SECTION 040500
COLD AND HOT WEATHER MASONRY CONSTRUCTION

PART 1 – GENERAL

1.01 SUMMARY

A. Cold weather protection.

B. Hot weather protection.

1.02 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

B. BIA Technical Notes 1 - Hot and Cold Weather Construction; 2018.

C. National Concrete Masonry Association (NCMA).

1.03 DEFINITIONS

A. Hot Weather Construction: Per BIA Technical Notes 1 hot weather construction is defined as occurring when ambient temperatures exceed 100 deg f or 90 deg f when the wind velocity is greater than 8 mph.

B. Cold Weather Construction: Per BIA Technical Notes 1 Cold Weather Construction is defined as occurring when ambient temperature falls below 40 deg f or when the temperature of the masonry units is below 40 deg f.

PART 2 – PRODUCTS – (NOT APPLICABLE TO THIS SECTION)

PART 3 – EXECUTION

3.01 ERECTION AND APPLICATION

A. General:
   1. Comply with National Concrete Masonry Association recommendation and practices.
   2. Do not use frozen or ice coated materials.
   3. At end of each day or at shutdown, cover tops of all walls not enclosed or sheltered with clear polyethylene minimum 6 mil thick. Extend down each side of wall minimum of 16 inches and secure.

B. Temporary Facilities:
   1. Construct and maintain temporary protection required to permit continuous and orderly progress of work.
   2. Provide and maintain heat sufficient to assure temperature above 32 deg f within protected areas.
   3. Remove all temporary facilities after completion of work.

C. Cold Weather Construction and Protection Requirements Prior To and During Installation:
   1. Air temperature 32 to 40 deg f: Heat mixing water or aggregate to produce mortar temperatures between 40 and 120 deg f.
      a. Heat mixing water or sand to produce mortar between 40 deg f and 120 deg f.
      b. Do not heat water or aggregates used in mortar or grout above 140 deg f.
      c. Heat grout materials when their temperature is below 32 deg f.
      d. Protect newly constructed masonry by covering with a weather-resistive membrane for 24 hours after being completed.

D. Air temperature: 25 to 32 deg f.
   1. Comply with cold weather requirements above.
   2. Maintain mortar temperature above freezing until used in masonry.
   3. Heat grout materials so grout is between 70 deg f and 120 deg f during mixing and placed at a temperature above 70 deg f. Maintain grout temperature above 70 deg f at the time of grout placement.

E. Air temperature: 20 to 25 deg f.
   1. Comply with cold weather requirements above.

2. Heat masonry surfaces on both sides to 40 deg f.
3. Use windbreaks or enclosures when the wind velocity exceeds 15 mph.
4. Heat masonry to a minimum of 40 deg f prior to grouting

F. Air temperature: 20 deg f and below.
1. Comply with cold weather requirements above.
2. Provide an enclosure and auxiliary heat to maintain air temperature above 32 deg f within the enclosure.

G. Cold Weather Construction and Protection Requirements After Installation:
1. Air temperature 32 to 40 deg f: Protect newly constructed masonry by covering with a weather-resistive membrane for 24 hours after being completed.
2. Air temperature 25 to 32 deg f: Protect newly constructed masonry by covering with a weather-resistive membrane for 24 hours after being completed.
3. Air temperature 20 to 25 deg f: Cover newly constructed masonry completely with weather-resistive insulating blankets, or equal protection, for 24 hours after completion of work. Extend time period to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.
4. Air temperature: Below 20 deg f: Maintain newly constructed masonry temperature above 32 deg f for at least 24 hours, by using heated enclosures, electric heating blankets, infrared lamps or other methods. Extend time period to 48 hours for grouted masonry, unless the only cement in the grout is Type III portland cement.
5. Promptly repair all tears, holes, etc., to translucent membrane and shelter using compatible patching material and tape as recommended by membrane manufacturer.

H. Hot Weather Construction and Protection Requirements:
1. Storage and preparation of materials.
    a. Cover or shade masonry units and mortar materials from direct sun.
    b. Use cool water for mixing mortars.
    c. Avoid using tools and equipment that have been sitting in the sun.
        1) Sprinkle mortar boards, mortar pans, wheel barrows, mixers, etc. with cool water.
    d. Wet brick units have high initial rates of absorption.
    e. Do not wet concrete masonry units prior to use.
2. Installation:
    a. Place masonry units within one minute of the spreading of the mortar.
        1) Mortar beds shall not be spread more than 4 FT ahead of the masonry unit being placed.
    b. Provide wind screens and shading partitions as required to eliminate direct sunlight exposure.
    c. Wet installed units using fog spray of clean water.
    d. Cover installed work immediately after installation to slow rate of loss of moisture from units.
    e. Fog-spray new masonry work until damp. Repeat fog spraying minimum of three times per day until masonry work has cured for 72 HRS.
        1) In high humidity conditions, Engineer reserves the right to discontinue fog spraying if operation is found to be introducing excessive amounts of moisture into the Work.

END OF SECTION