

GENERAL INFORMATION

Any questions relative to the Research Problem Statement must be submitted by e-mail to: mdot-research@michigan.gov. Questions must be received by **February 18, 2011 at 5:00 p.m. EST**. All questions and answers will be placed on the MDOT RFP Web site as soon as possible after receipt of the questions and at least three (3) days prior to the due date listed above. The names of organizations submitting questions will not be disclosed.

The prime contractor must be a Michigan university. An organization located outside of Michigan may be included in the research team, but cannot be the primary contractor. A consultant located in Michigan may be included in the research team, but cannot be the primary contractor. MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to participate as a subcontractor. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal.

MDOT AND ORBP FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION:

- 5100D – Request for Proposal Cover Sheet
- 5100G – Certification of Key Personnel
- 5100I – Conflict of Interest Statement
- ORBP Research Proposal Budget Form Worksheet
- ORBP Schedule of Research Activities Form
- ORBP Deliverables Table
- ORBP Implementation Project Recommendation Form

**OFFICE OF RESEARCH & BEST PRACTICES
MDOT RESEARCH PROGRAM
2010 PROBLEM STATEMENT**

PROBLEM TITLE

Analyze and Evaluate MDOT's accelerated contracting techniques, including incentive/disincentive (I/D) methods relative to Cost, and Impact on Long Term Pavement Performance.

ORBP NO. OR10-021	STRATEGIC PRIORITY NO. 13	CRITICAL ISSUE CODE 5-Finance	MDOT PROJECT CATEGORY 2-d
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PROBLEM TO ADDRESS

BRIEFLY DESCRIBE THE PROBLEM TO BE ADDRESSED AND WHY IT IS AN ISSUE FOR MDOT

The department has been using monetary incentive payments for many years through a variety of methods/work items to reduce user delay. We have not successfully determined whether the I/D for expediting construction captures the true cost (user delay savings vs. actual I/D dollars). We have also not identified the impacts to long term pavement performance for projects that have been expedited vs. conventional scheduling. The department has not identified the most effective contractual I/D tool for expediting construction projects based on different types of work.

RESEARCH OBJECTIVES AND TASKS

LIST THE RESEARCH OBJECTIVE(S) TO BE ACCOMPLISHED

1. Review the 2010 MDOT document on Innovative Construction Contracting, especially the portion on Acceleration Techniques.
2. Prepare a list of all MDOT projects built via acceleration techniques using I/D methods mentioned in the Innovation Construction Contracting document.
3. Research and prepare a list of similar (work type and vintage) MDOT projects that were constructed under standard contract means.
4. Compare accelerated (I/D methods) projects to standard contract projects. The analysis should include but not be limited to;
 - Comparing user delay cost savings versus extra dollars spent on incentives, bid costs and construction oversight.
 - Comparing long term pavement or other performance differences.
5. Compare analysis results to the listed "Advantages and Disadvantages" and "Recommendations for Use" of each acceleration technique in the Innovative Construction Contracting document.

LIST THE MAJOR TASKS TO ACCOMPLISH THE RESEARCH OBJECTIVES:

ESTIMATED PERSON HOURS

1. Prepare a list of all MDOT projects that have used acceleration techniques.	120
2. Prepare a list of similar type (to those in list in task 1 above) MDOT projects built via standard contract methods.	120
3. Report differences in performance between projects using acceleration techniques versus those using standard contract methods..	600
4. Based on the analysis, quantitatively comment on the listed "Advantages and Disadvantages" and "Recommendations for Use" of each acceleration technique in the Innovative Construction Contracting document.	280

ESTIMATED COST AND TIMELINE

ESTIMATE THE COST OF THIS RESEARCH STUDY (Please provide a cost range [min. and max.] associated with the person hours by task above)
Tier I (\$25,000 - \$99,000)

PROVIDE A PROPOSED TIMELINE FOR THE PROJECT (At minimum, the expected duration of the project)
10/1/2011 to 9/30/2012

REQUIRED COMPLETION DATE (At minimum, the date by which results are needed to be applicable)
9/30/2012

BUDGET INFORMATION

(For each FY, list suggested minimum and maximum budgets as targets. Indirect Cost Rate is for ORBP use only.)

TOTAL BUDGET (BY FY)	FY1	FY2	FY3	FY4	INDIRECT COST RATE
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DELIVERABLES

WHAT DELIVERABLES SHOULD BE RECEIVED AT THE END OF THIS PROJECT? (e.g., usable technical product, design method, techniques, training, workshops, report, manual of practice, policy, procedure, specification, standard, software, hardware, equipment, training tools, etc.)
Written report of research review findings, conclusions, and recommendations, and a decision Matrix/Model for deciding correct I/D method tool.

MDOT INVOLVEMENT (What will MDOT provide for this project and when)

Based on limited resources and budgets, MDOT will not be involved in the project other than project management.

URGENCY, PAYOFF POTENTIAL AND IMPLEMENTATION

HOW URGENT IS THIS RESEARCH? IS IT IMPORTANT THAT IT BE DONE SOON? IF SO, WHY?

There are no date specific project completion dates for this study. Having the conclusions at the earliest possible date could result in the department's

decision about the future use of I/D, which could impact the quality of our pavement, and the cost of the program.

DESCRIBE HOW THE PROPOSED RESULTS OF THIS PROJECT CAN BE IMPLEMENTED AT MDOT

The development of a matrix/model for deciding the correct I/D method/tool for project type would be included as a part of the design/scoping procedure manual when a project is being developed.

DESCRIBE HOW MDOT WILL BENEFIT FROM THE IMPLEMENTATION OF THIS PROJECT AND WHO THE BENEFICIARIES WILL BE. INCLUDE A DISCUSSION OF HOW MDOT DIVISIONS, OTHER THAN THAT OF THE PROBLEM SUBMITTER, WILL BENEFIT AND HOW.

Should the research conclude that I/Ds are providing significant cost effectiveness for our projects, the beneficiaries would be the department, the state, and the citizens of Michigan.

POTENTIAL OBSTACLES

WHAT RISKS OR OBSTACLES MAY MAKE CARRYING OUT THIS PROJECT DIFFICULT? WHAT STRATEGIES WILL YOU USE TO OVERCOME THEM?

Based on a prior related research project, Value Affect of Construction Incentive Payments on Pavement Performance, it may not be possible to isolate the impacts of I/D on long term pavement performance, combined with the fact there are too many variables to make an accurate investigation of the long term impact of incentives on long term pavement performance (pavement designs, weather conditions, traffic loads, etc.).

POSSIBLE INVESTIGATOR(S)

DESIRED QUALIFICATIONS IN AN INVESTIGATOR

Based on my understanding on the stated research objectives and tasks, the research team should have the following skills:

- (1) Traffic engineering skill for measuring traffic related delay time and for equating user delay costs.
 - (2) Engineering knowledge of transportation project contracting methods especially relative to MDOT.
 - (3) Pavement engineering skill and knowledge of MDOT pavement management systems.
 - (4) Statistical skill to develop an efficient statistical experiment design and the corresponding sampling plan to obtain the needed data involving (1), (2), and (3) for performing statistical analyses to set proper I/D rules.
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