

## GENERAL CONDITIONS

### 1 -- DEFINITIONS

Wherever used in the **CONTRACT DOCUMENTS**, the following terms shall have the meanings indicated and shall be applicable to both the singular and plural thereof:

- 1.01 **ADDENDA** -- Written or graphic instruments issued prior to the Agreement which modify or interpret the Contract Documents, drawings and specifications, by additions, deletions, clarifications, or corrections.
- 1.02 **BID** -- The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.
- 1.03 **BIDDER** -- Any person, firm, or corporation submitting a bid for the work.
- 1.04 **BONDS** -- Bid, Performance, and Labor & Material Bonds and other instruments of surety, furnished by the Contractor and the Contractor's surety in accordance with the Contract Documents.
- 1.05 **CHANGE ORDER** -- A written order to the Contractor authorizing an addition, deletion, or revision in the work within the general scope of the Contract Documents, or authorizing any adjustments in the contract price or contract time.
- 1.06 **CONTRACT DOCUMENTS** -- The contract, including Invitation for Proposals, Instruction to Bidders, Proposal Forms, Contract and Bond Forms, General Conditions, Special Conditions, Technical Conditions, Caltrans LAPM Forms, Prevailing Wage Rates, Drawings, Insurance Requirements and Addenda.
- 1.07 **CONTRACT PRICE** -- The total moneys payable to the Contractor under the terms and conditions of the Contract Documents.
- 1.08 **CONTRACT TIME** -- The number of working/calendar days stated in the Contract Documents for the completion of the work.
- 1.09 **CONTRACTOR** -- The person, firm or corporation with whom the Owner has executed the Agreement for any one or multiple bid divisions.
- 1.10 **CONSTRUCTION MANAGER** -- The person, firm or corporation with whom the Owner has contracted with to perform the management of the project, including the inspection, oversight, coordination, quality control, etc. Also known as the RESIDENT ENGINEER.
- 1.11 **DRAWINGS** -- The parts of the Contract Documents which show the characteristics and scope of the work to be performed and which have been prepared or approved by the Engineer.
- 1.12 **ENGINEER** -- The Engineer of Record: The Holt Group, Inc.
- 1.13 **FIELD ORDER** -- A written order effecting a change in the work not involving an adjustment in the contract price or an extension of the contract time, issued by the Construction Manager to the Contractor during construction.
- 1.14 **NOTICE OF AWARD** -- Written notice of the acceptance of the bid from the Owner to the successful bidder.
- 1.15 **NOTICE TO PROCEED** -- Written communication issued by the Owner to the Contractor authorizing him/her to proceed with the work and establishing the date for commencement of the work.

- 1.16 **OWNER** – Palo Verde Community College District, herein referred to as “District”.
- 1.17 **PROJECT** -- The undertaking to be performed as provided in the Contract Documents.
- 1.18 **RESIDENT ENGINEER** -- The person, firm or corporation with whom the Owner has contracted with to perform the management of the project, including the inspection, oversight, coordination, quality control, etc. Also known as the **CONSTRUCTION MANAGER**.
- 1.19 **SHOP DRAWINGS** -- All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated or installed.
- 1.20 **SPECIFICATIONS** -- A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship and including the General Conditions, Technical Conditions and Special Conditions.
- 1.21 **SUBCONTRACTOR** -- An individual, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the work at the site.
- 1.22 **SUBSTANTIAL COMPLETION** -- That date certified by the Construction Manager when the construction of the project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the project or specified part can be utilized for the purposes for which it is intended.
- 1.23 **SPECIAL AND TECHNICAL CONDITIONS** -- Additions to the General Conditions. In the event of a discrepancy, the General Conditions shall govern over the Special Conditions and Technical Conditions.
- 1.24 **SUPPLIERS** -- Any person or organization who supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor at the site.
- 1.25 **WORK** -- All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the project.
- 1.26 **WRITTEN NOTICE** -- Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party or their authorized representative on the work.

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### **2 -- ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS**

- 2.1 The Contractor may be furnished additional instructions and detail drawings by the Construction Manager, as necessary to carry out the work required by the Contract Documents.
- 2.2 The additional drawings and instructions thus supplied will become part of the Contract Documents. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions.

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### 3 -- CONSTRUCTION SCHEDULE

- 3.1 Within six (6) calendar days after the date of receipt by the Contractor of the Award, the Contractor shall submit to the Construction Manager a progress schedule showing the proposed sequence of the work and the estimated dates of starting and finishing each work item. The progress schedule shall conform to the specified time for the completion of the work; shall show a reasonable and orderly work sequence that will preclude excessive times for completion of any part thereof; shall show and be in accordance with the order and delivery dates for materials requiring special fabrication or otherwise not readily available for purchase and affecting, or critical with respect to, such time of completion; and shall be subject to the approval of, and modification by, the Construction Manager. The Construction Manager shall be advised in advance by the Contractor when construction work is scheduled and the days when no construction work will be completed. Contractor will be charged the cost of inspection for that day or days when construction work was scheduled but not completed and the Contractor failed to notify the Construction Manager. The effects of weather or Acts of God are excusable events to which advance notification to the Construction Manager of the inability to complete scheduled work are not required. When, in the judgment of the Construction Manager, it is necessary to accelerate any part of the work ahead of schedule, the Contractor shall, when directed, concentrate his efforts on such part of the work. Within seven (7) calendar days after the submission of the original schedule, the Contractor shall participate with the Construction Manager in the review and establishment of critical completion dates within the total contract time which will relate to the successful and timely completion of the project. Any revisions necessary as a result of this review and evaluation process shall be made by the Contractor and resubmitted to the Construction Manager for approval within seven (7) calendar days. The Contractor shall, at monthly intervals, evaluate work progress with the Construction Manager by review of actual accomplishments since the previous update. The schedule shall be jointly revised by the Contractor and Construction Manager to show all changes in network logic, work items sequence, duration of activities, and critical completion dates since the previous update. Data furnished to the Construction Manager shall include a description of the problem area, current and anticipated delaying factors and their impact, and an explanation of the corrective action to be taken.

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### **4 -- DRAWINGS AND SPECIFICATIONS**

- 4.1 The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the work in accordance with the Contract Documents and all incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy or operation by the Owner.
- 4.2 In case of conflict between the drawings and specifications, the specifications shall govern. Figure dimensions on drawings shall govern over scaled dimensions on drawings.
- 4.3 Any discrepancies found between the drawings and specifications and site conditions or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported to the Construction Manager, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after discovery of such discrepancies, inconsistencies or ambiguities, shall be done at the Contractor's risk.

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### **5 - SHOP DRAWINGS**

- 5.1 The Contractor shall provide shop drawings as may be necessary for the prosecution of the work as required by the Contract Documents. The Construction Manager shall promptly review all shop drawings. The Construction Manager's approval of any shop drawings shall not release the Contractor from responsibility for deviations from the Contract Documents. The approval of any shop drawings which substantially deviates from the requirement of the Contract Documents shall be evidenced by a Change Order.
- 5.2 When submitted for the Construction Manager's review, shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents. The Contractor shall submit six (6) copies of the shop drawings.
- 5.3 Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawings or submission has been approved by the Construction Manager. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Construction Manager.

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### **6 -- MATERIALS, SERVICES AND FACILITIES**

- 6.1 It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time.
- 6.2 Material and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.
- 6.3 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- 6.4 Materials, supplies, or equipment to be incorporated into the work shall not be purchased by the Contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

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### 7 -- INSPECTION AND TESTING

- 7.1 All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with the requirements of Caltrans Standard Specifications, latest edition.
- 7.2 The District shall provide all inspection and testing services unless specified to be provided by the Contractor. All inspection and testing shall be completed in accordance with the Contract Documents. The Contractor shall provide all required certificates of compliance to the Construction Manager during the submittal review in accordance with the contract document requirements.
- 7.3 All Inspection and Testing results shall be submitted to the Construction Manager upon completion of each Inspection and Test.
- 7.4 The Inspection and Testing Services shall be completed by a firm with a current certification in California Test Methods certified by Caltrans. The laboratory of the testing firm shall be certified by Caltrans. The testing personnel performing the tests for this project shall be certified by Caltrans. Current Caltrans Laboratory Certification and current Caltrans Certifications for testing personnel performing the tests for this project shall be submitted to the Construction Manager during the submittal review process.
- 7.5 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Construction Manager, the Contractor will give the Construction Manager timely notice of readiness. The Contractor will then furnish the Construction Manager the required certificates of inspection, testing or approval.
- 7.6 Inspections, tests, or approvals by the Construction Manager or others shall not relieve the Contractor from the obligations to perform the work in accordance with the requirements of the Contract Documents.
- 7.7 The Construction Manager and the Construction Manager's representative will at all times have access to the work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records on personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.
- 7.8 If any work requiring testing or inspection is covered prior to inspection by the Construction Manager it must, if requested by the Construction Manager, be uncovered for the Construction Manager's observation and replaced at the Contractor's expense.
- 7.9 If the Construction Manager considers it necessary or advisable that covered work be inspected or tested by others, the Contractor, at the Construction Manager's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Construction Manager may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction.
- 7.10 A prefinal inspection of the work will be made by the Owner, Construction Manager, project inspector and representatives of the agencies involved in project financing. Such inspection shall be made as soon as practical after the Contractor has notified the Owner in writing that the work is ready for such inspection. The prefinal inspection shall be made prior to acceptance of any portion of the work as being substantially complete and prior to filing of the Notice of Completion.
- 7.11 A final inspection of all the work will be made by the Owner, Construction Manager, Contractor and representatives of the agencies involved in project financing.

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### **8 -- SUBSTITUTIONS**

- 8.1 Whenever a material, article, or piece of equipment is identified on the drawings or specifications by reference to brand name or catalogue numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the opinion of the Construction Manager, such material, article, or piece of equipment is of equal substance and function to that specified, the Construction Manager may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the contract price and the Contract Documents shall be appropriately modified by a change order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without change in the contract price or contract time.

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### 9 -- SURVEYS, PERMITS, AND REGULATIONS

- 9.1 The Contractor shall furnish all staking and layout points as required for the construction of the street improvements. The minimum staking and demolition layout work to be provided by the Contractor is as follows:

Contractor shall provide construction staking certification for curb and gutter and Class II Base signed by a registered land surveyor or registered civil engineer.

1. Demolition layout shall be completed by painting the demolition lines along the pavement areas or along the P.C.C. infrastructures for sawcutting and grinding.
  2. Place offset hubs 25 feet on center, at centerlines of p.c.c. driveways, end of curve radius's, beginning of curve radius's,  $\frac{1}{4}$  and  $\frac{1}{2}$  delta angle points at curb radius's and curb and gutter ending points at an offset established by the Contractor for the rough grading work required to establish subbase elevation grade for the A.C. Pavement, curb and gutter and sidewalk infrastructure. Cut and fill vertical distances from the hubs to the curb and gutter flowline grade will be established.
  3. Place offset hubs 25 feet on center, at a 3 foot offset from the curb and gutter face of curb for all curb and gutter at the project site. Install a centerline hub at all new driveway entrances. Place offset hubs at curb returns at the B.C., E.C.,  $\frac{1}{4}$  Delta,  $\frac{1}{2}$  Delta,  $\frac{3}{4}$  Delta and Radius Point. Cut and fill vertical distances to flowline grade shall be established.
  4. Install 3 hubs at an offset established by the Contractor at the end points and mid-point of the p.c.c. cross-gutters. Cut and fill elevations to the flowline grades of the cross-gutter shall be established.
  5. The Contractor shall contact the Construction Manager prior to commencing construction staking activities. Stakes destroyed by the Contractor or subcontractors shall be re-set by the Contractor at no additional cost to the District.
  6. The Construction Manager and the Contractor will be issued three (3) sets of cut sheets and an electronical file (excel) copy of the cut sheets within 24 hours after the completion of staking activities.
- 9.2 The Contractor shall carefully preserve benchmarks, reference points, stakes and layout points, and in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.
- 9.3 Permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the Contract Documents. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Construction Manager in writing, and any necessary changes shall be adjusted as provided in Section 12, Changes in the Work.
- 9.4 The Contractor shall be responsible for the compliance by subcontractors of all tiers with the above provisions.

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### 10 -- PROTECTION OF WORK, PROPERTY AND PERSONS

- 10.1 The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He/She will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to, all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, sidewalks, pavements, roadways, structures, p.c.c. curb and gutter, p.c.c. cross gutters, and utilities not designated for removal, relocation or replacement in the course of construction.
- 10.2 The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He will notify the Construction Manager of adjacent utilities when prosecution of the work may affect them. The Contractor will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- 10.3 In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Construction Manager or shall act to prevent threatened damage, injury or loss. He will give the Construction Manager prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby, and a change order shall thereupon be issued covering the changes and deviations involved.
- 10.4 The Contractor shall maintain all portions of the work in a neat, clean and sanitary condition at all times. Toilets shall be furnished by the Contractor where needed for use by all employees and their use shall be strictly enforced. The Contractor shall also be responsible for furnishing and maintaining a potable water supply.
- 10.5 The Contractor shall keep adequate first-aid facilities and supplies available.
- 10.6 The Contractor shall assure that his Subcontractors of all tiers shall comply with the foregoing provisions.

