

COLD WEATHER CONCRETE REQUIREMENTS

Low air temperatures during the curing of concrete and masonry work can affect their characteristics both temporarily and permanently. All types of concrete cure slower in cold temperatures and thus develop their ultimate design strengths over longer periods of time than would be normal for temperatures above 50EF. Concrete that is exposed to temperatures less than **30EF** without protection may actually freeze. Depending on how early in the curing process the freezing occurs, **permanent damage** and **reduction in strength** may take place. In most cases, however upon warming up curing will continue and design strengths may eventually be reached, but most of the time durability under stress will adversely be affected.

Based on these facts and references listed above, the city has determined that the **following requirements must be met** for all unengineered footings and foundations poured during cold weather. These requirements **are not adequate** for other types of pours such as structural slabs, walls, and beams or for foundations that will be loaded immediately.

- 1) **Rebar, forms, fillers and ground** against which concrete will be poured shall be free from all ice, snow or frost.
- 2) **Wind protection** is required when air temperatures are below 35EF. Otherwise, rapid cooling takes place.
- 3) During freezing weather, pours should be **scheduled for mornings** in order to avoid immediate night time low temperatures.
- 4) Protection-----
 - 30EF - 25EF Weather resistive **membrane** for **3 days** minimum.
 - 25EF - 20EF **Insulation blankets** or insulation coverage with a weather resistive membrane for **3 days** minimum.
 - Below 20EF Provide **supplemental heat** under a weather resistive membrane for **3 days** minimum.

Note: All protection equipment **must be on the site** at the time of inspection.