BOOK 1

NOTICE, PLANS & SPECIAL PROVISIONS

PAVEMENT REHABILITATION PROJECT – PHASE 3

City Project No. 210/211/212

Approved by: Scott Ottmar, P.E.
Interim City Engineer

CITY OF SEASIDE
Department of Public Works
April 1, 2020

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PROJECT NO.: 210/211/212

The Technical Specifications contained herein have been prepared by or under the direction of the following Registered Person:

CIVIL

Frank S. Lopez 04/1/2020

Frank Lopez, P.E.
Registered Civil Engineer, CA 74581, Exp. 12/31/2021
Harris & Associates, Inc.

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CITY OF SEASIDE
Notice Inviting Bids
PAVEMENT REHABILITATION PROJECT – PHASE 3

PUBLIC NOTICE IS HEREBY GIVEN that the City of Seaside will receive sealed bids for the above stated project in the office of the City's Deputy City Manager – Administrative Services, located at City Hall, 440 Harcourt Avenue, Seaside, CA 93955, until **2:00 pm on May 6, 2020,** at which time all bids will be publicly opened and read aloud.

The scope of the work will consist of all labor, material, equipment and services necessary to complete the work identified in plans titled **PAVEMENT REHABILITATION PROJECT – PHASE 3** and in the specifications, including but not limited to:

> The work includes, but is not necessarily limited to, the furnishing of all labor, materials, equipment, and services necessary for, and reasonably incidental to paving, reconstructing concrete curb, gutter & sidewalk, curb ramps, valley gutter, curb extensions, storm drain improvements, sanitary sewer improvements, and signing and striping, as shown or indicated in the Drawings and Specifications. The project is located at various streets within City of Seaside, Monterey County.

A mandatory pre-bid conference shall be held on **April 15, 2020 at 2:00 pm**, at the Council Chambers, 440 Harcourt Avenue, Seaside, CA 93955. Due to COVID-19 and current social distancing and public gathering requirements, the City may be required to change the in person mandatory pre-bid conference meeting to a telephone/video conference call. Bidder is responsible to check the City's website where the project is advertised to be aware of any updates to the status of the meeting.

Copies of the Bid Documents will be available for free on the City's website at www.ci.seaside.ca.us or can be purchased from the City of Seaside Public Works office: 440 Harcourt Avenue, Seaside, CA 93955; by telephone - (831) 899-6825. There is a nonrefundable fee of $150.00 charged for the plans and specifications and an additional $15.00 mailing fee to be paid in advance of mailing.

The quantities shown in the proposal forms are approximate only and given as a basis for the comparison of bids. The City does not expressly or by implication assert that the actual amount of work will correspond herewith and reserves the right to increase or decrease the amount of any portion of the work or to omit portions of the work as may be deemed necessary.

Bidders are required to sign and submit the bid forms provided in the Proposal and Contract book. No bid will be considered unless it is made on a proposal form furnished by the City and is accompanied by a bid bond for ten percent (10%) of the bid amount. The successful bidder shall furnish a Labor and Materials Bond, a Performance Bond, and a Surety Bond. The successful bidder will be required to secure a City Business License before commencing work on the project and must possess a Class A General Contractors license or a combination of Class C-8 7 C-12 Licenses at the time the contract is awarded.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in Monterey County, in which the work is to be done have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, available from the California Department of Industrial Relations' Internet web site at http://www.dir.ca.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Bidders are responsible to check the website (www.ci.seside.ca.us/bids) prior to the Bid opening to obtain any addenda information. Submittal of a signed Bid shall be evidence that the Bidder has obtained this information and that the Bid is based on any changes contained therein.

Notice is also hereby given that all Bidders may be required to furnish a sworn statement of their financial responsibility, technical ability and experience before award is made to any particular Bidder.

Provision is made for security substitution on payment withholds as provided in Public Contract Code Sections 22200 and 22300.

The City reserves the right to reject any or all bids and the right to waiver minor irregularities or informalities in any bid proposal.

CITY OF SEASIDE
Public Works Department
_____/s/ _____
Scott Ottmar, PE Date
Interim City Engineer

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CITY OF SEASIDE

Special Provisions Volume I

PAVEMENT REHABILITATION PROJECT – PHASE 3

SECTION 1. SPECIFICATIONS AND PLANS

1.01 GENERAL. The work embraced herein shall be done in accordance with these special provisions and the Standard Specifications of the State of California Department of Transportation dated 2015 sections 1-99, insofar as the same may apply, which specifications are hereinafter referred to as the "Standard Specifications."

Whenever in these special provisions attention is directed to specific portions of the Standard Specifications, such direction is not exclusive and shall not be interpreted as excluding other applicable provisions of said specifications.

The following General Provisions of the Standard Specifications do not apply:

Section No.	Section Name
2-1.15	Disabled Veteran Business Enterprises
2-1.18	Small Business and Non–Small Business Subcontractor Preferences
2-1.27	California Companies
2-1.31	Opt Out of Payment Adjustments for Price Index Fluctuations
3-1.08	Small Business Participation Report
9-1.07	Payment Adjustments for Price Index Fluctuations
9-1.16C	Materials on Hand
9-1.16F	Retentions

In the event of conflict in the contract documents, the order of precedence shall be as follows:

1. Governing ranking of Contract parts in descending order is:

    1.1. Permits and licenses
    1.2. Project Plans
    1.3. Special Provisions
    1.4. Supplemental project information
    1.5. Revised Standard Specifications
    1.6. Standard Specifications
    1.7. Revised Standard plans
    1.8. Standard Plans

2. Written numbers and notes on a drawing govern over graphics
3. Detail drawing governs over a general drawing
4. Specific specification governs over a general specification
5. Specification in a section governs over a specification referenced by that section

1.02 DEFINITIONS AND TERMS.

Specifications: Standard specifications, revised standard specifications, and special provisions.

1. standard specifications: Specifications standard to Caltrans construction projects. These specifications are in a book titled *Standard Specifications, State of California, California State Transportation Agency, Department of Transportation*, dated 2015 published by the California Department of Transportation.
2. revised standard specifications: New or revised standard specifications. These specifications are in a section titled Revised Standard Specifications of a book titled "Contract Documents, Plans and Special Provisions."
3. special provisions: Specifications specific to the project. These specifications are in sections titled "Special Provisions Volume I" and "Special Provisions Volume II" of a book titled "Contract Documents, Plans and Special Provisions".

Whenever in the Standard Specifications, the terms "State of California," "Department of Transportation," "Director," "Division of Highways," "Chief Engineer," "Engineer," or "Laboratory" are used, the following terms shall be substituted therefore and any reference to any of the above terms shall be understood and interpreted to mean and refer to such substituted terms as follows:

"State of California," substitute "City of Seaside."
"Department of Transportation" -- the "Seaside City Council."
"Director"-- the "Seaside City Manager."
"Division of Highways"-- the "Public Works Department of the City of Seaside."
"Engineer" or "Chief Engineer"-- the "City Engineer," acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.
"Laboratory"-- the contract laboratory of the City of Seaside or such other laboratory as may be authorized by the City to test materials and work involved in the contract.

1.03 CONTRACTOR'S COPIES OF CONTRACT DOCUMENTS.

The Engineer will supply the Contractor with two (2) full-size sets and one pdf set of contract documents that include the plans and specifications. Maintain at least one complete set of plans and specifications at the site of construction in good condition and at all times available to the Engineer. Additional copies of the contract documents, if required, can be furnished by the Engineer at the cost of reproduction.

1.04 PAYMENT. Full compensation for work specified in the Special Provisions Volume I are included in the payment for the bid items involved unless:

1. Bid item for the work is shown on the Bid Item List
2. Work is specified as change order work

SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 GENERAL. The bidder's attention is directed to the provisions in Section 2, "Bidding," of the Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of the proposal form and the submission of the bid. Proposal forms are provided in a separate book entitled Book 2 “Contract Documents” for Pavement Rehabilitation Project – Phase 3.

The Bidder's Bond Statement mentioned in the last paragraph in Section 2-1.34, “Bidder’s Security” of the Standard Specifications will be found following the signature page of the Proposal in the Proposal and Contract Book.

Failure of the bidder to fulfill the requirements of the Special Provisions for submittals required to be furnished after bid opening may subject the bidder to a determination of the bidder's responsibility in the event it is the apparent low bidder on a future public works contracts.

2.02 FEDERAL LOBBYING RESTRICTIONS. Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier sub recipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase if $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
(3) A change in the officer(s), employees(s), or Member(s) contacted to influence or attempt to influence a covered Federal Action.

2.03 DISADVANTAGED BUSINESS ENTERPRISE (DBE). Federal aid projects must comply with the requirements of section 2-1.12 of the Standard Specifications.

2.04 EXAMINATION OF SPECIFICATIONS, SPECIAL PROVISIONS, AND WORK SITE. The bidder shall examine carefully the site of the work contemplated and the proposal, specifications, and contract forms therefore. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality and quantities of work to be performed, materials to be furnished, and as to the requirements of the specifications, these special provisions, and the contract.

If any party contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the specifications or proposed contract documents, or finds discrepancies in or omissions from the specifications, shall submit to the City a written request for an interpretation or correction thereof. The party submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the proposed documents prior to bid opening will be made only by addendum duly issued, and a copy of such addenda will be mailed to each person receiving a set of such documents. The City will not be responsible for any other explanations or interpretations of the proposed documents. **No request will be reviewed or heard within seventy-two (72) hours of bid opening.**

The bidder shall perform or make any investigations or studies he deems necessary to evaluate the site conditions and bid on the construction operations necessary to complete the project under this Contract. No additional compensation will be made for such investigations. All investigations shall be coordinated with the City and shall be subject to all applicable City standards and ordinances.

2.05 PROPOSAL FORMS. All proposals shall be made upon the forms obtained from the City. Proposals submitted on forms other than those issued by the City will be disregarded. All bids shall be presented under sealed cover, plainly marked "Proposal" and identifying the project name and number.

2.06 REJECTION OF PROPOSALS CONTAINING ALTERATIONS ERASURES, OR IRREGULARITIES. Proposals may be rejected if they show any alteration of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind.

2.07 PROPOSAL GUARANTY. All bids shall be accompanied by cash, cashier's or certified check, or by bidder's bond made payable to the City of Seaside and executed as surety by some corporation authorized to issue surety bonds in the State of California, for an amount equal to at least ten percent of the total bid amount. No bid shall be considered unless cashiers' or certified check, or bidder's bond is enclosed therewith.

2.08 WITHDRAWAL OF PROPOSAL. Any bid may be withdrawn at any time prior to, but not after, the hour fixed in the public notice for the opening of bids, provided that a request in writing, executed by the bidder or his duly authorized representative, for the withdrawal of such bid, is filed with the City Engineer. The withdrawal of a bid shall not prejudice the right of a bidder to file a new bid.

2.09 PUBLIC OPENING OF PROPOSALS. Proposals will be opened and read publicly at the time and place indicated in the Notice to Bidders. Bidders or their authorized agents and the public are invited to be present.

2.10 DISQUALIFICATION OF BIDDERS. The City will not consider more than one proposal from an individual, firm, or partnership, a corporation, or an association under the same or different names. A Contractor may be interested in one bid as prime Contractor and another as subcontractor, providing no collusion exists. Proposals in which the prices are unbalanced may be rejected.

2.11 COMPETENCY OF BIDDERS. No bid will be accepted from or contract awarded to a Contractor to whom a proposal form has not been issued by the Engineer or who has not successfully performed on projects of similar character and scope of proposed construction. Submit a completed Bidder's Information Statement with your proposal using the form provided by the City.

2.12 PERMITS AND LICENSES. Comply with Section 5-1.20B, "Permits, Licenses, Agreements, and Certifications," of the Standard Specifications and these special provisions.

Additionally, Contractor must:

- Hold a valid City of Seaside business license for the duration of this contract.
- Possess a Class A General Contractors License, or a combination of Class C-8 & C-12 Contractors License
- Obtain all applicable permits at no additional cost to the City
- Obtain City of Seaside no-fee encroachment permit

SECTION 3. AWARD AND EXECUTION OF CONTRACT

3.01 GENERAL. The bidder's attention is directed to the provisions in Section 3, "Contract Award and Execution," of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

Bid protests are to be delivered to the following address: 440 Harcourt Avenue, Seaside, CA 93955

The contract shall be executed by the successful bidder and shall be returned, together with the contract bonds, to the City so that it is received within 10 days, not including Saturdays, Sundays and legal holidays, after the bidder has received the contract for execution. Failure to do so shall be just cause for forfeiture of the proposal guaranty. The executed contract documents shall be delivered to the following address: **Public Works, 440 Harcourt Avenue, Seaside, CA 93955.**

3.02 AWARD OF CONTRACT. The City reserves the right to reject any or all bid proposals and to waive minor irregularities or informalities in any bonds or in any proposals. **Bids are required for all the work including bid alternate packages**. The award of contract, if awarded, will be made within sixty calendar days to the lowest responsible bidder whose proposal complies with all the requirements prescribed. **The City reserves the right to award only the base bid package and/or in any combination with bid alternate packages.**

3.03 CONTRACT BONDS. The successful bidder shall furnish three separate bonds: a performance bond, a labor and materials bond and a surety bond. Each of the said bonds shall be executed in a sum equal to one hundred percent of the Contract price and issued by a bonding company with an A.M. Best rating of A- or better, or instrument of credit.

- Performance Bond: This bond shall guarantee the faithful performance of said contract by the Contractor. The performance bond will be held until final acceptance of the project.

- Labor and Materials Bond: This bond shall be furnished as required by the terms of Division 3, Title 15, Chapter 7, Section 3247, et seq. of the Civil Code of the State of California. The Labor and Materials bond shall be held until final acceptance of the project.

- Surety Bond: This bond shall serve as surety for the guaranty requirements, as follows: The successful bidder shall unconditionally guarantee the materials for a period of one year from the date of recording of the notice of completion. The guarantee shall cover one hundred percent of all costs of repairs within this one-year period, including all costs of labor, materials, equipment and incidentals.

Whenever any surety or sureties on any such bonds, or on any bonds required by law for the protection of the claims of laborers and material suppliers, become insufficient, or the City has cause to believe that such surety or sureties have become insufficient, a demand in writing may be made of the Contractor for such further bond or bonds or additional surety, not exceeding that originally required as is considered necessary considering the extent of the work remaining to be done. Thereafter, no payment shall be made upon such contract to the Contractor or any assignees of the Contractor until such bond or bonds or additional surety have been furnished.

3.04 EXECUTION OF CONTRACT. Attention is directed to the provisions in Section 3-1.18 "Contract Execution" of the Standard Specifications. The contract shall be signed by the successful bidder and returned, together with the contract bonds, copies of insurance policies, and Certificates of Insurance within 10 days, not including Saturdays, Sundays and legal holidays, after the bidder has received the contract for execution.

3.05 FAILURE TO EXECUTE CONTRACT. Failure to execute a contract and file acceptable bonds within five calendar days after receiving notice that the contract has been awarded shall be just cause for the annulment of the award and the forfeiture of the proposal guaranty. If the successful bidder refuses or fails to execute the contract, the City Council may award the contract to the second lowest responsible bidder. On the refusal or failure of the second or third lowest responsible bidder to whom such contract is so awarded to execute the same, such bidder's guaranty shall be likewise forfeited to the City. The work may then be re-advertised or may be constructed by day labor as the City Council may decide.

3.06 RETURN OF PROPOSAL GUARANTIES. Within ten days after the award of contract, the City will return the proposal guaranties accompanying such of the proposals as are not to be considered in making the award. All other proposal guaranties will be held until the contract has been finally executed, after which they will be returned to the respective bidder whose proposal they accompany.

3.07 INDEMNIFICATION. To the fullest extent permitted by law, the Contractor agrees to indemnify, defend and hold harmless, City and any and all of City's boards, officers, employees, agents, assigns, and successors in interest through legal counsel reasonably acceptable to the City, from and against any and all claims losses, demand and expenses, including, but not limited to, attorney's fees and cost of litigation, on account of bodily injury, including death, or property damage arising out of or in any way connected to the work performed by Contractor under this agreement. Without affecting the rights of City under any provision of this agreement, Contractor shall not be required to indemnify and hold harmless City for liability attributable to the active negligence of City, provided such active negligence is determined by agreement between the parties or by the findings of a court of competent jurisdiction. In instances where City is shown to have been actively negligent and where City's active negligence accounts for only a percentage of the liability involved, the obligation of Contractor will be for that entire portion or percentage of liability not attributable to the active negligence of City.

3.08 RESPONSIBILITY FOR DAMAGE AND INSURANCE. Prior to the beginning of and throughout the duration of the work, Contractor will maintain insurance in conformance with the requirements set forth below. Contractor will use existing coverage to comply with these requirements. If that existing coverage does not meet the requirements set forth here, it will be amended to do so. Contractor acknowledges that the insurance coverage and policy limits set forth in this section constitute the minimum amount of coverage required. Any insurance proceeds available to City in excess of the limits and coverage required in this agreement and which is applicable to a given loss, will be available to City.

Contractor shall provide the following types and amounts of insurance:

1. Commercial General Liability Insurance using Insurance Services Office "Commercial General Liability" policy form CG 00 01 or the exact equivalent. Defense costs must be paid in addition to limits. There shall be no cross liability exclusion for claims or suits by one insured against another. Limits shall be no less than $2,000,000 per occurrence for all covered losses and no less than $4,000,000 general aggregate.

   Contractor's policy shall contain no endorsements limiting coverage beyond the basic policy coverage grant for any of the following:
   - Explosion, collapse or underground hazard (XCU)
   - Products and completed operations
   - Pollution liability
   - Contractual liability

   Coverage shall be applicable to City for injury to employees of contractors, subcontractors or others involved in the project. Policy shall be endorsed to provide a separate limit applicable to this project.

2. Workers Compensation on a state-approved policy form providing statutory benefits as required by law with employer's liability limits no less than $1,000,000 per accident for all covered losses.

3. Business Auto Coverage on ISO Business Auto Coverage form CA 00 01 06 92 including symbol 1 (Any Auto) or the exact equivalent. Limits shall be no less than $1,000,000 per accident, combined single limit. If Contractor owns no vehicles, this requirement may be satisfied by a non-owned auto endorsement to the general liability policy described above. If Contractor or Contractor's employees will use personal autos in any way on this project, Contractor shall provide evidence of personal auto liability coverage for each such person.

4. Excess or Umbrella Liability Insurance (Over Primary) if used to meet limit requirements, shall provide coverage at least as broad as specified for the underlying coverages. Any such coverage provided under an umbrella liability policy shall include a drop down provision providing primary coverage above a maximum $25,000 self-insured retention for liability not covered by primary but covered by the umbrella. Coverage shall be provided on a "pay on behalf' basis, with defense costs payable in addition to policy limits. There shall be no cross liability exclusion precluding coverage for claims or suits by one insured against another. Coverage shall be applicable to City for injury to employees of Contractor, subcontractors or others involved in the Work. The scope of coverage provided is subject to approval of City following receipt of proof of insurance as required herein. Limits are subject to review but in no event less than $1,000,000 per occurrence and aggregate.

Insurance procured pursuant to these requirements shall be written by insurers that are admitted carriers in the state of California and with an A.M. Best rating of A- or better and a minimum financial size VII.

Contractor and City agree as follows:

1. Contractor agrees to endorse the third party general liability coverage required herein to include as additional insureds City, its officials, employees and agents, using standard ISO endorsement No. CG 2010 with an edition date of 1985. Contractor also agrees to require all contractors, subcontractors, and anyone else involved in any way with the project contemplated by this agreement to do likewise.

2. Any waiver of subrogation express or implied on the part of City to any party involved in this agreement or related documents applies only to the extent of insurance proceeds actually paid. City, having required that it be named as an additional insured to all insurance coverage required herein, expressly retains the right to subrogate against any party for sums not paid by insurance. For its part, Contractor agrees to waive subrogation rights against City regardless of the applicability of any insurance proceeds, and to require all contractors, subcontractors or others involved in any way with the project(s) contemplated by this agreement, to do likewise.

3. All insurance coverage maintained or procured by Contractor or required of others by Contractor pursuant to this agreement shall be endorsed to delete the subrogation condition as to City, or to specifically allow Contractor or others providing insurance herein to waive subrogation prior to a loss. This endorsement shall be obtained regardless of existing policy wording that may appear to allow such waivers.

4. It is agreed by Contractor and City that insurance provided pursuant to these requirements is not intended by any party to be limited to providing coverage for the vicarious liability of City, or to the supervisory role, if any, of City. All insurance coverage provided pursuant to this or any other agreement (express or implied) in any way relating to City is intended to apply to the full extent of the policies involved. Nothing referred to here or contained in any agreement involving City in relation to the project(s) contemplated by this agreement is intended to be construed to limit the application of insurance coverage in any way.

5. None of the coverages required herein will be in compliance with these requirements if they include any limiting endorsement of any kind that has not been first submitted to City and approved of in writing.

6. All coverage types and limits required are subject to approval, modification and additional requirements by the City, as the need arises. Contractor shall not make any reductions in scope of coverage (e.g. e1imation of contractual liability or reduction of discovery period) that may affect City's protection without City's prior written consent.

7. Proof of compliance with these insurance requirements, consisting of binders of coverage, or endorsements, or certificates of insurance, at the option of City, shall be delivered to City at or prior to the execution of this Agreement. In the event such proof of any insurance is not delivered as required, or in the event such insurance is canceled at any time and no replacement coverage is provided, City has the right, but not the duty, to obtain any insurance it deems necessary to protect its interests under this or any other agreement and to pay the premium. Any premium so paid by City shall be charged to and promptly paid by Contractor or deducted from sums due Contractor, at City option.

8. Contractor agrees to endorse, and to require others to endorse, the insurance provided pursuant to these requirements, to require 30 days notice to City and the appropriate tender prior to cancellation of such liability coverage and notice of any material alteration or non-renewal of any such coverage, and to require contractors, subcontractors, and any other party in any way involved with the project contemplated by this agreement to do likewise.

9. It is acknowledged by the parties of this agreement that all insurance coverage required to be provided by Contractor or any subcontractor, is intended to apply first and on a primary non-contributing basis in relation to any other insurance or self-insurance available to City.

10. Contractor agrees to ensure that subcontractors, and any other party involved with the project who is brought onto or involved in the project by contractor, provide the same minimum insurance coverage required of Contractor. Contractor agrees to monitor and review all such coverage and assumes all responsibility for ensuring that such coverage is provided in conformity with the requirements of this section. Contractor agrees that upon request, all agreements with subcontractors and others engaged in the project will be submitted to City for review.

11. Contractor agrees that all layers of third party liability coverage required herein, primary, umbrella and excess, will have the same starting and expiration date. Contractor agrees further that all other third party coverages required herein will likewise have concurrent starting and ending dates.

12. Contractor agrees not to self-insure or to use any self-insured retentions or deductibles on any portion of the insurance required herein and further agrees that it will not allow any contractor, subcontractor, Architect, Engineer or other entity or person in any way involved in the performance of work on the project contemplated by this agreement to self-insure its obligations to City. If contractor's existing coverage includes a deductible or self-insured retention, the deductible or self-insured retention must be declared to the City. At that time the City shall review options with the contractor, which may include reduction or elimination of the deductible or self-insured retention, substitution of other coverage, or other solutions.

13. The City reserves the right at any time during the term of the contract to change the amounts and types of insurance required by giving the Contractor ninety (90) days advance written notice of such change. If such change results in substantial additional cost to the Contractor, the City will negotiate additional compensation proportional to the increased benefit to City.

14. For purposes of applying insurance coverage only, all contracts pertaining to the project will be deemed to be executed when finalized and any activity commences in furtherance of performance under this agreement.

15. Contractor acknowledges and agrees that any actual or alleged failure on the part of City to inform Contractor of non-compliance with any insurance requirement in no way imposes any additional obligations on City nor does it waive any rights hereunder in this or any other regard.

16. Contractor will renew the required coverage annually as long as City, or its employees or agents face an exposure from operations of any type pursuant to this agreement. This obligation applies whether or not the agreement is canceled or terminated for any reason. The insurance shall include but not be limited to products and completed operations and discontinued operations, where applicable. Termination of this obligation is not effective until City executes a written statement to that effect.

