

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): IOWA DOT

INSTRUCTIONS:

Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # TPF-5(100)	Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 4 – December 31)	
Project Title: Deicer Scaling Resistance of Concrete Mixtures Containing Slag Cement		
Project Manager: Peter Taylor	Phone: 294-9333	E-mail: ptaylor@iastate.edu
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Lead Agency Project ID: RT 0000	Other Project ID (i.e., contract #): Addendum 374	Project Start Date: 4/15/10
Original Project End Date: 10/14/11	Current Project End Date:	Number of Extensions:

Project schedule status:

On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Total Percentage of Work Completed
24,888	No billing yet	5%

Quarterly Project Statistics:

Total Project Expenses This Quarter	Total Amount of Funds Expended This Quarter	Percentage of Work Completed This Quarter
No billing yet	No billing yet	5%

Project Description:

Field surveys of portland cement concrete pavements and bridge decks containing slag cement (13) have already been conducted. This was done to evaluate whether the addition of slag cement to the concrete mixtures increased the surface scaling caused by the routine application of deicer salt. From this study it appeared that construction-related issues played a bigger role in the observed scaling performance than did the amount of slag in the concrete mixture. The work also indicated that the test method C672 may be more severe than most environments.

The aim of this project is therefore to recommend a test method that is more representative of field performance for concrete in a salt scaling environment.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

5 Concrete Mixes have been cast:

- 100% low alkali (LA) cement mix 0.42wc, 6-7% air entrained using Vinsol Admixture
- 80% LA, 20% slag grade 120 mix 0.42wc, 6-7% air entrained using Vinsol Admixture
- 65% LA, 35% slag grade 120 mix 0.42wc, 6-7% air entrained using Vinsol Admixture
- 50% LA, 50% slag grade 120 mix 0.42wc, 6-7% air entrained using Vinsol Admixture
- 50% high alkali (HA), 50% slag grade 100 mix 0.42wc, 6-7% air entrained

For each mix, 6 slabs have been cast for deicer scaling under the ASTM C672, modified BNQ and VaDOT accelerated curing regimes (2 slab specimens for each test).

Test being conducted on the mixes above include:

- 7,14, 28, 28 accelerated curing (7days moist, 21days moist at 38°C) and 56 day compression strength tests (2 cylinders cast for each testing period)
- 14, 28, 28 accelerated, 56 day RCPT testing (2 samples per testing period)
- Samples have been prepped for Air/Void testing for all 5 mixes and will be analyzed once software is installed in mid-July.
- Freeze/Thaw cycling has commenced on slabs from all 5 mixes (currently 5 -10 cycles have been completed depending on cast date of each mix)

Anticipated work next quarter:

- 5 additional mixes to be cast
- Identical tests will be performed as mentioned above
- A slab is being instrumented with thermocouples to determine the temperature cycles experienced in the solution and just below the concrete surface.

Significant Results:

Circumstance affecting project or budget (Describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope, and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

Not enough freezer space for the required number of slabs projected for deicer scaling. Currently only 30 slabs may be freeze/thaw cycled at a time and there are at least 60 slabs to be tested. As a result, the current deadline for the project is not likely to be met.