

February 1, 2022

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 request for proposal to be coordinated by the Research Unit of the Construction and Materials Division.

Please submit a proposal for project **TR202205** entitled, “**Analysis of Asphalt Mixtures Using Alternative Aggregate in SMA and Superpave.**” 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 firm. 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 submit all proposals to MoDOTResearchRFP@modot.mo.gov by **March 21, 2022 10:00 AM (CST)**. More information about project contracting in general can be found at <https://www.modot.org/information-researchers> under RFP documents.

Sincerely,



Jen Harper
Research Director



Background

Over the years the Missouri Department of Transportation's (MoDOT) hot mix asphalt (HMA) paving projects have added new innovative mix designs including Stone Matrix Asphalt (SMA) and Superior Performing Asphalt Pavements (Superpave). SMA is a gap-graded bituminous mixture which is designed to be tough, stable, and rut-resistant. The higher concentrations of coarse aggregates in the mix provide strength and a higher asphalt content provides more durability. The SMA aggregate gradation creates stone-to-stone contact for greater structural capacity. The Superpave mix design method consists of performance-graded asphalt binder specifications and volumetric mix design test procedures.

For any HMA mix the aggregate durability is a major factor in the performance of the mix. The SMA is generally more expensive than a typical dense-graded HMA because it requires more durable aggregates, a higher asphalt content along with modified asphalt binder and fibers. Most MoDOT SMA projects use Porphyry (Traprock), the source of which is confined to the southeastern part of the State. MoDOT is interested in finding other locally available, durable crushed aggregates for use in SMA and higher level Superpave mixes that could handle interstate traffic and are less expensive than Traprock.

The objective of this study is to identify and compare alternatives to Traprock through testing and laboratory evaluation along with conducting a literature review of current practices of neighboring DOTs.

Objectives

The Contractor will conduct a comprehensive literature review to identify other hard, durable aggregates that may be used as alternatives to Porphyry (Traprock), for use in SMA and Superpave mixes. The contractor will acquire comparable quality aggregates to Porphyry (Traprock) that will meet or compare with MoDOT specification requirements. The list of potential materials will be reviewed by the Technical Advisory Committee (TAC) for selection of alternative materials to include in the evaluation.

Besides the TAC-approved materials, the researchers will also test and evaluate (1) Traprock, which will serve as a baseline for comparison, (2) chat (a byproduct of lead mining) and (3) crushed river gravel.

Durability testing in the evaluation should include but not be limited to; stripping, rutting and abrasion testing.

The proportioning of coarse aggregates in the proposed mixes should compare favorably with MoDOT's current specification, which states, "for LP (limestone porphyry) and SMA mixtures, at least 50 percent by volume of the aggregate shall be crushed porphyry retained on the following sieves: No. 30 for SP048, No. 16 for SP095 and No. 8 for SP125. Depending on the actual gradation of porphyry aggregate furnished, the amount of crushed porphyry required may vary, however at least 40 percent by weight of crushed porphyry will be required. Steel slag may be substituted for porphyry in LP and SM mixtures, except at least 45 percent by weight of crushed porphyry and/or slag will be required. The engineer may approve the use of other hard, durable aggregate in addition to porphyry and steel slag. When an SMR mixture is designated, the mixture shall contain aggregate blends with at least 30 percent non-carbonate material in accordance with Sec 403.3.5."

Project Requirements

Task 1: Project Management

The Contractor will facilitate a kick-off meeting with MoDOT to review the work plan, scope, and schedule; and establish a protocol for regular ongoing communications and coordination with the team.

The finalized work plan will detail implementation of the following tasks as well as the resources and schedule required to carry them out.

Task 2: Literature Review

The Contractor will conduct a comprehensive literature review to identify other locally available hard, durable aggregates that may be used as alternatives to Porphyry (Traprock), for use in SMA and Superpave mixes. An investigation of other DOTs use of alternative materials will be conducted.

A list of potential alternative aggregates, known or believed to work well in an SMA or Superpave mix, will be created from the literature reviews and investigations. The list must include details of how each potential material would likely be incorporated into a mix design, the benefits, and concerns with presence in a mix, and any other notable details, including but not limited to, the associated costs, availability/reliability of the source of material along with durability testing records.

The list of potential materials will be reviewed by the Technical Advisory Committee (TAC) for selection of alternative materials to include in the evaluation.

Task 3: Aggregate Selection

The Contractor will provide a list of aggregates for consideration to be evaluated in this project for SMA and Superpave mixtures. MoDOT will require Traprock to be tested and used as the control aggregate. Two additional aggregates will also be tested, Chat and crushed river gravel. Material source, price and availability shall be included with each material included on the list of materials.