17. Contractor agrees to waive its statutory immunity under any workers' compensation statute or similar statute, in relation to the city, and to require all subcontractors and any other person or entity involved in the project contemplated by this agreement to do likewise.

18. Requirements of specific coverage features are not intended as limitations on other requirements or as a waiver of any coverage normally provided by any given policy. Specific reference to a given coverage feature is for purposes of clarification only as it pertains to a given issue, and is not intended by any party or insured to be all-inclusive.

19. Any provision in any of the construction documents dealing with the insurance coverage provided pursuant to these requirements, is subordinate to and superseded by the requirements contained herein. These insurance requirements are intended to be separate and distinct from any other provision in this agreement and are intended by the parties here to be interpreted as such.

20. All liability coverage provided according to these requirements must be endorsed to provide a separate aggregate limit for the project that is the subject of this agreement and evidencing products and completed operations coverage for not less than two years after issuance of a final certificate of occupancy by all appropriate government agencies or acceptance of the completed work by City.

21. Contractor agrees to be responsible for ensuring that no contract used by any party involved in any way with the project reserves the right to charge City or Contractor for the cost of additional insurance coverage required by this agreement. Any such provisions are to be deleted with reference to City. It is not the intent of City to reimburse any third party for the cost of complying with these requirements. There shall be no recourse against City for payment of premiums or other amounts with respect thereto.

22. Contractor agrees to obtain and provide to City a copy of Professional Liability coverage for Architects or Engineers working on this project through Contractor. City shall determine the liability limit.

SECTION 4. PROSECUTION AND PROGRESS

4.01 BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES. Attention is directed to the provisions in Section 8-1.04, “Start of Job Site Activities,” in Section 8-1.05 "Time“ and in Section 8-1.10, "Liquidated Damages;" of the Standard Specifications.

The Contractor shall begin work within 15 calendar days after the Notice to Proceed has been issued by the City of Seaside. This work shall be diligently prosecuted to completion before the expiration of **125 WORKING DAYS** beginning on the fifteenth calendar day after approval of the contract.

The Contractor shall pay liquidated damages to the City of Seaside, **the sum of $5,400 per day, for each and every calendar day's delay** in finishing the work in excess of the number of working days prescribed above.

Upon written request of the Contractor, the Engineer will add one day to the contract completion date for each working day that in the judgment of the Engineer work cannot be performed to the specifications herein due to inclement weather conditions. The Contractor shall submit such delay request to the Engineer no later than 9:00 a.m. on the workday in question.

4.02 PRECONSTRUCTION CONFERENCE. Prior to or in conjunction with issuance of the Notice to Proceed, a preconstruction conference will be held for the purpose of discussing with the Contractor the scope of work, contract drawings, specifications, existing conditions, schedule, traffic control, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution of and the satisfactory completion of the project as required. The Contractor's representative at this conference shall include all major superintendents for the work and may include major subcontractors.

At or before the preconstruction conference, submit to the Engineer a “letter of responsibility” on company letterhead indicating (1) the names and phone numbers of at least three different persons who shall be available to be contacted in case of emergency at any time during the term of the contract. (said persons must have decision-making authority within the company); and (2) the name and title of each of your officials who will be authorized to sign contract change orders, daily extra work reports, and the final pay estimate.

Weekly meetings will be scheduled by the City at the discretion of the City during the pre-construction phase and during the construction phase.

4.03 SUBCONTRACTORS. In the event that the bidder proposes to subcontract any portion of the work in an amount in excess of one-half of one percent (0.5%) of the total amount of bid, he shall complete the form included in the proposal showing the name and location of the place of business of each subcontractor and the portion of the work to be done by such subcontractor. The purchase of sand, gravel, crushed rock, batched concrete, aggregates, ready-mixed concrete and/or any other materials produced at and furnished from established and recognized commercial plants, together with the delivery of such materials to the site of the work by means of vehicles owned and operated by such plants or by recognized commercial hauling companies, shall not be considered as subcontracting under these special provisions.

4.04 SCHEDULE. A detailed progress schedule identifying the critical path method (CPM) shall be submitted for approval at the scheduled pre-construction meeting. Schedule must comply with the requirements of Section 8-1.02 “Schedule” of the Standard Specifications.

4.05 SUSPENSION OF CONTRACT. Attention is directed to Section 8-1.13, “Contractor’s Control Termination” of the Standard Specifications for requirements regarding suspension of contract.

4.06 RESOLUTION OF CONSTRUCTION CLAIMS. “Claim" means a separate demand by the Contractor for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, (3) an amount the payment of which is disputed by the City. This section applies to all public works claims of three hundred seventy-five thousand dollars [$375,000] or less. For any claim subject to this section, the following requirements apply:

1. The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

2. For claims of less than fifty thousand dollars the City shall respond in writing to any written claim within 45 days of receipt of the claim, or may request in writing within 30 days of receipt of the claim any additional documentation supporting the claim or relating to defenses or claims the City may have against the claimant.

If additional information is thereafter required, it shall be requested and provided pursuant to this section upon mutual agreement of the City and the Contractor. The City's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

3. For claims of over fifty thousand and less than or equal to three hundred seventy-five thousand dollars the owner shall respond in writing to all written claims within 60 days of receipt of the claim, or may request in writing within 30 days of receipt of the claim any additional documentation supporting the claim or relating to defenses or claims the City may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this section upon mutual agreement of the City and the Contractor. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

4. If the claimant disputes the owner's written response or the City fails to respond within the time prescribed, the claimant may so notify the City in writing either within 15 days of receipt of the City's response or within 15 days of the City's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the owner shall schedule a meet and confer conference within 30 days for settlement of the dispute.

5. If following the meet and confer conference the claim or any portion remains in dispute, the claimant may file a claim pursuant to Chapter 1 [commencing with Section 900] and Chapter 2 [commencing with Section 910] of Part 3, Division 3.6, Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subsection (1) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

The following procedures are established for all civil actions filed to resolve claims subject to this article:

(1) Within 60 days, but no earlier than 30 days, following the filing of response pleading, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

(2) If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 [commencing with Section 1141.10] of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act of 1986, Article 3 [commencing with Section 2016] of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

In addition to Chapter 2.5 [commencing with Section 1141.10] of Title 3 of Part 3 of the Code of Civil Procedure, [A] arbitrators shall, when possible, be experienced in construction law, and [B] any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

4.07 MEASUREMENT AND PAYMENT. Measurement and payment shall conform to the applicable provisions of Section 9 of the Standard Specifications, except as the referenced section is modified herein.

The City does not share costs. You are responsible for the entire cost of flagging and BMP maintenance.

When an item of work is designated as **Final Pay (F)** in the Engineer's Estimate, the estimated quantity for that item of work shall be the final pay quantity, unless the dimensions of any portion of that item are revised by the Engineer, or the item or any portion of the item is eliminated. If the dimensions of any portion of the item are revised, and the revisions result in an increase or decrease in the estimated quantity of that item of work, the final pay quantity for the item will be revised in the amount represented by the changes in the dimensions, except as otherwise provided for minor concrete. If a final pay item is eliminated, the estimated quantity for the item will be eliminated.

If a portion of a final pay item is eliminated, the final pay item will be revised in the amount represented by the eliminated portion of the item of work.
The estimated quantity for each item of work designated as (F) in the Engineer's Estimate shall be considered as approximate only, and no guarantee is made that the quantity which can be determined by the computations, based on details and dimensions shown on the plans, will equal the estimated quantity. No allowance will be made in the event that the quantity based computation does not equal the estimated quantity.

In case of discrepancy between the quantity shown in the Engineer's Estimate for a final pay item and the quantity or summation of quantities for the same item shown on the plans, payment will be based on the quantity shown in the Engineer's Estimate.

4.08 PROGRESS PAYMENTS. Attention is directed to Section 9-1.16, "Progress Payments," of the Standard Specifications.

After acceptance of the contract pursuant to the provisions in Section 9-1.17, "Payment After Contract Acceptance," of the Standard Specifications, the amount, if any, payable for a contract item of work in excess of the maximum value for progress payment purposes hereinabove listed for the item, will be included for payment in the first estimate made after acceptance of the contract.

The City shall retain five percent of such estimated value of the work done as aforesaid as part security for the fulfillment of the contract by the Contractor, and shall pay monthly to the Contractor while carrying on the work the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the contract. No such estimate or payment shall be required to be made when, in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of the contract, or when, in his judgment, the total value of the work done since the last estimate amounts to less than Three hundred dollars. No such estimate or payment shall be construed to be an acceptance of any defective work or improper materials.

The City of Seaside, by and through the appropriate officer or officers, may at its option and at any time retain out of any amounts due the Contractor sufficient to cover any unpaid claims provided that sworn statements of said claims shall have been filed in the office of the City Engineer.

No progress payments will be made for any materials on hand which are furnished but not incorporated in the work.

4.09 FINAL PAYMENT. Within fifteen days after the completion of the work, make a semi-final estimate in writing of the final quantities of work done under the contract and the value of such work and submit such estimate to the Engineer. The City will retain five percent of such estimated value of the work done and will pay to the Contractor the balance not retained as aforesaid after deducting therefrom all amount to be kept and all amounts to be retained under the provisions of the contract.

Within fifteen days after submission to the City of the semi-final estimate, submit to the Engineer your written statement of all claims for additional compensation due under the contract. Claim statements must comply with the requirements of Section 9-1.17D(2), "Claim Statement" of the Standard Specifications.

Upon your approval, or if you file no claims within said period of fifteen days, the Engineer will issue a final written estimate, and the City will pay you the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept or retained under the provisions of the contract. If you, within said period of fifteen days, file claims, the Engineer will then consider and investigate such claims, and will make such revision in the final quantities as he may find to be due, and will then make and issue a final written estimate. The City will pay the amount so found due, after deducting therefrom all previous payments and amounts to be retained under the provisions of the contract.

All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The final estimate shall be conclusive and binding against both parties to the contract on all questions relating to the performance of the contract and the amount of work done thereunder and compensation therefor, except in the case of gross error.

Payment on the final estimate shall not be due and payable in less than thirty-five days after the date of recording of the notice of completion in the county recorder's office.

The City, by and through the appropriate officer or officers may at its option and at any time retain out of any amounts due the Contractor sums sufficient to cover any unpaid claims provided that sworn statements or said claims shall have been filed in the Public Works Department.

Attention is directed to Section 5.06, "Prompt Payments," of these Special Provisions.

4.10 CLEANUP. Attention is directed to Section 4-1.13, "Cleanup," of the Standard Specifications. Ensure that all vehicles leaving the site area are in a condition so that no dirt or debris will be spilled upon the City's streets or highways. Full compensation for all cleanup work is considered included in the various contract bid items, and no additional payment will be made therefor.

4.11 HOURS OF WORK. The hours of construction shall be begin at 8:00 am and end at 5:00 pm Monday through Friday. No work except maintenance of the traveled way or maintenance of completed work shall be performed on Saturday, Sunday or legal holidays without prior written approval of the Engineer. Perform overtime and shift work only when approved by the Engineer. You must pay the City's costs for inspection and management of overtime and shift work.

4.12 PUBLIC NOTIFICATION. Prior to beginning work and during the course of the work, deliver notices to each business and resident adjacent to the project area, and to residents of adjacent streets that may have access restricted during construction. Submit notices and proposed delivery schedule for each at the pre-construction conference. Notices in English and Spanish shall be posted as door hangers at each address at least on month prior to the work and within two (2) weeks of restricting access. Notice must include a brief description of the work, estimated duration of access restriction, and names, email addresses and mobile phone numbers for Contractor' Project Superintendent and City contact representatives.

In addition to obtaining approval from the Seaside Police and Fire Departments in compliance with the Public Safety section of these special provisions, notify the United States Post Office (831.394.6329), Sand City & Seaside Waste Management (831.384.5000) and Monterey-Salinas Transit (831.899.2555) by telephone two workdays prior to implementing street and lane closures for this project.

Full compensation for providing public notification shall be considered as included in the contract lump sum price paid for "Mobilization," and no separate payment will be made therefor.

SECTION 5. GENERAL

5.01 LABOR NONDISCRIMINATION. Comply with the requirements of Section 7-1.02I(2) “Nondiscrimination," of the Standard Specifications.

5.02 PREVAILING WAGE. The general prevailing wage rates are determined by the Director of Industrial Relations, for the County of Monterey. Current prevailing wage rates can be found in “General Prevailing Wage Determinations made by the Director of Industrial Relations” (wage determinations) at the Division of Labor Statistics and Research, Prevailing Wage Unit, P. O. Box 420603, San Francisco, CA 94142, (415) 703-4774, or at DIRs website at http://www.dir.ca.gov/. These wage rates are not included in the Bid book for the project. Changes, if any, to the general prevailing wage rates will be available at the same location. The City will include a copy of the applicable State prevailing wage rates with the contract.

The Contractor will be required to maintain and distribute certified payroll records in compliance with Section 1776 of the California Labor Code. The Contractor shall register as specified in Labor Code section 1771.1(a). The project is subject to compliance monitoring and enforcement by the Department of Industrial Relations in accordance with Labor Code sections 1725.5 (contractor registration requirements and criteria), 1771.1 (requirement to register as a condition to bid or work on public works), and 1771.4 (project compliance monitoring).

The labor surcharge, equipment rental rates, and the delay factors for each classification of equipment are listed in the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates."

5.03 PUBLIC SAFETY. The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.04, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

A. Excavations**--**The near edge of the excavation is 12 feet or less from the edge of the lane, except:

1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
2. Excavations less than 1 foot deep.
3. Trenches less than 1 foot wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m in diameter.
4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical: horizontal).
6. Excavations protected by existing barrier or railing.

B. Temporarily Unprotected Permanent Obstacles--The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.

C. Storage Areas--Material or equipment is stored within 12 feet of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.04, "Public Safety," of the Standard Specifications, shall be offset a minimum of 15 feet from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 1 foot transversely to 10 feet longitudinally with respect to the edge of the traffic lane. If the 15 feet minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

Approach Speed of Public Traffic (Posted Limit) (Miles Per Hour)	Work Areas
Over 45 Miles Per Hour	Within 6 feet of a traffic lane but not on a traffic lane
35 to 45 Miles Per Hour	Within 3 feet of a traffic lane but not on a traffic lane

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 10 feet without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

In addition to any other measures pursuant to the provisions of Section 7-1.04, "Public Safety," of the Standard Specifications, your attention is directed to the following special provisions. Maintain access to all fire hydrants within the project area to the satisfaction of the Seaside Fire Department. Obtain their written approval prior to using any hydrant within the City of Seaside.

When constructing curb ramps at an intersection, the Contractor must provide safe passage to all pedestrians around the area of work at all times. The Contractor must use the latest California MUTCD standards when determining the number of curb ramps that can be constructed at once at the intersection.

Construction is within City owned right-of-way, and you must make provisions for the safe passage of public traffic through the necessary portions of the work at all times, unless full closure of the right-of-way is required and authorized by the Engineer.

Maintain access to adjacent parking areas by motor vehicles at all times, and make provisions for the safe passage of pedestrians around walkway and parking areas at all times.

Prior to the closure of any portion of a street, written approval shall be obtained from the Seaside Fire Department (831.899.6790), the Seaside Police Department (831.899.6280), and the Engineer. Fire and Police Departments shall immediately be notified when such street is reopened. Keep the City police and fire departments informed of obstructions in either public or private roads caused by reason of your operations.

Comply with the latest California MUTCD for all items related to traffic control.

The fact that rain or other causes, either within or beyond your control, may force suspension or delay of the work shall in no way relieve you of responsibility for maintaining traffic through the project and providing local access as specified herein. At all times, keep on the job such materials, force, and equipment as may be necessary to keep roads, streets, and driveways within the project open to traffic and in good repair, and expedite the passage of such traffic, using such force and equipment as may be necessary.

Should you fail, in the opinion of the Engineer, to provide all the materials, force, and equipment necessary to maintain traffic through the work as set forth herein, the City, upon the recommendation of the Engineer, may take steps necessary to suspend the contract. The City may then, upon such suspension, because such work as may be necessary to maintain traffic to be done and may charge same against you and your sureties.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the Engineer public traffic will be better served and the work expedited. Such deviations shall not be adopted until the Engineer has indicated his written approval. All other modifications will be made by contract change order.

5.04 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES. Comply with the requirements of Section 14-11, “Hazardous Waste and Contamination” of the Standard Specifications.

Contractor shall take appropriate action in accordance with all guidelines and policies applicable to this work associated with the Code of Federal Regulations (CFR), Environmental Protection Agency (EPA), National Institute for Occupational Safety and Health (NIOSH), and the Occupational Safety and Health Administration (OSHA) to protect employees and public. Contractor shall submit a written Plan describing sequence of demolition and description of measures to protect employees and public and prevent contamination from entering the environment. Plan shall include air monitoring during relevant phases of demolition and post construction performed by an individual qualified to conduct air sampling.

If delay of work in the area delays the current controlling operation, you will be compensated for the delay in conformance with the provisions in Section 8-1.07, "Delays," of the Standard Specifications.

5.05 SUBCONTRACTING. Comply with the requirements of Section 5-1.13, “Subcontracting” of the Standard Specifications. The Contractor shall perform, with the Contractor’s own organization, contract work amounting to not less than 50 percent of the original total contract price, except that any designated “Specialty Items” performed by subcontract may be deducted from the original total contract price before computing the amount of work required to be performed by the Contractor with the Contractor’s own organization. Attention is also directed to Section 2, "Proposal Requirements and Conditions," Section 3, "Award and Execution of Contract," elsewhere in these Special Provisions. A sheet for listing the subcontractors is included in the proposal.

5.06 PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS. The City of Seaside shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the agency, 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 agency

SECTION 6. NOT USED

SECTION 7. MATERIALS

7.01 SOURCE OF SUPPLY AND QUALITY OF MATERIALS. All materials required to complete the work under the attached contract shall be furnished by the Contractor unless otherwise specified. Upon approval of the contract, the Contractor shall notify the Engineer of the proposed source of supply of all materials to be used in the work, and shall furnish samples of such materials as may be required by the Engineer for testing.

At the request of the Engineer, the Contractor shall submit manufacturer/supplier certificates of compliance for any or all materials used in the construction of the project. If certification is so requested, said certificates must be reviewed and accepted in writing by the Engineer prior to any use or installation of the material on the project.

7.02 TRADE NAMES AND ALTERNATIVES. Attention is directed to Section 6-1.05, "Specific Brand or Trade Name and Substitution," of the Standard Specifications.

Requests for substitutions will be considered only if received within 10 calendar days from the date of award. Requests received after this period may be accepted or rejected at the discretion of the Engineer.

Prepare and submit each request for substitution to the City in accordance with the procedures for submittals. Provide the following additional information:

1. An explanation of the advantages to the City for accepting the substitution.
2. A comparison of significant qualities of the proposed substitution with those specified.
3. When the substitute equipment or material necessitates changes to or coordination with any portion of the work, include drawings and details showing all such changes. You must perform these changes as a part of any acceptance of substitute material or equipment.
4. A statement indicating the substitution's effect on the construction schedule compared to the construction schedule without acceptance of the substitution. Indicate the effect of the proposed substitution on overall contract time.
5. Cost information, including a proposal of the net change, if any, in the Contract Sum.
6. Certification that the substitution is equal to or better in every respect to that required by Contract Documents, and that it will perform adequately in application indicated. Include Contractor's waiver of rights to additional payment or time extensions that may be necessary because of the substitution's failure to perform adequately.

Substitution requests will be considered by the Engineer when the following conditions are satisfied, as determined by the Engineer; otherwise, requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The specified product or method of construction cannot be provided within the specified Contract Time. The request may not be considered if the product or method cannot be provided as a result of failure of the Contractor to pursue the work promptly or coordinate activities properly.
5. A substantial advantage is offered the City, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the City may be required to bear. Additional responsibilities for the City may include additional compensation to the Consulting Engineer/Architect for redesign and evaluation services, increased cost of other construction by the City or separate contractors, and similar considerations.
6. The specified product or method of construction cannot receive necessary approval by a regulatory agency, and the requested substitution can be approved.
7. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the compatibility.
8. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
9. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution can provide the required warranty.

Submittal of shop drawings, product data or samples that do not comply with the Contract Documents does not constitute a valid request for substitution, nor does it constitute acceptance of a substitution.

The Engineer will notify the Contractor of acceptance or rejection of the proposed substitution within 28 calendar days of receipt. If a

decision on use of a substitute cannot be made within these time limits, the product originally specified shall be used.

No extension of contract time will be allowed through your failure to either transmit requests for substitution sufficiently in advance of the work, or on account of processing time outside the time limits noted above.

Should the originally specified materials not be available within the specified contract time due to your failure to order and obtain such materials, you are responsible to provide, install and maintain a temporary "equal" material as approved by the City, and for replacing such temporary material with the required product upon availability. You are responsible for all costs associated with the installation, maintenance, and removal of the temporary product and the installation of the specified product, including an extended one year warranty to cover the final product installed. Sufficient funds to cover the purchase and installation of the specified product will be withheld until such work has been completed and accepted by the City.

The use of any material or equipment so offered will be permitted only after written acceptance of the Contractor's offer by the Engineer. Such acceptance by the Engineer shall not relieve the Contractor from full responsibility from the efficiency, sufficiency, and quality, and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified in the Contract Documents.

7.03 SUBMITTALS. This section supplements the requirements of section 5-1.23, "Submittals" of the Standard Specifications.

All submittals must be electronic.

Accompany submittals with a transmittal form. Use a separate form for each item, class of material, equipment, and for items specified in separate specification sections. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are functionally related such that expediency indicates checking or review of the group or package as a whole. Assign a sequential number to each submittal and note the number on the transmittal form accompanying each item submitted.

Submittal numbers shall have the following format:

XX.YY (NN-N.NN)

Where:

XX = the sequential submittal number
YY= the sequential number of the submittal ("01" for the first submittal, "02" for the second submittal, etc.)
(NN-N.NN) identifies the specification section number that requires the submittal.

For example, if the twelfth submittal made is the quality control plan for sign panels, as required by section 56-2.01A, the initial submittal would be 12.01 (56-2.01A). If a re-submittal were required, it would be 12.02 (56-2.01A).
In general, allow 10 working days for Engineer's review of submittals. Allow 20 working days for Engineer's review of submittals that include shop drawings or calculations.

SECTION 8. OTHER REQUIREMENTS

8.01 GENERAL. Section 8 includes specifications for miscellaneous project-specific work, and bid item descriptions.

8.03 PROJECT APPEARANCE. The Contractor shall maintain a neat appearance to the work. In any area visible to the public, the following shall apply, at no additional cost to the City:

When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. No stockpiling is allowed.

8.04 WORK SEQUENCING. Work sequencing shall conform to the provisions in Section 10-1.02, "Work Sequencing," of the Standard Specifications, the plans, and these special provisions.

The Contractor's sequence of construction operations shall provide for the maintenance of full and uninterrupted utility services, except that minor planned interruptions of utility services may be permitted, with prior written approval of the Engineer. The Contractor shall submit to the City a written notice of the intent to disrupt services at least ten days prior to the planned disruption. Said notice shall specify the dates and time, nature of the service disrupted, and a complete list of properties affected. It shall be the Contractor's responsibility to notify occupants of properties affected of any services interruptions and to coordinate the work necessitating the interruption with the appropriate owners, or their authorized agents, of the utilities involved. Approval by the Engineer to disrupt services shall be in no way relieve the Contractor of his responsibility for damage or preservation of property as specified in Section 5-1.36, "Property and Facility Preservation" and Section 5-1.39, "Damage Repair and Restoration " of the Standard Specifications.
Sequence work in accordance with the "Stage Construction and Traffic Handling Plan" found in the plans.

8.05 DUST CONTROL. Control the dust resulting from construction of this project regardless of whether it is the result of your operations or caused by public traffic only.

8.06 WATERING. The application of water for dust control, landscaping, and other uses shall conform to Section 10-6 and applicable sections of the Standard Specifications, these special provisions, and as directed by the Engineer. Provide all the water required to perform any operations and work under this Contract.

