

SECTION 32 19 00 SITE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Extent: Work in this Section includes, but is not limited to, the provision of materials and labor for the construction of all concrete elements shown on the Plans.
- B. Related work:
 - 1. Earthwork and Grading.

1.3 STANDARDS

- A. Unless otherwise shown or specified, all materials and methods shall conform to the appropriate current sections of:
 - 1. The State of California Department of Transportation (CALTRANS) Standard Specifications, except for measurement and payment requirements.
 - 2. Applicable ASTM Specifications as they reasonably apply to this work.
 - 3. Reinforced concrete work and materials shall be in accordance with ACI 318-83.

1.4 QUALITY ASSURANCE

- A. Inspection: Contractor shall notify the Architect 48 hours prior to placement of any concrete to inspect forms.
- B. Tolerances: Tolerances for sub-grade, sub-base and finished grade shall be as specified by the Standard Specifications except that Contractor shall install the aggregate base and concrete to the minimum thickness shown. No combination of high and low tolerances will be permitted.
- C. Samples - Special Concrete: Contractor shall prepare samples of all at-grade and above-grade concrete work that is colored and/or has a special finish, as shown on the Plans. Minimum 4' square sample for paving. Minimum 10' length sample for curbs and gutters. Samples shall be viewed for color, form, pattern, jointing, and finish requirements. Samples shall include expansion joint and sealant, control joints, sawcuts, stair tread nosing, flagstone, and boulder treatments.
 - 1. Contractor shall allow for up to four different mock ups of each color and finish to be prepared.

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2. All concrete work installed that does not conform to the approved samples shall be removed and replaced by the Contractor at the Contractor's expense.

1.5 SUBMITTALS

- A. Product data: all steel reinforcement, joint filler, sealants, cure, expansion joint filler, integral color.
- B. Proposed mix design of each class of concrete to Architect for review 10 days prior to the commencement of work.
- C. Design Mixture Documentation: Contractor shall submit documentation to the Architect which indicates mix design for each paving mixture containing fly ash and/or slag and/or aggregate base and/or other recycled content products in order to comply with LEED MR Credit 4.2: Recycled Content.

1.6 TESTS

- A. Testing and analysis of concrete will be performed under provisions of Section 6-3 of the Standard Specifications.
- B. Testing firm will take cylinders and perform slump, compression strength, and air entrainment tests in accordance with ASTM C-143, C-39 and C-173.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aggregate Base: Class-II, manufactured from 100% recycled materials, and conforming to CALTRANS Section 25 & 26, latest edition.
- B. Forms: Steel or wood, of size and strength to resist movement during concrete placement and to retain straight, true, and to proper elevation, horizontal and vertical alignment until removed. Use forms that are straight and free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required.
- C. Reinforcement Bars and Dowels: Deformed steel bars, ASTM A615, Grade 60, unless otherwise shown.
- D. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A185. Furnished in flat sheets, not rolls.
- E. Concrete Mix: Shall be designated by class based on 28-day compressive strengths (when tested in accordance with ASTM C39) and shall be:
 1. Class-B (470 lbs of Portland cement per c.y. / 2500 psi) for all sidewalks, pavements, sub-pavements, and sub-slabs. Substitute 15% (20% maximum) of Portland cement with coal fly ash.
 2. Concrete shall comply with applicable requirements for concrete materials, admixtures, bonding materials, curing and other except as noted.
- F. Concrete Materials:
 1. Cement: Portland cement shall conform to the requirement of ASTM C150, Type II.

