

### ONTARIO BUILDING CODE

#### 9.3.1.9. Cold Weather Requirements

- (1) When the air temperature is below 5° C (41° F), concrete shall be,
  - (a) kept at a temperature of not less than 10° C (50° F) or more than 25° C (77° F) while being mixed and placed, and
  - (b) maintained at a temperature of not less than 10° C (50° F) for *72 hours after placing*.
- (2) No frozen material or ice shall be used in concrete described in Sentence (1).

#### 9.20.14.1. Laying Temperature of Mortar and Masonry

- (1) Mortar and masonry shall be maintained at a temperature not below 5° C (41° F) during installation and for not less than *48 hours after installation*.
- (2) No frozen material shall be used in the mortar mix.

#### 9.20.14.2. Protection from Weather

- (1) The top surface of uncompleted masonry exposed to the weather shall be completely covered with a waterproofing material when construction is not in progress.

### OBJECTIVE

Masonry construction is greatly affected by cold weather. The performance characteristics and quality of concrete and masonry mortar are influenced by low temperatures. For example, early freezing of a concrete basement wall can reduce the strength of the concrete by 30%.

Curing of concrete and masonry mortar is one of the most important steps in concrete and masonry construction and regrettably one of the most neglected. Proper curing greatly increases the strength and durability of concrete and masonry mortar.

#### Concrete Work

- To maintain continued hydration and strength gain in concrete, use insulated forms or protect concrete work with insulating blankets.
- High early strength concrete can also be used to speed up the setting time and strength development. This can reduce the curing period from 7 days to 3 days

#### Mortar Mixing

- Mortar mixed in cold weather should be mixed in small quantities.
- It is good practice to heat the water and the sand. Water is the easiest material to heat and it can store heat better than any other material.

#### Masonry Laying

- Use dry and unfrozen bricks or concrete blocks. Wet or frozen masonry units may have a negative effect on the mortar.
- Protect masonry construction with enclosures and windbreaks
- To maintain the required temperature for curing after installation of the masonry, heaters and blowers are usually used. When this type of protection is employed, safety precautions must be taken to protect the workers from asphyxiation caused by improper ventilation.