***ADD THE FOLLOWING SECTION TO DIVISION II – CONSTRUCTION DETAILS***

### SECTION 570 – CONCRETE MASONRY UNIT WALLS

**DESCRIPTION**

**570.01.01 GENERAL**

A. This work shall consist of constructing concrete masonry unit (CMU) walls, retaining walls and footings, complete and in place, at locations as shown in the plans and as required in the specifications, in conformity with the lines, grades, dimensions and locations as shown in the plans and as determined by the Engineer.

**MATERIALS**

**570.02.01 CONCRETE MASONRY UNITS**

A. Hollow load bearing units shall conform to ASTM C90 with F’m=1500 psi, and be tested in accordance with ASTM C140. Concrete masonry units for non-earth retaining block wall shall be light-weight units of 105 or more pounds per cubic foot. Concrete masonry units for earth retaining block wall shall be normal weight units of 125 or more pounds per cubic foot.

B. Concrete masonry units used to extend or repair existing block walls or retaining walls shall be of identical color, size, and configuration to match the existing wall material.

**570.02.02 MORTAR**

A. Mortar shall be Type M-2500 psi and shall conform to ASTM C270. Type M mortar shall have proportions of 1 part Portland cement, 1/4 part hydrated lime, and 3‑1/2 parts sand by volume.

B. Mortar shall be freshly prepared, uniformly mixed, and be of spreadable, workable consistency.

C. Mortar shall be retempered with water as required to maintain high plasticity. Retempering on mortar boards shall be done only by adding water within a basin formed with the mortar and the mortar worked into the water. Any mortar which is unused after 1‑1/2 hours from the initial mixing time shall not be used.

D. After all ingredients are in the batch mixer, they shall be mechanically mixed for not less than 3 minutes.

E. The use of fire clay, rock dust, dirt, and other deleterious materials is prohibited in mortar.

F. Sand mortar shall conform to ASTM C144.

**570.02.03 GROUT**

A. Grout shall conform to ASTM C476 and shall have a minimum strength of 2,000 psi.

B. Fine grout shall be proportional by volume of 1 part Portland cement and 2‑1/4 to 3 parts sand. Coarse grout shall be proportioned by volume and shall consist of 1 part Portland cement, 2‑1/4 to 3 parts sand, and 1 to 2 parts coarse aggregate.

C. Laboratory design mixes are acceptable in lieu of the above proportions and are required if the minimum strength is more than 2,000 psi. Grout shall be of fluid consistency with proper proportions of sand to gravel for pouring and pumping.

D. Aggregate for masonry grout shall conform to ASTM C404.

**570.02.04 LIME**

A. Hydrated lime shall conform to ASTM C207. Quick lime shall conform to ASTM C5.

**570.02.05 AGGREGATE**

A. All aggregate for mortar and grout shall be sharp, clean, well graded, and free of injurious amounts of dust, lumps, shale, alkali, surface coatings, and organic matter.

**570.02.06 ADMIXTURES**

A. The use of admixtures shall not be permitted in mortar or grout unless approved by Engineer.

**570.02.07 WATER**

A. Water shall be free of deleterious quantities of acids, alkalis, and organic materials and shall come from domestic supply.

**CONSTRUCTION**

**570.03.01 CONCRETE MASONRY WORKMANSHIP**

A. In general, masonry construction shall conform to Section 2104 of the International Building Code. Masonry shall not be started when the horizontal and vertical alignment of the foundation is out of plumb or line 1-inch or more.

B. Care shall be taken to prevent grout and mortar stains. Keep wall continually clean; if grout does run over, clean immediately.

C. All masonry shall be laid true, level, and plumb in accordance with the drawings.

D. The masonry units shall be cut accurately to accommodate utilities, and all holes are to be neatly patched.

E. No construction support shall be attached to the wall except where specifically permitted by the Engineer.

F. The top surface of the concrete foundation shall be clean and the aggregate exposed before starting masonry construction.

G. Where no bond pattern is shown, the wall shall be laid up in straight, uniform courses with regular half or running bond. All work, bond patterns, or special details as shown on the Drawings shall be accurately and uniformly executed.

**570.03.02 CONCRETE MASONRY UNITS**

A. All masonry units shall be sound and free of cracks or other defects that would interfere with the proper placing of the unit or impair the strength of construction. Minor cracks incidental to the usual method of manufacture, or minor chipping resulting from customary methods of handling, shipping, and delivery shall not be deemed grounds for rejection.

B. All masonry units shall be stored on the job-site so that they are kept off the ground and protected from the elements. Wetting of units shall not be permitted.

