Section 04210

BRICK MASONRY FOR UTILITY CONSTRUCTION

PART 1 G E N E R A L

1.01 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 UNIT PRICES

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

1.03 REFERENCES

A. ASTM C 32 - Specification for Sewer and Manhole Brick (Made from Clay or Shale).

B. ASTM C 55 - Standard Specification for Concrete Building Brick.

C. ASTM C 62 - Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).

D. ASTM C 67 - Methods of Sampling and Testing Brick and Structural Clay Tile.

E. ASTM C 91 - Specification for Masonry Cement.

F. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).

G. ASTM C 140 - Standard Method of Sampling and Testing Concrete Masonry Units.

H. ASTM C 270 - 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 City.

1.05 HANDLING AND STORAGE

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.

PART 2 P R O D U C T S

2.01 CLAY AND SHALE BRICK MASONRY UNITS

A. Manholes and Structures: Use brick units made from clay or shale conforming to requirements of ASTM C 32, Grade MM, either cored or solid. Units shall have the following physical properties:

1. Compressive Strength: 2200 psi minimum for individual brick; 2500 psi average for five bricks.

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

3. Test Procedure: ASTM C 67.

B. Sewer Brick: Use brick units made from clay or shale conforming to requirements of ASTM C 32, Grade SM, either cored or solid. Units shall have the following physical properties:

1. Compressive Strength: 3750 psi minimum for individual brick; 5000 psi average for 5 bricks.

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

3. Test Procedure: ASTM C 67.

2.02 CONCRETE BRICK MASONRY UNITS

A. Manholes and Structures: Conform to requirements of ASTM C 55, grade S-1.

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

2.03 MORTAR

A. Provided motar conforming to the requirements of Section 4061 - Mortar.

PART 3 E X E C U T I O N

3.01 EXAMINATION

A. 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.

3.02 WEATHER REQUIREMENTS

A. 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.

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

3.03 BRICK PLACEMENT

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

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

C. 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.

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

E. 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.

F. Dampen brick prior to placement.

G. 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.

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

3.04 JOINTS

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

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

C. 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.

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

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 City Engineer. 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 C 109.

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

1. Test clay bricks in accordance with ASTM C 167.

2. Test concrete bricks in accordance with ASTM C 140.

END OF SECTION

THE FOLLOWING ITEMS SHOULD BE CHECKED FOR COORDINATION DURING DESIGN:

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A. Coordinate this specification with other related specifications including the following related Sections.

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RELATED SECTIONS

1. Section 02087 - Brick Manholes for Storm Sewers.
2. Section 02632 - Cast-in-Place Inlets, Headwalls, and Wingwalls.
3. Section 02085 - Valve Boxes, Meter Boxes, and Meter Vaults.
4. Section 02086 - Adjusting Manholes, Inlets, and Valve Boxes to Grade.
5. Section 02555 - Manhole Rehabilitation.