

Missouri Department of Transportation
Patrick K. McKenna, Director

1.888.ASK MODOT (275.6636)

March 29, 2023

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 **TR202403** entitled, “**Shear Wave Velocity Measurements.**” 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 **May 17, 2023 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

The American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications and AASHTO Guide Specifications for LRFD Seismic Bridge Design are being revised to include the direct use of the site class based on the time-average shear wave velocity (V_s) in the upper 100 feet of a geologic profile, rather than average Standard Penetration Test (SPT) blow counts or other methods. Due to the greater emphasis on V_s measurements in AASHTO procedures, the Missouri Department of Transportation (MoDOT) would like to explore methods to determine V_s profiles at a project site that could be done in the preliminary stages without having to deploy a drill rig, Cone Penetration Test (CPT) rig, or crew to obtain the data.

Objectives

The goal of the proposed project is to update and refine seismic site investigation and analysis procedures in anticipation of upcoming changes to AASHTO specifications.

Project Requirements

Task 1: Project Management

The Contractor will facilitate a kickoff meeting with MoDOT to review the work plan, scope, and schedule; and establish a protocol for regular ongoing communication and coordination with the team. This proposal will serve as the Draft Work Plan, to be discussed in the kickoff meeting. Upon comments received during the meeting and/or in writing, the Contractor will incorporate those comments into a Final Work Plan.

The Contractor will schedule and conduct a quarterly status meeting to review progress for the previous period and anticipated work for the next period. The Contractor will also develop minutes for the kickoff meeting and each of the quarterly status meetings.

Task 2: Literature Search

The Contractor will conduct a literature search to determine possible non-intrusive testing methods.

Task 3: Development of Non-Intrusive Methods to Determine the Average Shear Wave Velocity

Non-intrusive (i.e. no borehole) geophysical methods to determine the average shear wave velocity in the top 100 feet will be investigated. The focus will be on identifying effective methods with limited equipment, source and personnel requirements for deployment, as well as straightforward data analysis and interpretation of the results. A method of interest to be included in the investigation is the single-station HVSr (Horizontal to Vertical Spectral Ratio) method, but it should not shadow other more valid methods.

Task 4a: Creation of a Technical Brief with a Recommendation

Based on the results from Task 3, the Contractor will give a presentation and provide a technical brief with a recommendation to MoDOT for the equipment and field procedures to determine the average shear wave velocity for use in AASHTO guidelines. With this information, the Contractor should show how to field a small 1 or 2-man crew to economically and efficiently determine this important information for seismic analysis.

Task 4b: Field Demonstration

The Contractor will give a field demonstration to MoDOT staff. The demonstration will illustrate how the recommended methodology validates test results and the level of effort required of staff to complete work.

Task 5: Training and Training Manual

Once the tests have been accepted by MoDOT, the Contractor will train staff on testing procedures. A training manual will be prepared and submitted to MoDOT for incorporation into the Engineering Policy Guide.

Task 6: Develop Draft Synthesis Report, Research Summary, and Recommendation

The Contractor will prepare a draft Synthesis Report, Research Summary, and Recommendation along with all accompanying documentation identified as beneficial during the study. 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 the **Publication Guidelines** and summary template on the [website](#).

Task 7: Develop Final Synthesis Report, Research Summary, Presentation, and Recommendation

The Contractor will prepare a completed Synthesis Report, Research Summary, Presentation, and Recommendation along with all accompanying documentation. After MoDOT's review is complete and documents have been edited to MoDOT's satisfaction, final documents should be submitted as Word documents (unless otherwise instructed). Please refer to the **Publication Guidelines** and summary template on the [website](#).

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 Word documents (unless otherwise instructed). Please refer to **Publication Guidelines** and summary template on the [website](#).

Other Deliverables

A technical brief with a recommendation, an on-site demonstration of testing, training staff, and user manual are required for this project.

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	Minutes from the kick-off meeting.
4a	Provide MoDOT with recommendations for equipment and field procedures for use in AASHTO guidelines.
4b	Field demonstration of methodologies
5	Train staff and develop user manual.
6	Draft report, summary, recommendation, and user manual.
7	Final report, summary, recommendation, user manual, 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 **July 1, 2023**. 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. If the Contractor believes the project can be completed sooner, please include a revised schedule with the proposal. 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
7/12/2023	A kick-off 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.
7/1/2024	Recommendations for equipment and field procedures due.
11/1/2024	Field demonstration, employee training, and user manual due for MoDOT review.
4/1/2025	Draft report, draft summary report, recommendation, and user manual are due. The draft documents shall be submitted to MoDOT approximately two months prior to the final report.

Date	Milestone
6/1/2025	Final report, summary report, recommendation, user manual, and 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.
7/1/2025	Final invoice due.
7/1/2025	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>.
 - **Contractor'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.
 - **Contractor'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, Contractor's Project Experience, Team Member Experience, Contractor'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 and project schedule); 4) Contractor's Project Experience; 5) Team Member Experience; and 6) Contractor'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 Contractor will be based on the Contractor’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 Contractor **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 TR202403 Shear Wave Velocity Determination and Procedures 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 (CST) 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
3/29/2023	MoDOT posts RFP to the website at https://www.modot.org/research-requests-proposal .
4/12/2023 4:00 PM (CST)	Comments or questions must be submitted to MoDOTResearchRFP@modot.mo.gov . 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.
4/26/2023	MoDOT will post written responses publicly on the website at https://www.modot.org/research-requests-proposal .

Date	Action
5/17/2023 10:00 AM (CST)	Proposals must be submitted to MoDOTResearchRFP@modot.mo.gov by 10am CST. Do not consider your proposal submitted until you receive notification of receipt. A notification should be sent by noon of the same day.
5/31/2023	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 (CST)** 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 **12:00 PM Noon (CST)** 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.