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### 11 -- SUPERVISION BY CONTRACTOR

- 11.1 The Contractor will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated within five (5) days after the Notice to Proceed in writing by the Contractor as the Contractor's representative at the site. If a supervisor or superintendent is replaced during the project, the name of the new supervisor or superintendent shall be forwarded in writing to the Construction Manager. The supervisor shall have full authority to act on behalf of the Contractor, including the signature of payment requests, and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times to perform adequate supervision and coordination of the work.
- 11.2 The Contractor shall act as an independent Contractor in performing work under the Contract Documents, maintaining complete control over his employees and all of his Subcontractors. The Contractor shall perform all work in an orderly and workmanlike manner, enforce strict discipline and order among his employees and assure strict discipline and order by his Subcontractors.
- 11.3 The Contractor shall employ only competent and skilled men to perform any work. The Contractor shall be responsible for maintaining satisfactory conduct of his employees.
- 11.4 The Contractor shall be responsible for maintaining labor relations in such manner and by such methods as will provide for harmony among workmen, and, to the extent permissible under federal and state law, shall be bound by the terms and provisions of the Agreement creating the National Joint Board for Settlement of Jurisdictional Disputes, and the Contractor agrees that any decision or interpretation by such Joint Board shall be immediately accepted. The Contractor shall assure that his Subcontractors of all tiers comply with the provisions set forth above.
- 11.5 The Contractor shall provide and use on any work only such construction plant and equipment as are capable of producing the quality and quantity of work and materials required by the Contract Documents and within the time or times specified. Before proceeding with any facilities including but not limited to temporary structures, pipelines, equipment, grading and permanent structures, the Contractor shall, at his expense, furnish the Construction Manager with such information and drawings relative to such equipment, plant and facilities as the Construction Manager may request. Upon written order of the Construction Manager, the Contractor shall promptly remove unsatisfactory equipment and facilities from the site.

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### 12 -- CHANGES IN WORK

- 12.1 The District may at any time, as the need arises, order changes within the scope of the work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by a Change Order.
- 12.2 The Construction Manager also may at any time by issuing a Field Order make changes in the details of the work. The Contractor shall proceed with the performance of any changes in the work so ordered by the Construction Manager unless the Contractor believes that such Field Order entitles him to a change in Contract Price or Time, or both, in which event he shall give the Construction Manager written notice thereof within seven (7) days after the receipt of the ordered change. Thereafter the Contractor shall document the basis for the change in Contract Price or Time within thirty (30) calendar days. The Contractor shall execute such changes upon the receipt of an executed Change Order or further instructions from the District.
- 12.3 In the event of any emergency which the Construction Manager determines endangers life or property, any work required by reason of such an emergency shall be performed in accordance with verbal orders from the Construction Manager. These orders will be confirmed in writing as soon as practicable. Any such authorization, whether written or verbal, may be accompanied by drawings and data as are necessary to show the extent of such change or extra work. In the event of ordered emergency work, the Contractor shall keep accurate records of actual costs in accordance with Subparagraph 13.2 (c) until such time as Agreement of compensation is reached. Keeping of such records shall not be construed as an indication that this method of compensation is necessarily acceptable for such emergency work and shall not preclude the possibility of an Agreement to pay for such emergency work on a unit-price or lump-sum basis. Upon determination as to the compensation due the Contractor for performing any emergency work, the Contract Documents will be amended in writing by a Change Order.

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### 13 -- CHANGES IN CONTRACT PRICE

- 13.1 All changes which affect the cost or time of the construction of the project must be authorized by means of a Change Order. The Change Order will include extra work and work for which quantities have been dramatically altered from those shown in the bidding schedule. All changes should be recorded on a Change Order as they occur. Each Change Order must contain complete and detailed justification for all items addressed by the Change Order.
- 13.2 The value of any work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:
- a. An agreed lump sum.
  - b. The actual cost of labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition, there shall be added an amount to be agreed upon but not to exceed fifteen percent (15%) of the actual cost of the work to cover the cost of general overhead and profit.
  - c. Unit prices previously approved.

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### 14 -- TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- 14.1 The date of beginning and the time for completion of the work are essential conditions of the Contract Documents, and the work embraced shall be commenced on the date specified in the Notice to Proceed.
- 14.2 The Contractor will proceed with the work at such rate of progress to insure full completion within the contract time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the contract time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.
- 14.3 If the Contractor shall fail to complete the work within the contract time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the bid for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.
- 14.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following and the Contractor has promptly given written notice of such delay to the Owner or Construction Manager.
  - 14.4.1 To any preference, priority or allocation order duly issued by the Owner.
  - 14.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to: acts of God, or of the public enemy, acts of the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather.
  - 14.4.3 To any delays of subcontractors occasioned by any of causes specified in Paragraphs 14.4.1 and 14.4.2 of this article.

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### 15 -- CORRECTION OF WORK

- 15.1 The Contractor shall promptly remove from the premises all work rejected by the Construction Manager for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.
- 15.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within ten (10) days after receipt of written notice, the Owner may remove such work and store the materials at the expense of the Contractor.

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### 16 -- SUBSURFACE CONDITIONS

- 16.1 The Contractor shall promptly, and before such conditions are disturbed except in the event of an emergency, notify the Owner by written notice of:
- 16.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or
  - 16.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- 16.2 The Owner shall promptly investigate the conditions, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment hereunder shall be made and the Contract Documents shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless the required written notice has been given; provided that the Owner may, if the Owner determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

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### 17 -- SUSPENSION OF WORK, TERMINATION, AND DELAY

- 17.1 The Owner may suspend the work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Construction Manager which shall fix the date on which work shall be resumed. The Contractor will resume that work on the dates so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the contract time, or both, directly attributed to any suspension.
- 17.2 If the Contractor is adjudged as bankrupt or insolvent, or makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if the Contractor files a petition to take advantage of any debtor's act, or to re-organize under the bankruptcy or applicable laws, or repeatedly fails to supply sufficient skilled workmen, or suitable material, or equipment, or repeatedly fails to make prompt payments to subcontractors or for labor, materials or equipment, or disregards the authority of the Construction Manager, or otherwise violates any provision of the Contract Documents, then the Owner may, without prejudice to any other right or remedy, and after giving the Contractor and its surety a minimum of ten (10) days from delivery or a written notice, terminate the services of the Contractor and take equipment and machinery thereon owned by the Contractor, and finish the work by whatever method the Owner may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor will pay the difference to the Owner. Such costs incurred by the Owner will be determined by the Construction Manager and incorporated in a Change Order.
- 17.3 Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys by the Owner due the Contractor will not release the Contractor from compliance with the Contract Documents.
- 17.4 After ten (10) days from delivery of a written notice to the Contractor and the Construction Manager, the Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the project and terminate the Contract. In such case the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit.
- 17.5 If, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) days by the Owner, or under an order of court or other public authority, or the Construction Manager fails to act on any request for payment within sixty-four (64) days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Construction Manager or awarded by arbitrators within sixty-four (64) days after its approval and presentation, then the Contractor may, after ten (10) days from delivery of a written notice to the Owner and the Construction Manager, terminate the contract and recover from the Owner payment for all work executed and all expenses sustained. In addition and in lieu of terminating the contract, if the Construction Manager has failed to act on a request for payment or if the Owner has failed without good cause to make any payment as aforesaid, the Contractor may, upon ten (10) days written notice to the Owner and the Construction Manager, stop the work until paid all amounts then due, in which event and upon resumption of the work, Change Orders shall be issued for adjusting the contract price or extending the contract time or both to compensate for the costs and delays attributable to the stoppage of the work.
- 17.6 If the performance of all or any portion of the work is suspended, delayed, or interrupted as a result of a failure of the Owner or Construction Manager to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time, an adjustment in the contract price or extension of the contract time, or both, shall be made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Owner or Construction Manager.

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### 18 -- PAYMENT TO CONTRACTOR

- 18.1 At least ten (10) days before each progress payment falls due (but not more often than every thirty-one (31) calendar days), the Contractor shall submit to the Construction Manager a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Construction Manager may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, such as paid invoices, or other written evidence satisfactory to the Owner, as will establish the Owner's interest therein, including applicable insurance. The Construction Manager within ten (10) days after receipt of each partial payment estimate, shall either indicate in writing approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within fifteen (15) days of presentation of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate less the retainage. The retainage shall be an amount equal to five (5%) of said estimate.
- 18.2 All progress payments and the final payment shall be processed on a "Partial Payment Estimate" form similar to A.I.A. Document G702.
- 18.3 Prior to substantial completion, the Owner, with approval of the Construction Manager and with the concurrence of the Contractor, may use any completed or substantially completed portions of the work.
- 18.4 The Owner shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work, or the restoration of any damaged work except such as may be caused by agents or employees of the Owner.
- 18.5 Upon completion and acceptance of the work, the Construction Manager shall issue a certificate attached to the final payment request that the work has been accepted under the conditions of the Contract Documents. The entire balance will be due the Contractor thirty-five (35) days after the timely recording of a Notice of Completion, or ninety (90) days after completion and acceptance of the work, whichever is earlier.
- 18.6 The Contractor will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demand of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so, the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed in accordance with terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, the Contractor's Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.
- 18.7 The Construction Manager may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any approved partial payment estimate to such extent as may be necessary to protect the Owner from loss on account of:

- a. Defective work not remedied.
- b. Claims filed or reasonable evidence indicating probable filing of claims.
- c. Failure of Contractor to make payments properly to Subcontractors or for material or labor.
- d. A reasonable doubt that the work can be completed for the balance then unpaid.
- e. Damage to another Contractor.
- f. Performance of work in violation of the terms of the Contract Documents.

18.9 Where work on lump sum or unit price items is substantially complete but lacks clean-up and/or corrections ordered by the Construction Manager, amounts shall be deducted from lump sum items in partial payment estimates to amply cover such clean-up and corrections.

18.10 Public Contract Code Section 22300 allows for an escrow in lieu of retention provision which may be enacted at the discretion of the Contractor.

## GENERAL CONDITIONS

### 19 -- ACCEPTANCE OF FINAL PAYMENT AS RELEASE

- 19.1 The acceptance of the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically accepted by the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. Any payment, however, final or otherwise, shall not release the Contractor or its sureties from any obligations under the Contract Documents or the Performance and Payment Bonds.

## GENERAL CONDITIONS

### 20 -- INSURANCE

- 20.1 The Contractor shall purchase and maintain such insurance as will protect it from claims set forth below which may arise out of, or result from, the Contractor's execution of the work, whether such execution be by the Contractor and Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

The insurance requirement provisions are contained in Section VI, the Contract and Bond Forms Section of the specifications.

## GENERAL CONDITIONS

### 21 -- CONTRACT SECURITY

- 21.1 The Contractor shall within ten (10) calendar days after the receipt of the Notice of Award furnish the Owner with a Performance Bond and a Payment Bond in penal sums equal to the amount of the Contract Price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the Contract Documents. Such bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the State of California and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these bonds shall be borne by the Contractor. If at any time a surety on any such bond is declared bankrupt, or loses its right to do business in the state in which the work is to be performed, or is removed from the list of Surety Companies accepted on Federal Bonds, the Contractor shall within ten (10) days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bonds shall be paid by the Contractor. No further payment shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the Owner.
- 21.2 The Performance Bond and the Payment Bond to be furnished by the Contractor shall be executed on the forms provided in this document.
- 21.3 The contract security provisions are contained in the Bid Submittal Documents and Execution of Contract Documents Sections of the specifications.

## GENERAL CONDITIONS

### 22 -- ASSIGNMENTS

- 22.1 Neither the Contractor nor the District shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of any right, title or interest therein, or any obligation thereunder, without written consent of the other party.

## GENERAL CONDITIONS

### 23 -- INDEMNIFICATION

- 23.1 The Contractor will indemnify and hold harmless the District and the Construction Manager and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- 23.2 In any and all claims against the District or the Construction Manager, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under worker's compensation acts, disability benefit acts or other employee benefit acts.
- 23.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Construction Manager, its agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications.

## GENERAL CONDITIONS

### 24 -- SEPARATE CONTRACTS

- 24.1 The District reserves the right to enter into other contracts in connection with this project. The Contractor shall afford other Contractor's reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate the Work with theirs. If proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Construction Manager any defects in such Work that renders it unsuitable for such proper execution and results.
- 24.2 The Owner may perform additional Work related to the Project or the Owner may enter into other Contracts containing provisions similar to these. The Contractor shall afford the other Contractors who are parties to such Contracts (or the Owner, if the Owner is performing the additional Work) reasonable opportunity of the introduction and storage of materials and equipment and the execution of Work, and shall properly connect and coordinate the Work with theirs.
- 24.3 If the performance of additional Work by other Contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the Contractor prior to starting any such additional Work. If the Contractor believes that the performance of such additional Work by the Owner or others involves an additional expense or entitles it to an extension of the Contract Time, the Contractor may make a claim thereof as provided in GENERAL CONDITIONS Items 12.1, 12.2, 13.1, and 13.2.