C. Where masonry unit cutting is necessary, all cuts shall be neat and true.

**570.03.03 CONCRETE MASONRY JOINTS**

A. The starting joint on foundations shall be laid with full mortar coverage on the bed joints except that the area where the grout occurs shall be free from mortar so that the grout will be in contact with the foundation.

B. Mortar joints shall be straight, clean, and uniform in thickness.

C. Unless otherwise specified, all joints shall be tooled with a concave surface. Tooling shall be done when the mortar is partially set and still sufficiently plastic to bond. All tooling shall be done with a tool that compacts the mortar.

**570.03.04 CONCRETE MASONRY REINFORCING**

A. Provide and install reinforcing steel in accordance with Section 505.

B. Reinforcing bars shall be straight except for bends around corners and where bonds or hooks are detailed on the Drawings.

C. Horizontal reinforcing shall be laid on the webs of bond beam units and shall be solidly grouted in place. Reinforcing in channel units shall be spaced off the bottom of the unit.

D. Vertical reinforcing shall have a minimum clearance of 1/4 inch from the masonry.

**570.03.05 CONCRETE MASONRY GROUTING**

A. Reinforcement shall be in place before grouting starts. Mortar droppings shall be kept out of grout spaces. All grout shall be puddled or vibrated in place. Vertical cells to be filled shall have vertical alignment to maintain a continuous unobstructed cell area not less than 2 inches by 3 inches. Cells containing reinforcement shall be solidly filled with grout, and pours shall be stopped 1 inch below the top of a course to form a key or joints. Maximum height of grout pour shall be 6 feet.

**570.03.06 SURFACES FINISHES**

A. Provide concrete masonry unit walls with surface finishes that will match the color and texture of the existing adjacent walls. Prior to construction, the Contractor shall submit samples of materials to be used for approval by the City. Allow 10 working days for approval.

**570.03.07 TEMPORARY FENCING REMOVAL**

A. Temporary fencing, as required in Section 202 in association with block wall removal to maintain the integrity of fencing around private property until construction of replacement block walls, shall be removed and disposed of by Contractor when the new walls are provided as specified in this Section.

**METHOD OF MEASUREMENT**

**570.04.01 MEASUREMENT**

The quantity of CMU Wall (XX-Feet High) will be measured per linear foot, along the face of the wall.

The quantity of CMU Retaining Wall (XX-Feet High) will be measured per linear foot, along the face of the wall.

The quantity of [FILL IN ITEM DESCRIPTION] will be measured per [UNIT].

No direct measurement shall be made for [FILL IN ITEM DESCRIPTION].

**BASIS OF PAYMENT**

**570.04.01 PAYMENT**

The accepted quantity of CMU Wall (XX-Feet High)will be paid for at the contract unit price of linear foot and shall include all materials, equipment and labor required including, but not limited to, excavation; shoring; grading; shaping; dewatering; aggregate base materials; granular backfill; drain rock; drain tile; compaction; block; concrete; footings; replacement finishes to match adjacent wall; mortar; grout; reinforcing steel; dowels; water proofing; temporary fencing and all other items necessary to complete the work as shown on the Plans, as specified herein and as directed by the Engineer.

The accepted quantity of CMU Retaining Wall (XX-Feet High) will be paid for at the contract unit price of linear foot and shall include all materials, equipment and labor required including, but not limited to, excavation; shoring; grading; shaping; dewatering; aggregate base materials; granular backfill; drain rock; drain tile; compaction; block; concrete; footings; replacement finishes to match adjacent wall; mortar; grout; reinforcing steel; dowels; water proofing; temporary fencing and all other items necessary to complete the work as shown on the Plans, as specified herein and as directed by the Engineer.

The accepted quantity of [FILL IN ITEM DESCRIPTION] will be paid for at the contract unit price of [UNIT] and shall include all materials, equipment and labor required including, but not limited to, [FILL IN] and all other items necessary to complete the work as shown on the Plans, as specified herein and as directed by the Engineer.

Unless otherwise provided in the Special Provisions, no payment will be made for [FILL IN ITEM DESCRIPTION] as such. The cost thereof shall be considered as included in the price bid for construction or installation of the items to which [FILL IN ITEM DESCRIPTION] is required.

All payments will be made in accordance with Subsection 109.02, “Scope of Payment”.

Payment will be made under:

|  |  |  |
| --- | --- | --- |
| **ITEM NO.** | **ITEM DESCRIPTION** | **UOM** |
| 570.XXXX | CMU WALL (XX-FEET HIGH) | LF |
| 570.XXXX | CMU RETAINING WALL (XX-FEET HIGH) | LF |

**END OF SECTION 570**