



Ames Cold Weather Concrete Policy

October 2019

1. Purpose

The purpose of this policy is to regulate the placement of concrete during cold weather by providing minimum standards.

2. Scope

This policy shall apply to all new or replacement concrete that is placed during cold weather, as determined by section 3 of this policy.

3. Requirements

- 3.1** Footings at grade, cold weather practices apply when the National Weather Service's predict low for the next 24 hours is 32 degrees Fahrenheit or colder. Concrete walls or trench footings, cold weather practices apply when the National Weather Service's predict low for the next 24 hours is 25 degrees Fahrenheit or colder.
- 3.2** Concrete shall not be placed when the temperature is predicted to drop below 10 degrees Fahrenheit during the following 24 hours without prior approval from the Building Official.
- 3.3** Air entrained concrete shall be used when exposure to moisture and freezing and thawing conditions are expected.
- 3.4** Concrete shall not be placed on frozen subgrade. It may be possible to thaw a few inches of frost using heat or blankets, or remove the frost and regrade with appropriate compacted subgrade material.
- 3.5** Dry Calcium chloride shall not be field added to ready mix concrete. Calcium chloride and any other admixture shall be used according to manufactures' specifications and guidelines.
- 3.6** Concrete shall not be allowed to freeze for a minimum of 48 hours after placement; or until it reaches strength of 500psi as determined by laboratory testing. In order to satisfy curing requirements of a minimum of 50 degrees Fahrenheit, any approved method of protecting the concrete (blankets, straw, tenting, etc.) shall remain in place and effective for the minimum 48 hours. Forms may be removed during this curing period, provided that the protection is reinstalled and effective until the 48-hour period has expired.
- 3.7** When the temperature is below 32 degrees Fahrenheit footings that do not extend a minimum of 42 inches below the surface shall be protected from frost heaving by an approved method (blankets, straw, tenting, heating, etc.).

4. Recommendations

- 4.1** Humidity is normally lowered when heating an enclosure. Membrane-forming curing compounds should be used to ensure that the concrete surface does not dry out too soon and cause plastic shrinkage cracks.
- 4.2** Fossil fuel burning heater can cause carbonation of newly placed concrete surfaces. This may cause unacceptable dusting. Therefore, combustion byproducts must be vented from the enclosures.
- 4.3** During cold weather, the concrete mix should be increased from 3500psi to 4000psi, or another high early strength mix. Guidelines and manufacture's recommendations for utilizing admixtures should be followed.