

## Special Weather-Related Installation Conditions:

### Weather Protection:

ACMV units and all other cementitious materials shall be protected from contaminants and shall not be wetted by rain, snow or ground water.

### Cold Weather Conditions:

For working environment temperatures between 25 and 40°F, heat all mixing water and any sand to a minimum of 68F and a maximum of 158F.

For working environment temperatures between 20 and 25°F, heat all water and sand to a minimum of 68F and a maximum of 158F. Source heat shall be provided on both sides of the wall under construction. Windbreaks shall be employed when the wind speed exceeds 15 mph.

For working environment temperatures below 25°F, heat all water and sand to a minimum of 68F and a maximum of 158F. Enclosures and supplementary heating shall be provided to maintain air temperatures above 32F. The temperature of the stone units shall be above 45F.

If the average daily temperature is between 32 and 40F, do not allow freshly bonded stone veneer to be wetted from rainfall or snow fall for the first 48 hours following installation.

If the average daily temperature is between 25-31.9F, cover the wall for a minimum of 48 hours following installation.

If the average daily temperature is between 20 and 25F, cover the wall with insulated blankets during the first 48 hours following installation.

If the average daily temperature is below 20F, the wall shall be covered and supplementary heat shall be applied to maintain a masonry temperature above 32F for the first 48 hours after installation.

### Grout Placement:

Grout temperatures shall be a minimum of 68F and a maximum of 120F when installed on the wall.

### Maximum Mortar Temperatures:

Do not prepare mortar such that the temperature of the mortar exceeds 120F. Flash set may occur if the mortar is too warm/hot.

**NOTE:** *The 48 hour time periods listed above can be reduced to 24 hours if a rapid set polymer modified mortar is used.*

### Hot Weather Conditions:

If the ambient air temperature at any time during veneer installation exceeds 100F, the maximum allowable area for mortar to be spread on the wall is 10 square feet.

If the ambient temperature at any time during construction exceeds 90F and the wind speed exceeds 8 mph, the maximum allowable area for mortar to be spread on the wall is 10 square feet.

**The following directions regarding cold weather conditions for masonry work are directly from the Building Code:**

**1.8 C. Cold weather construction** — When ambient air temperature is below 40F (4.4C), implement cold weather procedures and comply with the following:

1. Do not lay glass unit masonry.
2. *Preparation* — Comply with the following requirements prior to conducting masonry work:
  - a. Do not lay masonry units having either a temperature below 20F (-6.7C) or containing frozen moisture, visible ice, or snow on their surface.
  - b. Remove visible ice and snow from the top surface of existing foundations and masonry to receive new construction. Heat these surfaces above freezing, using methods that do not result in damage.
3. *Construction* — These requirements apply to work in progress and are based on ambient air temperature. Do not heat water or aggregates used in mortar or grout above 140F (60C). Comply with the following requirements when the following ambient air temperatures exist:
  - a. 40F to 32F (4.4C to 0C):
    - 1) Heat sand or mixing water to produce mortar temperature between 40F (4.4C) and 120F (48.9C) at the time of mixing.
    - 2) Heat grout materials when the temperature of the materials is below 32F (0C).
  - b. Below 32F to 25F (0C to -3.9C):
    - 1) Heat sand and mixing water to produce mortar temperature between 40F (4.4C) and 120F (48.9C) at the time of mixing. Maintain mortar temperature above freezing until used in masonry.
    - 2) Heat grout aggregates and mixing water to produce grout temperature between 70F (21.1C) and 120F (48.9C) at the time of mixing. Maintain grout temperature above 70F (21.1C) at the time of grout placement.
    - 3) Heat AAC units to a minimum temperature of 40F (4.4C) before installing thin-bed mortar.
  - c. Below 25F to 20F (-3.9C to -6.7C): Comply with Article 1.8 C.3.b and the following:
    - 1) Heat masonry surfaces under construction to a minimum temperature of 40F (4.4C)
    - 2) Use wind breaks or enclosures when the wind velocity exceeds 15 mph (24 km/h).
    - 3) Heat masonry to a minimum temperature of 40F (4.4C) prior to grouting.
  - d. Below 20F (-6.7C): Comply with Article 1.8 C.3.c and the following: Provide an enclosure and auxiliary heat to maintain air temperature above 32F (0C) within the enclosure.

**1.8 C Cold weather construction:**

4. *Protection* — These requirements apply after masonry is placed and are based on anticipated minimum daily temperature for grouted masonry and anticipated mean daily temperature for ungrouted masonry. Protect completed masonry in the following manner:

- a. Maintain the temperature of glass unit masonry above 40F (4.4C) for the first 48 hr after construction.
- b. Maintain the temperature of AAC masonry above 32F (0C) for the first 4 hr after thin-bed mortar application.
- c. 40°F to 25F (4.4C to -3.9C): Protect newly constructed masonry by covering with a weather resistive

membrane for 24 hr after being completed.

d. Below 25F to 20F (-3.9C to -6.7C): Cover newly constructed masonry completely with weather-resistive insulating blankets, or equal protection, for 24 hr after completion of work. Extend time period to 48 hr for grouted masonry, unless the only cement in the grout is Type III portland cement.

e. Below 20F (-6.7C): Maintain newly constructed masonry temperature above 32F (0C) for at least 24 hr after being completed by using heated enclosures, electric heating blankets, infrared lamps, or other acceptable methods. Extend time period to 48 hr for grouted masonry, unless the only cement in the grout is Type III portland cement.

## SPECIFICATION COMMENTARY

**1.8 C. Cold weather construction** — The procedure described in this article represents the committee's consensus of current good construction practice and has been framed to generally agree with masonry industry recommendations (IMI, 1973). The provisions of Article 1.8 C are mandatory, even if the procedures submitted under Article 1.5 B.3 are not required. The contractor has several options to achieve the results required in Article 1.8 C. The options are available because of the climatic extremes and their duration. When the air temperature at the project site or unit temperatures fall below 40 F (4.4 C), the cold weather protection plan submitted becomes mandatory. Work stoppage may be justified if a short cold spell is anticipated. Enclosures and heaters can be used as necessary. Temperature of the masonry mortar may be measured using a metal tip immersion thermometer inserted into a sample of the mortar. The mortar sample may be mortar as contained in the mixer, in hoppers for transfer to the working face of the masonry or as available on mortar boards currently being used. The critical mortar temperatures are the temperatures at the mixer and mortar board locations. The ideal mortar temperature is 60F to 80F (15.6C to 26.7C).

Temperature of the masonry unit may be measured using a metallic surface contact thermometer. Temperature of the units may be below the ambient temperature if the requirements of Article 1.8 C.2 are met. The contractor may choose to enclose the entire area rather than make the sequential materials conditioning and protection modifications. Ambient temperature conditions apply while work is in progress. Minimum daily temperatures apply to the time after grouted masonry is placed. Mean daily temperatures apply to the time after ungrouted masonry is placed. Grout made with Type III portland cement gains strength more quickly than grout mixed with Type I portland cement. This faster strength gain eliminates the need to protect masonry for the additional 24 hr period.

### **d Commentary, S-30**

**1.8 C. Cold weather construction** Construction experience, though not formally documented, suggests that AAC thin-bed mortar reaches full strength significantly faster than masonry mortar; however, it is more sensitive to cold weather applications. AAC masonry also holds heat considerably longer than concrete masonry. Cold weather requirements are therefore different for thin-bed mortar applications as compared to conventional mortar. Cold weather requirements for leveling course mortar and grout remain the same as for other masonry products.