Research Project Statement

Fiscal Year: 2005  
Project Statement Date: January 15, 2004

Project Number: 0-5134  
RMC Number: 5

Title: Self-Consolidating Concrete for Precast Structural Applications

Developed By: Tyler Ley, BRG

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Duration (# of years): __________  
Total Budget: $ TBD

First Year  
FY 2005 $  
Second Year  
FY $  
Additional FYs  
FY $

Project Description: Self-consolidating concrete (SCC) is a self leveling concrete that has been used in Europe, Asia and in select locations in North America. SCC has the potential to provide some advantages over non SCC mixtures. Some of these examples include a reduction in labor, equipment, concrete placement time, construction noise, and improved surface finish.

Currently, there are many different methods of obtaining SCC, therefore the behavior of SCC may be difficult to characterize. Also, it appears that most of these SCC methods require vastly different construction practices to be used compared to a non SCC mixture.

If the mixture and construction practices are so vastly different, can we expect the same hardened properties from SCC? What fresh properties need to be measured to insure that the SCC mixture provides a product that matches the current construction constraints? What changes to our current mixture design methods are needed to produce a useable SCC? Do our design codes need to be modified for SCC use?

The researchers are expected to submit technical memos quarterly to TxDOT to provide an update on their progress. These submittals shall cover the following topics:

- Evaluation of the hardened properties of SCC for various mixtures
- A literature review of other studies done on SCC
- A set of benchmark studies done to insure that other reported SCC performance is obtainable with Texas materials
- Evaluation of the fresh properties of SCC and the methods to measure them
- Evaluation of the change in fresh properties of SCC under different environmental conditions
- Suggestions of TxDOT specification changes to utilize this material
- Suggestions of any design code modifications that need to be made to utilize SCC
- Mixture designs and work plans for each method of obtaining SCC
- Manual for TxDOT inspectors to evaluate a SCC mixture when it arrives at the job site
- Produce SCC mixtures in a prestressed beam and compare the fabrication experience to a non SCC mixture (This beam should continue to be monitored for long term durability performance)
• Evaluation of compatibility with other admixtures
  Repeatability of fresh and hardened properties

**Deliverable Products**

**And Reports:**

**The following are minimums:**

**P1.** Manual for TxDOT inspectors to evaluate a SCC mixture when it arrives at the job site

**P2.** Suggestions for TxDOT specification changes to utilize SCC

**P3.** Suggestions for any design code modifications that need to be made to utilize SCC

**R1.** Research report(s) documenting all work performed.

**Project Summary Report**

**Implementation:**

The information from this research project will provide TxDOT with a better understanding of SCC. This information will guide TxDOT to insure that future SCC usage will yield the best products possible.

**Pre-proposal Meeting:**  □ Yes ☒ No

**Sole Source Justification, if applicable:** N/A

**Additional Information:** N/A

**Proposal Submission:**

- Proposals are required to be submitted in both hard copy (4 copies) and PDF format (1 PDF file per proposal). Both formats are used within TxDOT for evaluating the proposals and **must** contain identical information.
- The “Background and Significance” portion of the proposal should be limited to 10 pages.
- All proposals from researchers should be sent directly to your university’s Research Liaison for submission to RTI. The Research Liaison is TxDOT’s official contact with the university.

**Deadlines** (for RTI use only):

1. All individuals interested in proposing are encouraged to contact the PC or PD by February 12, 2004.
2. Proposals are due to RTI by 4:00 p.m. CST on March 24, 2004.