

Missouri
Department
of Transportation



Kevin Keith, Interim Director

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September 16, 2010

Dear Research Partner:

The Missouri Highways and Transportation Commission requests proposals from qualified organizations—namely private consultants, universities, and research organizations—to furnish professional services as described in the following attachment to be coordinated by the Organizational Results (OR) unit.

Please submit a proposal for project TRyy1110 entitled, “Design and Evaluation of High-Volume Fly Ash (HVFA) Concrete Mixes.” Your submittal must include a work plan, the proposed project team and its background, and any related projects now active or recently completed by your organization. The project team must be led by a licensed professional engineer in the state of Missouri and the final report must be sealed, in accordance with the provisions of Chapter 327 RSMo.

The selection committee will use Qualification Based Selection. A “not to exceed” budget amount is included in the RFP to assist with the required scope, but budgets are not to be included with the proposal submissions, and will not be presented to the selection committee.

Please deliver all proposals to the OR Contract Administrator indicated in the attachment by October 25, 2010. More information about project contracting in general can be found at: www.modot.mo.gov/services/OR/orRFP.htm.

Sincerely,

Mara Campbell
Organizational Results Director

Attachment

Request For Proposals (RFP)
Project Specific Requirements:

This document contains information and requirements for only this RFP. A “Standard Requirements” document contains additional needs for all research proposals and contracting. Submitters should review both this document and the Standard Requirements document, available from the OR Contract Administrator (identified at the end of this document) or: www.modot.org/services/OR/orTemplates.htm

TRyy1110
Design and Evaluation of High-Volume Fly Ash (HVFA) Concrete Mixes

Project budget: Not to exceed \$100,000.

Background:

Sustainability is at the forefront of our society. Unfortunately, concrete, our most common construction material, is manufactured from Portland cement, the production of which generates a significant amount of carbon dioxide. For each pound of cement produced, there is approximately one pound of carbon dioxide released to the atmosphere. However, fly ash offers both the potential to reduce the amount of cement in concrete and improve the properties of the hardened material. Yet most specifications limit the amount of fly ash to less than 35 or 40 percent cement replacement. Recent studies have shown that higher cement replacement percentages, even up to 75 percent, can result in excellent concrete in terms of both strength and durability. Furthermore, only about 40 percent of fly ash is currently used for concrete and other applications, so the remaining 60 percent is placed into landfills. HVFA concrete offers a potential green solution.

Objectives:

The goal of the proposed study is to design, test, and evaluate high-volume fly ash concrete mixtures. HVFA concrete uses a waste product to significantly reduce the greenhouse gas emissions associated with the production of Portland cement.

Project Requirements and Deliverables:

The anticipated deliverable from this study will be a guide for specifying HVFA concrete in transportation-related infrastructure. This guide will provide both MoDOT and infrastructure designers a resource to design and implement HVFA mixes in Missouri.

Based on pilot studies performed recently, the Class C fly ash produced in Missouri has significant potential in HVFA concrete mixtures. The addition of certain additives will produce a concrete with sufficient early age strength to combat the problem of slow strength gain normally associated with HVFA concrete. There is a significant potential in Missouri to turn a waste product into a material that can benefit all Missourians, and MoDOT can lead the way.

Task 1: Literature Review – a summary of the current state of the art information shall be investigated and reported along with a list of references found and used for this study.

Task 2: Determine the hardened properties of HVFA concrete with Missouri aggregates including, but not limited to: strength gain over time, compressive, tensile strength, shear strength, creep, shrinkage, bond development length, air void system (ASTM C457), permeability, Modulus of Elasticity, freeze/thaw durability (AASHTO T161), scaling (ASTM C672).

Task 3: Casting and testing a scale model of a reinforced concrete member and pavement section for testing in the laboratory, and/or incorporating in a pilot project of a scheduled construction project.

Task 4: Present findings of tests and/or a Finite Element Analysis of the structure made with the proposed HVFA mix design(s) in a Final Report. The Final Report should include conclusions and recommendations for future use by MoDOT.

Task 5: Develop recommendations for specifications and implementation of HVFA concrete..

Task 6: Determine a “value” for MoDOT implementing the research.

Task 7: Finally a formal presentation will be given to MoDOT to summarize the work and answer any remaining questions.