## GENERAL CONDITIONS

### 25 -- SUBCONTRACTING

- 25.1 The Contractor may utilize the services of specialty Subcontractors on those parts of the Work which, under normal contracting practices, are performed by specialty Subcontractors.
- 25.2 The Contractor shall not award Work to Subcontractor(s), in excess of fifty percent (50%) of the Contract price, without prior written approval of the Owner.
- 25.3 The Contractor shall be fully responsible to the Owner for the acts and omissions of its Subcontractors, and persons either directly or indirectly employed by them, as the Contractor is for the acts and omissions of persons directly employed by it.
- 25.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the Work of Subcontractors and give the Contractor the same power with regard to terminating any subcontract that the District may exercise over the Contractor under any provision of the Contract Documents.
- 25.5 Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the Owner.
- 25.6 Prompt progress payment to subcontractors – per State of California Department of Transportation Standard Specifications, Standard Special Provisions and Standard Plans

A prime contractor or subcontractor shall pay any subcontractor not later than 10 days of receipt of each progress payment in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The 10 days is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over 30 days may take place only for good cause and with the District's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE subcontractors.

- 25.7 Prompt Payment of Funds Withheld to Subcontractors – Per State of California Department of Transportation Standard Specifications, Standard Special Provisions and Standard Plans

The District shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the District, of the contract work, and pay retainage to the prime contractor based on these acceptances. The prime contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the District. Federal Law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the District's prior written approval. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE prime contractors and subcontractors.

## GENERAL CONDITIONS

### 26 -- CONSTRUCTION MANAGER'S AUTHORITY

- 26.1 The Construction Manager shall act as the District's representative during the construction period, shall decide questions which may arise as to quality and acceptability of materials furnished and Work performed, and shall interpret the intent of the Contract Documents in a fair and unbiased manner.
- 26.2 The Contractor shall be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship, and execution of the Work. Inspections may be at the factory or fabrication plant of the source of material supply.
- 26.3 The Construction Manager will not be responsible for the construction means, controls, techniques, sequences, procedures or construction safety unless specified otherwise in these specifications.
- 26.4 The Construction Manager shall promptly make decisions relative to interpretation of the Contract Documents.

## **GENERAL CONDITIONS**

### **27 - LAND AND RIGHT-OF-WAY**

- 27.1 Prior to issuance of the Notice to Proceed, the District shall obtain all land and right-of-way necessary for the completion of the Work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.
- 27.2 The District shall provide to the Contractor information which delineate and describes the lands owned and right-of-way acquired.
- 27.3 The Contractor shall provide at its own expense and without liability to the District any additional land and access thereto that the Contractor may desire for temporary construction facilities; or for storage of materials.

## GENERAL CONDITIONS

### 28 -- GUARANTEE

- 28.1 The Contractor shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one (1) year from the date of Substantial Completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of the damage of other parts of the system resulting from such defects. The District shall give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the District may do so and charge the Contractor the cost thereby incurred.

## GENERAL CONDITIONS

### 29 -- ARBITRATION

- 29.1 All claims, disputes, and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by the acceptance of final payment as provided by subsection 18, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. If this is a "public works contract" as defined in Section 4600 of the California Government Code, the arbitration shall be conducted pursuant to Sub-section 10240 - 10240.13 of the California Public Contract Code. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.
- 29.2 Notice of the request for arbitration shall be filed in writing with the other party to the Contract Documents and a copy shall be filed with the Construction Manager. Request for arbitration shall in no event be made on any claim, dispute, or other matter in question which would be barred by the applicable statute of limitations.
- 29.3 The Contractor shall carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

**GENERAL CONDITIONS**

**30 -- TAXES**

- 30.1 The Contractor shall pay all sales, consumer, use and other similar taxes required by the laws of the City of Blythe, Riverside County, State of California, United States of America.

## GENERAL CONDITIONS

### 31 -- CONFLICT OF INTEREST

- 31.1 No member of or delegate to Congress or District Trustee shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.
- 31.2 No official of the District who is authorized in such capacity and on behalf of the District to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the project, shall become directly or indirectly involved personally in this contract or in any part thereof. No officer, employee, architects, attorney, engineer or inspector of or for the District who authorized in such capacity and on behalf of the District who is in any legislative, executive, supervisory or other similar functions in connection with the construction of the project shall become directly or indirectly involved personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract or any other contract pertaining to the project.

## GENERAL CONDITIONS

### 32 -- PRE-CONSTRUCTION CONFERENCE

- 32.1 Prior to the start of construction, the Construction Manager will conduct a preconstruction conference. At the conference, the Construction Manager will review the project with the Contractor and other interested parties. On lump sum projects the Contractor shall present a comprehensive breakdown of the contract price as a basis for payment for review and approval by the Construction Manager.

## **GENERAL CONDITIONS**

### **33 -- AFFIRMATIVE ACTION**

- 33.1 Each Contractor shall be required to have an affirmative action plan which declares that it does not discriminate on the basis of race, color, creed, national origin, sex, marital status, or age and which specifies goals and target dates to assure compliance with this requirement by contractors and to assure that suspected or reported violations are promptly investigated.

## GENERAL CONDITIONS

### 34 -- CLEAN UP

- 34.1 The Contractor shall at all times keep the premises occupied by him and access to such premises in a neat, clean and safe condition. Upon completion of any Work, the Contractor shall promptly remove all his equipment, temporary structures, and surplus construction and other materials not to be used at or near the same location during later stages of work. Upon completion of any work and before final payment is made, the Contractor shall, at his expense, satisfactorily dispose of all plants, buildings, rubbish, unused materials, concrete forms and other equipment and materials belonging to him or used in the performance of work and the Contractor shall leave the premises in a neat, clean and safe condition. In the event of the Contractor's failure to comply with any of the foregoing, the same may be accomplished by the District at the Contractor's expense.

## **GENERAL CONDITIONS**

### **35 -- FIRE PREVENTION**

- 35.1 The Contractor shall not permit unauthorized fires either within or adjacent to the limits of the Project and shall be liable for all damage from fire due directly or indirectly to its own activities, or those of its employees or of its Subcontractor or their employees. The Contractor shall conform to all state and local laws and regulations pertaining to burning, fire prevention and control within or adjacent to the Project. A copy of each required permit shall be furnished to the Construction Manager.

## GENERAL CONDITIONS

### 36 -- TITLE TO MATERIALS FOUND

- 36.1 Unless otherwise provided in the Contract, the title and interest in the right to use all water, and the title to all soil, stone, gravel, sand materials, timber, and all other materials, developed or obtained in the excavation or other operations by the Contractor or any of his Subcontractors, or any of their representatives or employees, and the right to use or dispose of the same are hereby expressly reserved by the District and neither the Contractor nor any of his Subcontractors, not any of their representatives or employees, shall have any right, title or interest in or to any part thereof; neither shall they, nor any of them assert to make any claim thereto.
- 36.2 In the event that any Indian relics or items with archeological or historical value are discovered by the Contractor or any of his Subcontractors or any of their representatives or employees, the Contractor shall immediately notify the Construction Manager and await the Construction Manager's decision before proceeding with any Work. Such relics and items shall be the property of the District.
- 36.3 The Contractor shall, at his expense, remove and legally dispose of all surplus excavation and demolition materials such as native material and soils, asphalt, grindings, broken concrete, trash, debris and other material to be removed as called out in the plans. If hazardous material is encountered, the contractor shall immediately notify the Construction Manager. It is not anticipated that hazardous material will be encountered. Testing and removal of hazardous material shall be considered extra work.

## SPECIAL CONDITIONS

### 1. MOBILIZATION

- A. Mobilization shall consist of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the Project site for all other work and operations that must be performed or costs incurred before beginning work on the various Contract items on the Project site.
- B. Mobilization shall include, but not be limited to, the following items, all as required for the proper performance and completion of the Work:
1. Obtaining all permits, licenses, insurance, and bonds. Providing copies to the ENGINEER;
  2. Moving onto the Jobsite all of CONTRACTOR'S plant and equipment and establishing a staging area as required;
  3. Developing construction water supply;
  4. Providing restroom facilities for construction personnel;
  5. Providing for potable water facilities as specified. This includes a means by which all on site Contractor, Subcontractor or supplier personnel can wash their hands with soap. It also includes providing potable drinking water to the Construction Personnel at the project site;
  6. Submitting all required Subcontractor insurance certificates and bonds;
  7. Posting all CAL/OSHA required notices and establishment of safety programs;
  8. Having the Contractor's representative at the Jobsite full time;
  9. Furnishing a Construction Schedule, Contract Price Breakdown (Schedule of Values) and Submittal Schedules and Submittal Documents;
  10. Complying with the Air Pollution Control District Permit Requirements and paying the associated Fees;
  11. Complying with the CEQA/NEPA Categorical Exemption and Exclusion Determinations;
  12. Providing Project Signs (Contractor's Identity Sign and Project Identity Sign);
  13. Potholing of the Existing Underground Utilities;
  14. Paying other miscellaneous fees

All costs incurred for the mobilization and the associated work shall be included in the Bid Item for the Mobilization cost and no additional compensation shall be provided.

### 2. AS-BUILT DRAWINGS

The Contractor shall maintain a set of drawings at the site showing all "as-built" changes made to date. A marked-up set of drawings shall be delivered to the Construction Manager upon completion of the work which shall reflect all "as-built" modifications.

### 3. **SUBMITTALS**

The Contractor shall submit the following shop drawings or submittal information to the Construction Manager for review and approval prior to commencing construction work at the project site. A total of six (6) sets of submittal documents shall be forwarded to the Construction Manager. Three (3) reviewed submittal documents shall be forwarded to the contractor. This list is not intended to be all inclusive and the Construction Manager and the District reserve the right to demand shop drawings and submittal information associated with any other items at its discretion.

1. Construction Schedule
2. Class 2 Base gradation, durability, R-value and sand equivalent
3. Granular Sand gradation, durability, R-value and sand equivalent
4. Asphalt design for pavement. The combined aggregate gradation, individual bin gradations (hot for batch, cold for drum plant), percentage of each bin, bitumen content, density, air voids, voids in mineral aggregates, stability, aggregate source, asphalt binder source and all other standard parameters
5. Crack Sealant Manufacturers and Technical Data Sheets
6. Method and procedure to be utilized for cleaning cracks
7. P.C.C. concrete mix design (4,000 psi)
8. Truncated Domes
9. Traffic paint - quick dry paint for centerline striping and thermo plastic for "STOP" legend, stop bar and crosswalk
10. Raised pavement markers
11. Construction area signs, traffic control devices, cones, barricades and all other items required per the Traffic Control Plan
12. Erosion control BMPs
13. Project identity sign, Federal and State Contractor's Employee Notices and Poster Signs
14. Letter designating project superintendent
15. Certificates of Compliance as required by the Construction Manager

The Contractor shall obtain approvals on all submittals prior to the commencement of the construction activities.

### 4. **STREET GEOTECHNICAL TESTING REQUIREMENTS**

All geotechnical testing and inspections required for this project shall be completed by the Caltrans certified geotechnical engineers and laboratory(ies) in accordance with the Caltrans "CT" Method unless otherwise specified on the plans

A copy of all tests shall be forwarded to the Construction Manager within four (4) days after the testing is complete.

The Geotechnical testing shall include but not be limited to compaction tests on Class 2 Base and granular sand material. Compaction and extraction, gradation testing regarding the A.C. pavement shall be required during the project. The Construction Manager shall determine the location of the tests. Gradation, durability, R-value and sand equivalent tests for Class 2 Base shall be required during the Submittal process. Compaction testing for the Class 2 Base shall be required. Mix designs for the A.C. pavement shall also be required during the Submittal process.

The following tests shall be performed as a minimum:

- A. A compaction test for the Class 2 Base shall be required for each P.C.C. handicap curb return installed.
- B. A compaction test for the Class 2 Base shall be required for each commercial driveway entrance.
- C. A compaction test for the Class 2 Base shall be required at each spandrel area at each curb return.

- D. A compaction test for the Class 2 Base shall be required at crosscutters.
- E. A compaction test for the Class 2 Base shall be required for every 150 lineal feet of P.C.C. curb and gutter installed.
- F. A compaction test for the Class 2 Base or granular sand shall be required for every 150 lineal feet of sidewalk installed.
- G. A compaction test for the Class 2 Base subgrade material shall be required for every 2,500 square feet of Class 2 Base surface street area.
- H. A.C. pavement density testing shall be conducted on a continuous basis by the geotechnical representative during the placement of A.C. pavement.
- I. One (1) set of cylinders and one (1) slump test shall be required for every 50 cubic yards of concrete except that a minimum of one (1) set of cylinders and slump test shall be required each day twenty (20) or more yards of concrete are placed at a project site. The maximum allowable slump shall be 4 inches. A set of cylinders shall be composed of three (3) cylinders. The first cylinder of a set shall be tested after seven (7) days curing. The second cylinder of a set shall be tested after 28 days curing. The third cylinder shall be held in reserve and tested if directed by the Construction Manager. The test results will be forwarded to the Construction Manager for review. The Construction Manager shall receive a concrete vendor slip for each truck load of concrete delivered to the project site.
- J. An A.C. mix design and concrete mix design shall be submitted for the review and approval of the Construction Manager during the submittal process.
- K. Geotechnical testing for the Class 2 Base during the submittal process as required per Street Technical Conditions contained within this document.

