CONCRETE PAVEMENT

The City and County Pavement Improvement Center (CCPIC) provides this model specification to support the local agencies in California.

This sample specification for concrete pavement is provided as a guide for design professionals. Specific projects will have conditions that may require modifications to this document.

Notes to specifier in blue are editing guides and should be hidden or deleted in the finished specification. To hide a text in Word, check the “Hidden” option from “Font” panel after selecting the blue text; to unhide a text in Work, uncheck the “Hidden” option from “Font” panel after selecting the text containing the hidden text.

This model specification is intended solely for use by professional personnel to evaluate the significance and limitations of the information provided and who will accept responsibility for the application of this information. CCPIC and its partners disclaim any and all responsibility and liability for the accuracy and the application of the information contained in this publication to the full extent permitted by law.

1. GENERAL
   * + 1. SUMMARY
          1. The work to be completed under this contract includes the furnishing of all labor, materials and equipment necessary for the construction of jointed plain concrete pavement (JPCP) for streets, parking areas, and other municipal pavements.
       2. DEFINITIONS

More definitions can be found in Section 40-1.01B of the Caltrans 2018 Standard Specifications.

* + - * 1. Raveling: Progressive disintegration of the concrete pavement surface resulting in dislodged aggregate.
        2. Contraction Joints: Joints constructed in concrete pavement by saw cutting to a specified depth at specific locations.
        3. Transverse Construction Joints: Joints constructed at the transverse edge of each placement of concrete pavement.
        4. Longitudinal Construction Joints: Joints constructed along the longitudinal edge of each placement wherever another placement or lane with adjoin.
        5. Transverse Isolation Joints: Joints constructed to isolate structures within the concrete pavement.
        6. Longitudinal Isolation Joints: Joints constructed to isolate structures adjacent to the concrete pavement.
      1. ADMINISTRATIVE REQUIREMENTS

Require pre-construction meetings for complex or large projects. Adjust list of attendees to include specific subcontractors for related work, such as underground water storage or adjacent decorative paving.

* + - * 1. General: If the pavement quantity is at least 2,000 cubic yards, provide a QC manager and a QC plan including certified testers and an approved laboratory.
        2. Pre-Paving Meeting: The Engineer will schedule a pre-paving meeting at a mutually agreed upon date and time prior to submission of the Quality Control plan. Discuss the Quality Control Plan and methods of performing each item of the work.

Required attendees are as follows:

Contractor's Project superintendent

Concrete paving subcontractor's foreman

Foremen responsible for earthwork and pavement base

Representatives from subcontractors for adjacent and related work

Engineer and Assistant Engineer

Testing Laboratory

Testers

Topics to be discussed are as follows:

QC plan including tests and testing frequencies

Work schedule

Traffic control plan

Progress Payments

* + - 1. PRE-CONSTRUCTION SUBMITTALS
         1. Product Data: For each concrete material, aggregate, admixture, curing compound, and accessory.

B. Construction Details: If the following are not shown on the Plans prepared by the Agency, submit the following:

1. Project-specific plans and details, including placement of joints in paving, and joints between paving and adjacent work or existing facilities.
2. Particular joint details for intersections. Maximum joint spacing for all concrete construction shall be shown on the plans.

C. Mix Design(s): Mix design(s) meeting the requirement of these specifications. Use a laboratory that complies with ASTM C1077 to determine the mix proportions for concrete pavement. The laboratory must have a current accreditation for: AASHTO T 97 or ASTM C782, ASTM C192/C192M.

D. For streets and parking lot pavement, develop and submit a correlation curve between flexural strength and compressive strength using the same mix design.

E. Materials used in concrete must have a certificate of compliance when delivered to the production site.

1. CONCRETE PAVEMENT MATERIALS AND EQUIPMENT
   * + 1. MATERIALS
          1. The mix design(s) shall show the proposed concrete mixture proportions including all material weights, volumes, density (unit weight), water-cement ratio, and void content. The mix design(s) shall specify an average compressive or flexural strength that meets or exceeds the acceptance criteria for the specified strength.

For streets and parking lot pavement the minimum allowable average flexural strength of the concrete per ASTM C78, or California Test Method 523, shall be 550 psi at 28 days age. The average must be calculated using at least three replicate specimens.

