Section 04210

BRICK MASONRY FOR UTILITY CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

This Section includes:

A. Brick masonry work in utility construction for permanent or temporary installation of below ground structures.

B. Brick masonry in repair and rehabilitation of utility lines and associated structures.

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices.

1. No separate payment will be made for brick masonry work under this Section unless specifically noted in bid documents. Include payment in unit price for applicable utility structure section.

2. Refer to Section 01270 – "Measurement and Payment".

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03 REFERENCES

A. ASTM C32 - Specification for Sewer and Manhole Brick (Made from Clay or Shale).

B. ASTM C55 REV A - Standard Specification for Concrete Building Brick.

C. ASTM C62 REV A - Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).

D. ASTM C67 – Standard Test for Sampling and Testing Brick and Structural Clay Tile.

E. ASTM C91/C91M – Standard Specification for Masonry Cement.

F. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. of [50mm] Cube Specimens).

G. ASTM C140/C140M REV A - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

H. ASTM C270 REV A- Standard Specification for Mortar for Unit Masonry.

1.04 SUBMITTALS

A. Submittals shall conform to requirements of Section 01330 – "Submittal Procedures".

B. Submit certification from the manufacturer that brick units meet applicable requirements of reference standards.

C. As an alternate to providing certification, submit test results that show brick units meet applicable requirements of reference standards, when tested by an approved independent testing laboratory. Test result submittals shall be at no cost to the Owner.

1.05 RELATED REQUIREMENTS

A. Section 01330 – "Submittal Procedures"

B. Section 01454 – "Testing Laboratory Services"

C. Section 04061 – "Mortar"

1.06 - 1.07 NOT USED

1.08 DELIVERY, STORAGE, AND HANDLING

A. Handle and store brick to prevent damage.

B. Store brick and mortar mix off the ground and in a dry place. Cover mortar mix to protect from weather.

1.09 – 1.13 NOT USED

PART 2 PRODUCTS

2.01 MANUFACTURER(S) (NOT USED)

2.02 MATERIALS AND/OR EQUIPMENT

A. Clay and Shale Brick Masonry Units

1. Manholes and Structures: Use brick units made from clay or shale conforming to requirements of ASTM C32, Grade MM, either cored or solid. Units shall have the following physical properties:

a. Compressive Strength: 2,200 psi minimum for individual brick; 2,500 psi average for five bricks.

b. Size: 2-1/4" by 7-5/8" by 3-5/8".

c. Test Procedure: ASTM C67.

2. Sewer Brick: Use brick units made from clay or shale conforming to requirements of ASTM C32, Grade SM, either cored or solid. Units shall have the following physical properties:

a. Compressive Strength: 3,750 psi minimum for individual brick; 5,000 psi average for 5 bricks.

b. Size: 2-1/4" by 7-5/8" by 3-5/8".

c. Test Procedure: ASTM C67

B. Concrete Brick Masonry Units

1. Manholes and Structures: Conform to requirements of ASTM C55 REV A, grade S-1.

2. Dimensions: 2-1/4" by 7-5/8" by 3-5/8".

C. Mortar

Provided mortar conforming to the requirements of Section 04061 – "Mortar".

PART 3 EXECUTION

3.01 GENERAL / MANUFACTURER(S) (NOT USED)

3.02 PREPARATION

A. Examination

Ensure that foundations and other surfaces to support brickwork are at proper grades and elevations. Correct improperly prepared surfaces. Work surfaces and masonry shall be free of dirt, grease, oil, or other harmful materials before starting brick masonry work.

3.03 ERECTION/INSTALLATION APPLICATION AND/OR CONSTRUCTION

A. Weather Requirements

1. Lay no masonry when temperature of outside air is below 50°F, unless satisfactory means are provided to heat materials and protect work from cold and frost.

2. Maintain mortar at 50°F or above and ensure that mortar will harden without freezing.

B. Brick Placement

1. Use sewer brick where exposed to flow. Where not exposed to flow, use manhole brick.

2. Lay sewer brick with the 2-1/4" by 7-5/8" side exposed to flow.

3. Lay manhole bricks so that in every fifth course the long axis of bricks are perpendicular to the long axis of the four preceding courses.

4. Lay curved courses, and courses in different planes, using bonded and keyed construction.

5. Lay brick plumb and true with courses level and uniformly spaced. Adjust the bond of face brick so that no course will terminate with a piece less than one-half length of brick.

6. Dampen brick prior to placement.

7. Where fresh masonry joins partially set or totally set masonry, clean surfaces of set masonry. Remove loose mortar and brick. Wet brick to obtain the best possible bond.

8. Immediately remove mortar droppings and splashings as work progresses to facilitate final cleaning.

C. Joints

1. Completely fill joints in brick and other materials with mortar as each course is laid.

2. Make joints in exposed brickwork a uniform 3/8-inch wide, unless otherwise shown on Plans.

3. When mortar is "thumbprint" hard, tool exposed joints with a round or other suitable jointer that is slightly larger than width of the mortar joint. In tooling, make sure that cracks and crevices are closed.

4. Point holes in exposed masonry. Cut out defective joints and repoint.

3.04 REPAIR/RESTORATION (NOT USED)

3.05 FIELD QUALITY CONTROL

A. Testing will be performed under provisions of Section 01454 – “Testing Laboratory Services”.

B. A minimum of one set of mortar samples shall be molded for each day's placement as directed by the Project Manager. Mold three 2-inch cube specimens. One cube will be tested for compressive strength at 7 days and 2 cubes will be tested for compressive strength at 28 days in accordance with ASTM C109/C109M.

C. Each load of bricks delivered to the jobsite shall be tested.

1. Test clay bricks in accordance with ASTM C67.

2. Test concrete bricks in accordance with ASTM C140/C140M REV A.

3.06 – 3.10 NOT USED

END OF SECTION