The list of potential materials will be reviewed by the Technical Advisory Committee (TAC) for selection of alternative materials to include in the evaluation.

Task 4: Mix Design

The Contractor shall, in consultation with MoDOT, generate a proposed mix design that will utilize the different aggregates identified, while still in compliance with MoDOT specifications.

Selected aggregates and asphalt binder will be procured by the researchers in sufficient quantities as to create the necessary trial mixes.

The Offeror shall provide detail in their proposal as to their proposed methodology for designing mixes with the alternative aggregates, and considerations for adapting mix designs to meet or exceed current performance standards.

Task 5: Laboratory Testing

Aggregate and mix durability testing to be performed should include but is not limited to; stripping, rutting and abrasion testing. If available, the researchers will provide MoDOT with potential new test methods to be used for acceptance.

Task 6: Develop Draft Final Report, Research Summary and Presentation

The Contractor will develop a final report detailing the tasks completed during the project including any and all findings generated during the project's duration as well as recommendations for implementation. A presentation for MoDOT staff, summarizing important or significant details of the project, will also be provided.

Task 7: Delivery of Final Report, Research Summary and Presentation

Project Deliverables

For templates and forms for reports and plans, visit <https://www.modot.org/information-researchers>.

Email Communications

E-mail and phone communications between the Principal Investigator(s) and MoDOT contacts as necessary are required to provide on-going updates of progress throughout the project

Data Management Plan

The plan is a formal document that describes the data that is acquired, created or produced during the project, specifies who owns it and who can access it as well as information on how it will be described, managed, analyzed, stored, shared and preserved during and after the project is over. Please refer to templates on the [website](#).

Quarterly Reports

Quarterly reports should be submitted throughout the project on the last day of March, June, September, and December. The quarterly reports are not intended to replace any additional correspondence between the research team and MoDOT needed to keep the project moving. Please refer to template on the [website](#).

Interim Presentation

An interim presentation shall be scheduled near the mid-point of the project to update MoDOT on the progress and the direction of the project. The purpose of the interim presentation is to evaluate the progress and determine if any mid-project corrections are necessary.

Draft Final Report and Research Summary

These drafts should be final products except for revisions based on MoDOT's review. A final report must include a completed Technical Report Documentation page. Please refer to **Publication Guidelines** and summary template on the [website](#).

Final Report and Final Research Summary

After MoDOT's review is complete and documents have been edited to MoDOT's satisfaction, final documents should be submitted as a Word documents (unless otherwise instructed). Please refer to **Publication Guidelines** and summary template on the [website](#).

Final Presentation

May be required. The contractor will present the results, recommendations, and implementation ideas to MoDOT and other stakeholders. The contractor will coordinate location, date, and meeting fees with MoDOT. For stakeholder and agency participants, any travel and lodging fees are to be covered by individual attendees or their firms. MoDOT and stakeholders will provide feedback to the contractor, especially related to implementation.

Task-Specific Deliverables

Task	Deliverables
1	Schedule and conduct kickoff meeting Kickoff meeting minutes Final work plans
2	Summary of literature review List of potential alternative materials
3	Review of alternative materials to be tested Final alternative material list
4	Generate a proposed mix design Procure selected aggregates and asphalt binder
5	Aggregate and mix durability testing performed
6	Draft final report, research summary and presentation
7	Deliver draft final report, research summary and presentation

Project Schedule

The following is an estimate of the project timeline or information on key dates within the project, presuming the project starts **May 2, 2022**. Proposals need to include a work plan with a proposed timeline. For a sample of a work plan template, see link below. Changes to our estimated project timeline below will be considered, however, timeline extensions cannot be guaranteed. The project timeline will be discussed and finalized during the kickoff meeting.

For report templates and forms, visit <https://www.modot.org/information-researchers>.

Date	Milestone
5/16/2022	A kickoff meeting with MoDOT will be scheduled to discuss project requirements and deliverables. The dates of key milestones and deliverables will be determined from this meeting.

Date	Milestone
5/1/2023	Interim presentation must be done by this date.
2/1/2024	Draft final report and draft summary report are due. The draft documents shall be submitted to MoDOT approximately two months prior to the final report.
4/1/2024	Final report, research summary and final presentation are due. The final documents shall be due approximately one month before the end of the contract. This is to allow all billing to be completed prior to the end of the project.
5/1/2024	Final invoice due.
5/1/2024	Contract ends.

Special Notes

Project budget is not to exceed **\$200,000**. A budget is not to be included in the proposal, but will be required for the contract and must be within this limit. For a sample Budget template, report templates and forms, see <https://www.modot.org/information-researchers>.

