Feasibility Analysis of Ultra High Performance Concrete (UHPC)

Project Number: NM09MSC
Research Category: Material Science
Budget: $478,098
Duration: 74 months

Benefits of UHPC:
Research has demonstrated the following advantages to the use of UHPC:

- increased durability;
- higher concrete strength;
- reduced material quantities;
- smaller geometry and weight of members;
- improved aesthetics;
- simpler detailing and construction;
- reduced maintenance; and
- increased lifespan.

Given the much higher concrete strengths, bridges can be made lighter, carry greater loads and/or span greater distances. In addition, UHPC has considerably more tensile strength than normal concrete, therefore less steel is required in bridge members to carry loads and reinforce the concrete.

Phase I: *Complete*
Investigate the feasibility and benefits related to the implemention of UHPC into prestressed bridge design.

Phase II: *To be completed July 2012.*
Develop mixture proportions and a curing regimen for UHPC that uses material local to New Mexico.

Phase III: *Anticipated to begin Fall 2012*
Large-scale tests will be conducted on prototype prestressed bridge girders based off of design procedures developed to incorporate UHPC into the design. Specifications will be developed for the implementation of this material to precast plants.

Research shows that there are advantages to using UHPC.

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