5. **BUSINESS LICENSE**

The Contractor and Subcontractors performing work on this project shall obtain a business license from the City of Blythe at 235 Broadway, Blythe, California 92225, telephone number (760) 922-6161. The Contractor and Subcontractors shall contact the City regarding the cost of the license and include the cost in the proposal.

6. **CONSTRUCTION WATER**

The Contractor shall obtain construction water from the City of Blythe. It is the responsibility of the Contractor to contact the City prior to the opening of proposals and identify all costs and requirements relative to obtaining water from the City. The Contractor shall bear all expenses relative to obtaining construction water from the City of Blythe.

7. **STAGING AREA**

The District shall afford the Contractor an area within or adjacent the college for storage of material and staging of construction operations. The construction staging area can also be used for implementation of BMP's for Concrete Waste Disposal, Vehicle and Equipment Fueling Areas, and Vehicle and Equipment Maintenance Areas. Location of the construction staging area shall be coordinated between the Contractor, the Construction Manager and the District. Construction activities and BMP's implementation may be performed in phases.

8. **SWEEPING OF STREET PAVEMENT AND P.C.C. INFRASTRUCTURE**

At the conclusion of construction activities, after the placement of the new A.C. pavement, the pavement surface shall be swept clean of dirt, construction debris and particulate matter. The

dirt, construction debris and particulate matter shall be removed and disposed of by the Contractor.

The existing concrete infrastructure including handicap ramps, spandrels, valley-gutters, sidewalks, driveways, barrier curb, curb and gutter and all other concrete infrastructure shall be swept clean of particulate matter, dirt, debris and cleaned of vegetation prior to the commencement of construction activities. The Contractor shall remove and dispose of the particulate matter, dirt, debris and vegetation. After the conclusion of construction activities the Contractor shall sweep and clean the existing and new concrete infrastructure along the street sections of all construction debris, dirt and particulate matter. The Contractor shall remove and dispose of the construction debris, dirt and particulate matter.

9. **CONSTRUCTION STAKING**

Construction staking including both horizontal and vertical control shall be provided by the Contractor as listed in Item 9 of the *General Conditions* section of the Specifications. The Contractor shall provide the grade checkers to establish subbase at the end of curve radius points, beginning of curve radius points, angle points, grade breaks, end points, beginning points and all other critical points. The Construction Manager shall field verify the subbase and subgrade design points have been satisfactorily obtained prior to approving the placement of Class 2 Base, P.C.C. concrete and A.C. pavement.

10. **EXCAVATION, REMOVAL AND DISPOSAL OF NATIVE MATERIAL AND EXISTING A.C. PAVEMENT IN AREAS TO RECEIVE AN A.C. PAVEMENT OR NEW P.C.C. CONCRETE INFRASTRUCTURE**

The Contractor shall remove and dispose of the existing grinding and native material as required to the subbase elevations indicated on the Plans. The Contractor shall scarify and re-compact the native material beneath the subbase design grade per plans. If native material is removed below the subbase design grade it shall be necessary to replace and compact the native material to 90 percent of maximum density per ASTM D-1557 to subbase design grade. The Construction Manager may require compaction tests be obtained on the re-compacted native material by the Contractor. If the native material becomes unstable due to the water table when heavy equipment is allowed to pass over the excavated areas, then it shall be necessary for the Contractor to utilize lighter construction equipment.

The Contractor shall, at his expense, remove and legally dispose of all surplus excavation and demolition materials such as native material and soils, asphalt, grindings, broken concrete, trash, debris and other material to be removed as called out in the plans. If hazardous material is encountered, the Contractor shall immediately notify the Construction Manager. It is not anticipated that hazardous material will be encountered. Testing and removal of hazardous material shall be considered extra work.

11. **AIR POLLUTION CONTROL DISTRICT REQUIREMENTS**

- A. The Contractor shall be required to comply with the Mojave Desert Air Quality Management District Requirements.
  - L. The Contractor shall be responsible for completing, submitting and implementing the Construction Notification Form and Dust Control Plan as required by the Mojave Desert Air Quality Management District. The Construction Notification Form and Dust Control Plan template forms follow this specification section.

12. **RESTROOM FACILITIES**

The Contractor shall furnish two (2) portable restroom facilities at the project site. The restroom facilities shall be placed at the job site prior to the start of construction within 5 days from the issuance of the Notice to Proceed and shall remain in service until the job is complete. The Contractor shall position the restroom facilities, as required to maintain the facilities, near the location of daily work activity. The restroom facilities shall be serviced and cleaned on a weekly basis.

13. **AS-BUILT DRAWINGS**

The Contractor shall maintain a set of drawings at the site showing all "as-built" changes made to date. A marked-up set of drawings shall be delivered to the Construction Manager upon completion of the work which shall reflect all "as-built" modifications.

14. **PROJECT MEETINGS**

Weekly Progress Meetings will be held to review and discuss construction schedule, coordination of work, Requests for Information, Submittal(s), safety related matters, and project related items.

# TECHNICAL CONDITIONS

## 1.0 GENERAL

The Technical Specifications for the work to be completed within the City of Blythe are the City of Blythe Standard Specifications, 2018 Caltrans Standard Specifications and the Specifications as required in this Technical Conditions Section. Major material component standard specifications have been included in these Technical Specifications. If pertinent specifications are not included within these Technical Specifications, refer to Caltrans Standard Specifications, 2018.

If there is any conflict between the Specifications, the most stringent Specification shall prevail.

## 2.0 EXISTING FACILITIES

Performing work on existing facilities such as demolition, cold planing, disposal, etc. shall conform to the provisions in Sections 15-1 through 15-3 of Section 15, "Existing Facilities," of the Standard Specifications.

## 3.0 SUBBASE PREPARATION

THE NATIVE MATERIAL BENEATH P.C.C. CONCRETE AND ASPHALT CONCRETE INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO P.C.C. DRIVEWAY ENTRANCES, P.C.C. SIDEWALKS, P.C.C. RIBBON GUTTERS, P.C.C. VALLEY GUTTER, P.C.C. CROSS-GUTTER, P.C.C. BARRIER CURB, A.C. BARRIER CURB, P.C.C. CURB AND GUTTER, P.C.C. SIDEWALK, P.C.C. SPANDRELS, P.C.C. TRANSITION AREAS AND A.C. PAVEMENT SHALL BE EXCAVATED TO  $\pm 0.05$  FEET OF DESIGN SUBBASE GRADE. THE DESIGN SUBBASE GRADE SHALL BE FIELD VERIFIED AND APPROVED BY THE CONSTRUCTION MANAGER PRIOR TO THE PLACEMENT OF GRANULAR SAND FILL, CRUSHER FINES OR CLASS 2 BASE. THE CONSTRUCTION MANAGER SHALL DETERMINE THE NUMBER AND LOCATION OF POINTS TO CHECK FOR THE SUBBASE GRADE ELEVATION COMPLIANCE.

## 4.0 SUBGRADE PREPARATION

THE CLASS 2 BASE, SAND OR CRUSHER FINES BENEATH A.C. PAVEMENT AND CONCRETE INFRASTRUCTURE SHALL BE PLACED TO WITHIN  $\pm 0.02$  FEET OF DESIGN SUBGRADE PRIOR TO THE PLACEMENT OF A.C. PAVEMENT OR P.C.C. CONCRETE. THE CONSTRUCTION MANAGER SHALL FIELD VERIFY THE SUBGRADE ELEVATIONS IN THE FIELD PRIOR TO THE PLACEMENT OF CLASS 2 BASE, GRANULAR SAND MATERIAL OR CRUSHER FINES. PLACEMENT OF P.C.C. CONCRETE OR A.C. PAVEMENT SHALL NOT BE ALLOWED UNTIL THE CONSTRUCTION MANAGER HAS APPROVED THE SUBGRADE DESIGN GRADE.

7-0

## 5.0 CLASS 2 BASE

THE CLASS 2 BASE MATERIAL SHALL CONFORM TO CALTRANS STANDARD SPECIFICATIONS SECTION 26, LATEST EDITION, FOR  $\frac{3}{4}$  INCH MAXIMUM BASE MATERIAL. THE GRADATION REQUIREMENTS ARE AS FOLLOWS:

<u>SIZE</u>	<u>PERCENT PASSING</u>
1 IN/25.00MM	100
$\frac{3}{4}$ IN/19.00MM	87-100
#4/4.75MM	30-65
#30/600MM	5-35
#200/75.00MM	0-12

THE SAND EQUIVALENT SHALL BE 25 OR GREATER. AN ANGULAR AGGREGATE IS TO BE USED. CLASS 2 BASE MATERIAL SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY ACCORDING TO ASTM D-1557, UNLESS OTHERWISE NOTED ON THE PLANS OR DETAILS. THE TOLERANCE FOR THE CLASS 2 BASE BETWEEN DESIGN SUBGRADE ELEVATION AND ACTUAL SUBGRADE ELEVATION AS CONSTRUCTED IN THE FIELD SHALL BE PLUS OR MINUS 0.02 FEET AS REFERENCED FROM THE DESIGN SUBGRADE. PRIOR TO THE PLACEMENT OF CLASS 2 BASE THE NATIVE SUBBASE GRADE SHALL BE CHECKED AND APPROVED BY THE

CONSTRUCTION MANAGER. THE NATIVE SUBBASE GRADE SHALL BE WITHIN PLUS OR MINUS 0.05 FEET OF NATIVE SUBBASE DESIGN GRADE PRIOR TO THE PLACEMENT OF CLASS 2 BASE.

THE CONTRACTOR SHALL SUPPLY A FIVE GALLON SAMPLE OF THE CLASS 2 BASE TO THE MATERIAL TESTING LABORATORY WITHIN FOUR (4) DAYS OF THE NOTICE TO PROCEED. THE MATERIAL SHALL BE DELIVERED TO THE TESTING LABORATORY TO DETERMINE THE MAXIMUM DENSITY, GRADATION, R-VALUE, SAND EQUIVALENT AND DURABILITY INDEX OF THE CLASS 2 BASE. A COPY OF THE TEST RESULTS SHALL BE FORWARDED TO THE CONSTRUCTION MANAGER BY THE GEOTECHNICAL CONSULTANT FOR REVIEW. THE GRADATION OF THE CLASS 2 BASE SHALL BE DETERMINED AND THE TEST RESULTS FORWARDED TO THE CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO THE DELIVERY OF THE CLASS 2 BASE MATERIAL TO THE CONSTRUCTION SITE. CLASS 2 BASE UTILIZING RECYCLED MATERIALS SHALL BE ALLOWED IN LIEU OF VIRGIN CLASS 2 BASE AS LONG AS THE SPECIFICATIONS MEET THE CALTRANS STANDARD SPECIFICATIONS SECTION 26.

## P.C.C. CONCRETE

P.C.C. SHALL MEET SECTION 90-2 MINOR CONCRETE OF THE LATEST CALTRANS STANDARD SPECIFICATIONS.

