

**SECTION 32 14 12
CONCRETE PAVERS**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, equipment and services required for and incidental to the installation of concrete pavers.

1.02 RELATED WORK

- A. Section **31 20 00**, EARTH MOVING
- B. Section **32 13 20**, SITE CONCRETE
- C. Section **01 45 29**, TESTING LABORATORY SERVICES

1.03 QUALITY ASSURANCE

- A. A person who is thoroughly familiar with the type of materials being installed and the methods for their installation shall be present at all times during execution of the work.

1.04 SUBMITTALS

- A. Per Section **01 33 23**, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- B. Concrete Unit Pavers, submit the following:
 - 1. Product cut-sheet and product literature.
 - 2. Full size paver samples of each type of paver used indicating full range of color and finish to be expected in completed work.
- C. Construct an 8'-0" x 8'-0" minimum sample area at job site with 2x4s restraints and vibrate in place including all color patterns, bands and paver field with edges cut to match the restraints. Protect sample panel until unit paving work is accepted. Locate panel where directed by Resident Engineer.

1.05 CODE REQUIREMENTS:

- A. Conform to the requirements of all applicable local, state and federal building and safety codes, ordinances and regulations.

1.06 PRODUCT HANDLING:

- A. Deliver and unload concrete and stone pavers at job site on pallets and bound in such a manner that no damage occurs to the product during hauling, handling or unloading at the job site. Provide bedding and joint sand in such a manner as to deter contamination including saturation of water..

1.07 WARRANTY:

- A. Warrant all of the work under this Section to be free of defects of any kind, whether due to workmanship or materials, for a minimum period of one year from the time of completion of the project. This one year warranty does not negate the various manufacturers warranties that are longer than one year.

PART 2 - PRODUCTS

2.01 CONCRETE PAVERS

- A. Concrete pavers shall be in accordance with the drawings, patterns, and details as shown on the plans and/or contained within these specifications. All concrete and stone pavers shall be produced by single source manufacturers. Concrete pavers shall be sealed as recommended by manufacturer.
1. Concrete Unit Paver: 3" x 18" x 4", "Granada White" #1401 (with Slag), "Light Sandblast", by Stepstone Inc. Gardena, CA (800) 572-9029; or approved equal.
 2. Concrete Unit Pavers over slot drain assembly: 3" x 18" x 2-1/2", "Granada White" #1401 (with Slag), "Light Sandblast", by Stepstone Inc. Gardena, CA (800) 572-9029; or approved equal.
 3. Concrete Pavers: Concrete pavers shall be made from 5000 psi (34,450 kPa) hardrock concrete using Type III cement.
 4. Materials used to manufacture concrete pavers shall conform to the following:
 - a. Cement: ASTM C150 (Portland Cement)
 - b. Aggregates: ASTM C33 (washed, graded sand and rock; no expanded shale or lightweight aggregates).

2.02 SAND LAYING COURSE:

- A. Sand laying course shall conform to ASTM C33 as follows:

<u>Sieve Size</u>	<u>3/8 in.</u>	<u>No. 4</u>	<u>No. 8</u>	<u>No. 16</u>	<u>No. 30</u>	<u>No. 50</u>	<u>No. 100</u>
% passing	100	95-100	80-100	1-12	25-60	10-30	2-10

- B. CALTRANS Department of Transportation Specifications 90-3.03, Fine Aggregate Gradings:
1. Thickness of sand laying course nominal 1" and uniform to ensure an even surface.
 2. The sand laying course shall be the responsibility of the paver installer.

2.03 SAND JOINT FILLER

- A. Plaster sand.

2.04 SEALER

- A. Joint stabilizing Sealer, Teflon based or epoxy-modified, penetrating sealer and joint sand stabilizer. Shall be VOC, EPA, OSHA and FDA compliant through 2007 as recommended by concrete paver manufacturer.

2.05 AGGREGATE BASE (Base Rock)

- A. Aggregate base shall be crushed aggregate, R-78 minimum, 3/4" maximum, conforming to Caltrans Standard Specifications 26.1.02A, Class 2, free from vegetable matter or other deleterious substances.

2.06 MORTAR BED

- A. Latex-Portland Cement Mortar

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. Subgrade is that area on which pavement, surfacing, base, sub-base or layer of any other material that may be specified, is to be placed.
- B. Provide subgrade preparation and the base material installation complete, including clearing, grading, excavation, and filling and dewatering. Take every precaution to obtain a subgrade of uniform bearing power compacted to a minimum of 90% relative compaction as determined by the ASTM D1557 laboratory test procedure and in Sections 19, 25 and 26 of the Caltrans Standard Specifications.
- C. After clearing subgrade of all vegetation and debris in accordance with Section 16 of the Caltrans Standard Specifications, prepare the soil subgrade in accordance with the recommendations provided in the geotechnical report for concrete flatwork. Remove all boulders, hardened material or rock encountered. The earth shall be uniform for the full depth and width of the subgrade.

