An ACI Center of Excellence for Nonmetallic Building Materials

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July 17, 2023

NEx Request for Proposals Notice

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

Project ID: RD24.03.

Project Title: Investigate GFRP screw/helical piles and micropiles utilization in geotechnical applications.

Background

Helical ground anchors also referred to as helical piles, screw piles, screw anchors, or mini-piles, have been extensively used in construction, for example as deadmen in certain tilt-up applications, or as tiebacks for temporary or permanent retaining walls and as foundation tiedowns. Their main purpose is to transfer structural loads to the soil. Corrosion of steel helical piles in soils is well known and has already been documented. Changing the material to a nonmetallic one could solve the corrosion problem.

There is a growing interest in the use of non-metallic alternatives such as Glass Fiber Reinforced Polymer (GFRP) screw/helical piles and micropile reinforcement stems. These innovative solutions offer advantages such as quick installation, light to medium load capacity, and suitability for various applications including pipe supports, highway gantry systems for signage, and light structures. However, there is a need for comprehensive research and development to explore the feasibility, design considerations, and performance of GFRP screw/helical piles and micropile reinforcement in different scenarios.

Proposal Request

We invite proposals from qualified/ experienced researchers, institutions, or experts in the field of foundation systems and structural engineering to undertake a research and development project focused on GFRP screw/helical piles and micropile reinforcements. The objective of this project is to study the applicability, design considerations, and performance characteristics of these non-metallic alternatives for light to medium loaded foundations, particularly when quick installation schedules are required. The final report should provide guidance on use and design of GFRP screw/helical piles and micropiles utilization in geotechnical applications. The main objectives of this project are:

a. Conduct literature review for current research of using GFRP screw/helical piles and micropiles utilization in geotechnical applications.

b. Developed experimental works to investigate and enhance GFRP screw/helical piles and micropiles utilization in geotechnical applications.

c. Develop a generic industrial guideline of how and where to use it. The guideline could be a proposal to be included in one of the existing code or standards to be used as a reference.

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 $75,000. 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. NEx anticipates completion of this project within 24 months duration.

Awarded Proposals

- The awarded proposal is expected to commence within the first quarter of 2024.
- 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. Progress reports, if required, 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 research that involves the use of proprietary products if the goal of the research 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-founding organization(s). PI should obtain approval from NEx before publishing any results.

Where and How to Submit Proposals

Submitted proposals will be evaluated by the NEx Steering Committee and the NEx Staff. 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, **September 5, 2023**. 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).

Required Proposal Content

Proposals submitted to the NEx shall be provided in one unprotected pdf file and shall contain:

1. **Section 1: Executive summary (maximum 2 pages)**
   - 1.1. NEx RFP ID:
   - 1.2. Proposal Title:
   - 1.3. Principal Investigator (name, affiliation, address, phone, email):
   - 1.4. Objective of the proposal (300 words or less)
   - 1.5. Description of significance/impact of the project (300 words or less)

2. **Section 2: Main body (maximum 5 pages)**
   - 2.1. Background
   - 2.2. Project description (include enough detail to understand how the project will be performed)
   - 2.3. Schedule (include matrix of tasks and schedule of completion, including quarterly progress and final reports, and semi-monthly teleconference updates)
   - 2.4. List of deliverables/anticipated products, such as new material specifications, new documents, published papers, presentations, NEx/ACI University Webinar, or conference proceedings.
   - 2.5. Budget (table of funding that includes all support such as):
     - Total budget
     - Any co-funding from organizations other than NEx (monetary, in-kind)
     - Net value of waived institution overhead or planned co-funding

3. **Section 3: Supporting Documents (maximum 2 pages each)**
   - 3.1. Qualifications of the investigator, co-investigator(s), if any, and/or institutions.