P.C.C. CONCRETE, UTILIZED FOR BUT NOT LIMITED TO, CURB AND GUTTER, BARRIER CURB, SPANDRELS, CROSS-GUTTER, VALLEY GUTTER, RIBBON GUTTERS, RESIDENTIAL AND COMMERCIAL DRIVEWAYS, SIDEWALKS AND ALL OTHER CONCRETE INFRASTRUCTURE SHALL CONTAIN A MINIMUM OF 7 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE AND ATTAIN 4,000 P.S.I. COMPRESSIVE STRENGTH AFTER 28 DAYS CURING UNLESS STATED OTHERWISE ON THE PLANS. A CONCRETE MIX DESIGN IS TO BE SUBMITTED TO THE CONSTRUCTION MANAGER WITHIN FIVE (5) DAYS AFTER THE ISSUANCE OF THE NOTICE TO PROCEED. NEW FORMWORK SHALL BE UTILIZED IN THE CONSTRUCTION OF EVERY CONCRETE FACILITY. THE FORMWORK SHALL BE TRUE TO LINE AND GRADE. THE VERTICAL FLOWLINE ELEVATION TOLERANCE SHALL BE +/- 0.02 FEET FOR DESIGN GRADE FOR SLOPES OF 1.0% OR GREATER, +/- 0.01 FOR DESIGN GRADE FOR SLOPES LESS THAN 1.0%. THE CONSTRUCTION MANAGER SHALL CHECK THE FORMWORK FOR LINE AND GRADE PRIOR TO THE PLACEMENT OF CONCRETE. CONCRETE "CURB MACHINES" SHALL NOT BE ALLOWED FOR CURB AND GUTTER AND RIBBON GUTTERS DESIGNED AT A SLOPE OF 1 PERCENT OR LESS. THE SUBCONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER 72 HOURS PRIOR TO THE REQUIRED INSPECTION. EXPOSED SURFACES OF CONCRETE AREAS SHALL RECEIVE A DOUBLE TROWEL FINISH. WEAKENED PLANE JOINTS SHALL BE PLACED EVERY 8 LINEAL FEET FOR RIBBON GUTTER, CROSS GUTTER AND VALLEY GUTTER CONSTRUCTION UNLESS OTHERWISE ILLUSTRATED ON THE STANDARD PLANS. EXPANSION JOINTS SHALL BE PLACED EVERY 64 FEET ALONG CURB AND GUTTER, BARRIER CURB, VALLEY GUTTER AND SIDEWALK CONSTRUCTION UNLESS OTHERWISE ILLUSTRATED ON THE STANDARD PLANS. INSTALLATION OF CURB AND GUTTER, VALLEY GUTTER AND CROSS-GUTTERS SHALL BEGIN AT THE LOWEST ELEVATION AND PROCEED UPHILL. A TOTAL OF ONE (1) SET OF CYLINDERS AND ONE (1) SLUMP TEST SHALL BE REQUIRED FOR EVERY 50 CUBIC YARDS OF CONCRETE, EXCEPT THAT A MINIMUM OF ONE (1) SET OF CYLINDERS AND SLUMP TEST SHALL BE REQUIRED EACH DAY TWENTY (20) OR MORE YARDS OF CONCRETE ARE PLACED AT A PROJECT SITE. THE MAXIMUM ALLOWABLE SLUMP SHALL BE 4 INCHES. A SET OF CYLINDERS SHALL BE COMPOSED OF THREE (3) CYLINDERS. THE FIRST CYLINDER OF A SET SHALL BE TESTED AFTER SEVEN (7) DAYS CURING. THE SECOND CYLINDER OF A SET SHALL BE TESTED AFTER 28 DAYS CURING. THE THIRD CYLINDER SHALL BE HELD IN RESERVE AND TESTED IF DIRECTED BY THE CONSTRUCTION MANAGER. THE TEST RESULTS WILL BE FORWARDED TO THE CONSTRUCTION MANAGER FOR REVIEW. THE CONSTRUCTION MANAGER SHALL RECEIVE A CONCRETE VENDOR SLIP FOR EACH TRUCK LOAD OF CONCRETE DELIVERED TO THE PROJECT SITE.

PRIOR TO THE PLACEMENT OF CONCRETE, THE SUBGRADE DEPTH SHALL BE INSPECTED TO INSURE THAT THE FULL DEPTH OF CONCRETE, AS NOTED ON THE PLANS, IS ATTAINED. EXCESS FILL MATERIAL SHALL BE REMOVED AS REQUIRED BY THE CONSTRUCTION MANAGER. THE FORM BOARDS SHALL BE CHECKED FOR THE PROPER ELEVATION. COMPACTION TESTS ON THE SUBGRADE SHALL HAVE ACHIEVED THE DENSITY REQUIREMENTS SPECIFIED. THE CONSTRUCTION MANAGER SHALL THEN ALLOW THE PLACEMENT OF CONCRETE.

THE CONCRETE SHALL BE SCREEDED AND FLOATED. ALL EDGES SHALL BE STRUCK WITH A CONCRETE EDGER. WEAKENED PLANE JOINTS SHALL BE ESTABLISHED AT RIGHT ANGLES TO THE SIDEWALK EDGE AS ILLUSTRATED ON THE STANDARD DRAWINGS. THE WEAKENED PLANE JOINTS SHALL BE 3/8 INCH IN WIDTH AND 3/4 INCH IN DEPTH. EXPANSION JOINTS CONSISTING OF 1/2 INCH THICK FIBERBOARD MATERIAL SHALL BE PLACED ACROSS THE FULL SECTION OF THE P.C.C. SIDEWALK EVERY 64 LINEAL FEET, OR AS REQUIRED BY THE STANDARD PLANS. AFTER THE CONCRETE SURFACE HAS BEEN FLOATED AND CURED ADEQUATELY, IT SHALL RECEIVE A DOUBLE TROWEL FINISH. THE TROWELING SHALL BE ACCOMPLISHED BY HAND WITH A STEEL TROWEL. THE SURFACE OF THE CONCRETE SHALL RECEIVE A LIGHT BROOM FINISH AFTER THE SURFACE IS DOUBLE TROWELED. THE SURFACE OF THE CONCRETE SHALL BE SMOOTH AND TRUE TO GRADE. TOLERANCE FOR THE CONCRETE SURFACE SHALL BE 1/8 INCH IN 10 LINEAL FEET WITH MAXIMUM HIGH AND LOW VARIANCE NOT OCCURRING IN LESS THAN 20 FEET. THE CONTRACTOR SHALL MAINTAIN THE CONCRETE SURFACE MOIST OR WET FOR A 24-HOUR PERIOD AFTER THE CONCRETE IS PLACED AND FINISHED TROWELED. PLACEMENT OF BURLAP BAGS OR USED CARPET OVER THE CONCRETE SURFACE AND A CONTINUOUS APPLICATION OF WATER OVER THE CONCRETE SURFACE WILL BE REQUIRED FOR A 24-HOUR PERIOD. CONCRETE SHALL NOT BE PLACED AFTER 10:00 A.M. ON FRIDAYS UNLESS APPROVED BY THE CONSTRUCTION MANAGER.

## 6.0 CRACK SEAL

THE CRACK SEALANT SHALL BE COMPOSED OF A HOT-APPLIED, SINGLE COMPONENT, ELASTICALLY MODIFIED COMPOSITION OF ASPHALT CEMENT, VIRGIN SYNTHETIC POLYMER, RECYCLED RUBBER AND OTHER MODIFIERS. THE SEALANT SHALL CONTAIN NO SOLVENT, IS PRE-REACTED AND SHALL CONFORM TO THE REQUIREMENTS OF CALTRANS SSP 37-400 TYPE 2. THE CRACK SEALANT SHALL BE A MODERATELY HIGH VISCOSITY PAVEMENT PRESERVATION SEALANT INTENDED FOR STREET AND HIGHWAY APPLICATIONS FOR SEALING LONGITUDINAL AND TRANSVERSE CRACKS. THE CRACK SEALANT SHALL BE AN EFFECTIVE BARRIER AGAINST DAMAGE FROM DEBRIS AND MOISTURE INFILTRATION INTO CRACKS. THE CRACK SEALANT SHALL BE A CRAFCO 34521CA , DEERY 80200CA OR AN APPROVED EQUAL. THE CRACK SEALANT SHALL NOT CONTAIN CONSTITUENTS WHICH REACT ADVERSELY WITH SLURRY SEALCOAT MATERIAL.

THE CRACK SEALANT SHALL BE MELTED IN A JACKETED DOUBLE BOILER TYPE MELTING UNIT WHICH IS EQUIPPED WITH BOTH AGITATION AND RECIRCULATION SYSTEMS. DIRECT FIRED OR AIR HEATED MACHINES SHALL NOT BE ALLOWED. THE TEMPERATURE OF THE HEAT TRANSFER OIL IN THE MELTING UNIT SHOULD NOT EXCEED 525 DEGREES FAHRENHEIT (274 DEGREES CELSIUS) DURING MELTING OF THE SEALANT. THE MELTING UNIT MUST BE CAPABLE OF SAFELY HEATING THE SEALANT TO 400 DEGREES FAHRENHEIT (204 DEGREES CELSIUS). THE MELTING UNIT SHALL COMPLY WITH THE REQUIREMENTS OF DOUBLE JACKETED BOILER MELTERS WITH EFFECTIVE AGITATION COMPLIANT WITH APPENDIX X1.1 OF ASTM D 6690. PRIOR TO APPLYING THE SEALANT, IT SHALL BE HEATED TO A TEMPERATURE BETWEEN THE RECOMMENDED APPLICATION TEMPERATURE AND THE MAXIMUM HEATING TEMPERATURE AS ILLUSTRATED ON THE SEALANT CONTAINERS AND PRODUCT DATA SHEETS. THE CRACK SEALANT APPLICATION LIFE IS TO BE MONITORED AND IF EXCEEDED EITHER EXTENDED OR REMOVED AND DISCARDED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

THE PAVEMENT SURFACE TEMPERATURE SHALL BE GREATER THAN 40 DEGREES FAHRENHEIT PRIOR TO CRACK SEALANT APPLICATION. LOWER TEMPERATURES MAY RESULT IN REDUCED ADHESION DUE TO THE PRESENCE OF MOISTURE OR ICE. IF THE PAVEMENT TEMPERATURE IS LOWER THAN 40 DEGREES FAHRENHEIT IT MAY BE WARMED USING A HEAT LANCE THAT PUTS NO DIRECT FLAME ON THE PAVEMENT. IF INSTALLING CRACK SEALANT AT PAVEMENT TEMPERATURES BELOW 40 DEGREES FAHRENHEIT, EXTREME CARE SHOULD BE USED TO INSURE THAT CRACKS ARE DRY AND FREE FROM ICE, MOISTURE AND OTHER CONTAMINANTS. THE CRACK SEALANT SHALL BE MAINTAINED AT ITS MAXIMUM TEMPERATURE DURING APPLICATIONS WHEN THE PAVEMENT TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT. IF CRACK SEALANT IS APPLIED AT NIGHT, APPLICATORS SHALL OBSERVE THE PAVEMENT TO ASSURE DEW DOES NOT FORM ON THE PAVEMENT SURFACE.

PROPER CRACK SEALANT ADHESION REQUIRES CRACKS BE THOROUGHLY CLEAN AND DRY IMMEDIATELY PRIOR TO CRACK SEALANT INSTALLATION. CRACKS SHALL BE INITIALLY CLEANED OR WIDENED USING APPROPRIATE ROUTING, BRUSHING OR BLOWING OPERATIONS. AFTER INITIAL CLEANING AND WIDENING AND AFTER ANY DEBRIS REMOVAL IS ACCOMPLISHED A FINAL CRACK CLEANING SHALL BE ACCOMPLISHED BY USING A HIGH PRESSURE, 90 PSI MINIMUM, DRY, OIL FREE COMPRESSED AIR UNIT. BOTH SIDES OF THE PREPARED CRACKS SHALL BE INSPECTED TO INSURE THE HIGH PRESSURE AIR HAS REMOVED ANY REMAINING DUST FROM THE INITIAL CRACK CLEANING OR ROUTING. THE SURFACES OF THE PREPARED CRACK SHALL BE INSPECTED TO INSURE ADEQUATE CLEANLINESS AND DRYNESS PRIOR TO THE APPLICATION OF THE CRACK SEALANT. THE CONTRACTOR SHALL APPLY A HERBICIDE TO ANY CRACKS WHICH EXHIBIT VEGETATIVE GROWTH 10 DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

CRACKS 1/8 INCH WIDE SHALL BE ROUTED TO A MINIMUM WIDTH OF 3/8 INCH AND A MINIMUM DEPTH OF 1/2 INCH. CRACKS 1/4 INCH WIDE AND GREATER SHALL BE ROUTED FOR A MINIMUM OF 1/8 INCH ON BOTH SIDES OF THE CRACK AND A DEPTH OF 3/4 INCH. IT IS RECOMMENDED THAT CRACKS 1 1/2 INCHES AND GREATER NOT BE CRACK SEALED USING THE CRACK SEAL MATERIAL SPECIFIED UNDER THIS TECHNICAL SPECIFICATION SECTION. FOLLOWING APPROPRIATE CLEANING OF THE ROUTED CRACK, SEALANT SHALL BE APPLIED TO A SLIGHTLY OVERFILLED CONDITION AND THEN LEVELED WITH A SQUEEGEE ACROSS THE CRACK WITH AN OVERLAP BEYOND THE CRACK EDGES. THIS METHOD OF CRACK SEALING RESULTS IN AN OVERBAND CONDITION. SEALANT OVERBANDS SHALL NOT EXCEED 1/16 INCH IN HEIGHT ABOVE THE PAVEMENT AND NOT EXTEND GREATER THAN 2 INCHES BEYOND CRACK EDGES. A DETACK AGENT SHALL BE APPLIED TO THE CRACK SEALANT PRODUCT AFTER APPLICATION, AS DETERMINED BY THE ENGINEER, TO REDUCE THE TACKINESS AND RESULTANT "TRACKING" OF THE SEALANT BY VEHICULAR TRAFFIC.

