RESEARCH REQUEST FOR PROPOSAL (RRFP) #26-02

ALTERNATIVE REINFORCMENT BAR MATERIALS FOR CONCRETE STRUCTURES

POSTED DATE: 5/28/2026; CLOSING DATE: 6/26/2026

PROJECT INFORMATION	
Funds:	$150,000
Estimated Contract Term:	18 months
Projected Start Date:	1/4/2027
Deadline for Submitting Proposal:	4:30:00 PM (local time) 6/26/2026
Submit Proposal via Email to:	research@getipass.com

BACKGROUND

Reinforcement serves a critical structural function in every reinforced concrete structure the Tollway constructs and it must be protected during service life to maintain structural integrity. The Tollway primarily utilizes epoxy-coated steel reinforcement, which does offer a cost-effective barrier against chloride ingress, however, does have disadvantages. The first drawback includes the lack of adhesion to concrete which requires increasing lap lengths and ultimately results in more steel in the structure. Additionally, the coating is easily damaged during construction and if not properly repaired, will prematurely corrode.

The Tollway's current reinforcement practices vary by structure type and exposure condition, and despite the noted disadvantages, epoxy-coated steel remains acceptable for many applications. The Tollway is currently using stainless steel in certain cases; however, it drastically increases initial costs. Multiple new alternatives are available to mitigate the above concerns including textured epoxy (TEC), glass fiber reinforced polymer (GFRP), basalt fiber reinforced polymer (BFRP), carbon fiber reinforced polymer (CFRP), stainless steel-clad bar, and potentially more. Each alternative has unique properties that must be considered. The Tollway has a need to evaluate these factors to determine the best

reinforcement for each use case. Prior research has been conducted by the Tollway, Illinois Center for Transportation (ICT), and other agencies on corrosion-resistant and non-metallic reinforcement (e.g., GFRP, BFRP). This study is positioned as building upon and synthesizing existing research, rather than duplicating earlier laboratory efforts.

OBJECTIVE

After identifying all available reinforcement bar alternatives, each must be evaluated to determine their unique design, construction, and environmental factors, with each being compared to determine the best type for each application. The intent of this research is not to replace existing reinforcement practices universally, but to identify where alternative materials provide a clear performance, durability, or life-cycle benefit for specific Tollway applications.

RESEARCH TASKS AND REQUIRED DELIVERABLES

Several tasks are envisioned for completing this research project, as described below:

A. Conduct a comprehensive literature review to identify all currently available reinforcement bar alternatives to epoxy-coated steel, including but not limited to TEC, stainless steel, stainless steel-clad bar, GFRP, BFRP, CFRP, and any other emerging products. For each material type, compile and summarize key performance factors including cost (material and installed), life-cycle cost, weight, bond/adhesion to concrete, design life, global warming potential, and environmental product declaration (EPD) availability, end-of-life recycling potential, corrosion susceptibility, and current availability and supply chain efficacy within the industry.

B. For each alternative rebar material identified in Task A, evaluate design changes required relative to the Tollway's Structure Design Manual. This should include differences in strength, yield, and modulus of elasticity; required changes to lap lengths, cover requirements, and constructability considerations. Proposed design changes must be evaluated for consistency with Tollway design philosophy, including conservatism, redundancy, and constructability,

C. Develop a standardized framework for evaluating and comparing the various reinforcement types across different concrete applications. Review the Tollway's current use of reinforcement across its various structure types and applications, including bridge decks, substructures, noise walls, barrier walls, drainage structures, etc. Identify the critical reinforcement properties for each structure type and how alternative reinforcement materials may provide the greatest benefit. Identify any structural design or geometric changes based on these reinforcement properties.

D. Using the findings of Tasks A through C, develop draft specification language for the alternative reinforcement materials deemed suitable for Tollway use. Specifications should be performance-based and material-class-based and should avoid vendor-specific or proprietary language unless explicitly approved by the Tollway. Specifications must be compatible with existing Tollway Standard Specifications and Special Provisions to facilitate pilot use without major structural manual rewrites.

Proposers should provide examples of how results could be incorporated into Tollway projects, specifications, or pilot programs, rather than high-level statements of benefit.

Deliverables that will be required throughout this project will include:

- Quarterly progress reports, in electronic format, containing a summary of effort performed during the quarter and expected progress for the following quarter including percent of remaining schedule and budget.
- Final report, in electronic format, summarizing the results and recommendations developed as a result of this research effort as contained in the Tasks A-D documents described above. A draft final report shall be submitted 45 days prior to the end date of the research contract. The Tollway will review and provide comments and feedback within 15 days of receipt of the draft final report. Then, the researcher shall have 30 days to address the comments and questions, make revisions, and resubmit the final report.
- An electronic copy (pdf) of all reports shall be submitted.

INSTRUCTIONS FOR SUBMITTING A PROPOSAL

The proposal shall be prepared in accordance with the guidelines presented in Appendix A. The contact name/email and due date are presented on the first page. All potential Principal Investigators (PIs) should read and understand the responsibilities of Illinois Tollway Principal Investigators, which are presented in Appendix B.

Technical questions regarding the research project or questions regarding the RRFP procedures should be submitted to research@getipass.com by 2:00:00 p.m. (local time) on 6/11/2026. Technical questions that are received by 2:00:00 p.m. (local time) on 6/11/2026 will have the questions and answers posted on the Tollway's website at least 3 days before the proposal due date.