8.07 OBSTRUCTIONS. Attention is directed to Section 5-1.36, "Property and Facility Preservation" of the Standard Specifications. Section 1540(a) 1 of Construction Safety Orders (Title 8) California Administrative Code, Section 1540 states:

> "Prior to opening any excavation, effort shall be made to determine whether underground installations i.e., sewer, water fuel, electric lines etc., will be encountered and, if so, where such underground installations are located. When the excavation approaches the approximate location of such installation, the exact location shall be determined by carefully probing or hand digging; and, when it is uncovered, adequate protection shall be provided for the existing installation. All known owners of underground facilities in the area concerned shall be advised of proposed work at least two working days prior to start of actual excavation."

Contractor shall call 811 and pothole as first order of business in order to determine the exact locations of the underground installations prior to any digging.

No extra payment will be allowed for the removal, replacement, repair, or possible increased cost caused by inadvertent or planned interception and breaking of underground obstructions which may exist.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by you to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter or pipelines operating at pressures greater than 60 psi (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 volts, either directly buried or in duct or conduit which do not have concentric grounded conductors or other effectively grounded metal shields or sheaths. If such facilities are not located on the plans in both alignment and elevation, no work shall be performed in the vicinity of said facilities, except as provided herein for conduit to be placed under pavement, until the owner, or his representative, has located the facility by potholing, probing, or other means that will locate and identify the facility. Any conduit to be installed under pavement in the vicinity of such facilities shall be placed by the trenching method as specified.

You are responsible for the protection of utility facilities and services. Rearrangement of underground utilities may be required at various locations. You are not liable to the various utility owners nor to the City of Seaside for the cost of utility rearrangements. You must:

(1) Coordinate the efforts of the utility owners in identifying all possible points of conflict between existing underground utilities and improvements to be constructed under this Contract, and

(2) Coordinate your construction activities with the utility owners to expedite the rearrangement of existing underground utilities as necessary to construct the improvements as shown on the plans.

If utility conflicts exist when you start construction, be prepared to schedule your work around these conflicts. While you will be granted time extensions without penalty for utility delays if such delays impede your overall progress, no extra payment will be made for utility delays.

Notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure.

8.08 MAINTAINING TRAFFIC.

Attention is directed to Sections 7-1.03, "Public Convenience," 7-1.04, "Public Safety," and 12, "Temporary Traffic Control," of the Standard Specifications and to the Section 5.03, "Public Safety" in these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from his responsibility as provided in said Section 7-1.04. Lane closures shall conform to the provisions in section 12 of these special provisions.

At the pre-construction meeting, submit Traffic Control Plan(s) conforming to the latest *California MUTCD*, Part 6 "Temporary Traffic Control," and the requirements of these Special Provisions for acceptance by the Engineer.

Notify local authorities of your intent to begin traffic control work at least 5 working days before work is begun. Cooperate with local authorities relative to handling traffic through the area and make your own arrangements relative to keeping the working area clear of parked vehicles.

The City does not share cost. Contractor bears the entire cost of flagging, including furnishing all flaggers, stands, towers and the transportation of flaggers.

The provisions in this section shall in nowise relieve you from your responsibility for providing for the safety of the public as provided in said Section 7-1.04 nor relieve you from your responsibility for damage as provided in Section 5-1.39, "Damage Repair and Restoration "

If not otherwise specified, whenever vehicles or equipment are parked on the shoulder within 6 feet of a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 cones or portable delineators shall be used for the taper. A C23 (Road Work Ahead) or C24 (Shoulder Work Ahead) sign shall be mounted on a telescoping flag tree with flags. The flag tree shall be placed where directed by the Engineer.

The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays and designated legal holidays, after 3:00 p.m. on Fridays and the day preceding designated legal holidays, and when construction operations are not actively in progress.

> Designated legal City holidays are: New Year's Day, Dr. Martin Luther King's Birthday, President's Day, Cesar Chaves Day Observed, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day Following Thanksgiving Day, Day before and Christmas Day. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Unless otherwise specified, provide a minimum of one paved traffic lane for each direction of travel, not less than 10 feet wide, for use by public traffic.

Contractor must provide entry and exit routes for residences located on one way streets during construction phase.

8.09 COOPERATION. In the event construction is under way by other forces or by other contractors within or adjacent to the limits of the work specified, cooperate with the other contractors or other forces to the end that any delay or hindrance to their work will be avoided. Each contractor shall be responsible to the other for damage to work, to persons or property caused to the other by their operations, and for loss caused the other due to unnecessary delays or failure to finish the work within the time specified for completion.

SECTION 9. BID ITEM DESCRIPTION

9.01 BID - ITEMIZED BELOW AS SPECIFIED BY THE PROJECT

Bid Item 1. Mobilization

The lump sum price paid for **"Mobilization"** shall be considered as full compensation for mobilization as specified herein, including but not limited to notifications, project records and documents, obtaining all required permits, licenses, and paying all fees, moving on the site any equipment required for the operations, preparatory work, coordination and cooperation, inquiring information about other anticipated projects in the project areas and coordination to minimize delays, project meetings, developing construction water supply, providing on-site sanitary facilities, developing a temporary construction staging area, subcontractor insurance and bonds, Contractor insurance and bonds, demobilization and all other mobilization work, and no additional payment shall be allowed therefor.

Bid Item 2. Traffic Control System

The contract lump sum price paid for **"Traffic Control System"** shall include full compensation for traffic control plans, including revisions to the satisfaction of the Engineer, furnishing all labor, including traffic control supervision, materials (including signs and barricades), flaggers, tools, equipment and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of traffic control system including all lane closures necessary for any activities during the life of the project and as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer and no additional compensation will be allowed therefor.

All flagging costs will be paid as part of "Traffic Control" in lieu of provisions in Section 12-1.03, "Flagging Costs," of the Standard Specifications. The City does not share costs. Contractor is responsible for full cost of flagging.

Furnishing and installing funding signs as shown on the plans, as specified in these special provisions, and as directed by the Engineer is paid as part of "Traffic Control" and no additional compensation will be allowed therefor.

After the City has applied and obtained the Encroachment Permit, the contractor must apply and obtain the double permit required by Caltrans for all work to be performed by the Contractor in Caltrans right of way. The Contractor is responsible for determining the need for and obtaining the requisite permits.

The Contractor shall submit two (2) final signed copies of all Contractor obtained permits to the Engineer prior to beginning any work. Once obtained, the Contractor shall be responsible for complying with all permit conditions.

Bid Item 3. Water Pollution Control

"Water Pollution Control" will be paid for as a lump sum. Payment will be made according to Section 13-2.04 of the Standard Specifications, with 75% of the item total paid upon authorization of the WPCP and the final 25% of the item paid upon project acceptance.

Bid Item 4. Critical Path Method (CPM) Schedule

Preparing, maintaining and implementing of the **"Critical Path Method (CPM) Schedule"** is paid for as a lump sum.
The CMP schedule shall be kept up to date and coordinated with the City and the Engineer. A 3 week look ahead shall be provided at every weekly meeting in order to discuss the specific upcoming activities and any changes that may occur. The CPM schedule shall be updated immediately upon request from the City and/or Engineer.

Bid Item 5. Lead Compliance Plan

"Lead Compliance Plan" is paid as lump sum on submission of final Lead Compliance Plan.

Full compensation for removal and disposal of yellow traffic stripe and markings shall be considered as included in the contract price for the various bid items and no separate payment will be made therefor.

Bid Item 6. Trench Sheeting, Shoring, and Bracing

The contract lump sum price paid for **"Trench Sheeting, Shoring and Bracing"** includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in Trench Sheeting and Shoring and Bracing, including but not necessarily limited to installation, maintenance and removal, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as accepted by the City Engineer.

Bid Item 7. Wedge Grind and Conform Grind

"Wedge Grind And Conform Grind" is measured and paid per square yard and shall include furnishing all labor, equipment, transportation, and materials necessary to perform the work complete in place in conformance with these special provisions, project plans, and as directed by the engineer. Refer to project plans for allowable wedge grind lengths and maximum allowable slopes.

Full compensation for furnishing asphalt concrete for temporary tapers and for constructing, maintaining, removing and disposing of the tapers shall be considered as included in the contract price paid per square yard for grinding pavement and no additional compensation will be allowed therefor.

Bid Item 8. Base Failure Repair

"Base Failure Repair" is measured and paid per TON and shall be considered as full compensation for furnishing all labor, equipment, materials, , tools, equipment, transportation, and incidentals; and for performing all of the work involved as detailed in the Standard Specifications, these Special Provisions, and as directed by the Engineer and no additional compensation will be allowed therefor. No adjustment to bid price shall be made due to oil price fluctuation.

The bid item measured in TON includes the removal of pavement for identified "base repair" locations in project plans. In addition the bid item includes the installation of hot mix asphalt and tack coat per depths identified in the project plans. All Base Repair shall be performed AFTER wedge grind and or conform grind is performed.

You will receive no additional payment for base failure repair beyond the area marked out by the Engineer due to availability or limitations of your equipment.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Payment for Tack Coat shall be considered as included in the contract prices bid for various items of work shown on the bid schedule and no additional compensation shall be allowed therefor.

Refer to project plans for base repair locations, depths, and dimensions.

Bid Item 9. Leveling Course (0.5 inch)

"Leveling Course (0.5 inch)" is measured and paid per TON and shall include furnishing all labor, equipment, transportation, and materials necessary to perform the work complete in place in conformance with these special provisions and as directed by the Engineer. The contractor shall supply weight tags to the Engineer on a daily basis. Quantities of asphalt concrete will be determined and approved by the Engineer by using the tags. Asphalt concrete weight tags shall contain the project name and indicate tonnage used on each street.

Payment for Tack Coat shall be considered as included in the contract prices bid for various items of work shown on the bid schedule and no additional compensation shall be allowed therefor.
Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.
Refer to project plans for leveling course locations.

Bid Item 10. Hot Mix Asphalt (Type A) – Overlay

Payment for **"Hot Mix Asphalt (Type A)-Overlay"** shall be at the contract price per TON and shall be considered full compensation for all labor, materials, tools, equipment, transportation, and incidentals to do all the work involved. The contractor shall supply weight tags to the Engineer on a daily basis. Quantities of asphalt concrete will be determined and approved by the Engineer by using the tags. Asphalt concrete weight tags shall contain the project name and indicate tonnage used on each street.

Payment for Tack Coat shall be considered as included in the contract prices bid for various items of work shown on the bid schedule and no additional compensation shall be allowed therefor.

HMA Overlay Treatments vary in depths from 1.75 inches to 2 inches for all street segments proposed in the project plans. Refer to the construction details in the project plans for exact location and depths of proposed HMA Overlays.

The quantity TON for the "2-inch Fill" for the "2-inch Mill and Fill" on Broadway Avenue is included in this bid item. Refer to construction details in project plans for exact "2-inch mill and fill" limits of proposed asphalt on Broadway Avenue.

Bid Item 11. Hot Mix Asphalt (Type A) – Full Depth HMA

Payment for **"Hot Mix Asphalt (Type A)-Full Depth HMA"** shall be at the contract price per TON and shall be considered full compensation for all labor, materials, tools, equipment, transportation, and incidentals to do all the work involved. The contractor shall supply weight tags to the Engineer on a daily basis. Quantities of asphalt concrete will be determined and approved by the Engineer by using the tags. Asphalt concrete weight tags shall contain the project name and indicate tonnage used on each street.

Payment for Tack Coat shall be considered as included in the contract prices bid for various items of work shown on the bid schedule and no additional compensation shall be allowed therefor.

Full Depth HMA Treatments vary in depths from 3 inches to 6.5 inches for all street segments proposed in the project plans. Refer to construction details in the project plans for exact location and depths of proposed Full Depths HMA treatments.

Bid Item 12. Grind and Removal of Existing Roadway

The Contract unit price per cubic yard for "**Grind and Removal of Existing Roadway"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals, and for doing all the work including excavation, grinding, removal, and disposal of materials such as fabric and road mesh, grading and compaction, complete in place as specified in these Special Provisions, as shown on the Plans and as directed by the Engineer and no additional compensation will be allowed therefor.

"Grind and Removal of Existing Roadway" includes the removal of existing asphalt and existing aggregate base for Full Depth HMA treatments as identified in the plans. Refer to construction details in project plans for grind and removal locations and depths for Full Depth HMA.

"Grind and Removal of Existing Roadway" also includes the 2" grind and removal of existing asphalt for portions of Broadway Avenue. This item is referred to as "2-inch Mill and Fill" on Broadway Avenue. Refer to construction details in project plans for exact 2" grind and removal limits of existing asphalt on Broadway Avenue.

Existing structural section for Fremont Boulevard includes a 12-inch concrete slab. Contractor shall no excavate or impact the structural integrity of the existing 12-inch concrete slab. Road mesh may be encountered in Fremont Boulevard. Contractor to verify the presence of road mesh prior to construction. Price for removal of road mesh is included in the contract unit price cubic yard for this bid item.

This item is revocable if not used and Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Prior to digging, the contractor shall call 811 and pothole as first order of business in order to determine exact utility horizontal locations and depths.

Bid Item 13. Unsuitable Subgrade

The Contract unit price per cubic yard for "**Unsuitable Subgrade"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work including excavation, removal, disposal of materials, fabric, grading and compaction, complete in place as specified in these Special Provisions, as shown on the Plans and as directed by the Engineer and no additional compensation will be allowed therefor.

This item is revocable if not used and Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Bid Item 14. Microsurface Maintenance Treatment

The contract price paid per square yard for **"Microsurface Maintenance Treatment"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals and for doing all the work involved in micro surfacing, complete in place, as specified in the State Standard Specifications and these special provisions, and as directed by the Engineer.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Bid Item 15. Crack Seal

The contract price paid per linear foot for **"Crack Seal,"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals and for doing all the work involved in sealing cracks, complete in place, as specified in the State Standard Specifications and these special provisions, and as directed by the Engineer.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Bid Item 16. Full Depth Reclamation (FDR)

The contract price paid per square yard for **"Full Depth Reclamation (FDR)"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all of the work involved for full depth reclamation including pulverizing existing asphalt concrete, base, and subgrade soil to a total depth shown on the plans, regrade, off haul of pulverized material to landfill, micro cracking, and tack coat as detailed in the Standard Specifications, these Special Provisions, and the plans.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Bid Item 17. Cement Content for Full Depth Reclamation

The contract price paid per TON for **"Cement Content for Full Depth Reclamation"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all of the work involved for incorporating the cement content into the full depth reclamation construction process.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Bid Item 18. Remove Concrete

The contract price paid per square foot for **"Remove Concrete"** is Final Pay and shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all of the work involved for removal and disposal of existing concrete curb, gutter, sidewalk, driveway, valley gutter and other concrete features as detailed in the Standard Specifications, these Special Provisions, and the plans.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply to this bid item.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 19. Minor Concrete – Type A2-6 Curb and Gutter

The contract price paid per linear foot for curb and gutter concrete improvements under "**Minor Concrete – Type A2-6 Curb and Gutter"** is Final Pay and -shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all work involved as detailed in the Standard Specifications, these Special Provisions, and the plans and typical sections.

The price for Minor Concrete – Type A2-6 Curb and Gutter bid item includes subgrade preparation, furnishing, placing and compaction of aggregate base, all costs associated with incidental work such as construction staking, the cost of restoring adjacent pavement and backfilling the adjacent area with native material to accommodate curb ramp as shown on plans shall be included in the unit cost of the work and no additional compensation will be allowed therefor. Hot Mix Asphalt used for the HMA plug adjacent to concrete curbs is paid as part of the respective bid item and no additional compensation will be allowed therefor.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Item 20 Thru 22. Minor Concrete

The contract price paid per square foot for various concrete improvements under "**Minor Concrete (Sidewalk and Bulb-outs)", "Minor Concrete (6" Thick Concrete at Curb Ramps and Driveways)", "Minor Concrete – Valley Gutter"** is Final Pay and -shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all work involved as detailed in the Standard Specifications, these Special Provisions, and the plans and typical sections.

The price for Minor Concrete bid items includes subgrade preparation, furnishing, placing and compaction of aggregate base, all costs associated with incidental work such as construction staking, the cost of restoring adjacent pavement and backfilling the adjacent area with native material to accommodate curb ramp as shown on plans shall be included in the unit cost of the work and no additional compensation will be allowed therefor. Hot Mix Asphalt used for the HMA plug adjacent to concrete curbs is paid as part of the respective bid item and no additional compensation will be allowed therefor.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Prior to digging, the contractor must call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 23. Detectable Warning Surface

The contract price paid per square foot for **"Detectable Warning Surface"** shall include full compensation for furnishing all labor, materials, tools, equipment, transportation, installation, complete in place, as shown on the plans, as specified in the Standard Specifications, these special provisions, and as shown on the project plans.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Item 24 Thru 27. Storm Drain Pipe Improvements

The Contract Price Paid per linear foot for "**Construct 15-inch Diameter Storm Drain Pipe", "Construct 18-inch Diameter Storm Drain Pipe", "Construct 24-inch Diameter Storm Drain Pipe", "Construct 30-inch Diameter Storm Drain Pipe", "Construct 36-inch Diameter Storm Drain Pipe"** shall include all work associated with the installation of storm drain pipe as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, spoil disposal, dewatering, installation of bedding, furnishing and placing pipe and fittings, connection to new manholes, backfill, compaction, pipeline testing, cleaning, temporary paving, surface restoration of all public and private improvements including, concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings. Restoration of pavement is included in this bid item only when proposed project paving is not taking place. The length paid shall be measured from the outside edge of manhole/inlet structure.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 28. Storm Drain Manhole

The Contract Price Paid per each for "**Construct New Storm Drain Manhole per City Standard S-401"** shall include full compensation for all work associated with the installation of storm drain manholes as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, spoil disposal, dewatering, installation of bedding, furnishing and placing pipe and fittings, backfill, compaction, manhole testing, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings. Restoration of pavement is included in this bid item only when proposed project paving is not taking place.

Storm Drain manholes shall be constructed to match proposed pavement elevations for HMA overlay streets, Full Depth Reclamation (FDR) streets, and Full Depth HMA Street. Newly constructed manholes shall not be raised or lowered after installation. Manholes shall be adjusted to proposed grade during installation.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 29. Storm Drain Type GO Catch Basin

The Contract Price Paid per each for "**Construct New Type GO Catch Basin"** shall include full compensation for all work associated with the installation of the drainage inlets including, but not limited to, furnishing all labor, materials, tools, equipment, transportation, and incidentals, as noted on the plans, per the Standard Specifications and these special provisions.

Full compensation for earthwork related to installing drainage inlets shall be considered as included in the items of work involved and no additional compensation will be allowed therefor. Restoration of pavement is included in this bid item only when proposed project paving is not taking place.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 30 Thru 32. Remove Storm Drain Pipe

The Contract Price Paid per linear foot for "**Remove 15-inch Diameter Storm Drain Pipe", "Remove 18-inch Diameter Storm Drain Pipe", "Remove 30-inch Diameter Storm Drain Pipe",** shall include all work associated with the removal of existing storm drain pipe as indicated on the plans. The work shall include but not limited to saw cutting, grinding, trenching, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of pipes, spoil disposal, backfill, compaction, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings. The length paid shall be measured from the outside face of manhole/inlet structure. Restoration of pavement is included in this bid item only when proposed project paving is not taking place.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 33. Remove Existing Storm Drain Catch Basin

The Contract Price Paid per each for "**Remove Existing Storm Drain Catch Basin"** shall include all work associated with the removal of existing storm drain catch basin as indicated on the plans. The work shall include but not limited to saw cutting, grinding, trenching, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of pipes, spoil disposal, backfill, compaction, cleaning, temporary paving, surface restoration of all public and private improvements including asphalt paving, concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 34. Remove Existing Storm Drain Manhole

The Contract Price Paid per each for "**Remove Existing Storm Drain Manhole",** shall include all work associated with the removal of existing storm drain manhole as indicated on the plans. The work shall include but not limited to saw cutting, grinding, trenching, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, spoil disposal, backfill, compaction, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings. Restoration of pavement is included in this bid item only when proposed project paving is not taking place.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 35. Connect New Storm Drain Pipe to Existing Manhole

The Contract Price Paid per each for "**Connect New Storm Drain Pipe to Existing Manhole",** shall include all work associated with the connection of new storm drain pipe to existing storm drain manhole as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of abandoned pipes, spoil disposal, dewatering, backfill, compaction, pipeline testing, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 36. Plug and Abandon Existing Storm Drain Pipe

The Contract Price Paid per each for **"Plug and Abandon Existing Storm Drain Pipe"** includes furnishing for all labor, tools, equipment, and materials necessary to plug the identified existing pipe shown in the contract plans.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal and depths.

Bid Item 37. Sanitary Sewer Manhole

The Contract Price Paid per each for "**Construct New Sanitary Sewer Manhole per City Standard S-401"** shall include full compensation for all work associated with the installation of sanitary sewer manholes as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of abandoned pipes, spoil disposal, dewatering, installation of bedding, furnishing and placing pipe and fittings, backfill, compaction, pipeline testing, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings.

Sanitary Sewer manholes shall be constructed to match proposed pavement elevations for HMA overlay streets, Full Depth Reclamation (FDR) streets, and Full Depth HMA Street. Newly constructed manholes shall not be raised or lowered after installation. Manholes shall be adjusted to proposed grade during installation.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 38. Sanitary Sewer Pipe Improvements

The Contract Price Paid per linear foot for "**Construct 15-inch Diameter Sanitary Sewer Pipe",** shall include all work associated with the installation of sanitary sewer pipe as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of abandoned pipes, spoil disposal, dewatering, installation of bedding, furnishing and placing pipe and fittings, connection to new or existing manholes, backfill, compaction, pipeline testing, cleaning, temporary paving, surface restoration of all public and private improvements including concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings. The length paid shall be measured from the center of

manhole/inlet structure to connection of existing pipe.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 39. Connect new 15-inch diameter Sanitary Sewer Pipe to existing 15-inch Diameter Sewer Pipe

The Contract Price Paid per each for "**Connect new 15-inch Sanitary Sewer Pipe to existing 15-inch Diameter Sewer Pipe",** shall include all work associated with the connection of news sanitary sewer pipe to existing sanitary sewer pipe as indicated on plans. The work shall include but not limited to all construction staking, potholing, site clearing, saw cutting, grinding, trenching, dewatering and bypass pumping if required, removal and disposal of asphalt (including reinforcing fabric, if present), concrete pavement, removal of abandoned pipes, spoil disposal, dewatering, installation of bedding, furnishing and placing pipe and fittings, connection to new or existing manholes, backfill, compaction, pipeline testing, cleaning, temporary paving, surface restoration of all public and private improvements including asphalt paving, concrete paving, driveway, striping, landscaping and all incidentals required by these specifications and drawings.

Prior to digging, the contractor shall call 811 and pothole to determine exact utility horizontal locations and depths.

Bid Item 40-47. Adjust Utility Covers to Grade

"Adjusting Utility Covers to Grade" shall be measured and paid for by each unit designated in the contract Bid Schedule. All quantities will be determined from actual counts. The unit costs shall govern regardless of the method used to make the adjustments. No compensation will be allowed for the work performed by the owners of the facilities.

Facilities to be adjusted to finish grade after paving operations shall include, but not be limited to, monument covers, storm drain manhole covers, sanitary sewer manhole covers, gas valve covers, water valve covers, sewer cleanout covers, telephone box covers, and electrical vault covers.

In the event that existing utility covers are in inadequate condition, contractor must replace existing utility covers and boxes with new. Contractor shall request new utility covers and boxes from the local utility agencies. If utility agencies are not able to provide new covers and boxes, Contractor shall purchase new covers and boxes and install. Inadequate condition is determined by the Engineer. New utility covers and boxes purchased by Contractor after approval of Engineer will be paid by unit each.

"Inadequate Condition" of existing utility covers and boxes is at the discretion of the engineer.

