

August 15, 2024

NEx Request for Proposals Notice

NEx encourages you to submit proposals focused on the research topic described below:

NEx RFP Id: RD25.03

Proposal Title: Development of an Effective Device and Method for Coupling and Anchoring Fiber Reinforced Polymer Bars in Tensile Reinforcement of Concrete

Background

Fiber Reinforced Polymer (FRP) bars offer advantages over steel reinforcement due to their high strength-to-weight ratio and corrosion resistance. However, FRP's application as concrete reinforcement is limited by the lack of effective bar coupling and mechanical anchorage methods. Current solutions require extended embedment lengths or field splicing to effectively develop reinforcement and these extended lengths are not always practical. Existing steel mechanical couplers are unsuitable for non-corrosive environments and methods used to connect couplers to steel bars do not work for FRP bars. FRP couplers and mechanical anchorages have been proposed by researchers but have yet to see widespread adoption. This necessitates development of specialized devices and methods tailored to coupling and mechanically anchoring FRP bars. This project should address existing limitations by developing innovative coupling and anchoring solutions that comply with ICC-ES Acceptance Criteria "Mechanical Splice Systems for Fiber Reinforced Polymer (FRP) Bars," AC552 - ICC Evaluation Service, LLC (ICC-ES), and increase the viability of FRP bars for a wider range of concrete reinforcement applications.

Proposal Request

We are seeking proposals to develop a device and/or method to effectively couple and anchor fiber reinforced polymer (FRP) bars used as tensile reinforcement in concrete. FRP bar properties create challenges with coupling and mechanical anchoring which has limited their broader adoption in construction. Existing methods often require extended embedment lengths or field splicing, which are impractical and inefficient.

The proposed project should address these challenges by reviewing existing literature on FRP couplers and mechanical anchorages to understand previous approaches and challenges. With this information, the project should then develop non-corrosive devices and/or methods that can effectively couple and anchor FRP bars to enhance their usability in various reinforcement scenarios. Proposals should include the engagement of manufacturers of coupling and mechanical anchorage systems to gather input and ensure practical applicability. The developed devices and methods must comply with ICC-ES AC552 criteria to meet industry standards. NEx envisions that the research test plans and outcomes be communicated with the ACI 440 committee over the course of the project.

NEx Mission Statement

Collaborate globally to expand and accelerate the use of nonmetallics in the built environment to drive innovation, research, education, awareness, adoption, and deployment.

Research and Development within NEx are among its core missions, and it supports and facilitates the development of new nonmetallic technologies to address challenges with effective solutions.

Funding Policy

NEx will impose a limit of 15% on indirect costs (overhead) by research organizations for any research it funds. The organization must waive the remainder of the indirect costs.

Award Amount

NEx does not impose any limit on the overall funding request; however, the anticipated budget for this project is to be around \$80,000 to \$100,000. Proposals with higher budget estimate will be accepted with information on budget spending relevant to the value added to the project scope. Co-funding and co-sponsoring proposals with other organizations are welcomed.

Proposal Evaluation

NEx research proposals will be evaluated by the NEx Steering Committee. A winning proposal will be forwarded to the NEx Board of Directors with recommendations for funding.

Proposal evaluation criteria will include technical content, methodology, PI's relevant experience, potential impact/ industry adoption, budget and time, proposed deliverables, and outcome. Typically, NEx funded project duration ranges from 6 to 24 months.

Awarded Proposals

- The awarded proposal is expected to commence within the first quarter of 2025
- NEx will enter into a contract with the researching entity. As part of the contract, it is mandated that the overhead or indirect return be set at no more than 15% of the direct cost of the research funding requested from NEx. Any overhead over the maximum allowed 15% that is waived by the researching entity shall be considered as cost sharing and shall be indicated on the budget table as waived overhead, separate from other co-funding. Non-compliant proposals in this regard shall be returned without review.
- The schedule of payments contingent upon milestone deliverables will be contained in the contract and will include, at a minimum, a final report deliverable to NEx. Quarterly progress reports will be identified in the final contract.
- If principal investigators (PI) from two organizations are collaborating on the research, the award must be to a single organization, which will then subcontract with the second organization.
- NEx will only consider funding projects that involves the use of proprietary products if the goal of the project is to advance knowledge in a particular area of study and not solely on a proprietary product.
- In case of any co-funding arrangement with other organization(s), commitment letter(s) from co-funding organization(s) is required before funds are dispersed from NEx.
- The results of NEx-funded research will be owned by NEx, and possibly by other co-funding organization(s). PI should notify NEx before publishing any results.

Where and How to Submit Proposals

Submitted proposals will be evaluated by the NEx Steering Committee and subject matter experts.

Anyone who evaluates a proposal is required to agree and abide by NEx policies on confidentiality and conflict of interest.

Please email the proposal and supporting information to info@nonmetallic.org, by end of the day, **October 7, 2024**. The email subject line and file name shall include project ID (see top of page 1) and the name of the proposing organization (For example: "RD24.xx University of xyz").

If you have any questions regarding the proposal requirements or process, please contact NEx Technical Director, Aparna Deshmukh (aparna.deshmukh@nonmetallic.org).

Proposals submitted to NEx shall be provided in **one unprotected PDF** using [NEx provided template](#).