Rapid strength concrete shall be used for high early strength where specifically required by the Special Provisions or shown on the plans. Rapid set concrete shall be sampled per California Test Method 539 and tested per California Test Method 524. Rapid strength concrete must have an opening modulus of rupture of not less than 400 psi and a 3-day modulus of rupture of not less than 600 psi.

* + - * 1. Cement: Portland cement Type II or V complying with ASTM C150 or Portland cement Type IP, IL, or IS complying with ASTM C595.
        2. Supplementary Cementitious Materials/Requirements for Compliance:

Fly Ash: ASTM C618 / AASHTO M 295, Class F.

Ground Granulated Blast-Furnace Slag (GGBFS): ASTM C989 / AASHTO M 302, Grade 100 or 120.

Metakaolin: AASHTO M 295, Class N.

Raw or calcined natural pozzolans: AASHTO M 295, Class N.

Silica Fume: ASTM C1240 / AASHTO M 307.

Percentages of SCMs allowed in concrete:

The following general ranges are specified based on the percentage of the ingredients by the total weight of cementitious material used in the batch for concrete:

Class F Fly Ash: 15% - 35%. (ACI 232.2R)

Slag Cement (GGBFS): 25% - 70%. (ACI 233R)

Metakaolin: 5% - 15%. (ACI 232.1R)

Natural Pozzolans: 5% - 15%. (ACI 232.1R)

Silica Fume: 5% - 12%. (ACI 234R)

* + - * 1. Chemical Admixtures: Comply with ASTM C494.

Adjust list below according to project requirements.

Hydration Stabilizers: As required to extend working time.

SAP: Allows for increased water-cement ratio to aid in workability and curing while eliminating need for water reducers and viscosity modifiers.

Hydration Stabilizers:

Super-Absorbent Polymers (SAP):

Air Entraining Admixtures: Comply with ASTM C260.

Delete pigment if not required, or add criteria for matching samples or other work. Pigment generally reduces the albedo (reflectivity) of concrete, which may be an important design consideration for thermal comfort of users where the pavement will be used by pedestrians and bicyclists.

Pigment: ASTM C979.

* + - * 1. Aggregates: Comply with ASTM C33.
        2. Alkali-Silica Reaction (ASR): Comply with ASTM C1778-16

ASTM C1778-16 provides a detailed procedure that can be used to achieve ASR resistant concrete. This guide will give a very simple method that can be applied to California Pavements as well as minor flatwork.

Although not required for ASR for non-reactive aggregate, SCMs can still be used for their environmental and sustainability benefits. SCMs have environmental benefits in the initial build as well as long term benefits. Using an SCM in a mix design significantly reduces the greenhouse gases in the concrete mix. SCMs can also increase the density, strength, and long-term durability of concrete.

Identify the type of work and the source of the aggregate. If the submitted aggregate source is not on the Caltrans approved source list, then fly ash, slag cement, or silica fume must be incorporated into the mix at the percentages shown in the table below.

Concrete Pavements for Streets Non-Reactive Aggregate Reactive Aggregate

Fly Ash type F 0% 25%

Slag Cement 0% 50%

Silica Fume 0% 1.8 x LBA\*

\* LBA: The alkali (Na2Oe) content of the concrete contributed by the portland cement and expressed in units of lb/yd3(LBA)

* + - * 1. Reinforcing Materials:

The decision to require or not require macro-fibers needs to be made by the specifier and the specifications should be written accordingly.

Distributed rebar/mid-panel reinforcement is not necessary when pavement is jointed to form short panel lengths. The use of distributed steel reinforcement will not add to the load-carrying capacity of the pavement and should not be used in anticipation of poor construction practices or soil conditions.

Macro-fibers: Per manufacturer’s recommendations.

Tie bars shall be deformed steel bars complying with ASTM A615, ASTM A616, or ASTM A617.

Dowels:

Dowel bars: Comply with ASTM A615, ASTM A616, or ASTM A617.

Plate dowels: Per manufacturer’s recommendations, as approved by the Engineer.

* + - * 1. Water: Comply with ASTM C1602.
        2. Isolation Joint Material: Comply with ASTM D994, D1751, or D1752.
        3. Joint Sealer: Comply with ASTM D6690.

Information for specifying the amount of air entrainment: See Caltrans 2018 Standard Specifications section 40-1.02B(4), Air Entrainment. Climate regions are determined by the Caltrans Highway Design Manual Climate Region Map.

