

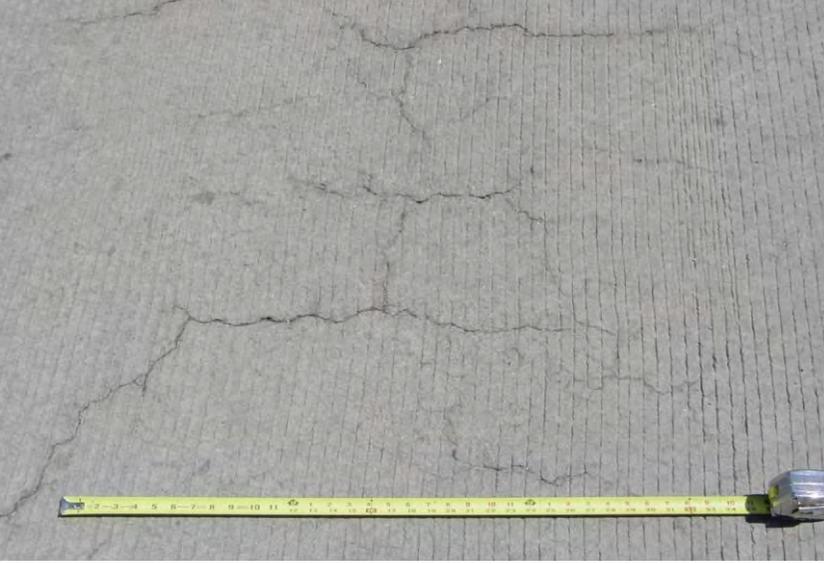


CONSTRUCTION ADVISORY:
**HOT
WEATHER
CONCRETE**

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HOT WEATHER CONCRETE is any combination of high ambient temperature, low humidity, solar radiation, and high wind velocity that tends to impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration.



WHAT SHOULD YOU DO?

Suggested Mitigating Measures

- **Routine recordings of site conditions** should be taken including air temperature, sun exposure, relative humidity, and prevailing winds.
- **Cooling of materials and equipment.** The temperature of materials and equipment should be kept as low as possible to prevent rapid setting of concrete. The use of chilled water or ice in the mix can also help to reduce the temperature of the concrete. The temperature of mixing water has the greatest effect per unit weight on the temperature of concrete. Chilled water can reduce the concrete placing temperature usually by a maximum of approximately 8° F.*
- **Using ice as part of the mixing water** is a major means of reducing concrete temperature. The ice should be crushed, shaved, or chipped when placed directly into the mixer as part of the mixing water. Liquid nitrogen is also used to cool aggregates and water.
- **Use of appropriate concrete mix.** The concrete mix should be adjusted to counteract the effects of hot weather. This can include using a lower water-cement ratio, reducing the amount of cement, and increasing the amount of fine aggregates.*
- Concrete should be handled and transported with minimum segregation and slump loss.
- **Limit re-tempering.** Strength reduction and other detrimental effects are proportional to the amount of re-tempering water added. Water addition in excess of the proportional maximum water content or w/cm to compensate for loss of workability is prohibited.
- **Protect the concrete.** The concrete should be protected from the sun and wind to minimize moisture loss. This can be achieved by using shade cloths, windbreaks, or burlap, among other materials as well as misting the surface to raise relative humidity.
- **Schedule work.** Concrete placement should be scheduled during the cooler times of the day, such as early morning or late afternoon.
- **Monitor the curing process.** Continue to monitor the concrete during the curing process and take measures to maintain the proper moisture level until the concrete has reached the desired strength. Curing should be conducted so that at no time during the prescribed period will the concrete lack ample moisture and temperature control to permit full development of its potential strength and durability.

*Engineer of Record (EOR) approval may be necessary