The above contract unit costs shall be considered full compensation for furnishing all labor, materials, tools, equipment, transportation, and incidentals; and for performing all of the work involved as detailed in the Standard Specifications, these Special Provisions, and the plans and typical sections and no additional compensation will be allowed therefore.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Item 48. Thru 51. Relocate Utilities, Relocate Roadside Sign, Relocate Bus Stop Bench

"Relocating Utilities", "Relocate Roadside Sign" and "Relocate Bus Stop Bench" shall be measured and paid for by each unit designated in the contract Bid Schedule. All quantities will be determined from actual counts. The unit costs shall govern regardless of the method used to relocate the facilities. No compensation will be allowed for the work performed by the owners of the facilities.

Facilities to be relocated due to conflict with proposed improvements shall include, but not be limited to, fire hydrants, water valves, roadside signs, and bus stop benches.

The contract unit price paid for **"Relocating Utilities", "Relocate Roadside Sign" and "Relocate Bus Stop Bench**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved in installing sign, including post, foundation, panel, hardware, complete in place as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. Multiple sign panels installed on one post will count as one sign. Work involved to relocate bus stop benches part of this bid item.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Items 52. Thru 59. Thermoplastic Traffic Stripe

Payment for "**Thermoplastic Traffic Stripe"** shall be measured per lineal feet. Layout and placement of temporary tabs will be included in the unit price bid for each striping detail and no additional compensation will be allowed therefor.

Measurement and payment for traffic striping, characters, arrows, pavement markers, raised pavement markers and reflective pavement markers shall be paid on a unit cost basis as identified in the Bid Schedule.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved with placing thermoplastic or and markings, including pavement markers, as specified in these Special Provisions, as shown on the plans and as directed by the Engineer, shall be considered as included in the contract lineal foot price for Thermoplastic of the various kinds identified in the Bid Schedule, and the contract square unit price for Thermoplastic or Painted Markings, as identified in the Bid Schedule, and no additional compensation will be allowed.

Bid Items 60 Thru 61. Pavement Marking

Payment for **"Pavement Marking"** shall be measured per square feet. Layout and placement of temporary tabs will be included in the unit price bid for each striping detail and no additional compensation will be allowed therefor.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved with placing thermoplastic markings, including pavement markers, as specified in these Special Provisions, as shown on the plans and as directed by the Engineer, shall be considered as included in the contract square foot price for Thermoplastic of the various kinds identified in the Bid Schedule, and no additional compensation will be allowed.

Bid Items 62. Pavement Marker-Blue Reflective Marker

Payment for "**Pavement Marker-Blue Reflective Marker"** shall be quantified per each. Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved with placing new blue reflective marker as specified in these Special Provisions, as shown on the plans and as directed by the Engineer, shall be considered as included in the contract price per each.

Bid Items 63. Traffic Sign

Payment for "**Traffic Sign"** shall be quantified per each. Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved with placing new traffic signs including post, foundation, panel, hardware, complete in place as shown on plans and specified in the Standard Specifications and Special Provisions as directed by the Engineer, shall be considered as included in the contract price per each.

Bid Item 64. Delineators

Payment for **"Delineators"** shall be quantified per each.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved with placing Delineators, as specified in these Special Provisions, as shown on the plans and as directed by the Engineer, shall be considered as included in the contract price per each as identified in the Bid Schedule, and no additional compensation will be allowed.

Bid Item 65. Remove Detector Loops

"Remove Detector Loops" shall be measured and paid for by each unit designated in the contract Bid Schedule. All quantities will be determined from actual counts. The unit costs shall govern regardless of the method used to remove the Detector Loops. No compensation will be allowed for the work performed by the owners of the facilities.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Items 66. Video/Radar Hybrid Signal Detection Camera

The Contract Unit Price Paid per each for **"Video/Radar Hybrid Signal Detection Camera"** shall include all work associated with the installation of the video camera, video detection processor, extension module, video surge suppressor, remote communications interface, monitor, system hardware, and installation of cable in existing conduit from each video/hybrid signal detection camera to the controller cabinet.

Changed quantity payment adjustments under Section 9-1.06 of the Standard Specifications shall not apply.

Bid Items 67. Rectangular Rapid Flashing Beacon Assembly (RRFB)

The Contract Unit Price Paid per each for **"Rapid Flashing Beacon"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in installing roadside signs, RRFB assembly, and conduit as specified in these Special Provisions, and as directed by the Engineer, and no additional allowances shall be made therefore.

Bid Items 68. Pedestrian Push Button

The Contract Unit Price Paid per each for **"Pedestrian Push Button"** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in installing push button assembly and post as specified in these Special Provisions, per Caltrans Standard Plans, and as Directed by the Engineer. No additional allowances shall be made therefore.

SPECIAL PROVISIONS VOLUME II - TECHNICAL SPECIFICATIONS

10.01 MOBILIZATION

Refer to California Public Contracts Code §10104 for Mobilization requirements, Section 1-1.07B of the Standard Specifications for the definition of Mobilization and Section 9-1.16D of the Standard Specifications.

Mobilization includes 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 the establishment of all offices, staging areas and other facilities necessary for work on the project, and for all other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site.

The contractor shall photograph or video the entire site(s), and each existing improvement prior to construction.

Note that the City has not provided a laydown area for the Contractor. The Contractor shall be responsible for establishing a laydown area and coordinate such location with the City.

Contractor shall document all design changes and prepare red lined plans representing the finished field conditions.

On a daily basis, the Contractor shall clean all portions of the project area. This work includes removing all debris, street sweeping, clearing Underground Service Alert marks, and power washing sidewalks.

10.02 TRAFFIC CONTROL SYSTEM

Attention is directed to Sections 7-1.03, "Public Convenience," 7-1.04, "Public Safety," 12, "Temporary Traffic Control," of the Standard Specifications, Section 5.03 “Public Safety” and Section 8.08 “Maintaining Traffic” of these special provisions.

All traffic control will be provided by the Contractor. Nothing in these Special Provisions shall be construed as relieving the Contractor from his/her responsibility as provided in said Section 7-1.03.

Any deviation in traffic control from the references mentioned above will not be allowed unless advance written approval is granted by the Engineer. Minor deviations from the traffic requirements of this section, which do not significantly change the cost of the work, may be permitted upon the written request of the Contractor, if in the opinion of the Engineer public traffic will be better served and work expedited. Such deviations shall not be adopted until the Engineer has indicated his written approval. All other modifications will be made by contract change order.

Contractor shall provide all markers, signs, delineators, barricades, portable flashing beacons, flaggers, etc. necessary to ensure the safe passage of traffic through the work zone.

If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and shall restore the component to its original location.

The Traffic Control System shall be placed, maintained and removed under the direct supervision of a person who is certified by either the Institute of Transportation Engineers (ITE), the American Traffic Safety Services Association (ATSSA), the International Municipal Signal Association (IMSA) or the State of California Department of Transportation (Caltrans) as having successfully completed training in the design and operation of work zone traffic control.

The Contractor shall designate in writing the person who shall have the responsibility for supervising the activities associated with the Traffic Control System. Traffic Control Plan as per Section 7-1.04 Public Safety, along with proof of certification, shall be submitted in writing at the Preconstruction meeting to the Engineer for approval. Any changes to plan, shall be provided to the Engineer for his approval, two (2) working days in advance of any planned activity, which requires traffic control.

Contractor shall prepare Traffic Control Plans required for the approval of the Caltrans Encroachment Permit.

10.03 CONSTRUCTION AREA SIGNS

Construction area signs shall be furnished, installed, maintained, and removed, when no longer required, in accordance with the provisions in Section 12, "Temporary Traffic Control," of the Standard Specifications and these Special Provisions.

The Contractor shall notify the appropriate regional notification center for operations of subsurface installations at least two (2) working days, but not more than fourteen (14) calendar days, prior to commencing any excavation for construction area sign posts.

All excavations required to install construction area signs shall be performed by hand methods without the use of power equipment.

The location for each sign shall be approved in advance by the Engineer. Signs shall be mounted on 4" x 4" new wood posts, 7' above grade. The required size of each of the signs shall be 36" x 36" for W20-1, "Road Work Ahead," and 48" x 48" for G20-2, "End Road Work." The sign panels for all construction area signs, including temporary signs, shall conform to Section 12-3.11 of the Standard Specifications.

Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items and no separate payment will be made therefor.

10.04 CLEARING AND GRUBBING

Clearing, Grubbing and Removals shall conform to the provisions of Section 17-2 "Clearing and Grubbing" of the State Standard Specifications and these Special Provisions. Clearing, Grubbing and Removals shall consist of thoroughly sweeping and cleaning surfaces prior to resurfacing, removal and disposal of raised pavement markers, existing weeds, brush, or other objectionable material in or along the edge of areas to receive work.

Contractor shall keep existing streets free from dirt and debris at all times. Contractor shall be prepared to sweep surfaces immediately at the request of the Engineer should he deem it is necessary for safety of public and to avoid damage to properties.

When required, existing thermoplastic pavement markings shall be removed in accordance with Section 84-9 "Existing Markings" of the State Standard Specifications and all applicable state laws and regulations.

Existing pavement markers shall be removed in accordance with Section 81-8.03B of the State Standard Specifications.

Contractor shall trim overhanging limbs that may be in conflict with paving and other construction activities. Tree, roots, and bush pruning shall be performed per recommendations from a certified arborist and in accordance with "Pruning Standards," published by the Western Chapter of the International Society of Arboriculture. The certified arborist shall be approved in advance by the Engineer, and all pruning shall be done as directed by the Engineer and in the presence of the Engineer.

Contractor shall remove existing landscaping (hard and soft) only within City Right of Way which is in conflict with the new improvements.

Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items and no separate payment will be made therefor.

10.05 WATER POLLUTION CONTROL

Refer to Section 13-2 of the Standard Specifications for requirements related to development and implementation of a Water Pollution Control Program. The soil disturbance area is less than 1 acre and is therefore exempt from the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ). Refer to Section 13-4 for Job Site Management requirements, Section 13-5 for Temporary Soil Stabilization, Section 13-6 for Temporary Sediment Control, Section 13-7 for Temporary Tracking Control, and Section 13-9 for Temporary Concrete Washouts.

You are responsible for penalties assessed or levied on you or the City as a result of your failure to comply with the provisions in this section "Water Pollution Control," including, but not limited to, compliance with the applicable provisions of the Manuals, and Federal, State, and local regulations and requirements as set forth therein. Notwithstanding any other remedies authorized by law, the City may retain money due to you under the contract, in an amount determined by the City, up to and including the entire amount of Penalties proposed, assessed, or levied as a result of your violation of the Federal or State law, regulations or requirements.

10.06 CRITICAL PATH METHOD (CPS) SCHEDULE

Refer to Section 8-1.02C (1) of the Standard Specifications and Section 4.04 of these Special Provisions for preparing and maintain a critical path method schedule. The schedule must be submitted for approval during the pre-construction meeting.

Contractor shall install the Video/Radar Hybrid Signal Detection Cameras as first order of business, prior to the construction of all curb ramps, bulb outs, and pavement treatments.

City of Seaside anticipates the construction of sewer pipelines in Del Monte Avenue in the same time frame as the proposed project. Contractor shall coordinate project schedule with City of Seaside in order to construct Phase 3 concurrently with other projects in Del Monte Avenue.

Where road improvements are near a school, it is the Contractors responsibility to perform all construction during times that school is not in session. Contractor shall verify school calendars with City of Seaside and plan accordingly in the CPM schedule.

Links to school websites are below:

- Monterey Unified School District: https://www.mpusd.net/
- International School of Monterey: https://www.ismonterey.org/

10.07 LEAD COMPLIANCE PLAN

Yellow thermoplastic and yellow paint traffic stripe exist along the length of the project. Residue produced when yellow thermoplastic and yellow paint are removed may contain heavy metals in concentrations that exceed thresholds established by the California Health and Safety Code and may produce toxic fumes when heated. The existing pavement markings must be tested for lead content. If the evaluation indicated elevated levels of lead and chromium, residue from the removed markings must be treated as a hazardous waste, and must be handled and disposed of in accordance with the requirements outlined below.

Prepare and submit a Lead Compliance Plan in accordance with Section 7-1.02K (6) (j) (ii) of the Standard Specifications. Before submission to the Engineer, the Lead Compliance Plan must be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Plan must be submitted to the Engineer at least 7 days prior to beginning removal of yellow thermoplastic and yellow paint. Perform all removal work according to the Plan.

The removed yellow thermoplastic and yellow paint must be disposed of at a Class 1 disposal facility or a Class 2 disposal facility permitted by the Regional Water Quality Control Board in conformance with the requirements of the disposal facility operator within 5 days after accumulating 220 pounds of residue and dust.

Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic and yellow painted traffic stripe, the removed residue, including dust, must be contained and collected immediately. Sweeping equipment must not be used. Collection must be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective methods approved by the Engineer.

10.08 WEDGE GRIND AND CONFORM GRIND

Cold planing in accordance with Section 39-3.04 of the Standard Specifications shall be used for pavement wedge removal and conform grinding at pavement transitions. Planing machine shall have cutter head at least 4 feet wide. On streets designated for overlay, contractor shall have a wedge of pavement removed to facilitate placement of overlay by wedge grinding the full length of the pavement adjacent to lip of existing gutters, and conform grinding at cross streets and at other locations shown on plans or as designated by the Engineer. Cold planing at edge of pavement shall be to depth noted on plans, below existing lip of gutter or adjacent asphalt concrete pavement.

Final cut shall result in uniform surface. Outside lines of planed area shall be neat and uniform.

If utility castings are encountered within wedge grind or conform grind area, said castings shall be protected by performing wedge removal using hand tools or other approved method and shall be adjust to finished grade as shown on plans and in conformance with these special provisions.

Wedge Grind shall be 8 feet maximum at HMA overlay conditions. On Broadway Avenue only, the wedge grind shall start at the outside edge of the outermost travel lane. Refer to Construction Detail 3 on Sheet CD-01 of the project plans.

10.09 BASE FAILURE REPAIR

Materials:

HMA for pavement failure repair must be Type A.

Asphalt binder for the HMA must be PG 64-10. The minimum asphalt binder content must be 5.0 percent. If you request and if authorized, you may reduce the minimum asphalt binder content.

The aggregate for the HMA must comply with the 3/4-inch HMA Types A and B grading.

Construction:

Place base failure repair under the Method construction process in Section 39-3.

Provide flaggers and/or traffic control to allow the Engineer to mark out base failure areas.

Base Repair depths vary for different street segments. Refer to construction details in the project plans for base repair horizontal location and proposed base repair depths.

Remove existing roadway section by grinding with a milling machine capable of cutting to a neat line. Do not damage any pavement that is to remain in place. Minimize the disturbance of materials to be left in place during removal or roadway sections.
Remove failed pavement and base rock to the required depth, then grade, water, and thoroughly compact the material remaining in place to a minimum of 95% relative compaction.

Dispose of removed material.

Apply tack coat to the bottom base rock and all vertical surfaces of the existing roadway section within the base failure repair area. Follow the “Tack Coat Application Rates for HMA” table in Section 39-2.01C (3) (f) of the Standard Specifications, using "Planed pavement".

The surface must be:

1. Textured uniformly
2. Compacted firmly
3. Without depressions, humps, and irregularities

If the base is excavated beyond the specified plane, replace it with HMA. The Department does not pay for this HMA. Damage to pavement which is to remain in place shall be repaired to a condition satisfactory to the Engineer, or the damaged pavement shall be removed and replaced with new HMA if ordered by the Engineer. Repairing or removing and replacing pavement damaged outside the limits of pavement to be reconstructed shall be at the Contractor's expense.

The HMA in the base failure areas shall be placed on the same day as the removal. The HMA shall be placed and compacted in two lifts unless shown otherwise on the plans and/or as directed by the Construction Manager. Complete base failure repair prior to opening to traffic under Section 12-4 “Maintaining Traffic” of these special provisions.

<u>Existing utilities:</u>

Existing utilities located within areas designated for base repair shall be protected-in-place unless directed otherwise by the engineer.

Survey Monuments shall be recorded at the County Records prior to work disturbance. Any that are damaged, destroyed or disturbed due to contractor’s activity shall be restored in place at the contractor’s expense.

The Contractor shall ensure that the existing survey monuments are preserved in full compliance with California Business and Professions Code, Chapter 15, 8771. To comply with this Section, the Contractor shall engage the services of a Licensed Land Surveyor.

Payment for protecting existing utilities shall be considered as included in the cost of the various items of work shown on the Bid Proposal and no additional compensation will be allowed therefor.

10.10 GRIND AND REMOVAL OF EXISTING ROADWAY

General:

This work shall consist of uniform and variable depth cold planing (or "milling" or "grinding") the existing asphalt concrete pavement and removing and disposing of grinded material as shown on the project plans. "Grind and Removal of Existing Roadway" includes the grind and removal of existing pavement and aggregate base for Full Depth HMA treatments identified in the plans. In addition, "Grind and Removal of Existing Roadway" includes the 2" grind on Broadway Avenue identified as "2-inch Mill and Fill".

The Contractor shall grind existing pavement as shown on the Plans. The presence of pavement fabric within the depth to be cold milled shall be noted on the Plans or in the Special Provisions. The surface after cold milling will be uniformly grooved or ridged unless otherwise specified in the Special Provisions. The outside lines of the milled pavement shall be neat and uniform.

Existing structural section for Fremont Boulevard includes a 12-inch concrete slab. Contractor shall no excavate or impact the structural integrity of the existing 12-inch concrete slab. Road mesh may be encountered in Fremont Boulevard. Contractor to verify the presence of road mesh prior to construction. Price for removal of road mesh is included in the contract unit price cubic yard for this bid item.

The milled pavement shall be true to grade and cross section. When a straightedge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from the edge of the straightedge more than 3/8 inch (9.5 mm) at any point, except at intersections or at changes of grade. Any areas that are not within tolerance shall be brought to grade within 1 Working Day following initial cold milling.

Cold milling operations shall be performed without damage to the remaining pavement. Whenever cold milling is adjacent to existing Portland cement concrete curbs, gutters or pavement the Contractor shall protect these improvements from damage. Any Portland cement concrete curbs gutters or pavement damaged during cold milling operations shall be repaired as directed by the Engineer at the Contractor's expense. Any Portland cement concrete curbs, gutters or pavement that is cracked or displaced shall be removed and replaced at the Contractor's expense. Replaced sections of Portland cement concrete curb, gutter or pavement shall be a minimum of 5 feet (1500 mm) in length or to the next joint.

The Contractor shall remove existing asphalt concrete overlay from gutters adjacent to any area
Specified to be cold milled, as directed by the Engineer.

Milling machines shall be specially designed for cold milling of asphalt concrete, Portland cement concrete, or a combination of asphalt and Portland cement concrete pavement. Milling machines shall conform to the following:

a. The cutting drum shall be a minimum 0[60 inches (1500 nun) wide and shall be equipped with carbide-tipped cutting teeth placed in a variable pattern to produce the desired finish.

b. Be self-propelled and capable of removing the pavement to the depth shown on the Plans.

c. Be equipped with a conveyor system that will immediately convey the milled material into a transport vehicle for disposal as specified in the Special Provisions.

d. Have the capability of spraying water at the cutting drum to minimize dust.

e. Be designed so that the operator can observe the milling operation, at all times, without leaving the controls.

f. Be adjustable for slope and depth.

g. Be able to deep cut, in one pass, to the maximum depth recommended by the manufacturer without producing fumes or smoke.

The Contractor shall provide smaller machines if required to cold mill areas that are inaccessible to the larger machine and to provide the surface specified in the Special Provisions.

The cold planing machine shall be specifically designed for automatically controlled profiling. The automatic controls shall provide for accurately establishing profile grades at each edge of the machine by referencing from the existing pavement or an independent grade reference, where required, or be capable of automatically maintaining a designated cross slope from a single reference.

The machine shall be self-propelled and shall have sufficient power, traction and stability to maintain an accurate depth of cut. The machine shall also be equipped with means to effectively control dust generated by the cutting operation.

Immediately following the milling process the Contractor shall have all milled material removed from the job site and disposed of. The milled section shall be cleaned of all loose material. Power-brooming shall be supplemented by hand brooming when necessary, until the surface is free of deleterious material. Each street shall be swept immediately after the cold planning operation has been completed. Streets shall not be washed to the extent that debris may enter the storm drain system. All streets, gutters and local depression areas of catch basins shall be kept free of dirt, rocks or other debris at all times. During cold planning operations, all catch basin inlets shall be covered with a fabric which will allow the passage of water but will not allow debris to enter storm drain.

Temporary pavement markings shall be provided on all cold planed surfaces if section will be opened to traffic. Refer to Traffic Striping section of these Specifications for pavement striping and marking. Refer to Section 10-2.04, Traffic Control, of the Special Provisions for additional information.

The longitudinal surface deviation of the finished cold planed surface shall not exceed 1/4" inch in 10 feet.

Hand-operated cold plane equipment may be required in areas not accessible to self-propelled machinery.

A motorized street sweeper shall follow within 50 feet (15 m) of the cold milling machine unless otherwise approved by the Engineer.

Unless otherwise specified in the Special Provisions all material removed shall be considered the property of the Contractor and shall be disposed of by the Contractor.

Payment for various cold mill items shall be at the contract price per Cubic Yard and shall be considered full compensation for cold milling, removal and disposing of all milled material, temporary pavement markings, sweeping and for furnishing all labor, materials, equipment and incidentals to accomplish the work as specified herein and no additional compensation will be allowed.

10.11 HOT MIX ASPHALT

General:

This work includes producing and placing hot mix asphalt (HMA) Type A for Overlay Conditions and Full Depth HMA Conditions. The contractor shall place hot mix asphalt (HMA) Type A with the thickness shown on the plans.

Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications except as modified herein.

SUBMITTALS

Submit JMF information on Form CEM-3511 and Form CEM-3512. Submit Form CEM-3513 for mixes that have been verified within last 12 months. For unverified mixes, coordinate mix verification with Engineer.

Submit Quality Control Plan that conforms to the current Caltrans Quality Control Plan Review Checklist for Hot Mix Asphalt. Allow 20 calendar days for review.

Materials:

The grade of asphalt binder mixed with aggregate for HMA Type A must be PG 64-10.

The aggregate for HMA Type A must comply with the 3/8” gradation for leveling course, 1/2” gradation for the final lift and 3/4” gradation for the lower lifts and base repair areas as shown on the plans.

The tack coat shall be emulsified asphalt of grades RS1, RS2, SS1, or SS1h, conforming to Section 94, ‘Asphaltic Emulsions’, of the Standard Specifications.

Construction:

Surface Preparation

This work consists of preparing the existing street surface prior to the commencement of paving. Such work shall include compacting and removing loose and broken asphalt concrete pavement and foreign material as specified in the Standard Specifications and these Technical Provisions, and as directed by the Engineer.

Sampling

The Owner's Engineer will have the right to obtain samples of all materials to be used in the work and to test such samples for the purpose of determining specification compliance. The Owner reserves the right to obtain said samples at the point of delivery and/or at the point of manufacture. The Owner shall also have the right to inspect sources of materials to be used in the work to determine workmanlike procedures used by the materials supplier. The contractor shall facilitate the sampling process.

Transportation and Placement

The asphalt concrete shall be delivered in a thoroughly blended condition and shall be spread by an asphalt paving machine in such a manner as to avoid segregation during the placing operations. Areas inaccessible to spreading and compaction equipment may be paved by such methods as may be approved by the Owner's Engineer. Initial rolling shall be performed immediately after placement. No asphalt concrete is to be placed when the atmospheric temperature is below 50 degrees Fahrenheit.

EQUIPMENT

Paving Machine

Asphalt pavers shall be mechanical spreading and finishing equipment, provided with a screed or strike off assembly capable of distributing the material to not less than eight (8) feet. Screed action shall include any cutting, crowding or other practical action which is effective on the mixture without tearing, shoving, or gouging, and which produces a surface texture of uniform appearance. The screed shall be adjustable to the required section and thickness. The paver shall be provided with a full width roller or tamper or other suitable compacting devices. Pavers that leave ridges, indentations or other marks in the surface shall not be used unless the ridges, indentations or other marks are eliminated by rolling or prevented by adjustment in operations.

Compaction Rollers

The Contractor shall furnish equipment capable of producing the required compaction. Vibratory rollers shall be double steel drum and have adjustable amplitude settings.

