Virginia Ready-Mixed Concrete Association

Cold Weather

Approximate set time for concrete at 70ºF. is six hours. Set time jumps to just over 14 hours if the concrete temperature drops to 40ºF. If it drops below this point and the concrete actually freezes early in the process, loss of strength, up to 50 percent, increased permeability and a lower resistance to weather may result.

The key is to start with warm concrete and keep it warm. The internal heat of the concrete mix may be raised by heating the materials ; using extra or special cements, or by the addition of accelerators.

Basic Guides for Winter Concreting:

1. Plan in advance. Have equipment and materials ready before cold weather hits. Be set with heaters, insulating materials and enclosures.
2. Use air-entrained concrete.
3. Don't place concrete on a frozen sub base. Be sure that all ice, snow and frost are removed from surfaces the concrete will touch.
4. For durability, the fresh concrete should be kept at 55ºF or higher for thin sections. Consider using high-early strength concrete.
5. Cure concrete to prevent loss of moisture.
6. Do not use "antifreeze" compounds in an attempt to lower the freezing point of concrete.
7. Leave the forms in place as long as the job schedules permit. Reshoring is necessary until concrete reaches required design strength.
8. The use of calcium chloride or admixtures containing soluble chlorides is not recommended under certain conditions:
    - Where discoloration of troweled surfaces cannot be tolerated (Interior architectural slabs)
    - Where galvanized steel will remain in permanent contact with the concrete.
9. Be very careful in protecting cylinders for strength tests.
10. Concrete placed in late fall or winter should not be exposed to salts applied as deicers or salts which drip from parked vehicles. The best way to help prevent this last item is to use a curing compound or a sealer/curing compound product.