



WHRP

Responses to FFY21 RFP Questions

Administrative

1. The proposal preparation instructions identify organizations eligible to submit proposals to this WHRP call. May a federally funded research laboratory submit a proposal as the lead agency to this WHRP RFP? I am seeking clarification as we are a government-owned government-operated (meaning reimbursable funded) research laboratory interested in participating.

WHRP RFPs are open to anyone and all proposals received are considered.

2. Is there a specified indirect rate for research projects under the Wisconsin Highway Research Program? If so, can you please specify the rate or maximum allowable indirect rate?

There is not a specific indirect rate maximum for research projects under the Wisconsin Highway Research Program (WHRP). The proposal review committee evaluates the overall costs presented in the budget along with other aspects of the work plan.

3. I would like to verify my eligibility to submit proposals to the WHRP. Do the WHRP bylaws prohibit or at least limit contractors being awarded these projects?

RFPs are open to anyone, including contractors and suppliers, and all proposals received are considered.

4. How does invoicing work? Do we get a first check or first invoice to get us started on the project?

We collect one invoice from the researcher each quarter. The invoices are reviewed, along with the quarterly report for the project. After approval of the quarterly report, the invoices are submitted for payment and a check is issued to the research entity for the quarterly expenses.

5. What is the overhead percentage?

An overhead charge is typically an industry expense rather than an academic expense. Each entity has its own determined overhead rate.

6. Based on proposal preparation guidelines, there is an 18-page limit for entire proposal. Are the cover page, summary page, and table of contents part of the 18-page limit?

The 18-page limit includes the cover page, summary page and table of contents, along with all other pages of the proposal. Proposals that exceed the 18-page limit will be returned at risk of not being reviewed.

7. What criteria are used for evaluating and scoring the proposals?

The proposals are evaluated and scored by the following criteria (weighted percentage):

Background: awareness of recent work (15%)

Work plan: understanding of the problem (15%)

Work plan: activities & techniques (30%)

Deliverables & implementation plan (15%)

Qualifications, certifications & experience of research team/facilities (25%)

Flexible Pavements

Material Specifications for Longitudinal Joint Construction, Remediation and Maintenance

No questions received.

Interlayer Mixture Design

No questions received.

Geotechnics

Geotechnical Asset Management for Slopes

1. Under Task 2, it is indicated that previous WisDOT data on slope failures will be made available. Is the information about slope failures currently stored in a GIS system? If yes, what data are collected and input into the GIS system? If no, please describe the data collected and stored and whether the data is in an electronic form or paper-based format.

Available data are not stored directly in a GIS database. There is a limited MS Access database of emergency slope repairs that will be available. The database includes general project location, failure description and remediation method, along with repair cost, plans and photos.
2. The RFP discusses possible traffic control for the field-based efforts. Does WisDOT provide traffic control with the project reimbursing the costs, or does the researcher need to hire private traffic control and include this in the budget? Please clarify.

The RFP states, "do not assume that WHRP will cover the cost of traffic control" because traffic control needs vary widely among the different WHRP projects. Depending on the extent and location of traffic control required for the research there may be justification for WisDOT to contribute to the traffic control costs. In addition, some research projects are better served by using less expensive county services, with often limited availability, versus using private traffic control companies. Proposers should use their best judgement when preparing budgets.
3. In the call, you want a GIS-based slope model developed. Is this model going to be based on the landslide inventory from Crawford County or the entire State of Wisconsin?

The GIS model developed should be for the STH 35 corridor in Crawford County. How the researcher calibrates and develops their model is up to them provided it is founded in sound engineering and valid research practices. The final model should be specific enough for the STH 35 corridor in Crawford County as the RFP states, but with the long-term goal that it be applicable for implementation on a statewide basis.
4. In the Proposal Preparation Instructions, #10 Facilities and Information Services, Certifications: "Requirements for national and state laboratory and technical certifications for project related activities are indicated in the RFP. If the proposer does not have the proper certification(s) then a plan indicating how and when certification(s) or committee approval will be obtained must be included the proposal." What certification(s) is this referring to?

