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COLD WEATHER CONCRETE PLACEMENT

Under the guide of the Manual of Concrete Practice, cold weather is defined as a period when, for more than 3 consecutive days, the following conditions exist:

1. The average daily air temperature is less than 40 degrees and
2. The air temperature is not greater than 50 degrees for more than one half of any 24-hour period.

The average daily temperature is the average of the highest and the lowest temperatures occurring during the period from midnight to midnight. Cold weather, as defined, usually starts during fall and continues until spring.

Obviously, if we didn't allow placement of concrete unless these conditions were exceeded, we wouldn't be providing much of an opportunity to construct buildings during the course of the year.

Therefore, the following policy will be enforced.

No concrete shall be placed upon frozen sub-base. Sub-base shall be placed, compacted and protected from freezing prior to placement.

No concrete placement shall take place when the high temperature predicted will not be above 32 degrees. Considerations of wind chill factors are applicable. Approved protection methods are applicable if indicated and approved prior to placement.

Flatwork- Shall not be placed when the temperatures for the day of placement are predicted to be less than 40 degrees. Shall be protected from weather and maintained at 50 degrees for a period of 72 hours after placement. If this cannot be achieved in an approved manner, do not place the concrete.

It is common knowledge that standard operating procedures are to pour footings one day and walls the next. With that in mind –

Footings- Shall be reasonably protected from frost once placed and shall be fully protected along with the wall for a minimum period of 72 hours once placed.

Walls- Protected from freezing for a minimum period of 72 hours once placed. That means that the forms will be covered completely in such a manner as to be airtight for the minimum of 72 hours. Forms shall not be removed the next day and moved to next job.

This potentially provides for an additional expense to the contractor, not solely for the winterizing of the project as well as the concrete design mix, but additionally in that the forms aren't being utilized to their best economical purpose.

There's also an understanding that in some cases the temperatures in an excavated hole are warmer than the air temperatures being recorded above the hole. This applies occasionally to footing placements. However, the walls project above the excavated area. Therefore, that premise is not applicable to walls.

If the inspector becomes aware of inadequate protection of placed concrete, that specific contractor will be made aware of the concern one time. Any second notification will require that specific contractor to cease operations until weather allows placement without the protective measures being required.

At the discretion of the Code Official, Cylinder testing may be required to substantiate minimum PSI strength requirement compliance, at the cost of the developer or permit holder.

At the discretion of the Code Official – When the area of work and materials are fully enclosed and protected to enable maintaining the required temperatures of above 40 degrees for a minimum of 24 hours before and 72 hours after placement, consideration of continuation of placement may be provided by the Code Official or their respective agent in written format.

At the discretion of the inspector or code official, the time line may need to extend for up to 7 days or more when the weather environment requires such.

References to:

IBC 2012 – 1904 Durability Requirements
ACI 318
Manual of Concrete Practice 19.4 - Table 19.2 & 19.3