All questions, information, data and/or manual requests regarding any aspect of the RFP details or process for submissions should be submitted to MoDOTResearchRFP@modot.mo.gov by the date and time listed in the "RFP Schedule" section of the RFP. This is the only acceptable method for contact regarding the RFP and contacting MoDOT employees via other methods is prohibited. Not adhering to this rule is cause for disqualification of the proposal.

RFP Requirements

- "Contracting Documents" provide further details and links to the required forms. They are available at <https://www.modot.org/information-researchers>.
 - **Organization's Project Experience:** The proposal must clearly identify the Organization's experience in offering the services requested in this RFP during the past three (3) years. The description should include a list of the agencies which your organization has served during this time period or currently serves. Please highlight any work you have done with other state agencies or local governments.
 - **Team Member Experience:** Please list all team members (including subcontractors) proposed to work on the project. Attach licenses, certifications and resumes for key personnel.
 - **Organization's Client References:** Proposals should indicate the name, title, and telephone number of at least three clients within the past three years.

- Proposals must be no more than **10** pages in length with a font size no less than 11 points. This length limit **does not include** the Proposal Submission Form, Organization’s Project Experience, Team Member Experience, Organization’s Client References and optional cover letter (if included, one page maximum).
- Proposals must be submitted as one combined PDF document. The submission should **only include the required documents** organized in the following order: 1) Proposal Submission Form; 2) Cover Letter (Optional; 1 page maximum); 3) Body of Proposal (including work plan); 4) Organization’s Project Experience; 5) Team Member Experience; and 6) Organization’s Client References.
- The Offeror must respond to this RFP by submitting all the information required herein for its proposal to be evaluated and considered for award. Failure to submit all the required information shall be deemed sufficient cause for disqualification of a proposal from consideration.
- Proposals will be evaluated by an agency and stakeholder team with knowledge and backgrounds in relevant areas for this project. Selection of the successful Offeror will be based on the Offeror’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.
 - Correct proposal submission is one of the evaluation criteria. If submission instructions in this section are not followed, the **Offeror risks an automatic 10 point deduction (out of 100 total points)** when points are awarded during the Proposal Evaluation Process.

RFP Schedule

This document constitutes an RFP from qualified organizations to conduct the **TR202205 Analysis of Asphalt Mixtures Using Alternative Aggregate in SMA and Superpave** study for the MHTC and Missouri Department of Transportation (MoDOT). MHTC reserves the right to reject any and all proposals for any reason whatsoever.

The following RFP Schedule of Events represents MoDOT’s best estimate of the schedule that shall be followed. The time of day for the following events shall be between 7:30 am and 4:00 pm, Central Standard Time unless otherwise noted. MoDOT reserves the right at its sole discretion to expand this schedule, as it deems necessary, without any notification except for the deadline date for submitting a proposal. Time is of the essence for responding to the RFP within the submission deadlines.

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

Date	Action
2/1/2022	MoDOT posts RFP to the website at https://www.modot.org/research-requests-proposal .
2/22/2022 4:00 PM (CST)	Written comments or questions must be submitted to MoDOTResearchRFP@modot.mo.gov .

Date	Action
	This is the only acceptable method for contact regarding the RFP and contacting MoDOT employees via other methods is prohibited. Not adhering to this rule is cause for disqualification of the proposal. This includes all requests for information, data, and manuals.
3/7/2022	MoDOT will post written responses publicly on the website at https://www.modot.org/research-requests-proposal .
3/21/2022 10:00 AM (CST)	Written proposals must be submitted to MoDOTResearchRFP@modot.mo.gov . Do not consider your proposal submitted until you receive notification of receipt. A notification should be sent by noon of the same day.
4/6/2022	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.

As part of the eAgreements process, MoDOT uses an electronic signature tool, DocuSign, for signing agreements electronically. All parties of the agreement must agree to sign electronically in order to utilize the electronic signature option. If your proposal is selected, you will be informed about how to obtain your credentials for electronic signatures (including how to become a MoDOT vendor if you are not already).

Standard contracts, forms, attachment templates and additional information are available from the website at <https://www.modot.org/information-researchers>.

Proposal Submission

Submission Deadline

Proposals must be emailed by **10:00 AM (Central Standard Time)** according to email time stamp by the submission date in the RFP Schedule to the Research Director's attention (Jen Harper) at: MoDOTResearchRFP@modot.mo.gov. Please reference the project title since more than one RFP may be due at one time. Electronic proposals are required.

Submission Confirmation

You will receive an email confirmation after your proposal has been received. If you do not receive such a confirmation by **12noon (Central Standard Time)** on the day of the deadline, please contact us at MoDOTResearchRFP@modot.mo.gov as soon as possible. Your submission should not be considered received until you have received your email confirmation.