* + - * 1. Air Entrainment: Comply with ACI 318, ASTM C33 Number 57
      1. FORMS
         1. Forms shall be of steel or wood capable of resisting deformation during edge compaction and to maintain grade. Wood forms shall have a minimum nominal thickness of 2 inches.
         2. Forms shall be clean and free of debris, rust, and hardened concrete.
         3. Forms shall be treated with a bond breaker prior to use.
         4. Forms shall be free from warp.
      2. JOINT MATERIAL
         1. Pre-molded joint filler or bituminous-type joint material used for isolation and/or expansion joints shall be shown on the plans and approved by the Engineer.
      3. CURING MATERIALS
         1. Non-pigmented curing compound must comply with ASTM C309, Type 1, Class B per Caltrans 2018 Standard Specifications, Section 64-3.02 H.
      4. CONSTRUCTION EQUIPMENT
         1. Concrete pavement shall be spread, screeded, shaped, slip formed, and/or consolidated by one or more self-propelled machines. These machines shall perform in a manner so that the completed pavement will conform to the required cross section with a minimum amount of handwork. Consolidate the concrete with internal vibrators or other authorized method.
         2. Self-propelled slip form paving machines shall be vibratory, and shall be calibrated per the equipment manufacturer.

Each vibrator must have a vibration rate from 5,000 to 8,000 cycles per minute. The amplitude of vibration must cause perceptible concrete surface movement at least 1 foot from the vibrating element. Use a calibrated tachometer to measure the frequency of vibration.

Use a smaller, maximum size of aggregate with an extruded or slip form machine if it is required to produce concrete (1) free from surface pits larger than 3/16 inch in diameter and (2) with well-defined web marks of water on the surface.

1. CONSTRUCTION

Subgrade and any base and subbase materials and construction are addressed in respective sections of the Caltrans 2018 Standard Specifications. Foundation layers for pavement should be designed based on a site investigation and structural design, and proper foundation design for other concrete flatwork.

* + - 1. SUBGRADE, SUBBASE, AND BASE PREPARATION INSPECTION
         1. Verify that the finished surface of the subgrade does not project into the concrete cross section at any point by:
  1. Using a template supported on the side forms for the fixed form method
  2. Measuring from the offset guide line or survey marks for the extruded or slip form method.

For new construction, include below to ensure that the subgrade is properly compacted as “G”.

Verify that subgrade, subbase, and base work complies with requirements. These materials shall be compacted to 95% relative compaction established by California Test Method 216, Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates, and placed in maximum lifts of 8-inches. Additional materials may not be placed until compaction of the underlying materials reaches 95% per California Test Method 231, Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates Using Nuclear Gages.

* + - * 1. Verify base elevation to ensure required thickness of concrete pavement. The base material must meet 0.02-foot tolerance of the grades shown on the plans.
        2. Verify that base extends at least 2 inches beyond the outside edge of the concrete pavement.
        3. Any changes of thicknesses must be approved by the Engineer.
      1. FORMWORK
         1. Setting Formwork:

Set, align, and brace forms so that hardened pavement meets specified tolerances for finished grade, top of pavement.

Install forms to allow continuous progress of work.

Assemble formwork to permit stripping and dismantling without damage to concrete.

* + - * 1. Vertical face of previously placed concrete may be used as a form. Ensure that previously placed pavement is protected from damage.
        2. Formwork must be inspected by the Engineer prior to placing concrete. Top of forms must meet tolerances for grade.

Forms must be free from warp.

Forms must be secured by steel stakes placed at regular intervals.

* + - 1. REINFORCEMENT PLACEMENT
         1. Dowels Bar or Plate Dowels:

Dowels or other load-transfer units of an approved type shall be placed across joints in the manner as shown on the plans. They shall be of the dimensions and spacing as shown on the plans and constructed to manufacturer’s recommendations and accepted in the field by the Engineer.

The Contractor shall submit the proposed method of using wire basket supports including shop drawings with proposed method of anchoring the baskets for acceptance by the Engineer prior to placement. Where applicable, include the proposed method of establishing the assembly locations on the subgrade.

* + - * 1. Tie Bars: Conform to Caltrans 2018 Standard Specifications, Section 40.
      1. TEST STRIPS (optional)

Choose between 3.5 and 3.6, or include both if the Agency and the Contractor will collect and test samples. Edit to fit the project. Specify the sampling and testing frequency if different

than specified below.