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2. Water: The water used in the concrete mix shall be clear and free from injurious amounts of oil, salts, acid, alkali, organic matter, or other deleterious substances.
 3. Air Entrainment: Air entrainment agents shall conform to ASTM C260. Use five percent (5%) air entrainment: Darex, Sika, or approved equal. Air entrainment shall be at the Contractor's discretion at the time of the pours.
 4. Fly Ash: Fly ash for use in Portland cement concrete shall conform to the requirements of ASTM C 618, Standard Specification for Fly ash and Raw or Calcined Natural Pozzolan Class C Fly ash for use as a Mineral Admixture in Portland cement. At no time during the course of the project will a change of fly ash source (plant) be permitted without the prior written consent of the Engineer or Architect. Concrete mixtures with fly ash must be property engineered for the application and finishing procedures must be appropriately applied.
- G. Expansion joint filler: 3/8" thick asphalt impregnated fiberboard, shall conform to ASTM D1751.
- H. Cure: shall be a VOC compliant water-base, resin-base, clear membrane curing compound. White liquid membrane curing compound shall not be used.
- I. Waterproofing Sealant: Sinak S-101 or approved equal.
- J. Integral Color/Exposed Aggregate materials to match existing.
- K. Expansion joint cap: Snap-cap 3/8", by W.R. Meadows, Inc. P.O. Box 338, Hampshire, IL, 847-214-2100, or approved equal.
- L. Joint Sealant: Polyurethane, and shall comply with ASTM C920 grade M, color to match concrete.
- M. Truncated domes: shall be manufactured by Tile Tech Pavers - Detectable Warning Paver, 12"X12"X2", Charcoal color, 213-489-2555, www.tiletechpavers.com
- N. Flagstone: per plans or equal.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Weather Conditions: Construct concrete surface course only when atmospheric temperature is above 40 degrees F., when the underlying base is dry, and when weather is not rainy.
- B. Grade Control: Establish and maintain the required lines and grades, including cross-slope during construction operations.
- C. Protection: Take all steps necessary not to discolor or damage existing improvements. If damage occurs, repair immediately and if repair cannot be made to the satisfaction of the Architect, remove and replace at no expense to the Owner.

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3.2 PREPARATION

- A. Sub-grade: Verify that sub-base is properly compacted and at suitable grade.

3.3 INSTALLATION

- A. Form Construction: Set forms to the required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Reinforcement Placement: Contractor shall inform Architect 24 hours prior to pouring of concrete so reinforcement can be inspected. No concrete shall be poured prior to the Architect's inspection. Reinforcement bar shall be per the Plans, secured in place.
- C. Integral Color: Install in mix of all concrete specified with exposed faces per manufacturers written recommendations.
- D. Concrete Placement: Moisten sub-grade as required to provide a uniform, dampened condition at the time concrete is placed. Place concrete using methods which prevent segregation of the mix, with as little re-handling as possible. Consolidate concrete along the face of forms and adjacent to transverse assemblies, reinforcement, or side forms. Use care to prevent dislocation of reinforcing, dowels, and joint devices. Deposit and spread concrete in a continuous operation between transverse joints. If interrupted for more than 1/2 hour, place a construction joint.
- E. Joints: Construct expansion and construction joints true-to-line with face perpendicular to surface of the concrete, unless otherwise shown. Construct transverse joints at right angles to the centerline, unless otherwise noted.
1. All joints shall be set accurately to grade and straight in alignment as shown on the Plans. Alignment shall not vary more than 1/8" in 10' length.
 2. Expansion joints: Furnish joint fillers in one-piece lengths for the full width being placed, whenever possible. Where more than one length is required, lace or clip joint filler sections together. Form top edge of filler to conform to top profile of concrete.
 3. Expansion joint locations: On pavements, construct expansion joints:
 - Where shown on the plans
 - At all new and existing paving, walls, steps and other structures, and building faces.
 - Align expansion joint at paving with expansion joint at curbs.
 4. Expansion joint cap: Install joint filler with expansion joint cap, top edge of the cap to conform to top profile of concrete. Remove the top of the expansion joint cap after all finish work is completed per manufacturer's recommendations. Seal the expansion joint with joint sealant. Sealant shall produce a concave joint over joint filler and shall not spill over the edges of the joint.
 5. Saw Cut Joints: 3/16" width. Minimum halfway between expansion joints or as shown on the Plans. Shall be as specified in the Standard Specifications, Section 40-1.08 B (1), 1/4 the depth of the slab. Saw cutting shall occur within the first 12 to 24 hours after pour, at the discretion of the Contractor.
 6. Tool Joints: 1/4" width, 3/4" deep
- F. Curing:
1. Protect and cure finished concrete, complying with applicable requirements of the Standard Specifications.
- G. Repair: Repair or replace broken or defective concrete immediately as directed by the Architect.
- H. Protection: Protect concrete from damage until acceptance of work.

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- I. Clean Up: Sweep concrete and wash free of stains, discolorations, dirt and other foreign materials just prior to final inspection.
- J. Disposal: Surplus material and debris remaining upon completion of the work shall be segregated as to type, and transported from the job site and disposed of in a legal manner.

3.4 CONCRETE FINISHING

- A. Colored Concrete paving: Light wash sand finish - expose the integral aggregate fines and light exposure of aggregate in the concrete.

END OF SECTION 002510