic/fundamental research as opposed to immediately applicable research can be important—NC does this especially in the area of biological/environmental concerns.
- Some agencies do not have resources to do fundamental research, but we can get other agencies involved.
- Sometimes what appears to be a grammar problem is really a content problem.
- We may not always want a product or recommendation—we may just want the information and then the agency will decide what to do with it.
- Sometimes we do want a recommendation.

Theme 4: Evaluation of Final Products from Researchers to Be Used as Basis for Funding Additional Studies

Take-Home Items

Kansas

- Review our process and see what our next step is to address complaints.
- Use feedback to improve performance.

West Virginia

- Evaluation of both researchers and PMs.
- WV likes Kansas's implementation plan form.
- Efforts need to be worthwhile.
- Perhaps look at editing in the proposal.
- Understand supervisory hierarchy of researcher.
- Steering/implementation committees

New York

- The importance of documenting performance in order to take any action is important.
- Giving feedback to PI and PMs could be important to making any improvements.
- Borrow as much as I can from the formats supplied by others. Do not make it a burden on anyone. It is a way to improve the process.

North Carolina

- Look into Kansas DOT evaluation forms.
- Evaluation of research management process.

FHWA

- Have implementation strategy as part of proposal.
- Have task deliverables as interim steps and monitor at each step.

Mississippi State University

- MSU has a better understanding of MDOT's issues.
- Recognize DOT's deadlines.
- Communicate early and often.

REFERENCES

Covey, Stephen R. 1989. *The Seven Habits of Highly Effective People*. New York: Free Press.

APPENDIX A: AGENDA

Mississippi Research Peer Exchange 2009

THURSDAY	
1:30 pm to 2:00 pm	Introductions
2:00 pm to 5:00 pm	State and FHWA Program Presentations
6:00 pm	Dinner
FRIDAY	
7:30 am to 8:00 am	Breakfast
8:00 am to 9:30 am	Panel-Discussion States and FHWA: Identifying Improvements that Streamline the Research Program Development Process
9:30 am to 9:45 am	Break
9:45 am to 12:00 pm	Panel-Discussion: Continued
12:00 pm to 1:00 pm	Lunch
1:00 pm to 2:30 pm	Panel-Discussion States and FHWA: Criteria Used to Evaluate a Researcher's Qualifications and Experience To Perform Research Studies for MDOT
2:30 pm to 2:45 pm	Break
2:45 pm to 5:00 pm	Panel-Discussion States and FHWA: Continued
6:00 pm	Dinner

7:30 am to 8:00 am	Breakfast
8:00 am to 9:30 am	Panel-Discussion States and FHWA: Evaluate Final Products from Researchers to be Used as Basis for Funding Additional Studies
9:30 am to 9:45 am	Break
9:45 am to 12:00 am	Panel-Discussion States and FHWA: Continued
12:00 am to 1:00 pm	Lunch
1:00 pm to 5:00 pm	Technical Tour: Highway 90 Bridges Rebuilt after Hurricane Katrina
5:00 pm	Adjourn
6:00 pm	Dinner

APPENDIX B: CONTACTS LIST

Dr. Mrinmay ("Moy") Biswas, P.E.

Manager, Office of Research
North Carolina Department of Transportation
1549 Mail Service Center
Raleigh, NC 27699-1549
Phone: (919) 508-1865
Fax: (919) 715-0137
www.ncdot.org/~research

Donald L. ("Donny") Williams, P.E.

West Virginia Department of Transportation
Division of Highways
Program Planning and Administration Division
Research and Special Studies
1900 Kanawha Blvd. East
Room 816
Charleston, WV 25305
Fax: 304-558-3783
Cell: 304-677-4000
Donald.L.Williams@wv.gov

Rodney A. Montney, P.E.

Engineer of Research
Kansas Department of Transportation
Dwight D. Eisenhower State Office Building
700 S.W. Harrison Street
Topeka, KS 66603-3754
Phone: 785-291-3844
Fax - (785) 296-0287
Rodney@ksdot.org

Gary Frederick, P.E.

Director, Research and Development
NYS Dept. of Transportation
50 Wolf Rd, Albany NY, 12232
Phone: 518-457-4645
gfrederick@dot.state.ny.us

Douglas ("Doug") MacDonald, P.E.

FHWA Mississippi Division
666 North Street, Suite 105
Jackson, MS 39202-3199
Phone: 601-965-4228
Fax: 601-965-4231
douglas.macdonald@fhwa.dot.gov

Robert L. ("Bob") Orthmeyer, P.E.

Senior Pavement Engineer
FHWA-Resource Center
19900 Governors Drive
Suite 301
Olympia Fields, IL 60461
Phone: (708) 283-3533
Mobile: (708) 574-8134
robert.orthmeyer@dot.gov

William F. ("Bill") Barstis, P.E.

Materials Research Engineer
Mississippi Department of Transportation
Research Division 86-01
PO Box 1850
Jackson, MS 39215-1850
Phone: 601-359-7650
Fax: 601-359-7634
wbarstis@mdot.state.ms.us

Jordan Whittington

Engineer Intern
Mississippi Department of Transportation
Research Division 86-01
PO Box 1850
Jackson, MS 39215-1850
Phone: 601-359-7650
Fax: 601-359-7634
jswittington@mdot.state.ms.us

Cynthia J. ("Cindy") Smith, P.E.

Assistant State Research Engineer
Mississippi Department of Transportation
Research Division 86-01
PO Box 1850
Jackson, MS 39215-1850
Phone: 601-359-7650
Fax: 601-359-7634
csmith@mdot.state.ms.us

James C. Watkins, P.E.
State Research Engineer
Mississippi Department of Transportation
Research Division 86-01
PO Box 1850
Jackson, MS 39215-1850
Phone: 601-359-7650
Fax: 601-359-7634
jwatkins@mdot.state.ms.us

Dennis D. Truax, Ph.D., P.E., DEE, F.ASCE
Department of Civil and Environmental Engineering
Mississippi State University
PO Box 9546, 235 Walker Hall, 501 Hardy Road
Mississippi State, MS 39762-9546
Phone: 662.325.7187
Fax: 662.325.7189
Truax@CEE.MsState.Edu
<http://www.cee.msstate.edu/DennisTruax.htm>