

STANDARD SPECIFICATION
SECTION 04200
MASONRY

PART 1 GENERAL

1.1 DESCRIPTION

- A. Section includes requirements for providing masonry work above and below grade.

1.2 QUALITY ASSURANCE

- A. Engineered Masonry: ACI 530.1/ASCE 6.

1.3 SUBMITTALS

- A. Submit following Section 01330.
1. Sewer and Manhole Brick Samples.
 - a. Submit at least 4 bricks before purchase and delivery of each type required.
 - 1) Do not purchase brick until Engineer has approved samples.
 2. Concrete Block Samples.
 - a. Submit at least 4 blocks of each type required before purchase and delivery.
 - 1) Do not purchase blocks until Engineer has approved samples
- B. Submit following Section 01450 before delivery to site.
1. Certificates of Compliance:
 - a. Bricks.
 - b. Concrete blocks.
 - c. Prepackaged mortar mix.
 - d. Portland cement.
 - e. Masonry cement.

1.4 DELIVERY, HANDLING, AND STORAGE

- A. Deliver cement, lime, and other cementitious materials to site and store in unbroken bags, barrels, or other approved containers, plainly marked and labeled with manufacturers' names and brands.
- B. Handle masonry units to avoid chipping and breakage, and store off ground on wood blocks, pallets, or other means.
- C. Store mortar materials in dry, weather tight sheds or enclosures, to prevent inclusion of foreign materials and damage by water or dampness.

1.5 PROJECT CONDITIONS

A. Masonry Placement:

1. Do not place masonry when air temperature falls below 40 degrees F. or when temperatures below 40 degrees F. are likely within 72 hours after mortar is placed, unless Engineer approves adequate means for protecting work from freezing.
2. Heat and maintain temperature of masonry materials at not less than 40 degrees F. but not more than 160 degrees F. and maintain air temperature above 40 degrees F. on both sides of masonry for not less than 72 hours.
 - a. Do not work with or on frozen materials.
3. Protect new work against freezing weather for period of 72 hours after masonry is placed.

B. During hot weather, protect masonry from direct rays of sun.

1. Cover or wet all finished work for period of 3 days after placing.
2. When ambient air temperature is warmer than 95 degrees F. or when it appears probable that temperatures above 95 degrees F. will be encountered, protect work from sun and prevent drying out for not less than 72 hours after masonry is placed.

PART 2 PRODUCTS

2.1 MATERIALS

A. Brick.

1. Match approved brick samples.
2. Sewer and Manhole Brick: ASTM C32.
3. Bricks Used for Channel Lining: Sewer brick Grade SM.
4. All Other Brick Used in Water, and Sewer, Structures and Manholes: Manhole brick, Grade MS.
5. Approved Manufacturers and Type of Sewer and Manhole Bricks:
 - a. General Shale Products Corp., modular size sewer and manhole brick.
 - b. Glen-Gery Brick, 213 Y solid standard modular, Harvard modular, AA Matt and Prince William Red Solid.
 - c. Or Equal.

B. Concrete Block.

1. Masonry Units for Manholes and Structures: ASTM C139.
2. Admixtures: Not allowed without Engineer's approval.

C. Mortar.

1. Mortar Proportions for Placing Concrete Block, Bricks, and Unit Masonry Structures:

- a. ASTM C270 and ASTM C91 for foundation walls, and work below grade, Type M.
 - b. For all other masonry work, Type S.
 2. Mortar for Parging Masonry Walls below Grade: Composed of 1 part Portland cement, 1/4 part hydrated lime, and 3 parts sand.
 3. Sewer and Water Main Construction: Unless otherwise shown on Drawings, 1 part Type II cement and 3 parts masonry sand meeting ASTM C144.
 4. Prepackaged Mortar Mix: Meet requirements of mortar depending on use specified above.
 5. Cement for Mortar: ASTM C150.
- D. Grout: ASTM C476 with minimum compressive strength of 2000 psi at 28 days, tested following ASTM C1019.
- E. Water for Mixing Mortar and Grout: See Section 03300.

PART 3 EXECUTION

3.1 PREPARATION

- A. General.
1. Clean dirt, debris, oil, grease and other foreign substances which would affect bond of mortar, from surfaces to receive masonry.
 2. Ascertain location of chases and openings for pipes.

3.2 MORTAR

- A. Measuring Materials for Mortar: Method that will control and maintain specified proportions during entire progress of Work.
- B. Mixing Mortar.
1. Mix mortar in mechanically operated batch mixer of drum type.
 2. Hand mixing will be permitted if quantities of materials and water are accurately measured and if Engineer approves method of mixing.
 3. Mix cement, lime, and sand, add water and mix for at least 5 minutes.
 4. Do not use mortar that has obtained its initial set or has been mixed for longer than 45 minutes.
 5. Do not add water to mortar that has started to stiffen.
- C. Grout.
1. Add water in sufficient quantity to produce fluid mixture.
 2. Place fine grout in spaces less than 2 inches in any horizontal dimension and where clearance between reinforcing and masonry is less than 3/4 inch.
 3. Place coarse grout in spaces 2 inches or greater in any horizontal dimension and where clearance between reinforcing and masonry is not less than 3/4 inch.

3.3 PLACING

A. Workmanship.

1. Place masonry plumb, true to line, with level and accurately spaced courses, and each course breaking joint with course below.
 - a. Make joints uniform in thickness with average thickness of any 3 consecutive joints 3/8 to 1/2 inch.
2. Remove mortar splashed or smeared on finished surfaces with stiff bristle brushes as work progresses.

B. Parging: Follow Standard Details.

C. Brick: Drenched with water just before laying.

1. Joints: Filled between bricks completely with mortar.
 - a. Form bed joints with thick layer of mortar, smoothed.
 - b. Buttering at corners of brick and then throwing mortar or scrapings into empty joints will not be permitted.
2. Brick Placement.
 - a. Place brickwork in common bond.
 - b. Place brick carefully without disturbing brick previously placed.
 - c. Dry or butt joints will not be permitted.
 - d. Grout where indicated.

3.4 PROTECTION OF WORK

- A. Cover completed work each day to prevent rain or melting snow from penetrating mortar.

PART 4 MEASUREMENT AND PAYMENT

- 4.1 Measurement of masonry work for payment will not be made under this Section and is considered essential material required in construction of specific items of work that will be measured and paid for under various items or lump sum listed in Bid Schedule.

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