This RFP does not have any special certification requirements for the proposing researchers.

Rigid Pavements

Evaluating the Impact of Anti-Icing Solutions on Concrete Durability

1. How many penetrating sealer types should be considered?
The number of penetrating sealer types will depend on the proposed research plan and the available budget. However, solvent-based penetrating sealers such as silane or siloxane-based sealer should be included in the study.
2. How many types of epoxy coated thin overlays should be considered, and should they be single or double lift (different thickness)?
The types of epoxy coated thin overlay to be considered will depend on the proposed research plan and the available budget. For more information, visit Wisconsin DOT [STSP webpage](https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnsIt-rsrces/contracts/stsp/stsp-art.pdf) (<https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnsIt-rsrces/contracts/stsp/stsp-art.pdf>) and find stp-509-030 Polymer Overlay, Item 509.5100S.
3. How many anti-icing agents should be considered for task III?
The number of anti-icing agents to be considered will depend on the proposed research plan and the available budget. For more information please refer to the WisDOT Winter Maintenance webpage (<https://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/winter-maintenance/default.aspx>) and the previous research sponsored by WHRP available [here](https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf) (<https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf>) which identified the commonly used agents in Wisconsin.
4. What do you mean by the anti-icing chemical application rate, application time, and application frequency for Task III?
Application rates imply how much anti-icing chemical per lane-mile should be applied, application time means how early it should be applied, and application frequency means how often it should be applied.
5. Should one typical WisDOT pavement concrete and one typical WisDOT bridge deck concrete be sufficient for this project?
While the final number of pavement concrete and bridge deck concrete decks will depend on the proposed research plan and the available budget, at least one pavement concrete and one bridge deck concrete should be included in this study.
6. What is the current concentration of liquid anti-icers, i.e. NaCl, MgCl₂, and CaCl₂ in Wisconsin.
Each county works independently, and WisDOT does not have any recommended concentration of the liquid anti-icers. For more information, please refer to previous research available [here](https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf) (<https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf>) which conducted a survey of the counties. Wisconsin is a part of the Clear Roads pooled fund. That [webpage](https://clearroads.org/) (<https://clearroads.org/>) would also be a good starting point for more information.
7. Please provide information on the concrete mixture design specifications (e.g., Can SCM be added, or are only blended cements allowed?).
Both SCM and the blended cements are allowed in Wisconsin. See WisDOT Standard Specification [Section 501 Concrete](https://wisconsindot.gov/rdwy/stnds/spec/ss-05-01.pdf#ss501) (<https://wisconsindot.gov/rdwy/stnds/spec/ss-05-01.pdf#ss501>) for more detailed mixture design specification.