* + - 1. AGENCY SAMPLING, SAMPLE CUSTODY, AND TESTING
         1. Sampling will be performed under the direction of the Engineer by a qualified tester. The tester will be certified for the following test methods:

ACI-certified concrete laboratory technician, Grade I, will perform field qualification tests and calculations or field tests.

Caltrans certified tester for California Test Methods 523 and 524.

* + - * 1. The Engineer will obtain one sample per 1,200 square yards, or one each day during concrete pavement placement, whichever is greater.
        2. Samples will be submitted to the Agency laboratory by the Engineer or their representative at the end of each work day.
        3. Concrete samples will be cured for the prescribed period of time prior to a 7-day, 14-day, and 28-day test to meet minimum compressive strength requirements for concrete pavement.
        4. Field samples for compressive strength testing may be stored in the field in accordance with the test method, and field tested accordingly.
        5. The Agency laboratory will perform the testing.
        6. Dispute samples will be stored/cured at the Agency laboratory or at the Agency’s facility.
      1. CONTRACTOR SAMPLING, SAMPLE CUSTODY AND TESTING
         1. Sampling shall be performed by a qualified tester under the oversight of the Engineer. The tester must be certified for the following test methods:

ACI-certified concrete laboratory technician, Grade I, for field qualification tests and calculations or field tests.

Caltrans certified tester for California Test Methods 523 and 524.

* + - * 1. Obtain one sample per 1,200 square yards, or one each day during concrete pavement placement, whichever is greater.
        2. Samples will be submitted to the laboratory by the Engineer or their representative at the end of each work day.
        3. Concrete samples will be cured for the prescribed period of time prior to a 7-day, 14-day, and 28-day test to meet minimum compressive strength requirements for concrete pavement.
        4. Field samples for compressive strength testing may be stored in the field in accordance with the test method, and field tested accordingly.
        5. The approved certified laboratory shall perform the testing.

F. Dispute samples shall be stored/cured at the approved laboratory or at the Agency’s facility.

G. Submit a written report of test results to the Engineer within 24 hours of test completion.

* + - 1. FIELD CONDITIONS
         1. Weather Limitations:

Do not place concrete pavement when the ambient temperature is below 45°F, or is expected to fall below 32°F within 48 hours of placement, unless otherwise permitted in writing by the Engineer.

Hot weather installation increases the chances of curling and cracking because the surface may dry prematurely.

Do not place concrete pavement when the ambient temperature is above 95°F unless otherwise permitted in writing by the Engineer.

Do not place concrete pavement when the wind, heat or humidity do not allow enough time to place, properly joint, compact, edge, finish and cure before the surface dries.

* + - * 1. Protection of Existing Conditions:

Protect adjacent work and existing surfaces from damage.

Protect adjacent vegetation from damage.

* + - 1. PLACEMENT
         1. Limitations on Mixing and Placing: Concrete shall not be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated. Concrete pavement shall be placed at times that ensure sawing is completed on the same day as placement unless approved by the Engineer.
         2. Inspect formwork for compliance with requirements.
         3. Remove loose and extraneous material from the surface to receive concrete.
         4. Moisten base or sub-base aggregate or subgrade to provide a uniform dampened condition at the time concrete is placed, without standing or flowing water.
         5. Place concrete to the lines and grades as shown on the plans accounting for finishing and grinding operations.

Place consecutive concrete loads within 30 minutes of each other. Construct a transverse construction joint if the concrete placement is interrupted by more than 30 minutes. The transverse construction joint must be at the same longitudinal location as the contraction joint in the adjacent lane location(s), or you must remove the concrete pavement to the preceding transverse joint.

Place the concrete pavement in full-lane widths separated by construction joints or monolithically with contraction joints.

Do not re-temper concrete.

Do not add water to the concrete during the time between mixing at the plant and placement unless approved by the Engineer.

* + - 1. FINISHING
         1. The surface of the pavement shall be finished with a broom, burlap drag, artificial turf finish, tine, or diamond grind as shown on the Plans or specified in the Special Provisions. The use of steel trowels or floats for finishing operations is not allowed for air-entrained concrete in freeze/thaw environments. Bleed water shall not be finished into the concrete surface.

Brush or Broom Finish. If the pavement surface texture is to be a type of brush or broom finish, it shall be applied when the water sheen can no longer be seen. The equipment shall operate transversely across the pavement surface, providing corrugations that are uniform in appearance and approximately 1/16 of an inch in depth. The texturing equipment shall not tear or unduly roughen the pavement surface during the operation. Any imperfections resulting from the texturing operation shall be corrected.