THE CRACK SEALANT MATERIAL SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS WHEN HEATED TO ITS MAXIMUM HEATING TEMPERATURE IN ACCORDANCE WITH ASTM D5167:

<u>TEST</u>	<u>METHOD</u>	<u>CALTRANS SSP 37-400 TYPE 2</u>
CONE PENETRATION	ASTM D5329	40 MAXIMUM
SOFTENING POINT	ASTM D36	205 DEGREES F (96 DEGREES C) MINIMUM
FLEXIBILITY	ASTM D3111 MODIFIED	PASS AT 32 DEGREES F (0 DEGREES C)
TENSILE ADHESION	ASTM D5329	400% MINIMUM
SPECIFIC GRAVITY	ASTM D70	1.25 MAXIMUM
ASPHALT COMPATIBILITY	ASTM D5329	PASS
SIEVE TEST (CERTIFICATION NON-SOLUBLE COMPONENTS PASS #16 SIEVE)		PASS 100%
RESILIENCE	ASTM D5329	25 - 65 %
RECOMMENDED TEMPERATURE	APPLICATION ASTM D5167	380 - 400 DEGREES F (193 - 204 DEGREES C)
MAXIMUM HEATING TEMPERATURE	ASTM D6690	400 DEGREES F (204 DEGREES C)

AFTER THE CRACK SEALANT MATERIAL IS APPLIED, THE DEBRIS, LOOSE PARTICLES, DIRT AND PAVEMENT RESIDUE RESULTANT FROM THE CRACK CLEANING AND ROUTING OPERATION SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE MATERIAL RESULTANT FROM THE CRACK SEALING CLEANING OPERATION WITH A VACUUM STREET SWEEPER AT THE CONCLUSION OF THE WORK DAY. THE STREET AREA SUBJECT TO CRACK SEALING SHALL BE CLOSED TO TRAFFIC UNTIL THE CRACK SEALANT HAS SUFFICIENTLY CURED AND IS NOT SUBJECT TO "TRACKING" BY VEHICULAR TRAFFIC. ONE-WAY TRAFFIC SHALL BE MAINTAINED ALONG THE STREETS DURING CRACK SEALING APPLICATION WORK.

IF EQUIPMENT BEING USED REQUIRES THE CLEANING OUT OF PUMPS AND PLUMBING, FOLLOW THE MANUFACTURER'S CLEAN OUT INSTRUCTIONS. IF SOLVENT IS USED FOR CLEAN OUT, INSURE THAT THE SOLVENT DOES NOT CONTAMINATE THE SEALANT BECAUSE SEALANT DILUTION AND FLASH PROBLEMS MAY OCCUR.

PALLETS OF BOXED PRODUCT ARE PROTECTED WITH A WEATHER RESISTANT COVERING. DURING STORAGE, THE PROTECTIVE WRAP MUST BE KEPT ON THE PALLETS TO PREVENT BOXES FROM GETTING WET. IF BOXES ARE SUBJECTED TO MOISTURE, THEY MAY LOSE STRENGTH AND CRUSH RESULTING IN PALLET LEANING. IF RIPS IN THE PALLET COVERING OCCUR DURING HANDLING, THEY SHOULD BE REPAIRED TO HELP MAINTAIN PACKAGING INTEGRITY. PALLETS SHOULD BE STORED ON A LEVEL SURFACE WHICH IS DRY AND HAS GOOD DRAINAGE. PALLETS SHOULD BE NOT STACKED BECAUSE CRUSHING OF BOTTOM LAYERS MAY OCCUR. SEALANT MATERIAL PROPERTIES ARE NOT AFFECTED BY PACKAGING DETERIORATION.

SINCE THESE SEALANTS ARE HEATED TO ELEVATED TEMPERATURES, IT IS ESSENTIAL THAT OPERATIONS BE CONDUCTED IN MANNERS WHICH ASSURE SAFETY OF PERSONNEL. ALL ASSOCIATED WITH USE OF THE MATERIAL NEED TO BE AWARE OF THE HAZARDS OF USING HOT APPLIED MATERIALS AND SAFETY PRECAUTIONS. BEFORE USE, THE CREW SHOULD READ AND UNDERSTAND PRODUCT USE AND SAFETY INFORMATION ON EACH BOX OF SEALANT AND THE PRODUCT MSDS. THIS SHEET WHICH IS SUPPLIED WITH EACH SHIPMENT, DESCRIBES THE CHARACTERISTICS OF THE PRODUCT AS WELL AS ANY POTENTIAL HEALTH HAZARDS AND PRECAUTIONS FOR SAFE HANDLING AND USE. USER SHOULD CHECK D.O.T. REQUIREMENTS FOR TRANSPORTATION AT ELEVATED TEMPERATURES ABOVE 212°F (100°C).

SKIN CONTACT WITH HOT APPLIED MATERIALS CAUSES BURNS. OVEREXPOSURE TO FUMES MAY CAUSE RESPIRATORY TRACT IRRITATION, NAUSEA, OR HEADACHES. APPROPRIATE PRECAUTIONS NEED TO BE TAKEN TO PREVENT CONTACT WITH THE HOT MATERIAL AND TO AVOID INHALATION OF FUMES FOR EVERYONE IN THE VICINITY OF THE SEALING OPERATION. SAFETY PRECAUTIONS SHOULD INCLUDE: (1) PROTECTIVE CLOTHING TO PREVENT SKIN CONTACT WITH HOT MATERIAL; (2) CARE WHEN ADDING BLOCKS OF PRODUCT TO MELTERS TO REDUCE SPLASHING; (3) CAREFUL OPERATION AND CONTROL OF WANTS OR POUR POTS WHICH ARE USED TO APPLY PRODUCT; (4) TRAFFIC AND PEDESTRIAN CONTROL MEASURES WHICH MEET OR EXCEED LOCAL REQUIREMENTS TO PREVENT ACCESS TO WORK AREAS WHILE PRODUCT IS STILL IN A MOLTEN STATE; (5) AVOIDANCE OF MATERIAL FUMES; (6) PROPER APPLICATION CONFIGURATIONS WITH A MINIMUM AMOUNT OF EXCESSES OF MATERIAL; AND (7) APPROPRIATE CLEAN UP OF EXCESSIVE APPLICATIONS OR PRODUCT SPILLS.

THE CONTRACTOR SHALL BE COMPENSATED FOR THE CRACK SEAL APPLICATION BY THE POUND OF CRACK SEALANT MATERIAL PLACED. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TRANSPORTATION AND EQUIPMENT FOR THE INSTALLATION OF THE CRACK SEALANT. STREET SWEEPING PRIOR TO CRACK SEALING A STREET SECTION, STREET SWEEPING AT THE CONCLUSION OF EACH DAYS CRACK SEALING WORK, CLEAN UP, TRAFFIC CONTROL, APPLICATION OF HERBICIDE AND PROTECTION OF UTILITY COVERS ARE INCIDENTAL TO THE CRACK SEAL APPLICATION COSTS.

## 7.0 SLURRY SEAL COAT

### DESCRIPTION

This work shall consist of mixing a formulation of asphaltic emulsion, crushed aggregates, set-control additives, coloring additives, synthetic butadine latex and water and spreading the mixture on a pavement where shown on plans, as specified in these special provisions, and as directed by the Engineer. The material to be utilized for this project shall consist of a Type 2 slurry seal coat with the addition of styrene butadiene latex and other additives. Construction and materials for emulsion - aggregate slurry shall conform to Subsection 203-5 and 302-4 of the Standard Specifications for Public Works Construction, latest edition, except as modified herein.

### MATERIALS

The materials for the modified Type 2 Slurry Seal Coat shall conform to the following requirements:

#### A. ASPHALTIC EMULSION

Asphaltic emulsion shall be quick-setting type CQS-1h grade conforming to the requirements of these specifications. Quick setting CQS-1h asphaltic emulsion shall conform to the following requirements when tested in accordance with the specified test method.

#### B. TESTS ON EMULSION

<b>TESTS</b>	<b>QUALITY TEST</b>	<b>REQUIREMENTS</b>
AASHTO T59 ASTM D244	Residue After Distillation	60 % MIN.
<b>TESTS ON RESIDUE</b>		
AASHTO T49 ASTM 2397	Penetration at 77 F. (25 C)	40 - 90

In addition, quick-setting type CQS-1h asphaltic emulsion shall test positive for particle charge when tested in accordance with ASTM designation: E70. If the particle charge test result is inconclusive the asphaltic emulsion shall meet a ph requirement of 6.7 maximum.

#### C. AGGREGATE

The aggregate shall be manufactured crushed stone such as granite, slag, limestone, chat, or other high quality aggregate, or combination thereof. Aggregate shall consist of rock dust except that 100 percent of any aggregate or combination of aggregates, larger than the No. 50 sieve size, used in the mix shall be obtained by crushing rock. The material shall be free from vegetation matter and other deleterious substances. All aggregate shall be free of caked lumps and oversized particles.

D. QUALITY TESTS

The percentage composition by weight of the aggregate shall conform to the following gradings when determined by California Test 202, modified by California Test 105 when there is a difference in specific gravity of 0.2 or more between blends of different aggregates.

TYPE 1	SIEVE SIZE	PERCENTAGE PASSING	STOCKPILE TOLERANCE
	NO. 4	100	±5%
	NO. 8	90-100	±5%
	NO. 16	60-90	±5%
	NO. 30	40-65	±5%
	NO. 50	25-42	±4%
	NO. 200	10-20	±2%
TYPE 2	SIEVE SIZE	PERCENTAGE PASSING	STOCKPILE TOLERANCE
	NO. 4	90-100	±5%
	NO. 8	65-90	±5%
	NO. 16	45-70	±5%
	NO. 30	30-50	±5%
	NO. 50	18-30	±4%
	NO. 200	5-15	±2%

The job mix (target) gradation shall be within the gradation band for the desired type. After the target gradation has been submitted, then the percent passing each sieve shall not vary by more than the stockpile tolerance.

The aggregate shall also conform to the following requirements:

<u>TESTS</u>	<u>CALIFORNIA TEST</u>	<u>REQUIREMENTS</u>
SAND EQUIVALENT	217	45 MIN.
DURABILITY INDEX	229	55 MIN.

The aggregate will be accepted at the job location or stockpile. The stockpile shall be accepted based on five gradation tests according to California Test 202, modified by California Test 105 when there is a difference in specific gravity of 0.2 or more between the blends of different aggregates. If the average of the five tests is within the gradation tolerances, then the material will be accepted. If the tests show the material to be out of gradation tolerance, the Contractor will be given the choice to either remove the material or blend other aggregates with the stockpile material to bring it into specification. Materials used in blending must meet the quality test before blending and must be blended in a manner to produce a consistent gradation.

When the results of either the aggregate grading or the sand equivalent tests do not conform to the requirements specified, the aggregate shall be removed. However, if requested in writing by the contractor and approved by the Engineer, the aggregate may be used and the Contractor shall pay to the Owner \$1.00 per ton for such aggregate left in place. No single aggregate grading or sand equivalent tests shall represent more than 300 tons or one day's production, whichever is smaller.

E. WATER

Water shall be of such quality that the asphalt will not separate from the emulsion before the slurry seal is in place in the work. If necessary for workability, a set-control agent that will not adversely affect the slurry sealcoat surfacing material may be used. Pre-wetting of streets will be required unless otherwise determined by the Engineer. If pre-wetting of the streets is required the Contractor shall perform this work as an incidental item to the placement of the slurry sealcoat material.

F. CARBON BLACK

The carbon black solution shall be cationic or non-ionic in charge and liquid in form. The carbon black must be compatible with the emulsion system, latex and additives being used and shall meet the following specifications:

<u>SPECIFICATIONS</u>	<u>TOLERANCES</u>
TOTAL SOLIDS	40 - 44
% BLACK BY WEIGHT	35 - 37
TYPE BLACK	MEDIUM FURNACE COLOR
TYPE DISPERSING AGENT	NON IONIC
pH	0.5 - 4.5

G. MINERAL FILLER

Portland cement, hydrated lime, limestone dust, fly ash or other approved filler meeting the requirements of ASTM D242 may be used if required by the mix design and may be used to facilitate set times as needed. Any cement used shall be considered as part of the dry aggregate weight for mix design purposes.

H. ADDITIVES

Additives may be used to accelerate or retard the break-set of the RPM surfacing material. The use of additives shall be in quantities specified in the mix design.

I. LATEX

A styrene butadiene latex shall be added to the slurry sealcoat. Latex shall be a minimum of 2.5% of the weight of the emulsion. The latex shall be injected into the water phase of the emulsion prior to running through the colloid mill. The styrene butadiene latex shall conform to the following chart:

	TEST METHOD	SPECIFICATION		RESULTS
		MIN	MAX	
Grade of Material		LMCQS in 2.5%		
Tests on Emulsion:		MIN	MAX	
Viscosity @ 25°C, SFS	AASHTO T59	15	100	
Sieve Test, %	AASHTO T59	-	0.10	
Particle Charge	AASHTO T59	Pos	-	
Storage Stability, 1 day, %	AASHTO T59	-	1	
Residue by Distillation, % by Wt	AASHTO T59	60.0	-	
Tests on Residue by Distillation:				
Penetration, .01mm, 5 sec, 25C	AASHTO T49	45	80	
Solubility in TCE, %	ASTM D2042	97.5	-	
Ductility, mm/min, mm @ 25C	AASHTO T51	400	-	
Softening Point, °F	AASHTO T53	-	-	

LABORATORY EVALUATION

## A. GENERAL

Before work begins, the Contractor shall submit a mix design covering the specific materials to be used on the project. The design will be performed by a laboratory who has experience in designing slurry sealcoat surfacing. After the mix design has been approved, no substitution will be permitted unless approved by the Engineer. The Contractor shall bear all expenses with regard to the preparation of the mix design.