3.02 AGGREGATE BASE

- A. Deliver to site as a uniform mixture and spread each layer in one operation without segregation.
- B. Spread and compact Class 2 Aggregate Base to a minimum of 95% relative compaction with equipment that will provide a uniform layer conforming to the planned section, and as specified in Section 26 of the Standard Specifications.
- C. The elevation of the compacted surface shall not deviate more than $\pm\frac{1}{2}$ inch over a 10 foot straightedge.

3.03 SAND LAYING COURSE:

- A. Install dry sand to uniform depth required for flush finish after pavers are installed. The designed nominal depth shall be one inch thick with no sand thickness less than $\frac{3}{4}$ " or more than $1\frac{1}{2}$ ". Sand is to remain undisturbed prior to the installation of pavers. Moisture content of sand to remain constant.

3.04 CONCRETE SUB-SLAB:

- A. Install as shown on Drawings and accepted by Resident Engineer.

3.05 PAVER INSTALLATION

- A. Before installing, clean pavers of all foreign material. Do not begin installation of pavers until subgrade and base have been prepared per Specifications.
- B. Screed sand bedding course to recommended depth. Sand is to remain undisturbed prior to the installation of unit pavers. Maintain constant sand moisture content.
- C. Start installation from a corner or straight edge, unless detailed otherwise, and proceed forward over the undisturbed sand bedding course with pavers as shown on Drawings.
- D. Install pavers plumb and true to line and grade to coincide and align with adjacent work and elevations in accordance with Drawings. Use string lines to hold pattern lines true.

Maximum vertical deflection shall not exceed 3/8 inch under a 10 foot straightedge. All perimeter edges must be retained to secure the pavers and sand bedding course. Provide retainer as required. No paver joint shall be greater than 1/4" inch. No perimeter edge joint shall be greater than 3/8".

- E. Cut pavers with a double bladed stone cutter or diamond blade masonry saw.
- F. Use a plate vibrator to compact the pavers and to vibrate the sand up into the joints between the pavers. A plate type vibrating compactor capable of 3,000 to 5,000 lbs. centrifugal compaction force should be used to compact the unit pavers into the sand bedding course. 2 - 3 passes is recommended to insure an even elevation. Ensure paver surface is clear of debris prior to compaction. Do not use joint sand during this process. Avoid scuffing finished surface of pavers. Replace Scuffed pavers as directed by Resident Engineer.
- G. Profiled Pavers shall be protected from scuffing during compaction using a woven geotextile such as Mirafi 500X or other method. Scuffed pavers shall be replaced as directed by Resident Engineer.
- H. Spread plaster sand over the installed and approved pavers and vibrate into the joints between the pavers. Make several passes with the plate compactor, while sweeping the sand into the paver joints. Insure all joints are full before clean up. Excess sand should be swept up and removed from the completed unit paver installation. The completed paving installation shall be swept and washed down to provide a clean, finished, workmanlike hardscape pavement.
- I. Protect paved areas from damage and stains during installation and throughout the remainder of the project until final project acceptance. The completed paver installation shall be swept and washed down to provide a clean, finished, workmanlike hardscape pavement.
- J. The final surface elevation of pavers shall not deviate more than 3/8 in. under a 10 ft long straightedge and 1/8 in. between individual pavers.
- K. The surface elevation of pavers shall be 1/8 to 1/4 inch above adjacent drainage inlets, concrete collars or channels.
- L. Apply sealer after final cleanup and wash down of paving surfaces.
- M. Prior to applying sealer, remove any stains and efflorescence using cleaners as recommended by manufacturer. During application, protect surrounding areas from over spray. All traffic, pedestrian or vehicular, shall be kept off of sealed pavers until initial cure time has been achieved.

3.06 FIELD QUALITY CONTROL

- A. After sweeping the surface clean, check final elevations for conformance to the drawings.
- B. Lippage: No greater than 1/8 inch difference in height between adjacent pavers.
- C. The minimum slope of the finished pavement surface shall be 1%.

3.07 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.

3.08 CLEANUP

- A. Per Section 01 74 00.

- B. Perform the work under this Section so as to keep affected portions of the buildings and site neat, clean and orderly. Upon completion of the work under this Section, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work.
- C. Reset all disturbed pavers and brush joints with sand. Reseal individual pavers as required.

END OF SECTION