



Cold-Weather Concrete

SpringBoard and the Cold Regions Research and Engineering Lab (CRREL) provide manpower, logistics, support, and funding for successful cold-weather concrete demonstrations

In 2008 SpringBoard was the recipient of the National Association of Development Organizations Innovation Award for demonstrating applicability of cold weather concrete in Juneau and Fairbanks, Alaska. This technology is edging closer to technology transition as other groups examine it more closely.



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Cold-weather concrete utilizes off-the-shelf, commercially-available admixtures that depress the freezing point and accelerate the setting time, allowing the concrete to cure properly, even at temperatures below freezing. Because concrete loses strength as it freezes, contractors are often forced to build warming tents over projects toward the end of the building season or during winter months. This new approach to cold weather concreting extends and eases the pressures of an already overburdened construction season in Alaska and other cold regions.

The 2008 pour at Ft. Wainwright near Fairbanks brought together, as collaborators, CRREL, the US Army, private contractors, the State of Alaska, university researchers and design engineers who are looking at this seriously for upcoming projects in the winter of 2008-09.

Applications include military and civilian projects, particularly significant in remote areas where heated enclosures are impractical. The mixture can be poured on frozen ground and needs only to be covered with a light insulation blanket. In 2007, at the Cold Climate Housing Research Center, Fairbanks, two pours were successfully made on days when the low temperatures overnight were -25 degrees Celsius.

“With energy costs skyrocketing and increasing costs to build enclosures for normal winter concrete pours, this cold-weather concrete technology is looking better all the time,” says Dr. Charles Korhonen, a retired CRREL engineer who consults to SpringBoard. “Work still needs to be done to refine the process, but we are getting there.”

The 2008 field demonstration was conducted as a part of the Installation Technology Transition Program (ITTP). This ACSIM—Assistant Chief of Staff for Installation Management—sponsored effort transfers innovative technologies that improve infrastructure design, operation, and maintenance on Army installations.

The Marine Corp is interested in learning more about cold-weather applications. With the assistance of T2Bridge, new Cooperative Research and Development Agreement (CRADA) opportunities are being explored.