## B. MIX DESIGN

The Contractor, at its expense, shall submit for Engineer approval laboratory reports of mix designs performed in accordance with ASTM D 3910 procedures, utilizing the specific materials to be used. ASTM D 3910 procedures shall be modified to include the retained No. 4 (4.75 mm) aggregate if present in the mix design. The Engineer will approve the mix proportions that are best suited for use on the Work, based upon the emulsion content and water needed to produce a slurry with a maximum loss of 50 grams per square foot (540 grams per square meter) by the modified Wet Track Abrasion Test. For mix designs containing more than 4 percent aggregate retained on the No. 4 (4.75 mm) sieve, the maximum loss will be 60 grams per square foot (650 grams per square meter).

All of the component materials used in the mix design shall be representative of the materials proposed by the Contractor to be used on the project. The percentage of each individual material required shall be indicated in the laboratory report. Adjustments may be required during the construction, based on field conditions.

The component materials shall be within the following limits:

Residual Asphalt	Type 1	9.0% - 10.8%	based on dry weight of aggregate
	Type 2	8.4% - 9.6%	
Styrene Butadine Latex	The butadine latex will be added to the slurry sealcoat mix at a rate of 2.5% + 0.5% by weight of emulsion.		
Carbon Black	Carbon black shall be added at 1.5% to 3.0% of the finished emulsion.		
Mineral Filler	0.5% - 2.0% (if required by mix design) based on dry weight of aggregate.		
Additives	As needed		
Water	As needed to achieve proper mix consistency. (Total mix liquids should not exceed the loose aggregate voids)		

The Contractor, at its expense, shall calibrate each slurry mixer to be used in the Work according to the approved slurry mix design. The Contractor shall allow 2 days prior to the start of work for calibration and testing at a location to be approved by the Engineer. The Engineer will obtain field samples at the time of calibration for Extraction Test (ASTM D 2172, California Test 382), Consistency Test, and Wet Track Abrasion Test (Modified ASTM D 3910). When in the judgment of the Engineer, the field samples meet the requirements stipulated in these specifications, the Engineer will notify the Contractor to start the work.

## PROPORTIONING

Aggregate, asphaltic emulsion, water, latex, additives, including set-control agent if used, and reacted latex shall be proportioned by weight utilizing the mix design approved by the Engineer. If more than

one kind of aggregate is used, the correct amount of each kind of aggregate to produce the required grading shall be proportioned separately, prior to the other materials of the mixture, in a manner that will result in a uniform and homogenous blend.

The completed mixture, after addition of water and any set-control agent used, shall be such that the mixture has proper workability and (a) will permit a traffic flow, without pilot-car-assisted traffic, on the slurry seal within 1 hour after placement (at 78 degrees f.) Without the occurrence of bleeding, separation or other distress, and (b) will prevent development of bleeding, excessive raveling, separation or other distress within 15 days after placing the slurry sealcoat surfacing.

Asphaltic emulsion shall be added at a rate within the approximate following ranges of percent by weight of the dry aggregate. The exact weight will be determined by the mix design and the asphalt solids content of the asphaltic emulsion furnished. The emulsion weight shall be determined prior to and exclusive of the added latex. Added latex will be in addition to the emulsion.

<u>TYPE OF AGGREGATE</u>	<u>RANGE</u>
TYPE 1	15 - 18%
TYPE 2	14 - 16%

The aggregate shall be proportioned by a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be readily determinable. The emulsion shall be introduced into the mixer by a positive displacement pump. Water shall be introduced into the mixer through an adjustable multi-spray pugmill bar, water volume shall be displayed by an electronic digital meter registering in gallons delivered.

The bitumen ratio (pounds of asphalt per 100 pounds of dry aggregates) shall not vary more than 0.5-pound of asphalt above or 0.6-pound asphalt below the amount designated by the mix design and approved by the Engineer.

The aggregate belt feeder shall deliver aggregate to the pugmill mixed with such volumetric consistency that the deviation for any individual aggregate delivery rate check-run shall not exceed 2.0 percent of the average of 3 runs of at least 3 tons each in duration. The emulsion pump shall deliver emulsion to the pugmill with such volumetric consistency that the deviation for any individual emulsion delivery check-run shall be within 2.0 percent of the mathematical average of 3 runs of at least 300 gallons each in duration.

#### PROPORTIONING EQUIPMENT & PROCEDURES

Each slurry sealcoat surfacing unit shall be equipped with a unit designed to store and deliver the various required materials to a single shafted or twin-shafted, multi-paddle pugmill in the following manner:

Each slurry sealcoat surfacing unit shall be equipped with a computer controlled automatic sequencing system that initiates each material delivery at the precise moment necessary to insure proper proportioning.

Each slurry sealcoat surfacing unit shall be equipped with independent storage capabilities for the aggregate, emulsion, latex additives, set-control additives and the carbon black.

The latex additive and the carbon black shall be delivered to the mixer in the relative proportions required by means of a common shaft, dual pump system. The latex additive and the carbon black flow rates shall be independently adjustable by means of diaphragm valves and shall be sequenced through the computer controlled auto-sequencing system. A portion of the latex additives may be added through co-milling with the base asphalt during the emulsion production process. A maximum of 2.5% latex blend may be added in this manner. The balance of the latex shall be added by means of truck mounted introduction systems.

The latex additive and the carbon black shall be blended and mixed prior to their introduction into the pugmill. Introduction into the twin-shafted pugmill shall be accomplished through an injection system that delivers the blended material to the apex of each mixing shaft immediately prior to the introduction of the asphalt emulsion.

The latex additive delivery system shall each be equipped with a digital electronic flow metering device that reads in gallons/liters per minute. The carbon black and liquid additive systems shall be equipped with non-corrosive acrylic visual flowmeters.

The slurry sealcoat application shall be mixed in a continuous, twin shaft, multi-paddle pugmill mixer. The pugmill shall be equipped with a hydraulically controlled steel pugmill gate for positive discharge operations. No dripping slurry will be allowed.

The emulsion shall be introduced into the mixer by a positive displacement pump. The emulsion storage shall be equipped with a device that will automatically shut down the power to the emulsion pump and aggregate belt feeder when the level of stored emulsion is lowered to within 2" of the suction line.

A temperature indicating device shall be installed in the emulsion storage tank at the pump suction level.

The aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be readily determinable.

The aggregate feeder shall be directly connected to the drive on the emulsion pump. The drive shaft of the aggregate feeder shall be equipped with an electronic digital revolution counter reading to the nearest full revolution of the aggregate delivery belt. The belt delivering the aggregate to the pugmill shall be equipped with a device to monitor the depth of the aggregate being delivered to the pugmill. The device for monitoring depth of aggregate shall automatically shut down the power to the aggregate belt feeder whenever the depth of aggregate is less than 70 percent of the target depth of flow. An additional device shall monitor movement of the aggregate belt by detecting revolutions of the belt feeder. The devices for monitoring no flow or belt movement, as the case may be, shall automatically shut down the power to the aggregate belt when the aggregate belt movement is interrupted. To avoid shutdowns caused by normal fluctuations in delivery rates, a delay of 3 seconds between sensing less than desirable storage levels of aggregate or emulsion shall be permitted.

Water delivery shall be adjusted through a diaphragm valve. Water flow rate shall be electronically displayed through a digital meter.

The mixer unit shall not be operated unless all electronic display and revolution counters are in good working condition and functioning and all metal guards are in place. All indicators required by these specifications shall be operational at all times.

The slurry sealcoat surfacing mixture shall be spread by means of a controlled spreader box. The spreader box shall be capable of spreading a traffic lane width and shall have strips of flexible rubber belting or similar material on each side of the spreader box and in contact with the pavement to positively prevent loss of slurry from the ends of the box. All spreader boxes shall be equipped with a motor driven auger when placing slurry sealcoat surfacing material. Rear flexible strike-off blades shall make close contact with the pavement, and shall be capable of being adjusted to the various crown shapes so as to apply a uniform surfacing coat. Flexible drags, to be attached to the rear of the spreader box, shall be provided as directed by the engineer. All drags and strike-off blades (rubbers) shall be cleaned or changed daily if problems with cleanliness and longitudinal scouring occur. The spreader box shall be clean, free of all slurry and emulsion, at the start of each work shift.

## SURFACE PREPARATION

Immediately prior to the slurry surfacing operation, the surface shall be cleaned of all loose material, vegetation, and other objectionable material. The pavement surface shall be crack sealed if required by the Contract Documents. Pavement striping shall be removed from the pavement surface and

raised pavement markers shall be removed prior to the placement of slurry sealcoat material as required by the specifications. The contractor shall perform the cleaning and sweeping of the pavement surface, removal of striping and removal of raised pavement markers as an incidental cost to the placement of the slurry sealcoat material. The Contractor shall remove and dispose of sweeping residue. Any standard cleaning method will be acceptable. If water is used cracks shall be allowed to dry thoroughly before surfacing is applied. The surface of the pavement shall be determined to be sufficiently clean by the engineer prior to the application of slurry sealcoat material.

The Contractor shall protect all utility manhole covers, gratings, gas valve covers, water valve covers and survey monument covers from being coated with the slurry surfacing mixture. Suitable means of protection include covering the utility manhole covers, gratings, valve covers, and monument covers with a stick down paper or tape, polyethylene material or cardboard cutouts shall be accomplished prior to the slurry sealcoat application. Upon completion of the slurry surfacing, the protection devices shall be removed the same day. Removable markings with distances shall be placed on the curb and gutter bordering the streets to identify the utility cover locations. Wood lath shall be placed along A.C. pavement edges when no curb and gutter borders the street. The distance from the lath to the utility cover shall be written on the lath.

## APPLICATION OF SLURRY SEALCOAT SURFACING MATERIAL

### A. GENERAL

If required by the Engineer due to ambient temperature or dust conditions, the pavement surface shall be pre-wetted by fogging ahead of the spreader box. The rate of application of the fog spray shall be adjusted during the day to suit temperatures, surface texture, humidity, and dryness of the pavement but shall be kept to a minimum under all conditions.

The slurry sealcoat surfacing shall be of the desired consistency upon leaving the mixer. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained.

The slurry sealcoat surfacing mixture shall be uniformly spread on the existing surface within the rate specified. The slurry surfacing material shall not be placed when existing pavement temperature is below 60 degrees F, or when rain or freezing temperatures are forecast within the next 24 hours.

Evidence of solidification of the asphalt, balling or lumping of the aggregates, or the presence of uncoated aggregates will be cause for rejection of the slurry.

Slurry shall be applied in such a manner that no ridges shall remain.

The Contractor shall prevent slurry from being deposited on other than asphalt concrete surfaces and shall remove slurry from surfaces not designated to be sealed at no cost to the Owner. The method of slurry removal shall be approved by the Engineer.

At the direction of the Engineer, the Contractor shall repair and reseal all areas of the streets which have not been sealed properly or completely, at no cost to the Owner.

Where the completed slurry is not uniform in color, the street shall be treated to eliminate the color variation at the Contractor's expense. The method of treatment shall be approved by the Engineer.

### B. APPLICATION RATES

The slurry sealcoat surfacing material shall be spread at the following application rates:

Type 1	9 to 11 pounds of dry aggregate per square yard
Type 2	11 to 13.3 pounds of dry aggregate per square yard or

19 pounds of dry aggregate per square yard as indicated on the plans

The spread rate will be sufficient to fill all voids in the existing pavement and to place sufficient material to embed the largest size aggregate particles.

The completed spread rate will be within 10% of the rate determined by the Engineer after consideration of the surface texture of the existing pavement and the physical size of the aggregate in the mix.

The mixture shall be uniform and homogeneous after spreading on the surface and shall not show separation of the emulsion and aggregate after setting.

Any slurry sealcoat surfacing material to be spread in areas inaccessible to the controlled spreader box, may be spread by hand squeegees or other approved methods.

**FIELD SAMPLING**

During the performance of the Work, the Contractor will take at least two field samples of the mixed slurry per slurry mixer per day. The Wet Track Abrasion test sample shall not be transported until slurry has set as defined by ASTM D 3910. All field samples shall have the following values:

**TABLE 302-4.3.3 (A)**

Tests	Test Method	Requirements	
		Min.	Max.
Wet Track Abrasion Test, Weight loss, gm/ft <sup>2</sup> (gm/m <sup>2</sup> ) Type I Aggregate	ASTM D3910 <sup>1</sup>	0	50 (540)
Wet Track Abrasion Test, Weight Loss, gm/ft <sup>2</sup> (gm/m <sup>2</sup> ) Type II Aggregate	ASTM D3910 <sup>1</sup>	0	60 (650)
Consistency Test (mm)	ASTM D3910 <sup>1</sup>	20	40
Extraction Test (Calculated Emulsion Content, %)	ASTM D 2172, California 382 <sup>2</sup>	± 1.0% of mix design	
Water Content, % of Dry Aggregate Weight	See Note 3 below	-	25

1. Modified ASTM D 3910 to include No. 4 (4.75 mm) aggregate or greater and to be performed using field samples.
2. Modified CTM 382 to allow 1000 ± 100 gram sample.
3. Weigh a minimum of 500 grams of homogenized mixed slurry into a previously tarred quart can with a friction lid. The lid shall be placed on the can to prevent loss of material during transportation. Place the can with the lid off in an oven and dry to constant mass at 230° ± 9°F (110° ± 5°C). Cool, reweigh and calculate the water content.