Hand Equipment

Sufficient vibraplates and hand tampers shall be provided to assure their immediate availability when placing asphalt concrete around planters, inside corners, or irregular areas. Torches for heating cold joints or making repairs shall be available during every paving operation. Lack of such hand equipment shall be cause to prevent paving from starting or continuing.

Tack Coat

The work to be performed shall consist of furnishing and applying tack coat in conjunction with asphalt concrete overlays and other asphalt concrete paving work.

Tack coat shall be emulsified asphalt of grades RS1, RS2, SS1, or SS1h, conforming to Section 94, 'Asphaltic Emulsions', of the Standard Specifications.

The tack coat shall not be applied until the preparation of the existing surface has been completed, and then only so far in advance of placing the asphalt concrete as permitted by the Engineer. Preparation of the surface shall be performed as described in these Technical Provisions. No tack coat shall be left exposed overnight. Immediately in advance of placing the asphalt concrete, additional tack coat shall be applied as directed by the Engineer to areas where previously applied tack coat has been destroyed or otherwise

rendered ineffective, and no additional compensation will be allowed for such work.

Tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters, and construction joints, against which additional material is to be placed, to a new or old pavement to be overlaid, and to other surfaces as designated by the Owner's Engineer. Shields for protecting curb faces shall be provided and used during tacking of curb faces. The Contractor shall protect concrete surfaces that are not to be paved against from tack coat spray or splash. Any tack coat more than one inch above the paving surface shall be removed by power washing or other means.

The Engineer will determine if the pavement is sufficiently dry for the application of the tack coat. Tack coat shall not be applied when the temperature of the surface to be tacked is below 40 degrees Fahrenheit in the shade.

WORKMANSHIP

Finished Surface

The completed surfacing shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, irregularities, rock pockets, excessive coarse aggregate, and roller marks.

Any ridges, indentations, or other objectionable marks left in the surface of the asphalt concrete shall be eliminated by rolling or other means. The use of any equipment that leaves ridges, indentations, or other objectionable marks in the asphalt concrete shall be discontinued.

The Contractor shall provide sufficient manpower and manual compacting equipment to perform all handwork compaction in unison with the initial compaction rolling. If the handwork compaction begins to lag for whatever reason, the Contractor shall cease paving operations until the handwork compaction is caught up with the rest of the paving operation.

Areas of hand work at joints and miscellaneous structures shall match the smooth surface texture of all other areas of the new pavement. Any areas which have a rough surface texture shall be reworked with heat and asphalt concrete fines shall be placed. Coarse aggregate removed during raking shall not be returned to the finished mat surface. Such coarse aggregate may be returned to the hopper of the paving machine or spread immediately in front of the paver. Cold coarse aggregate shall not be reused, but discarded.

Finished areas of asphalt concrete adjacent to concrete drainage facilities shall be placed in such a manner that the finished surface is no greater than 1/4 inch higher than the facility and no lower than flush with the facility.

Cold Joints

The contractor shall heat by torch or other acceptable methods paving joints which do not receive an adjacent pass within 3 hours of placement. If the cold joint goes unpaved against overnight, the contractor shall heat the joint and place tack coat prior to placing the adjacent pass. Longitudinal pavement joints shall be on, or as close as possible to, the lane lines.

10.12 UNSUITABLE SUBGRADE

The excavation and removal of additional unsuitable materials beyond the depths of excavations as shown on the Plans and additional backfill, if required by the Engineer, shall be in accordance with the Provisions in Section 19-1.03B, "Unsuitable Material," of the State Standard Specifications.

10.13 MICROSURFACE MAINTENANCE TREATMENT

General:

Microsurface Maintenance Treatment shall comply with Section 37-3 "Slurry Seal And Micro-Surfacing" of the Standard Specifications and these Special Provisions.

Microsurface Maintenance Treatment work shall be coordinated in a way that does not disrupt residential garbage collection and mail delivery. The Contractor shall coordinate with applicable agencies and time paving activities as needed to prevent disruption of service.

Definitions:

Alkali Resistant (AR) Glass Fibers: High tensile strength glass fiber resistant to chemical breakdown from the alkaline conditions of the slurry seal or micro-surfacing application.

Microsurface Maintenance Treatment: A mixture of polymer modified cationic quickset emulsion, AR glass fibers, aggregate, mineral filler, additives, and water.

References:

ASTM C1666/C1666M, Standard Specification for Alkali Resistant (AR) Glass Fiber for GFRC and Fiber-Reinforced Concrete and Cement.

Submittals:

Submit the following as part of the bid package:

a. Representative fiber product sample.
b. Fiber product data sheet and certification from the Manufacturer that the fiber product supplied meets the requirements of this specification.
c. Fiber Manufacturer's instructions and general recommendations.

Materials:

Aggregates for microsurface maintenance treatment shall meet the **Type II** gradation per Section 37-3.02.

Fiber reinforcement shall be Surface-EXT™ fibers manufactured by FORTA Corp. or equivalent reinforcing fiber that meets the requirements in Table 1.

Table 1

Material Property	**Requirement**
Material	Alkali Resistant Glass
Length/Form	1/4 in, Pre-Chopped
Tensile Strength	250 ksi (1,700 MPa)
Modulus of Elasticity	10,000 ksi (72 GPa)
Softening Point	1,580°F (860°C)
Density	4,517 lb/cu yd (2,680 kg/cu m)

Delivery, Storage and Handling:

Deliver fiber-reinforcement in sealed, undamaged containers with labels intact and legible, indicating material name and lot number.

Store materials covered and off the ground. Keep sand and dust out and do not allow to become wet.

Mixing, Production and Quality Control:

1. Add AR glass fiber at a dosage rate of 0.20% by dry weight of aggregate or 4 lbs/ton per dry weight of aggregate.

2. The AR glass fibers shall be added by a mounted hydraulic feeding system to either a truck mount or continuous paver. The continuous feed system shall automatically dispense fiber into the pug-mill at an adjustable feeding rate.

3. The system shall be powered by the main hydraulic system of the mixer-spreader truck and turn on/off with the main start of the mixer-spreader truck.

4. Contractor shall have a system in place to record total fiber added vs. tons of dry aggregate placed to verify dosage rate.

5. Ensure sufficient AR glass fiber material is present in the hopper of the mounted hydraulic feed system. Refill material as necessary.

6. Visually ensure AR glass fiber is dispersed and properly mixed in the weigh hopper.

Construction:

Ranges for spread rates shall be **12 - 15 lbs/yd².** The exact rate will be as determined by specific weight of aggregate, the surface demand of the pavement, and the size of the largest particle size of the aggregate. The application rate will produce finished slurry seal as defined elsewhere in the specifications.

At the end of each day's production, the Contractor will provide to the Engineer a report containing the following information:

a. Tons of dry aggregate consumed that day;
b. Tons of asphalt emulsion consumed that day; and
c. Footage covered that day.

This report shall be received no later than 10:00 a.m. of the following day.

Immediately preceding the slurry seal application, the Contractor shall cover all grates, slotted manholes, and other appurtenances on and adjacent to the pavement that would allow the entry of the sealing materials; mask with roofing paper, all closed manhole covers, water valve box covers, etc.

10.14 CRACK SEAL

General:

Comply with Section 37-5 "Crack Treatment" of the Standard Specifications except as modified herein.

The work shall consist of cleaning and filling cracks prior to placement of HMA overlay or Slurry Seal with asphalt joint seal as specified in these special provisions, and as directed by the Engineer. Crack sealing will not be performed in areas designated to receive full depth HMA. Cracks less than ½ inch in width shall be routed to a depth of ½ inch by ½ inch in width. The contractor shall remove all debris from the roadway.

Materials:

Crack sealant shall be a mixture of paving asphalt and ground rubber and shall conform to ASTM D 5078, Type II. The crack seal product shall conform to the following requirements:

Test	Specification Limit
Cone Penetration 77° F(25° C)(ASTM D5329)	35-55
Resilience (ASTM D5329)	40% min.
Softening Point (ASTM D36)	200° F(93° C) min.
Ductility 77° F(25° C)(ASTM D5113)	30 cm min.
Flexibility (ASTM D3111 Modified)	Pass at 20° F(-7° C)
Flow 140° F(60° C)(ASTM D5329)	3 mm max.
Brookfield Viscosity 400° F(204° C)(ASTM D2669)	100 Poise max.
Asphalt Compatibility (ASTM D5329)	Pass
Bitumen Content (ASTM D4)	60% min.
Tensile Adhesion (ASTM D5329)	500% min.
Safe Heating Temperature	400° F(204° C)
Recommended Pour Temperature	380° F(193° C)

The pre-emergent herbicide shall be an E.P.A. approved herbicide composed of glyphosate and oryzaline, combined and applied according to label directions. The Contractor shall submit a product information sheet on the sterilent to be used.

Construction:

All cracks indicating weed growth are to be sprayed and cleaned as follows: the Contractor shall apply herbicide to all existing weed growth within the roadway area from curb to curb including the joint between the gutter lip and asphalt pavement. A minimum of two applications shall be made with a minimum period of 7 calendar days between applications. The second application shall be applied to treated areas and any additional new weed growth between applications. Any new weed growth shall be treated a third time after a minimum of 7 days from the second application. The herbicide shall be applied by a licensed applicator and shall comply with the manufacturers' recommendations.

Seven days after the last application of herbicide (either the second or third), all remaining vegetation in the cracks shall be mechanically removed.

All existing vegetation, outside the areas to be cleared and grubbed, shall be protected from the Contractor's operations unless specifically shown on the plans to be removed.

Immediately prior to applying the sealant, the cracks shall be cleaned with high pressure air jets to remove all residue and foreign material. Any weed growth shall be physically removed. Water jets will not be allowed. Crack surfaces shall be surface dry at the time the sealant is applied.

During all construction operations, the Contractor shall protect cracks cleaned for sealing from intrusions of solid foreign materials into the groove or into the sealant.

Crack seal materials shall be placed in conformance with the manufacturer's recommendations. Crack seal materials shall not be placed when the surface temperature is below 50 degrees Fahrenheit.

The finished crack seal shall be bonded to the crack such that there is no separation or opening between the sealant and the crack edge and there shall be no cracks, separation or other opening in the sealant.

The Contractor shall remove crack seal material that is not placed within the conformance of these provisions, clean cracks as specified herein and then reseal the cracks at his expense.

Sequencing

After filling the cracks with the sealant, they are to be squeegeed with a "U" shaped squeegee so as to strike off excess material and to provide a band aid effect with the sealant. After the sealant has cooled, there should be a slight depression of not more than 1/8th-inch below the adjacent pavement. Bulging as a result of overfilling of cracks must be corrected.

10.15 FULL DEPTH RECLAMATION (FDR)

This work shall be performed as shown on the Plans, and shall consist of pulverizing existing asphalt concrete, Portland Cement (PCC) and underlying base materials, mixing with Portland cement and water, and spreading and compacting, grading and curing the mixture to conform to the requirements of Section 30-4, "Full Depth Reclamation Cement" of the Standard Specifications of 2015 Caltrans Standard Plans except as modified herein.

Section 30-4.01C(1)General

Add the following paragraphs to Section 30-4.01C(1) General

At least 15 days before starting soil stabilization activities submit the name of the laboratory you will use for QC tests. The laboratory must be qualified under the Department's Independent Assurance Program.

Before performing QC sampling and testing, submit the time and location the sampling and testing will occur. Submit QC testing results within 24 hours of receiving the results.

Submit a certificate of compliance with the stabilizing agent samples that includes a statement certifying the stabilizing agent furnished is the same as on the Authorized Material Source List for the stabilizing agent specified.

Submit a weighmaster certificate for stabilizing agent remaining on hand after completion of the work.

Samples: From 30 to 180 days before use, submit one 10 lb sample of each stabilizing agent proposed and from each source. Stabilizing agents shall be submitted in airtight containers. Mark the sample date on the container and include the Safety Data Sheet.

30-4.01C(2)(a) General

Add the following paragraphs to Section 30-4.01C(2)(a) General

If requested, perform QC testing in the presence of the Engineer.

If required, construct test strips with materials, tools, equipment, and methods you will use in the work.

Construct test pads for compaction tests by scraping away material to the depth ordered. If a compaction test fails, corrective action must include the layers of material already placed above the test pad elevation.

Section 30-4.01D(2) Mix Design

Add the following to Section 30-4.01D(2) Mix Design

Excavate, sample and test at least 2 test pit locations per street from the existing pavement and subgrade soil. You may perform additional sampling and testing to optimize the mix design. Determine the exact locations of the test pits and excavate test pits between wheel paths. Do not excavate test pits in the wheel paths or shoulders. Test pits must be at least 2 feet by 2 feet in area to at least the depth of the required FDR section.

FDR cement design and construction shall achieve a 7 day unconfined compressive strength of from 300 psi to 500 psi per ASTM D1633, as noted in Section 30-4.02Atable: FDR – Cement Quality Characteristic Requirements. A minimum of 0.5 percent cement shall be added to the minimum cement content required to achieve the specified compressive strength to account for construction variances.

Section 30-4.01D(3)(b) Sampling and Testing

Replace the FDR-Cement Quality Characteristics Sampling and Testing Frequencies, Table in Section 30-4.01D(3)(b) Sampling and Testing with the following

Quality characteristic	Test method	Sampling location	Minimum frequency
Air temperature before adding cement to basement material	--	Each temperature location	1 test per 20,000 sq ft, minimum 1 per day
Moisture content of basement material before adding cement	California Test 226	Roadway	1 per 1000 sq yd per layer, minimum 1 perday
Cement application rate	Calibrated tray or equal	Roadway	1 test per 20,000 sq ft, minimum 2 per day

30-4.02A General

Revise row 2/column 3 cell in table titled: FDR – Cement Quality Characteristic Requirements per the following:

Mix Design 0 to 5 percent

30-4.03A General

Add the following paragraphs to Section 30-4.03A General

During compaction and finish grading, add water to the surface to prevent dryinguntil the next layer of mixed material is placed, or until you apply curing treatment.

Do not scarify surfaces of intermediate or final layers of cement stabilized soil (FDR).

30-4.03C Pulverizing

Add the following to Section 30-4.03C Pulverizing

Moisture condition the pulverized material to at least optimum moisture content prior to application of cement. Maintain at least optimum moisture content in the materials to be treated with cement.

30-4.03D Spreading Materials

Add the following paragraphs to Section 30-4.03D Spreading Materials

Apply cement uniformly over the area to be stabilized using a vane spreader. Apply dry cement at a rate of 23 pounds per square yard for Yosemite Street, 23 pounds per square yard for Kimball Avenue, 36 pounds per square yard for Wheeler Street.

Do not apply dry cement in windy conditions that will result in dust outside thetreatment area.

Section 30-4.03E Mixing

Add the following paragraphs to Section 30-4.03E Mixing

Complete initial mixing work within 30 minutes of the application of cement.

After mixing, maintain the in-place moisture of the basement material to be stabilized within optimum to 3 percent above the optimum moisture.

Except for clods larger than 1 inch, randomly test the adequacy of the mixing with a phenolphthalein pH indicator solution.

Stabilizing agent and basement material must be uniformly mixed at least twice to within 0.05 foot of the depth shown at any point. If you exceed the mixing depth shown by more than 10 percent, add stabilizing agent in proportion to the exceeded depth.

Remix until the mixture is uniform with no streaks or pockets of stabilizing agent.

Before compaction, the mixed subgrade soil within the FDR material, not including rock and pulverized pavement material, shall be mixed to achieve a minimum of 98 percent passing a 1 inch sieve and a minimum of 55 percent passing the No. 4 sieve.

30-4.03F Compacting and Grading

Add the following paragraphs to Section 30-4.03F Compacting and Grading

Compact using a sheepsfoot or segmented wheel roller immediately followed by steel drum or pneumatic-tired rollers.

Wherever the thickness shown is 1.0 foot or less, compact in 1 layer. Wherever the thickness shown is more than 1.0 foot, compact in 2 or more layers of approximately equal thickness. The maximum compacted thickness of any 1 layer must not exceed 1.0 foot unless you first construct a test strip to demonstrate your equipment and methods provide uniform distribution of stabilizing agent and achieve the specified compaction. The test strip must contain at least 500 cu yd of material and no more material than 1 day's production. Construct test strips with materials, tools, equipment, and methods you will use in the work.

30-4.03G Finishing

Add the following paragraphs to Section 30-4.03G Finishing

Wherever the finished surface of stabilized soil is above the allowable tolerance, trim and remove the excess material. Do not leave loose material on the finished surface. If finish rolling cannot be completed within 2 hours of trimming, defer trimming.

Finish rolling of trimmed surfaces must be performed with at least 1 complete coverage with steel drum or pneumatic-tired rollers.

Do not proceed with construction activities for subsequent layers of material until the Engineer verifies the final grades of the stabilized soil.

Maintain the moisture content of the cement stabilized soil/FDR to within a range of optimum to 3 percent above the optimum moisture content through the entire finish grading operation.

Finish rolling of trimmed surfaces must be performed within 2 hours of completion of compacting.

The finished surface of the cement stabilized soil/FDR must not vary more than 0.05 foot above or below the grade established by the Engineer unless the cement stabilized soil/FDR is to be covered by material paid for by the cubic yard, in which case the finished surface may not vary above the grade established by the Engineer.

Fill areas of finished FDR cement that are lower than the grade established by the Engineer with material specified for the subsequent layer.

After Section 30-4.3G Finishing Add the Following New Section 30-4.03H Curing

30-4.03H(1) General

Cure by the following methods:

1. Water cure
2. Curing seal

30-4.03H(2) WaterCure

Water may be used to cure the finished surface before you apply curing seal. Keep the surface above the optimum moisture content of the stabilized soil. Use this method for no more than 3 days, after which you must apply a curing seal.

30-4.03H(3) Curing Seal (Tack Coat)

Curing seal equipment must have a gauge indicating the volume of curing seal in the storage tank. Curing Seal must be asphaltic emulsion, Grade SS1, SS1h, CSS1, or CSS1h.

Apply curing seal to the finished surface of stabilized soil under section 37-1.03 when the stabilized soil is at optimum moisture content and:

1. When the ambient temperature is above 40 degrees F and rising.
2. At a rate from 0.10 to 0.20 gallon per square yard. The exact rate is determined by the Engineer.

Repair damaged curing seal the same day the damage occurs.

30-4.04 PAYMENT

Add the following paragraph to Section 30-4.04 PAYMENT

The City does not pay for subsequent layer material used to fill low areas of cement stabilized soil.

Performing mix design and other such items and activities required for full depth reclamation is included in the contract item price paid for Full Depth Reclamation – Cement and/or Cement (Full Depth Reclamation – Cement).

10.16 REMOVE CONCRETE

The Contractor shall remove and dispose of existing portland cement concrete curb, gutter, sidewalk, driveway, curb ramp, and valley gutter, at the locations shown on the Plans. When curb and gutter are removed, the Contractor shall immediately place portable delineators along the edge of the pavement. Portable delineators shall be 36-inch minimum height, orange with white reflectors. The delineators shall be maintained by the Contractor until new curb and gutter are placed. All materials removed shall be legally disposed of in accordance with Section 7-1.04, "Public Safety," of the Standard Specifications.

Existing concrete to be removed shall be sawcut at the nearest joint or score line. Any existing concrete damaged by reason of the Contractor's operations outside this limit shall be repaired at the Contractor's expense. The repair shall be made by removing and replacing the entire portion between weakened plane joints or score lines.

Nothing in these Special Provisions shall relieve the Contractor of the Contractor's responsibility as specified in Section 7-1.04, "Public Safety," of the Standard Specifications.

10.17 MINOR CONCRETE IMPROVEMENTS

General:

New concrete facilities including curbs, gutters, sidewalks, ramps, and valley gutters shall be constructed at the locations indicated on the plans or as directed by the Engineer. Concrete curbs, and sidewalks, shall comply with Section 73 "Concrete Curbs and Sidewalks" of the Standard Specifications.

Refer to Caltrans Standard Plan A88A and A88B for curb ramp design requirements. All curb ramps shall have a 6-inch PCC concrete slab with a 4-inch Class 2 Aggregate Base. All other concrete outside of the ramp footprints shall be 4-inch PCC over 4-inch Class 2 Aggregate Base.

Materials:

Minor Concrete for curbs, curb and gutter, and sidewalks must comply with Section 90-2 Minor Concrete of the Standard Specifications.

Aggregate base shall be Class 2, ¾" maximum conforming to the provisions in Section 26, "Aggregate Bases," of the State Standard Specifications.

Concrete Mix Design

The Contractor shall furnish a concrete mix design to the Engineer at least ten working days prior to the start of the work, based on the following guidelines.

Minor Concrete Facilities including curb, gutter, sidewalk, driveways, access ramps, etc. shall meet the following requirements:

Min. Compressive Strength:	3500 psi @ 28 days
Maximum Slump:	5 inches

The Contractor shall be responsible for all costs associated with the required mix design.

Quality Control / Acceptance Testing

Field testing shall include testing for concrete slump as per ASTM C-143 and compressive strength (C39). Such testing shall be at a frequency determined by the Engineer and shall be performed by the Owner's laboratory at the Owner's expense. The Contractor shall furnish the concrete necessary for casting test cylinders.

Construction:

The construction of concrete curb, gutter and sidewalk marked in the field or shown on the plans shall conform to the provisions in Section 73 "Concrete Curbs and Sidewalks" of the Standard Specifications and these special provisions.

Boundaries of concrete curb, gutter, and sidewalk removal have been noted on the plans and shall be removed according to the remove concrete section noted elsewhere in these special provisions, and as directed by the Engineer.

Expansion joints, control joints and scoring shall match adjacent existing improvements or shall be as directed by the Engineer. The new improvements shall match the existing improvements at each end. Provide constant slope between ends if no other elevations are shown on the plans. Installation shall conform to the State Standard Specifications and the details shown in the Plans and herein in these special provisions.

The existing concrete shall be sawcut full depth prior to removal. Any concrete broken due to the Contractor's failure to comply with these requirements shall be removed and replaced at the Contractor's expense.

The line and grade of the replaced facilities shall conform to the existing facilities. In most instances, this will consist of a straight line between existing facilities.

Class 2 aggregate base, ¾ in. size, shall be placed under curb, gutter and sidewalks after excavating existing subgrade, as noted on plans, and be compacted to 95% relative compaction (ASTM D-1557)

The Contractor shall water test all repaired curbs and gutters, cross gutters, and other repaired drainage facilities in the presence of the City's Inspector.

Commercial driveway and alley approaches, including the adjacent curb and gutter section, shall be removed and replaced within twenty-four hours. Curing time shall be seventy-two hours.

Protection of Existing Facilities

The contractor shall protect existing facilities from damage, and discoloration from concrete splash. Adjacent concrete facilities shall be covered during concrete placement to prevent concrete splash and excess concrete from staining the adjacent concrete. After initial placement, strikeoff and finishing, the protection shall be removed and the adjacent concrete cleaned.

Vertical existing facilities such as light poles, walls, fences, etc. shall be protected with plastic extending a minimum of three feet above the concrete surface. After initial placement, strikeoff and finishing, the protection shall be removed and the vertical surfaces cleaned.

It shall be the contractor's responsibility to protect the existing improvements adjacent to new concrete improvements such as fences, landscaping, irrigation, hardscaping, etc.

Subgrade

After the subgrade is prepared, moisture conditioned, and compacted to 90% relative compaction at zero to three percent over optimum, the Contractor shall continuously maintain the sub-grade in a uniform condition at the moisture content obtained during sub-grade compaction until the concrete is placed.

Forming

Wooden forming shall be of two-inch nominal thickness staked at two-foot intervals. The maximum gap at the bottom of the forms shall be 1-3/4 inches.

Tolerances

The maximum variation from design elevation shall not exceed +/- 0.02 feet. In some instances, particularly in critical drainage areas, tolerances may be reduced to zero. Concrete facilities shall be installed to maintain or provide positive drainage. Questions regarding applicable tolerances shall be directed to the Engineer forty-eight hours in advance of the work.

When shown on the drawings, the concrete shall be set at the design elevations. When existing facilities are to be removed and replaced, they shall conform to the existing elevations and grades. Generally, this will be at a straight line between the start and end points of the removal.

