**Quarterly Progress Report – December 2008**
**For the period October 1, 2008 to December 31, 2008**
**ISU/FHWA Cooperative Agreement No. DTFH 61-06-H-00011 WO 6**
**Pooled Fund Project**

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|---|---|
| **Project Dates:** | December 7, 2006 – December 6, 2010 |
| **Project Title:** | Self-Consolidating Concrete-Applications for Slip-Form Paving, Phase 2 **(**Addendum 285**)** |
| **Principal Investigator:** | Kejin Wang, voice: 515-294-2152, email: kejinw@iastate.edu |
| **Project Technical Monitor:** | Sandra Larson, Iowa DOT, 515-239-1646, Sandra.larson@dot.iowa.gov<br>Gina Ahlstrom, 202-366-4612, email: gina.ahlstrom@fhwa.dot.gov |

**Progress Report:**

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|---|---|
| Project is on schedule | A little behind due to the delayed arrangement for field applications |
| Project is within budget | Yes. |
| Significant changes in project description | Yes (see summary of this quarter's research) |

**Problems** (current or anticipated):
Help is needed in contact paving equipment manufacturers and search for equipment that is suitable for SF-SCC

**Products and tangible results this quarter** (reports/articles written, oral reports/interviews):

**Interaction with Technical Monitor and/or Project Advisory Committee** (brief recount of meetings):

**Brief summary of this quarter's research**:
We are combining the field trial (Task 1) with field applications (Task 2). Performance monitoring (Task 3) of the pavements constructed in July and September 2008, at Ames, Iowa, is also in process. Considering the cost of the concrete materials, we are trying to reduce the cement content in the new SCC. In addition this quarter the research team:

1. Developed an SCC mixture with a reduced amount of cement by use of admixture and addition of aggregate.(11.5% reduction)
2. Developed an SCC mixture with a reduced amount of cement by use of GGBFS. (24% reduction)
3. Investigating the use of limestone dust on workability and mechanical properties of SF-SCC (ongoing)
4. Monitoring the performance of the SCC pavements constructed at Ames

**Main emphasis for next quarter:**

1. Continue investigating the use of limestone dust for SF-SCC
2. Investigate the shrinkage properties of SF-SCC compared to conventional pavement concrete
3. Continue to monitor the performance of the SCC pavements
4. Seek for other field applications of SCC
5. Contact paving equipment manufacturer and search for equipment that is suitable for SF-SCC

6. Analyze flocculation, rheology and green strength tests for compositions containing different types and amounts of clays (ACBM)
7. Investigate why Actigel has a much higher rapid chloride count using Mercury Intrusion Spectroscopy (ACBM).

| Task # | Phase II Task Description | Completion date expected | % of task completed |
|---|---|---|---|
| 1 | **Mix Design Refinement and Field Trial Testing** | | |
| *1.1* | *Further Study SF SCC Materials and Mix Proportions* | December 2007 | 90% |
| *1.2* | *Conduct Quality Control Tests for Selected SF SCC Mixtures* | December 2007 | 90% |
| *1.3* | *Investigate Engineering Properties and Durability of SF SCC Candidates* | December 2007 | 85% |
| *1.4* | *Conduct Field Paving Trial Tests Using SF SCC* | August 2008 | 60% |
| *1.5* | *Develop SF SCC Mix Design Methodology and Acceptance Criteria* | August 2008 | 75% |
| *1.6* | *Further Study the "Green" Strength, Shape-holding Ability, and Compactibility of SF SCC* | December 2008 | 85% |
| *1.7* | *Complete Test Data Analyses and Prepare Task 1 Report (will be combined with Task 2 report)* | December 2008 | 45% |
| 2 | **Field Investigation of SF SCC Paving** | | |
| *2.1* | *Select/Modify Paving Equipment for SF SCC Applications* | August 2008 | 10 |
| *2.2* | *Determine Construction Times and Locations* | August 2008 | 50 |
| *2.3* | *Perform Field Tests to Characterize SF SCC Performance* | August 31, 2008 | 50 |
| *2.4* | *Analyze Field Test Data and Establish Primary Guidelines for SF SCC Paving* | December 2008 | 25 |
| *2.5* | *Prepare Task 2 Report* | December 2008 | 10 |
| 3 | **Performance Monitoring and Technology Transfer** | | |
| *3.1* | *Field Performance Monitoring of SF SCC Pavement* | September 2010 | 10 |
| *3.2* | *Technology Transfer* | December 2010 | 0 |
| 3.3 | Prepare Final Report for Entire Project | December 2010 | 0 |

* Significant changes have been made in project description:
(1) We are combining the field trial (Task 1) with field applications (Task 2).
(2) Considering the cost of the concrete materials, we are trying to reduce the cement content in the new SCC, therefore, the activities in task 1 are extended.

**DATA FOR THE QUARTER ENDING DECEMBER 31, 2008**

| BUDGET CATEGORY DESCRIPTION | AMOUNT BUDGETED | EXPENDITURES THIS PERIOD | CUMULATIVE EXPENDITURES |
|---|---|---|---|
| TRAVEL | $10,000.00 | $0.00 | $0.00 |
| SUPPLIES/MATERIALS | $2,000.00 | $703.64 | $1,161.66 |
| SUBCONTRACTS(subj to IDC) | $25,000.00 | $0.00 | $25,000.00 |
| SUBCONTRACTS(not subj to) | $66,999.00 | $28,271.59 | $43,283.87 |
| OTHER DIRECT COSTS | $13,000.00 | $0.00 | $370.00 |
| **TOTAL DIRECT COSTS** | $116,999.00 | $28,975.23 | $69,815.53 |
| INDIRECT COSTS (University Overhead) | $13,001.00 | $182.95 | $6,898.23 |
| **CATEGORY TOTALS** | $130,000.00 | $29,158.18 | $76,713.76 |

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