Burlap Drag Finish. If a burlap drag is used to texture the pavement surface, it shall have a weight of at least 15 ounces per square yard. To obtain a textured surface, the transverse threads of the burlap shall be removed approximately 1 foot from the trailing edge. The texture produced will have wide sweeping longitudinal striations of the pavement surface~~.~~ The corrugations shall be uniform in appearance and approximately 1/16 of an inch in depth.

Artificial Turf Finish. If artificial turf is used to texture the pavement surface, texture shall be achieved by dragging the surface of the pavement in the direction of concrete placement with an approved full-width drag. The leading transverse edge of the artificial turf drag shall be securely fastened to a lightweight pole on a traveling bridge. At least 2 feet of the artificial turf shall be in contact with the concrete surface during dragging operations. Approval of any one type of artificial turf will be done only after the Contractor has demonstrated to the Engineer that it provides the required texture. The corrugations shall be uniform in appearance and approximately 1/16 of an inch in depth.

Tining. If tining is used to texture the surface, use a spring-steel tining device that produces grooves parallel with the centerline. Construct longitudinal grooves with a self-propelled machine designed specifically for grooving and texturing pavement. The machine must have tracks capable of maintaining constant speed, providing traction, and maintaining accurate tracking along the pavement surface. The machine must have a single row of rectangular spring steel tines. The tines must be from 3/32 to 1/8-inch-wide, spaced on 3/4-inch centers, and have enough length, thickness, and resilience to form grooves approximately 3/16 inch deep. The machine must apply a constant downward pressure on the surface of the pavement during texturing. Construct grooves over the entire pavement width in a single pass except do not construct grooves 3 inches from the pavement edges and longitudinal joints. The operation must not cause raveling.

Specifications for diamond grinding can be found in Section 42-3 of Caltrans standard specifications. If diamond grinding is required, so specify.

Diamond Grinding. If diamond grinding is used as the final surface finish, the Contractor shall submit a plan and schedule for achieving final diamond grind surface finish and smoothness and receive prior approval by the Engineer. Diamond grinding shall conform to section 42-3 of the 2018 Caltrans Standard Specifications.

* + - * 1. Concrete Pavement Transition Panel: For concrete pavement placed in a transition panel, texture the surface with a drag strip of burlap, broom, or spring tine device that produces scoring in the finished surface. Scoring must be either parallel or transverse to the centerline in a method approved by the Engineer.
      1. JOINTING
         1. Joints shall be constructed at the locations and to the depths shown on the Plans or contractor submitted construction details and approved by Engineer. For reference, Caltrans Standard Plans Section Pavements has the details of joints.

Spacing between pavement contraction joints shall not exceed 15 feet unless approved by Engineer.

Larger horizontal dimension of each slab panel for all pavement and flatwork shall not exceed 150 percent of smaller horizontal dimension, unless approved by the Engineer.

Contraction joint depth shall be a minimum of 25 percent of pavement thickness.

Concrete pavement joints need to mesh with the traffic control plan and final pavement delineation for joints to be either coincidental with or split the middle of the final traffic lane lines to extent feasible.

Joint spacing depends on the maximum joint length to slab thickness ratio. ACPA recommends 24 to 1 maximum if on subgrade or granular base, 21 to 1 maximum if on asphalt or stabilized base. This does not apply to concrete containing macrofibers

* + - * 1. Joint Placement: One of the following.

Tool joints in plastic concrete immediately after concrete is compacted.

Saw cut joints may be placed after concrete has hardened sufficiently to prevent dislodging of aggregate, but before cracking occurs.

If an insert material is used, the installation and edge finish shall be according to the manufacturer’s instructions, or as shown on the plans.

* + - * 1. New joints in plastic concrete or recently hardened concrete shall align with joints in older concrete to the extent feasible. Joints abutting curbs and other fixed concrete shall be installed within 10 degrees of perpendicular to the older concrete, to extent feasible.
        2. Construction joints: Construction joints must be vertical

Transverse construction joints: Install whenever placing is suspended for 30 minutes or whenever concrete is no longer workable.

Before place fresh concrete against hardened concrete, existing concrete pavement, or structures, apply curing compound to the vertical surface and allow it to dry.

At joints between concrete pavement and asphalt concrete pavement, apply a tack coat between the two pavements.

