

**SECTION 04 72 10
STONE VENEER WALL**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, equipment and services required for and incidental to the installation of stone veneer walls using natural stone.

1.02 RELATED WORK

- A. Procedures and requirements for managing and disposing construction and demolition waste: Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT.
- B. Section **32 13 20**, SITE CONCRETE

1.03 QUALITY ASSURANCE

- A. Pre-installation Conference: Conduct conference at Project site with Resident Engineer.
- B. Stone samples for comparison of quality and color are available from the Landscape Architect or Contracting Officer. Contractor shall request access to these samples for review, prior to submitting samples for approval.
- C. Preconstruction Soil Testing: Engage a qualified independent testing agency to test soil reinforcement and backfill materials for compliance with design criteria.
- D. Installer Qualifications: Firm specializing in design and installation of stone walls and :
 - 1. With not less than 2 years documented experience.
 - 2. With a minimum of five previously constructed successful projects, similar in size and magnitude, using specified wall system; Provide contact names and numbers.
 - 3. Site supervisor with verifiable qualified experience suitable for this project.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Stone, samples 3 by 6 by 12 inches, each color and finish.
- C. Shop Drawings:
 - 1. Stone walls showing exposed faces, profiles, cross sections, anchorage, reinforcing, jointing and sizes.
- D. List of jobs furnished by the manufacturer, which were similar in scope and at least three (3) years of age.
- E. Mockups: Build 8' long sample curb mockup including veneer over prepared, tested and approved concrete wall core to verify selections made under sample submittals and to demonstrate functional and aesthetic effects and set quality standards for materials and execution. Mockup should include color range, texture, bond pattern, and joints. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion. Do not continue masonry work until mock-up has been approved by Resident Engineer.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Store cement, sand, Lime and stone under waterproof covers on planking clear of ground.
- B. Protect Stone from handling, dirt, stain, and water damage.

1.06 WARRANTY

- A. Warranty exterior masonry walls against moisture leaks, any defects and subject to terms of "Warranty of Construction", FAR clause 52.246-21, except that warranty period shall be two years.

1.07 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. Concrete Reinforcing Steel Institute (CRSI): "Manual of Standard Practice" and "Recommended Practice for Placing Reinforcing Bars".
- C. California Code of Regulations, Title 24, 2007 Edition, also known as California Building Code (CBC).
- D. American Society for Testing and Materials (ASTM):
 - 1. A167-99 (2004) Stainless and Heat Resisting Chromium- Nickel Steel Plate, Sheet, and Strip
 - 2. A185-07 Steel, Welded Wire Fabric, Plain for Concrete
 - 3. A615/A615M-08 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 - 4. C33-07 Concrete Aggregates
 - 5. C150-07 Portland Cement
 - 6. C503-08 Marble Dimension Stone (Exterior)
 - 7. C568-08 Limestone Dimension Stone
 - 8. C615-03 Granite Dimension Stone
 - 9. C616-08 Quartz-Based Dimension Stone
 - 10. C979-05 Pigments for Integrally Colored Concrete

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

- A. ASTM C150, TYPE I.

2.02 SAND

- A. ASTM C144; natural sand containing not more than 2% of silt and clay by weight with specific gravity not less than 2.65.

2.03 LIME:

- A. ASTM C5, slake; screen through 16 mesh, then store and protect for 10 days.

2.04 STONE VENEER WALL SOLID STONE UNITS

- A. Natural stone quarried and sawn (except for face) into rectangular shapes and sizes suitable for the retaining wall configuration as shown.
 - 1. Stone Type: Rhyolite Napa Wall Stone as available from Stonewater Quarries or approved equal
 - 2. Color: Natural tan, brown, rust, and light grey color range
 - 3. Quarry: Syar, Napa County
 - 4. Texture: As shown on Drawings.
 - 5. Face Shape: As shown on Drawings.
 - 6. Individual Stone Height: As shown on Drawings.
 - 7. Individual Stone Length (face Width): As shown on Drawings.
 - 8. Width (Depth from Face): As shown on Drawings.
 - 9. Moisture Absorption: 3 percent, maximum
 - 10. Appearance: Natural quarried or cut face without machine marks or scrapes.
- B. Concrete Wall Core and Foundation: Reinforced concrete with compressive strength of 3,000 psi minimum.
- C. Drainage backfill: Class 2 permeable backfill per Caltrans with Subsurface Drain system as described herein.