Placing and Finishing

General

The concrete shall be deposited on a moist grade in such a manner as to require as little re-handling as possible. Workmen shall not be allowed to walk in the freshly mixed concrete with boots or shoes coated with earth or foreign substances.

Strikeoff, Consolidation, and Finishing

In general, adding water to the surface of the concrete to assist in finishing operations shall not be permitted.

Before final finishing is completed and before the concrete has taken its initial set, the edges shall be carefully finished with the radius shown on the plans or a radius to match the existing construction.
Concrete shall be thoroughly consolidated against and along the faces of all forms and adjacent concrete. After the forms are removed, excess concrete below the form surface shall be removed to be flush with the form face.

All new concrete shall match existing facilities in texture, color, and appearance.

Concrete Protection

The Contractor shall always have materials available to protect the surface of the fresh concrete against rain. These materials shall consist of burlap, curing paper, or plastic sheeting. If plastic sheeting is used, it shall not be allowed to contact finished concrete surfaces.

The Contractor shall also protect the concrete against traffic and vandalism. If the concrete is damaged or vandalized, the Contractor shall make the necessary repairs at its own expense. The repair procedure for damaged or vandalized concrete shall be approved in advance by the Engineer.

Curing

Concrete shall be cured by protecting it against loss of moisture, rapid temperature change, and mechanical injury for at least three days after placement. White or clear liquid membrane compound shall be used. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by the curing medium. The edges of the concrete exposed by the removal of forms shall be protected immediately to provide these surfaces with continuous curing treatment.
The concrete shall be allowed to cure for seventy-two hours prior to placing adjacent asphalt concrete.

Joints

Control joints shall be placed at a maximum spacing of ten feet unless shown otherwise on plans.

Control joints in all PCC facilities, except sidewalks, shall be formed by tooling a deep joint or by using expansion joint material. If expansion joint material is used, a minimum of two 1/2 inch by eighteen inch dowels shall be used with additional dowels placed every twenty-four inches.

Control joints in sidewalks may be made using a tooled joint which shall extend a minimum of 1/4 of the depth of the concrete and shall not be less than 1-1/2 inches in depth.

Expansion joints shall be required at a maximum of sixty-foot intervals on curbs, curbs and gutters, cross gutters, swales, and sidewalks. Expansion joints shall also be required on all corners of curbs, curbs and gutters, sidewalks, at the outside boundary of access ramps, and other locations with discontinuities or reentrant corners which may cause cracking.

Cleanup and Backfill

After the concrete is placed, cured, and the forms have been removed, the Contractor shall clean the site of all concrete and forming debris.

After curing has been completed and the forms have been removed from the new curb and gutter or sidewalk, the resulting void after excavation shall be backfilled with clean native material.

The Contractor shall remove all USA markings, Engineer markings, and Surveyor markings (created for the purpose of the work being done) when work in a particular area is complete by water blasting or other non-destructive method as approved by the Engineer. Sandblasting or grinding to remove markings will not be allowed.

Payment for removing USA painted markings shall be considered as included in the cost of the various items of work shown on the Bid Proposal and no additional compensation will be allowed therefor.

10.18 STORM DRAIN PIPE IMPROVEMENTS

General

"Construct 15-inch diameter or 18-inch diameter or 24-inch diameter or 30-inch diameter or 36-inch diameter storm drain pipe" shall be furnished, installed, constructed in accordance with Section 19 "Earthwork" and Section 64-2 "Plastic Pipe" of the State Standard Specifications and these Special Provisions and Plans.

Materials

All proposed storm drain pipe shall be HDPE Type S corrugated polyethylene pipe.

The residue form the ignition of the HDPE compounds must not exceed 30 percent as determined under ASTM D2584 except the muffle furnace temperature must be 840 ± degrees F.

Pipes and fittings must be homogeneous throughout and uniform in color, opacity, density, and other properties. The inside and outside surfaces must be semimatte or glossy in appearance and free of chalky, sticky,, or tacky material. The pipe walls must be free of cracks, holes, blisters, voids, foreign inclusions, or other defects affecting the pipe wall integrity or visible to the naked eye. Do not use pipes or fittings with abrasions or scratches deeper than 10 percent of the wall thickness. The joint surfaces where the gaskets bear must be smooths and free of imperfections, ridges, fractures, or cracks that could adversely affect the joint seal.

Store pipes in unit packages and protect the bell of the pipes from damage. Support unit packages with racks or dunnage to prevent damage and bending. If unit packages are stacked, do not allow the weight of the upper units to cause deformation to the pipes in the lower units. Do not store pipes adjacent to heat sources. Do not allow pipes to overhang vehicles or storage areas unsupported by more than 3 feet.

Cover pipes to provide temporary sun block protection. Provide adequate air circulation around the covered pipes to reduce excessive heat accumulation. Protect gaskets from exposure to weather, heat, ozone, oil, grease, and sunlight for any time period exceeding 48 hours. Do not store gaskets near electrical or exhaust heat sources.

The City reject pipes with cracked or split gaskets. Protect pipes and fittings from damage when handling and installing.

Corrugated Polyethylene Pipe

Type S corrugated polyethylene pipe must be manufactured from HDPE virgin compounds and comply with AASHTO 294.

HDPE compounds used in the manufacture of corrugated polyethylene pipe and fittings must comply with AASHTO M 294 except the mix must contain from 2 to 4 percent well dispersed carbon black.

The corrugated polyethylene pipe manufacturer must:

1. Participate in the National Transportation Product Evaluation Program for each plant supplying corrugated polyethylene pipe and fittings for the project.

2. Conduct and maintain a quality control program under National Transportation Product Evaluation Program.

10.19 PLUG AND ABANDON EXISTING STORM DRAIN PIPE

For “Plug Existing Pipe at Manhole and/or Catch Basin”, the identified existing pipes to be plugged shown in the contract plans shall be filed for a length of two feet with 2-sack slurry cement with 28-day strength between 50 psi and 150 psi.

10.20 REMOVE EXISTING STORM DRAIN

“Remove Existing Storm Drain Pipe”, shall be performed in accordance with Section 71 of the Caltrans Standard Plans. Pipes to be removed shall be kept operational until the replacement pipe is installed and accepted or as approved by the Engineer. Removed material shall become property of the Contractor and legally disposed outside the public right of way. Backfill surface restoration shall be same as trench backfill in accordance with City Standard Plans, Caltrans Standard Plans, and as approved by the Engineer.

“Remove Existing Storm Drain Manhole” and “Remove Existing Storm Drain Catch Basin” shall be in accordance with Section 71 of the Caltrans Standard Plans. The manhole and catch basin frame and cover shall be salvaged and provided to the City. The remainder of the manhole and catch basin shall be completely removed and disposed by the Contractor in accordance with these specifications, City Standard Specifications, Caltrans Standard Plans, and as approved by the Engineer.

10.21 SANITARY SEWER PIPE IMPROVEMENTS

General

"Construct 15-inch diameter sewer pipe (PVC SDR 26)" shall be furnished, installed, constructed in accordance with Section 19 "Earthwork" and Section 64 "Plastic Pipe" of the State Standard Specifications, these Special Provisions and Plans.

Materials

All proposed sanitary sewer pipe shall be PVC-SDR 26 pipe.

The residue form the ignition of the PVC compounds must not exceed 30 percent as determined under ASTM D2584 except the muffle furnace temperature must be 840 ± degrees F.

Pipes and fittings must be homogeneous throughout and uniform in color, opacity, density, and other properties. The inside and outside surfaces must be semimatte or glossy in appearance and free of chalky, sticky,, or tacky material. The pipe walls must be free of cracks, holes, blisters, voids, foreign inclusions, or other defects affecting the pipe wall integrity or visible to the naked eye. Do not use pipes or fittings with abrasions or scratches deeper than 10 percent of the wall thickness. The joint surfaces where the gaskets bear must be smooths and free of imperfections, ridges, fractures, or cracks that could adversely affect the joint seal.

Store pipes in unit packages and protect the bell of the pipes from damage. Support unit packages with racks or dunnage to prevent damage and bending. If unit packages are stacked, do not allow the weight of the upper units to cause deformation to the pipes in the lower units. Do not store pipes adjacent to heat sources. Do not allow pipes to overhang vehicles or storage areas unsupported by more than 3 feet.

Cover pipes to provide temporary sun block protection. Provide adequate air circulation around the covered pipes to reduce excessive heat accumulation. Protect gaskets from exposure to weather, heat, ozone, oil, grease, and sunlight for any time period exceeding 48 hours. Do not store gaskets near electrical or exhaust heat sources.

The City reject pipes with cracked or split gaskets. Protect pipes and fittings from damage when handling and installing.

10.22 CONSTRUCT MANHOLE AND CATCH BASIN

"Construct New Sanitary Sewer Manhole" & "Construct New Storm Drain Manhole" per City Standard S-401 and shall be in conformance with the Project Plans, these Specifications and Section 51 of the State Standard Specifications. A 48-inch diameter manhole shall be constructed when installing pipes up to 24-inch in diameter. A 60-inch diameter manhole shall be constructed when installing pipes greater than 24-inch.

"Construct New Type GO Catch Basin" & "Construct Type GOL Catch Basin" at locations identified in the plans. Proposed catch basins shall conform to the contract plans and the provisions in Section 51 'Concrete Structures' of the State Standard Specifications. Proposed Catch Basins shall conform to standard plans D72 and D74B from the 2015 Caltrans Standard Plans.

Proposed Manhole locations and proposed catch basin locations shown on the plans reflect the intersection of the centerlines of the incoming and outgoing pipes.

Contractor must submit to the Engineer the proposed catch basin and manhole details and specifications. Proposed catch basins and manholes must meet Section 51 of the Caltrans State Standard Specifications and City Standard Detail S-401.

10.23 TRAFFIC STRIPING, PAVEMENT MARKINGS, AND PAVEMENT MARKERS

General:

Traffic Stripes and Pavement Markings shall be Thermoplastic.

Thermoplastic traffic stripes (traffic lines) shall conform to the provisions in Sections 84-1, "General" and 84-2, "Traffic Stripes and Pavement Markings", of the Standard Specifications and these Special Provisions.

Materials:

Thermoplastic

The thermoplastic material shall conform to Section 84-2.02B "Thermoplastic" of the Standard Specifications. Glass beads to be applied to the surface of the molten thermoplastic material shall conform to the requirements of Section 84-2.02D "Glass Beads" of the Standard Specifications.

Standard Specifications for thermoplastic material and glass beads may be obtained from the Transportation Laboratory, P.O. Box 19128, Sacramento, CA. 95819, (916) 739-2400.

Thermoplastic material for traffic stripes shall be applied at a minimum thickness of 0.125-inch.
A primer of the type recommended by the manufacturer of the thermoplastic material shall be applied over all existing painted stripes and pavement legends to be covered with thermoplastic material as shown on the plans.

Construction:

All construction shall conform to the respective provisions of the Standard Specifications, manufacturer's installation requirements, and the Special Provisions.

Existing Striping and Markings:

In areas where the existing striping to be replaced and updated, the contractor shall remove and replace all striping using methods as specified in the Standard Specifications by the Engineer.

The Contractor shall replace all striping which has been damaged or obliterated by or during the work. This shall include striping replacement completely across the street even in the event that the Contractor's work may not extend that far. Both lines of each crosswalk shall be completely restriped even if only a portion of a line has been obliterated.

When the Contractor's work removes or reduces the visual appearance of a lane or centerline, the Contractor shall replace all striping between the adjacent intersections in both directions. Where a median exists, this work will be required only in the roadway where the work has occurred, unless a detour which altered the pavement markings occurred in the other roadway. In such cases, the striping will be replaced in both directions.

Layout for Temporary and Permanent Striping

The Contractor shall be responsible for compiling an existing striping and marking plan including but not limited to stop bars, legends, parking stall stripes, crosswalks and other traffic delineation markings within the project prior to removing, obliterating, covering any existing striping, or starting work on the affected street. **This plan must be submitted to the Engineer and approved prior to commencing any striping and marking operations on the affected street.**

All alignments and layout measurements, and other work necessary to locate and replace traffic stripes and pavement markings shall be performed by the Contractor.

The City will not provide any assistance, information, or materials to the Contractor. It will be entirely the responsibility of the Contractor to perform all necessary pre-construction and construction layout work, obtain all necessary measurements and information, and marking work as specified. All traffic control systems necessary for performing striping and marking, as directed by the Engineer, shall be the responsibility of the Contractor.

The Contractor shall physically tie down the location of the beginning and ending of each paint or thermoplastic marking type in the adjacent curb top. The marking location shall not exceed 50 square inches each. Any locations exceeding this limit shall be removed by the Contractor prior to acceptance of the work. The Contractor shall contact the City Engineer for review of tie downs.

The Contractor shall be responsible for accurately referencing out and replacing the lines and positions of all traffic lines, directional lines, arrows, and other markings in accordance with the plans and City standard markings by cat tracking with painted marks. This shall occur no later than 2 hours behind the final surface course paving operation.

Cat tracking shall consist of stretching a rope on a straight line between control points on tangent alignment and on a true arc through control points on curved alignment and placing spots of paint along the rope. Temporary tab markers shall be placed not more than 12' apart on curves nor more than 24' apart on straight segments.

Temporary tab markers shall be the same color as the traffic stripe that they are replacing, shall measure 2" tall by 3-1/2" wide, and have a reflective lens across the width of the marker.

Prior to application of permanent striping and markers, the Contractor shall call for review and approval of the proposed striping by the City's Traffic Engineer or agent. The City shall have the right to make changes in the location and alignment of line stripes. Striping and traffic markings shall not be applied until after approval is granted by the Traffic Engineer. The Contractor shall allow a minimum of 3 working days for review of the layout by the City.

Schedule

Raised pavement markers (RPM's) shall be placed as specified in Subsection 81-3.02C, "Retroreflective Pavement Markers", of the Standard Specifications. When utilizing hot melt bituminous adhesive, RPM's shall be placed after the surface has been open to traffic for at least 7 days. When utilizing epoxy adhesive, RPM's shall be placed after the surface has been open to traffic for at least 14 days. Regardless of which adhesive is utilized, the RPM's shall not be placed more than 21 days after paving or surfacing.

Permanent traffic striping and markings including legends and arrows shall be placed within 21 days after paving or surfacing, unless otherwise directed by the Engineer.

Temporary yellow marking tape denoting school crosswalks shall be placed the same day that the pavement surfacing is placed.

Failure to comply with these requirements shall result in liquidated damages of $1,000 per day for each street that has not received permanent installation of the required raised pavement markers, traffic striping, and markings.

Pavement Stencils

The Contractor shall use stencils that conform to Caltrans Standard Plans and Details.

Reflective and Raised Pavement Markers Ceramic Non-reflective Pavement Markers No Plastic

Installation of both reflective and raised pavement markers shall conform to the provisions of Section 81-3 "Pavement Markers" of the Standard Specifications. Pavement markers shall be placed in the same pattern and locations as they were previously, except as shown on the plans or modified herein.

Pavement Delineation – Extruded Thermoplastic No Spray

Pavement temperature shall be measured at the beginning of the shift on each working day and this information shall be provided to the Traffic Engineer.

No primer or thermoplastic shall be installed within 48 hours from the last measurable rain report as provided by the City.

Thermoplastic traffic striping, legends, and arrows shall conform to the provisions of Section 84-1, "General"; Section 84-2, "Traffic Stripes and Pavement Markings"; and refer to Section 81-3, "Pavement Markers".

Pavement Markers Ceramic Non-Reflective Pavement Markers No Plastic

Pavement markers shall be placed to the line established by the Contractor and approved by the Engineer, which will consist of temporary painted line or new or existing stripes one for each line of markers.

All additional work necessary to establish satisfactory lines for markers shall be performed by the Contractor.

At the option of the Contractor, a hot melt bituminous adhesive may be used to cement the markers to the pavement instead of the Rapid Set Type or Standard Set Type epoxy adhesive. Bituminous adhesive material shall conform to the following:

Specification	ASTM	Requirement
Flash Point, COC, ºF	D 92	550 Min.
Softening Point, ºF	D 36	200 Min.
Brookfield Thermosel Viscosity, Centipoise, No. 27 Spindle, 20 RPM,400ºF	D 4402	3,000-6,000
Penetration dmm, 100g, 55 seconds, 77ºF	D 5	10 - 20
Filler Cement, percent by weight (Insoluble in1,1,1 Trichloroethane)	D 2371	65 - 75

Filler material used in bituminous adhesive shall be Type PC, Grade III, calcium carbonate conforming to ASTM D1199, and shall conform to the following gradation:

Sieve Size	Percent Passing
No. 100	100
No. 200	95
No. 325	75

Bituminous adhesive shall be heated indirectly in an applicator with continuous agitation or recirculation. Bituminous adhesive shall not be heated above the maximum safe heating temperature recommended by the manufacturer and shall not be applied at temperatures greater than 425ºF. nor less than 375ºF.

Immediately after application of the adhesive, pavement markers shall be placed in position and pressure applied until firm contact is made with the pavement.

Placement of pavement markers using bituminous adhesive shall conform to the requirements of Section 81-3.03B, "Hot Melt Bituminous Adhesive" of the Standard Specifications except blast cleaning shall be required.

The adjustment provisions in Section 9-1.06B of the Standard Specifications shall not apply.

10.24 PROJECT FUNDING SIGN

The Contractor shall furnish and install Project Funding Signs that inform the community of the work and funding source. A minimum of two (2) project finding signs shall be installed at each project location/street. Exact locations for placing the signs will be determined by the Engineer. The signs shall be installed a minimum of two (2) weeks prior to start of paving activities. The sign shall be constructed per the requirements of the Caltrans Division of Traffic Operations.

SB-1 funding sign shall be C48(CA) and shall be 48" x 30" (4ft x 2.5 ft), 1/3rd size. Refer to Caltrans website http://www.dot.ca.gov/trafficops/tcd/pfi.html for SB-1 sign specifications. Signs shall be installed in accordance with Section 6F.109(CA) of CA MUTCD.

The signs shall be made by a professional sign painter, approved in advance by the Engineer. The signs will be installed prior to construction and maintained in place for the duration of the project by the Contractor. Signs shall be repaired or replaced at no cost to the City, if damaged or stolen.

Full compensation for complying with the provisions of this section shall be considered as included in the Lump Sum contract price for Traffic Control System and no separate payment will be made therefor.

10.25 RECTANGULAR RAPID FLASHING BEACON (RRFB) ASSEMBLY AND ROADSIDE SIGNS

"Roadside Signs" shall be installed at locations shown on the plans and as directed by the Engineer. Roadside Signs shall be installed in accordance with Section 82 of the Caltrans Standard Specifications. Existing roadside signs that are disturbed due to construction shall be replaced. Contractor shall coordinate the location of the roadside sign with the Engineer.

"Rectangular Rapid Flashing Beacon (RRFB)" shall be installed per contract plans. The contractor shall install a "R920-E Rectangular Flashing Beacon or approved equal.
The RRFB shall include two RRFB light bars and two sign faces, include a beep confirmation activated manual push button, all signs noted on plans, and shall include a top of pole self-contained control cabinet with solar panels. RRFB, signs, and striping must meet the latest CA MUTCD requirements and lighting intensity requirements.

Each single sign post with one or more sign panels mounted on the post shall be considered a single unit. All signs shall be anti-graffiti and include high intensity sheeting.

Locations where existing posts will be removed will require grouting. Full compensation for removal and grouting of existing posts shall be considered as included in the contract price per each "Relocate Road Sign" and no additional compensation will be allowed thereafter.

10.26 SIGNAL, LIGHTING, AND ELECTRICAL SYSTEMS

GENERAL

Work must conform to the provisions in Section 86, "Electrical Work" and Section 87, "Electrical Systems," of the latest 2018 State Standard Specifications and Plans, and these Special Provisions**.**

SCOPE

Work consists of furnishing and installing video/radar hybrid signal detection systems at the following location(s)
A. Intersection of Fremont Blvd and Ord Grove Ave
B. Intersection of Fremont Blvd and Playa Ave
C. Intersection of Fremont Blvd and La Salle Ave
D. Intersection of Fremont Blvd and Broadway Ave
E. Intersection of Del Monte Blvd and Playa Ave
F. Intersection of Del Monte Blvd and Tioga Ave
G. Intersection of Broadway Ave and Noche Buena St

H. Intersection of Fremont Blvd and Kimball Ave (ONLY Kimball Avenue Bid Alternate is awarded)

Work shall also consist in connecting existing pedestrian push buttons to newly installed video detection systems.

WORKMANSHIP

All facilities must be installed in a professional and workmanlike manner. Any portion of the signal system that is not installed in a professional manner must be removed and reinstalled correctly, to the satisfaction of the Engineer.

APPLICABLE CALTRANS STANDARD PLANS

RSP ES-1A	RSP ES-1B	RSP ES-1C		

MATERIALS

GENERAL

The electrical materials must comply with section 86 and these special provisions

VIDEO DETECTION SYSTEM

A video detection system (VDS) must be supplied and installed for those locations indicated in the Contract. Unless there is a bid item for VDS, the VDS, including but not limited to specified hardware, software, warranty, maintenance, and support, is included in the lump sum price paid for the traffic signal installation, and no additional payment will be made.
This video detection specification is the minimum requirements for a system utilizing video imaging for stop bar detection zones for vehicles and bicycles and provides detector outputs to a traffic signal controller.
The system must consist of up to four video cameras, a video detection processor (VDP), extension module/s (EM) appropriate for the installation, video surge suppressors, remote communications interface, monitor and an industry standard three button USB mouse.
Detection zones shall be defined using only an on-board video menu and a mouse to place the zones on a video image. Up to 24 detection zones per camera view shall be available. The system shall include software that detects vehicles and bicycles and provides separate outputs for each 24 hours a day. A separate computer shall not be required to program the detection zones.
The VDS shall use a primary detector rack mounted processor to interface with the traffic control cabinet.
The VDP and EM/s must be designed to function in a standard Detector Input File. The VDP and EM must meet the Type 170, 170E, 2070, NEMA TS1 and TS2, and ATC environmental specifications.
The system must be Iteris' Vantage® Edge video system or approved equivalent.

SYSTEM HARDWARE:

The video detection system (VDS) shall consist of up to four video cameras, a video detection processor (VDP) capable of processing from one to four video sources, output extension modules, video surge suppressors, remote communications interface module, 10" LCD monitor and an industry standard three button USB mouse.

SYSTEM SOFTWARE:

The system shall include software that detects vehicles in multiple lanes using only the video image. Detection zones shall be defined using only an on-board video menu and a mouse to place the zones on a video image. Up to 24 detection zones per camera view shall be available. A separate computer shall not be required to program the detection zones.
Included at no additional cost must be full-function remote access system software, which will support both local and remote configuration.

SYSTEM CONFIGURATIONS

The VDS will be deployed at locations where site conditions and roadway geometry vary. The VDS system may also be deployed at locations where existing cabinets or equipment exist. Existing site configurations will dictate the availability of cabinet space and VDS usage.
The proposed VDS shall be available in various configurations to allow maximum deployment flexibility. Each configuration shall have identical user interface for system setup and configuration. The communications protocol to each configuration shall be identical and shall be hardware platform independent. The proposed VDS shall have multiple configurations available for deployment as described in Table 1.