Use a metal or wooden bulkhead to form transverse construction joints. If dowels are described, the bulkhead must allow dowel installation.

* + - * 1. Isolation joints: Use when abutting fixed structures. Place isolation material before concrete is placed and to a minimum depth of the pavement section. Before placing concrete at isolation joints, saw cut the existing concrete face (where applicable) to make a clean, flat, vertical surface and secure the joint filler.
        2. If joints are to be sealed, follow manufacturer’s instructions for joint sealant installation.
      1. CURING
         1. The surface of the freshly placed PCC pavement shall be kept damp by water-fog or misting until curing takes place. Curing compound shall be applied immediately after the final finishing operation and must follow the Manufacturer’s guidelines for both timing and dosage. The PCC pavement shall not be left exposed for more than 30 minutes during the curing period before a curing compound is applied. Cure the PCC pavement exposed area using the waterproof membrane method or curing compound method with Caltrans-approved curing compounds. If side forms are removed within 72 hours of the start of curing, then the pavement edges must also have curing compound applied, or be kept moist. Water curing methods must be approved by the Engineer and include a detailed plan and schedule for achieving continuous water application.
         2. Apply curing compound with mechanical sprayers. Application shall provide uniform coverage without streaks or blotchiness. Reapply curing compound to saw cuts and disturbed areas.

Smoothness is often expected to fall out of compliance when matching existing infrastructure, meeting non-uniform grades, or promoting necessary drainage. An alternative would be to include or reference the inertial profiler requirements in the Caltrans 2018 Standard Specifications.

* + - 1. SMOOTHNESS
         1. If using a straightedge to measure smoothness, the surface must be within 0.02 foot of the straightedge’s lower edge.

Choose from 3.13 or 3.14 below, or edit to fit the project. If the surface to receive concrete pavement and the forms are within tolerance, coring should not be necessary.

* + - 1. THICKNESS
         1. Concrete thickness will be verified by the Engineer.
         2. The average concrete pavement thickness must not be deficient by more than 0.02 foot with no individual thickness deficient by more than 0.05 foot.
      2. THICKNESS
         1. Verify the thickness by coring at the locations selected by the Engineer.
         2. Present the cores to the Engineer. The Engineer will measure the cores in the presence of the Contractor.
         3. The average concrete pavement thickness must not be deficient by more than 0.02 foot with no individual thickness deficient by more than 0.05 foot.
         4. Clean and dry core holes. Coat the core hole walls with epoxy adhesive conforming to section 95-1.02D of the Caltrans 2018 Standard Specifications. Fill core holes with non-shrink, hydraulic cement grout or concrete pavement mixture. Cores may be placed back in the original holes if coated with epoxy and approved by the Engineer.
      3. PROTECTION
         1. Maintain the concrete pavement temperature above freezing temperatures until the concrete strength is sufficient to resist damage by freezing.
         2. Protect pavement surface from abrasion, discoloration, debris, and sediments.
         3. Clean and repair pavement that has been damaged, soiled, discolored, or contaminated.
         4. Construct crossings for traffic convenience. Rapid-set concrete proportioned in conformance with an approved mix design may be used for crossings if approved by the Engineer.
      4. REPAIR, REMOVAL, AND REPLACEMENT
         1. Correcting Noncompliant Pavement Work: Per 2018 Caltrans Standard Specifications, Section 40.
         2. Damaged pavement shall be either repaired, or removed and replaced at the discretion of the Engineer.
      5. OPENING TO TRAFFIC
         1. Traffic may be allowed on the concrete pavement once the concrete has attained 2,500 psi compressive strength unless the concrete pavement thickness is less than 7 inches. When concrete pavement is less than 7 inches, the compressive strength shall be not less than 3,000 psi.
      6. CLOSEOUT SUBMITTALS
         1. Test Results: Baseline strength test results.
         2. Operation and Maintenance Data (optional):

Maintenance logs recording service performed between acceptance of pavement and Project completion.

* + - 1. MEASUREMENT AND PAYMENT

Concrete pavement will be paid for at the contract unit price per cubic yard for “Portland Cement Concrete Pavement” and shall include costs for all labor, materials and equipment necessary for constructing, finishing, curing, and protection of the concrete pavement..

If diamond grinding is required, it must be a separate bid item as it is a separate operation. Caltrans has a bid item for diamond grinding.

**END OF SECTION**