

COLD WEATHER CONCRETE

As temperatures begin to fall, special precautions must be taken when ordering, placing, finishing and curing concrete. Placing exterior concrete in freezing temperatures is risky, even when covered with blankets. Good concrete practices and proper planning are necessary to provide a quality, long-lasting product.

Unlike most products that are completed in the factory, where the manufacturer has sole responsibility for the quality of its final product, concrete is sold before it is a finished product. A high quality, durable finished product is the responsibility of both the supplier AND the concrete contractor placing the slab.

Cold weather concrete practices should be used 30 days before temperatures fall below 40 degrees Fahrenheit. In central Iowa, this temperature drop normally occurs about October 1st. As the temperature of concrete drops, setting time and strength gain is much slower. A 20 degree drop in temperature will double the set time, and inhibit the evaporation of bleed water. Premature finishing can cause blistering, scaling, or other surface defects.

ORDERING SPECIFICATIONS

- Minimum of 4000 PSI Exterior Concrete Mix.
- 6-8% Air. This is higher than current industry standards, but allows for some air loss during placement and finishing, while maintaining a level of protection against freeze/thaw conditions. Air entrainment should also be used in interior slabs that are exposed to freezing temperatures.
- The use of accelerating admixtures can speed the rate of setting and strength gain.
- 4 inch slump \pm 1". Excessive water will weaken the concrete and increase chances of scaling.

PLACING AND FINISHING

- Never place concrete on a frozen subgrade
- Place concrete at no more than a 5" slump.

SUDAS - COLD WEATHER TEMPERATURE PROTECTION

TEMPERATURE FORECAST TYPE OF PROTECTION	
TEMPERATURE	TYPE OF PROTECTION
35– 32 F	One layer of burlap for concrete. Plastic top layer is required if burlap is exposed to rain or heavy winds.
31 To 25 F	Two layers of burlap or one layer of plastic on one layer of burlap
Below 25 F	Four layers of burlap between layers of four mil plastic or equivalent commercial insulating materials.
Use of straw shall not be allowed for temperature protection	

CURING

- Humidity is low in heated enclosures, so apply curing compound immediately after finishing,
- Follow manufactures application recommended temperatures. 100% coverage is important.
- If supplemental heaters are used, they should be vented outside, to minimize dusting.

MAINTENANCE

- **Deicers should never be used during the first year of service and rarely thereafter.**
- Concrete sealants penetrate the slab and create a barrier that prevents the penetration of deicers.
- Only use breathable sealants that allow moisture to escape, and do not apply for at least 28 days.

