

## Hot Weather and Concrete

MPW not only is concerned about the placement of concrete during cold weather, but also hot weather. Higher ambient temperature, wind, and air humidity can all have a negative impact on the performance of concrete. Hot weather concreting can be defined as any period of high temperature during which special precautions need to be taken to ensure proper handling, placing, finishing and curing of concrete.



Higher temperatures cause water to evaporate from the surface of the concrete at a much faster rate and cement hydration occurs more quickly, causing the concrete to stiffen earlier and increasing chances of plastic cracking to occur.

Concrete cracking may result from rapid drops in the temperature of the concrete. This can occur when a concrete slab or wall is placed on a very hot day immediately followed by a cool night. High temperature also accelerates cement hydration and contributes to the potential for cracking in massive concrete structures. Higher relative humidity tends to reduce the effects of high temperature.

Other hot weather problems that may occur with concrete placement include increased water demand, which raises the water-cement ratio and yields lower potential strength, accelerated slump loss that can cause loss of entrained air, fast setting times requiring more rapid finishing or just lost productivity. MPW uses the following guidelines to help protect your investment as much as possible during hot weather:

### Organizing/Planning

- ▶ We organize each job in advance to ensure enough workers are onsite to avoid delays in placing, finishing and curing the concrete.
- ▶ We schedule, or consider, early morning or evening placement of the concrete.
- ▶ We use mix designs that ensure the delivery of a product with the correct slump, strength, and performance properties to meet the job requirements.
- ▶ Our Dispatcher and Scheduling Coordinator schedule concrete trucks to avoid waiting time so the concrete will not begin to set before placement.

### Pre-placement

- ▶ On exceptionally hot days, our crews may sprinkle or mist cool water on the forms, steel and subgrade before placing the concrete.
- ▶ However, we try to avoid standing water where we have moistened these items.

### Placement

- ▶ Our crews are ready when the concrete arrives to ensure it is unloaded within 60-90 minutes of batching.
- ▶ MPW minimizes the amount of water added on the job, by adding water only on arrival at the job site to adjust the slump. Later additions of water are avoided whenever possible!

### Post-pour

- ▶ Water should never be added to concrete that is more than 1.5 hours old.
- ▶ We may delay or extend setting times by using retarding admixtures.
- ▶ Our flatworkers will begin finishing as soon as the sheen has left the surface of the concrete.
- ▶ MPW generally never uses accelerators to speed up the setting process during periods of hot weather.