Project Title: C-02-07: Hybrid Fiber Reinforced Polymer (FRP) and Concrete Bridge Deck Systems

PIN: R020-42-

Responsible Unit: Tech. Services Div., Transportation Research & Development Bureau

Project Manager: Alampalli, Sreenivas

Project Goal:
The purpose of this project is to introduce cost-effective hybrid FRP-concrete bridge deck systems to replace old and deteriorated bridge decks and short span bridges. The systems must take full advantage of both the FRP and concrete properties to produce durable, structurally sound, and cost effective hybrid systems.

Actions Proposed:
The proposed actions should address the following tasks:
Propose Hybrid FRP-concrete deck systems in consultation with Department.

Verify the design concepts by analytical studies and the concepts with potential merits in terms of cost-effectiveness and structural soundness should be tested.

The testing of the deck concepts should include: Service limit load conditions; Thermal and moisture effects; Fatigue characteristics; Creep behavior; Impact; and Strength limit and mode of failure.

Provide and test details for connection of the hybrid systems to a typical bridge girder system and provide joint details between the panels of the proposed system (i.e. shear keys, etc.)

Study construction-related issues such as size of prefabricated systems, installation, field joints, and any other issues pertain to the feasibility of the construction of the proposed system.

Study and compare various manufacturing techniques and constituent materials suitable for the proposed deck systems. Select the appropriate manufacturing technique and materials for each system.

Anticipated Work Products and Accomplishments:

Proposed Budget: $360,000