TRANSPORTATION POOLED FUND PROGRAM
Quarterly Report

PROJECT TITLE: Extending the Season for concrete Construction and Repair-Phase-II

OBJECTIVES: The objective of Phase III study is to develop tools and guidance to specify dosage levels of admixture used in antifreeze concrete to correspond with the varying weather conditions experienced at any job location.

PROJECT LEADER: Lynette Barna from US Army Cold Region Lynette.A.Barna@usace.army.mil 603-646-4503 **LEAD AGENCY**: FHWA **PROJECT ENGINEER:**: Peter Seman from US Army Cold Region Peter.M.Seman@usace.army.mil 603-646-4825	**SP&R PROJECT NO**: DTFH61-08-X-30031 TPF-5(150)	PROJECT IS: _____ Planning __X___ Research & Development
ANNUAL BUDGET: Estimated Funding through interagency Agreement is $325,000	**PROJECT EXPENDITURES TO DATE**: None	

WORK COMPLETED:

Both Phases I and II of Extending the Season for Concrete Construction and Repair have proven that the antifreeze concrete approach to cold weather concreting works. Now the challenge is *putting it into practice!* Easy to use tools to aid implementation of this technology may include a cold weather field guide, a computer-based 1-d model, or a computer-based 3-d model. These computer-based tools would potentially allow for 'real-time' monitoring of the temperature within the structure, such a depiction is shown in Figure 1. Using the temperature readings, the strength gain may be estimated, as shown in Figure 2.

A fully funded Phase III study, we believe, would allow us to attain a tool at the computer-based 1-d level.

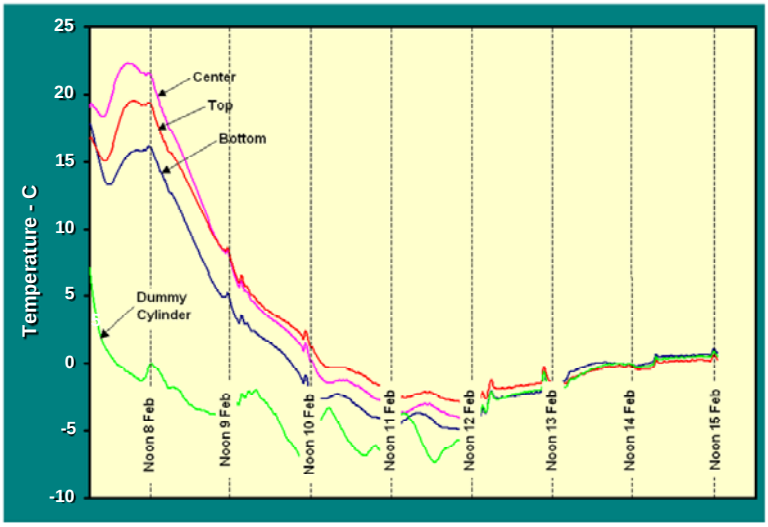

Figure 1. Example of real-time temperature monitoring within structure.

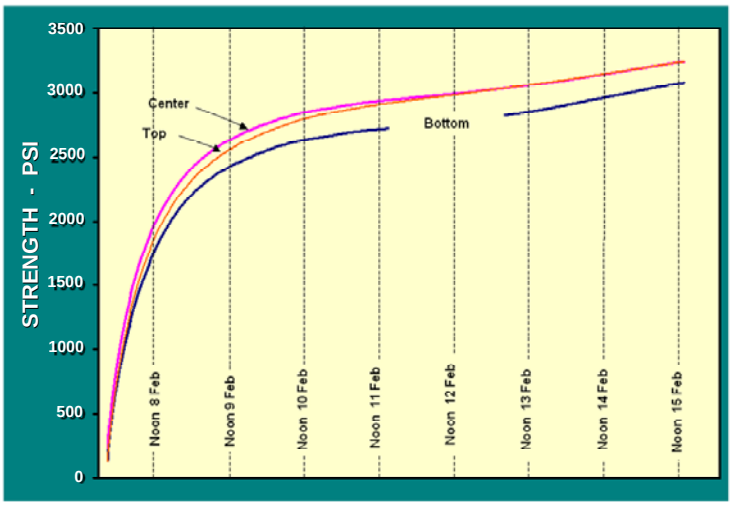

Figure 2. Temperature readings are used to estimate the early strength gain within the structure.

Review of previous field data - Work conducted during this quarter concentrated around reviewing previous field data and developing a project framework. Temperature data collected from the most recent field site at Ft. Wainwright, Alaska (March 2008) is being reviewed. The project consisted of a hardstand of slab on grade, made up of 5 sections each with dimensions of 25 ft x 15 ft. It was constructed and instrumented with temperature sensors at 3 critical locations: the center of mass, the corner, and along the edge. Each section used a different dosage level of chemical admixtures in the concrete mix. Air temperature data collected from the site, along with the geometry, and site conditions will be useful input to compare predicted concrete temperatures from potential thermal models.

Review potential concrete thermal models - A webinar entitled, “Introduction to HIPERPAV” was offered by ACPA and presented by Mr. Dan K. Rozycki of the Transtec Group. This webinar provided an overview and background information on the capability of the software.

Cold weather concrete web page:
http://www.crrel.usace.army.mil/projects/coldweatherconcreting/antifreezeadmixtures / for information on Phases I and II, as well as other work accomplished related to Cold Weather Admixture Systems (CWAS).

Another resource with project-related information is the FHWA TPF project website at: http://www.pooledfund.org/projectdetails.asp?id=377&status=4

SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:

Continue review of Ft. Wainwright data and other field site data;
Continue to identify and review potential concrete thermal models.

STATUS AND COMPLETION DATE:
Period of performance is 45 months. Interagency Agreement between FHWA and US Army Cold Region, Research Engineering Laboratory was signed on 8/7/2008.