DIVISION 04

SECTION 04 05 13

MASONRY MORTARING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes setting replacement units (e.g., masonry, stone, etc.) in mortar, repointing of mortar joints, and parging of inner wythe masonry wall surfaces as shown on contract drawings and as directed by the Authority's Representative.

1.02 SUBMITTALS

A. Product Data: For each product specified in Part 2 - Products.

B. Samples:

1. Mortar Components: Dry samples (minimum 4 oz.) of each component.
    a. Portland cement.
    b. Lime.
    c. Pigment (color).
    d. Sand (aggregate) samples.
2. Scuffed Mortar (showing exposed aggregate): For each mortar expected to be incorporated in the Work. Samples shall be fully cured and scuffed (showing exposing aggregate), 6-inch-long x 1/2-inch-wide strips set in aluminum or plastic channels.
3. Tooled-only Mortar: For each mortar expected to be incorporated in the Work. Samples shall be fully cured and tooled-only (unscuffed), 6" long x 1/2" wide, set in aluminum or plastic channels.

C. Special Inspection Reports.

D. Field Quality Control Test Reports:

1. Mortar Test Reports. If not in conflict with special inspections, submit within 24 hours after test is conducted.

1.03 QUALITY ASSURANCE

A. Comply with the following:

1. Brick Institute of America (BIA)
2. National Concrete Masonry Association (NCMA)

1.04 TESTS AND INSPECTIONS

A. Special Inspections: Comply with special inspection requirements of authorities having jurisdiction including, but not limited to, those indicated on Drawings.

B. Field Quality Control Testing:

1. Mortar Testing: If not in conflict with, or covered by special inspections, comply with the following:
    a. Test Specimens: Provide test specimen of mortar batch mix for everyone thousand (1000) square feet of wall surface area.
    b. Testing: Test each specimen provided per ASTM C 780. Test for air content and compressive strength.

c. Test Reports: Reports shall include date of test, products used, test method, and test results.

1.05 PROJECT CONDITIONS

A. Cold Weather Protection:

1. Provide protection when ambient air temperature is below 40° F, or is expected to fall below 40° F within 48 hours after completion of Work, as follows:
   a. 40° F to 32° F:
      1) Heat sand or mixing water to produce mortar temperatures between 40° F and 120° F.
      2) Protect from rain or snow; completely cover with weather-resistive membrane for 24 hours.
   b. 32° F and Below: No Work permitted.
2. Do not lower freezing point of mortar by use of antifreeze, calcium chloride, or other additives.

PART 2 - PRODUCTS

2.01 GENERAL

A. Refer to Drawings for color and texture of exposed mortars.

B. Pigmented Portland cement-lime should be used achieve the required color in exposed mortars.

C. Use aggregates (sand) that match color and grain size of original aggregates as closely as possible.

D. Mortars shall comply with ASTM C 270, type as indicated.

E. Mortar components shall comply with the following:

1. Portland cement: ASTM C 150, Type I or Type II; gray or non-staining white. Portland cement for use with limestone shall contain not more than 0.60 percent total alkali when tested according to ASTM C 114.
2. Hydrated Lime: ASTM C 207, Type S
3. Aggregates (for mortar): ASTM C 144
4. Coloring Agent (Pigments): Alkali stable as approved by in writing by Architect.
5. Admixtures: None, unless approved in writing by Architect.
6. Water: Potable

2.02 MORTAR

A. Mortar: ASTM C270 Type N

1. Pre-blended (Pre-bagged with Aggregates)
   a. Spec-Joint 46 Custom Color (Type N) Edison Coatings, Inc.
   b. Spec Mix Preblended PCL Sand Color (Type N) Spec Mix, Inc.
   c. Or Equal

B. Mortar: ASTM C270 Type S

1. Pre-blended (Pre-bagged with Aggregates)
   a. Spec-Joint 46 Custom Color (Type S) Edison Coatings, Inc.

b. Spec Mix Preblended PCL Sand Color (Type S) Spec Mix, Inc.

c. Or Equal

2.03 MORTAR MIXING

A. Measuring: Measure cementitious and aggregate material in a dry condition by volume or equivalent weight. Do not measure by shovel.

B. Mixing: Mix materials in a clean mechanical batch mixer.

1. Thoroughly mix cement, binder, pigment and aggregate materials together before adding any water.
2. Then mix again adding only enough water to produce a damp, unworkable mix which will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 1-1/2 hours.
3. Add remaining water in small portions until mortar of desired consistency is reached. Use mortar within 30 minutes of final mixing. Do not re-temper or use partially hardened material.

PART 3 - EXECUTION

3.01 MORTARING

A. Removal of Existing Mortar:

1. Comply with Section 024119 (Selective Demolition and Removal).
2. Brush, vacuum or rinse joint substrates to remove dust, dirt and loose debris.

B. Pre-wetting High Absorption Brick Masonry:

1. Wet both brick and surrounding bricks before laying if initial rate of absorption exceeds 30 grams per 30 square inches per minute when tested per ASTM C 67.
2. Allow units to absorb water so they are damp (dry on the surface), but not wet at time of laying.

C. Mortar Beds and Joints (For Setting Units):

1. Do not mortar joints where other joint treatment is indicated on Drawings (e.g., sealant joints, etc.)
2. Solid Units: Lay solid units with filled bed, head and collar joints. Butter ends of units with enough mortar to fill head joints and shove into place.
3. Hollow Units: Lay hollow units with face shells fully bedded in mortar. Fully bed webs in mortar in all courses of piers, columns, pilasters, and in grouted walls (including starting course). Butter ends of units with enough mortar to fill head joints and shove into place.
4. Cut joints flush for masonry walls to receive plaster, parging, or other direct-applied finishes (other than paint), unless otherwise indicated.
5. Keep wall cavities clean of mortar droppings.

D. Pointing (For Filling Prepared Mortar Joints):

1. Apply mortar in lifts (layers) as indicated on Drawings.
2. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas.
3. Fully compact the mortar in each layer and allow to become thumbprint hard before applying the next layer.

E. Tooling:

1. Remove mortar fins and smears before tooling joints.

2. Fully compact mortar and allow to become thumbprint hard. Where existing masonry has rounded edges recess mortar slightly from face. Do not spread mortar over edges onto exposed masonry surfaces. Do not feather edge mortar.
3. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. Remove excess mortar from edge of joint by brushing.
4. Stipple joints lightly with a soft bristle brush to expose aggregate, if necessary to match appearance of original mortar.

F. Curing: Cure mortar by maintaining in a damp condition for not less than 72 hours.

3.02 PARGING

A. Where required or as directed by Authority's Representative, parge the backup wall face in a single coat approximately 3/8 inch thick. Trowel face of parge coat smooth.

3.03 CLEANUP

A. After mortar is thoroughly set and cured, remove matter accumulated during construction and wash down masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and non metallic scrap hoes or chisels.
2. Wash Down:
    a. Test wash down methods on sample panels before proceeding with wash down of masonry surfaces.
    b. Wash down brick masonry in accordance with: Brick Industry Association Technical Notes on Brick Construction, No.20, June 2006, "Cleaning New Masonry: Bucket and Brush Hand Cleaning"
    c. Wash down stone or terra cotta masonry in accordance with National Park Service Preservation Brief #1 "Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings" by Robert C. Mack, FAIA, Anne Grimmer, 2000. Do not use wire brushes, steel wool, acid or alkali cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

END OF SECTION