Subsection 6.4.4.7 of ASTM D 3910 may be modified to use a microwave oven for drying the specimen after the abrasion cycle and the debris has been washed off.

If the test results fail to meet the Specifications, the Contractor shall cease slurry laydown operation with the nonconforming mixer until it demonstrates the ability to comply with the Specifications.

No change in the proportions of the approved mix design will be permitted without the Engineer’s approval. If the Contractor changes its source of supply for either the aggregate or the emulsion, the mix design approval and the quality control procedures specified herein shall be repeated. Mixes used shall not deviate more than ± 1.0 percent from the approved proportion of emulsion. (Example: If the approved mix is 16 percent emulsion, then the emulsion content must be between 15 and 17 percent). The percentage of emulsion is based on the dry weight of aggregate.

## **8.0 STRIPING APPLICATION – RAPID DRY PAINT FOR CENTERLINE STRIPING**

### **8.1 DESCRIPTION**

THIS ITEM SHALL CONSIST OF THE PAINTING OF MARKINGS AND STRIPES ON THE SURFACE OF THE A.C. PAVEMENT IN ACCORDANCE WITH THE LOCATIONS AND REQUIREMENTS ILLUSTRATED ON THE STRIPING PLAN. ALL PAINTING OF MARKINGS AND STRIPES SHALL CONFORM TO CALTRANS STANDARD PLANS AND SPECIFICATIONS, LATEST EDITION, UNLESS NOTED OTHERWISE.

### **8.2 MATERIALS**

#### **8.2.1 PAINT**

PAINT SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREENBOOK", 2012 EDITION, SECTION 214-4.2 AND THE TABLE 214-4.1(A).

#### **8.2.2 REFLECTIVE MEDIA**

A GLASS SPHERE REFLECTIVE MEDIA SHALL BE REQUIRED PER SECTION 214-3 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREENBOOK", 2012 EDITION.

### **8.3 CONSTRUCTION METHODS**

#### **8.3.1 WEATHER LIMITATIONS**

THE PAINTING SHALL BE PERFORMED ONLY WHEN THE SURFACE IS DRY, WHEN THE ATMOSPHERIC TEMPERATURE IS ABOVE 60 DEGREES F., AND WHEN THE WEATHER IS NOT FOGGY OR WINDY.

#### **8.3.2 EQUIPMENT**

ALL EQUIPMENT FOR THE WORK SHALL BE APPROVED BY THE CONSTRUCTION MANAGER AND SHALL INCLUDE THE APPARATUS NECESSARY TO PROPERLY CLEAN THE EXISTING SURFACE, A MECHANICAL MARKING MACHINE, AND SUCH AUXILIARY HAND-PAINTING EQUIPMENT AS MAY BE NECESSARY TO SATISFACTORILY COMPLETE THE JOB. THE MECHANICAL MARKER SHALL BE AN ATOMIZING SPRAY-TYPE MARKING MACHINE SUITABLE FOR APPLICATION OF TRAFFIC PAINT. IT SHALL PRODUCE AN EVEN AND UNIFORM FILM THICKNESS AT THE REQUIRED COVERAGE AND SHALL BE DESIGNATED SO AS TO APPLY MARKINGS OF UNIFORM CROSS SECTIONS AND CLEAR-CUT EDGES WITHOUT RUNNING OR SPATTERING.

#### **8.3.3 PREPARATION OF SURFACE**

IMMEDIATELY BEFORE APPLICATION OF THE PAINT, THE PAVEMENT SURFACE SHALL BE DRY AND FREE FROM DIRT, GREASE, OIL, LAITANCE, OR OTHER FOREIGN MATERIAL WHICH WOULD REDUCE THE BOND BETWEEN THE PAINT AND THE PAVEMENT. THE AREA TO BE PAINTED SHALL BE CLEANED BY SWEEPING AND BLOWING OR BY OTHER METHODS AS REQUIRED TO REMOVE ALL DIRT, LAITANCE, AND LOOSE MATERIALS.

#### **8.3.4 LAYOUT OF MARKINGS**

THE PROPOSED MARKINGS SHALL BE LAID OUT IN ADVANCE OF THE PAINT APPLICATION ACCORDING TO THE DIMENSIONS REQUIRED BY THE PLANS AND SPECIFICATIONS OR BY CALTRANS STANDARDS.

#### 8.3.5 APPLICATION

MARKINGS SHALL BE APPLIED AT THE LOCATIONS AND TO THE DIMENSIONS AND SPACING SHOWN ON THE PLANS. PAINT SHALL NOT BE APPLIED UNTIL THE LAYOUT AND CONDITION OF THE SURFACE HAVE BEEN APPROVED BY THE CONSTRUCTION MANAGER. THE PAINT SHALL BE MIXED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND APPLIED TO THE PAVEMENT WITH A MARKING MACHINE AT A RATE SPECIFIED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREENBOOK", 2012 EDITION, SECTION 214. THE ADDITION OF THINNER WILL NOT BE PERMITTED. THE EDGES OF THE MARKINGS SHALL NOT VARY FROM A STRAIGHT LINE MORE THAN ¼ INCH IN 50 FEET, AND THE DIMENSIONS SHALL BE WITHIN A TOLERANCE OF PLUS OR MINUS 2 PERCENT. THE CONTRACTOR SHALL FURNISH CERTIFIED TEST REPORTS FOR THE MATERIALS SHIPPED TO THE PROJECT. THE REPORTS SHALL NOT BE INTERPRETED AS A BASIS FOR FINAL ACCEPTANCE. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER UPON ARRIVAL OF SHIPMENT OF THE PAINT TO THE JOB SITE. ALL EMPTIED CONTAINERS SHALL BE RETURNED TO THE PAINT STORAGE AREA FOR CHECKING BY THE CONSTRUCTION MANAGER. THE CONTAINERS SHALL NOT BE REMOVED FROM THE PROJECT SITE OR DESTROYED UNTIL AUTHORIZED BY THE CONSTRUCTION MANAGER.

A MINIMUM OF TWO (2) THIN COATING APPLICATIONS SHALL BE APPLIED A MINIMUM OF ONE (1) WEEK AFTER THE PAVING OPERATIONS ARE COMPLETE. THEN, A MINIMUM OF TWO (2) ADDITIONAL THIN COATING APPLICATIONS SHALL BE COMPLETED A MINIMUM OF TWO (2) WEEKS AFTER THE FIRST COATING APPLICATIONS HAVE BEEN COMPLETED (A MINIMUM OF THREE (3) WEEKS AFTER THE PAVING OPERATIONS ARE COMPLETED).

#### 8.3.6 PROTECTION

AFTER APPLICATION OF THE PAINT, ALL MARKINGS SHALL BE PROTECTED FROM DAMAGE UNTIL THE PAINT IS DRY. ALL SURFACES SHALL BE PROTECTED FROM DISFIGURATION BY SPATTER, SPLASHES, SPILLAGE OR DRIPPINGS OF PAINT.

#### 8.3.7 MATERIAL REQUIREMENTS

RAPID DRY PAINT: THE PAINT SHALL CONFORM WITH THE RAPID DRY PAINT SPECIFIED IN THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREENBOOK", 2012 EDITION, SECTION 214.

## **9.0 THERMOPLASTIC – CROSSWALK, “STOP” LEGEND AND STOP BAR**

STRIPING SHALL BE CONFORMING SECTION 84, “TRAFFIC STRIPES AND PAVEMENT MARKINGS”, AND SECTION 85, “PAVEMENT MARKERS” OF THE CALTRANS STANDARD SPECIFICATIONS, EXCEPT THAT SECTION 84-2.03C SPRAYABLE THERMOPLASTIC WILL NOT BE ALLOWED. ALL THE PAINTED TRAFFIC STRIPES SHALL BE APPLIED IN THREE-COATS. EXISTING OR CONFLICTING STRIPING SHALL BE REMOVED AS SPECIFIED ON THE PLANS BY GRINDING OR OTHER ABRASIVE MEAN JUST ENOUGH TO REMOVE IT AND AVOID TO CREATE A RECESSED SURFACE. THE SURFACE WHERE THE STRIPES AND MARKINGS WERE REMOVED SHALL BE COVERED WITH FOG SEAL COMPLETELY. IN THE CASE OF THE PAVEMENT MARKING REMOVAL, THE FOG SEALED SURFACE SHALL BE SQUARED TO THE OUTER LIMITS OF THE MARKING AND SHALL BE COVERED COMPLETELY. STRIPING AND PAVEMENT MARKINGS SHALL NOT BE APPLIED BEFORE 14 DAYS OF FOG SEAL OR ASPHALT CONCRETE PLACEMENT. SURFACE CLEANING AND PREPARATION SHALL BE PERFORMED WITH MECHANICAL WIRE BRUSHING ACCORDING TO SECTION 84-1.03D SURFACE PREPARATION. STRIPING INSTALLATION AND REMOVAL SHALL BE PAID AT THE CONTRACT LUMP SUM AS SHOWN ON THE STRIPING PLAN AND IN ACCORDANCE TO SECTION 84 OF CALTRANS STANDARD SPECIFICATIONS. THE RESPECTIVE CONTRACT LUMP SUM PRICE SHALL INCLUDE FULL COMPENSATION FOR FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, AND INCIDENTALS FOR DOING ALL THE WORK, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

- PROTECT EXISTING STRIPES AND MARKERS.
- CROSSWALK STRIPES - THERMOPLASTIC
- “STOP” LEGEND AND STOP BAR - THERMOPLASTIC
- SURFACE CLEANING AND PREPARATION
- 3 - COATS ON ALL STRIPING
- ALL PAVEMENT MARKERS SHALL BE THERMOPLASTIC

## **10.0 MANHOLE/VALVE FRAMES AND COVERS**

ALL MANHOLE FRAMES AND COVERS, VALVE BOXES AND LIDS, AND OTHER SIMILAR EXISTING UTILITIES SHALL BE RAISED TO THE GRADE OF THE FINISHED PAVEMENT SURFACE BY THE CONTRACTOR, IN ACCORDANCE WITH THE UTILITY OWNER’S REQUIREMENTS FOR EACH UTILITY TO BE ADJUSTED. MANHOLE FRAMES AND COVERS, AND SIMILAR UTILITY COVERS SHALL BE LOWERED A MINIMUM OF 3 INCHES BELOW THE DESIGN PAVEMENT SURFACE PRIOR TO THE INSTALLATION OF A.C. PAVEMENT. MANHOLE FRAMES AND COVERS AND OTHER LIDS SHALL BE RAISED AFTER PAVING OPERATIONS HAVE OCCURRED. 8-INCH WIDE, 8-INCH DEEP CONCRETE COLLARS SHALL BE POURED CONCENTRIC WITH THE OUTSIDE OF VALVE EXTENSION RISERS 3/8 INCHES BELOW THE FINISH PAVEMENT SURFACE. A ONE (1) FOOT WIDE, ONE (1) FOOT DEEP CONCRETE COLLAR SHALL BE POURED CONCENTRIC WITH THE OUTSIDE OF ALL MANHOLE FRAMES AND COVERS 3/8 INCHES BELOW THE SURFACE OF THE PAVEMENT. MANHOLE FRAMES AND COVERS SHALL BE RAISED WITH CONCRETE GRADE RINGS 3/8 INCHES BELOW THE NEW STREET PAVEMENT SURFACE ELEVATION. THE MANHOLE FRAME AND COVERS AND VALVE EXTENSION RISERS AND COVERS SHALL BE RAISED 3/8 INCHES BELOW THE PAVEMENT GRADE AFTER PAVING OPERATIONS ARE COMPLETE.

## **11.0 ASPHALT**

THE ASPHALT CONCRETE MIX SHALL MEET SECTION 39 OF THE LATEST CALTRANS STANDARD SPECIFICATIONS AND THE FOLLOWING REQUIREMENTS:

THE AGGREGATE BASE SHALL BE 1/2 - INCH MAXIMUM, MEDIUM.

THE ASPHALT BINDER SHALL BE PG 70-10 IN ACCORDANCE WITH THE APPROVAL HOT MIX DESIGN.

THE ASPHALT CONCRETE SHALL BE TYPE “A” AS SET FORTH IN THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, SECTION 39, LATEST EDITION.

THE CONTRACTOR SHALL SUBMIT AN APPROVED, SIGNED, AND VERIFIED JOB MIX FORMULA (JMF) ON CALTRANS FORM CEM-3513 TO THE DISTRICT AND CONSTRUCTION MANAGER DURING THE SUBMITTAL PHASE FOR APPROVAL, 15 DAYS PRIOR TO THE BEGINNING OF THE WORK.