SECTION 0401

MASONRY

0401.0100 GENERAL

0401.0101 Description of Work. The work under this Section shall consist of furnishing all labor, materials, and equipment necessary for constructing masonry structures in accordance with the requirements of these specifications.

0401.0103 Submittals. Before moving any materials to the site or commencing any of the work in this Section, the Contractor shall submit for the Engineer's approval 3 individual samples of masonry units showing the variations in each color and texture.

0401.0104 Delivery, Storage, and Handling. All materials necessary for construction shall be delivered to the site, stored, and handled in accordance with the manufacturer's instructions, except as modified by the plans special specifications, or as directed by the Engineer.

0401.0105 Testing or Special Inspections. It is the Contractor's responsibility to schedule required testing per specifications, contract, plans, and special provisions. All required testing must be coordinated by the Contractor; failure to schedule required tests will result in rejected work at the Contractor's sole expense.

0401.0200 PRODUCTS

0401.0201 Materials.

(A) Concrete Masonry Units. Concrete masonry units shall be Grade N-I (UBC Grade A) hollow, load-bearing, and in conformance with ASTM C90. Units shall have a maximum linear shrinkage not to exceed .05 to 1 percent from a saturated to oven-dry condition.

Units shall be ordered a sufficient time prior to commencing work to assure units be from a uniform run. A statement to that effect shall be furnished to the Engineer.

Units shall be cured and dried before being used and shall not be wetted before being used, but shall be laid dry.

Color and type of concrete masonry units shall be as directed by the Engineer.

(B) Masonry Mortar. Masonry mortar shall be Type S natural color, as per ASTM C270, with a mix ratio by volume of 1 part Portland cement and 2-1/4 parts minimum to 3 parts maximum sand.

All mortar shall attain a compressive strength of 1,800 pounds per square inch at 28 days. A test to verify compressive strength may be required by the Engineer. Such a test shall be made by

an independent testing and inspection laboratory at City expense; the testing agency shall directly forward 2 copies of the test results to the Engineer.

(C) Grout. Grout shall be "coarse grout" as per ASTM C476, of fluid consistency, and with a mix ratio by volume of 1 part Portland cement, 2 parts minimum to 3 parts maximum damp loose sand, and 1 part minimum to 2 parts maximum coarse aggregate. Fluid consistency shall mean that consistency is as fluid as possible for pouring without segregating the constituent parts. Minimum strength is 2,000 pounds per square inch.

(D) Reinforcement. Steel bar reinforcement shall conform to ASTM A615.

0401.0300 EXECUTION

0401.0302 Installation.

(A) Workmanship. All work shall be executed with the highest quality workmanship and in full compliance with all applicable codes and ordinances. At a minimum, all work shall conform to the current International Building Code, Chapter 21; ASTM Standards; National Concrete Masonry Association recommendations; and TW Standard Detail 1610.

(B) Mortar. All components of the masonry mortar shall be delivered to the job site separately and shall be combined into specified mortar on the job site only. As a component of the mortar, sand/lime plant mix may be furnished to the job site, with 3 samples taken by the Engineer and analyzed as to the lime content.

(C) Concrete Masonry Units. Any unit that is chipped, cracked, broken, or otherwise defective—whether before or after setting—will be rejected and shall be removed and replaced.

(D) Mortar Joints. The Contractor shall work units into full beds and ends, except around cells to be grouted, to obtain maximum bond. Closures shall be locked into place with the head joints thrown against the two adjacent units in place.

Mortar joints that become "thumbprint" hard shall be tooled with a round or otherwise approved jointer. The jointer shall be no smaller than 1 inch in diameter so that complete contact is made along the edges of the units, compressing and sealing the surface of the joint.

Where fresh masonry joins totally or partially set masonry, the Contractor shall clean, wet, and roughen the set masonry before laying new work. The mason shall avoid over-plumbing and pounding of the corners to fit units after they are set in position. Where an adjustment must be made after the mortar has started to harden, the mortar shall be removed and replaced with fresh mortar.

(E) Wall Joints. Masonry control joints (MCJ) at 20'-0" on center max. Masonry expansion joints (EJ) at 60'-0" on center max.

(F) Reinforcement. Reinforcing bars shall be straight except where bends or hooks are detailed on the plans.

Reinforcing steel shall be lapped a minimum of 48 bar diameters where spliced. In the region of the spliced bars, the bars shall be securely tied to one another using suitable wire ties or proprietary bar positioners to ensure bar-to-bar contact. "Stabbing" of bars shall not be permitted. Bars scheduled to be spliced shall be tied as described before any grout is placed.

Vertical bars shall be held in position top and bottom and shall be secured against displacement prior to grouting by wire positioners or other suitable devices at intervals not exceeding 200 bar diameters.

Vertical reinforcing steel shall be placed within the individual masonry cells as shown on the plans. In no case shall the clearance between the interior cell of the masonry and the vertical bar be less than 1/2 inch for course grout or 1/4 inch for fine grout.

Horizontal joint reinforcement shall be hot-dip galvanized, truss type, minimum 9-gauge longitudinal wire and 12-gauge cross wires. All joint reinforcing shall be spaced at 16 inches on center within the mortar joints. All laps shall be a minimum of 12 inches.

Bond beam reinforcing shall be as shown on the plans. All bond beam laps shall be 40 bar diameters. All bond beam laps shall be staggered a minimum of 4 feet. All bond beams shall be 8 inches deep and fully grouted along the entire length of the bond beam.

(G) Grout. All reinforced hollow unit masonry shall be laid to preserve the unobstructed vertical continuity of the cells to be filled. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clean, unobstructed continuous cell measuring not less than 3 inches by 3 inches.

When grouting is stopped for 1 hour or longer, horizontal construction joints shall be formed by stopping the pour of grout 1-1/2 inches below the top of the uppermost unit. All grouted cells are to be rodded with 1/2-inch rod to ensure compaction and removal of air pockets. All masonry below ground shall be fully grouted.

(H) Control Joint Filler. Pre-molded joint filler shall be wide flange Rapid Poly-Joint manufactured by Dur-O-Wal, wide flange Vert-A-Joint manufactured by Vert-A-Joint Co., or equal.

(I) Bond. The common running bond shall be used.

(J) Daily Cleanup. At the completion of each day's work, all masonry work shall be thoroughly cleaned with stiff fiber brushes until the wall is free of all dripped or spattered mortar. Extreme care shall be used to prevent any grout or mortar from staining the face of all masonry. Grout or mortar visible from the face of the masonry shall be removed immediately.

(K) Final Cleanup. All masonry walls shall be thoroughly cleaned down on completion, damaged surfaces repaired or replaced, and mortar joints pointed to leave the work in a condition acceptable to the Engineer. Cleaning the point shall be started at the top and worked down. Cleaning shall be done with fiber brushes and clear water.

(L) Curing. The wall shall have its surface dampened with a very light fog spray during a 3-day curing period for the mortar.

(M) Freezing Weather. No masonry will be laid when the temperature outside is below 40 degrees F, unless suitable means are employed to protect the completed work from freezing during the period of laying and curing.

(N) Concrete Footings. All concrete footings shall be Class B per Sections 0301, 0302, and 0303 for concrete work.

(O) Gates. The gates shall be per Section 0214, TW Standard Detail 1610, and as modified by the plans. Vertical slatting shall be tan polyethylene as manufactured by PDS Fence Products, or equal.