



**C F I R E**  
NATIONAL CENTER FOR  
FREIGHT & INFRASTRUCTURE  
RESEARCH & EDUCATION

**Design, Materials, and Construction Processes for Highway, Harbor, and Rail  
Infrastructure STAR: Grant Year 4 RFP**

**PROJECT AREA:** Development of innovative technology for design, construction and maintenance of freight infrastructure components

**PROBLEM STATEMENT:** The impact of deteriorating infrastructure on traffic movement and in sustaining freight transportation operations continues as a primary problem in the U.S. transportation network. The need for rapidly constructed and sustainable infrastructure components is of great importance in rejuvenating the transportation system. Rapid and sustainable solutions are needed that provide long life with reduced energy consumption and use recycled materials.

Proposals that suggest transformative changes in freight infrastructure components that enhance sustainability, performance, and durability, or construction methods that increase production speed and efficiency are particularly desired. Changes in infrastructure components and their construction should include issues of sustainability including material availability, energy use in production, shipping and placement, and durability and serviceable life.

**POTENTIAL RESEARCH AREAS:** The Request for Proposals is developed intentionally to solicit a broad range of potential approaches to addressing these critical issues. Some potential areas of interest include (this list is not exhaustive):

- Implications on concrete construction of possible EPA classification of fly ash as a hazardous material
- NDE evaluation of the condition of prestressing strands in bridge girders
- Alternatives for high speed railway ties including wood, concrete and concrete slabs

A single proposal may address multiple issues, however, not all of these topics will be selected for funding.

**INSTRUCTIONS TO RESEARCHERS:**

- Proposals are expected to clearly articulate specifically how the research will have an impact on the freight transportation infrastructure.
- Procedures for applying the changes suggested by the research should be plainly described and methods for transferring the developed technology into practice should be outlined.
- Standard design methods, construction specifications or material specifications needed to incorporate the new technology into freight infrastructure improvement projects should be suggested.
- Potential beneficiaries of the new technology should be introduced to the technology and act as possible participants in defining the outcomes of the research.



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**ESTIMATED PROJECT DURATION AND COST:** Proposed projects are expected to have a 1 or 2 year duration with annual budgets not exceeding \$75,000. Proposals must clearly justify the suggested time frame and required budget. Non-Federal matching funding is strongly suggested.