8. Please provide information on the thin polymer overlays that are used in Wisconsin. Please visit WisDOT STSP webpage (<https://wisconsindot.gov/Documents/doing-bus/eng-consultants/cnsIt-rsrces/contracts/stsp/stsp-art.pdf>) and look for stp-509-030 Polymer Overlay, Item 509.5100S
9. Please provide additional information related to de-icing and/or anti-icing practices, as well as the number of annual snow events (average) which are treated for critical concrete sections. For more information, please visit the WisDOT winter maintenance webpage (<https://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/winter-maintenance/default.aspx>) and the previous research sponsored by WHRP available [here](https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf) (<https://wisconsindot.gov/documents2/research/0092-17-03-final-report.pdf>).
- a. Presumably, bridges and heavy truck traffic roadways would be the most critical; however, please provide information about what structures or pavements are deemed critical by WisDOT regarding strength and degradation.
- Critical would be high-volume interstate bridges and/or difficult to repair/replace structures (e.g., steel tub-girders).
10. Is there any interest in evaluating the impact strength/resistance for bridge rails and roadside barriers which could be affected by anti-icing and/or de-icing agents?
- a. Compacted or plowed snow against these barriers, and subsequent melting, could have an effect on roadside barrier strength. If deterioration can be quantified as a part of this research study (if applicable), then that deterioration could be utilized in evaluating WisDOT bridge rail design strengths affected and design factors for safety.
- b. Is there interest to perform strength analysis on roadside barriers, particularly bridge rails, if anti-icing and/or de-icing is found to deteriorate reinforced concrete strengths? Perhaps a reliability analysis?
- c. Or, alternatively, is there interest to recommend alternative reinforcement materials (glass fiber, stainless steel, FRP, etc.) which are resistant to deterioration, if any concerns are identified?
- d. Note that these recommendations are more applicable to the roadside safety division but may be helpful both to WisDOT and other state DOTs as well.
- This study emphasizes the use of anti-icing solution only and quantification of the impact on the durability of concrete pavement and bridge decks with polymer overlays. Other facilities such as bridge rails and concrete barrier are out of scope of this study.
11. Which mixture designs does WisDOT prefer to be investigated in this study? Should mixture designs for typical slip formed pavement, or bridge decks, or both be considered? Shall all mixtures consist of supplementary cementitious materials (SCMs) or does WisDOT prefer testing mixtures with and without SCMs be investigated?
- Both slip formed pavement and bridge decks with thin polymer overlays should be included. SCM can be included in the testing. See WisDOT Standard Specification [Section 501 Concrete](https://wisconsindot.gov/rdwy/stndspec/ss-05-01.pdf#ss501) (<https://wisconsindot.gov/rdwy/stndspec/ss-05-01.pdf#ss501>) for detailed mixture design specifications.

12. In Task 2, it is mentioned that “Also, mechanical/environmental conditions should reflect typical pre-snow events and winter conditions in Wisconsin.” What mechanical conditions, other than compressive strength, must be met?

Researchers can suggest other testing methods in addition to the required testing listed in RFP. All suggested methods will be considered during the proposal evaluation.

13. Task 3 asks to “Evaluate the current use of liquid anti-icing agents and determine practices to reduce their detrimental impact on concrete durability and to improve use. Design and conduct laboratory experiments to study key parameters of liquid anti-icing application (e.g., concentration, application rate, application time, and frequency of application). Review anti-icing application recommendations in the Highway Maintenance Manual Criteria for quality control. Test bare concrete, sealed concrete and concrete with thin polymer overlays to determine relative effectiveness of these protection strategies.” Shall the key parameters of liquid anti-icing be tested in combination with mitigation strategies? Or is the goal to examine the key parameters (other than mitigation strategies) in order to optimize the application practice of anti-icing solutions?

The RFP indicates the goal of this study is to quantify the impact of current anti-icing liquid on concrete durability and identify mitigation methods to reduce the long-term impacts without compromising safety. Proposals should develop procedures to both quantify the impacts of anti-icing liquid on concrete durability and reveal the mitigation strategies.

14. Please provide details on how to evaluate “detrimental impact on concrete durability...” doing this through compressive strength alone would be time consuming and would also need very significant space. The mixture design also becomes critical here – concrete without SCMs or air is damaged very rapidly, though adding both air and SCMs significantly increase the concrete durability, at least to CaCl₂.

Researches are encouraged to propose testing methods in addition to the required testing to measure concrete durability. WisDOT allows using both SCM and the blended cements. Please refer to the WisDOT Standard Specification [Section 501 Concrete](https://wisconsindot.gov/rdwy/stnds/spec/ss-05-01.pdf#ss501) (<https://wisconsindot.gov/rdwy/stnds/spec/ss-05-01.pdf#ss501>) for more detailed mixture design specification.

15. How should the concrete be exposed to the anti-icing solution? Is the temperature fixed or should this be done under freeze-thaw cycles (the latter being a non-standard condition)? Should ponding or wetting/drying cycles be considered? Are the tests only using ASTM C672 and AASHTO T161 done in the standard way which would not allow to change the chloride concentration?

Proposals should suggest the appropriate testing methods to measure concrete durability with anti-icing solution. Suggested methods will be considered during the proposal evaluation.