Project Schedule:

The following is an estimate of the project timeline or information on key dates within the project, presuming the project starts by December 6, 2010. Proposals need to include a work plan with a proposed timeline. While alternative timelines will be considered, an extension is unlikely. The project timeline will be finalized during the contracting phase.

Monthly: E-mail and phone communications with MoDOT contacts are required to provide on-going updates of progress.

Last working day of each quarter: Quarterly updates on work accomplished during the quarter are due on or before the last working day of any March, June, September, and December during the course of the project. A technical memo is required with a simple listing of progress on each of the Tasks spelled out in the Requirements and Deliverables above, any test results, laboratory work, etc. that has been accomplished during the quarter.

February 4, 2011: A summary of a literature search on past use and studies done on use of high volumes of waste products used in concrete should be submitted to MoDOT.

July 7, 2011: An Interim Presentation to update MoDOT on the progress and direction of the project. This is in addition to the necessary communications between the Principal Investigator(s) and MoDOT contacts throughout the project.

March 1, 2012: Draft Final Report is due (exact date will be stated in final work plan during the contracting phase.) One or more revisions should be anticipated. A final report must have the standard documentation form completed and should have sections consistent with the typical research report.

(For report templates and a standard form see: www.modot.org/services/OR/orTemplates.htm.)

March 1, 2012: Draft specification is due (exact date will be stated in final work plan during the contracting phase.)

March 12-22, 2012: A presentation should be coordinated with project team and MoDOT contacts.

April 5, 2012: Review of drafts will be completed. The time between review and next due date is to allow for final changes and formatting.

April 16, 2012: Final Report and final specification is due (exact date will be stated in final work plan during the contracting phase.) The final report must have the standard documentation form completed and should have sections consistent with the typical research report.

April 16, 2012: A technical memo is required with a simple listing of results from the research, a list of recommendations based on the list, and a preliminary list of ideas to implement the recommendations.

May 15, 2012: Final invoice is due.

May 31, 2012: Contract ends.

Special Notes:

Project budget is not to exceed \$100,000. A budget is not to be included in the proposal, but will be required for the contract and must be within this limit.

Reporting templates and standard report forms are available from the OR Contract Administrator or the web site: www.modot.org/services/OR/orTemplates.htm

RFP Requirements:

- Proposals must be no more than 12 pages with a font size no less than 11 points. This length limit does not include forms or resumes attached to the proposal.
- The “Standard Requirements” document provides further details and links to the required forms. It is available from the OR Contract Administrator or at:
www.modot.org/services/OR/orTemplates.htm
- Proposals will be evaluated by an agency and stakeholder team with knowledge and backgrounds in relevant areas for this project. Selection of the successful proposer will be based on the proposer’s demonstrated knowledge in the required areas, the merit of the proposed methods and approach in achieving the desired goals, the experience and qualifications of the team, the plan for ensuring implementation of results, and the adequacy and availability of team members to complete the work in a timely manner.

RFP Schedule:

The following timeline must be met for a proposal to be accepted.

Date:	Action:
September 16, 2010	MoDOT posts RFP to the website: www.modot.mo.gov/services/OR/orRFP.htm
September 30, 2010	Written comments or questions must be submitted to OR Contract Administrator.
October 14, 2010	MoDOT will post written responses publicly on the website: www.modot.mo.gov/services/OR/orRFP.htm
October 25, 2010	Written proposals must be submitted to OR Contract Administrator.
November 5, 2010	MoDOT will notify submitters about project selection, or if needed about interviews to finalize selection.

Contracting Requirements:

- The successful team will be required to complete additional documentation and enter into a contract such as a “Standard Research Agreement” or “Task Order.” Applicants should be aware of these additional needs so contracting can proceed in a timely manner.
- Standard contracts, forms, attachment templates and additional information are available from the OR Contract Administrator or the web site:
www.modot.org/services/OR/orTemplates.htm

Contact Information:

Proposals must be either hand delivered by close of business; or faxed, emailed, or mailed by midnight (Central Standard Time) according to time stamp or postmark; on the due date indicated below. Please reference the project title since more than one RFP may be due at one time. Electronic proposals are encouraged. They may be faxed or emailed to the OR Contract Administrator:

Karmen.Stockman@modot.mo.gov

Fax: 573 526-4324

Proposal packages suitable for duplicating may be submitted by mail or hand delivery to:

Organizational Results Contract Administrator

Missouri Department of Transportation

2217 St. Mary's Boulevard, West

PO Box 270

Jefferson City, MO 65109