Cold Weather Core Reinstatements

In northern climates, most of the roadwork involving pavement repair and reinstatement has been limited to the period between April and November when the ambient temperature is above 40ºF and there is no likelihood of frost.

Without some form of external heat source or cold weather chemical additives, no water-soluble cementitious product will set up and gain strength at temperatures below freezing. These additives can be in the form of chemical accelerators that speed up the hydration process or antifreezes that will lower the temperature at which the water in the concrete will freeze or may involve the entrainment of tiny bubbles of air. Because the addition of these substances tend to weaken the concrete they are limited in their use to slabs or concrete structures where compressive strength, rather than bonding strength, is most important. For this reason these additives cannot be effectively employed in bonding compounds like Utilibond™ or other cement-based grouts.

At freezing temperatures ice crystals form on the surfaces to be joined and prevent the bond from forming. To work in winter weather conditions you need to heat the surfaces of both the hole and the core to a temperature of at least 50ºF – 60ºF to ensure that the surfaces to be bonded are not frozen and are warm enough for long enough to allow the cementitious bond to set and gain strength before the frost returns.

We are aided in this process by the fact that the hydration process in Utilibond™ is exothermic (i.e. it gives off heat). Because of its super fast strength gain, Utilibond™ only needs about 5-10 minutes for that reaction to develop. But we need an external heat source to raise the surface temperature of both of the substances to be bonded long enough to allow the hydration reaction to develop sufficient internal heat of its own to prevent the formation of ice crystals. This will allow the bond to gain strength before the frost returns.

Because of Utilibond™'s super-fast strength gain formula, the retained heat in the pre-heated core and pavement eliminates the ice crystal problem for a sufficient time to allow the hydration reaction to kick in -- roughly 5 to 10 minutes. That reaction generates additional internal heat that allows Utilibond™ to gain strength over the next 30 minutes or so. Once this initial bonding reaction takes place, freezing temperatures will not affect the bond. Other products with slower strength gain times, such as those that take more than half an hour to gain strength at normal operating temperatures of 70º F, will take longer to set up and gain strength and may not perform in cold weather.

To achieve these conditions in cold weather we use hot water in the mix and heat the surfaces of both the hole and the core with a specially engineered core heater.

Contact Utilicor directly for further details on the latest procedures and equipment for cold weather

Utilicor Core Heater