



TECHNICAL BULLETIN 116

Subject: Elastomeric Concrete Placement in Cold Temperatures
(POSTING DATE: 12/27/11)

What is the recommended concrete temperature related to the proper bond of elastomeric concrete, or more specifically, how soon before you can install the expansion joint system into cold or frozen concrete?

The minimum temperature to install any elastomeric concrete is when the concrete deck temperature has reached a minimum of **40 degrees Fahrenheit** and is rising. Cease installation of expansion joints under adverse weather conditions and colder condition or if the temperature is falling.

At 40 degrees or less there is the strong possibility that ice crystallization may occur. Ice crystallization, often referred to as "ice wedging" or "frost wedging," occurs when water or moisture seeps into the concrete pores and then freezes. The more porous the concrete, the more susceptible it will be to ice crystallization. Additionally, because water expands when it freezes, it occupies a larger percentage of the open pores in the concrete thereby reducing the surface area for bonding. Under these conditions the Elastomeric Concrete cannot properly bond to the concrete which may cause future delamination problems.

If this is new concrete please refer to Technical Bulletin 102 - *"Elastomeric Concrete Placement in New Concrete."*

Please note that new concrete reaches 80% of its strength at 28 days which coincides with the natural concrete hydration process. After 28 days the concrete has reached a point in the hydration process where the moisture content in the concrete is at or below 4%. That is the targeted and acceptable moisture content when elastomeric concrete should be applied.

If cold temperatures occur within the first month of the initial concrete pour it is likely to slow down the hydration process. High moisture content will adversely affect the ability of elastomeric concrete to cure properly and bond to concrete. During the deceleration period concrete begins releasing water (moisture) as a normal part of the curing process. Since a greater amount of moisture will be present in the concrete then the likelihood of ice crystallization increases. Please note that for every day below freezing you will need to extend the curing process by double that number of days.

It is best practice to look for an installation period after the first 28 days of concrete cure and at point when the temperature is a minimum of 40 degrees F and rising for the next 4 to 7 days.