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VIRGINIA READY MIXED CONCRETE ASSOCIATION

COLD WEATHER CONCRETING:
HOW TO GET IT RIGHT

In cold weather, concrete cannot simply be placed, finished and forgotten – it needs continuing warmth and care early on.

There are several ways to deal with cold weather concrete construction both from production and construction standpoints, and while the following aren't new or revolutionary ideas, they will help offset the effects of cold weather on concrete.

ASK FOR HOT WATER

By using heated mix water, the concrete can be produced at a temperature that should be high enough to allow it to set and gain the strength it needs to get through the important first few hours.

INCREASE CEMENT CONTENT

Since the amount of heat generated relies on the quantity of cement, a higher strength concrete with more cement can be used in colder conditions.

WARM THE SUBGRADE

Concrete should NOT be poured on a frozen subgrade. Make sure to warm the subgrade and forms so the temperature is similar to the concrete being poured.

ASK FOR ACCELERATING ADMIXTURES

Accelerators increase the rate at which concrete hardens, meaning more heat is generated in the early stages and the concrete sets faster. Remember, though, that accelerators don't prevent freezing or frost damage.

RETAIN THE CONCRETE'S TEMPERATURE

By insulating the forms or covering the concrete with insulated curing blankets, heat can be kept in the concrete and support the hardening process so it can reach adequate strength.

PROTECT FROM FREEZING

The temperature of concrete is related to the temperature of its surroundings, so we can create an artificial environment for it.

Concrete mixes and admixtures are under development that will provide new weapons to combat cold weather concrete problems, but the key is that cold weather concreting must be a team effort.

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The tips contained in this document are intended to be helpful. For full technical information, please refer to the American Concrete Institute's Guide to Cold Weather Concreting reported by ACI Committee 306 (ACI 306R-16).

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