Table1. VDS Configuration

Description	Video Inputs	Video Outputs	Mounting Configuration	Power Supply Requirements
Single-Channel Rack Mounted	1	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack
Dual-Channel Rack Mounted	2	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack
Quad-Channel Rack Mounted	4	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack

VIDEO DETECTION CAMERA:

Video detection cameras used for traffic detection shall be furnished by the video detection processor (VDP) supplier and shall be qualified by the supplier to ensure proper system operation.
The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 1.0 lux to 10,000 lux.
The imager luminance signal to noise ratio (S/N) shall be more than 50 dB. In harsh backlit conditions, vehicles can be detected flawlessly with >100dB of dynamic range.
The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 540 TV lines. The CCD imager shall have a minimum effective area of 811(h) x 508(v) pixels.
The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter.
The camera shall utilize automatic white balance.
The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier.
The horizontal field of view shall be adjustable from 5.4 to 50.7 degrees. This camera configuration may be used for the majority of detection approaches in order to minimize the setup time and spares required by the user. The lens shall have a 27x zoom.
The lens shall also have an auto-focus feature with a manual override to facilitate ease of setup.
The camera shall incorporate the use of preset positioning that store zoom and focus positioning information. The camera shall have the capability to recall the previously stored preset upon application of power.
The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.
The camera shall be housed in a weather-tight sealed enclosure. The enclosure shall be made of 6061 anodized aluminum. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.
The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 6" diameter, less than 18" long, and shall weigh less than 6 pounds when the camera and lens are mounted inside the enclosure.
The enclosure shall be design so that the pan, tilt and rotation of the camera assembly can be accomplished independently without affecting the other settings.
The camera enclosure shall include a proportionally controlled Indium Tin Oxide heater design that maximizes heat transfer to the lens. The output power of the heater shall vary with temperature, to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.
The glass face on the front of the enclosure shall have an anti-reflective coating to minimize light and image reflections.
The glass face shall also employ a special coating to minimize the buildup of environmental debris such as dirt and water.
When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -34°C to +60°C and a humidity range from 0% RH to 100% RH. Measurement of satisfactory video shall be based upon VDP system operation.
The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 30 watts or less under all conditions.
Recommended camera placement height shall be 33 feet (or 10 meters) above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the camera should be centered above the traveled roadway. The camera shall view approaching vehicles at a distance not to exceed 350 feet for reliable detection (height to distance ratio of 10:100). Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.
The camera shall provide 2 options for set up, diagnostic testing, and viewing of video. A lens adjustment module (LAM) supplied

by the VDP supplier, when connected directly to the camera shall allow set up, diagnostic testing, and viewing of video while the camera is installed on a mast arm or pole. The (LAM) shall also allow set up, diagnostic testing, and viewing of the video from the cabinet when connected to the coaxial cable.
The video signal shall be fully isolated from the camera enclosure and power cabling.
Cable terminations at the camera for video and power shall not require crimping tools.
No BNC or other connector shall be used for the coaxial video cable termination at the camera.
The power connection at the camera shall use connector terminations that only require the use of wire strippers and a standard screwdriver. No special crimping tools or other types of terminations shall be used.
A weather-proof protective cover shall be provided shall be provided to protect all terminations at the camera. No special tooling shall be required to remove or install the protective cap.

SYSTEM INTERFACES:

The following interfaces shall be provided for each of the configurations identified in Table 1.

Video Input: Each video input shall accept RS170 (NTSC) or CCIR (PAL) signals from an external video source (camera sensor, DVD or video tape player). The interface connector shall be BNC type and shall be located on the front of the video processing unit. For four-channel VDPs, an adapter cable that converts a DB15 interface to 4 individual BNC connectors shall be used. The video input shall have the capability to select 75-ohm or high impedance (Hi-Z) termination.

Video Lock LED: A LED indicator shall be provided to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.

Video Output: One video output shall be provided. The video output shall be RS170 or CCIR compliant and shall pass through the input video signal. For multi-channel video input configurations, a momentary push-button shall be provided on the front panel to toggle through each input video channel. In the absence of a valid video signal, the channel shall be skipped and the next valid video signal shall be switched. The video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Overlays shall be able to be turned off by the user. Control of the overlays and video switching shall also be provided through the serial communications port. The video output interface connector shall be positive locking BNC type. Friction type (e.g. RCA type) connectors shall not be allowed.

Serial Communications: A serial communications port shall be provided on the front panel. The serial port shall compliant with EIA232 electrical interfaces and shall use a DB9 type connector. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented or interface software shall be provided. The interface protocol shall support multi-drop or point-to-multipoint communications. Each VDS shall have the capability to be addressable.

Contact Closure Output: Open collector contact closure outputs shall be provided. Four (4) open collector outputs shall be provided for the single, dual or quad channel rack-mount configuration. Additionally, the VDPs shall allow the use of extension modules to provide up to 24 open collector contact closures per camera input. Each open collector output shall be capable of sinking 30 mA at 24 VDC. Open collector outputs will be used for vehicle detection indicators as well as discrete outputs for alarm conditions.

Logic Inputs: Logic inputs such as delay/extend or delay inhibit shall be supported through the appropriate detector rack connector pin or front panel connector in the case of the I/O module. For VDPs and extension modules, 4 inputs shall be supported. The I/O module shall accommodate eight (8) inputs.

Detection LEDs: LEDs shall be provided on the front panel. The LEDs shall illuminate when a contact closure output occurs. Rack-mounted video processors shall have a minimum of four (4) LEDs. Rack-mounted extension modules shall have two (2), four (4) or eight (8) LEDs (depending upon extension module type) to indicate detection.

Test Switches: The front panel of the VDP shall have detector test switches to allow the user to place calls on each channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.

Mouse Port: A USB mouse port shall be provided on the front panel of the rack mount video processing unit. The mouse port shall not require special mouse software drivers. The mouse port shall be used as part of system setup and configuration. A mouse shall be provided with each video processor.

Extension Modules: Extension modules (EM) shall be available to eliminate the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack to provide open collector outputs. The extension

module shall be connected to the VDP by an 8-wire twisted-pair cable with modular connectors. VDP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise. The extension module shall be available in both 2 and 4 channel configurations. EM configurations shall be programmable from the VDP. A separate I/O module with 32 outputs and 8 inputs using external wire harness for expanded flexibility shall also be available.

VDP AND EM HARDWARE:

The VDP and extension module (EM) shall be specifically designed to mount in a standard detector rack, using the edge connector to obtain power, provide contact closure outputs and accept logic inputs (e.g. delay/extend). No adapters shall be required to mount the VDP or EM in a standard detector rack. Detector rack rewiring shall not be required. The VDP shall enable full two way communication between the local video detection system and the Vantage View central management software at the TOC.
The EM shall be available to avoid the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack. The extension module shall be connected to the VDP by an 8-wire cable with modular connectors, and shall output contact closures in accordance with user selectable channel assignments. The EM is available in 2, 4, or 32 channel configurations.
The VDP and EM shall be powered by 12 or 24 volts DC. VDP and EM modules shall automatically compensate for either 12 or 24 VDC operation. VDP power consumption shall not exceed 7.5 watts. The EM power consumption shall not exceed 3 watts.
The VDP and EM shall include detector input and output pin out compatibility with industry standard detector racks. The 32-channel EM shall accommodate inputs through a 15-pin “D” connector and shall provide outputs through a 37-pin “D” connector on the front panel.
VDPs shall include one, two or four BNC video input connections suitable for composite video inputs. The video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection.
The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices.
The VDP shall operate satisfactorily in a temperature range from -34 °C to +74 °C and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.
The front face of the VDP shall contain indications, such as LED displays, to enable the user to view real time detections for each channel of detection when the system is operational.
The VDP shall include an EIA232 port for serial communications with a remote computer. This port shall be a 9-pin "D" subminiature connector on the front of the VDP.
The VDP shall utilize non-volatile memory technology to enable the loading of modified or enhanced software through the EIA232 port and without modifying the VDP hardware.
An Edco CX-06M video surge suppresser shall be provided for each video input. The surge suppresser shall be directly grounded to the cabinet ground rod using 14 AWG minimum.

REMOTE COMMUNICATIONS INTERFACE DEVICE:

The interface device shall provide capabilities to enable multiple rack-mounted video detection processors to be locally and remotely accessed from a single point via one set of user interface devices. User interface devices are defined as a pointing device (mouse) and video monitor.
Up to four video detection processor chains (video detection processor and extension modules) shall be accommodated.
The device shall allow the operator to switch video output display for any of the attached rack-mounted video detection processors by pressing a momentary switch or by using the remote access software.
Local user access to video detection programming shall be limited to the detection processor unit that is currently being displayed on the monitor.
All local programming and setup parameters for the video detection processor shall be user accessible through the interface unit without requiring the user to swap user interface cables between video detection processors.
Remote access to the device shall be through the built-in Ethernet port or EIA-232 port via access software running on a Microsoft Windows based personal computer.
An internet browser-based remote access firmware shall also be available for remote setup and diagnostics of the interface unit.
The interface unit shall support streaming video technology using MPEG4 and H.264 standards to allow the user to monitor video detection imagery over the Ethernet interface. Motion JPEG streaming video shall not be allowed.
The user shall be able to select which video input to be displayed on the output video monitor by repeatedly depressing the menu button.
The user shall be able to select a quad view of all of the four cameras simultaneously on the output video monitor by depressing the menu button.
The interface unit shall allow four independent streams, one from each video detection processor, to be transported via Ethernet to four independent streaming video players simultaneously in CIF resolution.
The interface unit shall also have a browser interface that allows the user to configure the module.

The browser interface shall also allow the user to view the streaming video on the browser interface.
The browser interface shall allow the user to select the resolution of the displayed streamed video.
The interface unit shall support the streaming and display of D1, CIF, QCIF, VGA and QVGA video resolutions in a single stream or four concurrent streams in CIF resolution.
The interface unit shall allow the user to select a quad-view of all four input video signals to be shown on the browser interface.
The interface unit shall allow the user to manage the unit's Ethernet bandwidth usage by allowing the user to select the maximum bandwidth limit between 256 kbps and 7.0 Mbps.
The browser interface shall allow the user to change the unit's Ethernet network settings of IP address, subnet mask and default gateway.
The interface unit shall allow the user to upload new application firmware through the use of the browser interface.
Access to the interface unit shall be under password control and the browser interface shall allow the user to change the password.
The interface unit shall have the capability to perform IP port redirecting between the remote management software and each attached video detection processor. A unique IP port number shall be assigned for each video detection interface. The port number shall not be identical to the web browser interface of 80.
The interface device shall be specifically designed to mount in a standard TS-1, TS-2, and 170 type detector rack, using the edge connector to obtain power. No adapters shall be required to mount the interface device in a standard detector rack.
The interface device shall occupy no more than two slots in the detector rack and shall provide a loop-type handle for easy installation and removal.
The interface device shall be powered by 12 or 24 volts DC and shall not consume more than 6.25 watts. The unit shall automatically compensate for the different input voltages and shall be hot-swappable.
The interface device shall operate in a temperature range from -35°C to +74°C and a humidity range from 0% RH to 95% RH, non-condensing.
Video Ports - The interface unit shall accommodate a maximum of four composite video inputs and one video output.
Video inputs and video output shall be made via BNC connectors to ensure secure connections. RCA or other straight friction plug-in type connections shall not be allowed. Video inputs shall use a vendor supplied "octopus" cable to accommodate the four video inputs. Provisions shall be made to accommodate the mating cable to utilize jack screws for securing the octopus cable.
The interface unit shall accommodate either monochrome or color video signals conforming to NTSC or PAL video standards.
The interface unit shall automatically sense the video input signal and configure the video output port to either NTSC or PAL standards. Each video input signal shall be separately sensed to allow mixed video signals.
The interface unit shall interface with up to four video detection processors using RJ-45 interface connectors.
The interface unit shall support the use of an industry standard three button USB mouse. Pointing devices shall not require vendor specific pointing device software drivers.
An EIA-232 communications port shall be provided for local and remote access. The connector for this port shall be a 9-pin "D" subminiature connector on the front of the interface unit. Provisions shall be made to accommodate mating cables to utilize jack screws for securing cables.
Hi-intensity LED status lights shall be provided to facilitate system monitoring. Indicators shall be provided to show the status of the internal processor, video lock and indication of which video input is being monitored.
An Ethernet port shall be integrated within the interface unit. The Ethernet port shall conform to 802.3 Ethernet specifications and shall auto-sense between 10 and 100 Mbps data rates. Industry standard TCP/IP (UDP and TCP packets) protocol shall be supported. The Ethernet connection shall be made through a RJ-45 connector.

10" LCD MONITOR:

The 10.4-inch diagonal color LCD monitor shall be housed in an aluminum enclosure capable of standing on its own on a shelf.
The monitor shall have features that limit the monitor from sliding on the shelf (i.e. rubberized feet).
The LCD panel shall be industrial grade (Grade A) and employ thin film transistor (TFT) technology.
The LCD panel shall have a high contrast ratio of 900:1 typical.
The LCD panel shall have a brightness level of 1000 cd per square meter minimum.
The LCD panel shall have support computer resolution up to 1024 pixels (horizontal) x 768 pixels (vertical).
The LCD panel shall support both NTSC and PAL video formats and shall be auto-sensing.
The LCD panel shall support 16.7 million display colors.
The typical response time shall be 16 milliseconds.
The LCD panel shall have a pixel pitch of 0.2063 (horizontal) x 0.2063 (vertical) millimeters minimum.
The minimum viewing angle shall be +/- 75 degrees horizontally and +/- 75 degrees vertically.
The on screen display (OSD) shall enable control of brightness, contrast, color, horizontal and vertical positioning.
The LCD panel shall support VGA analog RGB, composite video (2x with pass-through), DVI-D, and HDMI (A type) interfaces.
The monitor system shall be able to operate from 110 to 240 VAC, 50 or 60 Hz.
The monitor system shall be FCC and CE approved.
The monitor system shall operate between -10 and 60 degrees Celsius, 90% non-condensing.
The monitor system shall be 266 mm x 214 mm x 60 mm (10.47 x 8.42 x 2.36 in.) (W x H x D).

The monitor system shall weigh no more than 2.3 kg (5.1 pounds).
The monitor shall facilitate the use of 100/75 VESA standard mounting brackets.

SYSTEM FUNCTIONS:

Detection zones shall be programmed via an on board menu displayed on a video monitor and a pointing device connected to the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. A separate computer shall not be required for programming detection zones or to view system operation.
The VDP shall store up to three different detection zone patterns. The VDP can switch to any one of the three different detection patterns within 1 second of user request via menu selection with the mouse. Each configuration shall be uniquely labeled and able to be edited by the user for identification. The currently active configuration indicator shall be displayed on the monitor.
The VDP shall detect vehicles in real time as they travel across each detection zone.
The VDP shall accept new detection patterns from an external computer through the EIA232 port when the external computer uses the correct communications protocol for downloading detection patterns. A Windows™-based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.
The VDP system shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.
The VDP shall send its detection patterns to an external computer through the EIA232 port when requested when the external computer uses the appropriate communications protocol for uploading detection patterns.
The VDP shall default to a safe condition, such as a constant call on each active detection channel, in the event of unacceptable interference or loss of the video signal.
The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all defined detection zones in a constant call mode. A user-selected alarm output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.
Up to 24 detection zones per camera input shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region.
The VDP shall provide up to 24 open collector output channels per camera input using one or more extension modules.
A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.
Placement of detection zones shall be done by using only an industry standard three button USB mouse and a graphical interface built into the VDP and displayed on a video monitor, to draw the detection zones on the video image from each video camera. No separate computer shall be required to program the detection zones.
Up to 3 detection zone patterns shall be saved for each camera within the VDP memory. The VDP's memory shall be non-volatile to prevent data loss during power outages.
The activation of the detection zone pattern for current use shall be done through a local menu selection. It shall be possible to activate a detection zone pattern from VDP memory and have that detection zone pattern displayed within 1 second of activation.
When a vehicle is detected within a detection zone, the outline of the detection zone shall activate on the video overlay display to confirm the detection of the vehicle.
Detection shall be at least 98% accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon site geometry, camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.
The VDP shall provide dynamic zone reconfiguration (DZR). DZR enables normal operation of existing detection zones when one zone is being added or modified during the setup process. The new zone configuration shall not go into effect until the configuration is saved by the operator.
Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.
The VDP shall process the video input from each camera at 30 frames per second. Multiple camera processors shall process all video inputs simultaneously.
The VDP shall output a constant call during the background learning period of no more than 3 minutes.
Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.
Up to six detection zones per camera view shall have the capability to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the EIA232 port. The zone shall also have the capability to calculate and store average speed and lane occupancy at bin intervals of 10 seconds, 20 seconds, 1 minute, 5 minutes, 15 minutes, 30 minutes and 60 minutes.
The system will utilize a zone based constant call mode for a failsafe operation. When a zone goes to failsafe recall as a result of a low contrast or loss of power condition only the output channel associated with that zone will recall. All other channels will not be affected.
The system software will utilize a dual redundant hybrid tracking algorithm to enhance vehicle presence detection and data

collection.
System software will include a moving shadow and occlusion rejection algorithm that is activated by selection of a drop down menu tab.
System software will include a menu selectable zone type labeled “Bike” that is specifically designed to detect bicycles.
System software will include a virtual QWERTY keyboard that is present when performing any labeling functions for the detection zones and cameras.
System software will include the ability to copy completed zones with one mouse click, drag and drop single zones, rows of zones together and entire detection configurations.
Detection zone indications will be a solid color outline of the entire zone when detecting vehicle presence. The activated zone color will be unique when the system senses a challenging condition such as fog or glare.
The Video Detection System shall be in compliance with California State Assembly Bill 1581. The system will be able to discriminate between bicycles and automobiles and be able to send bicycle and vehicle actuations from the same lanes to different detection outputs.

CABLES:

VDS cable must be per the Manufacturer’s Specifications and must be provided by the Contractor for each camera between the camera mounting location and the controller cabinet.

INSTALLATION:

The VDS shall be installed by factory-certified installers and shall be IMSA Level II Traffic Signal Technician certified. Proof of certifications shall be provided.
The exact mounting location of the video detection units shall be determined and approved by the unit manufacturer’s installation representative prior to installation. Do not drill any holes in the mast arms until after this approval has been made. Where possible, the detection unit shall be installed in a location which will allow for near detection of all lanes (left, though, right) on the approach, even though the initial setup will be to detect only those near lanes for which a video detection zone is indicated on the plans. Far detection shall be used for all through lanes on the approach.
The Contractor shall install all equipment and cables (including cable terminations) external to the controller cabinet. The unit manufacturer’s installation representative shall install all equipment and make all cable terminations inside the controller cabinet.
The detection units shall be mounted to the mast arms without drilling any holes in the arms and using 1” heavy stainless steel banding material.
Both the power cable and the coaxial cable shall be physically supported, strain relieved, and protected from chafing where the cables enter the mast arm. Strain relief shall be provided by drilling a hole in the mast arm and installing a cord connector. Both cables come through one hole/connector. The hole shall be tapped and the cord connector screwed in. See mounting detail on the Plans for cord connector location. The cord connector shall be Hubbell Wiring Device-Kellums ¾” N.P.T. Straight Male Cord Connector Catalog No. SHC1037SS, or Engineer approved equal.
Power and coaxial cables shall be wire tied together between the detection unit and the cord connector. A drip loop shall be provided for both cables as shown on the Plans.
A City traffic signal technician shall be present while the detection system equipment installation and cable termination is occurring. The City signal technician, in conjunction with the unit manufacturer’s installation representative, will determine the mounting location for the surge protection panel and detector rack slots for the detection system equipment.

TESTING AND PROGRAMMING:

The unit manufacturer’s installation representative, in conjunction with a City traffic signal technician, will test and perform the initial detection programming for the system.
The Contractor shall coordinate all signal cabinet access and the scheduling of signal technicians with the Inspector and the City Traffic Signal Division.

WARRANTY:

The supplier shall provide a limited three-year warranty on the VDS. During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

During the warranty period, updates to DP software shall be available from the supplier without charge.

MAINTENANCE AND SUPPORT:

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the VDS. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.
The supplier shall maintain an ongoing program of technical support for the VDS. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on-site technical support services. Installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Traffic Signal Technician certified.
All product documentation shall be written in the English language.

VIDEO/RADAR HYBRID SIGNAL DETECTION SYSTEM

A Multi-Sensor (Video Imaging and Radar) Vehicle Detection System (MSDS) must be supplied and installed for those locations indicated in the Contract. Unless there is a bid item for an MSDS, the MSDS, including but not limited to specified hardware, software, warranty, maintenance, and support, is included in the lump sum price paid for the traffic signal installation, and no additional payment will be made.
This specification sets forth the minimum requirements for a system that detects vehicles on a roadway using a multi-sensor detection system (MSDS) where advance detection of 200 feet or greater from the limit line is required. The MSDS shall utilize two different sensors of different technologies, video imaging and radar, to detect and track licensed and unlicensed vehicles at distances up to 600 feet. The sensor system shall use vehicle information from the two sensors to provide highly accurate and precise detection for special or advanced applications.
The MSDS shall use a primary detector rack mounted processor to interface with the traffic control cabinet. The module shall process information from both video imaging and radar sensors simultaneously in real-time.
The MSDS shall be capable of vehicle and bicycle detection utilizing video imaging for stop bar detection zones and radar for far detection. Detection zones shall be defined using only an on-board video menu and a mouse to place the zones on a video image. Up to 24 detection zones per camera view shall be available. The system shall include software that detects vehicles and bicycles and provides separate outputs for each 24 hours a day.
All components of the MSDS shall be of the same manufacturer and shall be compatible with each other. The MSDS equipment shall be Iteris Vantage® Vector, or Engineer approved equivalent.

SYSTEM HARDWARE:
The multi-sensor detection system (MSDS) shall consist of up to two video cameras and radar units, detection processors (DP) capable of processing from one to two intersection approaches, sensor data combiner, remote communications interface module, output extension modules, surge suppressors, 10” LCD monitor, a setup tool and a pointing device.

SYSTEM SOFTWARE
The system shall include software that detects vehicles in multiple lanes. Video imaging detection zones shall be defined using only an on-board video menu and a pointing device to place the zones on a video image. Up to 24 video detection zones per camera view shall be available. Two additional trigger zones for the radar sensor shall be available and be configurable by using the same system setup menu on the DP. A separate computer shall not be required to program the detection zones. A portable setup tool shall be available for sensor alignment and adjustment of camera’s field of view and focus.
Included at no additional cost must be full-function remote access system software, which will support both local and remote configuration.

SYSTEM CONFIGURATIONS:
The MSDS will be deployed at locations where site conditions and roadway geometry vary. The MSDS system may also be deployed at locations where existing cabinets or equipment exist. Existing site configurations will dictate the availability of cabinet space and MSDS usage.
The proposed MSDS shall be available in various configurations to allow maximum deployment flexibility. Each configuration shall have an identical user interface for system setup and configuration. The communications protocol to each configuration shall be identical and shall be hardware platform independent. The proposed MSDS shall have multiple configurations available for deployment as described in Table 1.

Table 1. MSDS Configuration

Description	No. of Multi-Sensor Inputs	No. Video Outputs	Mounting Configuration	Power Supply Requirements
Single-Channel Rack Mounted	1	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12 or 24 VDC Power From Rack
Dual-Channel Rack Mounted	2	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12 or 24 VDC Power From Rack

VIDEO IMAGING CAMERA SENSOR

To accommodate deployment flexibility, the MSDS camera sensor shall be compatible will all DP platforms identified in Table 1.
The MSDS camera sensor shall be supplied by the MSDS manufacturer.
The advanced camera enclosure shall utilize Indium Tin Oxide (ITO) technology for the heating element of the front glass. The transparent coating shall not impact the visual acuity and shall be optically clear.
Cable terminations at the data combiner for video and power shall not require crimping or special tools.
The camera sensor shall allow the user to set the focus and field of view via Wi-Fi connectivity.
The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 1.0 lux to 10,000 lux.
The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.
The imager luminance signal-to-noise ratio (S/N) shall be more than 50 dB with the automatic gain control (AGC) disabled.
The imager shall employ three dimensional dynamic noise reduction (3D-DNR) to remove unwanted image noise.
The camera imager shall employ wide dynamic range (WDR) technology to compensate for wide dynamic outdoor lighting conditions. The dynamic range shall be greater than 100 dB.
The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 550 TV lines. The color CCD imager shall have a minimum pixel count of 380K (NTSC) / 440K (PAL).
The camera sensor shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter. The electronic shutter shall operate between the ranges of 1/4 to 1/10,000th second.
The camera sensor shall utilize automatic white balance.
The camera sensor shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier.
The horizontal field of view shall be adjustable from 4.6 to 53.6 degrees. This camera configuration may be used for the majority of detection approaches in order to minimize the setup time and spares required by the user. The lens shall be a 12x zoom lens with a focal length of 3.7mm to 44.0mm.
The lens shall also have an auto-focus feature with a manual override to facilitate ease of setup.
The camera shall incorporate the use of preset positioning that store zoom and focus positioning information. The camera shall have the capability to recall the previously stored preset upon application of power.
The camera shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the camera to be rotated to allow proper alignment between the camera and the traveled road surface.
The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.
The camera enclosure shall be design so that the pan, tilt and rotation of the camera assembly can be accomplished independently without affecting the other settings.
The camera enclosure shall include a proportionally controlled Indium Tin Oxide heater design that maximizes heat transfer to the lens. The output power of the heater shall vary with temperature, to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.
The glass face on the front of the enclosure shall have an anti-reflective coating to minimize light and image reflections.
When mounted outdoors in the enclosure, the camera shall operate in a temperature range from -30 ^{o}F to +165 ^{o}F (-34 °C to +74 °C) and a humidity range from 0% RH to 100% RH. Measurement of satisfactory video shall be based upon DP system operation.
The camera sensor shall acquire its power from the sensor data combiner.
Recommended camera placement height shall be 18-33 feet (or 6-10 meters) above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the camera should be centered above the traveled roadway. The camera shall view approaching vehicles at a distance not to exceed 350 feet (107 meters) for reliable detection (height to distance ratio of 10:100). Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.
The video signal shall be fully isolated from the camera enclosure and power cabling
A weather-proof protective cover shall be provided to protect all terminations at the camera.