Structures

Development of Design Procedures for Concrete Adhesive Anchors

1. In Proposal Preparation Instructions, #10 Facilities and Information Services, Certifications, "Requirements for national and state laboratory and technical certifications for project related activities are indicated in the RFP. If the proposer does not have the proper certification(s) then a plan indicating how and when certification(s) or committee approval will be obtained must be included the proposal." What certification(s) is this referring to?
This RFP does not have any special certification requirements for this study.
2. Task 4 states that "... Uncoated and epoxy coated reinforcement should be evaluated based on the application (e.g., epoxy coated for parapet replacement)." In what applications is uncoated reinforcement used?
Uncoated reinforcement is used in abutment extensions.
3. In Item IV, required testing, the concrete strengths are specified for applications C and D, but not for application E, the abutment extension application. What concrete strength will be used for E?
The concrete strength used for application E is 3500 psi.
4. Task 5 – Laboratory Testing: Is it required or recommended that coarse and fine aggregates from sources in Wisconsin be used to make the concrete samples?
It is not required to use aggregate from Wisconsin, however WisDOT's mix specification is preferred.
5. Task 3 of the work prescribes the development of recommendations and guidelines for simplifying the application of adhesive anchors for specific WisDOT installations. What forms are envisioned/desired for these guidelines to be ultimately presented?
See IX. Implementation (C) in the RFP: Develop recommendations and guidelines in a format consistent with the WisDOT Bridge Manual, including text and standard drawings.

Optimizing Bridge Abutment Slope Protection at Stream Crossings

1. Regarding Task 3, would the WisDOT research project POC provide or recommend the Midwest states and their respective POCs?
The WisDOT POC can provide Midwest state contacts.
2. Regarding Task 4, are the site visits and field reviews qualitative measurements, given that no testing is required for this research project?
The site visits and field reviews are qualitative.
3. Regarding Task 5, are we determining the extent and cause for at least eight bridges or only for critical/selected ones?
Task 5 relates to the eight bridges of Task 4.
4. Regarding Task 6: for clarification, is the information for the cost analyses and comparisons based on data collected in Task 2?
Yes, data collected in Task 2 should be used for Task 6.

5. Is WisDOT also interested in the development and use of approach-flow control (guidebanks, hardpoints, spur dikes, bendway weirs or barbs, vanes, etc.) to minimize a bridge's obstruction to flow if both the life-cycle analyses and applicability justify the use of them for specific bridge sites in Wisconsin? Is there more inclination towards the use of mechanically stabilizing approaches such as armoring?

At this time WisDOT is not interested in approach-flow control. WisDOT is primarily interested in using a graded granular material in lieu of the geotextile fabric, grouted riprap, gabions, articulated concrete blocks, systematically placed riprap, flatter slopes, etc.

6. Is it necessary to limit the survey of slope protection approaches (Task 3) to the United States (upper Midwest states), or can we consider successful implementations of approaches in other regions nationally and internationally?

We want at least five surveys from the upper Midwest states – any other information from other regions or internationally would be welcome.

7. What method does your agency use to determine if an abutment scour countermeasure is needed for a specific bridge site?

It is WisDOT standard to use heavy riprap on geotextile fabric, at a 1.5:1 slope, for all water crossings.

8. Do you use riprap for all projects irrespective of the existence of the need for a countermeasure (for certainty), or do you use it selectively using some guidelines (HEC18, 20, 23; inspection reports; site history; staff experience, etc.)?

It is WisDOT standard to use heavy riprap on geotextile fabric, at a 1.5:1 slope, for all water crossings.

9. What design methodology is currently used by WisDOT for their current standard countermeasure (riprap)?

It is WisDOT standard to use heavy riprap on geotextile fabric, at a 1.5:1 slope, for all water crossings.

10. Once implemented, how is the QA/QC of your riprap countermeasure evaluated (biennial inspection; regular inspection; experience; ...)?

QA/QC of riprap occurs on biennial inspections. Furthermore, susceptible bridges will be looked at after exceptionally heavy flow events.

11. What is the most commonly used abutment type in Wisconsin bridges?

The most common abutment types used in Wisconsin are Abutment Type A1 (integral) and Abutment Type A5 (taller integral) especially for shorter stream crossings.