

HOT WEATHER CONCRETING

Hot Weather can be defined as any period of high temperature in which special precautions need to be taken to ensure proper handling, placing, finishing, and curing of concrete. Climatic factors such as high wind and dry air can occur at any time. Basically anytime conditions can produce a rapid rate of evaporation of moisture from the surface of the concrete, protective measures should be implemented.

TIPS TO MINIMIZE THE EFFECTS OF HOT WEATHER

- Contact your Ready Mix Producer to discuss cooling concrete, reducing heat of hydration, and using a water-reducing, set-retarding admixture.
- Dampen Sub-grade, forms, and Reinforcing Steel.
- Erect temporary Windbreaks and Sunshades
- Consider early morning, evening, or nighttime concrete placement.
- Provide sufficient work force to eliminate delays during construction.
- Schedule Ready Mix Trucks to minimize waiting time.
- Use "Plastic Shrinkage Prediction Chart" to determine the rate of evaporation. Precautions are required when the rate of water evaporation approaches 2 lbs. per SF per hour.
- Protect the Concrete between finishing passes.
- Apply final Curing immediately after final finishing to control moisture loss and surface temperature.
- Saw Cut slab as soon as possible.
- Protect surface; cover slab for at least 3 days.

ANY COMBINATION OF HOT, DRY OR WINDY WEATHER CAN

- Increase Slump Loss, through rapid surface evaporation.
- Accelerate Set
- Increase the potential of Plastic Shrinkage Cracking
- Decrease Air content if the dosage of Air Entrainment is not adjusted.
- Reduce Strength if water is added to offset slump loss.

PROTECT BETWEEN FINISHING PASSES BY

- Spraying a "Evaporation Retardant" on the surface can reduce evaporation by up to 80% for concrete under shade and windy conditions and up to 40% for concrete exposed to direct sunlight.
- Covering with White Plastic sheeting or damp burlap.
- Continuous Fog Spraying to produce Fog blanket, spray should not exceed $\frac{1}{2}$ gallon per minute. Optional Fog Sprayer: Use a pressure washer that delivers 2 to 3 gpm at 2000 to 2500 psi. Use a 40 to 50 degree wide-angle nozzle; in windy situations, use a 10 to 15 degree nozzle.

COOLING MATERIALS FOR HOT WEATHER CONCRETING

- One pound of ice absorbs 144 Btu. of heat.
- One pound of water cooled to 30 degrees, absorbs only 30 Btu.
- 100 pounds of crushed ice per cubic yard replacing that weight of normal mixing water having a temperature of 80 degrees F will reduce concrete temperature 17 degrees F.
- 50 % of mixing water weight in crushed ice will lower concrete temperature 25 degrees F.
- A 3.5-degree F, change in water temperature will lower concrete temperature by one degree.
- A 1.5-degree F, change in aggregate will lower concrete temperature one degree.
- Sprinkling stockpiles will lower concrete temperature one to two degrees.