RADAR SENSOR:
The radar sensor shall operate in the 24 GHz frequency band and shall operate on 1 of 7 available enumerated channels that is user selectable.
The radar detection range shall be 600 feet (180 meters) minimum, +/- 5%.
The radar sensor shall be able to track up to 20 independent objects simultaneously.
Object speed detection shall be within a range of 0 to 150 miles per hour +/- 1.0 miles per hour (240 km per hour ± 1.5 km per hour).
The radar sensor shall be able to detect vehicles in 1 to 4 traffic lanes.
The radar sensor shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the radar to be adjusted to allow proper alignment between the sensor and the traveled road surface.
When mounted outdoors in the enclosure, the radar shall operate in a temperature range from -30°F to +165°F (-34°C to +74°C) and a humidity range from 0% RH to 100% RH.
The radar sensor shall communicate with the sensor data combiner.
The radar sensor shall acquire its power from the sensor data combiner.

MULTI-SENSOR ASSEMBLY:
Both camera and radar sensors shall be housed in an overall, single enclosure assembly.
The overall size of the multi-sensor enclosure shall not exceed 14 inches x 15 inches x 17 inches (355mm x 380mm x 430mm).
The overall weight of the multi-sensor unit shall not exceed 11 pounds (5kg).
The effective projected area (EPA) shall not exceed 2.0 square feet (0.6 square meters).
The maximum power consumption for the multi-sensor assembly shall be less than 10 watts typical, 20 watts peak.

SENSOR DATA COMBINER:
A sensor data combiner that combines sensor information from both video and radar sensors shall be employed.
The sensor data combiner shall supply primary power to each sensor unit.
The sensor data combiner shall facilitate digital communications between the sensor data combiner and each of the sensor units.
The sensor data combiner shall get its primary power from an AC power source using industry standard 3-conductor cabling.
The sensor data combiner shall communicate with the detection processor using a single coax cable. Both video imaging and radar data shall use the single coax cable.
The sensor data combiner shall also employ industry standard Wi-Fi connectivity for remote sensor system setup using a mobile programming device such as a netbook or tablet computer. Video camera and radar sensor shall be able to be configured independently.
The sensor data signal shall be fully isolated from the mechanical enclosure and power cabling
Cable terminations at the sensor data combiner shall not require crimping tools.
The sensor data combiner shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications.

DETECTION PROCESSOR:
Each sensor input shall accept RS170 (NTSC) or CCIR (PAL) signals from an external video source. The interface connector shall be BNC type and shall be located on the front of the processing unit. The sensor input shall have the capability to be terminated into 75-ohms or high impedance (Hi-Z) using dip switches or software control from the user menu. The sensor input shall also facilitate the data from the radar sensor.
A LED indicator shall be provided to indicate the presence of the sensor signal. The LED shall illuminate upon valid sensor synchronization and turn off when the presence of a valid sensor signal is removed.
One video output shall be provided. The video output shall be RS170 or CCIR compliant and shall pass through the input video signal. For multi-channel video input configurations, a momentary push-button shall be provided on the front panel to cycle through each input video channel. In the absence of a valid sensor signal, the channel shall be skipped and the next valid sensor signal shall be switched. The real time video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Overlays shall be able to be turned off by the user. Control of the overlays and sensor switching shall also be provided through the serial communications port. The video output interface connector shall be positive locking BNC type. Friction type (e.g. RCA type) connectors shall not be allowed.
A serial communications port shall be provided on the front panel. The serial port shall compliant with EIA232 electrical interfaces and shall use a DB9 type connector mounted on the front panel of the DP. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented or interface software shall be provided. The interface protocol shall support multi-drop or point-to-multipoint communications. Each MSDS shall have the capability to be addressable. The DP shall support data rates of 1200 bps to 230,400 bps, inclusive.
Open collector (contact closure) outputs shall be provided. Four (4) open collector outputs shall be provided for the single or dual

channel rack-mount configuration. Additionally, the DP shall allow the use of extension modules to provide up to 24 open collector contact closures per camera input. Each open collector output shall be capable of sinking 30 mA at 24 VDC. Open collector outputs will be used for vehicle detection indicators as well as discrete outputs for alarm conditions. The DP outputs shall be compatible with industry standard detector racks assignments.
Logic inputs such as delay/extend or delay inhibit shall be supported through the appropriate detector rack connector pin or front panel connector in the case of the I/O module. For DPs and extension modules, 4 inputs shall be supported via detector rack interface. The I/O module shall accommodate eight (8) inputs through a 15-pin "D" connector.
Detection status LEDs shall be provided on the front panel. The LEDs shall illuminate when a contact closure output occurs. Rack-mounted detection processors shall have a minimum of four (4) LEDs. Rack-mounted extension modules shall have two (2), four (4) or eight (8) LEDs (depending upon extension module type) to indicate detection.
The front panel of the DP shall have detector test switches to allow the user to manually place calls on each DP output channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.
A USB mouse port shall be provided on the front panel of the rack mount detection processing unit. The mouse port shall not require special mouse software drivers. The mouse port shall be used as part of system setup and configuration. A mouse shall be provided with each detection processor.
Extension modules shall be connected to the DP by an 8-wire twisted-pair cable with modular RJ45 connectors. DP and EM communications shall be accommodated by methods using differential signals to reject electrically coupled noise.
Extension modules (EM) shall be available to eliminate the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack to provide additional open collector outputs. The extension module shall be available in both 2 and 4 channel configurations. EM configurations shall be programmable from the DP. A separate I/O module with 32 outputs through a 37-pin "D" connector on the front panel and 8 inputs through a 15-pin "D" connector using an external wire harness for expanded flexibility shall also be available.
The DP and EM shall be specifically designed to mount in a standard detector rack, using the edge connector to obtain power, provide contact closure outputs and accept logic inputs (e.g. delay/extend). No adapters shall be required to mount the DP or EM in a standard detector rack. Detector rack rewiring shall not be required.
The DP shall utilize non-volatile memory technology to store on-board firmware and operational data.
The DP shall enable the loading of modified or enhanced software through the EIA232 or USB port (using a USB thumb drive) and without modifying the DP hardware.
The DP and EM shall be powered by 12 or 24 volts DC. DP and EM modules shall automatically compensate for either 12 or 24 VDC operation. DP power consumption shall not exceed 7.5 watts. The EM power consumption shall not exceed 3 watts.
The DP shall operate satisfactorily in a temperature range from -30°F to +165°F (-34°C to +74°C) and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.
An Edco CX-06M video surge suppresser shall be provided for each sensor input. The surge suppresser shall be appropriately grounded to the cabinet ground rod using 14 AWG wire (2.5 mm^2) minimum.

REMOTE COMMUNICATIONS INTERFACE DEVICE:
The interface device shall provide capabilities to enable multiple rack-mounted video detection processors to be locally and remotely accessed from a single point via one set of user interface devices. User interface devices are defined as a pointing device (mouse) and video monitor.
Up to four video detection processor chains (video detection processor and extension modules) shall be accommodated.
The device shall allow the operator to switch video output display for any of the attached rack-mounted video detection processors by pressing a momentary switch or by using the remote access software.
Local user access to video detection programming shall be limited to the detection processor unit that is currently being displayed on the monitor.
All local programming and setup parameters for the video detection processor shall be user accessible through the interface unit without requiring the user to swap user interface cables between video detection processors.
Remote access to the device shall be through the built-in Ethernet port or EIA-232 port via access software running on a Microsoft Windows based personal computer.
An internet browser-based remote access firmware shall also be available for remote setup and diagnostics of the interface unit.
The interface unit shall support streaming video technology using MPEG4 and H.264 standards to allow the user to monitor video detection imagery over the Ethernet interface. Motion JPEG streaming video shall not be allowed.
The user shall be able to select which video input to be displayed on the output video monitor by repeatedly depressing the menu button.
The user shall be able to select a quad view of all of the four cameras simultaneously on the output video monitor by depressing the menu button.
The interface unit shall allow four independent streams, one from each video detection processor, to be transported via Ethernet to four independent streaming video players simultaneously in CIF resolution.
The interface unit shall also have a browser interface that allows the user to configure the module.
The browser interface shall also allow the user to view the streaming video on the browser interface.
The browser interface shall allow the user to select the resolution of the displayed streamed video.
The interface unit shall support the streaming and display of D1, CIF, QCIF, VGA and QVGA video resolutions in a single stream

or four concurrent streams in CIF resolution.
The interface unit shall allow the user to select a quad-view of all four input video signals to be shown on the browser interface.
The interface unit shall allow the user to manage the unit's Ethernet bandwidth usage by allowing the user to select the maximum bandwidth limit between 256 kbps and 7.0 Mbps.
The browser interface shall allow the user to change the unit's Ethernet network settings of IP address, subnet mask and default gateway.
The interface unit shall allow the user to upload new application firmware through the use of the browser interface.
Access to the interface unit shall be under password control and the browser interface shall allow the user to change the password.
The interface unit shall have the capability to perform IP port redirecting between the remote management software and each attached video detection processor. A unique IP port number shall be assigned for each video detection interface. The port number shall not be identical to the web browser interface of 80.
The interface device shall be specifically designed to mount in a standard TS-1, TS-2, and 170 type detector rack, using the edge connector to obtain power. No adapters shall be required to mount the interface device in a standard detector rack.
The interface device shall occupy no more than two slots in the detector rack and shall provide a loop-type handle for easy installation and removal.
The interface device shall be powered by 12 or 24 volts DC and shall not consume more than 6.25 watts. The unit shall automatically compensate for the different input voltages and shall be hot-swappable.
The interface device shall operate in a temperature range from -35°C to +74°C and a humidity range from 0% RH to 95% RH, non-condensing.
Video Ports - The interface unit shall accommodate a maximum of four composite video inputs and one video output.
Video inputs and video output shall be made via BNC connectors to ensure secure connections. RCA or other straight friction plug-in type connections shall not be allowed. Video inputs shall use a vendor supplied "octopus" cable to accommodate the four video inputs. Provisions shall be made to accommodate the mating cable to utilize jack screws for securing the octopus cable.
The interface unit shall accommodate either monochrome or color video signals conforming to NTSC or PAL video standards.
The interface unit shall automatically sense the video input signal and configure the video output port to either NTSC or PAL standards. Each video input signal shall be separately sensed to allow mixed video signals.
The interface unit shall interface with up to four video detection processors using RJ-45 interface connectors.
The interface unit shall support the use of an industry standard three button USB mouse. Pointing devices shall not require vendor specific pointing device software drivers.
An EIA-232 communications port shall be provided for local and remote access. The connector for this port shall be a 9-pin "D" subminiature connector on the front of the interface unit. Provisions shall be made to accommodate mating cables to utilize jack screws for securing cables.
Hi-intensity LED status lights shall be provided to facilitate system monitoring. Indicators shall be provided to show the status of the internal processor, video lock and indication of which video input is being monitored.
An Ethernet port shall be integrated within the interface unit. The Ethernet port shall conform to 802.3 Ethernet specifications and shall auto-sense between 10 and 100 Mbps data rates. Industry standard TCP/IP (UDP and TCP packets) protocol shall be supported. The Ethernet connection shall be made through a RJ-45 connector.

10" LCD MONITOR:
The 10.4-inch diagonal color LCD monitor shall be housed in an aluminum enclosure capable of standing on its own on a shelf.
The monitor shall have features that limit the monitor from sliding on the shelf (i.e. rubberized feet).
The LCD panel shall be industrial grade (Grade A) and employ thin film transistor (TFT) technology.
The LCD panel shall have a high contrast ratio of 900:1 typical.
The LCD panel shall have a brightness level of 1000 cd per square meter minimum.
The LCD panel shall have support computer resolution up to 1024 pixels (horizontal) x 768 pixels (vertical).
The LCD panel shall support both NTSC and PAL video formats and shall be auto-sensing.
The LCD panel shall support 16.7 million display colors.
The typical response time shall be 16 milliseconds.
The LCD panel shall have a pixel pitch of 0.2063 (horizontal) x 0.2063 (vertical) millimeters minimum.
The minimum viewing angle shall be +/- 75 degrees horizontally and +/- 75 degrees vertically.
The on screen display (OSD) shall enable control of brightness, contrast, color, horizontal and vertical positioning.
The LCD panel shall support VGA analog RGB, composite video (2x with pass-through), DVI-D, and HDMI (A type) interfaces.
The monitor system shall be able to operate from 110 to 240 VAC, 50 or 60 Hz.
The monitor system shall be FCC and CE approved.
The monitor system shall operate between -10 and 60 degrees Celsius, 90% non-condensing.
The monitor system shall be 266 mm x 214 mm x 60 mm (10.47 x 8.42 x 2.36 in.) (W x H x D).
The monitor system shall weigh no more than 2.3 kg (5.1 pounds).
The monitor shall facilitate the use of 100/75 VESA standard mounting brackets.

SYSTEM FUNCTIONS:

Detection zones shall be programmed via an on board menu displayed on a video monitor and a pointing device connected to the DP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. A separate computer shall not be required for programming detection zones or to view system operation.

The DP shall store up to three different detection zone patterns in non-volatile memory. The DP can switch to any one of the three different detection patterns within 1 second of user request via menu selection with the pointing device. Each configuration shall be uniquely labeled and able to be edited by the user for identification. The currently active configuration indicator shall be displayed on the monitor.

The DP shall detect vehicles in real time as they travel across each detection zone.

The DP shall accept new detection patterns from an external computer through the EIA232 port when the external computer uses the correct communications protocol for downloading detection patterns. A Windows™-based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The DP system shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.

The DP shall send its detection patterns to an external computer through the EIA232 port when requested when the external computer uses the appropriate communications protocol for uploading detection patterns.

The DP shall default to a safe condition, such as a constant call on each active detection channel, in the event of unacceptable interference or loss of the sensor signal.

The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all effected detection zones in a constant call mode. A user-selected alarm output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

Up to 24 detection zones per camera input shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region.

The DP shall provide up to 24 open collector output channels per sensor input using one or more extension modules.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single approach of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a graphical interface built into the DP and displayed on a video monitor, to draw the detection zones on the video image from each video camera. No separate computer shall be required to program the detection zones.

When a vehicle is detected within a detection zone, a visual indication of the detection shall activate on the video overlay display to confirm the detection of the vehicle for the zone.

Detection shall be at least 98% accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon site geometry, camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

The DP shall provide dynamic zone reconfiguration (DZR). DZR enables normal operation of existing detection zones when one zone is being added or modified during the setup process. The new zone configuration shall not go into effect until the configuration is saved by the operator.

Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.

The DP shall process the video input from each camera at 30 frames per second. Multiple camera processors shall process all video inputs simultaneously.

The DP shall output a constant call during the background learning period of no more than 3 minutes.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to six video detection zones per sensor input shall have the capability to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the EIA232 port. The zone shall also have the capability to calculate and store average speed and lane occupancy at bin intervals of 10 seconds, 20 seconds, 1 minute, 5 minutes, 15 minutes, 30 minutes and 60 minutes. One radar sensor zone shall also count vehicles, calculate, and store the average speed and lane occupancy across the approach.

In addition to the count type zone, the DP shall be able to calculate and/or acquire average speed and lane occupancy using both video and radar sensors. These values shall be stored in non-volatile memory for later retrieval.

The DP shall have an “advance” zone type where detection outputs to the traffic controller is compensated for angular occlusion and distance.

The DP shall support bicycle type zones where the zone can differentiate between motorized vehicles and bicycles, producing a call for one but not the other.

Bicycle zone types shall only output when a bicycle is detected. Larger motorized vehicles such as cars and trucks that traverse a bicycle zone shall not provide an output.

Six additional count zones for bicycles, separate from the 6 data collection zones for vehicles, shall be provided to accumulate

bicycle counts at user specified intervals.
Bicycle zones shall have the ability to have extensions assigned to individual bicycle zones for applications where the traffic controller does not have bicycle specific detection inputs.
The DP shall provide the ability to assign a separate output channel for bicycle zones to allow traffic controllers to implement special bicycle timing for applications where the traffic controller has separate bicycle detection inputs.
The DP shall employ color overlays on the video output.
The DP shall have the ability to show phase status (green, yellow, or red) for up to 8 phases. These indications shall also be color coded.
The user shall have the ability to enable or disable the display of the phase information on the video output.
The DP shall have the capability to change the characteristics of a detection zone based on external inputs such as signal phase. Each detection zone shall be able to switch from one zone type (i.e. presence, extension, pulse, etc.) to another zone type based on the signal state. For example, a zone may be a "count" zone when the phase is green but change to a "presence" zone type when the phase is not green. Another application would be zone type of "extension" when the signal phase is green and then "delay" when red.
For alpha numeric user inputs, the DP shall utilize a virtual keyboard on the video overlay system to ease user input. The virtual keyboard shall use the standard QWERTY keyboard layout.
The DP shall aid the user in drawing additional detection zones by automatically drawing and placing zones at appropriate locations with only a single click of the mouse. The additional zone shall utilize geometric extrapolation of the parent zone when creating the child zone. The process shall also automatically accommodate lane marking angles and zone overlaps.
When the user wishes to modify the location of a zone, the DP shall allow the user move a single zone, multiple zones or all zones simultaneously.
When the user wishes to modify the geometric shape of the zone, the DP shall allow the user to change the shape by moving the zone corner or zone sides.
On screen zone identifiers shall be modifiable by the user. The user shall be allowed to select channel output assignments, zone type, input status, zone labels or zone numbers to be the identifier.
For multiple camera input DPs, the user shall have the ability to enable automatic video output switching. The dwell time for each sensor input shall be user programmable.
The DP shall support 3 independent trigger points for radar outputs for standard dilemma zone applications.
For radar sensor zones, the output can be triggered by presence of a vehicle only or by presence of a vehicle above a user-defined speed threshold.
The radar sensor system shall also provide a platoon detection or "group" detection and provide a user-definable output when a minimum specified number of vehicles are detected in the region of interest.
The system shall provide a method of providing a continuous output for dynamic dilemma zone applications where each individual vehicle is tracked and an output is provided only when the vehicle is within dilemma zone parameters.
The system shall provide the ability to provide a user-definable output in a continuous mode when specific, continuously monitored, distance and speed parameters of vehicles are met.
In the continuous mode, the user shall have the ability to define the region of interest by providing a minimum distance and maximum distance parameters for the region of interest.
In the continuous mode and within the region of interest, the user shall have the ability to define the minimum speed and maximum speed thresholds for both the minimum and maximum distances.
In the continuous mode, no output shall be provided if vehicles do not meet the parameters of the dynamic dilemma zone detection application.

CABLES:
MSDS cable must be per the Manufacturer's Specifications and must be provided by the Contractor for each camera between the camera mounting location and the controller cabinet.
The coaxial cable to be used between the multi-sensor assembly and the DP in the traffic cabinet shall be Belden 8281. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. BNC plug connectors shall be used where applicable. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the MSDS, and the manufacturer's instructions must be followed to ensure proper connection.
The power cabling shall be 16 AWG (1.0 mm^2) three-conductor cable with a minimum outside diameter of 0.325 inch (8.25 mm) and a maximum diameter of 0.490 inch (12.45 mm). The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may acquire power from the luminaire if necessary.

INSTALLATION:
The MSDS shall be installed by factory-certified installers and shall be IMSA Level II Traffic Signal Technician certified. Proof of certifications shall be provided.
The exact mounting location of the multi-sensor detection units shall be determined and approved by the unit manufacturer's installation representative prior to installation. Do not drill any holes in the mast arms until after this approval has been made. Where possible, the detection unit shall be installed in a location which will allow for near detection of all lanes (left, through, right)

on the approach, even though the initial setup will be to detect only those near lanes for which a video detection zone is indicated on the plans. Far detection shall be used for all through lanes on the approach.
The Contractor shall install all equipment and cables (including cable terminations) external to the controller cabinet. The unit manufacturer's installation representative shall install all equipment and make all cable terminations inside the controller cabinet.
The detection units shall be mounted to the mast arms without drilling any holes in the arms and using 1" heavy stainless steel banding material.
Both the power cable and the coaxial cable shall be physically supported, strain relieved, and protected from chafing where the cables enter the mast arm. Strain relief shall be provided by drilling a hole in the mast arm and installing a cord connector. Both cables come through one hole/connector. The hole shall be tapped and the cord connector screwed in. See mounting detail on the Plans for cord connector location. The cord connector shall be Hubbell Wiring Device-Kellums ¾" N.P.T. Straight Male Cord Connector Catalog No. SHC1037SS, or Engineer approved equal.
Power and coaxial cables shall be wire tied together between the detection unit and the cord connector. A drip loop shall be provided for both cables as shown on the Plans.
A City traffic signal technician shall be present while the detection system equipment installation and cable termination is occurring. The City signal technician, in conjunction with the unit manufacturer's installation representative, will determine the mounting location for the surge protection panel and detector rack slots for the detection system equipment.

SETUP TOOL:
A set up tool shall be provided for the MSDS. The setup tool will provide secure access to the Sensor Data Combiner. The secure access will be on two levels; the first is a ten digit hexadecimal WiFi key embedded in the setup tool. The second is a user selectable alphanumeric password of between four and ten digits.
The setup tool shall provide the following Video Image Camera Sensor functions; Zoom and auto focus adjustments, low frame rate video and image snapshot storage functions.
The setup tool shall provide the following Radar Sensor functions; height, operating channel and sensor offset adjustments. The setup tool shall provide a visualization of the roadway with icons representing vehicles at the approach along with simulated detector outputs and instantaneous vehicle speed. The icon will be one of three sizes representing the classification of the vehicle. The detector trigger points shall be user adjustable along with the stop bar to MSDS distance.
The setup tool shall provide other general functions; MSDS labeling, password setting and Sensor Data Combiner firmware upgrades
The set up tool shall be provided on a personal computer having an embedded Wi-Fi module running at 2.4 GHz ISM band.
The set up tool shall be provided on a tablet computer having an embedded Wi-Fi module running at 2.4 GHz ISM band.

TESTING AND PROGRAMMING:
The unit manufacturer's installation representative, in conjunction with a City traffic signal technician, will test and perform the initial detection programming for the system.
The Contractor shall coordinate all signal cabinet access and the scheduling of signal technicians with the City Traffic Signal Maintenance Division.

WARRANTY:
The supplier shall provide a limited three-year warranty on the MSDS.
During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.
During the warranty period, updates to DP software shall be available from the supplier without charge.

MAINTENANCE AND SUPPORT:
The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the MSDS. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.
The supplier shall maintain an ongoing program of technical support for the MSDS. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for onsite technical support services.
Installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Traffic Signal Technician certified.
All product documentation shall be written in the English language.
PAYMENT

Full compensation for performing all the work as shown on the plans, as specified in the Standard Specifications and these Special Provisions, Section 77-1, including furnishing all labor, materials, tools, equipment, and incidentals, and performing all alterations

necessary to complete the work must be considered as included in the contract lump sum price paid for "Video Detection Systems" at the various intersections, and no additional compensation will be allowed therefor as shown on the plans.