SPECIAL CONDITIONS FOR REVIEWING PROPOSALS AND AWARDING ILLINOIS TOLLWAY FUNDS

Please note that the following three conditions will be applied in reviewing all proposals received and in awarding Tollway funds:

1) The award of this project is contingent upon the availability of funds at the time of award.
2) Tollway research projects are entered into through an Intergovernmental Agreement. Therefore, the lead institution in a successful proposal is required to meet the definition of a "public agency" pursuant to Illinois' Intergovernmental Cooperation Act (5 Ill. Comp. Stat. 220) in order to enter into an Intergovernmental Agreement to complete the project. Prior to notification of a successful proposal, the Tollway may request the lead institution's W-9 form to verify compliance with this requirement.
3) The lead institution must perform at least 35% of the work (budgeted costs).

APPENDIX A:
GUIDELINES FOR PREPARING A PROPOSAL FOR THE ILLINOIS TOLLWAY

Please use the following format for submitting a Tollway proposal for consideration. Please limit your total proposal to 5 pages in length (not including the Cover/Summary Page or optional Appendices), ensure file size is less than 5 MB, and use a font size no smaller than 10. We suggest Arial font with 1.5 spacing between lines.

1. Cover/Summary Page

Use the cover page included in Appendix C.

2. Research Plan

The research plan should describe in a specific and straightforward manner the proposed approach for solving the problem described in the problem statement. The research plan should be subdivided into the following sections:

(a) Introduction, including Research Idea Statement

Provide an introduction to the proposal and a concise overview of the research approach. Outline the objectives of the research project and explain the questions that will be answered by the research.

(b) Research Approach/Work Plan

Include the details of how the investigator will carry out the project and accomplish the project objectives. Itemize the tasks to be completed, explaining each in sufficient detail so the reviewers understand what will be done for each task and what will be produced or completed with each task.

(c) Anticipated Research Results

Specifically state the anticipated research results and deliverables.

(d) Applicability of Results to Illinois Tollway Practice

Describe how the anticipated research results can be used to improve Tollway practices.

3. Qualifications and Accomplishments of the Research Team

Identify who will perform the research and provide a brief explanation of each researcher’s qualifications to perform the research. Please provide examples of similar research that the proposed individuals have performed.

4. Other Commitments of the Research Team

Briefly outline the other commitments of the proposed principal and co-principal investigators to demonstrate that both will be able to fulfill the commitments of the proposal.

5. Equipment and Facilities

Describe the facilities and equipment available to undertake the research proposal.

6. Time Requirements

Describe the time that will be required to complete the research proposal, including final report preparation, Tollway editing, review of the report by the Technical Review Panel (TRP), and final review/publishing of the report. Include a timeline for each task.

7. Itemized Budget

Provide an itemized budget for each of the Phases of the project and for the entire project, including the cost of personnel, consultants, subcontracts, equipment, materials, travel, overhead/indirect costs and cost share (match). The Illinois Tollway believes that an overhead/indirect rate of 20% is reasonable and competitive. Justification shall be provided if an indirect cost rate in excess of 20% is used. Please itemize equipment and travel requests, especially any requested out-of- state travel or planned attendance at conferences.

8. Cooperative Features (if appropriate)

If assistance or cooperation is required from other sectors, public or private, to complete this proposed research, describe the plans for securing this assistance.

9. Appendices (if appropriate)

You may include such things as statements regarding previous work on the problem or related problems, abstracts of related projects, a bibliography or list of references, or materials describing the submitting organization.

APPENDIX B:
RESPONSIBILITIES OF ILLINOIS TOLLWAY PRINCIPAL INVESTIGATORS

1. Prepare and submit a project work plan and multi-year line-item budget, consistent with the Tollway RRFP for the newly-approved research project.

2. Meet with the Technical Review Panel (TRP) and revise the project work plan and multi-year budget, as agreed with the TRP.

3. Assist the TRP chair in preparing an Implementation Planning Worksheet and work throughout the project to identify the expected benefits of the research, e.g., construction savings, operation and maintenance savings, increased lifecycle, safety, etc.

4. Carry out the project as agreed with the TRP, or notify the TRP if any problem develops regarding the project.

5. Provide online quarterly progress reports to the TRP chair for review and approval.

6. Attend TRP meetings to provide project updates and answer TRP members' questions about the project.

7. Provide the TRP a synopsis of the project's implementation potential as well as implementation strategies. In conjunction with the TRP, develop Implementation activities/ tools such as draft specifications, policy guidelines, software, and training on new test/ practice/ equipment/ software and develop an implementation cost estimate, if applicable.

8. Near the completion of the research project, draft a final research report in accordance with the Tollway report format. (The timeline for the work plan must allow adequate time to prepare the report, typically three months.)

9. At least 45 days before the end date for the project, submit the draft final report to the Tollway for review and work with the TRP chair to finalize the content of the report.

10. Re-submit the final report to the Tollway for publication. The Tollway will post the final report to the Tollway website.

11. The publication or release of all work products, any information that is deemed confidential by the Tollway, or information which includes patentable results may not be published/ released without the Tollway's approval.

12. Include the Illinois Tollway acknowledgement statement and disclaimer statement (available on the Tollway website) in all publications and presentations regarding research sponsored partially or fully by the Tollway.

APPENDIX C:
PROPOSAL COVER SHEET FOR SOLICITATION #26-02

ALTERNATIVE REINFORCMENT BAR MATERIALS FOR CONCRETE STRUCTURES

DUE: 6/26/2026
TO: research@getipass.com

Submitted by: (Include Name and Address of Organization)	
Proposed Investigator(s):	
Corresponding Investigator Name:	
Corresponding Investigator Phone:	
Corresponding Investigator Fax:	
Corresponding Investigator Email:	
Submission Date:	