

SCOTT MESSER
Director

Construction Industry Communication #35

From: Amit Ghosh, Chief Building Official
Re: Cold Weather Placement of Concrete and Masonry Work
Date: June 14, 2010

Background: Columbus Department of Building & Zoning Services inspectors have recently witnessed placement of concrete during cold weather that has caused the work to be compromised and, thus, creating unsafe conditions. In order to help alleviate this situation, concrete and masonry contractors are to abide by the following procedures:

Concrete slab on grade

- During cold weather periods (As defined below - ACI Manual 318), the base course and subgrade shall be protected by an approved means to prevent concrete placement on frozen or frost-covered material.
- All concrete shall be protected against freezing for at least 5 days after being placed.

Concrete foundation walls and footings

- During cold weather periods (As defined below - ACI Manual 318), footer excavations and/or trenches shall be protected by an approved means to prevent concrete placement on frozen or frost-covered soils.
- All concrete shall be protected against freezing for at least 5 days after placed.

Masonry Work

- All masonry work performed during winter months shall comply with the following: Ohio Building Code (OBC) Section 2104.1 – Cold-weather construction:

The following cold-weather procedures shall be implemented when either the ambient temperature falls below 40 degrees F (4 degrees C) or the temperature of masonry units is below 40 degrees F (4 degrees C):

1. Temperatures of masonry units shall not be less than 20 degrees F (-7 degrees C) when laid in the masonry. Visible ice on masonry units shall be removed before the unit is laid in the masonry.
2. Mortar sand or mixing water shall be heated to produce mortar temperatures

- between 40 degrees F (4 degrees C) and 120 degrees F (49 degrees C) at the time of mixing. Mortar shall be maintained above freezing unit used in masonry.
3. Masonry surfaces under construction shall be heated to 40 degrees F (4 degrees C) where ambient temperatures are between 20 degrees F (-7 degrees C) and 25 degrees F (-4 degrees C) and wind breaks shall be installed when wind velocity is in excess of 15 mph (24 km/hr).
 4. Where ambient temperatures are below 20 degrees F (-7 degrees C), an enclosure for the masonry under construction shall be provided and heat sources shall be used to maintain temperatures above 32 degrees F (0 degrees C) within the enclosure.
 5. Where mean daily temperatures are between 20 degrees F (-4 degrees C) and 40 degrees F (4 degrees C), completed masonry shall be completely covered with a weather-resistant membrane for 24 hours after construction.
 6. Where mean daily temperatures are below 20 degrees F (-7 degrees C), masonry temperature shall be maintained above 32 degrees F (0 degrees C) for 24 hours after construction by enclosure with supplementary heat, by electric heating blankets, by infrared heat lamps or by other approved methods.

American Concrete Institute – 318

-Definition of cold weather

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 not greater than 40 degrees F / 5 degrees C and;
2. the air temperature is not greater than 50 degrees F / 10 degrees C for more than one-half of any 24-hr period.

The average daily air temperature is the average of the highest and the lowest temperatures occurring during the period from midnight to midnight.

Acceptable means to protect concrete footings and slabs shall include impervious paper or plastic sheeting with straw, insulating blankets or other approved methods.