2.05 MORTAR:

- A. Consist Of 1 Part Portland Cement And 4 Parts Dry, Loose Sand. Add Not Less Than 1/4 Nor More Than 1/2 Part Lime Putty Or Hydrated Lime Per Volume Of Cement Content. Insure Mortar With 28-Day Strength Of At Least 1500 Psi.

2.06 GROUT:

- A. Consist of 1 part portland cement and 3 parts sand. Add up to 10% lime. When the grout core is 2" or more wide, add 2 parts of pea gravel to the above grout mix. Add water to grout to cause it to flow without segregation into all voids intended to be filled, and to produce a 28-day strength of 2000 PSI. Plaster sand may be added to prevent segregation, provided strength is maintained. Color: medium to light gray color added to mortar. Submit color samples for acceptance by resident engineer.

2.07 REINFORCING MATERIALS

- A. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in a non-corrosive material such as zinc plated, galvanized steel, brass, or stainless steel Type 302 or 304.

2.08 ANCILLARY MATERIALS

- A. Dampproofing: Per CALTRANS Standard Specifications, Section 54.
- B. Subsurface Drain behind Retaining-Type Walls: All walls that retain 30 inches of soil or more shall include a subsurface drainage system to relieve water pressure in accordance with Section 68 of the CALTRANS Standard Specifications and as shown. If no subsurface drain is shown, provide corrugated polyethylene plastic tubing per 68-1.02K surrounded with an envelope of Class 2 permeable material per 68-1.025 and wrapped with filter fabric per 68-1.028. Connect drains to storm drain system as accepted by Resident Engineer.

- C. Caulk for dowel anchors shall be a one-part, cold-applied, non-sagging silicone material that cures to a medium modulus silicone rubber upon exposure to atmospheric moisture, Dow Corning® 795 Silicone Building Sealant or approved equal

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide testing and subgrade preparation complete.
- B. Provide subgrade preparation and the base material installation complete, including clearing, grading, excavation, filling and dewatering. Take every precaution to obtain a subgrade of uniform bearing power compacted to a minimum of 95% relative compaction as determined by the ASTM D1557 laboratory test procedure and in Sections 19 and 20 of the Caltrans Standard Specifications.
- C. Do any necessary finish grading and compaction in addition to that performed in accordance with earthwork to bring subgrades after final compaction to required grades and sections as indicated. Place no material on muddy subgrade. Remove un-compactable material and replace with clean fill and compact as required.
- D. Excavate to lines and grades shown on Drawings. Do not disturb embankment or foundation beyond lines. Minimize over-excavation.
- E. After excavation and prior to placement of leveling materials, Contractor's Geotechnical engineer shall examine bearing soil surface to verify strength meets or exceeds design requirement and assumptions and issue report to Resident Engineer for acceptance. Replace any unsuitable bearing soil as directed by Geotechnical Engineer.

3.02 REINFORCEMENT

- A. Concrete wall and footing shall be steel reinforced.

3.03 INSTALLATION

- B. Install in accordance with Drawings and applicable codes and regulations.
 - 1. Erection Tolerances:
 - a. Variation for plane may be 1/4".
 - 2. Mortar joints as shown on drawings. Recess mortar joints minimum 3/4" inch. Provide pitch on horizontal joints to drain. Strike all joints to provide dense mortar.
 - 3. Place first course of units on concrete foundation; check alignment and level. Check for full contact with base and for stability.
 - 4. Place units side by side aligning face of wall using string line or offset from base line.
 - 5. Insert anchoring devices as required. Check for proper alignment and batter. Place succeeding courses.
- C. Setting Stones:
 - 1. Distribute stones as shown on drawings. Brush free of dust or other foreign matter and thoroughly wet before placing. Set in full mortar beds.
 - 2. Provide sufficient number of stones to install complete wall from lines and grades shown on the drawings and details.

3.04 DAMPPROOFING

- A. Mop apply one heavy coat of asphalt to a minus 2 inches below finished soil grade on soil side of retaining wall.

3.05 CONSTRUCTION WASTE MANAGEMENT

- A. General: Comply with Contractor's Waste Management Plan and Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT.
- B. To the greatest extent possible, separate reusable and recyclable products from contaminated waste and debris in accordance with the Contractor's Waste Management Plan. Place recyclable and reusable products in designated containers and protect from moisture and contamination.

3.06 CLEANUP:

- A. Exercise care that no mortar or grout comes in contact with exposed face of work. Clean immediately.
- B. Use only stiff fiber brushed and wooden scrapers in keeping work clean as it progresses or in cleaning down at completion. Use no metal implements.

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