



PLAN WINTER CONCRETE PLACEMENT TO AVOID PROBLEMS

For much of the year along the Front Range, temperatures are mild and forgiving for concrete placement. However, during times like Stock Show week (notoriously frigid) and the dog days of July and August, special precautions are needed to assure good quality concrete is achieved. Since it is January now, let's focus on cold weather issues.

Like most of your building practices, the first place to start is a good plan. Refer to Table 3.1 of American Concrete Institute 306R-88 for guidance about the minimum recommended concrete temperature at time of placement, which is a function of air temperature and the minimum size of the concrete section you want to place.

Conduct a winter preconstruction meeting with your foundation and flatwork subcontractors to discuss the quality control measures you will implement. Consider establishing "no-go" criteria to avoid placement in very cold weather. If

you choose to go ahead and place the concrete, make sure subcontractors will have all the necessary equipment for proper placement, including blankets and heaters, if necessary.

Contact the supplier and request a mix that has been proportioned for cold weather placement, including use of appropriate accelerating admixtures. Don't count on these accelerators to stop freezing; they only speed set time and strength gain of protected concrete. It is possible for the supplier to help control the mix temperature by controlling the temperature of the aggregate used in the mix and the temperature of water when it is added to the aggregate. The supplier should avoid adding hot water directly to cement.

Once you have your plan, execute. Concrete should not be placed on frozen ground, ice or snow. Place blankets on flatwork areas the day before if you suspect cold or wet overnight weather. If possible, reinforcing steel should not be below freezing temperature when you pour.

Once the concrete is in place, protect it from freezing. Edges and corners deserve special attention because they are most susceptible. Try to maintain the in-place concrete temperature at 50 degrees F or greater, until the required strength is achieved. This might mean you need to keep blankets in place for a week or more during freezing weather. If you use heaters in confined areas like a foundation, make sure to vent exhaust to avoid carbonation and dusting of the concrete surface. When you pull the protection, do it on a mild day so that the concrete cools gradually to reduce potential cracking from thermal stresses. 🏠

These are general tips for cold-weather concreting. For specific recommendations, refer to ACI 306R-88.

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