

# CONCRETE BASICS

. . . Know Them and Use Them!



## HOT WEATHER CONCRETING—6

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### WHAT TO EXPECT

- Quicker setting.
- Rapid surface drying. . . less finishing time.
- Lower air content in air-entrained concrete.
- Plastic shrinkage cracking.
- Lower strengths.
- Surface checking.
- Early cracking (in patios, driveways before sawing).

### WHAT TO DO

- Use a retarder in the concrete mix.
- Cool the concrete.
  - Be sure aggregate piles are sprinkled.
  - Sprinkle the forms. For slabs-on-grade, sprinkle subgrade.
  - Replace mix water with equal weight of ice (50 lbs/cu yd reduces temperature about 9 degrees).
  - Inject liquid nitrogen into the mix (in place of ice).
- Use fly ash mixes where permissible.
- Apply fog spray over concrete surface during finishing.
- Make frequent air tests . . . increase admix as needed.
- Add about 10 to 15 lbs of cement per cu yd.
- Start curing immediately after finishing.
- Saw joints as early as possible . . . expect slight raveling.

In the case of extreme temperature conditions or with mass concrete, the concrete temperature can be lowered by using chilled water or ice as part of the mixing water.

Other measures such as sprinkling and shading the aggregate prior to mixing, can be used to help lower the temperature of the concrete. If low humidity and high winds are predicted, then windbreaks, sunscreens or mist fogging may be needed to avoid plastic shrinkage cracking in slabs.

## Follow These Rules for Hot Weather Concrete:

- Concrete mixture designs may include set retarders and water reducers, the lowest practical cement factor. Modify mixtures as appropriate - retarders, moderate heat of hydration cement, pozzolanic admixtures or other proven local solutions.
- Adequate manpower to quickly place finish and cure the concrete.
- Limit the addition of water at the jobsite - add water only on arrival at the jobsite to adjust the slump. Later additions should be avoided; in no instance should they exceed 2 or 2-1/2 gallons per cubic yard. Never add water to concrete that is more than 1-1/2 hours old.
- Slabs on grade should not be placed on polyethylene sheeting - if a vapor barrier is required, then a bed of damp sand should be placed over it.
- Finish as soon as the sheen has left the surface; start curing as soon as finishing is completed. Continue curing for at least 3 days: cover to prevent evaporation or use a liquid membrane curing compound or cure slabs with water. The addition of white pigment to membrane curing compounds will help by reflecting heat away from the concrete surface.
- Moisten the subgrade, forms and reinforcement prior to placement. However, avoid standing water.
- Protect field test cylinders by shading and preventing evaporation. Field curing boxes with ice or refrigeration may be used to ensure required 60-80F for cylinders.
- **DO NOT USE ACCELERATORS!!!!**

### Technical Information prepared by:

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