



# The City of EASTLAKE

35150 LAKESHORE BOULEVARD • EASTLAKE, OHIO 44095  
PHONE (440) 951-1416 • FAX (440) 975-4280

## INSPECTION NOTICE COLD WEATHER PROCEDURES

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

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 soils material *shall be completely removed* prior to inspection or 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 or slabs.
  - g) Duration of recommended protection for concrete to achieve 50% of design strength.

NOTE: These are days to achieve ONLY 50% of design strength.

At 50 degrees F		At 70 Degrees F	
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 shall 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	REQUIREMENTS
Below 40 degrees F and above 25 °F Or Temperature of masonry units are below 40 °F	Remove visible ice on all surfaces. Masonry units must be above 20 °F Heat sand and water to produce mortar above 40 °F. Do not allow mortar to freeze
Below 25 °F and above 20 °F or masonry units are below 20 °F	Same as above except: Use heat source on both sides of masonry under construction Install wind breaks when velocity is above 15 MPH
Below 20 °F	Same as above except: Provide enclosure for the masonry and maintain it above 32 °F within the enclosure.

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

TEMPERATURE RANGE	REQUIREMENTS
Below 40 °F and above 32 °F Below 32 °F and above 25 °F	Protect top of masonry from rain or snow for 24 hours. Completely cover completed masonry for 24 hours after construction
Below 24 °F and above 20 °F	Completely cover completed masonry with insulating blankets for 48 hours after construction
Below 20 °F	Maintain masonry temperature above 32 °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.