

October 25, 2021

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 **TR202207** entitled, “**Pile Set-up and Restrike Procedures**”. 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](mailto:MoDOTResearchRFP@modot.mo.gov) by **January 7, 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



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## Background

When a pile is driven into the subsurface, it disturbs and displaces the soil. As the soil surrounding the pile recovers from the installation disturbance, a time-dependent increase in pile capacity often occurs along with a strength gain from pile set-up in some soils. Pile driving remolds soil and generates an increase in pore pressure but is based on various things, such as soil type, sensitivity of the soil, drainage, etc. Not all soil will have the same set-up, glacial till usually will have the best and clay soils will generally exhibit more set-up due to greater shear strength loss and pore pressure generation during driving. Set-up is commonly observed in clay till soils of northern Missouri.

There are two types of piles generally used by the Missouri Department of Transportation (MoDOT). The structural steel H pile is a non-displacement pile and is typically used for end bearing only. A pipe pile (cast-in-place, CIP) is typically used as a friction pile. The CIP will typically have significantly better set-up than H-piles.

The objective of this research is to provide MoDOT with a better understanding of pile set-up in Missouri soils and provide the department with a pile restrike procedure for different types of piles. The department would like a more detailed pile restrike and set-up procedure that also considers contractor's tight timelines. A typical 7 or 14 day restrike procedure is not advantageous to a contractor's schedule.

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## Objectives

There are two objectives within this research project.

Objective 1: Provide MoDOT with a better understanding of pile set-up in the various Missouri soils.

- Determine which soils or soil properties result in greater set-up.
- Provide regions of the state that are more likely to encounter set-up.
- Provide the soil characteristics to look for during a foundation investigation that will identify a project site that may benefit from utilizing set-up.

Objective 2: Provide the department with a pile restrike procedure and guideline for different pile types that MoDOT might follow in future projects. Although most H-piles are designed for end bearing we do encounter projects that do not obtain the anticipated end bearing. A procedure and guideline that incorporate different pile types will allow greater design flexibility. The guideline should be in the format of MoDOT's [Engineering Policy Guide](#).

The procedure should consider contractor timelines to balance the savings gained in the increased capacity with the increased time for the contractor. It should (at a minimum, but not limited to) address:

- Percentage of final design capacity a pile should be driven initially
- Minimum initial restrike time
- Minimum capacity gain at initial restrike
- Establish final restrike test time to confirm final design capacity
- Procedures when capacity gain is not encountered

- PDA/CAPWAP testing requirements.

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## 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 contractor will also develop minutes for the kick-off meeting and any status meetings that may be held during the project.

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: Research and Literature Review

The contractor shall perform a literature review of recently completed research relating to pile set-up in various soils along with reviewing other state DOT's pile driving procedures. An examination of Missouri's various soil types by regions will also be conducted.

### Task 3: Produce a Summary Document on "Pile Set-Up in Missouri Soils"

The contractor will produce a summary document to provide MoDOT with a better understanding of pile set-up in the various Missouri soils. Information from the literature search along with researching existing soil data will aid in compiling an informational summary document. Areas to be incorporated in the document include but, are not limited to;

- Determine which soils or soil properties result in greater set-up.
- Provide regions of the state that are more likely to encounter set-up.
- Provide the soil characteristics to look for during a foundation investigation that will identify a project site that may benefit from utilizing set-up.

### Task 4: Provide Restrike Procedures and Guidelines

Provide the department with a pile restrike procedure and guideline for different pile types that MoDOT might follow in future projects. Although most H-piles are designed for end bearing we do encounter projects that do not obtain the anticipated end bearing. A procedure and guideline that incorporate different pile types will allow greater design flexibility. The guideline should be in the format of MoDOT's [Engineering Policy Guide](#).

The procedure should consider contractor timelines to balance the savings gained in the increased capacity with the increased time for the contractor. It should (at a minimum, but not limited to) address:

- Percentage of final design capacity a pile should be driven initially
- Minimum initial restrike time
- Minimum capacity gain at initial restrike
- Establish final restrike test time to confirm final design capacity,
- Procedures when capacity gain is not encountered

- PDA/CAPWAP testing requirements.

### **Task 5: Develop Draft Final Report, Research Summary, Draft Summary Document and Restrike Procedures**

### **Task 6: Delivery of Final Report, Research Summary, Summary Document and Restrike Procedures**

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## **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](#).

## Other Deliverables

Examples include construction reports, interim reports, annual reports, maps, brochures, Include descriptions, criteria, and frequency.

## 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<br>Kickoff meeting minutes<br>Final work plans          |
| 2    | Summary of literature review   |
| 3    | "Pile Set-Up in Missouri Soils" summary document   |
| 4    | Restrike procedures and guidelines in the format of <a href="#">Engineering Policy Guide</a> |
| 5    | Draft final report, research summary, draft summary document and restrike procedures         |
| 6    | Final report, research summary, final presentation, summary document and restrike procedures |

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## Project Schedule

The following is an estimate of the project timeline or information on key dates within the project, presuming the project starts **February 25, 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  |
|-----------|--|
| 3/9/2022  | 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.   |
| 10/3/2022 | Interim presentation must be done by this date.  |
| 5/25/2023 | Draft final report, draft summary report, draft summary document and restrike procedures are due. The draft documents shall be submitted to MoDOT approximately two months prior to the final report.  |
| 7/24/2023 | Final report, summary report, final presentation, summary document and restrike procedures 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. |
| 8/25/2023 | Final invoice due.   |
| 8/25/2023 | Contract ends.   |

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## Special Notes

Project budget is not to exceed **\$150,000**. 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](mailto: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.

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## 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 **TR202207 Pile Set-up and Restrike 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 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  |
|------------|---|
| 10/25/2021 | MoDOT posts RFP to the website at <a href="https://www.modot.org/research-requests-proposal">https://www.modot.org/research-requests-proposal</a> . |

| Date                           | Action  |
|--------------------------------|---|
| 11/22/2021<br>4:00 PM<br>(CST) | <p>Written comments or questions must be submitted to <a href="mailto:MoDOTResearchRFP@modot.mo.gov">MoDOTResearchRFP@modot.mo.gov</a>.</p> <p>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.</p> |
| 12/13/2021                     | <p>MoDOT will post written responses publicly on the website at <a href="https://www.modot.org/research-requests-proposal">https://www.modot.org/research-requests-proposal</a>.</p>  |
| 1/7/2022<br>10:00 AM<br>(CST)  | <p>Written proposals must be submitted to <a href="mailto:MoDOTResearchRFP@modot.mo.gov">MoDOTResearchRFP@modot.mo.gov</a>. Do not consider your proposal submitted until you receive notification of receipt. A notification should be sent by noon of the same day.</p>   |
| 1/28/2022                      | <p>MoDOT will notify submitters about project selection, or if needed about interviews to finalize selection.</p>   |

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## 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>.

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## 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](mailto: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](mailto:MoDOTResearchRFP@modot.mo.gov) as soon as possible. Your submission should not be considered received until you have received your email confirmation.