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**COLD WEATHER PROCEDURES**  
**INSPECTION NOTICE**

Masonry and concrete must be installed accordance with approved procedures and in accordance with American Concrete Institute (ACI) and International Masonry Institute (IMI).

1. Cast-in-place concrete shall be installed in accordance with cold weather procedures. At low temperatures concrete sets slowly, and development of strength is delayed. Some general guidelines include:
  - a) Concrete shall not be placed on frozen sub grade.
  - b) If frozen, the sub grade may be thawed with calcium chloride, however, all of the calcium chloride and soft soil material shall be completely removed prior to inspection of placement of concrete.
  - c) The temperature of all surfaces in contact with the new concrete shall be as close as possible to the temperature of the new concrete.
  - d) No ice shall be present or allowed to form during placement of concrete.
  - e) Curing and protection shall be continuous and uninterrupted until concrete develops its full designed strength. Accelerated early strength gain may be obtained by:
    - i. Substituting Type I with Type III cement
    - ii. Addition of calcium chloride admixtures
    - iii. Addition of non-chloride accelerators
    - iv. Increasing the Type I cement content by 100 to 200 lbs.
    - v. Concrete shall be air entrained not less than 5% or more than 7%
  - f) Provide insulation or a heated enclosure to maintain concrete temperatures for minimum periods to achieve required strength for the walls of slabs.
  - g) Duration of recommended protection for concrete to achieve 50% of design strength.

NOTE: Below are days to achieve only 50% of design strength:

	<u>At 50 Degrees F</u>	<u>At 70 Degrees F</u>
Type I Cement	6 Days	Type I Cement 4 Days
Type II Cement	9 Days	Type II Cement 6 Days
Type III Cement	3 Days	Type III Cement 3 Days

2. Special consideration shall be given to the strength of the concrete before other work proceeds. Concrete shall have achieved the required strength prior to backfill against poured basement walls or loads applied to foundations and slabs. In cold weather this may mean that the concrete needs to be heated during and after placement.
3. Curing and cold weather protection:
  - a) The curing period shall extend a minimum of 7 days (maintaining the 55 degree F temperature).
  - b) Do not seal freshly placed concrete. Sealing retains water in the concrete thereby keeping it saturated during freeze/thaw conditions.
  - c) Cold weather protection is best provided through insulating blankets or loose straw (minimum 18" deep) sandwiched between a waterproof cover (e.g. polyethylene). Sides and corners have adequate coverage
4. It would be beneficial if the concrete contractor would give a written copy of their cold weather procedures to their inspector.
5. The contractor and/or builder must demonstrate to the Building Inspector that proper cold weather procedures will be used before approval can be given.

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6. Masonry must be installed in accordance with cold weather procedures. The following are some highlights from the International Masonry Institute:
- a) The heat-liberating reaction between cement and water is slowed or stopped when cement paste is subjected to temperatures below 40 degrees F.
  - b) Chill factor, the term relating the combined wind and temperature effects, is considered an important variable of cold weather masonry construction.
  - c) Cold weather construction and protection requirements while masonry work is in progress:

Temperature Range

Below 40 degrees F and above 25 degrees F  
OR  
Temperature of masonry units are below  
40 degrees F

Below 25 degrees F and above 20 degrees F  
or masonry units are below 20 degrees F

Below 20 degrees F

Requirements

Remove visible ice on all surfaces.  
Masonry units must be above 20 degrees F  
Heat sand and water to produce mortar  
above 40 degrees F.  
Do not allow mortar to freeze  
Same as above except:  
Use heat source on both sides of masonry  
under construction.  
Install wind breaks when velocity is above  
15 MPH  
Same as above:  
Provide enclosure for the masonry and  
maintain it above 32 degrees F within the  
enclosure.

- d) Cold weather construction requirements for newly completed masonry.

Temperature Range

Below 40 degrees F and above 32 degrees F

Below 32 degrees F and above 25 degrees F

Below 24 degrees F and above 20 degrees F

Below 20 degrees F

Requirements

Protect top of masonry from rain or snow  
for 24 hours.  
Completely cover completed masonry for  
24 hours after construction.  
Completely cover completed masonry with  
insulating blankets for 48 hours after  
construction.  
Maintain masonry temperature above 32  
degrees F for 7 days within an enclosure or  
other acceptable method.

- e) Cold weather requirements for unheated structures during sub-freezing temperatures:
  - i. Freezing temperatures will drive horizontally through masonry walls causing frost to extend the total depth of the foundation wall. This may cause movement of the walls during the freeze/thaw cycles. Basement shall be sealed from space above and heated to maintain a temperature above 32 degrees F.

